FINAL YEAR PROJECT

SOIL CREEP DETECTION SYSTEM

GUIDED BY : BIJU LONGINOS

PROJECT TEAM

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OBJECTIVES

01 DETECTING THE EXTEND OF CREEP

02 PARAMETERS EFFECTING SOIL CREEP

03 DETECTION OF PARAMETERS AND IMPLEMENTATION

04 LORA COMMUNICATION

05 DISPLAYING IN WEBSITE

Basic Design

Sensors

Data from different sensors

LORA MODULE(NODES)

The data from sensors are processed here

LORA GATEWAY

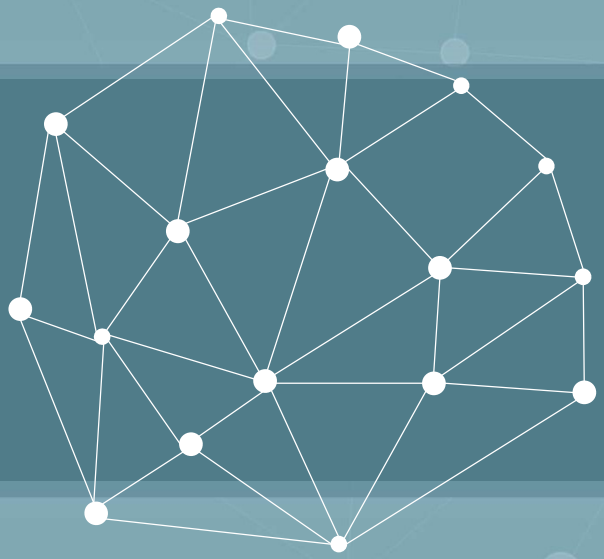
The processed sensor values from different nodes are collected here.

WEBSITE

Displaying of the parameters and their continuous monitoring

ALERT MESSAGING

Alert messages are given various disaster management centers



DETECTING THE EXTEND OF CREEP

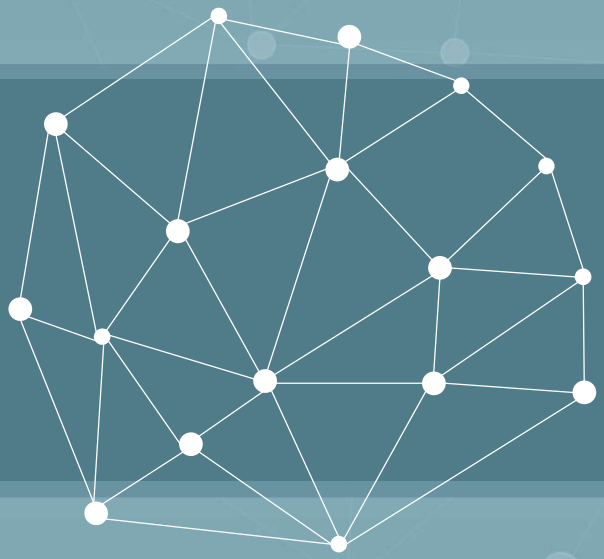
DETECTING THE EXTEND OF CREEP

01 Discrete movement of slope material caused by gravity

02 Can be also the presence of accumulated water in the soil.

03 Early detection of creep may help in alerting landslides.

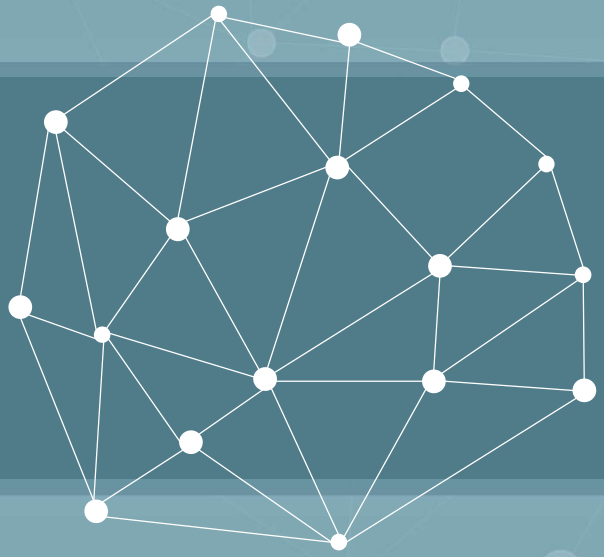
04 When the water content in the soil exceeds the limit it will weaken the bond between the soils.



