Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	03 October 2022
Team ID	PNT2022TMID34153
Project Name	Project – IoT Based Smart Crop System For Agriculture

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Visibility	IoT applications in connected agriculture employ a multitude of sensors for gathering real-time data. Connected sensors analyse soil conditions and monitor crop and livestock health. Sensors also operate drones and vehicles in remote areas.
FR-2	User Reception	IoT based Smart Farming improves the entire Agriculture system by monitoring the field in real-time. With the help of sensors and interconnectivity, the Internet of Things in Agriculture has not only saved the time of the farmers but has also reduced the extravagant use of resources such as Water and Electricity.
FR-3	User Understanding	Crop protection combines strategies, tools, and products that protect against various pests. These include diseases, viruses, weeds, and insects. All of them can significantly lower or even kill plants. The best decision is to control the situation by reducing the risks rather than deal with the problem's consequences.
FR-4	User Action	IoT smart farming solutions is a system that is built for monitoring the crop field with the help of sensors (light, humidity, temperature, soil moisture, crop health, etc) and automating the irrigation system.

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	IoT in agriculture uses robots, drones, remote sensors, and computer imaging combined with continuously progressing machine learning and analytical tools for monitoring crops, surveying, and mapping the fields, and providing data to farmers for rational farm management plans to save both time and money.
NFR-2	**Security**	Main objective is all about protecting the farm from animals that causes lot of damages to the crops and also to financial status of farmers who depends completely on the yield of crop. The

		android mobile application helps for the better interaction with user and to access the data and manage the system.
NFR-3	**Reliability**	Using RaspberryPi camera module, we can implement image processing by recognising animal face and capture the image. Object detection functions can be used. It uses the captured image and detects objects present in them like person, animal with distance between them. Also we can send the notification to user the moment animal is detected.
NFR-4	**Performance**	Crop Performance analytics quantify the yield potential and environmental impact of food production at field, farm and catchment scales. Crop Performance works with growers, food companies and retailers to improve productivity, conserve resources, and monitor the environmental impact of food production.
NFR-5	**Availability**	Smart farming systems reduce waste, improve productivity and enable management of a greater number of resources through remote sensing. In traditional farming methods, it was a mainstay for the farmer to be out in the field, constantly monitoring the land and condition of crops.
NFR-6	**Scalability**	We analysed the performance of FIWARE under different platform configurations comparing fog/cloud and cloud-only scenarios for precision irrigation using one of the SWAMP points as the evaluations scenario. Our results reveal non inituitive outcomes, such as, that fog computing does not always improve the overall system performance.