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

Date	03 October 2022
Team ID	PNT2022TMID04713
Project Name	IoT BASED SMART CROP PROTECTION FOR AGRICULTURE
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Need	• The crop field requires protection from wild animal attacks, birds, and pests. The mobile application sends an SMS to the user when it detects animals entering the crop field. • Once the animal is detected, the system will alarm and start lightning in the corner of the farm. • It will not harm any animals, and we can also protect the crops. • The farmer needs to know about the temperature and humidity of the crop field. • A microcontroller is to measure the moisture level of the soil, and a relay is used to turn ON and OFF the motor pump for the excess water level.
FR-2	User Reception	The data collected from the mobile application are temperature, humidity, and moisture content of the soil, get observed.
FR-3	User understanding	The obtained data from the mobile application is to know the present condition of the field, and it's on the sensors used.
FR-4	User solution	The user must take some precautions from the user's understanding to save the field before it gets damaged.

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Users can use the mobile application anywhere to know about the condition of the crop field.
NFR-2	**Security**	The data from the crop field requires secure access to information through the mobile application. And the mobile application will secure the data and sends it to the user.

NFR-3	**Reliability**	• The data from the application will detect when the animals enter the field through the alarm. • It will not harm any animals, and we can also protect the crop field. • And the application will detect the data like temperature of the soil, moisture content, humidity, and water level monitoring.
NFR-4	**Performance**	• With the help of sensors and data surveys, farmers can reduce water usage, energy consumption, and inputs like fertilizers. • And it offers an acceptable response of speed to the user. • A big challenge for many farmers is dealing with fertility.
NFR-5	**Availability**	IoT solutions are necessary for this crop protection system. If the IoT solutions are going down, neither operations nor production gets affected.
NFR-6	**Scalability**	This type of system will not harm or injure animals as well as human beings.