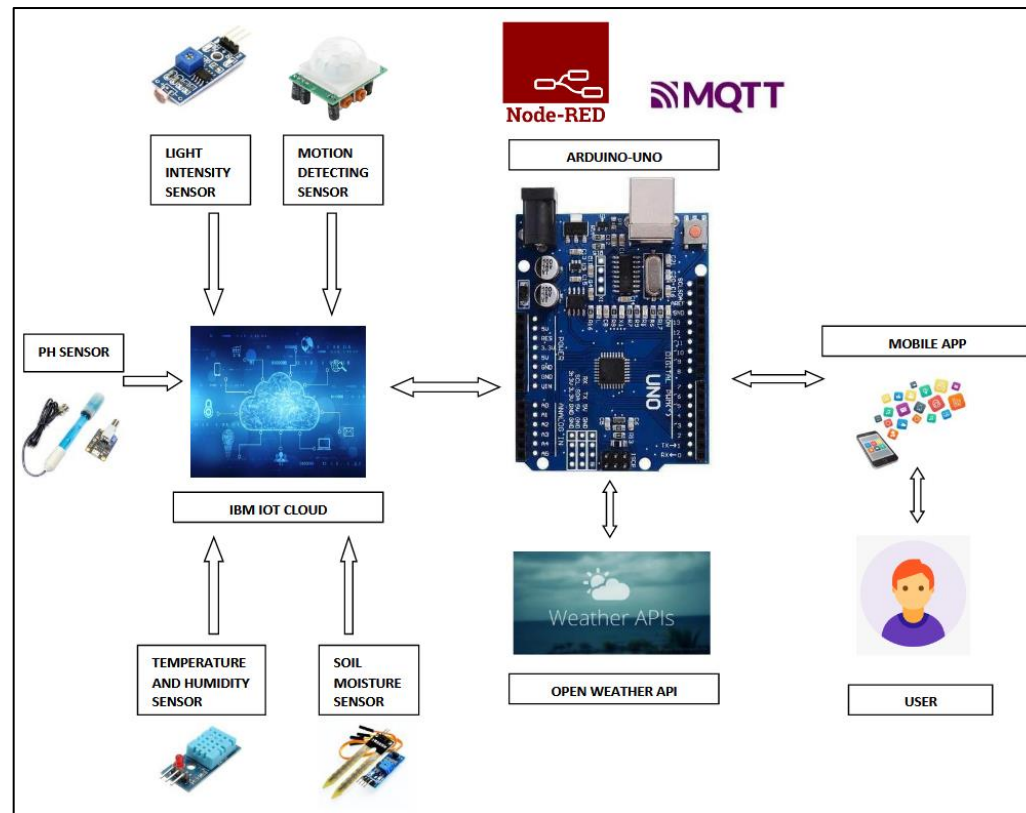


## Project Design Phase-II

### Technology Stack (Architecture & Stack)

Team ID	PNT2022TMID15028
Project Name	Project - SmartFarmer - IoT Enabled Smart Farming Application



#### Guidelines:

- The different soil parameters (Temperature, Humidity, Light Intensity, Ph level, Soil Moisture and Motion) are sensed using different sensors and the obtained value is stored in IBM cloud.
- Arduino UNO is used as a processing unit which processes the data obtained from sensors and weather data from weather API.
- Node red is used as a programming tool to wire the hardware, software and APIs. The MQTT protocol is followed for communication.
- All the collected data are provided to the user through a mobile application which was developed using MIT app inventor. The user could make decision through an app, whether to water the crop or not depending upon the sensor values.
- Increased control over production allows for better cost management. In addition, being alerted early to any anomalies in crop growth or livestock health allows farmers to mitigate costly risks.
- With more control (even remotely), farmers can reduce risks and plan better. For example, If you know exactly how large your yield is going to be, you can ensure that you find enough buyers and your product won't lie around unsold.

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

S.No	Component	Description	Technology
1.	User Interface	The user interacts with the software by the means of Mobile App	HTML, CSS, JavaScript / Angular Js / React Js/MIT app inventor
2.			
3.	Application Logic-2	The collected data is then used to calibrate the ratio, need based on the need of the soil	IBM Watson STT service
4.	Application Logic-3	The calibrated data can trigger certain actuators to act according to the need(eg:sprinkler)	IBM Watson Assistant
5.	Database	Open weather API, Serial communication between sensor and cloud storage	MySQL, NoSQL, etc.
6.	Cloud Database	IBM Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	Flash back , durable ,flexible and fast	IBM Block Storage or Other Storage Service
8.	External API-1	Open weather API – to collect weather data	IBM Weather API, etc.
9.	Infrastructure (Server /	Application Deployment on Local	Local, Cloud Foundry,

	Cloud)	System / Cloud Cloud Server Configuration : Support public, private and hybrid cloud environment	Kubernetes, etc.
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**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Used for creating an interactive interface	MIT APP AND MIT LICENCE
2.	Scalable Architecture	Mineral identification, water source or block identifier, animal and pesticide monitoring	Sensors and software
3.	Availability	Distributed servo's and easy user interface with interactive subscription pack	Hardware and software(Sensor, NodeMCU and etc)
4.	Performance	100 request per second	Cloud service

## References:

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