PARAMETERS EFFECTING SOIL CREEP

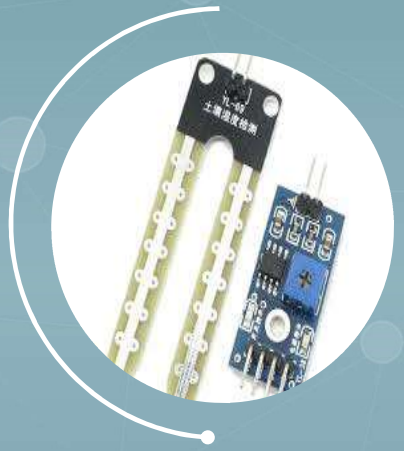
PARAMETERS EFFECTING SOIL CREEP

- MOISTURE CONTENT OF WATER
- HUMIDITY
- VIBRATIONS
- MOTION SENSOR

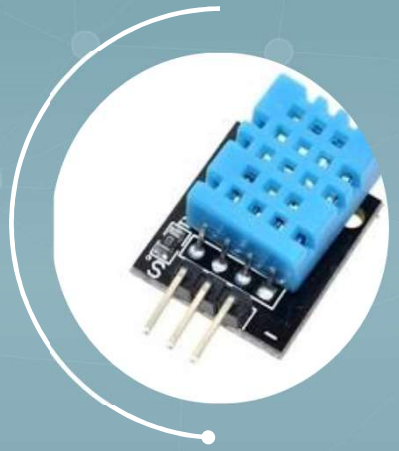


DETECTION OF PARAMETERS AND IMPLEMENTATION

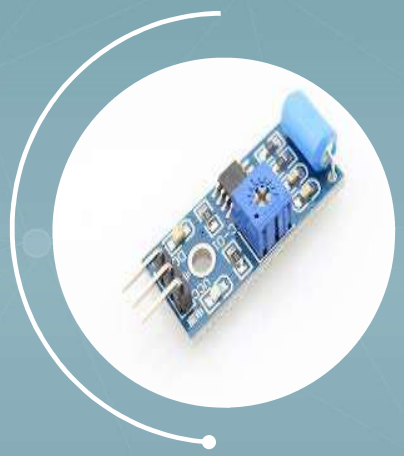
DETECTION OF PARAMETERS



