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

Date	03 October 2022
Team ID	PNT2022TMID23926
Project Name	Project - 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. Read carefully. understand the guidelines clearly.
FR-2	User Confirmation	For confirmation, user will be sent OTP on the registered g-mail.
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's are obtained by Cloudant DB. If any animal or bird is detected, the image will be captured and stored in 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 IBM Watson platform. When animals enter the field the alarm is generated which is not harmful for animals, it's only scares them away.
FR-6	Mobile application	It is used to control motors and field sprinklers. It is used to sends alarm notification to admin and farmer when there is wild animals 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 contributes to the farm protection using the smart modern technology "IOT" to increase its quality and quantity. Mobile support users able to interact easily using 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 must register and communicate securely on devices and authorized users of the system who exchange information must be able to do**.**
NFR-3	**Reliability**	Farmers able to protect his land using this technology. It has a capacity to recognize the wild animals near the field and doesn't give a false caution signal. Increase the food quality reduce the resource damages.
NFR-4	**Performance**	Animal friendly ultrasounds generates, which does not produce physical or biological harm to the animals nor sounds audible to humans so the performance not degraded. Must provide acceptable response times to users regardless of the volume of data that is stored and the analytics that occurs in background.
NFR-5	**Availability**	Agriculture fences are quite an effective while protecting wild animals. IoT solutions and domains demand highly available systems for 24x7 operations. Alarm system are available when farmer can't able to come to the field at a time. This project have a backup plan also. So availability of this project is 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 message directly to the fire department in case there is a mass wild animals attacks the fields. It will be 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.