

# Phase 3: Data Modeling & Relationships

This phase defines how **data is structured and connected** in the Smart Vehicle CRM project. It covers **custom objects, fields, relationships, page layouts, and schema builder visualization**.

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## 1. Standard & Custom Objects

We used both **standard objects** (User, Contact) and **custom objects** created specifically for vehicle service management.

### Standard Objects Used

- **User** → Used for Created By, Last Modified By, Owner relationships.
- **Contact** → Represents customers linked to vehicles and service requests.
- **Group** → Owners can also be public groups for better sharing.

### Custom Objects Created:

- **Vehicle\_\_c** → Stores customer vehicle details.
  - **Service\_Request\_\_c** → Tracks service bookings and status.
  - **Technician\_\_c** → Holds technician details.
  - **Parts\_Inventory\_\_c** → Manages spare parts & stock.
  - **Service\_Parts\_Used\_\_c** → Junction object between Service Request & Parts.
  - **Invoice\_\_c** → Handles billing and payments.
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## 2. Fields per Object

### Service\_Request\_\_c

Field Label	API Name	Data Type	Description
Service Request Name	Name	Auto Number	Unique identifier for request
Customer	Customer__c	Lookup(Contact)	Links request to customer
Vehicle	Vehicle__c	Lookup(Vehicle__c)	Vehicle being serviced
Technician	Technician__c	Lookup(Technician__c)	Assigned technician
Priority	Priority__c	Picklist	Service urgency
Service Date	Service_Date__c	Date	Scheduled service date

Status	Status__c	Picklist	Request progress
Field Label	API Name	Data Type	Description
Type	Type__c	Picklist	Type of service (Repair/Maintenance)
Owner	OwnerId	Lookup(User,Group)	Record ownership
Created By	CreatedById	Lookup(User)	Audit field
Last Modified By	LastModifiedById	Lookup(User)	Audit field

### Service\_Parts\_Used\_\_c (Junction Object)

Field Label	API Name	Data Type	Description
Service Parts Used Name	Name	Auto Number	Unique identifier
Service Request	Service_Request__c	Master-Detail(Service_Request__c)	Links to service request
Part	Part__c	Master-Detail(Parts_Inventory__c)	Part consumed
Quantity Used	Quantity_Used__c	Number(18,0)	Number of units used
Created By	CreatedById	Lookup(User)	Audit field
Last Modified By	LastModifiedById	Lookup(User)	Audit field

### Vehicle\_\_c

Field Label	API Name	Data Type	Description
VIN	Name	Text(80)	Vehicle unique ID
Customer	Customer__c	Lookup(Contact)	Vehicle owner
Make	Make__c	Text(20)	Manufacturer
Model	Model__c	Text(20)	Model name
Year	Year__c	Number(18,0)	Manufacturing year
Last Service Date	Last_Service_Date__c	Date	Previous service date
Owner	OwnerId	Lookup(User,Group)	Record ownership
Created By	CreatedById	Lookup(User)	Audit field
Last Modified By	LastModifiedById	Lookup(User)	Audit field

### Technician\_\_c

Field Label	API Name	Data Type	Description
Technician Name	Name	Text(80)	Technician's name
User	User__c	Lookup(User)	Linked Salesforce user
Skills	Skills__c	Text Area(255)	Technician skills
Availability	Availability__c	Picklist	Available/Busy/On Leave
Owner	OwnerId	Lookup(User,Group)	Record ownership
Created By	CreatedById	Lookup(User)	Audit field
Last Modified By	LastModifiedById	Lookup(User)	Audit field

### Invoice\_\_c

Field Label	API Name	Data Type	Description
Invoice Name	Name	Auto Number	Unique invoice identifier
Service Request	Service_Request__c	Lookup(Service_Request__c)	Linked request
Amount	Amount__c	Currency(18,0)	Total amount
Status	Status__c	Picklist	Draft / Approved / Paid
Owner	OwnerId	Lookup(User,Group)	Record ownership
Created By	CreatedById	Lookup(User)	Audit field
Last Modified By	LastModifiedById	Lookup(User)	Audit field