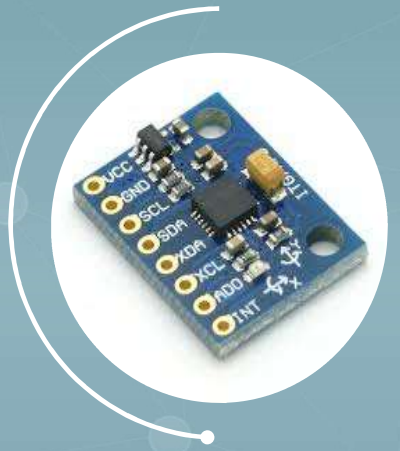
MOISTURE SENOR



HUMIDITY SENSOR

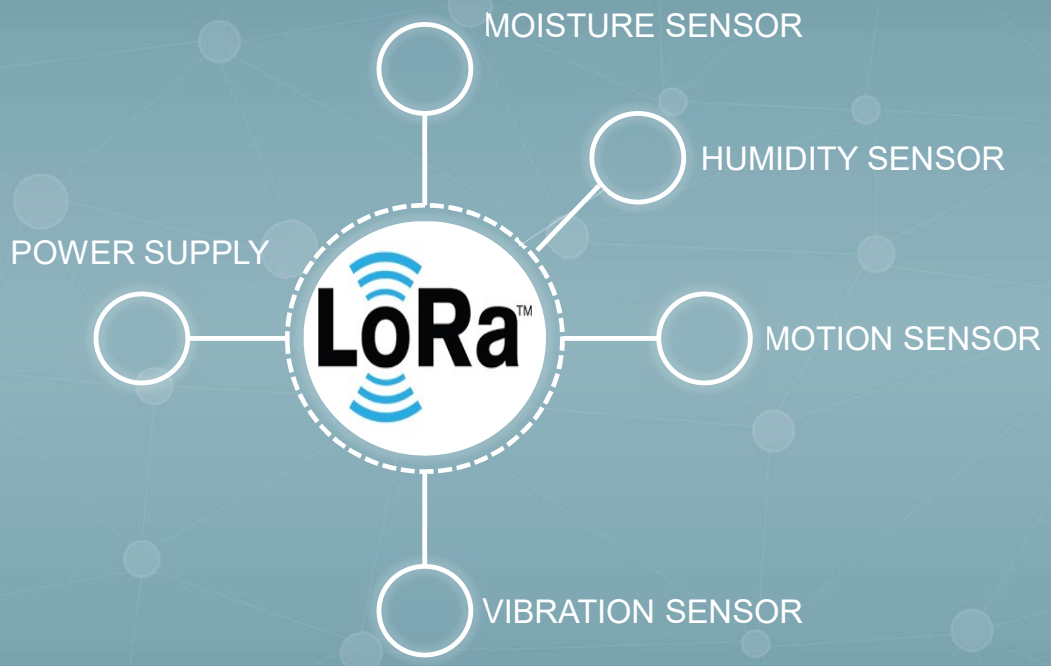


VIBRATION SENSOR

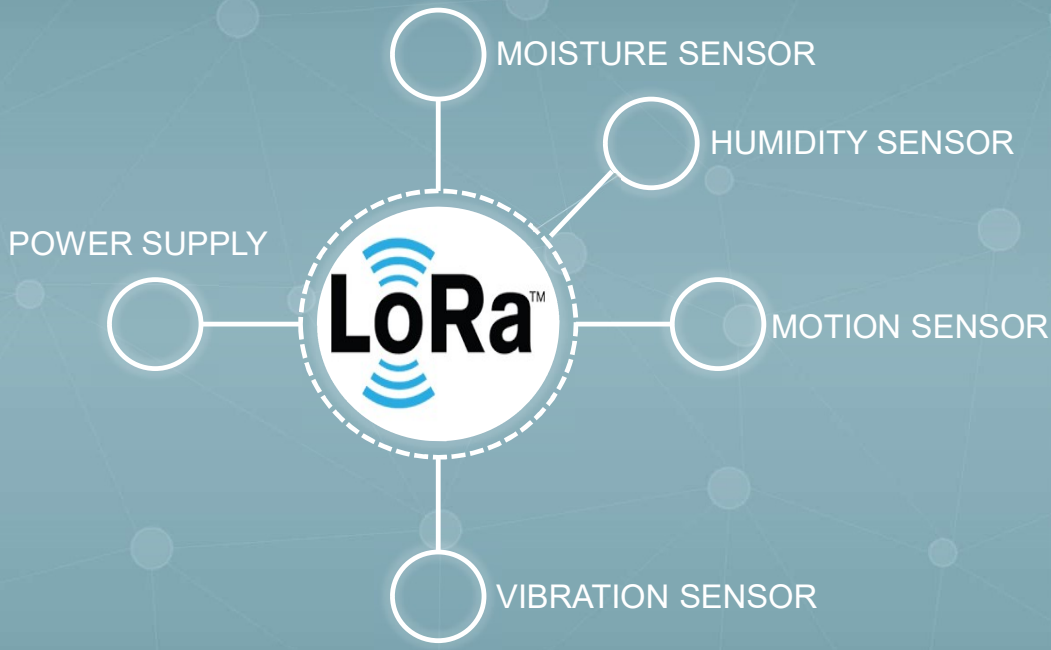


MOTION SENSOR

IMPLEMENTATION



NODE 1



NODE 2

IMPLEMENTATION

Sensors

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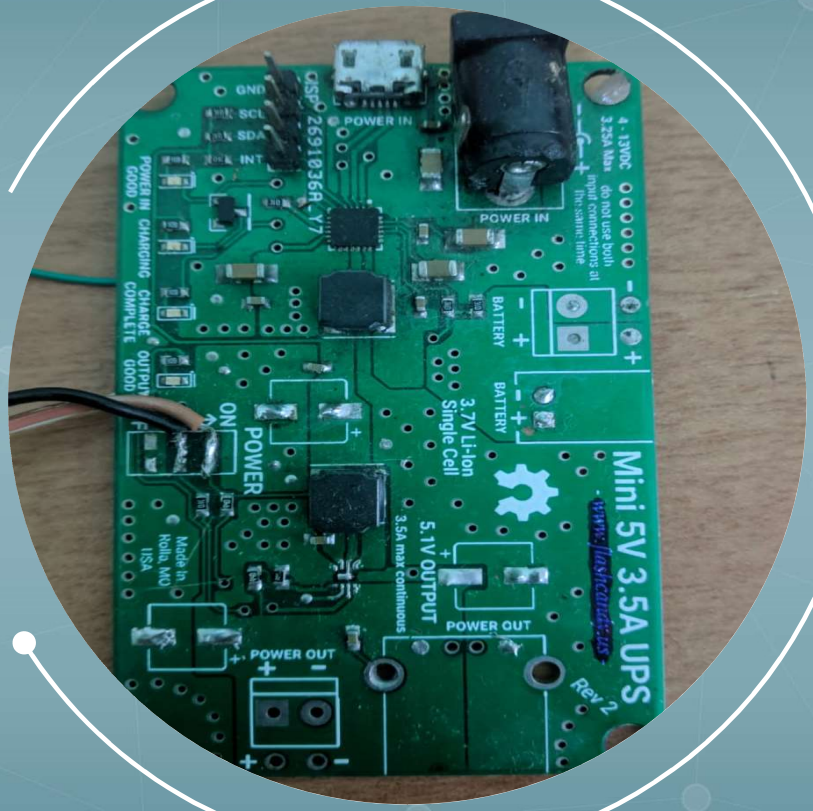
WEBSITE

