

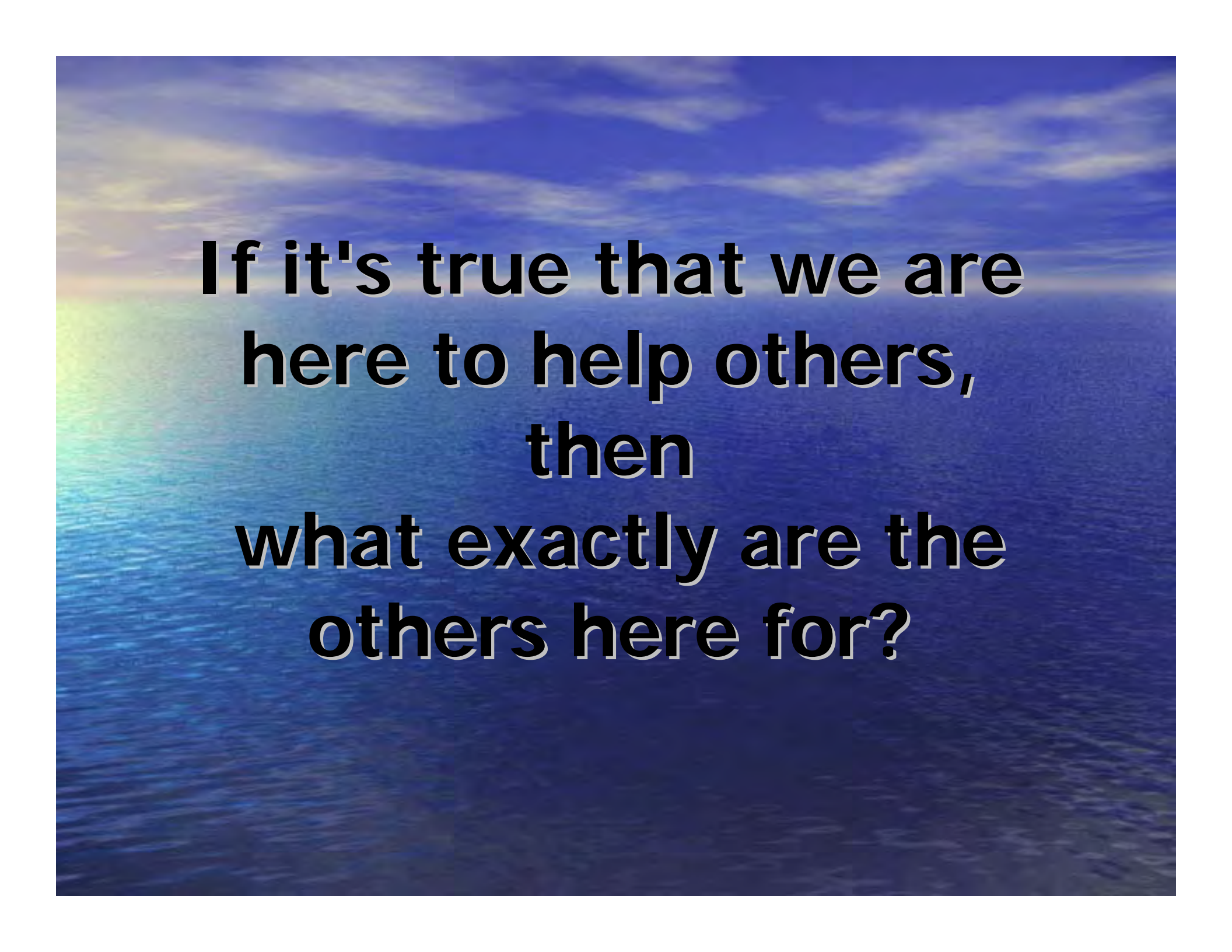
MALAYSIAN AMATEUR RADIO TRANSMITTERS' SOCIETY



RACES

RADIO AMATEUR CIVIL AND EMERGENCY SERVICE

**Radio Communication for Public
Protection and Disaster Relief**



**If it's true that we are
here to help others,
then
what exactly are the
others here for?**

What is Amateur Radio



- Amateur radio, is a hobby and a service which use various types of radio communications equipment to communicate with other radio amateurs for public service, recreation and self-training.
- Amateur radio operators enjoy personal (and often worldwide) wireless communications with each other and are able to support their communities with emergency and disaster communications if necessary, while increasing their personal knowledge of electronics and radio theory.

What is Amateur Radio ..c'tnue..

