PROJECT DESIGN:

4.1 Problem Solution Fit:

Problem – SolutionFitTemplate

Date	18 June 2025
Team ID	LTVIP2025TMID47771
Project Name	Visualisation tool for electric vehicle charge and Range Analysis using tableau
Maximum Marks	2 Marks

Problem – Solution Fit Template:

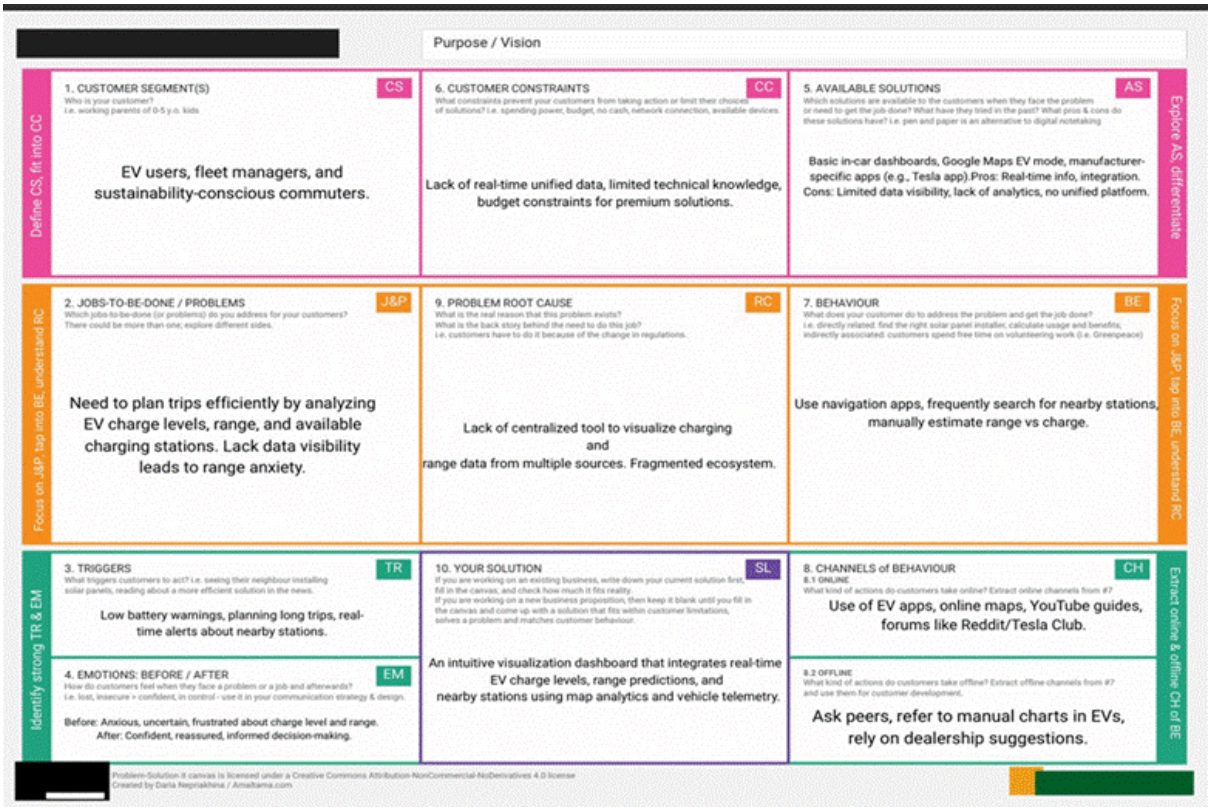
Electric vehicle (EV) users frequently experience **range anxiety** and uncertainty due to the **lack of a centralized, real-time visualization tool** that displays battery charge levels, estimated driving range, and nearby charging station availability. Existing solutions are often fragmented across different apps or limited to manufacturer-specific platforms, making it difficult for users to make confident travel and charging decisions.

Our solution is a **unified visualization tool** that integrates real-time data from EVs and charging infrastructure. It enables users to **analyze charge levels, forecast range accurately**, and identify optimal charging locations, empowering them with a seamless and data-driven experience. This directly addresses the problem by increasing route efficiency, reducing anxiety, and improving user trust in EV usability.

Purpose of the Problem:

To **eliminate range anxiety** by offering real-time visibility into EV performance metrics.
To **enhance travel efficiency** by enabling smarter decision-making using integrated data.
To **simplify access to charge station availability**, improving the user journey.
To support wider EV adoption by **building trust** through transparency and intelligent visualization.

Template:



4.2 Proposed Solution:

Proposed Solution Template

Date	15 February 2025
Team ID	LTVIP2025TMID47771
Project Name	Visualization Tool For Electric Vehicle Charge And Range Analysis
Maximum Marks	2 Marks

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	With the growing adoption of electric vehicles (EVs), users face challenges in understanding and optimizing charging behavior and range usage. There is a lack of user-friendly visualization tools that provide real-time and historical data insights about charging patterns, energy consumption, and estimated travel range.
2.	Idea / Solution description	The proposed solution is a visualization dashboard that allows users to analyze EV charging sessions, monitor range estimations, compare efficiency over time, and forecast energy needs. Using data analytics and visualization (via tools like Tableau or Power BI), users will be able to make informed decisions about charging habits, trip planning, and battery health.
3.	Novelty / Uniqueness	The uniqueness lies in integrating real-time vehicle data with dynamic visualizations, offering a comprehensive yet easy-to-understand overview. Unlike generic EV monitoring tools, this solution provides personalized visual analytics tailored to individual driving and charging behavior.

