Intelligent Last Mile Delivery Orchestration System

# Phase 3: Data Modeling & Relationships

## Standard & Custom Objects

The data model for the Intelligent Last Mile Delivery Orchestration System combines standard Salesforce objects with newly created custom objects to support delivery operations, routing, and customer communication.

**Standard Objects:**

- Account: Represents the business customers or clients associated with deliveries.  
- Contact: Represents individual customers receiving deliveries.  
- User: Represents delivery agents, managers, and customer service staff.

**Custom Objects:**

- Delivery\_\_c: Tracks each delivery record with status, scheduling, and completion details.  
- Route\_\_c: Holds optimized route details for delivery assignments.  
- Delivery\_Exception\_\_c: Captures failed or delayed deliveries and rescheduling information.  
- Notifications\_\_c: Stores automated communication alerts sent to customers.

## Fields & Relationships

Custom fields capture the logistics data required to manage deliveries, while relationships link the objects together.

**Relationships:**

- Delivery\_\_c → Lookup to Account (Customer placing the delivery).  
- Delivery\_\_c → Lookup to User (Assigned Delivery Agent).  
- Route\_\_c → Master-Detail with Delivery\_\_c (one route may cover multiple deliveries).  
- Delivery\_Exception\_\_c → Lookup to Delivery\_\_c (each exception tied to a specific delivery).  
- Notifications\_\_c → Lookup to Delivery\_\_c (notifications linked to delivery record).

**Custom Fields:**

On Delivery\_\_c:  
- Delivery\_Number\_\_c (Auto Number)  
- Delivery\_Status\_\_c (Picklist: Scheduled, In Transit, Delivered, Failed)  
- Scheduled\_Time\_\_c (Date/Time)  
- Actual\_Delivery\_Time\_\_c (Date/Time)  
- Customer\_\_c (Lookup to Account)  
- Assigned\_Agent\_\_c (Lookup to User)  
  
On Route\_\_c:  
- Route\_Name\_\_c (Text)  
- Optimized\_Path\_\_c (Long Text)  
- Total\_Distance\_\_c (Number)  
- Estimated\_Time\_\_c (Number)  
  
On Delivery\_Exception\_\_c:  
- Exception\_Type\_\_c (Picklist: Delay, Customer Not Available, Traffic, Weather)  
- Exception\_Details\_\_c (Text Area)  
- Rescheduled\_Time\_\_c (Date/Time)  
  
On Notifications\_\_c:  
- Notification\_Type\_\_c (Picklist: SMS, Email, In-App)  
- Message\_Content\_\_c (Text Area)  
- Sent\_Time\_\_c (Date/Time)

## User Interface & Layouts

Page Layouts: Custom layouts were created for Delivery, Route, Exception, and Notifications to display relevant fields and related lists clearly for different roles (Agents, Managers, Service Staff).  
  
Compact Layouts: Configured for Delivery\_\_c to show Delivery Number, Status, and Scheduled Time in highlights panel. Other compact layouts created for Route\_\_c and Delivery\_Exception\_\_c.  
  
Record Types: Not required in the initial phase but can be added later to distinguish different delivery types (e.g., Standard Delivery, Express Delivery).

## Data Architecture

Schema Builder: Used to visualize all objects and their relationships, showing Account and User at the center with custom objects linked for deliveries, routes, and notifications.  
  
Junction Objects: Not required for the current design. However, if a Delivery\_\_c could belong to multiple routes, a junction object such as Delivery\_Route\_Assignment\_\_c would be created with master-detail relationships to both Delivery\_\_c and Route\_\_c.