Project Design Phase-II

Data Flow Diagram & User Stories

Date	01 February 2026
Team ID	LTVIP2026TMIDS34838
Project Name	EV Charge and Range Visualization Platform
Maximum Marks	4 Marks

Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. It shows how data enters and leaves the system, what changes the information, and where data is stored.

Level 0 - Context Diagram

The context diagram shows the EV Range Visualization Platform as a single process interacting with EV Drivers, Vehicle Telematics Systems, Charging Networks, Weather Services, and Map Providers. Data flows include real-time vehicle telemetry, range calculation requests, and visualization outputs.

Level 1 - System Processes

- Process 1.0: User Authentication - Validates user credentials and manages session tokens
- Process 2.0: Vehicle Data Ingestion - Collects real-time telemetry (battery level, speed, location, temperature)
- Process 3.0: Range Calculation Engine - Computes predicted range using ML models and factor weighting
- Process 4.0: Visualization Generator - Creates range circles, route overlays, and dashboard components
- Process 5.0: Route Optimizer - Plans EV-optimized routes with charging stop recommendations

Data Stores

D1: User Profile Database - User preferences, vehicle details, saved routes

D2: Vehicle Telemetry Store - Real-time and historical vehicle data (Time-series DB)

D3: Charging Station Database - Station locations, availability, connector types

D4: Range Model Cache - Pre-computed range factors and ML model outputs

D5: Analytics Store - Historical range data, efficiency metrics, battery health records

External Entities

E1: EV Driver - End users viewing range predictions and planning routes

E2: Vehicle Telematics API - OEM systems providing real-time vehicle data

E3: Charging Network API - Third-party charging station data providers

E4: Weather Service API - Real-time and forecasted weather conditions

E5: Maps & Elevation API - Route data, traffic, and elevation profiles

User Stories

Use the below template to list all the user stories for the product.

User Type	Epic	USN	User Story / Task	Acceptance Criteria	Priority	Release
EV Driver	Range View	USN-1	As a driver, I can see my current range on a map	Range circle displays within 2 sec	High	Sprint-1
		USN-2	As a driver, I can adjust my range buffer setting	Buffer updates range in real-time	High	Sprint-1
		USN-3	As a driver, I can see range factors breakdown	All factors displayed with percentages	Medium	Sprint-2
EV Driver	Route Plan	USN-4	As a driver, I can plan a route with charging stops	Route shows all charging stops needed	High	Sprint-2
		USN-5	As a driver, I can see elevation impact on range	Elevation chart shows range changes	Medium	Sprint-3
EV Driver	Battery	USN-6	As a driver, I can view my battery health trends	Health chart shows degradation over time	Medium	Sprint-4
Fleet Manager	Fleet View	USN-7	As a manager, I can view all vehicles' ranges	Fleet dashboard shows all vehicle ranges	High	Sprint-3
		USN-8	As a manager, I can receive low range alerts	Alerts sent when range below threshold	High	Sprint-3
Admin	Manage	USN-9	As admin, I can manage EV model specifications	EV specs updated reflect in calculations	Medium	Sprint-4
EV Driver	Charging	USN-10	As a driver, I can find nearby available chargers	Chargers shown with real-time availability	High	Sprint-2