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Distress Signal Messaging Through Radio Frequency for Mobile

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***Abstract* – Recently, this has been found that there are network related issues which are occurring in some mountain and hilly areas. There are few outdated technologies that are still in use like cellular network, wired network techniques that could not find proper solution to overcome the issues. We are trying to find the solution for this issue using some latest technologies and small devices that can be used with smartphones. We are focusing on radio frequency techniques to increase the range for conversation in No-Network areas. For this, we are supposed to use radio antennas that will broadcast the signals in forward direction. The device Interface with smartphone through OTG. Where, the signal-receiving device will have same system arrangement for the communication to have taken place between them.**

Keywords- Android, Micro-B USB, Radio frequency Antenna.

INTRODUCTION

presence of cellular networks is mandatory and it is difficult to communicate with someone when the cellular network is totally absent or to reach to somebody in case of emergency[1]. For example, this project will work efficiently in cases of any natural disaster when the cellular network goes down; people can communicate with each other and most importantly can track each other's location to find people caught in trouble or to provide food and water to the people affected by the disaster by tracking their location.[2]

This Distress Signal Messaging Trough Radio each other through Radio Frequency they can send receive and even broadcast messages using the app. This system will overcome the earlier systems which worked only in presence of cellular network.

II. RELATED WORK

The present system or devices for communication were totally dependent on the presence of the cellular network. The places where cellular network goes down like mountains for hiking trails or places affected by natural disasters the existing systems doesnt work hence communication becomes impossible, in the places affected by natural disasters communicating with the people caught in trouble is very much essential to save their lives, or to provide them food packets, so in such situations our device will work efficiently because it totally sends, receives and broadcast messages through Radio Frequency.[2]

In telecommunication industry, mobile communication is rapidly growing a field of interest. There are many different technologies existing for mobile communication systems amongst which the cellular radio network is the most successful.[5] The cellular radio network provides mobility in communication. Some of the existing mobile communication systems currently used is given below:

A. Paging

Frequency For Mobile will help people communicate with each other in case of emergency in absence of cellular network.[3][4] This RF Dongle device will help people communicate with each other in case of emergency in absence of cellular network. This system will consist of a number of mobile android devices which would be connected to a radio frequency antenna and they would communicate with

B. Communication Satellites

It a very simple and inexpensive form of mobile communication. It uses an antenna or satellite for broadcasting short messages to users.[6] Devices which display messages like beepers are called as Receivers. It is a one data transmission system. Paging systems are designed because they provide reliable communication,

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which necessitates low data rates and high powered transmitters.

Communication satellites consist of large transponders, these transponders listen to a particular radio frequency, then amplifies the signal and rebroadcast it at another frequency. So they can be inherently called as broadcast devices. But large propagation delay is one of the drawbacks of this system. [2]

C. Personal Handy phone

The Personal Handy- phone system is as like cellular networks, used in Japan and is very popular in heavily populated metropolitan areas where phones can directly communicate with one another but only and only when they are in range but this proves as an advantage over cellular phones, which can communicate with each other via base station transceivers.[2]

D. Cellular Radio Networks

A geographical area is divided up into cells, and each cell is being serviced by one or more radio transceivers i.e. Transmitter or receiver and hence the name given cellular network. It offers a full duplex communication and is achieved by sending a message and receiving it on two different frequencies i.e. frequency division duplexing (FDD). Cells a certain distance apart can reuse the same frequencies and that's the reason for cellular network topology. According to cellular companies report, there was a subscription base of more than 1800 million people in 1995 and it grows on an average of 150,000 new subscribers every day.

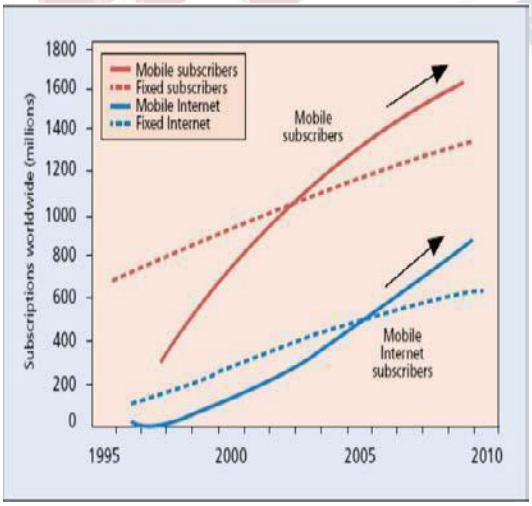

Fig 1.1: Evolution of mobile Subscribers

with each other efficiently. Considering this advantage we are using RF Antenna and developing the RF dongle which will be compatible with any android smartphone. [3]

III. FUTURE SCOPE

GSM is leading in both subscriber base and data transmission capabilities. The Japanese PDC system is the second largest cellular system after GSM. The cellular radio system is in their second, third and fourth generation.

