### **Brainstorming Document**

Project Title: A CRM Application for Public Transport Management

Team Members: K. Jayasree & G.Sireesha

Platform: Salesforce

### **6** 1. Objective

To develop a Salesforce-based CRM system for public transport that enables passengers to view routes, check fares, and book trips efficiently, while maintaining backend records for buses, trips, employees, and fare details.

### 2. Key Problems to Solve (User POV)

- Passengers can't easily explore available bus routes and timings.
- Ticket fares are not transparent or standardized across routes.
- Booking and managing trips is not streamlined or digitized.
- Manual data entry is error-prone for trip and fare details.

### 3. Ideas & Feature Concepts

Idea	Notes
Route browsing and search	User should be able to view source, destination, arrival, and departure.
Automated ticket fare retrieval	Based on route name and bus model, the fare is auto-filled using Flow.
Trip booking system	Lookup fields for choosing bus, route, and assigning driver/
Booking history and cancellation	Users can view and cancel their past/future bookings.
User-friendly mobile interface	Add support for Salesforce Mobile App usage.
Validation via Apex triggers	Ensure driver/conductor roles are validated before saving trip
Dashboard with trip stats	Track passenger count, routes used most, fare collections.

### 🃤 4. Custom Objects Needed

Object	Purpose
Bus Station	Stores details about physical bus stations

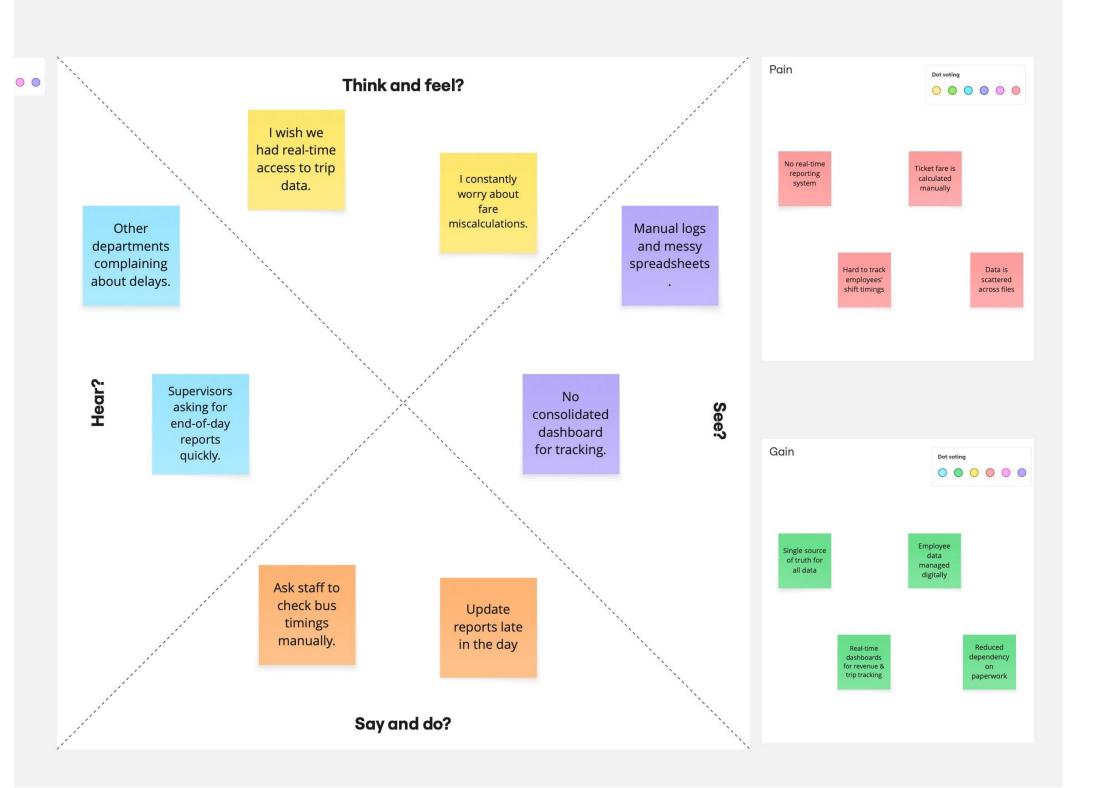
Bus	Stores bus registration, model, capacity, station link
Trip	Stores booking info, route, bus, employees, fare
Ticke t Fare	Stores route-wise fare for various bus models
Employee	Stores employee details (driver, conductor, etc.)