Displaying of the parameters and their continuous monitoring

ALERT MESSAGING

Alert messages are given various disaster management centers

POWER SUPPLY BOARD



Power supply board

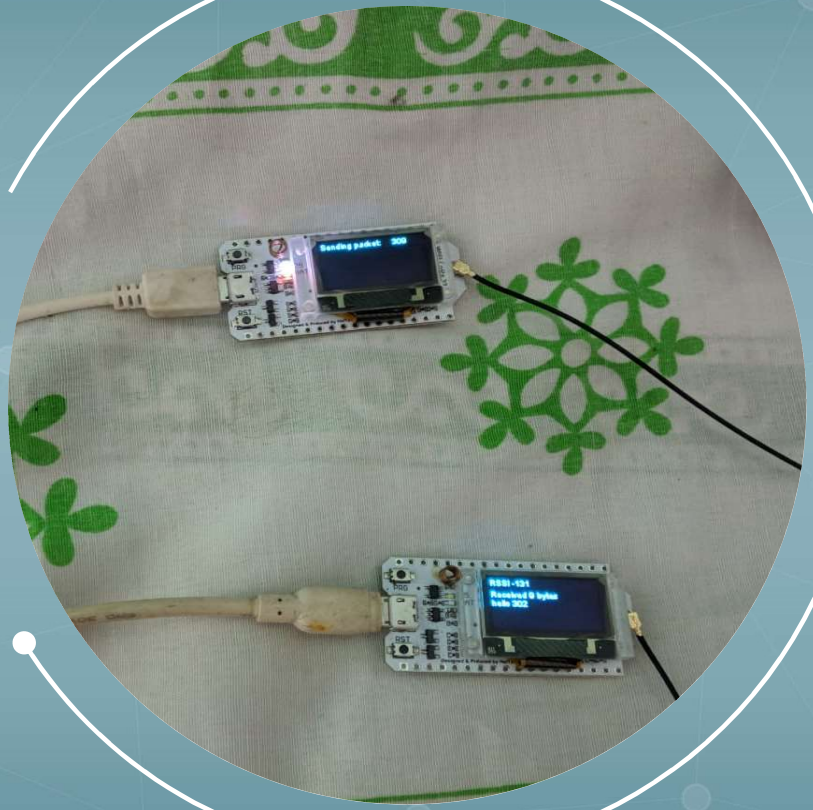
Used to convert 3.6v to 5v by using bq25895 charging controller ic and mic2876 from microchip boost converter ic.

LORA SETUP

LoRA Setup

It gives the sensor value of sensors like moisture sensor, humidity sensor etc .

