

RNRE – GAREC MEETING

Friedrichshafen – Ham Radio 2018

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WHO WE ARE

We are the most important EMCOMM association in Italy, with volunteers spread all over the peninsula.



WHERE WE ARE

- Regions in light blue are Regions where we have active volunteers
- Stars indicates cities where a UM (Mobile Unit) is dispatched





WHAT IS OUR MISSION

Our mission is to guarantee communications in emergency situations.
This is achieved by the use of several technology such as:

- ▶ Traditional analogical RTX (FM radios in civil bands)
- ▶ Satellite Communications (Internet connection guaranteed all over the country)
- ▶ VoIP devices (Service delivered via Satellite Communications)
- ▶ PACTOR
- ▶ C4FM
- ▶ DSTAR
- ▶ More...



WHAT'S NEXT



We always try to increase the quality of the service we can offer. Our next big step has been made with

DMR

With Mototrbo devices by Motorola



WHY DMR AND WHY NOW?

Even though this technology first made its appearance several years ago, it was never reliable enough to be adopted in EMCOMM, until now.

DMR offers several major changes over and above traditional analogic RTX such as:

- ▶ More spectrum efficiency thanks to timeslots
- ▶ More efficiency in energy consumption thanks to TMDA energy management
- ▶ More data transmission capabilities
- ▶ Better audio quality
- ▶ More global control over the network
- ▶ More security

We decided to adopt MOTOTRBO since we aim to build a network compatible with RTX that the **national department** already has.



BILL OF MATERIAL

ALSO KNOWN AS "WHAT WE ARE GOING TO BUY"



ITEM	QUANTITY
VHF repeaters	10
Transportable VHF repeaters	14
Transportable base station VHF radios **	10
Base station radio *	1
Handled VHF radios **	230
Mobile VHF radios **	65
Operation center VHF radios **	10
Software licenses	20

* Will be placed in national HQ

** Radios will be in VHF band since they will need to operate on our TWO reserved civil bands



HOW THEY WILL BE DISTRIBUTED

For the first part of the project

Each of our 11 UM (Mobile Unit) will receive the following items:

- ▶ 6x Handled DMR radios (with a case to contain them)
- ▶ 2x mobile DMR radios
- ▶ 1x DRM repeater
- ▶ Software licenses to run the network

In addition, spare parts will be available and extra devices that will be distributed to the associations that form R.N.R.E. so that they can support our UMs while deploying the network



WHEN AVAILABLE?



For the first part

- ▶ Device installations will begin by the end of June 2018
- ▶ Network will be completed before December 2018

For the second part

- ▶ Device installation will begin in 2019 and finish by the end of the year.





HOW THE NETWORK WILL BE IMPLEMENTED



R.N.R.E. DMR network implementation for emergency situations.