- An estimated six million people throughout the world are regularly involved with amateur radio.
- The term "amateur" is not a reflection on the skills of the participants, which are often quite advanced; rather, "amateur" indicates that amateur radio communications are not allowed to be made for commercial or money-making purposes.



Beginning of Amateur Radio

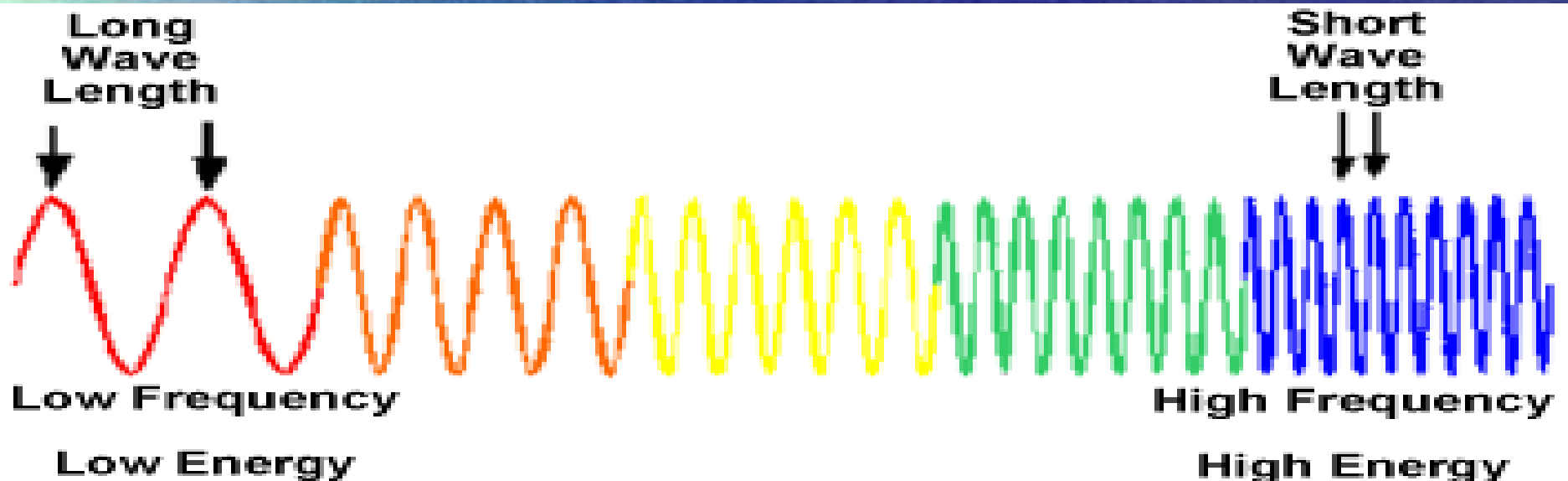
- World's 1st law regulating radio transmissions was passed in 1912 in US Congress.
- American amateur experimenters were communicating nationwide and setting up system to relay messages from coast to coast by 1914.



Amateur Radio Technology

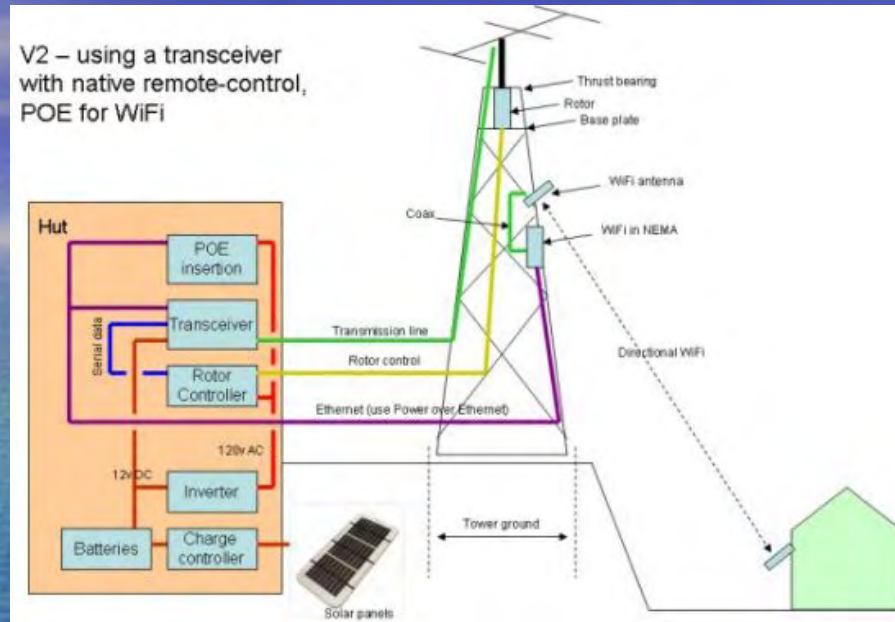
Amateur radio covers many technological areas and you need only general understanding of these technologies that makes up amateur radio.