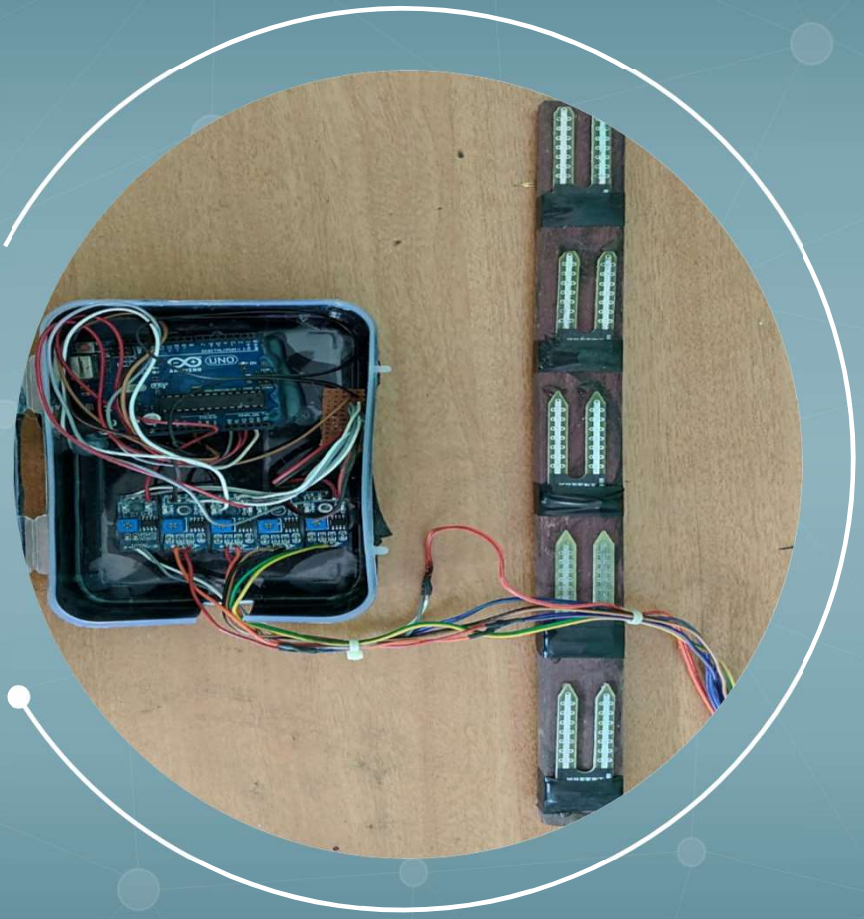
LORA COMMUNICATION



LoRa communication

The communication between the LoRa was established and the package data sending was carried out

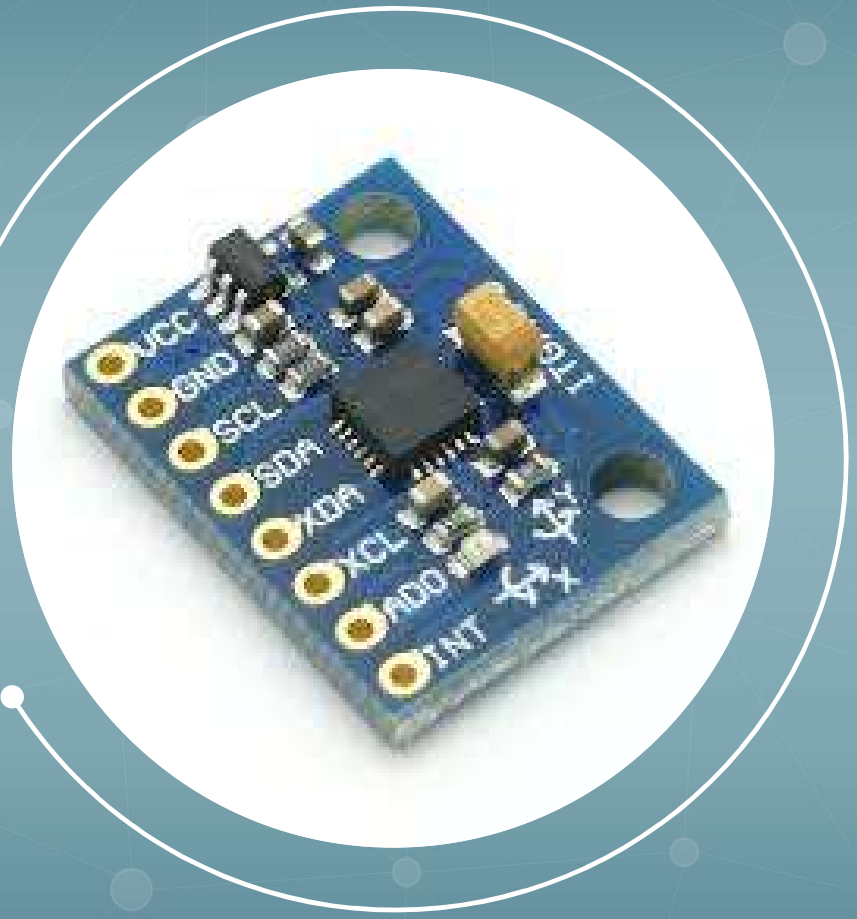
MOISTURE SENSOR SETUP



Moisture sensor setup

Help us to know the moisture content of soil and the water flow timing can be also measured

MOTION SENSOR



Motion sensor (MPU6050)

The MPU6050 is to give a directional output .

