**Project Design Phase**

**Proposed Solution Template**

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| Date | 16 July 2025 |
| Team ID | LTVIP2025TMID44001 |
| Project Name | TrafficTelligence: Advanced Traffic Volume Estimation with Machine Learning |
| Maximum Marks | 2 Marks |

**Proposed Solution Template:**

Project team shall fill the following information in the proposed solution template.

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| **S.No.** | **Parameter** | **Description** |
|  | Problem Statement (Problem to be solved) | Urban areas suffer from unpredictable and poorly managed traffic volumes due to lack of dynamic, data-driven forecasting. Manual traffic estimation methods are outdated and cannot adapt to changing variables such as weather, holidays, or special events, resulting in congestion and commuter delays. |
|  | Idea / Solution description | TrafficTelligence is a machine learning–based system that predicts traffic volume using multiple input features such as temperature, rain, snow, holidays, and date-related variables. It employs models like Random Forest, XGBoost, and SVR to deliver accurate and timely predictions, enabling smarter decision-making by urban planners, authorities, and commuters. |
|  | Novelty / Uniqueness | Unlike traditional traffic prediction tools, TrafficTelligence integrates real-time meteorological and calendar-based features to produce context-aware predictions. It uses ensemble ML models and an intuitive web-based interface for broader accessibility and deployment in smart city infrastructure. |
|  | Social Impact / Customer Satisfaction | The solution can reduce commute times, lower fuel consumption and carbon emissions, and improve the overall quality of life for city residents. It enhances public satisfaction by enabling informed commuting decisions and supporting authorities in proactive traffic management. |
|  | Business Model (Revenue Model) | The solution can be offered as a **B2G** (Business to Government) model with subscription plans for municipalities, **B2B** for ride-sharing/logistics companies, or integrated into smart city contracts. Freemium models for basic commuter use and licensing options for third-party apps are also feasible. |
|  | Scalability of the Solution | The solution is highly scalable across cities, states, and countries by adapting to region-specific traffic and weather datasets. It can be integrated into IoT and traffic signal systems, navigation apps, and transport planning dashboards for broader impact. |