- VHF – Very High Frequency
- UHF – Ultra High Frequency
- HF – High Frequency



(NOTE: Frequency refers to number of crests of waves of same wavelength that pass by a point in one second.)

Radio Wave



- The work of a radio is to send and receive information by using *radio wave*. (*analog - digital*)
- Radio wave travels at 3,000,00 km/s.
- It can hit the moon and bounce back in 2.5 seconds. (Moon Bounce)
- Travels around the world 7 times in 1 sec.

Roaming the world of Amateur Radio

- We have more than **3 million** amateur radio operators worldwide, ONLY few countries are without an amateur radio operator.
- Amateur Radio are required to have a license, no matter where they operate.
- Over **5,000** operators in Malaysia in September 2007.





**International
Telecommunication
Union**

International Telecommunication Union

- Amateur Radio Operator through out the world gathered in Geneva, Switzerland on May 17, 1865, and ITU was formed.
- ITU, is the United Nations' oldest agency has 191 member countries, including Malaysia.



MARTS' RACES and other nationally-established amateur radio voluntary organizations are an increasing part of the multi-agency response to major emergencies

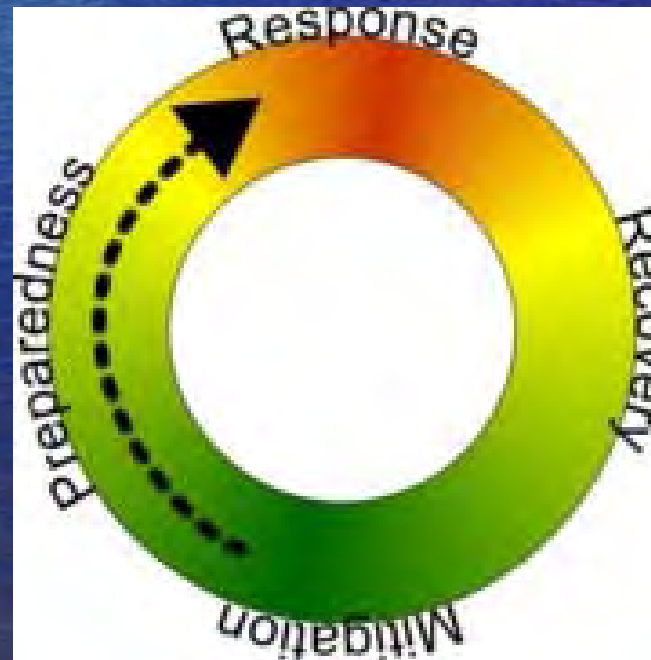


WHAT IS CIVIL EMERGENCY?

- **an unforeseen occurrence or combination of circumstances, any event (happening with or without warning) causing or threatening death or injury, damage to property or the environment, or disruption to the community which, because of the scale of its effects, cannot be dealt with by the emergency services and local authorities as part of their day-to-day activities that calls for immediate action or remedy.**



EMERGENCY SERVICES PROTOCOL





EMERGENCY SERVICES PROTOCOL



PREPAREDNESS

- where the agencies decide on how they will respond to a given incident or set of circumstances. This should ideally include lines of command and control, and division of activities between agencies.



EMERGENCY SERVICES PROTOCOL

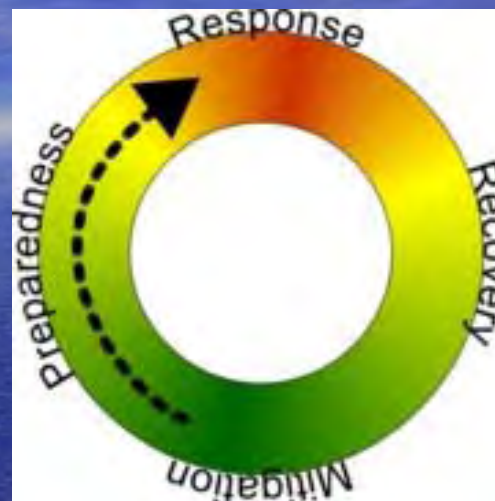


RESPONSE

- phase, where they execute their plans, and may end up improvising some areas of their response.



