Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	16 February 2026
Team ID	LTVIP2026TMIDS40575
Project Name	Visualization Tool for Electric Vehicle Charge and Range Analysis
Maximum Marks	4 Marks

Technical Architecture:

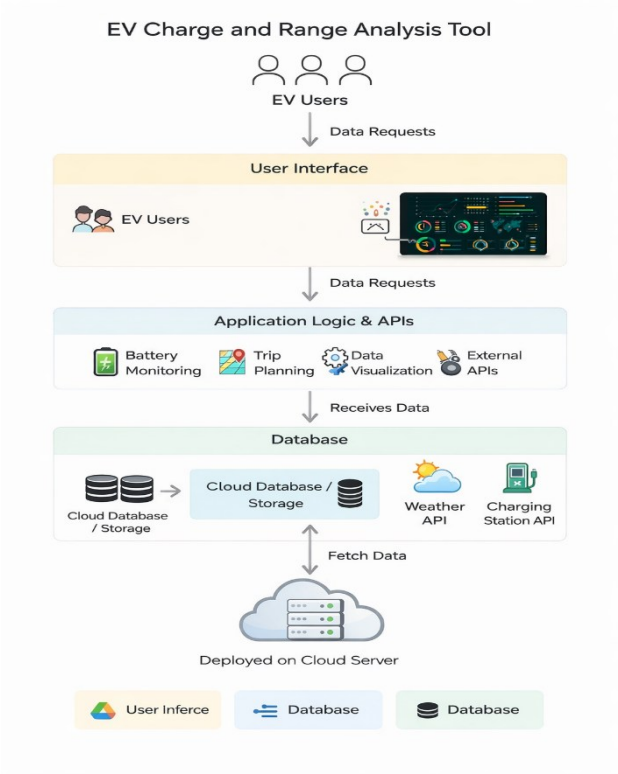

Table-1 :

Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Users interact through a web-based dashboard to view EV charge & range insights.	HTML, CSS, JavaScript
2.	Application Logic-1	Handles data processing and transformation before visualization.	Python
3.	Application Logic-2	Data cleaning and preprocessing (removing nulls, formatting columns, filtering).	MS excel / Python (pandas)
4.	Application Logic-3	Data aggregation & calculations (range comparison, efficiency metrics) .	python
5.	Database	Stores structured EV dataset.	CSV / Excel files
6.	Cloud Database	Cloud-based Storage for dataset sharing.	Google Drive
7.	File Storage	Local system storage for dataset files.	Local File System
8.	External API-1	EV dataset collection from public open data portals.	Public Open Data APIs
9.	External API-2	Fetch charging station locations.	Google Maps API
10.	Machine Learning Model	Not Implemented	Not Applicable
11.	Infrastructure (Server / Cloud)	Deployment of dashboard.	Tableau Public

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Used open-source libraries for data processing	Python (pandas, NumPy)
2.	Security Implementations	Basic authentication & cloud access control	Google Account Security , Tableau Public Access Control
3.	Scalable Architecture	Modular design: Data Layer -> Processing Layer -> Visualization Layer	3- Tier Architecture
4.	Availability	Cloud – hosted dashboard accessible anytime	Tableau Public Cloud
5.	Performance	Pre-processed dataset improves dashboard loading speed	Data Cleaning & Optimized Dataset