Phase 3: Data Modeling & Relationships

Introduction

At the heart of any CRM lies its data model—the blueprint that defines how different entities interact with each other. For AutoFlow CRM, Phase 3 focused on designing a robust, flexible, and logical data model capable of handling the complex ecosystem of buyers, dealerships, vehicles, and orders.

The primary objective was to ensure that all important business entities were represented as Salesforce objects, with meaningful relationships between them. A strong data model not only guarantees data integrity but also enables automation, reporting, and integrations to work seamlessly.

Key Objects in AutoFlow CRM

To represent real-world entities, several custom objects were created along with standard Salesforce objects. The most critical ones included:

1. **Buyers**
    - **Captures customer information (name, contact details, preferences, and location).**
    - **Stores history of interactions such as test drives, bookings, and past purchases.**
2. **Dealerships**
    - **Stores details about dealer partners, their branches, addresses, and contact staff.**
    - **Maintains operating hours and assigned inventory.**
3. **Orders**
    - **Represents booking requests, test drives, and confirmed purchases.**
    - **Tracks the order lifecycle: Requested → Booked → Confirmed → Delivered.**
4. **Vehicles**
    - **Holds details of available models, variants, colors, and current stock levels.**
    - **Linked with dealership inventory for real-time availability.**

Relationships Between Objects

To reflect real-world workflows, relationships were carefully designed using Salesforce's lookup and master-detail features:

1. **Buyer ↔ Order**
    - **One buyer can place multiple orders.**
    - **A master-detail relationship ensured that if a buyer record was deleted, associated orders were also removed to maintain data integrity.**

2. **Dealership ↔ Vehicle**
    - **A junction object was introduced to manage many-to-many relationships.**
    - **This allowed a single dealership to stock multiple vehicles, and the same vehicle model to exist across different dealerships.**
3. **Order ↔ Dealership**
    - **Lookup relationship used so each order could be linked to the dealership fulfilling it.**
4. **Technicians ↔ Test Drives**
    - **Lookup relationships assigned test drive slots to available technicians, ensuring accountability and proper scheduling.**

This relational setup ensured that the system could track customer interactions from start to finish, while maintaining accurate dealership and inventory data.

Data Integrity & Validation

To prevent errors and maintain consistency:

- **Validation Rules: Restricted duplicate orders or bookings without stock.**
- **Required Fields: Key fields like buyer contact number, dealership location, and vehicle model were mandatory.**
- **Unique Constraints: Prevented duplicate vehicle entries across dealerships.**

Such rules ensured clean, reliable, and trustworthy data for decision-making.

Challenges in Data Modeling

Designing the data model was not without difficulties:

- **Balancing Complexity: The automotive industry has multiple touchpoints (dealers, buyers, technicians). Designing too many objects could overcomplicate the system, while too few could limit flexibility.**
- **Many-to-Many Relationships: Vehicle–dealership assignment required a custom junction object, adding complexity.**
- **Scalability: The model had to be future-proof to accommodate new dealerships, new vehicle types, and advanced features like IoT integrations.**

The team resolved these by iteratively testing relationships and validating scenarios against real dealership workflows before finalizing the structure.