VIBRATION SENSOR

Vibration Sensor

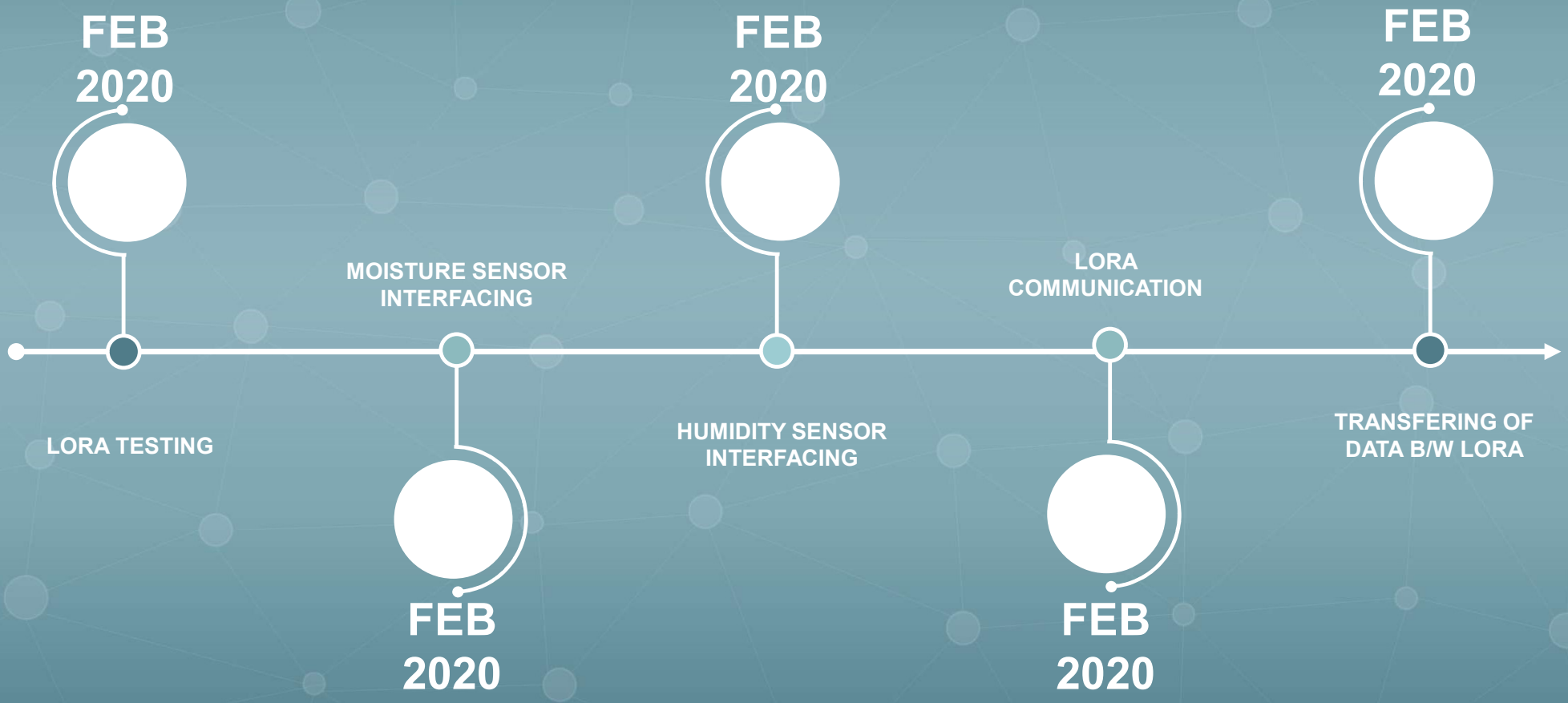
It gave the pulse value of the vibration in the soil

