ENHANCED SMART IRRIGATION SYSTEM USING TREE MODEL

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Introduction

Traditionally using IOT we can get the data of field and fulfil the requirement of that

But problems with traditional approach :

- It can’t be implemented with varying crop field
- Implementing this will be expensive and require individual water supply management for each field

Motivation

- Here our large feild is divided into small plots based on the varitey of crops in the feild.
- Now we need to collect the data from each plot and fulfill the requirements.
- The main motto is to do this in the best way so that the overall cost of hardware and power consumption is reduced.

Solution

Solution consists of two major steps :

- Data Collection:
  - Each node determines water requirement based on gathered data
  - Nodes send data to root node through their immediate parent.
- Water supply
  - Main hub will keep the water motor on until all node meet their requirement

Motivation Proposed Methodology

Data collection by each field nodes in regular intervals

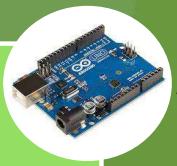
Sending child node requirement to the immediate parent

Repeat this till you reach the root hub

Pump water until all node meet their requirement

Logical Structure

- Humidity Data
- Moisture data
- Temperature data
- Water Requirements



Arduino

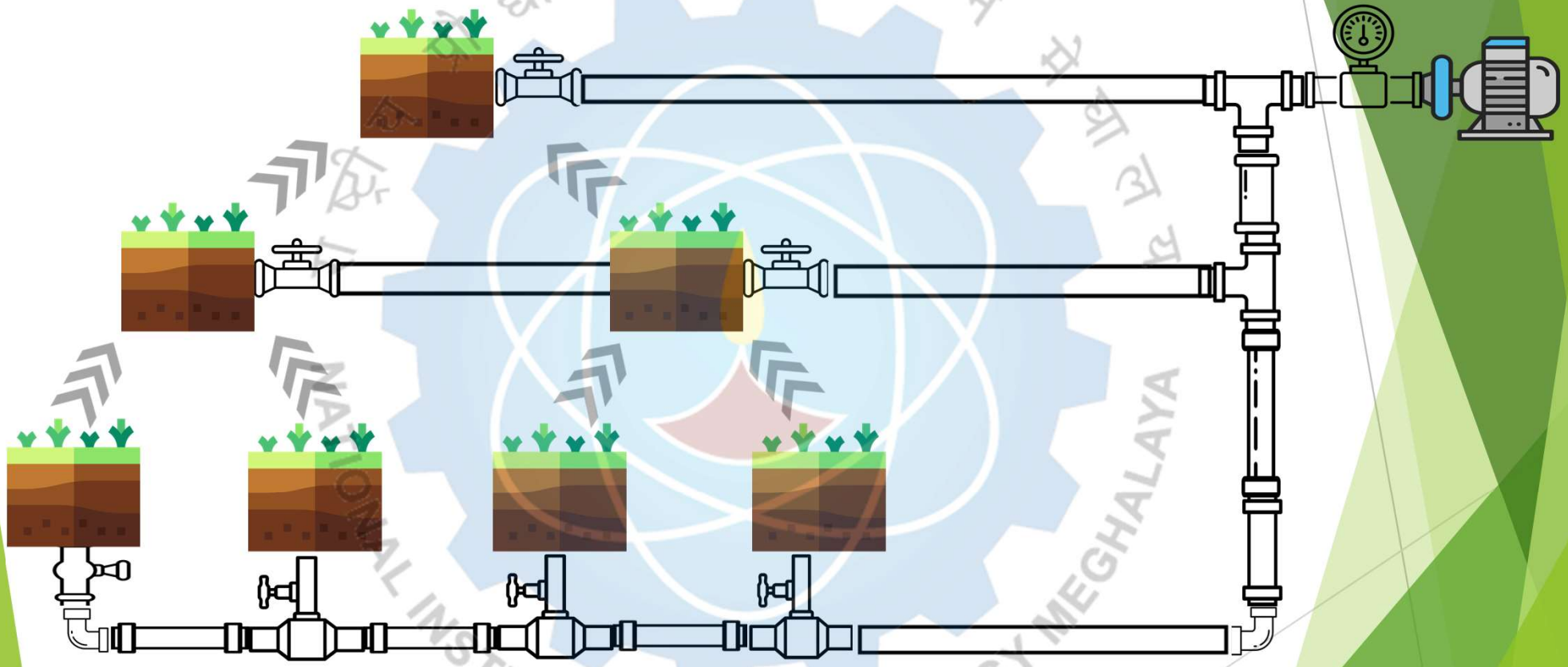
NRF

Sensors

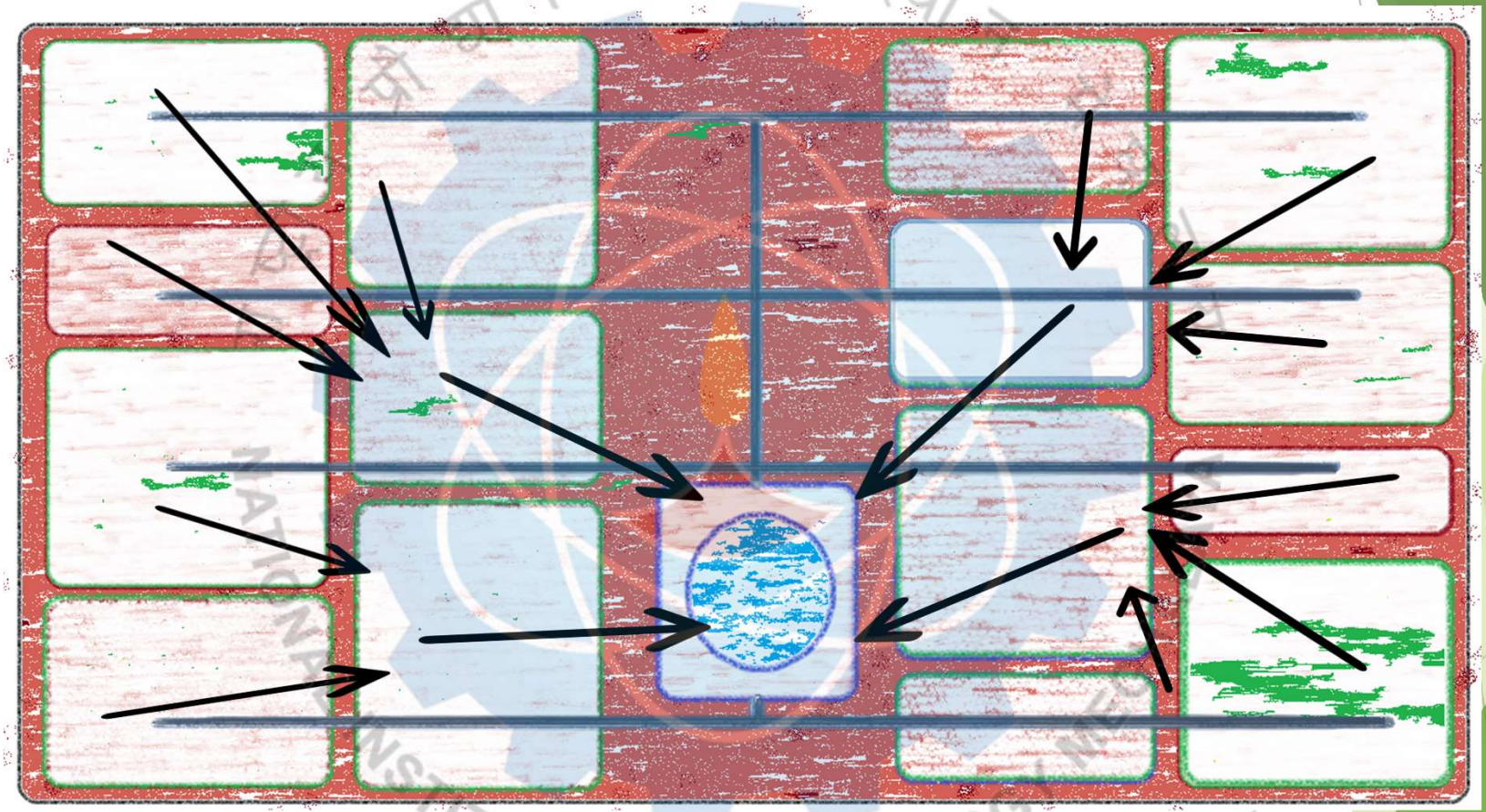
Comments from last Presentation

- ✓ What is some node will fails in network?
- ✓ How the water requirements for each node will actually be fulfilled?
- ✓ How will we map the path for sending the water?
- ✓ Is this model sustainable for varying filed shapes?
- ✓ How expendable this network is?

