

# Garbage Management System Using Salesforce

## Phase 1: Ideation Phase

### 1.1 Introduction

Urbanization, population growth, and industrial development have drastically increased the generation of municipal solid waste. According to global studies, cities produce millions of tons of waste annually, with improper disposal leading to environmental, social, and economic challenges. Traditional waste management practices are largely reactive, manual, and fragmented, resulting in overflowing bins, inefficient waste collection routes, and delays in addressing citizen complaints.

The Garbage Management System using Salesforce aims to modernize waste management through automation, real-time monitoring, data-driven decision-making, and citizen engagement. Salesforce, with its cloud-based ecosystem and powerful automation tools, provides a robust platform to transform waste management from reactive to proactive management.

### 1.2 Problem Statement

The existing challenges in municipal waste management include:

1. **Manual Operations:** Garbage collection is often scheduled without real-time data, causing delays or skipped locations.
2. **Inefficient Routing:** Collection trucks follow fixed routes regardless of bin status, increasing fuel consumption and labor costs.
3. **Overflowing Bins:** Lack of monitoring leads to hygiene issues, unpleasant odors, and public dissatisfaction.
4. **Poor Citizen Engagement:** Citizens have limited options to report overflowing bins, illegal dumping, or missed collections.
5. **Limited Data Analysis:** Authorities cannot efficiently analyze trends, optimize resources, or generate sustainability reports.

## 1.3 Objectives of the System

The primary objectives of the Garbage Management System are:

### 1. Automated Monitoring:

- Deploy IoT-enabled sensors or digital reporting to monitor bin fullness in real-time.
- Enable predictive analytics to schedule pickups before bins overflow.

### 2. Optimized Scheduling and Routing:

- Automate garbage truck routes using Salesforce Field Service based on priority and location.
- Reduce operational costs and carbon emissions through intelligent route planning.

### 3. Citizen Engagement and Reporting:

- Provide a user-friendly portal or mobile app for citizens to report waste-related issues.
- Ensure transparent feedback loops and progress tracking for complaints.

### 4. Data-driven Decision Making:

- Generate dashboards and reports for municipal authorities to track waste patterns, efficiency, and recycling statistics.
- Support policy-making and resource allocation using analytics insights.

### 5. Sustainability and Environmental Awareness:

- Track recycling rates and waste segregation efforts.
- Promote green initiatives and awareness campaigns via digital channels.

## 1.4 Stakeholders and Their Roles

A successful implementation requires identifying and involving key stakeholders:

| Stakeholder                               | Role in System   |
|---|--|
| City Authorities / Municipal Corporations | Oversee waste management operations, analyze performance, plan policies.             |
| Garbage Collection Teams                  | Execute collection schedules, update bin statuses, and report issues in real-time.   |
| Citizens                                  | Report overflowing bins, illegal dumping, and participate in recycling programs.     |
| Environmental Agencies                    | Monitor sustainability metrics and ensure compliance with environmental regulations. |
| IT/Technical Team                         | Configure Salesforce, integrate IoT devices, and maintain system performance.        |

## 1.5 Proposed Salesforce Solution

Salesforce offers multiple clouds and tools to build a robust garbage management system:

### 1. Salesforce Service Cloud:

- Manage citizen complaints and service requests efficiently.
- Automatically assign tickets to relevant teams based on priority and location.

### 2. Salesforce Field Service:

- Optimize garbage truck routes and schedules.
- Enable mobile access for field workers to update bin collection status.

### 3. Salesforce Experience Cloud:

- Create a citizen portal for complaint registration, feedback, and status tracking.
- Share educational content about waste segregation and recycling.

### 4. Salesforce Automation Tools (Flows, Process Builder):

- Automate notifications to teams when bins are full.
- Trigger escalations for unaddressed complaints.

### 5. Reports & Dashboards:

- Track KPIs such as collection efficiency, bin occupancy trends, citizen satisfaction, and recycling metrics.
- Provide actionable insights to authorities for resource allocation.

### 6. Integration with IoT Devices:

- Connect bin sensors to Salesforce to get real-time data on fill levels.
- Enable predictive maintenance and proactive collection planning.

## 1.6 System Benefits

Implementing a Salesforce-based Garbage Management System will yield multiple benefits:

- **Operational Efficiency:** Reduced manual monitoring and optimized collection routes save time and cost.
- **Transparency and Accountability:** Citizens and authorities can track complaints and progress in real-time.
- **Environmental Impact:** Reduced carbon emissions due to optimized routing; improved recycling rates.
- **Data-Driven Insights:** Authorities can make informed decisions using dashboards and analytics.
- **Scalability:** The system can expand to multiple regions or integrate additional smart city services.

## 1.7 Ideation Summary

The ideation phase defines the vision, objectives, stakeholders, and solution architecture for a Salesforce-based Garbage Management System. By leveraging Salesforce's cloud ecosystem, automation tools, and real-time analytics, the system ensures:

- Proactive waste management
- Enhanced citizen participation
- Optimized field operations
- Transparent reporting and monitoring

The next phase would involve requirement gathering, where detailed Salesforce objects, fields, automation flows, and dashboards will be designed to implement this vision effectively.