### **5.** Technical Tools to Use

- Salesforce Flows: For fetching ticket fare based on route and model
- Validation Rules: For ensuring required fields are entered
- Apex Trigger: To validate roles of employees (Driver/Conductor)
- Reports and Dashboards: For management-level insights
- Lightning App Builder: For a unified experience

### **6.** Expected Outcomes

Goal	How It's Achieved
Automate ticket fare logic	Record-triggered flow based on route and bus model
Validate employee roles	Apex trigger with separate handler class
Improve user booking experience	Custom objects with page layouts and app navigation
Track and manage trips easily	Dashboards, reports, and accessible records via tabs



### **Customer Problem Statement Template**



## **Customer Journey Map**

Customer Persona: RTC Transport Department Admin / Manager

**Product:** Salesforce CRM Public Transport Management

Goal: Efficiently manage buses, employees, trips, and fare data while gaining insights through

reports and dashboards.

### **Overview Table Format**

Stage	Touchpoints	<b>Customer Actions</b>	Experience	Pain Points	Opportunities for Improvement
Awareness	Trailhead, Internal IT Team, Salesforce onboarding	Gets introduced to Salesforce CRM	Curious but unsure	Overwhelmed with new platform	Provide in-app guided setup/tutorial videos
Considerati on	Setup Wizard, App Manager, Object Manager	Explores available features and navigates setup	Gaining confidence	Confused by object-relationship mapping	Offer quick-start checklist for transport use
Onboarding	Lightning App Builder, Tabs, Page Layouts	Creates tabs, custom objects (Trip, Bus, Employee)	Productive	Time-consuming to configure every tab	Provide template apps and layouts for bus CRM
Usage	Flows, Validation Rules, Reports, Dashboards	Automates fare fetch, manages trips and bus stations	Empowered, efficient	Flow errors or misconfigure d fields	Provide debug guide and test datasets
Monitoring	Reports, Dashboards	Views trip frequency, passenger count, route usage	Data-driven, insightful	Needs custom metrics	Allow dynamic dashboard filters and KPIs
Maintenanc e	Developer Console, Object Manager	Updates validation logic, manages employees	Confident admin	Complex for non-tech staff	Build a simplified admin panel UI
Support	Trailblazer Community, Salesforce Help, Internal IT	Seeks help during flow errors or trigger bugs	Supported but sometimes delayed	Not immediate answers	Add FAQ panel or AI chatbot to app
Feedback	Feedback form, Reporting issues to IT/Salesforce support	Shares issues like currency mismatch, lookup issues	Involved, invested	Hard to track resolved issues	Maintain internal feedback log dashboard

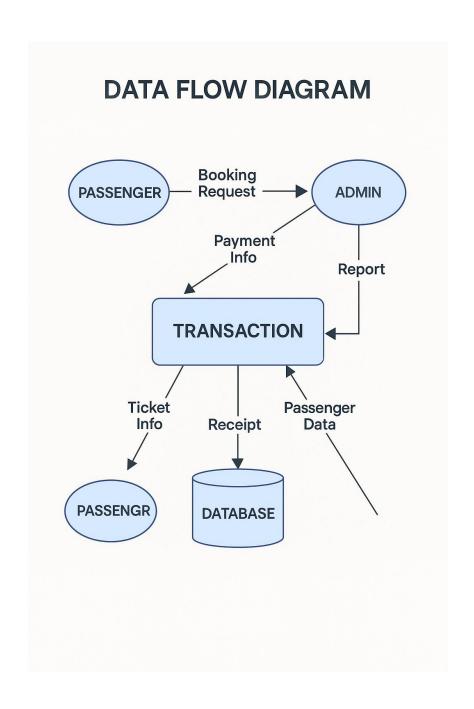
### **Admin Persona Snapshot**

- Role: Admin / Manager of Transport Operations
- Needs: Automation, accuracy, real-time reports
- Tech Skills: Medium (can use setup, flows, triggers with guidance)
- Pain Point: Needs to ensure drivers/conductors are correctly assigned, avoid manual fare entries

