

# Report on Project design phase 1

# **SmartFarmer - IoT Enabled Smart Farming Application**

## **Proposed Solution**

### **Problem statement:**

- To provide efficient decision support system using wireless sensor network which handle different activities of farm and gives useful information related to agriculture soil moisture, temperature, soil humidity control. The previous proposed systems have a drawback of network issues. Which causes delays in many operations.
- There is a problem of excess water supply or lack of water supply which makes the crops die. Because for rice, sugarcane, coconut crops require more water for the cultivation but in case of crops like pumpkin, ladies finger, carrot require water in drops so the requirement of water depends on the crops.
- There is a possibility of hackers to control the water supply by intruding into the server.
- After rain, there is no automated facility to alert the farmers about the presence of excess water in the field.

### **Idea/Solution Description:**

- The network issue problem can be over rid by providing high number of routers around the farm in the mesh network form.
- we can provide certain modes for different crop. This different modes can be given a range of humidity level for different crops. When the soil moisture level is not sufficient for the plant growth then the system will release the water supply according to the requirement. To measure the soil humidity level CS655, VTU933 sensors were used. But cs655 sensors are vulnerable to surface disturbances. The VTU933 sensor is also a time consuming sensor and not suitable for automatic control system .Hence we can come with FC28 sensor which can be used in both analog and digital mode and also it can be suitable for automatic control applications.

- To prevent hackers attack we can provide improved firewalls by Limiting VPN Access .Keeping it Constantly updated to the application server. Also the application design have to be done in a manner that it should be easily understandable to the farmers.
- By using smart water sensors, the excess water presence can be identified and the alert will be given to the farmers through the mobile application.

