Project Design Phase
Proposed Solution Template

Date	10 June 2025
Team ID	LTVIP2025TMID32454
Project Name	Clean Tech:Transforming Waste Management with Transfer learning
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 waste sorting in recycling centers, improper waste segregation in public bins, and inaccurate classification of industrial waste lead to inefficiencies, environmental harm, and regulatory non-compliance.
2.	Idea / Solution description	CleanTech uses transfer learning and computer vision to build an AI-powered smart waste classification system. This system automates the process of identifying and sorting different types of municipal and industrial waste from images captured by cameras placed in recycling centers, public bins, and factories. It enhances speed, accuracy, and compliance while reducing human error and operational cost.
3.	Novelty / Uniqueness	Unlike generic waste monitoring tools, CleanTech leverages deep learning with transfer learning techniques tailored to local waste categories and contexts. It works across multiple environments (recycling centers, smart cities, factories), adapts to regional waste types, and integrates real-time feedback mechanisms.
4.	Social Impact / Customer Satisfaction	CleanTech improves urban cleanliness, reduces landfill waste, supports sustainability goals, and ensures safer working conditions for waste handlers. It enables compliance with environmental regulations in industrial settings and encourages public responsibility through intelligent feedback systems.
5.	Business Model (Revenue Model)	CleanTech can follow a B2B SaaS (Software-as-a-Service) model for municipalities and private waste management firms. Revenue sources include: - Hardware + software bundles for recycling centers - Subscription-based analytics dashboards for city authorities - Custom AI training packages for factories

6.	Scalability of the Solution	The solution is highly scalable due to its modular AI architecture. Once trained, the model can be deployed across multiple cities and industries with minimal customization. New waste types can be added by retraining only specific layers, allowing expansion to new geographies and sectors.