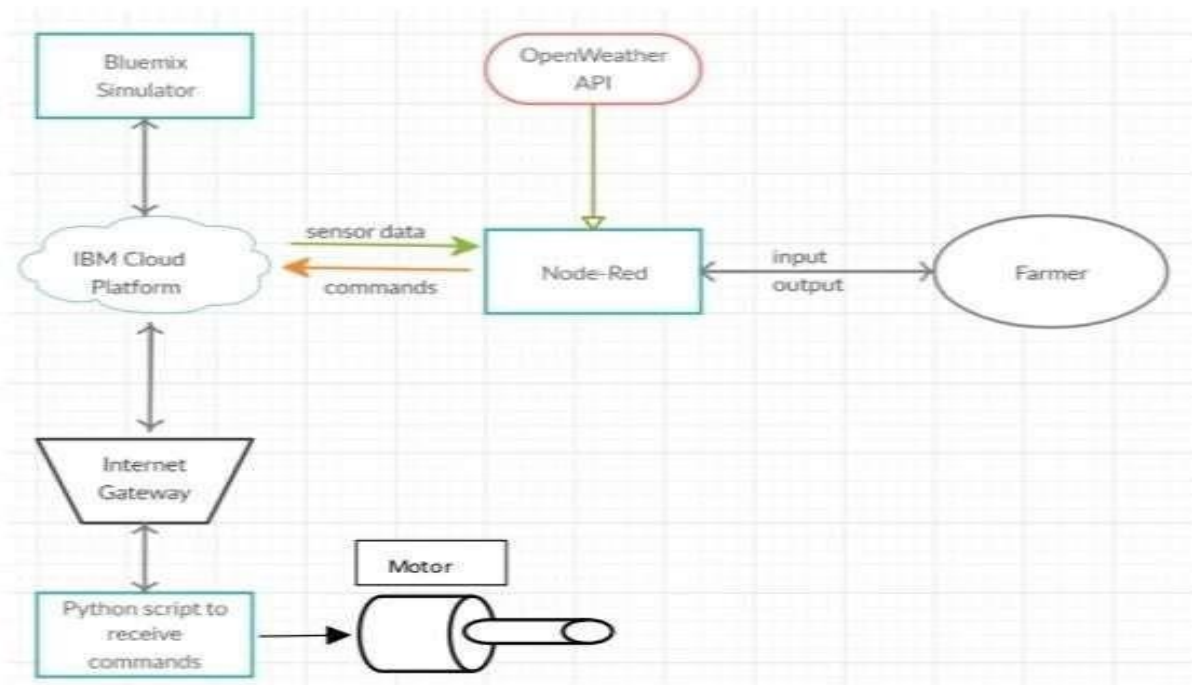


Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID52019
Project Name	Smart Farmer-IOT Enabled Smart Farming Application
Maximum Marks	4 Marks

Technical Architecture:



Guidelines:

1. The different soil parameters temperature, soil moistures and then humidity are sensed using different sensors and obtained value is stored in the IBM B2 cloud.
2. Arduino UNO is used as a processing Unit that process the data obtained from the sensors and whether data from the weather API.
3. NODE-RED is used as a programming tool to write the hardware, software and APIs. The MQTT protocol is followed for the communication.
4. All the collected data are provided to the user through a mobile application that was developed using the MIT app inventor. The user could make decision through an app, weather to water the field or not depending upon the sensor values. By using the app, they can remotely operate the motor switch.

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App.	MIT App Inventor
2.	Application Logic-1	Logic for a process in the application	Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson IOT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM Cloud
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage
8.	External API-1	Purpose of External API used in the application	Open Weather API
9.	External API-2	Purpose of External API used in the application	Local, Cloud Foundry.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Open source framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	Node-Red, Open weather app API, MIT App Inventor
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Open source framework
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Internet of Things (IoT)
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Drones, Accurate sensors