EMERGENCY SERVICES PROTOCOL



RECOVERY

- following the incident, where they assist in the clear up from the incident, or help the people involved overcome their mental trauma.



EMERGENCY SERVICES PROTOCOL



MITIGATION

- steps to ensure that no re-occurrence is possible, or putting additional plans in place to ensure less damage is done. This should feed back in to the preparedness stage, with updated plans in place to deal with future emergencies, thus completing the circle.



RACES

RADIO AMATEUR CIVIL AND EMERGENCY SERVICES

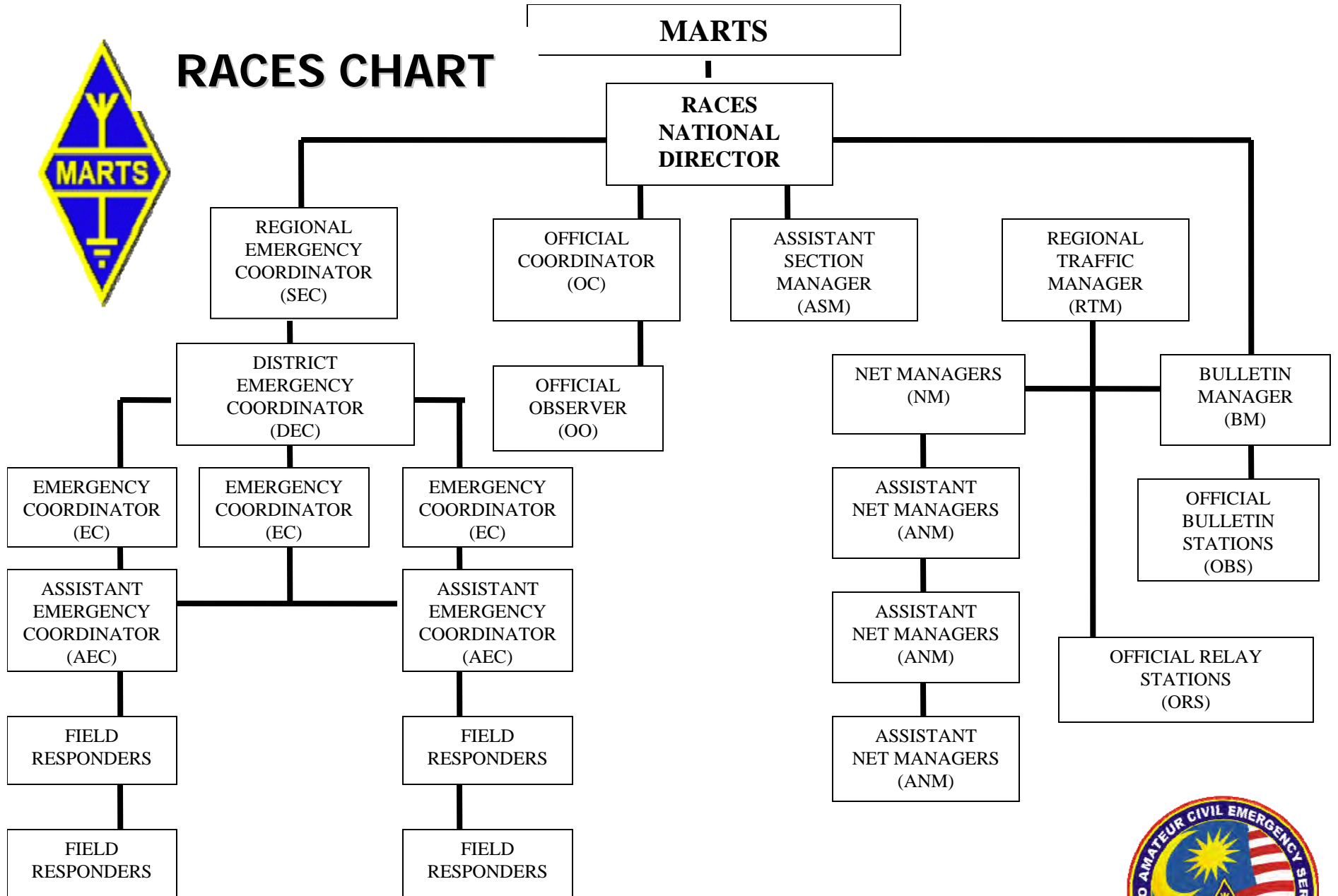


RACES

1. is a public service provided by a reserve (volunteer) group of Amateur Radio Operators that is administered by national, regional and local emergency management agencies.
2. provides radio communications for civil-preparedness purposes only, during periods of local, regional or national civil activities.



