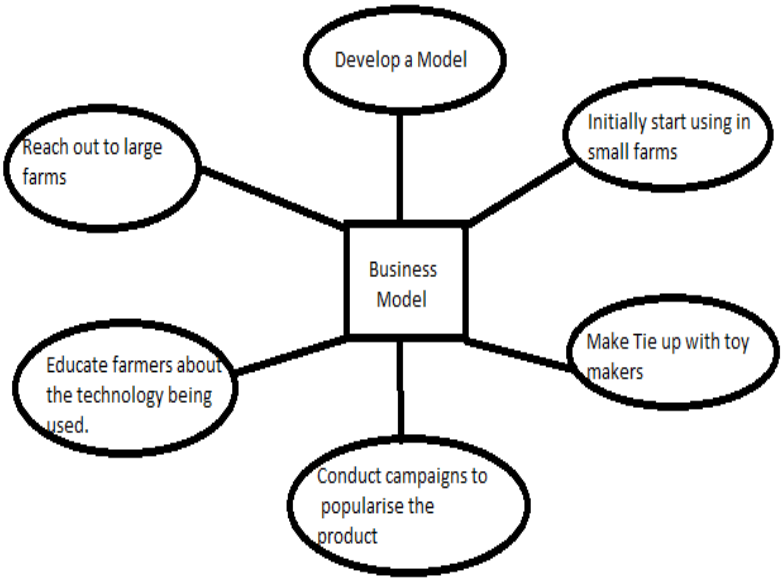
Project Design Phase-I
Proposed Solution Template

Date	16 October 2022
Team ID	PNT2022TMID52016
Project Name	**IOT Based Smart Crop Protection System for Agriculture**
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Agriculture is a huge contributor for our economy . Nowadays the biggest challenge faced by farmers in agriculture is the " Crop Depredation " due to wildlife interference and various other environmental factors like climate change . These factors leads to huge yield loss for farmers. With the changing of climate, agriculture faces increasing problems with extreme weather events leading to considerable yield losses of crops .Due to climate changes the farming pattern will also change.. The crops are also affected in a large scale due to animals and bird attacks. So in order to increase the yield and protect the crops , there is a urgent need to address the above mentioned issues.
2.	Idea / Solution description	In our project we are going to address both of the above mentioned issues . For the climate change issue , we are going to monitor the current climate of area and notify the farmer based on that information. For this we are going to use an web application called " **openweathermap.org**". From this application we are going to read the information using arduino via the API key. If there is a possibility of rain , the farmers will get an alert not to irrigate the farm on that particular day. If after the rain there is excess water in the field , then this moisture level will be detected using the humidity sensor placed in the soil . Then the farmers will get an alert to drain off the excess water from the field. Next for protecting the farm from animals and birds we are going to first fit PIR sensors and ultra sonic sensors in the entire field. PIR sensor will be used to detect the motion and ultra sonic sensor for measuring the distance of that animal from crop. The farmers will get an alert if the animal is within the range. As a means of protecting the farm from animals and birds the scarecrow toy attached to the servomotor will be triggered. The major use of servomotor is to change position of an object etc. Due to triggering of toy the animal or bird will move away from the crop.
3.	Novelty / Uniqueness	In conventional methods the farmer will predict the climate and they plan accordingly but this can be inappropriate . Because nowadays the climate conditions are unpredictable . If there is excess water in the field and if the farmers are far away from their field , it will lead to huge losses. Also they appoint guards for protecting the farms at night time. But this approach will not be that feasible as it may be an threat to human life. Also if no one is there in the farm then animals may affect the crop. But due to inclusion of

		technology in agriculture the farmers will be able to control everything in a single click. This help them in saving a lot of time and energy. As this project will be based on IOT the farmers will be able to monitor their farm even if they are far away from the field. The details will also be more accurate than a human prediction. The whole process can also be automated so that the process can be more fast.
4.	Social Impact / Customer Satisfaction	As the project is going to be IOT based , it is undeniably beneficial for saving the environment , reducing the cost and boosting the efficiency. In this manpower used will be very much reduced , so that the farmer can save the labour cost. The farmer will also be able to save energy and time. The components used in this process will cost effective and will consume only less power. The information from the application will be accurate to some extend so that the farmers can plan the farming plan for that day. The farmers will be able control these activities in a single click from anywhere in the world. This inclusion of technology will make the works simpler and it will pave way for the development of agricultural sector.
5.	Business Model (Revenue Model)	We are going to make some campaigns and check how many of them are interested to take this product. We need to produce scarecrow toy with movable hands. This toy will be made with cost effective products. The main components used in are very much cost effective and also the number of components will vary depending on the size of the field. The weather report obtained from the application is free of cost. We can even get the weather report of 16 days in advance. As the whole process is controlled by technology the manpower can be reduced. So the farmers can save the labour cost. This will increase their profit. As the farmers will be able to get the predictions of climate in right time , they will be able to reduce the loss and avoid the cost of repair. 
6.	Scalability of the Solution	This project is very much efficient because it is based on IOT. As the whole process is going to be controlled by technology , there will be much less probability for error. The farmers will be able to control everything from there place itself and the actions will be quick. As we are using ultra sonic sensor along with PIR sensor , we will be able to measure the distance and

		continuous monitoring of the field , the farmers will be able to find the spot at which animal is and can trigger toy at that particular spot. Also as the weather is being monitored continuously , the farmers will be able to plan accordingly. Even the 16 days weather report can be already known , which makes the process more efficient.