



National Institute of Technology Jamshedpur

Radio Mesh Network for disaster management



Radio mesh network for disaster management

- After a disaster like a tornado, earthquake, or tsunami, the **cell phone towers are also destroyed.**



- Restoring communication is absolutely important to conduct rescue and recovery.

Our Project :

- Brings a phone connection in the affected area.
- Enables everyone to conduct rescue operations
- File, image and message sharing is made possible through radio communication

Mesh Network Setup after a disaster



- Extended Connectivity through Nodes

- Solar powered Radio Nodes Setup (example)



Objective of the project

Cell phone connection



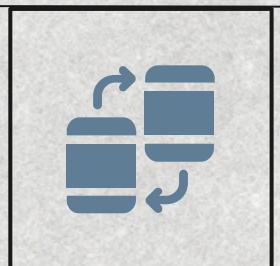
It allows normal calls to be made from any node

Message



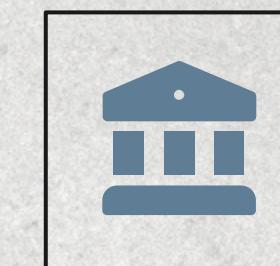
People in need can communicate with others

Cheap walkie talkie device



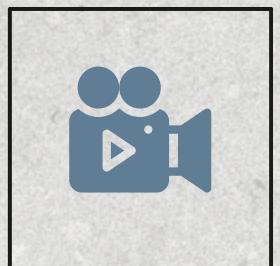
A small cheap device can be attached to the phone which makes it a walkie-talkie

Control Centre



A control centre can be setup to send instructions

Image and text share



Allows image and text sharing in the no network zone

Methodology

1

FM transmission

For Long range audio transmission for walkie talkie and cellphone line FM transmission is used.

2

SDR for Cell-Phones

A cheap small device which can be connected to a cell phone which converts it into a walkie-talkie.

Advantages:

- Long range
- Cheap
- Each node has an FM Transmitter and Receiver circuit

3

Cell Phone connection

- One of the nodes can be extended to a location where there is a cell tower signal
- A GSM module will be connected to that Node
- Audio from the GSM module will be sent through the FM transmission

4

Image and file sharing

- Radio Modules such as NRF24 or LoRa modules can be used to send data from one node to other



Timeline

01

Research and development.

Planning and development of prototype

02

Prototype testing and Refinement.

Build and Test prototypes in controlled environments

03

Field testing and validation

Conduct Field Tests of the node system

04

Production

Scale up production and assembly

Stages

Budget Details

Sno.	Areas	Price(INR)
	Development boards, Radio Transceivers, Solar panels	16,000.00
	Basic electronic components, Prototype boards	5,000.00
	Walkie-Talkies, 3d printer filaments, GSM modules	17,000.00
	Soldering, Hot air guns, wires and other equipment	7,000.00
	Miscellaneous	5,000.00
	Total	50,000.00

Details of Project Group



Sno	Post	Name	Reg. NO.	Email ID	Department	Contact
1.	Team Leader	Saurav Kumar	2023UGEC033	2023UGEC033@nitjsr.ac.in	ECE	7321992949
2.	Member	Satwik Pal	2023UGEC052	2023UGEC052@nitjsr.ac.in	ECE	7987242766
3.	Member	Penmatsa Rethika Surya Sri	2023UGEC073	2023UGEC073@nitjsr.ac.in	ECE	7675912633
4.	Member	Rajneesh	2023UGEC057	2023UGEC057@nitjsr.ac.in	ECE	6388531028

Mentorship Details

Sno	Name	Department
1	Dr. Prashant Kumar	Electronics and Communication Engineering