Project Design Phase-I
Solution Architecture

Date	**19 September 2022**
Team ID	**PNT2022TMID51948**
Project Name	**Project - Fertilizer Recommendation system for disease prediction**
Maximum Marks	**2 Marks**

Project Title: FERTILIZER RECOMMENDATION FOR DISEASE PREDICTION **Project Design Phase-I - Solution Fit** **Team ID:** PNT2022TMID51948

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

- Farmers
- Gardeners
- Agriculture Research Scientist
- Plant Scientist

6. CUSTOMER CONSTRAINTS CC

- Poor Network Connections in rural areas
- Less Quality Image (Because of less camera quality)
- No proper knowledge of using the website
- Installation Cost of required devices (laptops,PC,mobile etc.)

5. AVAILABLE SOLUTIONS AS

The traditional method to identify diseases by visually inspecting certain features like texture, color and shape of leaves, Usually the farmers used to hire professional agriculturists to diagnose their crops for diseases.

☑ **Pros:** Comparatively Cheaper than other methods

✗ **Cons:** Time Consuming

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS J&P

- Effective Detection of leaf disease using AI methods.
- Recommendation of Fertilizers based on the Disease Detected.

9. PROBLEM ROOT CAUSE RC

The reasons for leaf damage are Leaf viruses, Leaf biting insects, Spraying of pesticides, Usage of inefficient fertilizers. And also Environmental factors like soil pH, temperature, and humidity causes leaf damage.

The leaf diseases should be detected in the early stages and the best suitable fertilizer should be recommended to reduce or completely cure the diseases.

7. BEHAVIOUR BE

- At first,the farmers should upload the defective leaf to the website
- The leaf disease is predicted by the trained model.
- A suitable fertilizer for the predicted disease then suggested.

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

3. TRIGGERS TR

- The failure of crops leads to a huge loss in quantity of crops.
- Quality of the crops being reduced.
- Increase in the cost of pesticides.
- Reading about more efficient methods in internet.

4. EMOTIONS: BEFORE/AFTER

BEFORE	AFTER
Diffident	Confident
Distress	Relief

10. YOUR SOLUTION SL

- As Convolution Neural Network works well with Images we used this technique to learn the patterns from the images of different leaves.
- Thus given an input image the trained model predicts the disease of the leaf.
- The predicted result is used to recommend a suitable fertilizer for the disease

8.CHANNELS OF BEHAVIOUR CH

8.1 ONLINE

- Reading articles online to improve knowledge about various plant diseases and appropriate fertilizers.
- Gathering information online about various fertilizer recommendation sources.

8.2 OFFLINE

- Visiting various agricultural lands to know more about types of leaf diseases and fertilizers used by the farmers.
- Talking with agricultural research scientist.

Extract online&offline CH of BE