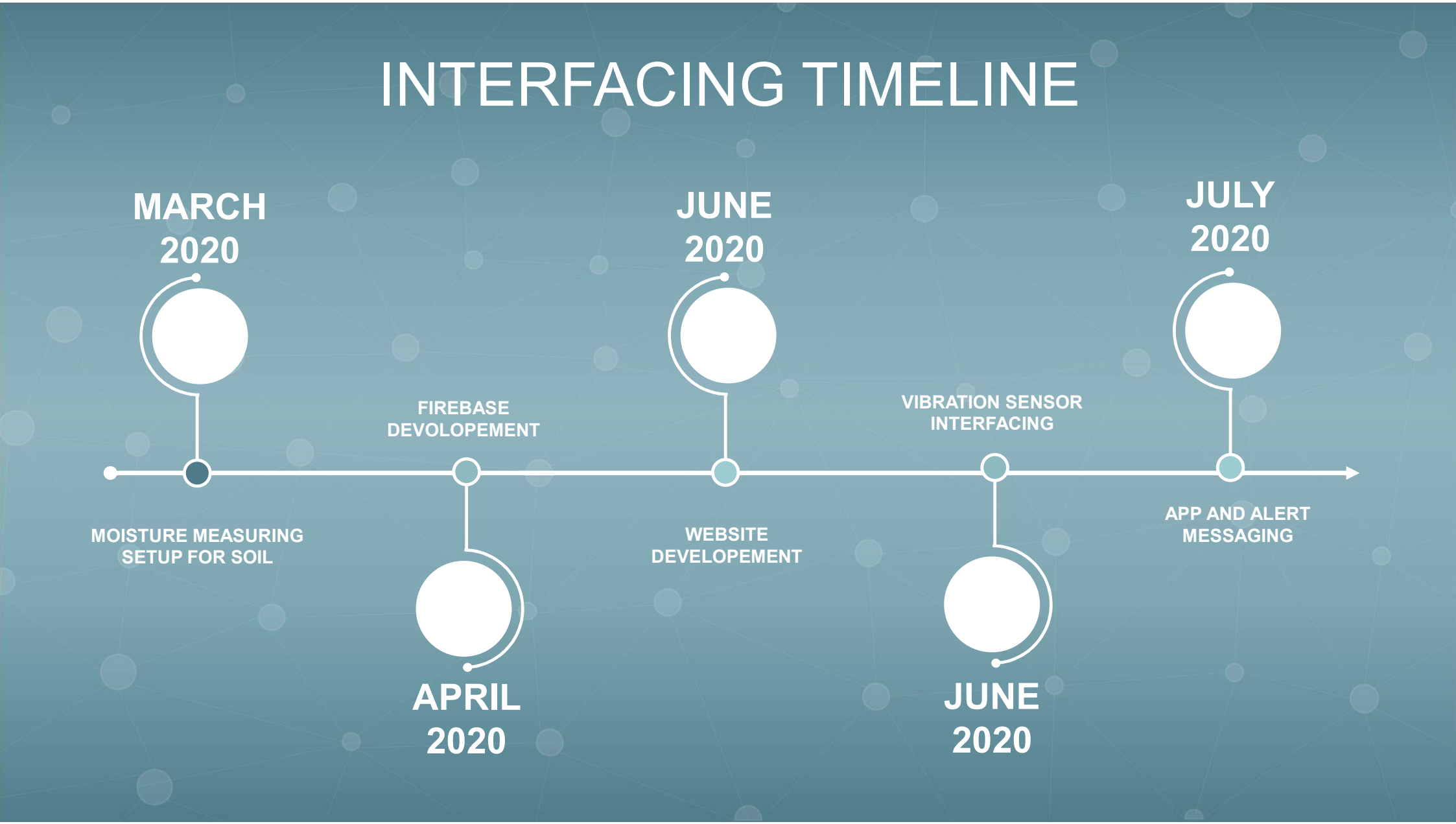
SITE IMPLEMENTATION

Site Implementation

On site implementation of the project

INTERFACING TIMELINE

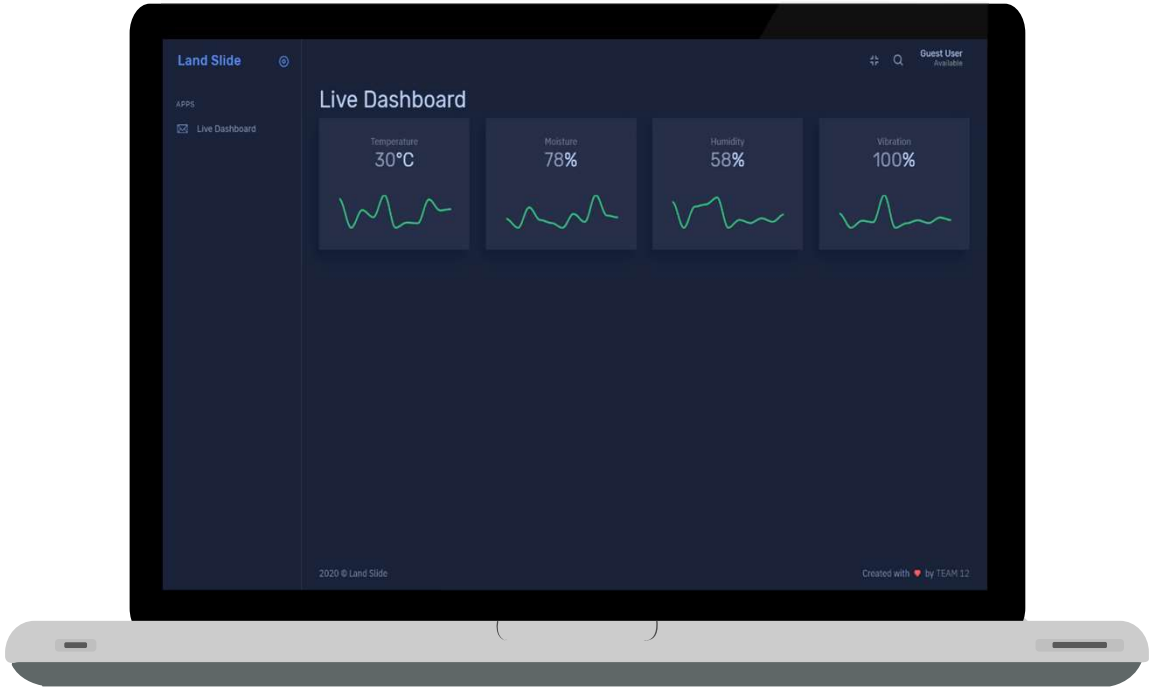



INTERFACING TIMELINE
MARCH 2020
MOISTURE MEASURING SETUP FOR SOIL
APRIL 2020
FIREBASE DEVOLOPEMENT
JUNE 2020
WEBSITE DEVELOPEMENT
JUNE 2020
VIBRATION SENSOR INTERFACING
JULY 2020
APP AND ALERT MESSAGING

WEBSITE

https://landslide.techwithus.com

Website is developed to display continues sensor value and for monitoring purpose with help of using google firebase.



