**Project Charter Document**



**Project Name:** Optimization of Bus Ticketing Demand and Forecasting.

**Department:** Transport

**Focus Area:** Infrastructure

**Product/Process:** Data Science.



**Prepared By**

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| **Document Owner(s)** | **Project/Organization Role** |
| Kari Mahesh BABU | Data Science |
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**Project Charter Version Control**

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| 1.0 | 10/01/2025 | Kari Mahesh Babu | Document created |
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# PROJECT CHARTER PURPOSE

The project charter defines the scope, objectives, and overall approach for the work to be completed. It is a critical element for initiating, planning, executing, controlling, and assessing the project. It should be the single point of reference on the project for project goals and objectives, scope, organization, estimates, work plan, and budget. In addition, it serves as a contract between the Project Team and the Project Sponsors, stating what will be delivered according to the budget, time constraints, risks, resources, and standards agreed upon for the project.



# PROJECT EXECUTIVE SUMMARY

* Project goals

The Bus service struggles with inefficient resource allocation, overbooked or underutilized trips, and customer dissatisfaction due to misaligned schedules and unpredictable demand patterns, These issues lead to revenue loss, increased operational costs, and poor customer experiences, such as frequent cancellations or routes operating with minimal occupancy

* Objectives
* Maximize prediction accuracy for future ticket sales and passenger demand
* Minimize operational costs by optimizing trip schedules and resource allocation Scope
* Assumptions
* Risks
* Costs
* Timeline
* Approach
* Organization



# PROJECT OVERVIEW



# PROJECT SCOPE

## Goals and Objectives

|  |  |  |
| --- | --- | --- |
| **Goals** | **Objectives** |  |
|  **Maximize Prediction Accuracy:** Develop a robust forecasting model to predict future ticket sales and passenger demand with high precision.   **Optimize Resource Allocation:** Reduce operational costs by efficiently scheduling trips, allocating buses, and managing fleet utilization based on demand trends.   **Enhance Customer Satisfaction:** Improve service reliability and availability by ensuring that buses are scheduled in alignment with passenger demand patterns.  **Data-Driven Decision Making:** Enable the company to make informed strategic decisions using insights derived from historical and real-time data. |  Achieve a **Mean Absolute Percentage Error (MAPE) of less than 10%** in demand forecasting to ensure accurate predictions.   Improve customer satisfaction by **at least 15%** through better trip planning and availability of seats.   Reduce operational costs by **15% or more** by optimizing trip schedules, minimizing fuel wastage, and improving fleet management.   Implement **machine learning models** to analyze historical booking patterns, peak hours, seasonal variations, and external factors affecting demand. |

## Project Deliverables

|  |  |
| --- | --- |
| **Milestone** | **Deliverable** |
| * Identifying Constraints and design the project architecture, explore various public forums to collect relevant data, Data Preparation. | * Deliverable 1.1—Identifying Constraints and design the project architecture. * Deliverable 1.2—Explore various public forums to collect relevant data. * Deliverable 1.3— Data Preparation |
| * EDA and Descriptive Analytics, Model Building for Association (Fuzzy Algorithm) and Recommendation | * Deliverable 2.1— EDA and Descriptive Analytics * Deliverable 2.2— Model Building for Association (Fuzzy Algorithm) and Recommendation |
| * Model Evaluation, tuning and insights, Deployment | * Deliverable 3.1— Model Evaluation, tuning and insights. * Deliverable 3. 2— Deployment |
| * Show case and review, Final Presentation and documentation, Handover and KT. | * Deliverable4.1 – show case and review * Deliverable4.2 – Final Presentation and documentation * Deliverable4.3 – Handover and KT |

## Deliverables Out of Scope

* designs
* mobile app

## Project Duration (start date: 7/01/2025 End date: 10/2/2025)

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Milestone** | **Date Estimate** | **Deliverable(s) Included** | **Confidence Level** |
| * Identifying Constraints and design the project architecture, explore various public forums to collect relevant data, Data Preparation. | [07/01/2025]  -  [17/01/2025] | * Deliverable 1.1—Identifying Constraints and design the project architecture. * Deliverable 1.2—Explore various public forums to collect relevant data. * Deliverable 1.3— Data Preparation | [High] |
| * EDA and Descriptive Analytics, Model Building for ARIMA,SARIMA,LSTM) | [18/01/2025]  -  [01/02/2025] | * Deliverable 2.1— EDA and Descriptive Analytics * Deliverable 2.2— Model Building for Association (Fuzzy Algorithm) and Recommendation | [High] |
| * Model Evaluation, tuning and insights, Deployment | [02/02/2025]  -  [05/02/2025] | * Deliverable 3.1— Model Evaluation, tuning and insights. * Deliverable 3. 2— Deployment | [High] |
| * Show case and review, Final Presentation and documentation, Handover and KT. | [06/02/2025]  -  [07/02/2022] | * Deliverable4.1 – show case and review * Deliverable4.2 – Final Presentation and documentation * Deliverable4.3 – Handover and KT | [Medium] |



# PROJECT CONDITIONS

## Project Assumptions

* Work on data Which is extracted from leading bus transportation company.
* Can create a web API by using flask or Streamlit.
* Cloud deployment should be done.
* **Robust Tested:** Application should be tested for noise data also.

## Project Issues

**Priority Criteria**

1 − High-priority/critical-path issue; requires immediate follow-up and resolution.

2 − Medium-priority issue; requires follow-up before completion of next project milestone.

3 − Low-priority issue; to be resolved prior to project completion.

4 − Closed issue.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **#** | **Date** | **Priority** | **Owner** | **Description** | **Status & Resolution** |
| 1 | 19/01/2025 | High | Leading Bus Transportation | Insufficient resource allocation causing revenue loss | Ongoing optimization resource planning |
| 2 | 20/01/2025 | High |  | Unpredictable demand patterns leading to misleading schedules | Ongoing – Implementing forecasting models |

## Project Risks

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Risk Area** | **Likelihood** | **Risk Owner** | **Project Impact-Mitigation Plan** |
| 1 | [Project Risk] | [High/Medium/Low] |  |  |
| 2 | [Project Risk] | [High/Medium/Low] |  |  |

## Project Constraints

* Ensure full compliance with applicable data privacy regulations
* Maintain the interpretability and usability of the predictive model to facilitate actionable insights and informed business decision-making

# Project Structure Approach



# Project Team Organization Plans

|  |
| --- |
| * Deliverable 1.1— * Deliverable 1.2— * Deliverable 1.3— |
| * Deliverable 2.1— * Deliverable 2.2— |
| * Deliverable 3.1— * Deliverable 3. 2— |
| * Deliverable4.1 – * Deliverable4.2 – * Deliverable4.3 – |



# PROJECT REFERENCES

|  |  |
| --- | --- |
| **Milestone** | **Deliverable** |
| [ |  |
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# APPROVALS

**Prepared by** \_\_\_\_\_\_Kari Mahesh BABU\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Manager

**Approved by** Sharat Chandra M\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Sponsor

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Executive Sponsor

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Client Sponsor



# APPENDICES

## Document Guidelines

## Project Charter Document Sections Omitted

