

## Project Planning Phase

Date	23-06-2025
Team ID	LTVIP2025TMID40978
Project Name	Traffic intelligence
Maximum Marks	4 Marks

The Planning Phase lays out the foundation for organizing the workflow, defining milestones, allocating resources, and scheduling activities to complete the project efficiently. This phase ensured that the traffic prediction system was built systematically and delivered on time.

### 1. Requirement Analysis:

In the initial stage, we clearly defined:

- The problem to be solved: predicting traffic volume
- The end users: commuters, traffic authorities, and planners
- Key features: hour, temperature, rainfall/snow, clouds, holiday status
- Expected output: estimated hourly traffic volume

### 2.Task Breakdown and Timeline:

The overall project was divided into the following key tasks, each with an estimated duration:

Task	Description	Duration
Data Collection	Identify and obtain relevant datasets	2 days
Data Preprocessing	Clean, transform, and prepare data	3 days
Exploratory Data Analysis	Visualize and understand patterns	2 days
Model Selection & Training	Train and evaluate various ML models	3 days

Model Evaluation	Fine-tune and assess model performance	2 days
Application Development	Build UI using Streamlit	3 days
Integration & Deployment	Deploy model and app	2 days
Testing & Documentation	Final testing and reporting	3 days

### 3.Tools and Resources:

- Software & Libraries: Python, Pandas, Scikit-learn, Streamlit, Matplotlib, Seaborn
- Platform: Streamlit Cloud for deployment
- Hardware: Local machine (for development and training)

### 4. Risk Analysis:

Risk	Impact	Mitigation
Incomplete or noisy dataset	Medium	Data cleaning and validation
Model underfitting or overfitting	High	Try multiple models and cross-validation
Deployment issues	Low	Use Streamlit Cloud for simplicity

### 5. Success Criteria:

The project was considered successful if:

- The model achieves an  $R^2$  score of above 0.75
- The Streamlit app gives real-time predictions
- Users can easily interact with the app without technical expertise

### Conclusion:

The project planning phase helped establish a clear roadmap, minimized risks, and ensured timely delivery. It provided a structured approach to transform the idea into a functioning and user-friendly machine learning application.