4.	Social Impact / Customer Satisfaction	By empowering EV users with data insights, the tool promotes efficient energy use, reduces range anxiety, and supports environmentally friendly practices. It contributes to sustainability and helps customers save time and money by planning better.
5.	Business Model (Revenue Model)	The tool can follow a freemium model: basic visualization features available for free, with advanced analytics, historical insights, and predictive modeling offered through a paid subscription. It can also be licensed to EV manufacturers or fleet operators.
6.	Scalability of the Solution	The solution can be easily scaled across different EV models, geographic regions, and fleet types. With cloud-based deployment and API integrations, it can be expanded to support more data sources, multi-user environments, and AI-powered forecasting modules.

4.3 Solution Architecture:

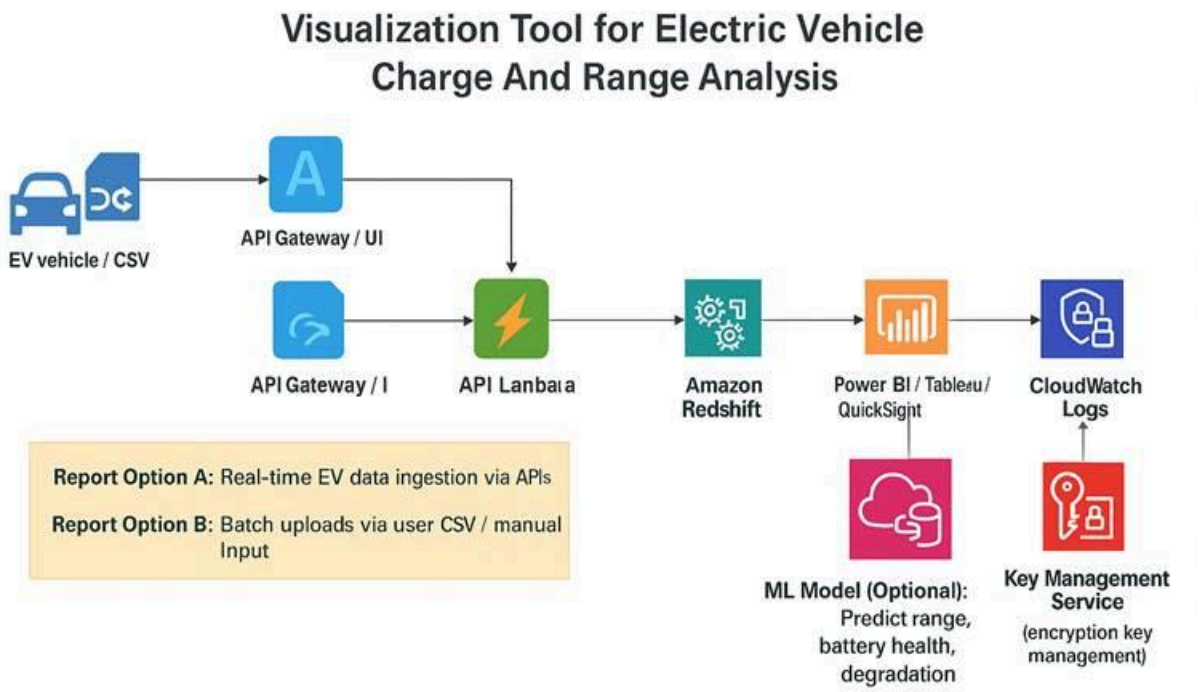
Solution Architecture

Date	19 June 2025
Team ID	LTVIP2025TMID47771
Project Name	Visualization Tool For Electric Vehicle Charge And Range Analysis
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. It goals are to be:

- Enable real-time and historical EV data collection.
- Ensure accurate analysis of EV charging and range metrics.
- Provide interactive and insightful data visualizations.
- Design for scalability and high performance.
- Enable predictive analytics using machine learning.
- Maintain data security and regulatory compliance.
- Facilitate integration with third-party platforms and services.
- Ensure flexibility for future system enhancements.
- Support multi-device accessibility (desktop, tablet, mobile).
- Enable system monitoring and logging for maintenance.



5.PROJECT PLANNING AND SCHEDULING:

5.1 Project Planning:

Project Planning Template (Product Backlog, Sprint Planning, Stories, Story points)

Date	19 June 2025
Team ID	LTVIP2025TMID47771
Project Name	Visualization Tool For Electric Vehicle Charge And Range Analysis
Maximum Marks	5 Marks

Product Backlog, Sprint Schedule, and Estimation (4 Marks)