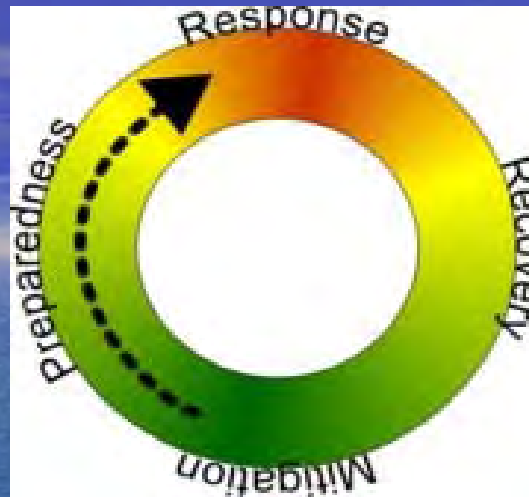
RACES CHART





RACES

1. While operating in a RACES capacity, RACES stations and amateurs registered in the local RACES organization may not communicate with amateurs not operating in a RACES capacity.
2. Only civil-preparedness communications can be transmitted.



RACES

HOW RACES CAN HELP ?

RACES can offer a flexible communication facility which can be adapted to suit the requirements of the emergency at all the four level of Emergency Management: Preparedness, Response, Recover, Mitigation.



RACES

- Provision of personnel with equipment to go to locations where communications do not exist or has failed.
- Provision of temporary additional channels to support links which have become overloaded.
- Shadowing of key officers from various User Services who may not have direct communications