## **★** Suggested Salesforce Features Used in Each Stage:

Stage	<b>Key Salesforce Features</b>
Awareness	Trailhead, Onboarding emails
Onboarding	Object Manager, App Manager, Tab creation
Usage	Flows, Validation Rules, Lookup Fields, Reports
Monitoring	Dashboards, Scheduled Reports
Maintenance	Apex Triggers, Page Layout Editor
Support	Salesforce Help, Developer Console

## **Data Flow Diagram**



### **Solution Requirements**

### **Functional Requirements:**

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIn
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Trip and Fare Management	Add/View/Edit daily trips Assign bus to route Record fare collected per trip
FR-4	Employee Management	Add/view/edit employees (driver, conductor) Assign to trip/station Generate ID cards
FR-5	Complaint Handling	Submit complaint Track complaint status Resolve and notify
FR-6	Reporting and Dashboard	Revenue report Trip-wise summary Filter by bus, date, route

### **Solution Requirements**

### **Non-functional Requirements:**

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Interface should be intuitive and mobile-friendly for all user roles (Customer, Admin, CCE).
NFR-2	Security	All user data must be encrypted; role-based access control for admin/customer segregation.
NFR-3	Reliability	System should ensure 99.5% uptime and automatic error logging.
NFR-4	Performance	Load time must not exceed 2 seconds even under 1000 concurrent users.
NFR-5	Availability	Application should be available 24/7 with failover and backup support.
NFR-6	Scalability	Should be able to support new cities, buses, and user registrations without major architectural changes.

### Technology Stack for Public Transport CRM System

#### Frontend (UI/UX)

Salesforce Lightning Experience: responsive UI for admins, employees and customer care evecshe HTML, CSS [via Lightning Design System)

LWC (Lightning Web Components): Build.":ynancs

#### Backend / Logic

**Apex (Salesforce):** Server-side business logic, triggers, and validations

Salesforce Flows: Declarative autumatution (nocode) for processes like assignment, emasils

#### Database / Storage

Salesforce Objects: Salesforce all ICRVCM data

#### Authentication

Salesforce Login + OAuth: Role-base' login and third-party (Gmail, Linkedin) registration

#### **Reporting & Analytics**

Salesforce Reports & Dashboards: Real-timesights into trips, fares, complaints, and employee metrics

#### Integration (Optional)

**REST APIs** (Salesforce API). For connsterd apps (e.g. payment gateways or GPS tracking)

#### **DevOps & Deployment**

Salesforce Change Sets / Git + SFDX Version control, staging, aud deployment of changes

### **▼** Technology Stack for Public Transport CRM System

Layer	Technology / Tool	Purpose
Frontend (UI/UX)	Salesforce Lightning Experience	Responsive UI for admins, employees, and customer care executives
	HTML, CSS (via Lightning Design System)	Custom styling and component-based layout
	LWC (Lightning Web Components)	Build dynamic client-side apps within Salesforce
Backend / Logic	Apex (Salesforce)	Server-side business logic, triggers, and validations
	Salesforce Flows	Declarative automation (no-code) for processes like assignment, emails
Database / Storage	Salesforce Objects	Store all CRM data (employees, trips, buses, stations, tickets, users)
Authentication	Salesforce Login + OAuth	Role-based login and third-party (Gmail, LinkedIn) registration
Reporting & Analytics	Salesforce Reports & Dashboards	Real-time insights into trips, fares, complaints, and employee metrics
Integration (Optional)	REST APIs (Salesforce API)	To connect external apps (e.g., payment gateways or GPS tracking)
DevOps & Deployment	Salesforce Change Sets / Git + SFDX	Version control, staging, and deployment of changes
Security	Salesforce Shield (optional)	Platform encryption, audit trail, field-level security

# Problem-Solution Fit

## Problem

Public transport organizations face challenges in efficiently managing large volumes of operations, such as:

- Manual processes for handling bus schedules, fares, and ticketing.
- Lack of real-time insights into trip and employee performance.
- Poor customer experience due to delays and uncoordinated operations.
- Fragmented systems leading to duplicate data and inefficiencies.
- Difficulty in generating actionable reports for administrative decisions.