### Parts\_Inventory\_\_c

Field Label	API Name	Data Type	Description
Part Number	Name	Text(80)	Unique part identifier
Name	Name__c	Text(20)	Part name
Cost	Cost__c	Currency(18,0)	Cost of the part
Stock	Stock__c	Number(18,0)	Available stock quantity
Reorder Level	Reorder_Level__c	Number(18,0)	Minimum stock before reordering
Owner	OwnerId	Lookup(User,Group)	Record ownership
Created By	CreatedById	Lookup(User)	Audit field
Last Modified By	LastModifiedById	Lookup(User)	Audit field



### Service Parts Used

Details	<b>Fields &amp; Relationships</b> 6 Items, Sorted by Field Label		Q. Quick Find	New	Deleted Fields	Field Dependencies	Set History Tracking
<b>Fields &amp; Relationships</b>	<b>FIELD LABEL</b>	<b>FIELD NAME</b>	<b>DATA TYPE</b>	<b>CONTROLLING FIELD</b>	<b>INDEXED</b>		
Page Layouts	Created By	CreatedById	Lookup(User)				
Lightning Record Pages	Last Modified By	LastModifiedById	Lookup(User)				
Buttons, Links, and Actions	Part	Part__c	Master-Detail(Parts Inventory)		✓		▼
Compact Layouts	Quantity Used	Quantity_Used__c	Number(18, 0)				▼
Field Sets							
Object Limits	Service Parts Used Name	Name	Auto Number		✓		▼
Record Types	Service Request	Service_Request__c	Master-Detail(Service Request)		✓		▼
Related Lookup Filters							
Restriction Rules							
Scoping Rules							
Object Access							
Triggers							
Flow Triggers							
Validation Rules							



## Invoice

Details	<strong>Fields &amp; Relationships</strong> 7 Items, Sorted by Field Label		<input type="text" value="Q. Quick Find"/>	<a href="#">New</a>	<a href="#">Deleted Fields</a>	<a href="#">Field Dependencies</a>	<a href="#">Set History Tracking</a>
<strong>Fields &amp; Relationships</strong>	<strong>FIELD LABEL</strong>	<strong>FIELD NAME</strong>	<strong>DATA TYPE</strong>	<strong>CONTROLLING FIELD</strong>	<strong>INDEXED</strong>		
Page Layouts	Amount	Amount__c	Currency(18, 0)				▼
Lightning Record Pages	Created By	CreatedById	Lookup(User)				
Buttons, Links, and Actions	Invoice Name	Name	Auto Number		✓		▼
Compact Layouts	Last Modified By	LastModifiedById	Lookup(User)				
Field Sets	Owner	OwnerId	Lookup(User,Group)		✓		
Object Limits	Service Request	Service_Request__c	Lookup(Service Request)		✓		▼
Record Types	Status	Status__c	Picklist				▼
Related Lookup Filters							
Restriction Rules							
Scoping Rules							
Object Access							
Triggers							
Flow Triggers							
Validation Rules							



Search Setup



Setup Home Object Manager

SETUP > OBJECT MANAGER  
Technician

Details

Fields & Relationships  
7 Items, Sorted by Field Label

Quick Find

New

Deleted Fields

Field Dependencies

Set History Tracking

Fields & Relationships

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Availability	Availability__c	Picklist		
Created By	CreatedById	Lookup(User)		
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User,Group)		✓
Skills	Skills__c	Text Area(255)		
Technician Name	Name	Text(80)		✓
User	User__c	Lookup(User)		✓



Search Setup



Setup Home Object Manager

SETUP > OBJECT MANAGER  
Vehicle

Details

Fields & Relationships  
9 Items, Sorted by Field Label

Quick Find

New

Deleted Fields

Field Dependencies

Set History Tracking

Fields & Relationships

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Created By	CreatedById	Lookup(User)		
Customer	Customer__c	Lookup(Contact)		✓
Last Modified By	LastModifiedById	Lookup(User)		
Last Service Date	Last_Service_Date__c	Date		
Make	Make__c	Text(20)		
Model	Model__c	Text(20)		
Owner	OwnerId	Lookup(User,Group)		✓
VIN	Name	Text(80)		✓
Year	Year__c	Number(18, 0)		