Operational aspects of systems (RA) Single Group

Role of Amateur Radio

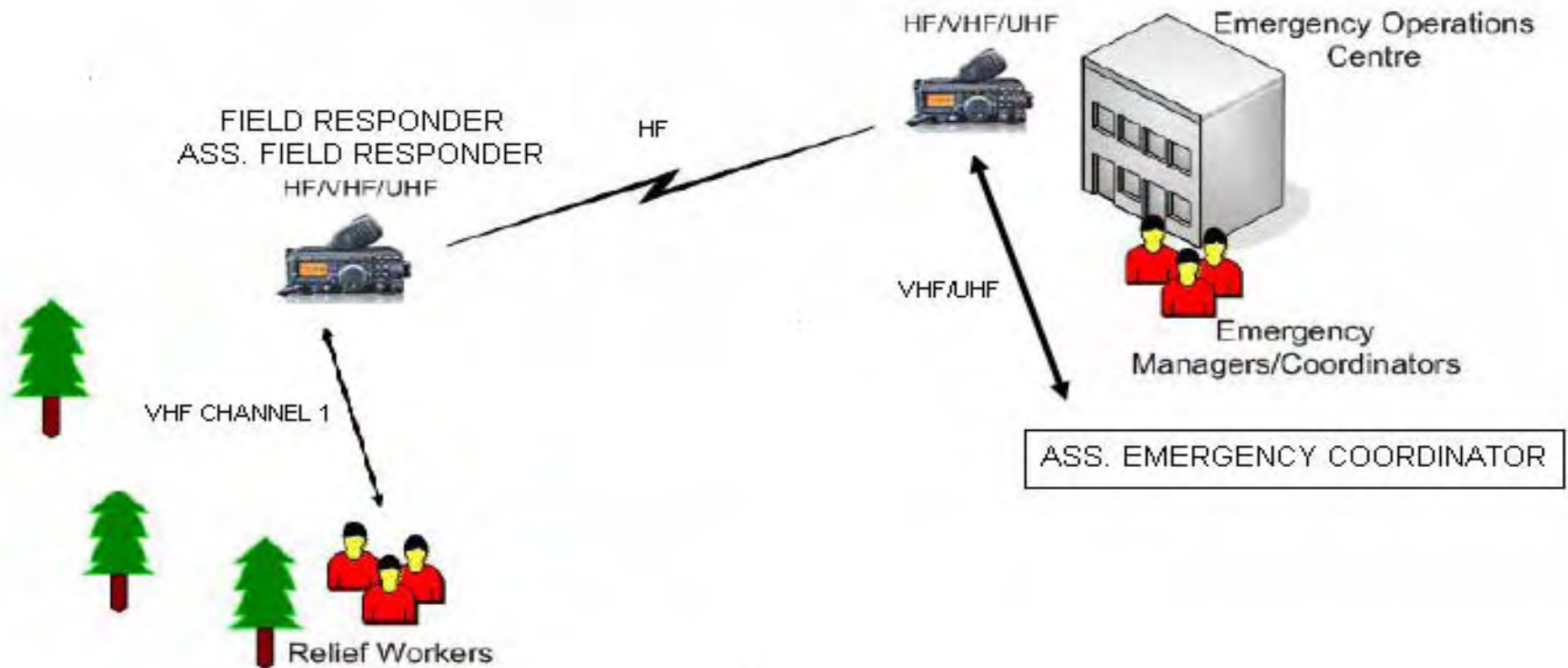


FIG.1

Operational aspects of systems (RA) in 2 Group

Role of Amateur Radio

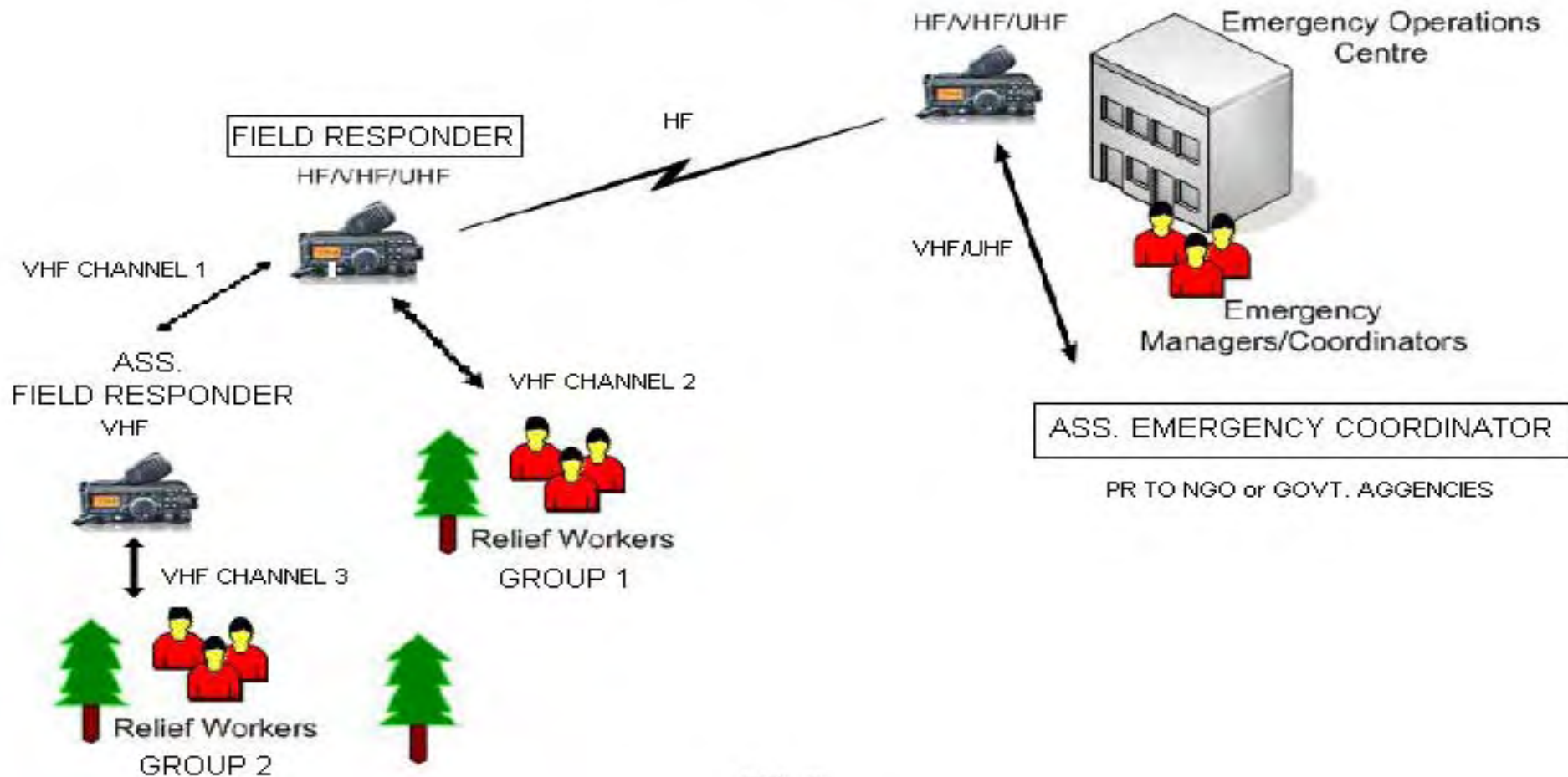


FIG. 2



MCMC CHANNELING PLAN



| CHANNEL NO. | FREQUENCY (MHz) | | NOTE |
|-------------|--|--------------|--|
| | Transmit (Tx) | Receive (Rx) | |
| NA | 144.2600 to 144.5750 | | Simplex & All Modes (freq. 144.26 MHz is for Emergency Communications) |
| | 144.6250 144.6375 144.6500 144.6625 144.6750 144.6875 144.7000 | | Simplex & Digital Mode. Emergency Communications (12.5 kHz ch. bandwidth) |

