Project Design Phase
Proposed Solution Template

Date	28 June 2025
Team ID	LTVIP2025TMID41507
Project Name	Smart Sorting: Transfer Learning for Identifying Rotten Fruits and Vegetables
Maximum Marks	2 Marks

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Manual sorting of rotten fruits and vegetables in large-scale settings (like food processing units, supermarkets, and homes) is timeconsuming, prone to human error, and contributes to unnecessary food waste. There is a strong need for an automated, intelligent system that can efficiently detect spoilage in real-time.
2.	Idea / Solution description	We propose a smart web-based application that uses **transfer learning** to classify fruits and vegetables as healthy or rotten. Users can simply upload an image of the item, and the system will analyze it using a fine-tuned deep learning model and provide an instant result.
3.	Novelty / Uniqueness	The project's novelty lies in its **hardwareindependent design** — it requires only an image upload via a browser, avoiding the cost and complexity of real-time camera systems. By leveraging **transfer learning**, the system achieves high accuracy even with a limited dataset, making it suitable for real-world deployment in resource-constrained environments.
4.	Social Impact / Customer Satisfaction	This application contributes to **reducing food waste**, improving **food safety**, and empowering **small-scale users** (e.g., households, local sellers) with accessible technology. Early identification of spoiled produce helps avoid health risks and financial losses, contributing to overall societal well-being.

5.	Business Model (Revenue Model)	The platform can adopt a **freemium model** where basic predictions are free for individual users, while advanced features such as bulk analysis, report downloads, or API access are available under a subscription. It also has potential for B2B licensing in the food and retail industry.
6.	Scalability of the Solution	The architecture is scalable in terms of both **data and functionality**. It can be extended to include more produce types, additional spoilage categories, or integrated into broader quality control systems. Cloud-based deployment ensures it can serve multiple users simultaneously from various regions.