Setup Home Object Manager

Search Setup

Setup > OBJECT MANAGER

### Parts Inventory

Details

**Fields & Relationships**  
8 Items, Sorted by Field Label

Quick Find New Deleted Fields Field Dependencies Set History Tracking

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Cost	Cost__c	Currency(18, 0)		
Created By	CreatedById	Lookup(User)		
Last Modified By	LastModifiedById	Lookup(User)		
Name	Name__c	Text(20)		
Owner	OwnerId	Lookup(User,Group)		✓
Part Number	Name	Text(80)		✓
Reorder Level	Reorder_Level__c	Number(18, 0)		
Stock	Stock__c	Number(18, 0)		

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Restriction Rules

Scoping Rules

Object Access

Triggers

Flow Triggers

Validation Rules

Setup Home Object Manager

Search Setup

Setup > OBJECT MANAGER

### Service Request

Details

**Fields & Relationships**  
11 Items, Sorted by Field Label

Quick Find New Deleted Fields Field Dependencies Set History Tracking

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Created By	CreatedById	Lookup(User)		
Customer	Customer__c	Lookup(Contact)		✓
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User,Group)		✓
Priority	Priority__c	Picklist		
Service Date	Service_Date__c	Date		
Service Request Name	Name	Auto Number		✓
Status	Status__c	Picklist		
Technician	Technician__c	Lookup(Technician)		✓
Type	Type__c	Picklist		
Vehicle	Vehicle__c	Lookup(Vehicle)		✓

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Restriction Rules

Scoping Rules

Object Access

Triggers

Flow Triggers

Validation Rules

### 3. Record Types

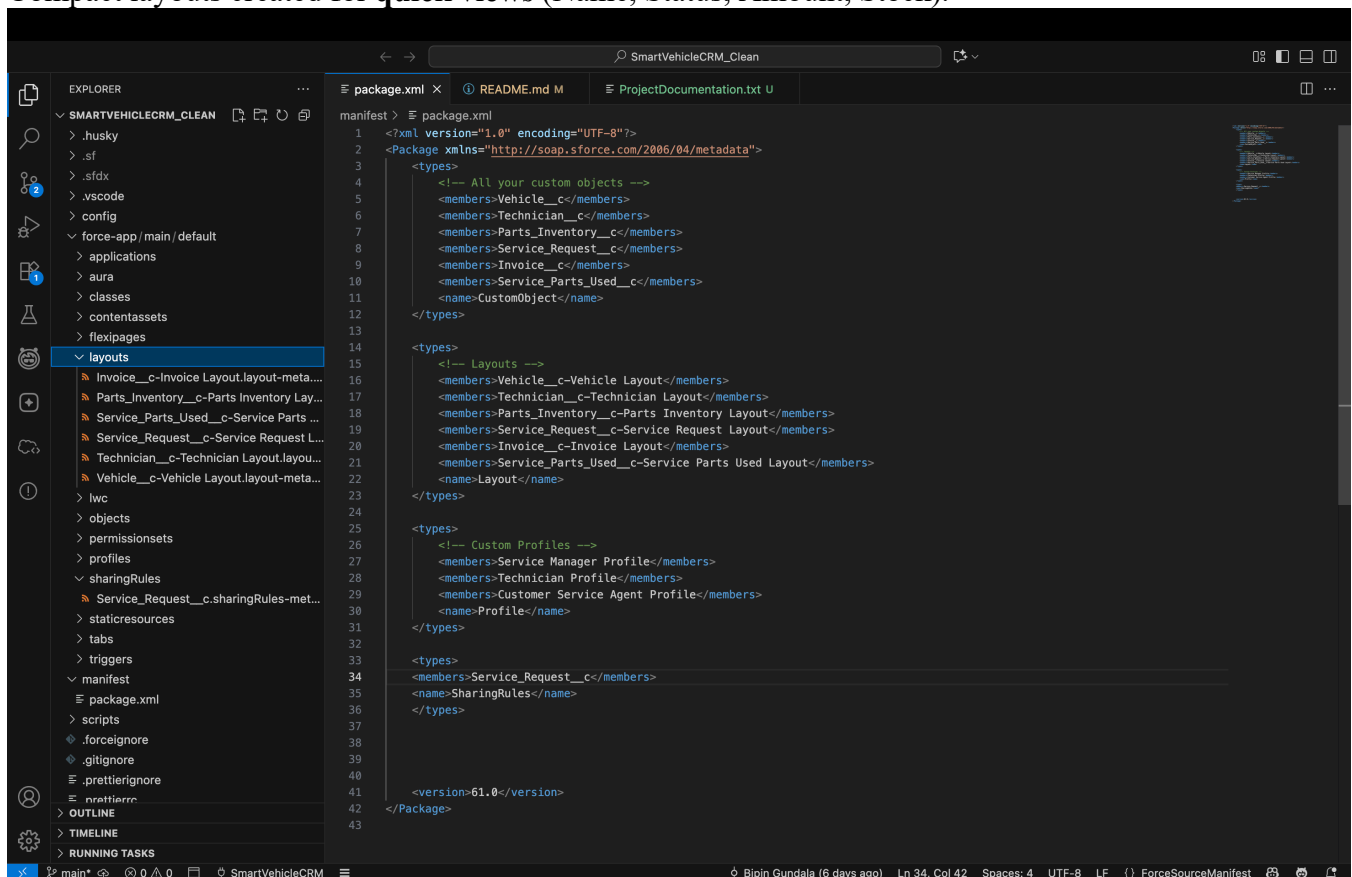
- **Service Request** → (Repair, Maintenance, Inspection).

