

# NAVIGATING URBAN MOBILITY

IMPROVING PUBLIC TRANSPORT  
ACCESSIBILITY THROUGH  
WEB APPLICATION

Presented by:

BASS



# INTRODUCTION

The centralized web application, "NaVi," aims to enhance urban mobility in the Philippines by providing consolidated public transport data, improving the commuter experience with real-time schedules, routes, and fare information.



## **PROBLEM DEFINITION AND SIGNIFICANCE**

**The urban mobility challenge, costing Metro Manila alone ₱3.5 billion daily due to traffic congestion, is worsened by the lack of integration in the public transport system, over-reliance on private vehicles, and increased carbon emissions, leading to significant environmental damage.**

# DATA & METHODOLOGY

## Data Sources



### Google Maps API

Utilized for comprehensive geospatial mapping, enhancing route visualization for commuters.

### Major Bus & Ferry Operators

Schedules, routes, and fare rates collected from transportation operators like Yanson Group of Bus Companies and 2GO Group, Inc.

# DATA & METHODOLOGY

## Core Methodology



### Data Import and Cleaning

CSV data is imported into PostgreSQL using Python (via psycopg2), with missing data handled to ensure data quality.



### Quantitative Analysis

Calculating fares and travel durations based on distance, ride type, and user category.



### Geospatial Analysis

Using Google Maps API to calculate routes, distances, and provide visual maps.



### Real-Time Updates

Google Maps APIs enabled real-time route and schedule data, supporting accurate, up-to-date information.

# DATA & METHODOLOGY

## Unique Tools and Innovative Approaches

### Backend Framework

 Django and Django Restframework is used to manage and create APIs that bridge the front and backend seamlessly.

### Frontend Framework

 Vue.js and TypeScript for building an interactive, user-friendly front-end.

### Backend Packages

 psycopg2, django-cors-headers, django-import-export.

### Frontend Packages

 PrimeVue, Axios, Cors-Anywhere Proxy.

# SOLUTION OVERVIEW

## Overview of the Solution's Functionality



**Centralizes real-time schedules, routes, and fare information for buses and ferries across Luzon, Visayas, and Mindanao.**



**Features an intuitive, user-friendly interface for easy navigation and access to transportation data.**



**Provides route planning tools, fare estimations, and continuous real-time updates.**



**Integrates data from multiple transportation operators to ensure comprehensive and accurate information.**

# SOLUTION OVERVIEW

## Practical Applications



### Enhanced Trip Planning

- Detailed route options and estimated travel times ensuring a well-informed travel experience.
- Reduces waiting times and helps avoid missed connections.



### Budget Management

- Offers transparent fare information to assist users in managing travel expenses.

# LIVE DEMONSTRATION



# RESULTS & MEASURABLE



## ENHANCED FARE CALCULATION

Implemented an accurate fare calculation system, providing users with clear and reliable fare estimates for different routes based on passenger type.



## IMPROVED URBAN MOBILITY

Reduced congestion by simplifying public transport access and promoting its use across Luzon, Visayas, and Mindanao.

# IMPACT



## ENVIRONMENTAL & SOCIAL IMPACT

Promoted public transportation to help reduce traffic and carbon emissions, contributing to sustainable urban mobility.



## ACCESSIBLE TRANSPORTATION INFORMATION

Successfully consolidated schedules and fares from 3 major bus and ferry operators, offering users comprehensive information.



## PLATFORM PERFORMANCE & FEEDBACK

Collected structured feedback, enabling targeted improvements in usability with over 70% of users expressing satisfaction with the platform's usability.

# FUTURE PHASE



## Expansion to Air Transportation

Broaden the scope of the platform by incorporating domestic air travel schedules.