Appendix 1: Amateur Frequency Band, Power and Classes of Emission

Class A privilege

| Frequency Bands (in MHz) | Maximum Power Level (in Watts PEP) | Classes of Emission |
|-----------------------------|---------------------------------------|---|
| 1.8 - 2.0 | 25 | A1A, A2A, A3E, F1A, F2A, F3E, J3E, R3E, |
| 3.5 - 3.9 | 400 | |
| 7.0 - 7.1 | 400 | |
| 10.1 - 10.15 | 400 | |
| 14.0 - 14.35 | 400 | |
| 18.068 - 18.168 | 400 | |
| 21.0 - 21.45 | 400 | |
| 24.89 - 24.99 | 400 | |
| 28.0 - 29.7 | 400 | |
| 50.0 - 54.0 | 400 | |
| 144.0 - 146.0 | 400 | |
| 146.0 - 148.0 | 400 | |
| 430.0 - 440.0 | 100 | |
| 1,240 - 1,300 | 100 | |
| 2,300 - 2,450 | 50 | |
| 3,300 - 3,500 | 50 | |
| 5,650 - 5,850 | 50 | |
| 10,000 - 10,500 | 50 | |
| 24,000 - 24,250 | 50 | |
| 47,000 - 47,200 | 50 | |
| 75,500 - 81,000 | 50 | |
| 119,980 - 120,020 | 25 | |
| 142,000 - 144,000 | 25 | |
| 144,000 - 149,000 | 25 | |
| 244,000 - 248,000 | 25 | |
| 248,000 - 250,000 | 25 | |

Class B privilege

| Frequency Bands (in MHz) | Maximum Power Level (in Watts PEP) | Classes of Emission |
|-----------------------------|---------------------------------------|-------------------------------------|
| 28.0 - 29.7 | 50 | A3E, F1A, F2A, F3E, J3E, R3E, |
| 50.0 - 54.0 | 50 | |
| 144.0 - 146.0 | 50 | |
| 146.0 - 148.0 | 50 | |
| 430.0 - 440.0 | 50 | |



AMATEUR RADIO & PUBLIC SERVICE

- Amateur Radio Operators provide public service in radio communication during emergencies like the Nuri helicopter crash near Genting Highlands, the December 2004 tsunami disaster and the Highland Towers tragedy in December 1993.



**MARTS RACES with other SAR agencies in search
of 6 hikers lost for 3 days on Mount Ledang
Johor. 19 MAY 2008**





In 2005, a task group was finally put together by MARTS to look into the possibility to link up the many repeaters situated in the various states. The need to have a complete radio communication coverage in peninsular Malaysia was further spurred after the tsunami in 2005. MARTS felt obligated to serve the community in times of emergency and disaster. By having radio communication coverage during these times, much help can be rendered toward to the support, health, and rescue agencies.

MARTS RACES training at Bukit Kepong, Johor. 1 MAY 2008



MARTS Races Training with St John Ambulance in Penang





Digital Communications on Amateur Radio



SSTV



- **Others then voice communication and Morse code transmissions, Amateur Radio are capable of sending digital transmission using computer soundcard, TNC which most of the software were developed by Amateur Radio Operator. PSK31, BPSK, MFSK16, PACKET, RTTY, SSTV and others**

