

# Dynamic Route Optimization for Last-Mile Delivery in Salesforce CRM

## Problem Statement

In TCS's Last-Mile operations, current route planning methods are insufficiently adaptive and often static. They fail to account for real-world conditions such as traffic fluctuations, road closures, delivery time windows, vehicle constraints, and customer availability. This leads to sub-optimal routes, increased fuel/time costs, frequent delays, missed or failed deliveries, and poor visibility into deviations. The lack of dynamic response to real-time disruptions reduces operational efficiency, degrades customer satisfaction, and limits scalability.

## Phase 1: Problem Understanding & Industry Analysis

**Goal:** Understand what we're building and why for Last Mile CRM.

### 1. Requirement Gathering

To develop a dynamic and adaptive route optimization system within Salesforce CRM, a detailed requirement study was conducted across multiple operational levels. The goal was to capture both functional and non-functional requirements that would drive intelligent routing decisions.

- Predict delivery ETAs with high accuracy using live traffic and GPS data.
- Plan and reoptimize routes dynamically based on real-time conditions.
- Assign deliveries intelligently to agents considering constraints like shift times, capacity, and location.
- Provide real-time tracking and status visibility for all stakeholders.
- Alert system for delays, deviations, or high-risk deliveries.
- Digital proof of delivery with photo/signature capture.
- Seamless integration with Salesforce modules, mapping APIs, and logistics systems.

### 2. Stakeholder Analysis

Each stakeholder plays a unique role in ensuring successful last-mile delivery. The system's design must address their distinct requirements and expectations.

- **Operations / Logistics Manager:** Seeks visibility on performance KPIs, operational costs, and delivery efficiency.
- **Dispatch / Routing Team:** Requires dashboards to plan, monitor, and modify routes dynamically when disruptions occur.
- **Field Agents / Drivers:** Need mobile interfaces for navigation, delivery confirmation, and status updates.
- **Customer Support:** Relies on accurate, real-time delivery status to resolve customer queries efficiently.
- **Customers:** Expect timely updates, accurate ETAs, and smooth delivery experiences.
- **Salesforce Admin / IT Team:** Ensures secure system setup, scalability, and integration with Salesforce ecosystems.

### 3. Business Process Mapping

The proposed process leverages Salesforce CRM to automate and optimize delivery workflows:

**Flow:** Order received → System predicts ETA & suggests optimal route → Dispatch assigns to

agent → Agent starts journey → Real-time tracking updates CRM → Route deviations trigger alerts → Delivery completed → Feedback recorded → Data stored for continuous improvement.

**Exception Management:** In case of delays, system recalculates routes, reassigns deliveries if needed, and sends automated notifications to customers.

#### 4. Industry-Specific Use Case Analysis

In logistics, real-world conditions are unpredictable. Systems must adapt dynamically to maintain efficiency and reliability. This section outlines key challenges specific to the last-mile delivery sector.

- High traffic density in urban areas significantly affects delivery times.
- Frequent changes in customer availability require dynamic re-routing.
- Vehicle limitations (capacity, fuel range) influence delivery sequence planning.
- External factors like weather or road closures often disrupt delivery schedules.
- Customer satisfaction heavily depends on real-time updates and transparency.

#### 5. App / Solution Landscape

An evaluation of Salesforce AppExchange solutions and third-party integrations was conducted to assess capabilities for dynamic route planning and optimization.

- **Existing Solutions:** Tools like Routific, Onfleet, and Locus provide strong optimization but lack deep Salesforce integration.
- **Gap Identified:** Most solutions offer static routing and limited real-time re-optimization features.
- **Decision:** Build custom Salesforce components using Apex, Flow, and Einstein AI to support dynamic routing, predictive ETA modeling, and automated alerts.

#### 6. Conclusion

The Phase 1 analysis of Dynamic Route Optimization for Last-Mile Delivery in Salesforce CRM establishes a solid foundation for the project. By understanding stakeholder needs, mapping operational workflows, and analyzing industry use cases, this phase highlights the potential of combining AI-driven analytics with Salesforce CRM capabilities. The proposed system aims to deliver measurable business value — reducing delivery time by up to 20%, lowering fuel costs, and enhancing customer satisfaction through real-time visibility and proactive communication. Future phases will focus on technical architecture, data modeling, and the development of optimization algorithms using Salesforce Einstein and third-party mapping APIs.