### **Solution**

Develop a Salesforce-based CRM application that streamlines transport operations by:

- Automating employee, bus, trip, and station management using Salesforce custom objects and flows.
- Enabling centralized fare and route tracking.
- Providing dashboards for real-time monitoring and reporting.
- Enhancing service delivery and responsiveness through automation and validation rules.
- Offering scalability and cloud access via Salesforce platform.

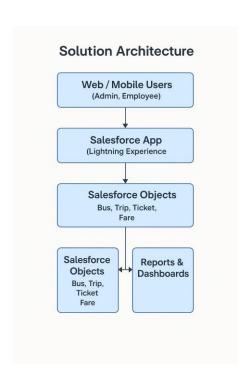
### Why It Works (Fit)

- **Ease of Use**: Salesforce's intuitive UI and customizable layouts reduce onboarding time for users.
- **Automation**: Minimizes human errors and saves time via triggers, flows, and process builders.
- **Data Visibility**: Dashboards and reports offer clear insights into performance and operations.
- **Scalability**: Salesforce scales with increased data and user volume without major infrastructure changes.
- Stakeholder Satisfaction: Admins, employees, and executives have tailored access to data and functionality.

### **Proposed Solution**

S.No.	Parameter	Description
1	Problem Statement (Problem to be solved)	Public transport systems often lack digital infrastructure for managing schedules, employee data, ticketing, and route analysis, leading to inefficiencies.
2	Idea / Solution description	A cloud-based CRM platform built on Salesforce to digitize operations of public transport departments—managing buses, employees, trips, and fare systems.
3	Novelty / Uniqueness	First-of-its-kind CRM tailored to public transport combining real-time data, automation (via flows/triggers), dashboards, and stakeholder access.
4	Social Impact / Customer Satisfaction	Improves commuter experience with better schedule reliability, enhances transparency, and reduces manual errors in management.
5	Business Model (Revenue Model)	Freemium model for government bodies; paid version includes advanced analytics, support, and customization; SaaS subscription-based.
6	Scalability of the Solution	Can be deployed across different cities and transport modes (bus, metro, ferry) with multilingual support and modular add-ons.

#### **Solution Architecture**



### 1. Core Components

Layer	Description
Presentation Layer	Web and Mobile Interfaces (for Admin, Employees, Passengers)
Application Layer	Salesforce Cloud Services (Salesforce Platform, Flows, Apex, LWC, Validation Rules)
Data Layer	Salesforce Objects: Bus, Trip, Ticket, Employee, Station, Fare, Reports

#### 2. Component Flow

#### 1. User Interface (UI)

- Admin Dashboard (Web)
- Employee View (Web/Mobile)
- Passenger Access (Limited info via community portal/mobile app)

#### 2. Salesforce CRM Core

- Custom Objects:
  - Bus, Trip, Ticket, Station, Employee, Fare
- o Automation:
  - Flows for schedule updates & notifications
  - Apex Triggers for complex logic
  - Validation Rules to ensure data integrity

#### 3. Data Storage

Salesforce Cloud Database (relational model using custom objects and lookups)

#### 4. Reports & Dashboards

° Real-time KPIs: Route efficiency, Ticket sales, Staff performance, Trip occupancy