IV. PROPOSED METHODOLOGY

All the existing systems worked in presence of cellular network our system aims to work in the total absence of a cellular network. Our proposed system consists of a device called as Distress Signal Messaging Trough Radio Frequency For Mobile. This device is constructed using a Radio Frequency Antenna and Micro-B USB [3] An android application is constructed for communication through which one can receive, send and broadcast messages and track one's location.[4]

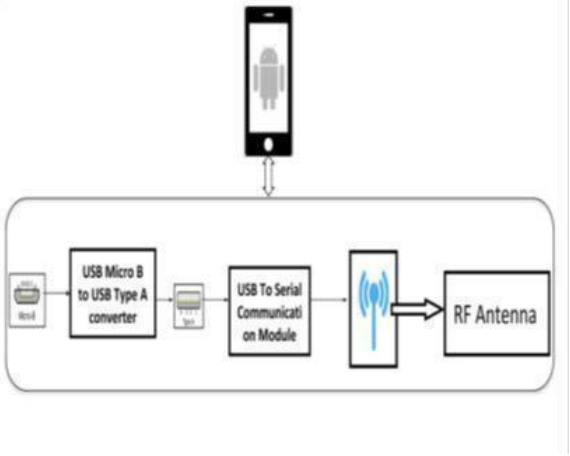

Fig 4.1: Framework of Distress Signal Messaging

Whenever a user gets in any difficulty during disasters or goes for trekking he will carry the OTG and mobile phone with installed application with themselves. The device and the mobile phone would be connected using Radio frequency antenna and establish communication with other such OTG using Radio Frequency. For this purpose will be creating a server in java and then obtaining the GPS coordinates from the device by latitude and longitude values on X and Y axis with respect to the

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globe, after that, we will be configuring the Radio frequency antenna for Hostapd (Host access point daemon). [5]

We are focusing on radio frequency antenna for communication between two devices. A radio frequency antenna has a capacity to communicate long distance than Bluetooth and Wifi. The two or more RF antennas are capable to communication

The most important future scope for our project is that we can use this OTG for group chat. Improvements can be made and this device with the application can be useful in areas like the army, navy, and many other natural disaster affected areas.

V. IMPLEMENTATION

Develop a communication device which will directly connect to the android phone and build a communication network in the range of radio frequency through which every member of the network can contact each other. The one device will broadcast the signal and other will receive it and will respond to it. The device can also share the geographical position to the person who is receiving the signal. For this, we are using radio frequency antennas on both devices.

VI. RESULT

We use Radio frequency antenna which is working on 2.4GHz band available free to common use. A band of frequencies clustered around 2.4 GHz has been designated, along with a handful of others, as the Industrial, Scientific, and Medical radio bands. The transceivers connected to the antenna which transfer R receive the data from the signal antenna. The TTL to USB converter is use to communicate the mobile device & DSM device.

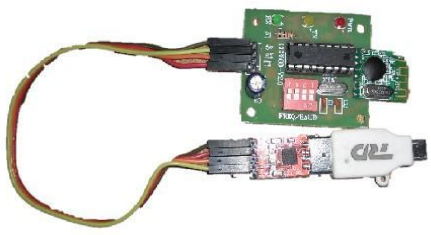

Fig 6.1: DSM Device

We transfer the messages through DSM device in bit from. First the messages, text any data converted into the bit format then it send through radio antenna at other end the messages decode at receiver end.

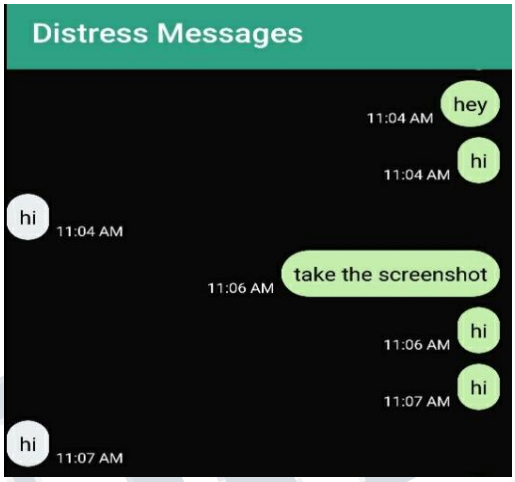

Fig 6.3: DSM Application

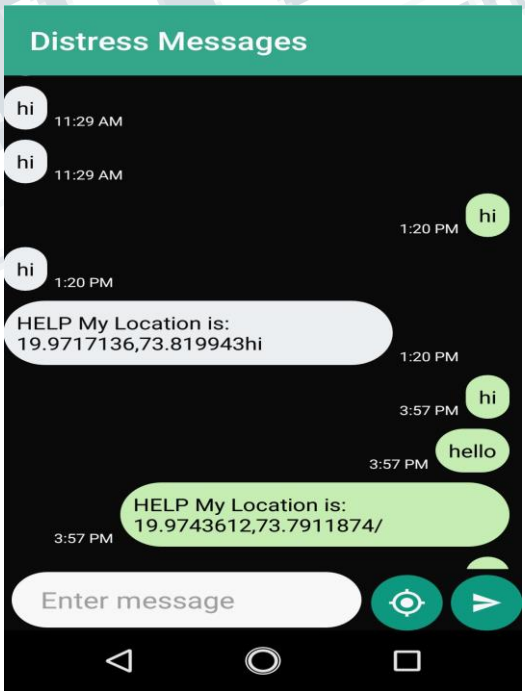

Fig 6.3: DSM Application

We have design our dongle and mobile application which can easily send message using Radio Frequency from one mobile to another. We have also design location tracking

system which works on longitude and latitude. We can easily find exact location of other device user.

VII. CONCLUSION

Distress Signal Messaging Trough Radio Frequency for Mobile eliminates the disadvantages of existing communication system that worked only in presence of cellular network. Hence we successfully achieved to construct a communication system which works in the total absence of the cellular network. We can send, receive and broadcast messages using this device and even track the location.

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