Project Design Phase-II

Data Flow Diagram & User Stories

Date	29 June 2025
Team ID	LTVIP2025TMID42078
Project Name	TrafficTelligence: Advanced Traffic Volume Estimation with ML
Maximum Marks	4 Marks

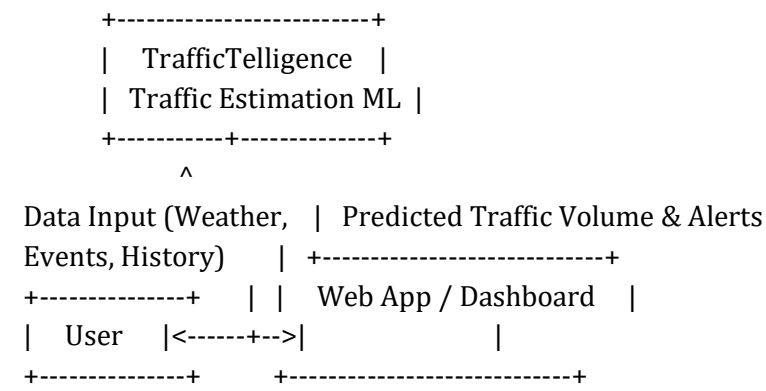
User Stories Table

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Traffic Authority	Real-time Traffic Monitoring	USN-1	As an official, I can view real-time traffic volume estimations	Dashboard shows traffic data accurately	High	Sprint-1
Traffic Authority	Adaptive Control System	USN-2	As an official, I can receive suggestions for signal timing adjustments	Recommendations are generated based on traffic flow	High	Sprint-1
Urban Planner	Infrastructure Forecasting	USN-3	As a planner, I can view predicted traffic data for future dates	Forecast graphs are displayed clearly	High	Sprint-2
Urban Planner	Project Planning Support	USN-4	As a planner, I can	Downloadable reports are generated in PDF	Medium	Sprint-2

			download traffic reports for planning			
Commuter	Navigation Guidance	USN-5	As a user, I can get alternate routes during congestion	Navigation suggestions are provided with time estimates	High	Sprint-1
Developer	Dataset Integration	USN-6	As a developer, I can upload and preprocess raw traffic data	Data is cleaned and structured into usable format	High	Sprint-1
Developer	Model Training	USN-7	As a developer, I can train the ML model on historical traffic patterns	Model achieves desired accuracy and performance	High	Sprint-2
Admin	System Logs Monitoring	USN-8	As an admin, I can monitor user activity and prediction logs	Logs include timestamps and success/failure statuses	Medium	Sprint-2

Data Flow Diagrams

Level 0 DFD (Context Diagram)



Level 1 DFD (Detailed Functional Flow)

[User]
└──▶(1.0 Login / Access System)
└──▶[Authentication Service]

└──▶(2.0 Upload Traffic Data or Use Live Feed)
└──▶[Data Ingestion Module]
└──▶Validates Format, Removes Anomalies

└──▶(3.0 Prediction Request)
└──▶[ML Engine - Regression / Time Series Model]
└──▶Uses Historical + Real-time Data

└──▶(4.0 View Results)
└──▶[Visualization Interface]
└──▶Shows Graphs, Heatmaps, Congestion Levels

└──▶(5.0 Export Report / Use API)
└──▶[Report Generator / API Layer]
└──▶Exports insights or integrates with navigation apps

Entities Involved

- Web App (Flask/Streamlit/Django): User interface to input, view predictions.
- ML Engine: Time-series prediction model trained on traffic datasets.

- Database: Stores input data, prediction logs, feedback.
- External APIs: Collects weather, events, sensor feeds.
- Navigation Services: Route optimization integrations.