**Ideation Phase**

**Define the Problem Statements**

| Date | 16 june 2025 |
| --- | --- |
| Team ID | LTVIP2025TMID41955 |
| Project Name | Traffic telligence:Adv Advance traffic volume estimation with Machine Learning |
| Maximum Marks | 2 Marks |

**Customer Problem Statement Template:**

Section Description / Guide Example (Traffic Volume Estimation)

1. Title Concise title summarizing the problem "Traffic Volume Estimation Using Machine Learning for Urban Congestion Management"

2. Background / Context Brief overview of the current situation, and why it matters Rapid urbanization is increasing traffic congestion, affecting commute times and air quality. Traditional volume estimation methods are costly and not scalable.

3. Problem Description Clear statement of the core issue to be addressed Existing traffic monitoring systems rely heavily on physical sensors, which are expensive and cover limited areas. There’s a need for scalable, real-time volume prediction using data-driven methods.

4. Objectives Specific, measurable goals of the project - Predict hourly traffic volume on major roads

- Use machine learning to improve prediction accuracy

- Reduce infrastructure costs using sensor alternatives (e.g., GPS, mobile data)

5. Scope Define what is included and excluded from the project Included: Urban roads, historical + real-time data, ML modeling

Excluded: Rural areas, signal optimization, policy recommendations

6. Stakeholders Who is affected by or benefits from solving this problem - City traffic planners

- Commuters

- Public transportation authorities

- Environmental agencies

7. Constraints Limitations such as time, budget, data availability - Limited historical data in some areas

- Real-time processing demands

- Privacy regulations on GPS/mobile data

8. Success Criteria / Metrics How to evaluate if the problem is effectively solved - RMSE < 10 on test data

- Deployment-ready model with inference time < 1 second

- Improvement over baseline traditional methods by 15%

9. Assumptions Conditions assumed to hold true during problem solving - Access to anonymized GPS or mobile data

- Sufficient historical traffic records

- ML models can generalize across time and location