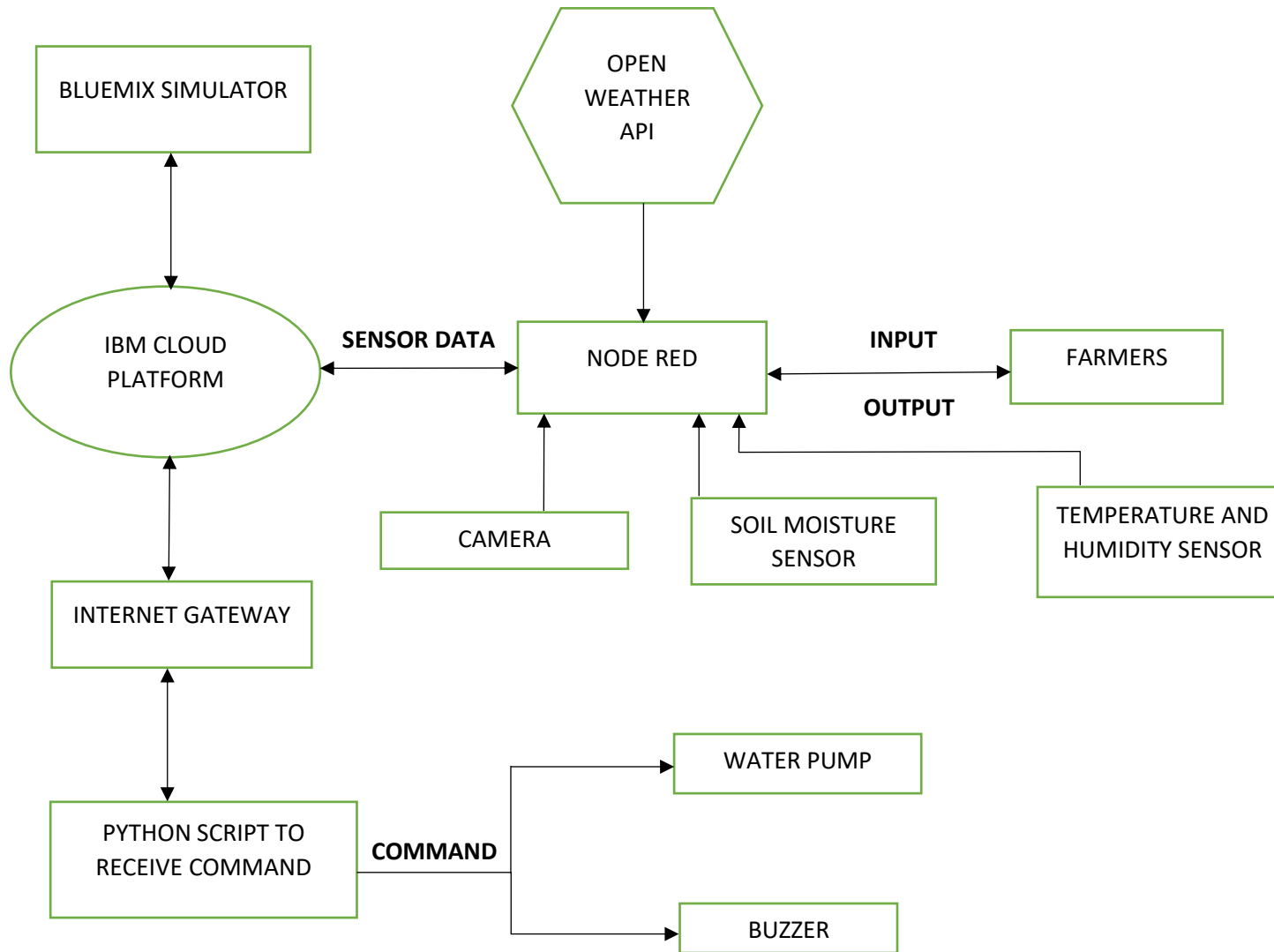


Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID32791
Project Name	IoT Based Smart Crop Protection System for Agriculture
Maximum Marks	4 Marks

Technical Architecture:



- The different field parameters like temperature, soil moistures, humidity and movements of animals are sensed using different sensors and the data is sent to the IBM cloud. Camera is used to detect the type of animal and the images are sent to the processor to process the image.
- Raspberry pi-3 is used as a processing Unit that process the data obtained from the sensors, camera and whether data from the weather API.
- NODE-RED is used as a programming tool to write the hardware, software, and APIs. The MQTT protocol is followed for the communication.
- All the collected data are provided to the user through a mobile application that was developed using the MIT app inventor. The user can also use the app to irrigate the crops manually with the data provided by the app.

Table - 1: Components & Technologies:

S. No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App.	Node-Red
2.	Application Logic-1	Logic for a process in the application	Python
3.	Application Logic-2	Logic for a process in the application	Python
4.	Application Logic-3	Logic for a process in the application	Python
5.	Database	Data Type, Configurations etc.	IBM Cloud
6.	Cloud Database	Database Service on Cloud	IBM Cloud
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem

Table-2: Application Characteristics:

S. No	Characteristics	Description	Technology
1.	Security Implementations	Sensitive and private data must be protected from their production until the decision-making and storage stages.	Node-Red, Open weather App API, MIT App Inventor.
2.	Scalable Architecture	Scalability is a major concern for IoT platforms. It has been shown that different architectural choices of IoT platforms affect system scalability and that automatic real time decision-making is feasible in an environment composed of dozens of thousand.	Node-Red
3.	Availability	Automatic adjustment of farming equipment made possible by linking information like crops/weather and equipment to auto-adjust temperature, humidity, etc.	Open weather API, Node- Red
4.	Performance	The idea of implementing integrated sensors with sensing soil and environmental or ambient parameters in farming will be more efficient for overall monitoring.	IBM Bluemix, Node-Red