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

Date	15 November 2022
Team ID	PNT2022TMID15088
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 Registration	• Install the application. • Sign up with the g-mail. • Create a profile.
FR-2	User Confirmation	For confirmation, user will be sent OTP to the registered e-mail ID.
FR-3	User Visibility	• Sensors sense the animals that comes nearer to the field. • The alarm sound (ultrasonic sound) is activated to scare them away and sends alert message to the farmers to notify what happens here using the cloud service.
FR-4	Accessing datasets	• Data is obtained by Cloudant DB. • If any animal or bird is detected, the image will be captured and storedin the IBM Cloud object storage. • The image will be retrieved from Object storage and displayed in the application.
FR-5	Interface sensor	• Connect the sensor and the application through IBMWatson platform. • When animals enter the field the alarm sound rings which is not harmful for animals, it only scares them away.
FR-6	Mobile application	• It is used to control motors and field sprinklers. • It is used to send alarm notifications to admin and farmer when wild animals try to attack.

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	• This project is developed for the purpose of farm protection using the smart technology “IOT” to increase its quality and quantity. • Mobile support helps the users to interact easily just with their mobile phones.
NFR-2	**Security**	• The goal of this work is to provide a repelling and monitoring system for crop protection against animal attacks. • Data requires secure access to register and communicate securely on devices and authorized users of the system who exchange information must be able to do**.**
NFR-3	**Reliability**	• Farmers would be able to protect their land using this technology. • It has the capacity to recognize the wild animals near the field and doesn't give a false caution signal. • Increase the food quality reduce and the resource damages.
NFR-4	**Performance**	• Animal friendly ultrasound is generated, which neither cause any kind of harm to the animals nor the sound is audible to humans so the performance is not degraded. • Must provide acceptable response time to users regardless of thevolume of data that is stored and the analytics that occurs in background.
NFR-5	**Availability**	• Agriculture fences are quite effective while protecting wild animals. • IoT solutions and domains demand highly available systems for 24x7 operations. • Alarm system are available when farmers are not able to come to the field on time. • This projecthas a backup plan . Hence availability of this project is also high.
NFR-6	**Scalability**	• System must handle expanding load and data retention needs that are based on the upscaling of the solution scope**.** • It can be enhanced by sending messages directly to the fire department in case there is a mass wild animals attack in the fields. • It willbe safe for human beings also. • The controlling and monitoring of the soil moisture level can be automated by taking care of the crops in case of • low moisture level, without notifying the farmers.