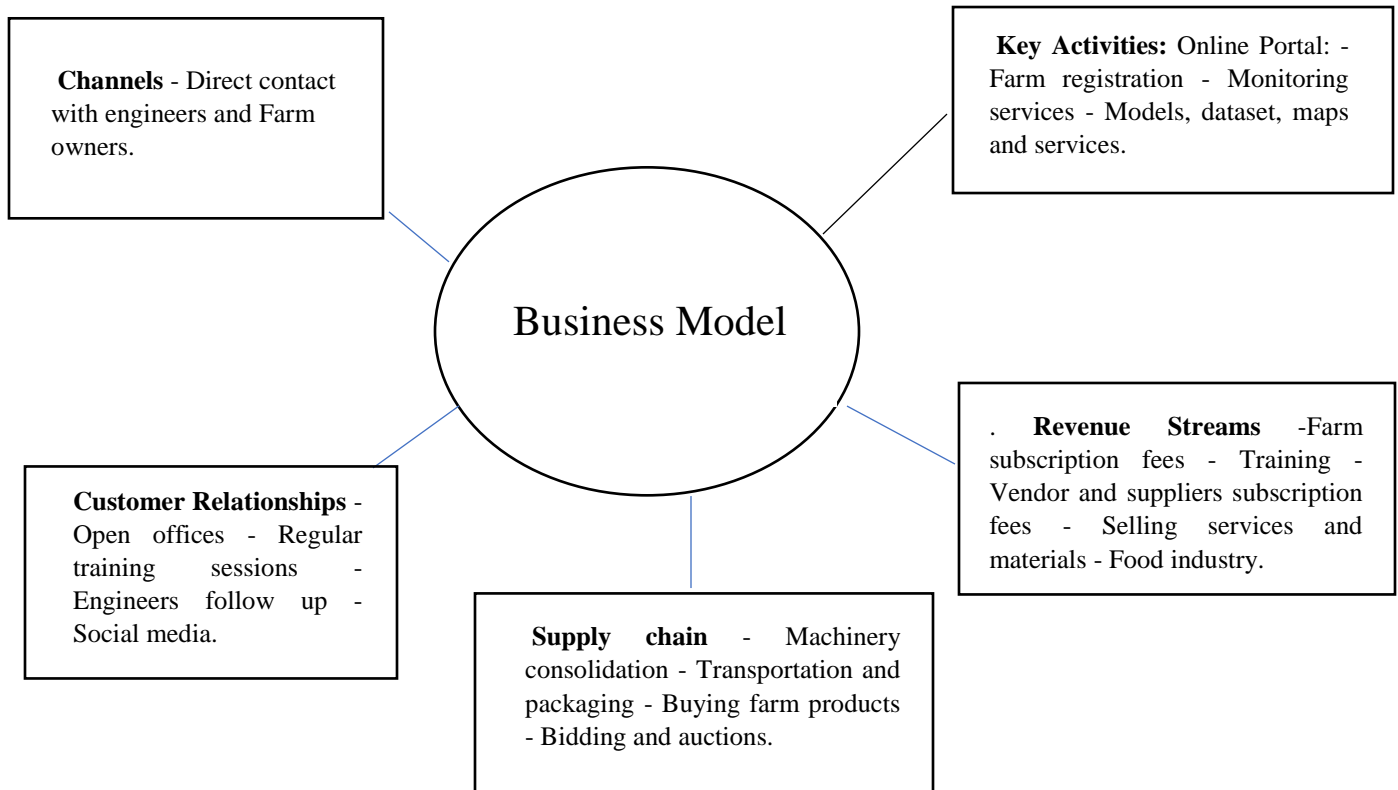
## **Novelty/Uniqueness**

- Our project system has customized function for different types of crops. Each mode comes with its own set of features depending on the crop. This system monitors some parameters of the crop using the sensors and determine the soil moisture, humidity and depending on the need, it automates water supply. Once the water levels met the required amount it will be deactivated and get activated again when required.
- The sensors used here is less suspected to environmental conditions therefore giving long lasting performance. These sensors offer enhanced protection features such as ESD protection and under voltage protection feature. Moisture sensor probes are coated with an immersion gold that protects the Nickel probes from oxidation.
- Several sensors can be used to identify the presence of excess water in the field. This feature is not present in many of the recent Farming applications.

## **Social impact/Customer Satisfaction**

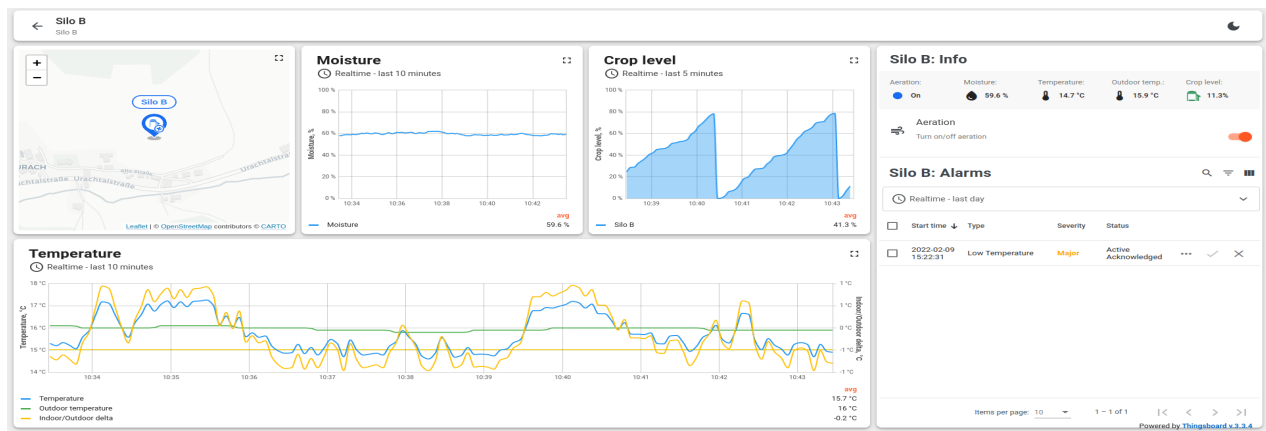
- Smart farming increases the production, efficiency and protection of crops. This enables the farmers to manage their fields remotely via smart gadgets, which will save lot of resources and time. With the help of automation and sensor technology, benefits the society by conservation of water, resource management and better crop yield.
- Realtime monitoring allows the user to know the present situation with just an application. The data collected can help the farmers to predict the weather in the upcoming years. The application is very user friendly and so anyone can learn how to use it in very short duration.

## Business Model:



## Scalability :

- Smart farmer platform dramatically reduces time to market and efforts to create smart-farming solutions. Save up to 90% of development time for your smart-farming solution by utilizing the following platform benefits:
- Reliable and fault-tolerant data collection from your IoT devices and sensors to monitor facilities state, crop growth characteristics, humidity level, etc.
- Powerful rule engine to process collected data and produce alarms and valuable insights.
- Optimize resource consumption with automatic remote control of actuators.
- Advanced and flexible visualization for real-time and historical data.
- Customizable end-user dashboards to share farm monitoring results.



- On-premises and cloud deployment options
- Customizable mobile applications with minimum coding efforts