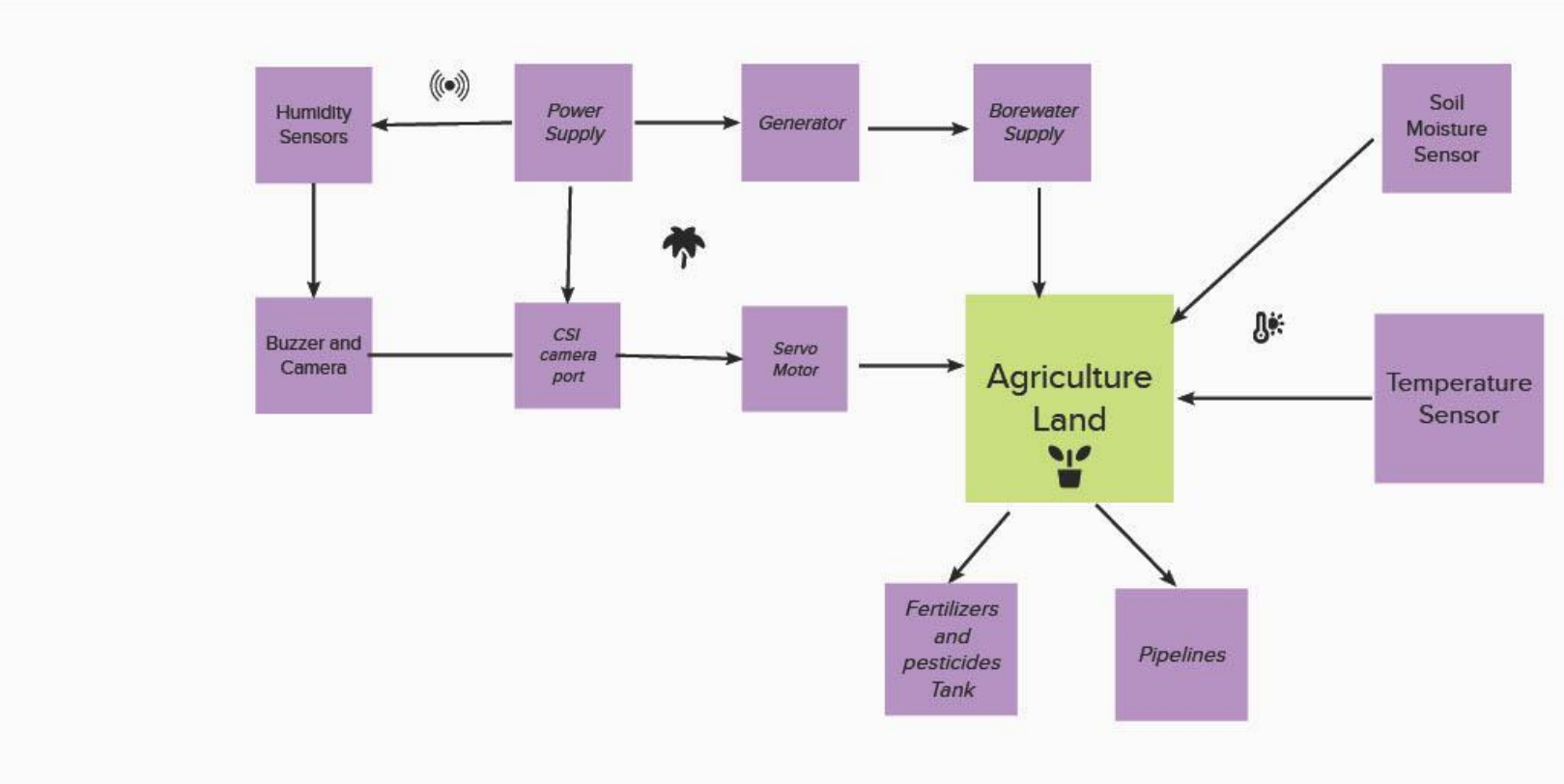
Project Design Phase-II
Technology Stack (Architecture & Stack)

Team ID	PNT2022TMID33417
Project Name	Smart Farmer-IOT Enabled Smart Farming Application

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



Example:Smart Farming Using IOT enabled devices

Reference: https://easternpeak.com/blog/iot-in-agriculture-technology-use-cases-for-smart-farming-and-challenges-to-consider

Table-1 : Components & Technologies:

S.No	Components	Description	Technology
1.	User Interface	Data based Smart agriculture decision support system using mobile apps	Internet of things(IOT),Artificial Intelligence(AI)
2.	Application Logic-1	Sensors Located across the field and collected various data from the environment and sent it to the cloud. The provided measurements can be used to map the climate conditions.	Electrochemical sensors,Temperature Sensors using IOT,C programming,Microcontroller :CC3200 chip
3.	Application Logic-2	Crop management devices Should be placed in the field to collect data Specific crop farming and overall crop health.	Global positioning system(GPS),Global information System(GIS),java
4.	Application Logic-3	The Crop performance platform helps farmers access the volume and quality of yields in advance	Information Communication technologies(ICT),Drones,Robotics
5.	Database	Farm database(DB)	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	Based on farmer requirements,Sensors data and Historical data	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	External APIs collect data like weather,air quality,	IBM Weather API,Robotics etc.

9.	External API-2	AI technologies help in detecting disease in plants,pests and poor nutrition of farms.	API,Cloud Interface Central Platform.
10.	Machine Learning Model	Machine learning in agriculture allows more efficient and precise farming with less human manpower with high quality production	Object Recognition Model, Machine learning,Automation.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration:Transmission control protocol(TCP),User Datagram protocol Cloud Server Configuration : Cloud Management(CM)	Local, Cloud Foundry, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	DeviceHive,Mainflux,Openremote	HTTP,Web Socket
2.	Security Implementations	GSM,Firewall,Early warning detection system	Encryptions, Agronomic Intelligence etc.
3.	Scalable Architecture	Componentize,Collaborate,Connect	Microservices based Architecture, Artificial Intelligence(AI),Modern tech stack
4.	Availability	Use of Crop monitoring sensors and devices	Aerial images,Global positioning Systems(GPS),Global Information Systems(GIS)

S.No	Characteristics	Description	Technology
5.	Performance	Design consideration for the performance of the Smart Farming (number of yields per month, use of Precision farming devices, Sensors and actuators) etc.	Internet of things(IOT), Robotics, Drones,etc

References:

https://www.researchgate.net/publication/342608407_A_Review_on_Smart_IoT_Based_Farming

https://easternpeak.com/blog/iot-in-agriculture-technology-use-cases-for-smart-farming-and-challenges-to-consider/

https://www.i-scoop.eu/internet-of-things-iot/iot-technology-stack-devices-gateways-platforms/

https://www.iotforall.com/smart-farming-future-of-agriculture