SMART INDIA HACKATHON 2025

TITLE PAGE

- **Problem Statement ID –** 25013
- **Problem Statement** Title – Real-Time Public Transport Tracking for Small Cities
- **Theme –** Transport & Logistics
- **PS Category –** Software
- **Team ID –**
- **Team Name –** NUVIRA

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SMART – BUS

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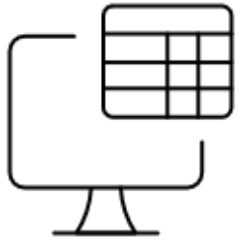
"Every year, more than **60% of commuters in rural cities** suffer from **unpredictable bus timings, overcrowding, and lack of real-time updates**.
To counter this growing challenge, we present **Smart-Bus** , a simple yet powerful mobile app to make public transport **smarter, safer, and more reliable**."

Passenger Portal

Search bus stops
live bus tracking
ETA predictions
SOS alerts
ratings.

Driver Portal

Start trip (GPS Share)
report delay status
SOS directly to Admin.



Admin Portal

Manage routes &drivers
real-time monitoring
analytics dashboard SOS
verification.

Proposed Solution

- Mobile app with **3 portals**
- (Passenger, Driver, Admin).
- Real-time GPS bus tracking.
- AI-powered ETA (Google Maps Traffic API).
- SOS emergencies (Medical, Police, Women Safety, Breakdown).
- Passenger ratings (bus, driver, experience).
- Rural-friendly flashy UI with animations.

Innovation / Unique Value Proposition

- Multi-portal design.
- SOS escalation logic.
- Analytics for admins.

