

# **PROJECT SCOPE**

## **IoT Application Development**

*" Smart Agriculture system based on IoT "*

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## ▪ **PROJECT SUMMARY**

This is a Smart Agriculture System project based on Internet Of Things (IoT), that can measure soil moisture, humidity and temperature conditions for agriculture using Watson IoT services. IoT aims to integrate the physical world with the virtual world by using the Internet as the medium to communicate and exchange information.

IoT has been defined as a system of interrelated computing devices, mechanical and digital machines, objects, animals, or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

In this project we have not used any hardware. Instead of real-time soil moisture, humidity, temperature conditions, sensors, IBM IoT Simulator is used which can transmit soil moisture, humidity, temperature as required. The Watson IoT Device Simulator is a solution that enables customers to create and simulate hundreds of virtual connected devices, without having to configure and manage physical devices, or develop time-consuming scripts.

In IoT based smart agriculture a system is built for monitoring the crop field with the help of sensors. This affords the farmers the capability to monitor the field conditions from anywhere. IoT- based smart agriculture is highly efficient when compared with the conventional approach. The goal of technology is to make the lives of human beings easier and simpler. It is therefore an attempt to extend the chain of electronic life to the famers and provide a means of reducing the cost included during manual means of monitoring and irrigation, save time and energy, and to control the ever increasing problem of water.

## ▪ **PROJECT REQUIREMENTS**

1. IOT Application Development
2. IOT Cloud Platform
3. Programming language- Python

## ▪ **FUNCTIONAL REQUIREMENTS**

This describes how the data will be ingested and analyzed. The following areas need to be defined:

1. **Ingestion:** how the data will be collected and integrated into one data source
2. **Communications:** who needs to be informed when an alarm is identified
3. **Persistence:** defines how long the data needs to be retained.

## ▪ **SOFTWARE REQUIREMENTS**

1. IBM Cloud
2. IBM Device
3. IBM Watson IoT
4. IBM IoT Simulator
5. Node.js
6. Node-RED
7. Python 3.8
8. Open Weather API platform

## ▪ **PROJECT DELIVERABLES**

### Application for IoT based Smart Agriculture System

- Web Application is build using Node-RED.
- We have created 2 tabs:
  1. Graphical Representation
  2. Smart Agriculture
- Web Application is also used to control the devices further like motor, pumps, lights, or any other devices in the agricultural field. In this project the output is passed using python code and the control action is displayed in python code console window.

## ▪ **PROJECT SCHEDULE**

- Create a device in IBM Cloud.
- Connect the device to IBM Simulator to get the weather conditions.
- Build Node-RED flow to build a web application to display the weather conditions and control the devices.
- Get the real time weather condition data from openweather map and integrate it in the Node-RED.
- Control the working of the web application to the devices by python coding.