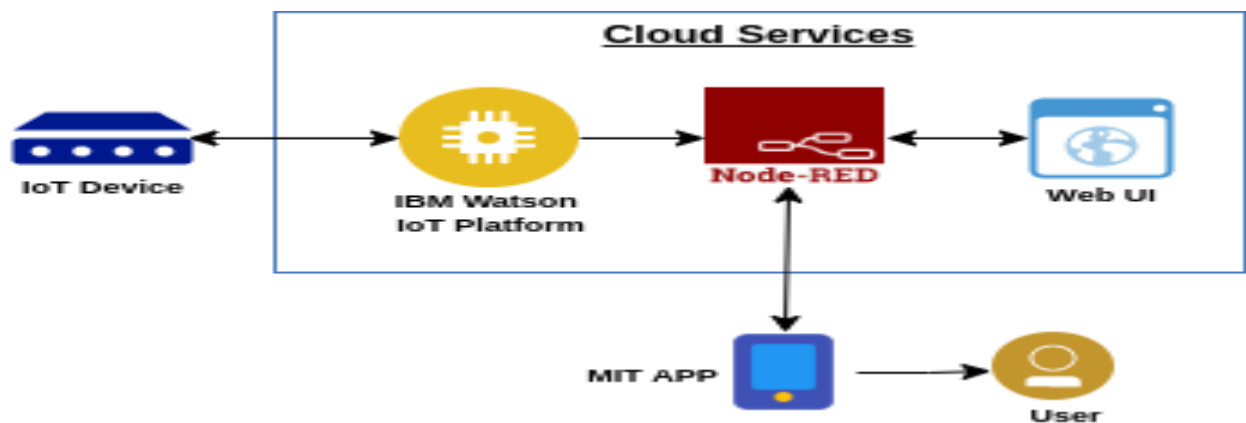


## Project Design Phase-II Technology Stack (Architecture & Stack)

Date	11 October 2022
Team id	PNT2022TMID54368
Project Title	SMART FARMER - IOT ENABLED SMART FARMING APPLICATION SYSTEM
Maximum Marks	4 marks

### Technical Architecture:

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



#### Guidelines:

1. Include all the processes (As an application logic / TechnologyBlock)
2. Provide infrastructural demarcation (Local / Cloud)
3. Indicate external interfaces (third party API's etc.)
4. Indicate Data Storage components / services
5. Indicate interface to machine learning models (if applicable)

- The various soil parameters, including temperature, moisture content, and humidity, are measured using various sensors, and the results are saved in the IBM cloud.
- Arduino UNO is utilized as a processing unit to process the data gathered from the sensors and weather API data.
- The hardware, software, and APIs are written using NODE-RED as a programming language. For communication, the MQTT protocol is used.
- A mobile application created with MIT App Inventor makes all the collected data available to the user. Depending on the sensor results, a user could choose whether or not to water a crop using an app. They can control the motor switch from a distance using the app.

**Table - 1: Components & Technologies:**

S. No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. WebUI, Mobile App.	HTML, CSS, JavaScript / Angular Js / React Js etc.
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 StorageService or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
10.	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 Opensource framework
2.	Security Implementations	Sensitive and private data must be protected from theirproduction until the decision-making and storage stages.	e.g. Node-Red, Open weather App API,MIT App Inventor, etc.
3.	Scalable Architecture	scalability is a major concern for IoT platforms. It hasbeen shown that different architectural choices ofIoT platforms affect system scalability and that automatic real time decision-making is feasible in an environment composed of dozens of thousand.	Technology used
4.	Availability	Automatic adjustment of farming equipment made possible by linking information like crops/weather andequipment to auto-adjust temperature, humidity, etc.	Technology used
5.	Performance	The idea of implementing integrated sensors with sensing soil and environmental or ambient parameters in farming will be more efficient foroverall monitoring.	Technology used