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TECHNICAL APPROACH

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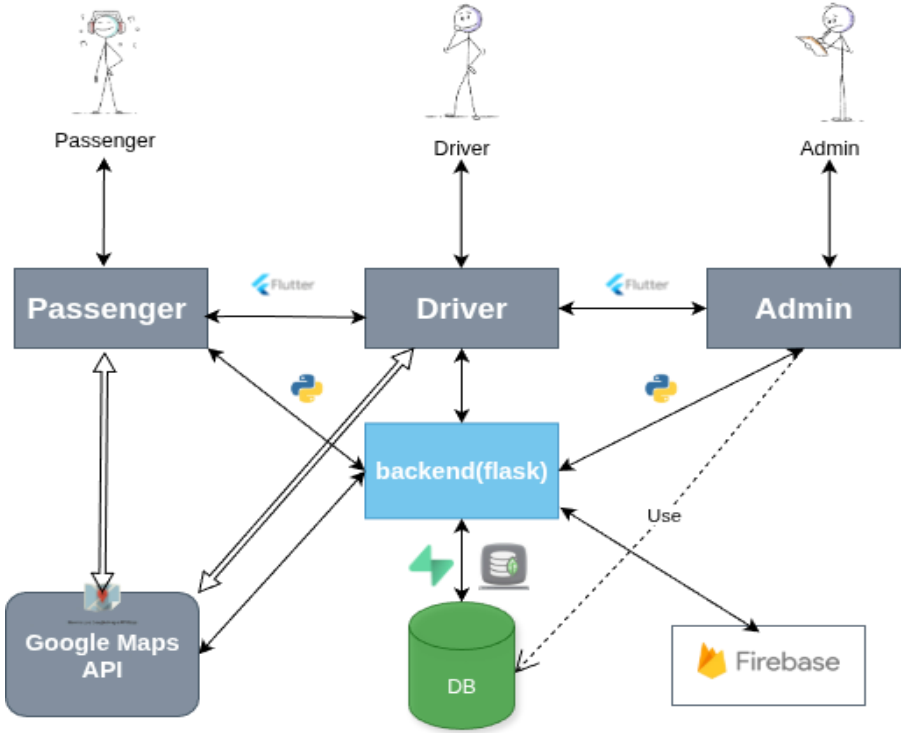
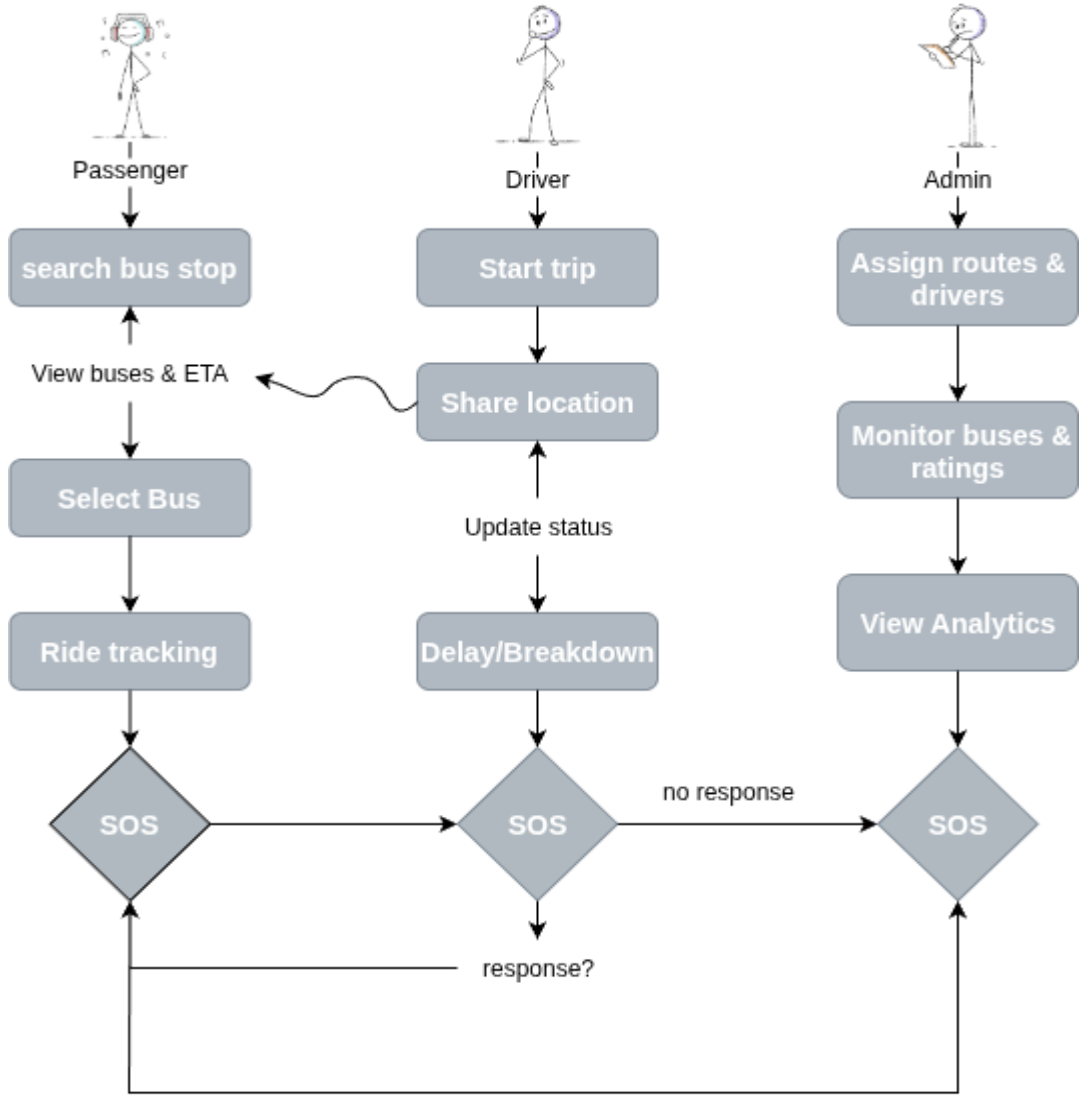
Tech Stack

- **Frontend**: Flutter / React.js
- **Backend**: Flask (Python REST)
- **Database**: MongoDB / supabase
- **Maps:** Google Maps API
- **Authorisation :** Firebase





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FEASIBILITY AND VIABILITY

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Feasibility

- Feasible with existing tech (Google Maps + Firebase).
- Optimized for low-bandwidth 3G/4G.
- Scalable for future Scope.
  - Add **multi-language support** (Hindi, Punjabi, Telugu, etc.).
  - **AI-powered route optimization** (predict delays, suggest alternate buses).
  - AI powered **SOS informer**