- **Invoice** → (Proforma, Final).

## 4. Page Layouts & Compact Layouts

- **Service Request Layout:** Customer, Vehicle, Technician, Status, Priority.
- **Vehicle Layout:** VIN, Make, Model, Last Service Date.
- **Technician Layout:** Name, Skills, Availability.
- **Invoice Layout:** Service Request, Amount, Status.
- **Parts Inventory Layout:** Part Number, Cost, Stock, Reorder Level.

Compact layouts created for **quick views** (Name, Status, Amount, Stock).



## 5. Relationships

- **Vehicle\_\_c** → **Contact** = Lookup (each vehicle belongs to a customer).
- **Service\_Request\_\_c** → **Vehicle\_\_c** = Lookup (each service request belongs to a vehicle).
- **Service\_Request\_\_c** → **Technician\_\_c** = Lookup (assigned technician).
- **Service\_Parts\_Used\_\_c** → **Service\_Request\_\_c** & **Parts\_Inventory\_\_c** = **Master-Detail (Junction Object)**.
- **Invoice\_\_c** → **Service\_Request\_\_c** = Lookup (invoice generated for a request).

## 6. Junctional Objects

In **Smart Vehicle CRM**, we created the junction object:

### Service\_Parts\_Used\_\_c

- **Purpose:** To track which parts were used in which service request.
  - This enables a **many-to-many relationship** between:
    - **Service\_Request\_\_c** (service activity on a vehicle)
    - **Parts\_Inventory\_\_c** (spare parts available in stock)
  - A **Service Request** can have **multiple parts used**.
  - A **Part** can be used in **multiple service requests**.
- The **junction object (Service\_Parts\_Used\_\_c)** allows us to store this many-to-many mapping. **Example Scenario**
    1. Service Request **SR-001** (Brake Service) used:
      - Brake Pad (2 units)
      - Engine Oil (1 unit)
    2. Service Request **SR-002** (Full Service) used:
      - Brake Pad (1 unit)
      - Air Filter (1 unit)

Here, **Brake Pad** is linked to both **SR-001** and **SR-002**, which is only possible because of the **junction object**.

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## 7. Schema Builder Representation

- Central object = **Service\_Request\_\_c**.
- Connected to **Vehicle\_\_c** (Lookup), **Technician\_\_c** (Lookup), **Invoice\_\_c** (Lookup).
- **Service\_Parts\_Used\_\_c** acts as a **junction object** between Service Request and Parts Inventory.
- All objects ultimately link back to **Contact (Customer)** for CRM context.



