Project Design Phase
Proposed Solution Template

Date	15 February 2025
Team ID	LTVIP2025TMID38970
Project Name	CleanTech: Transforming Waste Management with Transfer Learning
Maximum Marks	2 Marks

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Manual waste segregation is inefficient, error-prone, and unsustainable. There's a need for an automated system that can classify waste accurately using images to support cleaner and smarter waste management.
2.	Idea / Solution description	The project uses a deep learning model (MobileNetV2) to classify waste images into biodegradable, recyclable, or trash. It's integrated with a simple Streamlit web app for real-time, user-friendly waste classification.
3.	Novelty / Uniqueness	The solution combines lightweight transfer learning with a deployable web interface, enabling fast, low-cost, and scalable waste classification—ideal for smart cities and edge devices.lution.
4.	Social Impact / Customer Satisfaction	This project promotes sustainable waste management by enabling accurate, automated waste classification. It reduces manual labor, improves recycling efficiency, and supports cleaner environments. The user-friendly web interface ensures high accessibility and satisfaction, making it valuable for municipalities, recycling centers, and smart city systems.
5.	Business Model (Revenue Model)	The project follows a SaaS-based model, offering subscriptions to municipalities and waste management firms. Revenue is generated through paid plans, enterprise licensing, and integration with smart bins or mobile apps for scalable, recurring income.
6.	Scalability of the Solution	The solution is highly scalable — it can be deployed across multiple platforms including smart bins, recycling plants, and mobile devices using TensorFlow Lite. With cloud-based APIs or on-device inference, it supports large-scale adoption in cities, industries, and communities with minimal infrastructure.