Strategies

- - **Simple driver interface**
- - **Offline caching** & low-data mode
- - AI ETA + **static fallback**
  - If (GPS/Internet) isn't available the app doesn't just "break". Instead, it falls back to static, pre-stored data

Challenges Faced

Driver Adaptation – Driver Might be new to this modern UI
Rural Area Network Issues – Might not work on below 2G/3G networks
ETA inaccuracy – Wrong Estimated Times in Heavy Traffic

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IMPACT AND BENEFITS

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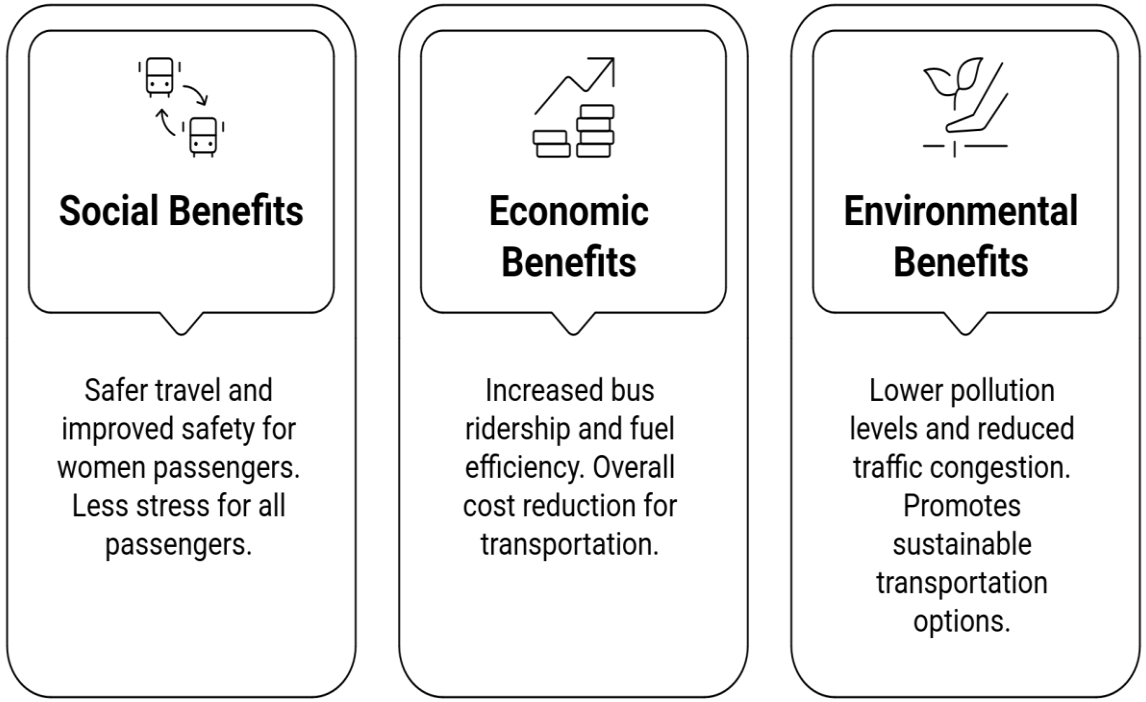
IMPACT ON ALL USERS

- **Commuters:** Save time, reliable & Safe travel.
- **Drivers:** Better coordination.
- **Govt:** Data-driven planning.

Business Potentials

- **Scalable Product** – Once developed, the same system can be replicated to hundreds of cities with minimal changes.
- **Data as a Service** – Provide valuable transport analytics to government bodies for planning new routes and reducing congestion
- **In-App Revenue** – Ads from local businesses (shops, hospitals, services near bus stops).

Benefits of Our App



Made with Napkin

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RESEARCH AND REFERENCES

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- Carol L. Schweiger, **"Real-Time Bus Arrival Information Systems - A Synthesis of Transit Practice"**Transportation Research Board, 2003
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Comparision With Popular Apps

Features	TSRTC Gamyam	Smart - Bus
Live Bus Tracking	✓	✓
Estimated Arrival Time (ETA)	✓	✓
Bus Routes Search	✓	✓
SOS / Emergency	✗	✓
Admin Analytics DashBoard	✗	✓