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

Date	20 October 2022
Team ID	PNT2022TMID12089
Project Name	IoT Enabled Smart Farming Application
Maximum Marks	4 Marks

Technical Architecture:

This Deliverable includes an architectural diagram as below and the information required in table1 & table 2
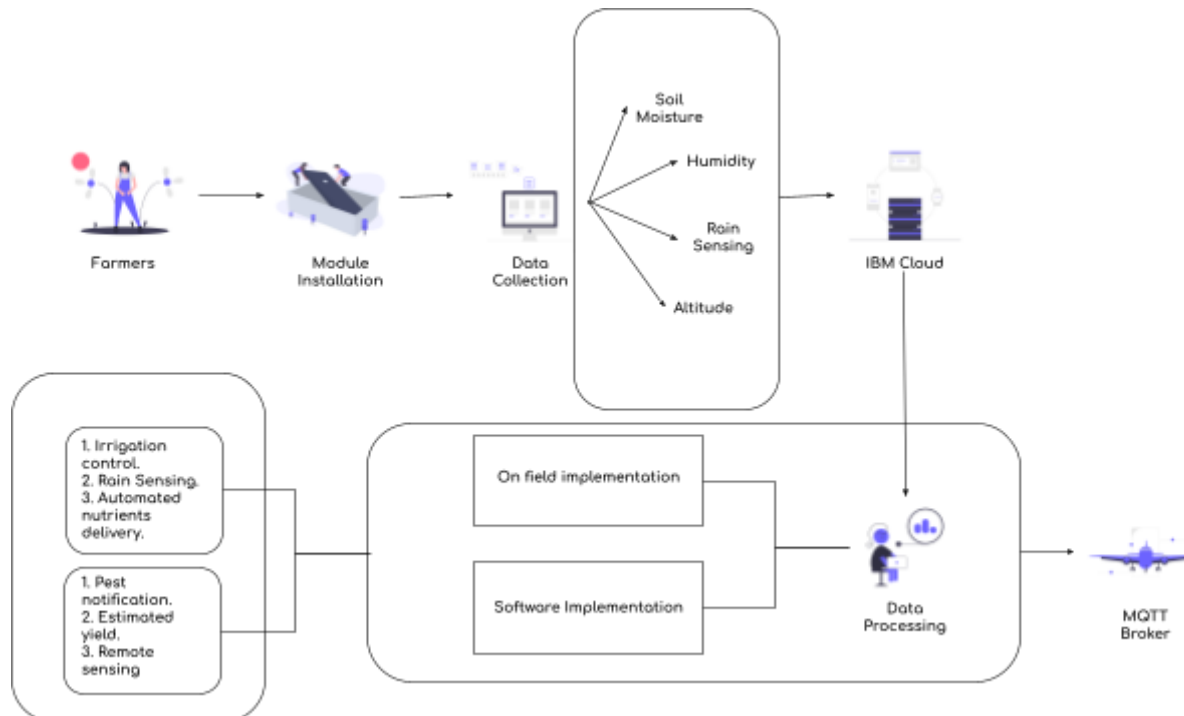
Architectural Diagram:

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User interaction is established through a web application and a mobile application	HTML, CSS, JavaScript, Bootstrap, MIT App inventor, Python.
2.	Application Logic-1	User data collection for registering in the web and mobile application or in mobile application.	Java, Python
3.	Application Logic-2	Payment Confirmation	PAYTM or any third party payment gateway.
4.	Application Logic-3	Individual cloud registration for data collection	IBM Watson Assistant, IBM cloud
5.	Database	Collection of user data includes their contact number, address, farm size, email	NoSQL - MONGODB
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant.
7.	File Storage	On device and off device storage requirements	IBM Block Storage or Other Storage Service or Local File System including a SD card.
8.	External API-1	For weather monitoring.	IBM Weather API, etc.
9.	External API-2	User verification.	Aadhar API, etc.
10.	Machine Learning Model	Purpose of machine learning model is to determine the crop yield, possible pest attacks and weather prediction.	Weather prediction model, Pest control model.
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	Open source framework included to increase the scalability of the application and also to improve user interaction.	Bootstrap, Laravel, Django.
2.	Security Implementations	Security features are added to the application to protect the user data from intruders.	SHA-256, Encryptions, OTP verification through SMS and mail.
3.	Scalable Architecture	The architecture is scalable since it has only one web interface which can be used even upon multiple models but users need to add the product to their dashboard.	HTML, CSS, JavaScript, Bootstrap, MIT App inventor, Python.
4.	Availability	Product needs an active internet connection to function at its full potential and for remote access.	IoT communication protocol - Message Queue Telemetry Transport (MQTT) or HyperText Transfer Protocol (HTTP).
5.	Performance	Product is designed to function very efficiently in all environmental conditions which increases its performance.	Strong 3d printed models, Solar powered, Better BMS(Battery Management System).