

Project Design Phase

Date	
Team ID	LTVIP2025TMID31460
Project Name	To Supply Leftover Food to Poor
College Name	Ideal Institute Of Technology

Step-1: Problem-Solution Fit

★ Problem Statement:

A large quantity of edible leftover food from restaurants, events, and households goes to waste, while many people in urban and rural areas remain hungry and undernourished.

Solution Hypothesis

Create a tech-enabled food distribution platform that:

- Connects food donors (restaurants, caterers, households) with verified NGOs/volunteers
 - Includes a real-time pickup and delivery tracking system
 - Ensures food safety guidelines are met
 - Rewards and recognizes donors to increase participation
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Key Features of the Solution

Feature	How it Solves the Problem
Mobile/Web App for Food Donors	Makes food donation easy and quick
Real-Time Matching Engine	Matches available food with nearby NGOs
Pickup Logistics System	Ensures timely and safe transportation
Volunteer Coordination	Allows scheduling and routing of pickups/deliveries
Food Safety Guidelines Checklist	Ensures hygiene and quality
Feedback & Rating System	Builds trust between users

Step-2: Proposed Solution

★ Phase Object:

Design a practical, scalable, and technology-enabled system to collect surplus food and distribute it safely to the underprivileged.

★ Solution Overview:

Design a centralized platform (mobile + web-based) that connects food donors, volunteers/NGOs, and recipients through an automated and transparent process.

Solution Components

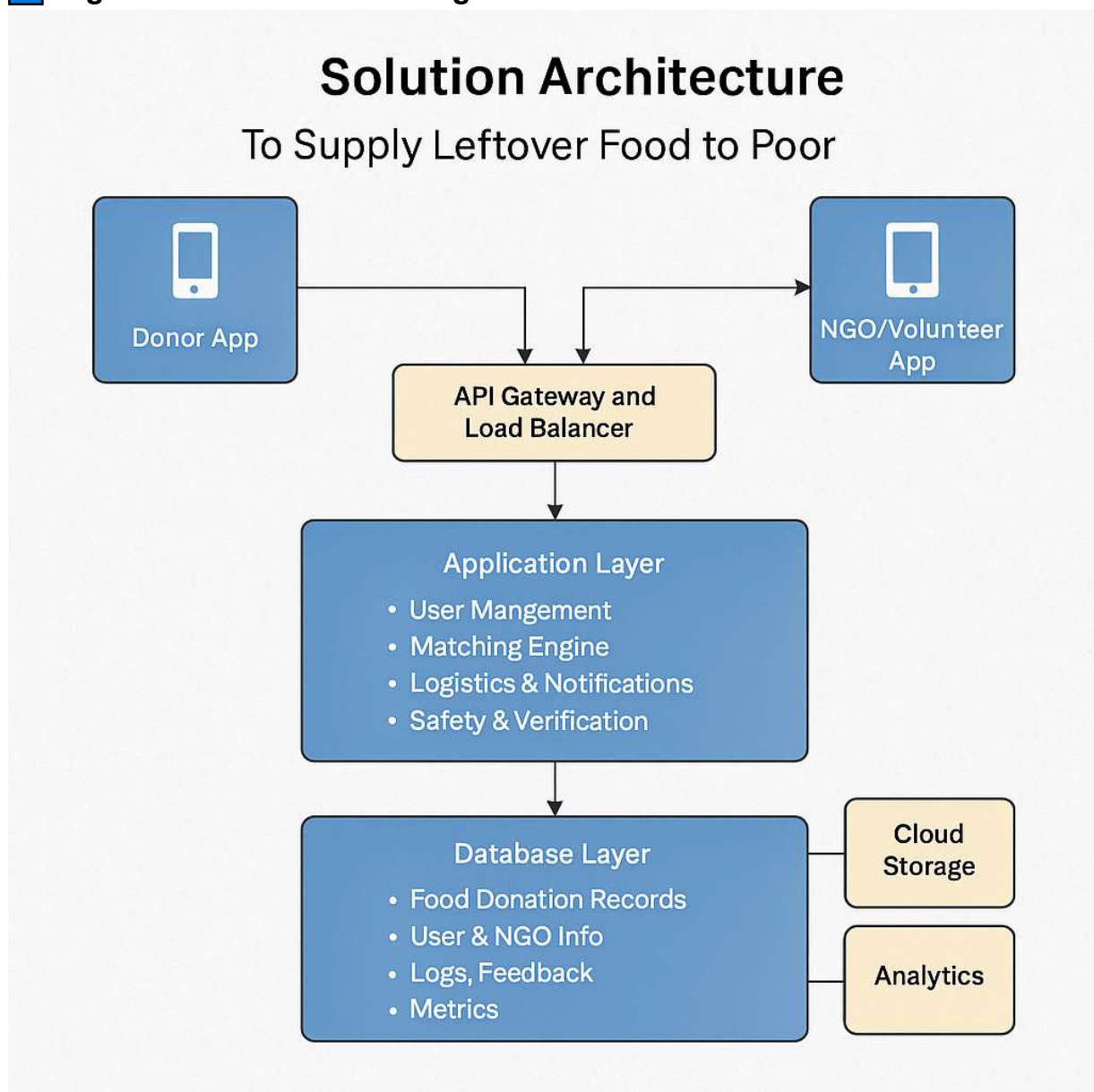
Component	Description
Donor App Interface	Allows food donors (restaurants, hotels, etc.) to register leftover food.
NGO/Volunteer Interface	Enables NGOs and volunteers to accept requests, schedule pickups.
Admin Dashboard	Central system to monitor operations, logistics, food flow, and reports.
Notification System	Sends real-time alerts and updates to all users.
Geo-Matching Engine	Matches donors and NGOs/volunteers based on location, quantity, and time.
Logistics Tracker	Tracks food pickup, transit, and delivery with timestamps and feedback.
Food Safety Protocols	In-app hygiene checklist and documentation of food type, time, and expiry.
Reward System	Badges, points, and CSR certificates for active donors and volunteers.

Step-2: Solution Architecture

★ System Overview

The solution is a cloud-based, modular platform that connects food donors, NGOs/volunteers, and recipients. The architecture focuses on scalability, performance, data security, and real-time operations

High-Level Architecture Diagram



Key Components

Component	Description
Frontend (Mobile/Web)	User interfaces for donors, volunteers, NGOs, and admins
API Gateway	Routes requests, provides rate limiting, and ensures security
Authentication Service	Sign-up/login, role-based access (donor/NGO/admin)
Matching Engine	Matches donations with nearest NGOs/volunteers based on location/time
Logistics Scheduler	Assigns and tracks pickup/delivery routes
Food Safety Module	Records food type, condition, and expiry with checklists
Notification System	Sends alerts via SMS, email, or in-app
Analytics Dashboard	Visualizes metrics like number of meals delivered, pickup time, etc.
Database (SQL/NoSQL)	Stores user profiles, donation logs, NGO data, delivery info
Cloud Storage (e.g., AWS S3)	For storing images, digital certificates, reports

Integration Points

External System	Purpose
Google Maps API	Location matching, route optimization
SMS/Email Gateway	Real-time notifications
Food Safety Guidelines API (if any)	Ensures compliance with health regulations
CSR/NGO Registries	Verifies legitimacy of organizations

Scalability Considerations

- **Microservices architecture** for each module (matching, logistics, notifications)
- **Auto-scaling cloud environment** (e.g., AWS, Azure, GCP)
- **Caching layer** (e.g., Redis) to improve speed of frequent queries
- **Load balancer** to distribute traffic and maintain uptime