Project Design Phase
Proposed Solution Template

Date	5 February 2026
Team ID	LTVIP2026TMIDS75799
Project Name	Smart Sorting: Transfer Learning for Identifying Rotten Fruits and Vegetables
Maximum Marks	2 Marks

Proposed Solution Template:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Manual sorting of fruits and vegetables often results in delays, inconsistency, and misclassification. This leads to product spoilage during storage and transit, customer dissatisfaction, and increased operational costs. A dependable automated inspection tool is needed to enhance quality control.
2.	Idea / Solution Description	This project employs **transfer learning with ResNet50** to create an intelligent system that distinguishes between healthy and spoiled produce using image analysis. The solution is optimized to run on tablets or embedded devices and offers instant classification with user-friendly feedback.
3.	Novelty / Uniqueness	Unlike conventional solutions, this approach delivers **AI-powered classification without requiring constant connectivity or specialized equipment.** The use of pre-trained deep learning models enables high performance with smaller datasets, reducing training time and deployment complexity.
4.	Social Impact / Customer Satisfaction	The system contributes to reducing food loss, lowering inspection costs, and supporting sustainable supply chains. Small producers gain access to modern tools that improve productivity and help meet regulatory standards, while consumers benefit from consistently better product quality.
5.	Business Model (Revenue Model)	The product can be monetized through a **subscription-based app** offering tiered plans for individual users and enterprises. Additional revenue streams include selling **enterprise software licenses**, providing consulting services, and offering optional camera modules bundled with the system.

S.No.	Parameter	Description
6.	Scalability of the Solution	The platform is designed to **scale across diverse crops and regions**, with configurable models for various produce categories. Future expansions can include detecting visual defects such as mold or pest damage and integrating with ERP or warehouse management systems for large distributors.