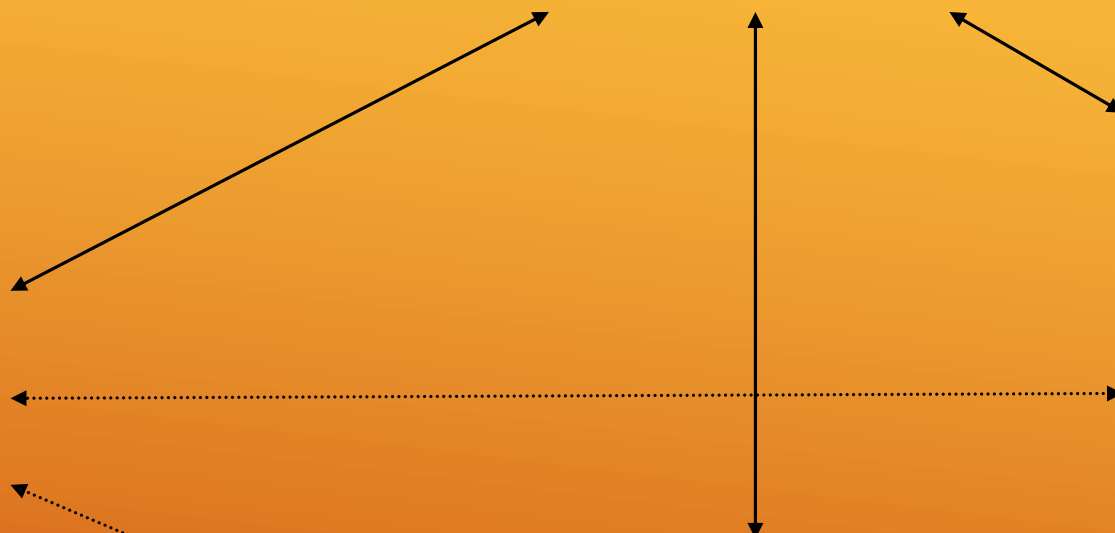
Mobile / Fixed repeater



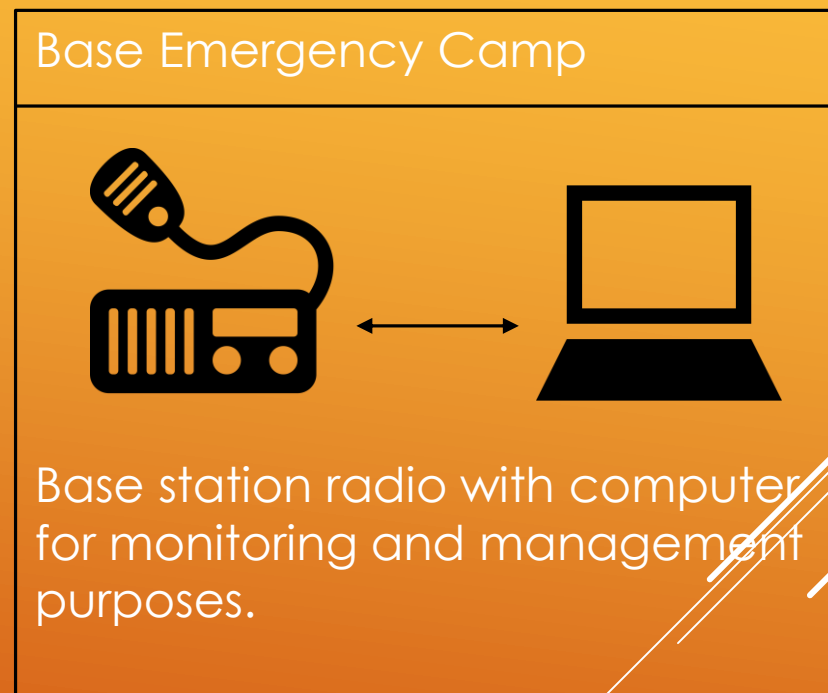
Internet



Handled radios



Mobile radios



Each of our UM will be able to set up this topology – Associations will increase UMs network size with more devices.
UMs will already be equipped with mobile radios

WHY WE CHOOSE THIS TOPOLOGY

- ▶ Easy implementation in several different environment
- ▶ Quick deployment
- ▶ Easy and fast troubleshooting
- ▶ Easy scalability to increase network size
- ▶ Enable us to use both digital and analogic radios at the same time, on the same network

This system can also provide:

- ▶ Voice radio communication
- ▶ Text messaging capabilities
- ▶ GPS real time tracking a the single radio





DEVICES WE HAVE CHOSEN





MOTOROLA SLR5500

- Can work both in analogic / digital mode
- 50 Watts TRX power
- Run the whole DMR network
- Can be controlled remotely

This device will be used in two different configurations:

- Fixed (as a traditional repeater, encased in racks)
- Portable (With backup batteries and transportable antennas)





MOTOROLA DM4600E – DM4601E

- Can work both in analogic / digital mode
- 1~25 Watts TRX power
- IP54, MIL-STD certification
- GPS capabilities which can be tracked from Base Camp (DM4601e)

This device will be used in three different configurations:

- Base camp radio
- National HQ radio
- UM's radio





MOTOROLA DP4801E

- Can work both in analogic / digital mode
- 5 Watts TRX power
- GPS integrated
- Wireless connectivity
- Can send text messages to other devices



SOFTWARE

Custom made software with the following capabilities

- ▶ Manages the complete DMR network
- ▶ Supports both analogic and digital modes, at the same time.
- ▶ Supports Hytera, Motorola, Radioactivity kairos and DMR tier II, III, multicast and simulcast;
- ▶ Can run mixed radio networks with unlimited users
- ▶ GPS tracking capabilities, with the possibility to show the real time location on a map
- ▶ Can interface different networks (even if not geographically close to each other)
- ▶ RoIP capabilities



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Thank you for your attention...

