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

Date	13 October 2022
Team ID	PNT2022TMID46939
Project Name	**Smart Crop Protection System for Agriculture**
Maximum Marks	4 Marks

Functional Requirements:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Fitting IoT Device in the farm.	The IoT device needs to be fixed in the farm with water proof safety. The IoT device consists of PIR Sensor,Flame Sensor. To send data to the cloud GSM is used.
FR-2	Connecting to the cloud.	The device should configure to connect to the cloud. The data of sensors need to be received and processed.
FR-3	Predictions for Crops Destroy.	In this 24x7 Monitoring System is designed for Monitoring the Crops, PIR Sensors is used to sense movement of People, Animals Node Red is used to access the location of the Agriculture farm. LCD display Animal Information when animal is detected, Flame Sensor detects the Fire and and via blink application send given Alert Message to farmer. Whenever there is an attack by animals to Crops in Agriculture then Alert Message is sent farm the device to farmers and the cloud. In term farmers can protect the Crop.
FR-4	Real time Monitoring.	This System works in real time to detect the animals in the fields. The System enables the farmer to have a real time view of his fields from any place via internet and even provides manual buzzer controls if the need arises to use sound the buzzer if needed. The System also provides a history of the events taking place in the fields, in the form of images and textual log records.
FR-5	Requires no human supervision.	This System requires almost no human supervision, except for the task of switching the system on and off. The System is capable of turning the buzzers on

		automatically and warding off the animals thus protecting the fields from any damage.
FR-6	Routes to Crop Protection.	The Crops are protected by insects, animals, etc through the use of deliberate sensors connected in the farm field; sensors estimate the motion of inspects and animals nearer to the crop and sent the signal to the Arduino Uno microcontroller for calculation of distance and all.

Non-functional Requirements:

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	IoT solution for Smart crop protection offer advanced machine learning techniques in the system. Due to this the system can be trained to detect different types of animals. This feature of the system makes it highly adaptable to the local sites of deployment. Thus the system is not limited to the detection of only particular type of animals. This make it suitable for different areas of our country.
NFR-2	**Security**	Building and deploying IoT-based smart crop protection in rural areas can be complex time consuming and resource intensive process. Many departments not have resources to support such a project internally.
NFR-3	**Reliability**	One of the difficult operational problems of farmers are facing is the Intrusion or Ravaged of Animals in forms in recent years, Due to Environmental concerns and no of cost most of the farmers have been forced for accessing this crops, and examing then Cost Effectiveness.
NFR-4	**Performance**	An integrated Aurdino program is developed to microcontroller, display system and communication system. Whenever there is any detection of intrusion in the field the users will get to know about it in the farm of assigned values.
NFR-5	**Availability**	Another purpose of this project is to make the crop protection system as cheap as possible.Ensures complete safety of crops from animals thus protecting the farmer loss.
NFR-6	**Scalability**	The Farm diversity about 80% of its Intrusion, or Ravaged and hopes to go "Better Crop Yields" by the end of 2021. Thus leads to their Economy well

		being.