Logical water-flow



Physical Structure

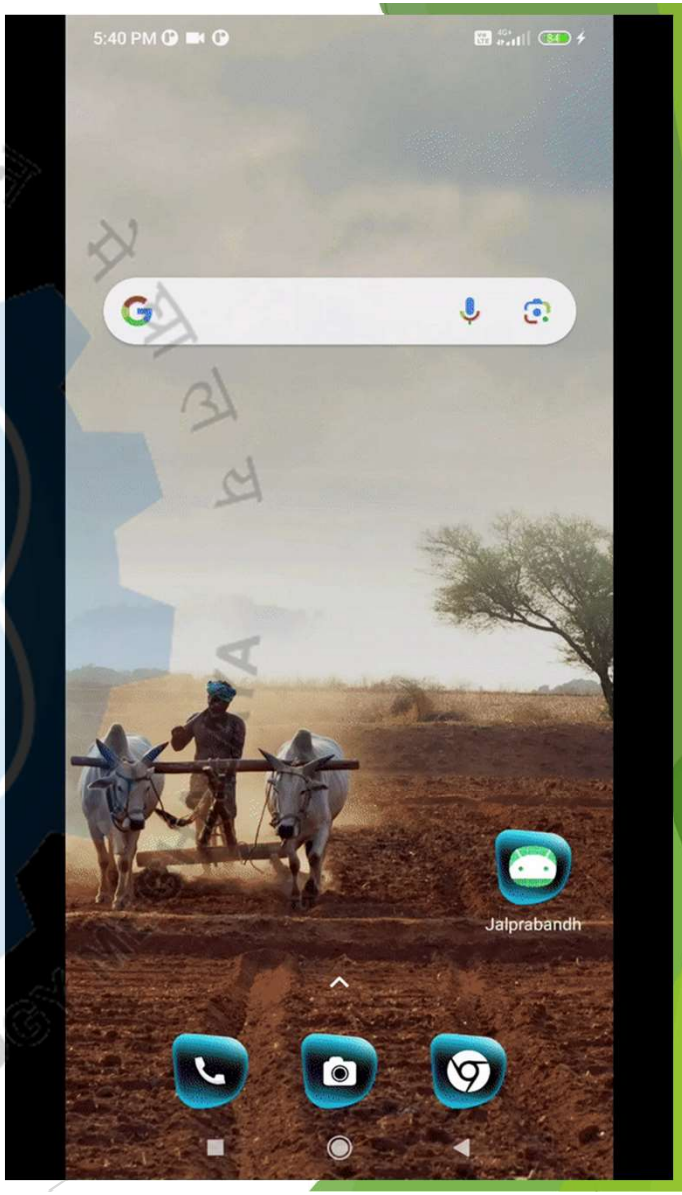


Demo Time!!

