# IOT ENABLED SMART FARMING APPLICATION

**PROJECT OBJECTIVE**

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| Date | 10 STEPMEBER 2022 |
| Team ID | PNT2022TMID24904 |
| Project Name | Project – Smart Farmer-IoT Enabled smart Farming Application |

# Abstract:

The growth of the global population coupled with a decline in natural resources, farmland, and the increase in unpredictable environmental conditions leads to food security is becoming a major concern for all nations worldwide. These problems are motivators that are driving the agricultural industry to transition to smart agriculture with the application of the Internet of Things (IoT) and big data solutions to improve operational efficiency and productivity. The IoT integrates a series of existing state-of-the-art solutions and technologies, such as wireless sensor networks, cognitive radio ad hoc networks, cloud computing, big data, and end-user applications. This study presents a survey of IoT solutions and demonstrates how IoT can be integrated into the smart agriculture sector. To achieve this objective, we discuss the vision of IoT-enabled smart agriculture ecosystems by evaluating their architecture (IoT devices, communication technologies, big data storage, and processing), their applications, and research timeline. In addition, we discuss trends and opportunities of IoT applications for smart agriculture and also indicate the open issues and challenges of IoT application in smart agriculture. We hope that the findings of this study will constitute important guidelines in research and promotion of IoT solutions aiming to improve the productivity and quality of the agriculture sector as well as facilitating the transition towards a future sustainable environment with an agroecological approach.

**Project Objectives:**

**By the end of this project you will:**

* Gain knowledge of Watson IoT Platform.
* Connecting IoT devices to the Watson IoT platform and exchanging the sensor data.
* Explore python client libraries of Watson IoT Platform.
* Gain knowledge on IBM Cloudant DB
* Configuring APIs using Node-RED for communicating with a mobile application.
* Creating a Mobile Application through which the user interacts with the IoT device.

**Project Flow:**

* The parameters like temperature, humidity, and soil moisture are updated to the Watson IoT platform
* The device will subscribe to the commands from the mobile application and control the motors accordingly
* APIs are developed using Node-RED service for communicating with Mobile Application
* A mobile application is developed using the MIT App inventor to monitor the sensor parameters and control the motors.

To accomplish this, we have to complete all the activities and tasks listed below:

* Create and configure IBM Cloud Services
  + Create IBM Watson IoT Platform
  + Create a device & configure the IBM IoT Platform
  + Create Node-RED service
  + Create a database in Cloudant DB to store all the sensor parameters
* Develop a python script to publish and subscribe to the IBM IoT platform
* Configure the Node-RED and create APIs for communicating with mobile application
* Developa mobile application to display the sensor parameters and control the motors