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

Date	16 October 2022
Team ID	PNT2022TMID34928
Project Name	IOT BASED SMART CROP PROTECTION SYSTEM
Maximum Marks	4 Marks

Technical Architecture:

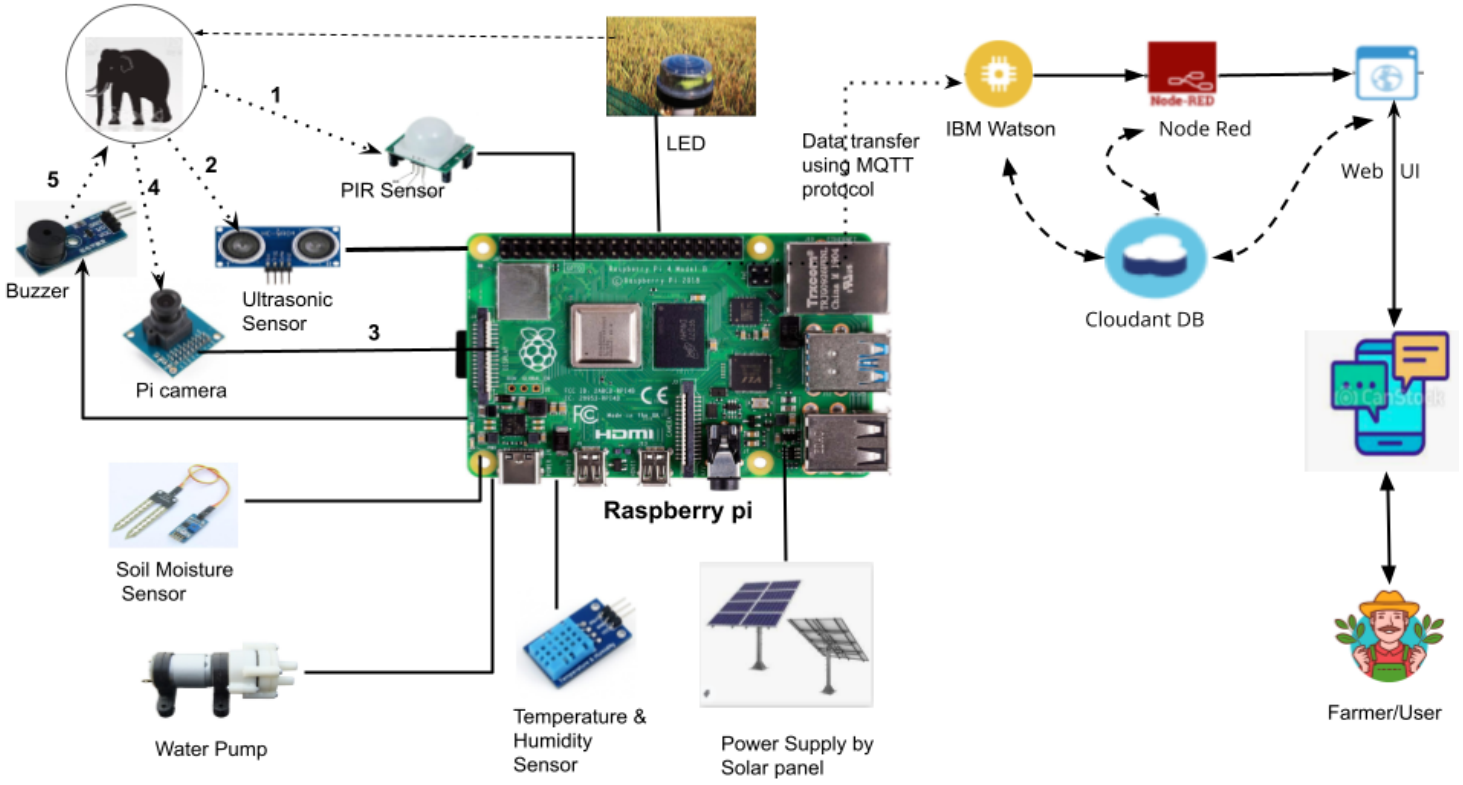

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2	Application Logic-1	Logic for a process in the application	Java / 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	Application Logic-3	Logic for a process in the application	Node-RED for wiring together hardware devices, APIs and online services
6	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
7	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
8	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
9	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
10	External API-2	Purpose of External API used in the application	Aadhar API, etc.
11	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, Image Processing Model etc.
12	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration Cloud Server Configuration	Local, Cloud Foundry, Kubernetes, etc.
13	Microprocessor used	kind of device used for processing	Raspberry Pi, Arduino etc

14	Various Sensor Used	Devices used for measuring the surrounding environment	Soil Moisture Sensor,Temperature & Humidity Sensor,PIR Sensor,UltraSonic Sensor
15	Power Supply	For Energizing the Microprocessor,Sensor & Actuator	Solar Panel is used as Power Supply
16	Communication Gateway	For transferring information from Device to Cloud	In built Wifi module in Raspberry pi
17	Computer Vision	For Classifying Threatened Animals And Alert the Farmers	image Processing Module OpenCV with python
18	Various Actuator Components	For irrigating the farms and to Drive Away Cattles & Trespassed animals	Water pump,buzzer and led lights
19	Communication Protocol	For transferring information from various client to server and then to particular client	MQTT Protocol (MQTT publisher & MQTT Broker-IBM Watson)

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	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used