

# PROJECT DESIGN PHASE

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## 1. Introduction

The **Project Design Phase** defines the architecture, interface, and data flow for the *To Supply Leftover Food to Poor* system.

This Salesforce-based platform is designed to connect **food donors**, **NGOs**, and **volunteers** under one cloud environment.

The design phase focuses on how the identified requirements will be translated into a structured, efficient, and user-friendly system using Salesforce tools such as **Objects, Apex Classes, Visualforce/Lightning Pages, and Automation Workflows**.

The goal is to ensure the application is scalable, secure, and intuitive while maintaining seamless interaction among all stakeholders.

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## 2. Design Objectives

The main objectives of the project design phase are:

- To develop a **modular system architecture** for efficient data handling.
  - To create **user interfaces** that are intuitive for different roles (Donor, NGO, Volunteer, Admin).
  - To define **relationships among Salesforce objects** ensuring smooth data flow.
  - To establish **automated workflows** and **approval processes** for timely operations.
  - To design **reports and dashboards** for effective monitoring and analytics.
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### 3. System Architecture

The *To Supply Leftover Food to Poor* system follows a **multi-layer architecture** comprising the following layers:

#### a) Presentation Layer

This is the user interface accessible through Salesforce Lightning or Visualforce pages. It provides different views based on user roles:

- Donors: Food donation form, status tracking, and feedback section.
- NGOs: List/map of available donations, acceptance option, and delivery records.
- Volunteers: Delivery tasks, route details, and update forms.
- Admin: Dashboard with full system analytics and controls.

#### b) Application Layer

This layer includes all business logic implemented through **Apex classes, triggers, and flows**. It handles donation creation, assignment logic, notifications, and delivery confirmation.

#### c) Data Layer

This layer consists of Salesforce custom objects and relationships. It ensures all food, donor, NGO, and volunteer data are securely stored and linked for real-time access.

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### 4. Data Flow Design

The **data flow** in the system moves as follows:

1. **Donor** logs in and submits a new food donation record.
2. The system notifies nearby **NGOs** using automation flows.

3. An **NGO** accepts the donation and assigns a **volunteer** for pickup.
4. The **volunteer** collects and delivers the food to beneficiaries.
5. The **delivery record** is updated, and confirmation is sent to the donor and admin.
6. Data from all transactions are stored and displayed in **reports and dashboards** for monitoring.

This flow ensures real-time coordination between stakeholders and minimizes delays in food redistribution.

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## 5. Database Design

Salesforce's object-oriented data model allows efficient data storage and management.

### Key Custom Objects and Relationships

Object Name	Purpose	Relationships
<b>Donor</b>	Stores donor details (restaurants, hotels, event organizers).	One-to-Many with Food Donations.
<b>Food Donation</b>	Holds information about donated food items.	Master-Detail with Donor; Lookup to NGO and Volunteer.
<b>NGO</b>	Contains NGO details and their food distribution capacity.	One-to-Many with Deliveries.

Object Name	Purpose	Relationships
<b>Volunteer</b>	Tracks volunteer details and delivery availability.	Lookup to Delivery object.
<b>Delivery</b>	Manages pickup, delivery, and confirmation details.	Lookup to Volunteer, NGO, and Food Donation.

#### Relationships Used:

- **Master-Detail Relationship** between Donor and Food Donation.
- **Lookup Relationships** between Food Donation, Volunteer, and NGO.
- **Hierarchical Relationship** for Admin to manage all users.

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## 6. User Interface Design

User interfaces are designed with Salesforce **Lightning Experience** for clarity and accessibility:

### Donor Interface

- “Create Donation” form with fields for food type, quantity, expiry time, and pickup address.
- Donation history and live status updates.

### NGO Interface

- “Available Donations” dashboard with location filters.
- “Accept Donation” and “Assign Volunteer” features.

### Volunteer Interface

- Task list showing assigned pickups and deliveries.
- Real-time update buttons for “Picked Up” and “Delivered.”

## Admin Interface

- Central dashboard summarizing all donations, deliveries, and active users.
  - Access to reports, analytics, and manual overrides.
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## 7. Process Design and Automation

Automation is a critical part of the Salesforce design.

### Automated Flows and Processes

- **Auto Notification Flow:** Sends email/SMS alerts to NGOs when a donation is posted.
- **Assignment Rule:** Automatically assigns volunteers based on location and availability.
- **Delivery Confirmation Flow:** Updates donation and delivery status upon completion.
- **Report Scheduler:** Generates weekly reports on food collected and distributed.

### Validation Rules

- Ensures that expiry date of food is valid.
  - Prevents duplicate donation entries.
  - Confirms that delivery cannot be marked complete without NGO confirmation.
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## 8. Security Design

To ensure data protection and controlled access, Salesforce's **role-based security** model is used:

Role	Access Level
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Admin	Full access to all objects and settings.
Donor	Create and view own donations only.
NGO	View and accept donations; manage assigned deliveries.
Volunteer	Update assigned delivery tasks only.

Field-level security and sharing rules are configured to maintain data confidentiality between different user types.

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## 9. Reports and Dashboards

To measure the project's impact, Salesforce **Reports and Dashboards** provide:

- Total number of donations created, accepted, and delivered.
  - Quantity of food redistributed by time period.
  - Performance summary of NGOs and volunteers.
  - Visual charts for active donors and successful deliveries.
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## 10. Conclusion

The **Project Design Phase** establishes a solid technical foundation for the *To Supply Leftover Food to Poor* system. By leveraging Salesforce's cloud architecture, automation tools, and security model, the design ensures a scalable, reliable, and user-friendly solution.

This design guarantees real-time coordination between donors, NGOs, and volunteers — reducing food wastage, improving efficiency, and supporting the broader mission of eliminating hunger through technology.