

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

Date	07 October 2022
Team ID	PNT2022TMID41893
Project Name	IOT BASED-SMART CROP PROTECTION SYSTEM 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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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.

