

PROJECT ID	PROJECT NAME	STARTING DATE
SPS_PRO_101	Smart Agriculture System based on IoT	21/05/2020
CANDIDATE NAME	PROJECT OBJECTIVES	
VISHWAM	The objective of the problem statement is aimed at predicting and controlling various conditions and factors of a field given various freatures.	

PROJECT SCOPE DOCUMENT

1. Project Summary

An IoT system consists of sensors/devices which "talk"to the cloud through some connectivity.

Once the data gets to the cloud, software processes it and then might decide to perform an action. Such as sending an alert or automatically adjusting the sensors/devices without the need of the user.

Agriculture, for decades, had been associated with the production of basic food crops. Agriculture and farming were synonymous so long as farming was not commercialized. However, as the process of economic development accelerated, many more other occupations allied to farming came to be recognized as a part of agriculture. At present, agriculture besides farming includes forestry, fruit cultivation, dairy, poultry, mushroom, bee keeping, arbitrary, etc. Today, marketing, processing, distribution of agricultural products etc. are all accepted as a part of modern agriculture. Thus, agriculture may be defined as the production, processing, marketing and distribution of crops and livestock products. According to Webster's Dictionary, "agriculture is the art or science of production of crops and livestock on farm."

Alongside agriculture and farming is considered to be one of the most difficult jobs by the perspective of all the labor that goes into it. This project aims at creating a Smart Agriculture System using IoT that

enables the farmers to monitor the fields and all the crops from remote locations and to control various devices employed on the fields using the data captured by the sensors and uploaded on the cloud which is then processed by the software and further controlling action takes place. Investing on automation of agriculture can be a great deal for the countries whose economies are primarily dependent on their agricultural produce and can also prove to be a great help at reducing human labor using smart technologies that lead to a better produce.

2. Project Requirements

For the successful completion of the project there is a need to first create a GitHub account to post/submit all the required deliverables during the course of the project and after the completion of the project.

Creation of IBM account to be able to access the IBM IoT Watson platform which is a managed, cloud-hosted service designed to make it simple to derive value from your **IoT** devices.

Installation of Nodered for, wiring together hardware devices, APIs and online services in new and interesting ways. It provides a browser-based editor that makes it easy to wire together flows using the wide range of nodes in the palette that can be deployed to its runtime in a single-click.

Installation of the Python integrated development environment(IDE), which would help writing all the programs that are needed for the development of the project software.

Connecting IoT simulator with the Watson IoT Platform, installation of the required nodes on the node red, and connecting it to the IBM IoT device to get the simulator data collected by all of the simulated sensors employed in the project.

Configuring the open weather API platform and the Nodered to get the weather forecasting data using http requests.

Finally building a web page which would involve the configuring of the nodes to display the weather parameters, that are collected from the IoT Simulator and the Open Weather API in UI.

Also to configure the nodes for, creating buttons and sending commands to IoT platform.

Configuring the device so that it can receive the data from the web application and control the motors installed on the fields to perform various actions that are decided on the basis of the data collected and processed, this would be done by writing a Python code to subscribe to IBM IoT platform and get the commands.

3. Functional Requirements

The finished product i.e. the web application provided to the farmers should enable them to monitor the temperature, humidity and soil moisture parameters along with weather forecasting details.

It should be able to access real time weather forecasting data by using external platforms like Open Weather API.

Based on all the parameters they should be able to water their crop by controlling the motors using the mobile application, even from the remote locations if the farmer is not physically around the field.

4. Technical Requirements

The application developed to function as the interface between the users i.e., the farmers should be able to function on various operating systems such as Android, IOS etc., without any glitches and must perform all the actions of collecting the data and controlling of the motors as required.

The software is to be built using Python as the language for programming all of its sections.

5. Software Requirements

The designed software or the application is expected to act as a n interface to the users that is the farmers

and should be easy to understand. It should enable the farmers to monitor soil moisture and climatic conditions to grow and yield a good crop. Also it would provide the farmers with the weather forecasting details which would let them water their crops even from far off locations, based on the above parameters.

6. Project Deliverables

Upon the completion of the project, a web application must be delivered which is based on simulated IoT and is a Smart Agriculture System that lets a user monitor the soil moisture and weather condition of a place in the real time and also ensures the control of the motors to function as it is required by the user even from faraway places.

7. Project Team

Individual Project