## Crowdsourced Data and Community Engagement

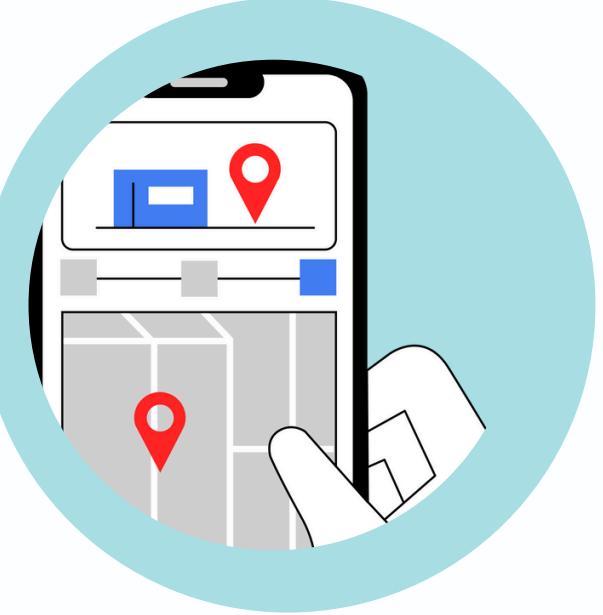
Increase data accuracy and community engagement by incorporating user-generated content and real-time feedback.



## Integration of Booking System

Promoting ease of trip planning and execution directly within the web application.

# FUTURE PHASE



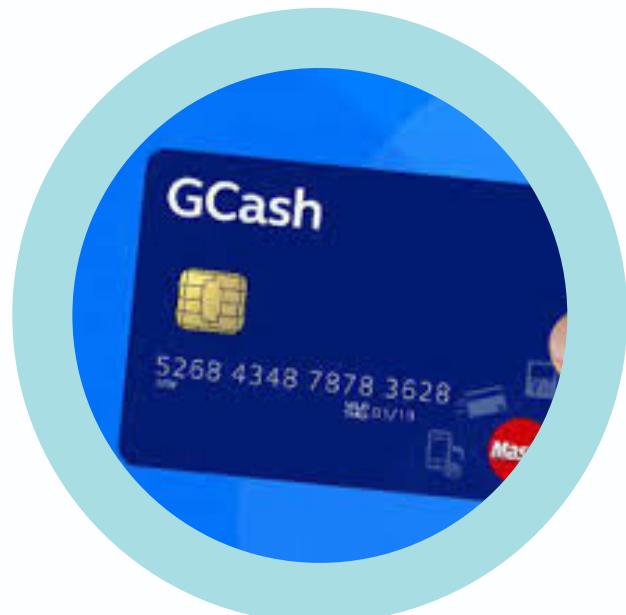
## Real-Time Tracking

Integrate GPS tracking for buses and ferries to show real-time locations



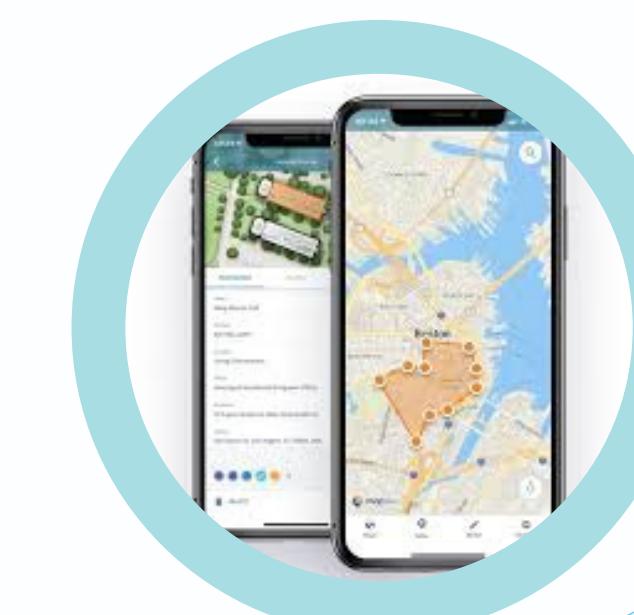
## Language & Localization Options

Offer the App in multiple local languages and display culturally relevant transit information.



## Cashless payment via Gcash Card

Transition from cash payments to digital payments for passengers convenience for faster transactions.



## Mobile App Development

Enhance accessibility by creating a mobile app for convenience.



# THANK YOU

[phnavi.com](http://phnavi.com)