PARAMETER MONITORING WEBSITE

- SOIL MOISTURE
- SOIL TEMPERATURE
- SOIL HUMIDITY
- MOTION SENSOR
- VIBRATION

APP

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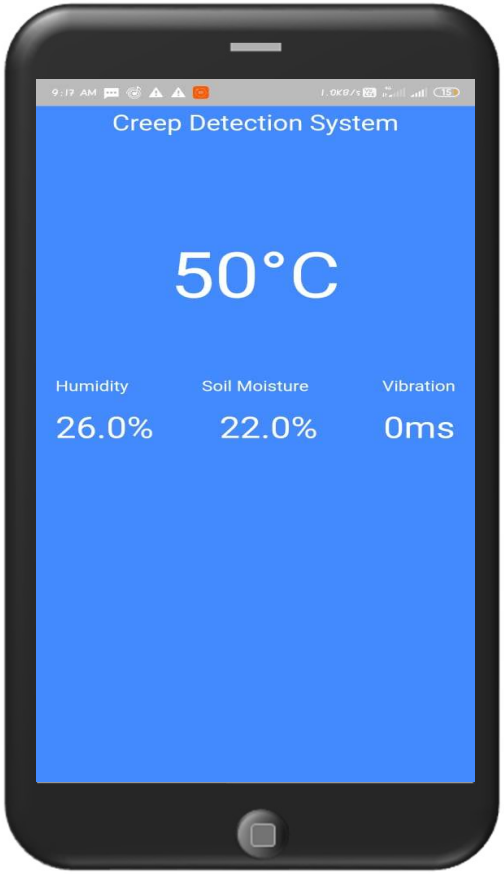

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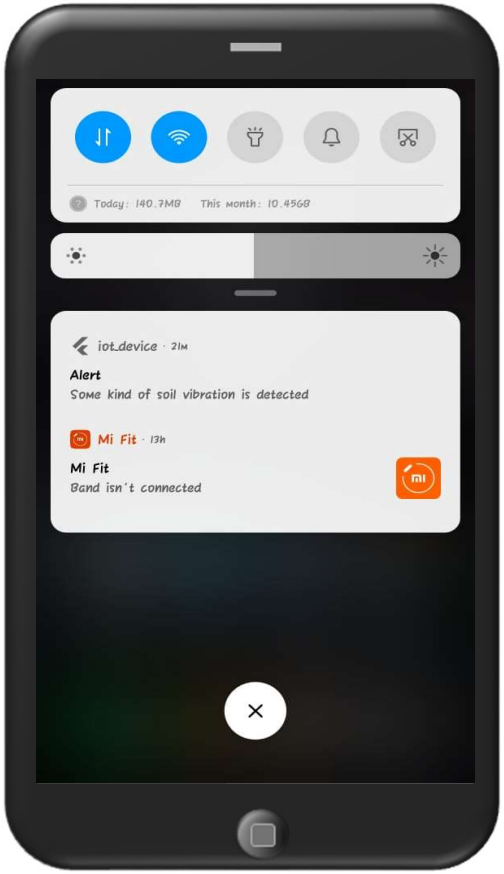

PARAMETER MONITORING APP

- SOIL MOISTURE
- SOIL TEMPERATURE
- SOIL HUMIDITY
- VIBRATION

CONCLUSION

01 DATA ACQUISITION FOR FURTHER STUDIES

02 MEASUREMENT OF SOIL PROPERTY

03 FIND THE DIRECT CORRELATION OF FACTORS WITH SOIL CREEP

04 EASE OF ACCESS

THANK YOU