Final result

https://smart-irrigation-51dfd-default-rtdb.firebaseio.com/

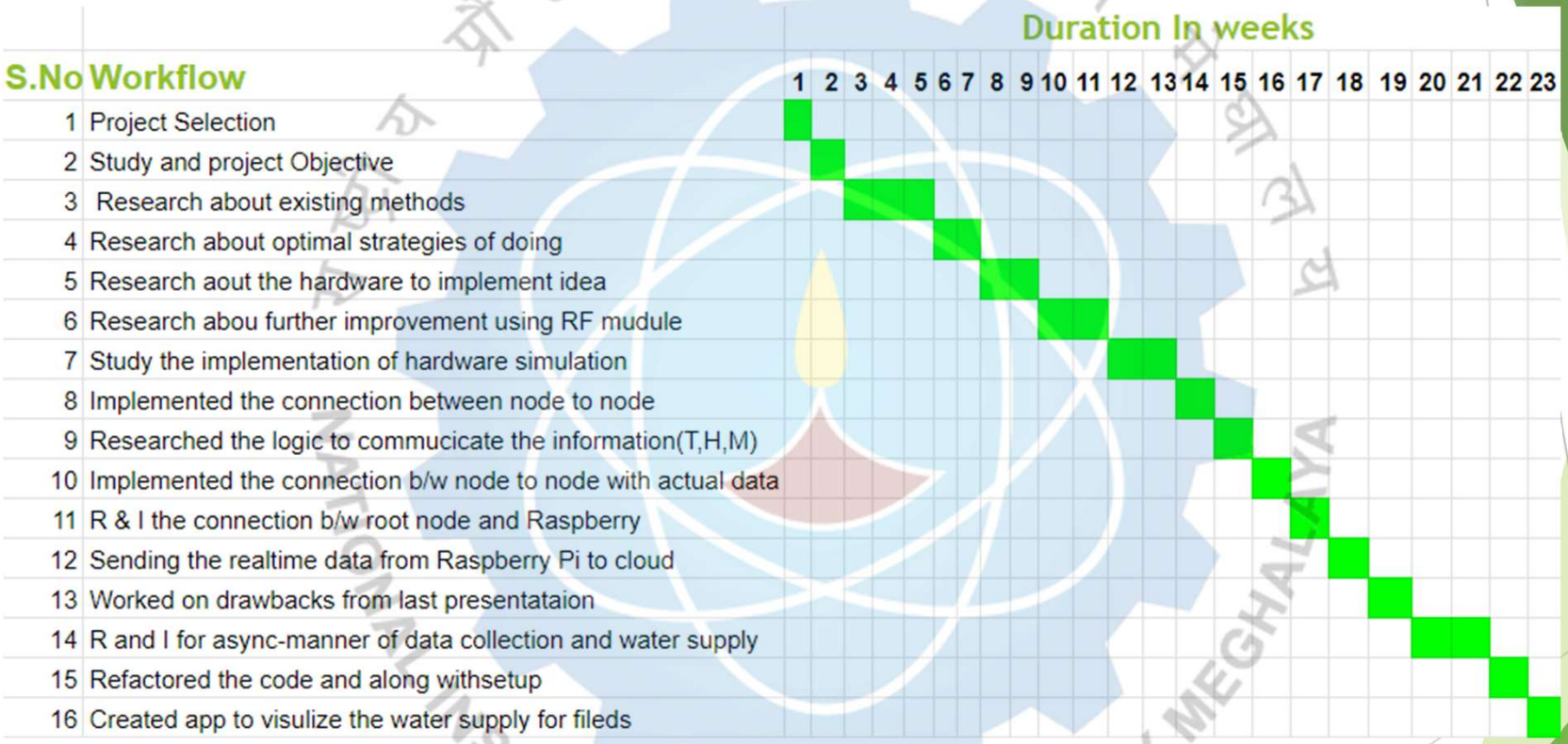
- A
  - 22:55:08
    - H: 61
    - M: 1021
    - T: 23
    - W: 1
- B
  - 22:55:04
    - H: 59
    - M: 220
    - T: 24
    - W: 0



Literature survey

Reference	Research Title	Description
1	IoT based smart crop-field monitoring and automation irrigation system.	Understood various IOT features that can be implemented in this project to automate the tasks.
2	Data Structures and Algorithms	Went to various data structures and found the best suited one to implement with algorithm
3	nRF24L01 - How It Works, Arduino Interface, Circuits, Codes	learn about nRF24L01 Arduino interfacing with the help example
4	Proteus PCB Design and Simulation Software - Introduction	Read about simulation and design software tool for simulating the prototype
5	Raspberry Pi as a Low-Cost Learning Platform for Computer Science Education	Connected Raspberry Pi with nrf module and send data to cloud

Gantt Chart



Thank you!!