### 5. External Integration (Optional/Future)

• API integrations with Google Maps, payment gateways, or GPS tracking tools

# Project Planning Phase Report

Project Title: A CRM Application for Public Transport Management System

Team Members: Mokshagna Ram, Punarvi

## **V** Product Backlog, Sprint Schedule, and Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Member(s)
Sprint-1	Object Creation	-USN 1	As a developer, I can create custom objects (Bus Station, Bus, Trip, Ticket Fare, Employee) to store transport data.	3	High	Mokshagna, Punarvi
Sprint-1	Tab Creation	-USN 2	As a developer, I can create tabs for each custom object to enable easy access.	1	High	Mokshagna
Sprint-1	App Setup	-USN 3	As a user, I can access all transport objects from a centralized Lightning App.	2	Medium	Punarvi
Sprint-2	Page Layout and Fields	-USN 4	As a user, I can view and input detailed transport data in properly structured fields.	3	High	Mokshagna, Punarvi
Sprint-2	Validatio n Rules	-USN 5	As a system, I validate correct data for roles, age, and retirement.	2	Medium	Punarvi
Sprint-3	Flows & Automation	-USN 6	As a system, I auto-fetch ticket fare based on route and model using flows.	3	High	Mokshagna
Sprint-3	Apex Trigger	-USN 7	As a system, I validate driver and conductor roles using Apex Trigger.	3	High	Mokshagna
Sprint-4	Reporting & Dashboard	-USN 8	As a manager, I can view passenger count and revenue in reports and dashboards.	3	High	Punarvi



## Project Tracker, Velocity & Burndown Chart

Sprint	Total Story Points	Durati on	Sprint Start Date	Sprint End Date	Story Points Completed	Sprint Release Date
Sprint-1	6	4 Days	15 June 2025	18 June 2025	6	18 June 2025
Sprint-2	5	3 Days	19 June 2025	21 June 2025	5	21 June 2025
Sprint-3	6	3 Days	22 June 2025	24 June 2025	6	24 June 2025
Sprint-4	3	3 Days	25 June 2025	27 June 2025	3	27 June 2025

## **Welocity Calculation**

**Total Story Points: 20** 

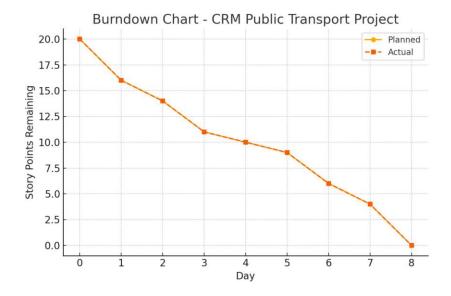
**Total Days: 13** 

Average Velocity: 20 / 13  $\approx$  1.54 story points/day



## **Burndown Chart Overview**

Day	Planned Story Points Remaining	Actual Story Points Remaining
Day 0	20	20
Day 1	16	16
Day 2	14	14
Day 3	11	11
Day 4	10	10
Day 5	9	9
Day 6	6	6
Day 7	4	4
Day 8	0	0



## **Performance Testing Document**

Project Title: CRM Application for Public Transport Management System

Team Members: Mokshagna Ram, Punarvi Tool Used: Salesforce Developer Org

**Testing Type:** Manual + Declarative-based Performance Observation



### 🚺 1. Objective

To test the performance of the Salesforce-based Public Transport CRM application under different operations such as record creation, updates, report generation, and flow execution, and ensure that the system handles load without delays or data inconsistency.



### **2. Performance Metrics Considered**

Metric	Description		
Record Processing Time	Time taken to create/update records in custom objects like Trip, Employee		
Flow Execution Time	Time taken for Flows to trigger and return results		
Trigger Validation	Whether Apex triggers fire correctly and instantly on updates		
Report & Dashboard Load Time	Time taken to generate reports and dashboards		
Field Auto-Calculations	Performance of formula fields like Age, Total Amount		

### **Test Cases (Low Record Volume)**

Test Case	Description	Action Taken	Observation	Resu lt
TC-01	Create a new Trip with Driver and Conductor IDs	Created 1 record with valid lookups	Record saved instantly	Pass
TC-02	Flow to auto-fetch Ticket Fare	Triggered flow by selecting Route Name	Fare updated correctly	Pass
TC-03	Trigger Validation (Wrong Role)	Assigned 'Cleaner' as Driver	Error shown on Save	Pass
TC-04	View Dashboard (Total Trips or Employees)	Opened sample dashboard	Loaded within 2 seconds	Pass
TC-05	Create a Report (e.g., Revenue by Route)	Generated report with 2-3 records	Loaded smoothly	Pass
TC-06	View Formula Fields (Age, Total Fare)	Edited 1 Employee/Trip record	Field recalculated instantly	Pass

