Project Title: Visualization Tool for Electric Vehicle Charge and Range Analysis **Team ID:** LTVIP2026TMIDS24926

Project Design Phase-I - Solution Fit Template

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

- Electric Vehicle (EV) owners (2-wheelers, 3-wheelers, cars)
- Fleet operators (ride-hailing, delivery, logistics)
- EV buyers evaluating range performance
- Charging infrastructure planners
- Automotive engineers & data analysts

6. CUSTOMER CONSTRAINTS

- Limited technical knowledge of battery behavior
- Inaccurate or static range estimates.
- Lack of real-time data visualization
- Poor integration with driving conditions
- Data overload without clear insights

5. AVAILABLE SOLUTIONS

- Basic dashboard range estimators in EVs
- Mobile apps showing battery percentage only
- Static manufacturer-claimed range values
- Simple navigation apps with charging points

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS

- Understand real-time battery charge and remaining range
- Predict how driving behavior, terrain, and weather affect range
- Reduce "range anxiety" during trips
- Plan charging stops efficiently
- Compare expected vs actual vehicle performance

9. PROBLEM ROOT CAUSE RC

- Range calculations based on ideal conditions
- No visualization of energy consumption patterns
- Lack of predictive analytics
- Poor user understanding of battery dynamics
- Fragmented data sources

7. BEHAVIOUR BE

- Frequently checking battery percentage
- Over-charging due to fear of running out
- Avoiding long trips
- Driving conservatively to save charge
- Relying on external apps for reassurance

Focus on J&P, tap into BE, understand RC

3. TRIGGERS

- Low battery warning
- Planning a long or unfamiliar trip
- Unexpected drop in remaining range
- Searching for nearby charging stations
- Comparing EV efficiency across routes or vehicles

TR

4. EMOTIONS: BEFORE / AFTER

EM

Before

- Anxiety about reaching destination
- Uncertainty and lack of trust in range estimates
- Frustration due to inaccurate predictions

After

- Confidence in trip planning
- Reduced stress while driving
- Trust in EV performance and data insights

10. YOUR SOLUTION

SL

Interactive visual dashboard showing:

- Battery charge vs distance
- Energy consumption trends
- Predicted remaining range

Real-time data integration (speed, terrain, weather)

- Route-based range forecasting
- Charging station visualization and recommendations
- User-friendly graphs, alerts, and insights

8. CHANNELS of BEHAVIOUR

CH

- In-vehicle infotainment system
- Mobile application (Android / iOS)
- Web dashboard for analytics
- Alerts & notifications
- Navigation and maps integration