DIGITAL COMMUNICATION EQUIPMENT





INTERNET LINKING



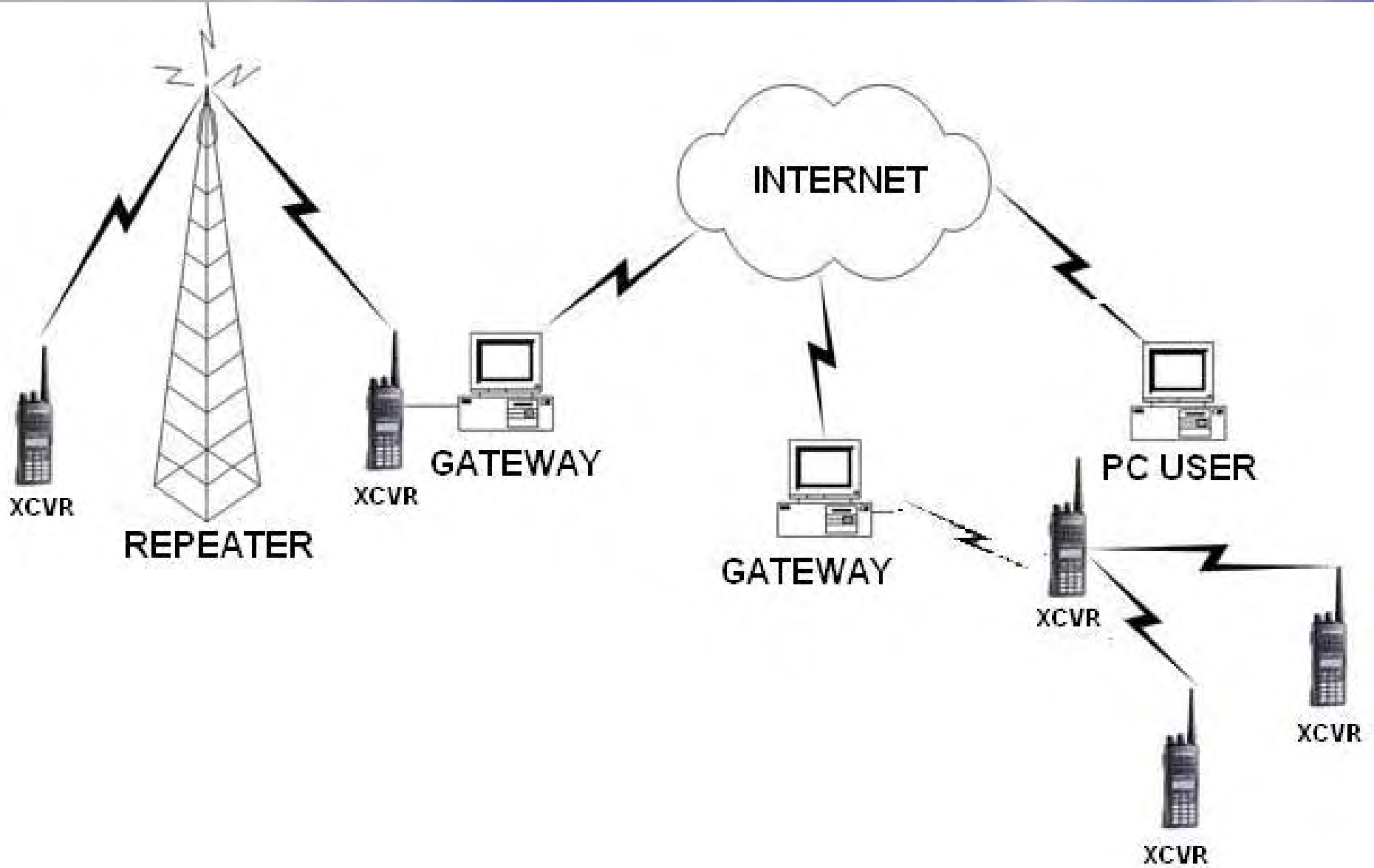
E-QSO

Echo link

Linking Amateur Radio through Internet

**Extended coverage through out the world
connecting Amateur Radio Repeaters**

GATEWAY ON INTERNET LINKING





ORBITING SATELLITE CARRYING AMATEUR RADIO " OSCAR "

- Many Amateur Radio Operators have been experimenting on the satellites in Analogue or digital transmission such as packet ,Bulletin Board Service (BBS) and others modes.
- Amateur Radio have many type of method to communicate amongst Amateurs.



Something to remember

- **Amateur Radio can only assist if they are asked to do so**
- **Amateur Radio will only be asked if they are considered to be part of the response team**
- **Amateur Radio will only become part of the team by becoming a recognised player**
- **Amateur Radio must abide by the guidelines laid out by the National Security Council, Directive MKN 20.**

Thank you for your contributions.....

- **9M2DA – Deen Atan**
- **9W2PCK – Choy Chee Keong**
- **9W2ART – Azhar Samat**
- **9W2ZE – Munzir Abdullah Sani**
- **9W2SOR – Mansor**
- **9W2AXE – Azhar Rais**
- **...and all other amateur radio operators contributions!**