

Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID53631
Project Name	Project - SmartFarmer - IoT Enabled Smart Farming Application
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

ARCHITECTURE:

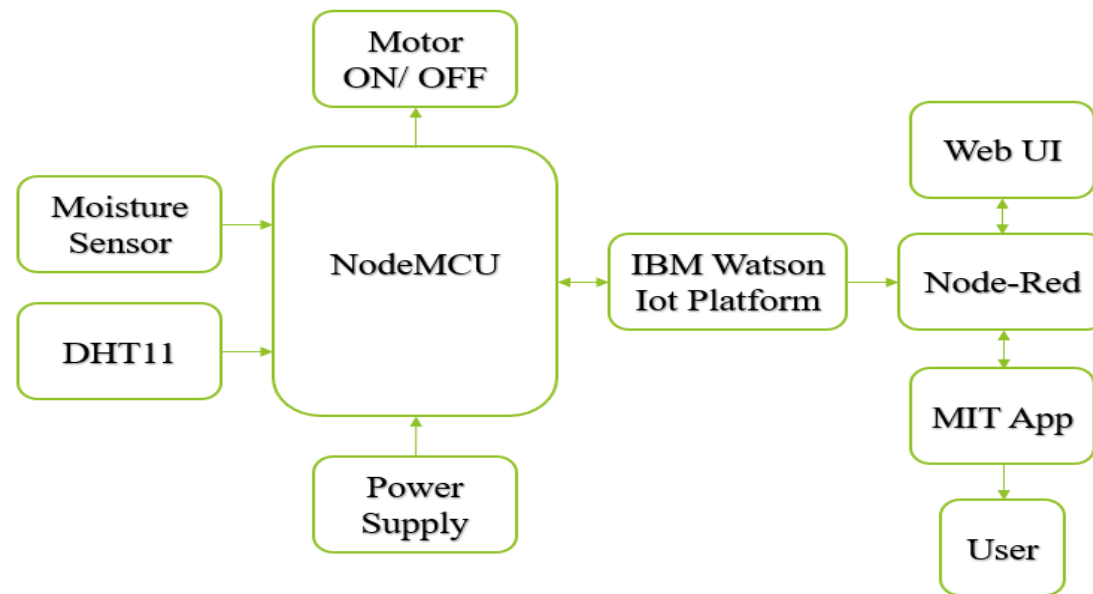


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web UI, Mobile App	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	The python code retrieves the moisture values from the soil and depending on the values fed in the code the farms are watered accordingly.	Python
3.	Application Logic-2	IBM Watson acts as a web dashboard which reflects the values retrieved from the system and also acts as an interface from where the values can be sent to various other platforms.	IBM Watson
4.	Application Logic-3	Node-Red is a platform that retrieves values from IBM Watson and can be used to visualize the data in the form of a web dashboard and it can also send the retrieved data to various other platforms such as MIT App Inventor and can also interact with the system directly.	Node-Red
5.	Cloud Database	Database Service on Cloud	IBM Watson Cloud
6.	Infrastructure (Server / Cloud)	Application Deployment on Cloud Cloud Server Configuration : IBM Watson, Wokwi	Cloud Foundry
7.	NodeMCU	Microcontroller board which provides the facility of internet connectivity	
8.	DHT11	To monitor the temperature and humidity of crop	
9.	Soil moisture sensor	To monitor the temperature of soil	
10.	Electric motor pump	To provide the required water supply to the crop	
11.	Buzzer	To give an alarming sound once the values reach above threshold	

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	User can create their cloud foundry by using login credentials of Gmail.	IBM Watson, Node-red, MIT app
2.	Security Implementations	Each user has unique credentials assigned to them hence the data associated with the farmer and his field cannot be accessed by anyone else.	Encryptions
3.	Scalable Architecture	The sensors, microcontrollers, and various other components used as a part of this system are cost-effective hence this product is scalable.	ESP-32
4.	Availability	Distributed Servers	Client Server System