

SMART INDIA HACKATHON 2025

TITLE PAGE



- **Problem Statement ID –** SIH25013
- **Problem Statement Title-** Real - Time Public Transport Tracking For Small Cities
- **Theme-** Transport and Logistics
- **PS Category-** Software
- **Team ID-** AI_DRIFTERS_SIH25013
- **Team Name -** AI Drifters



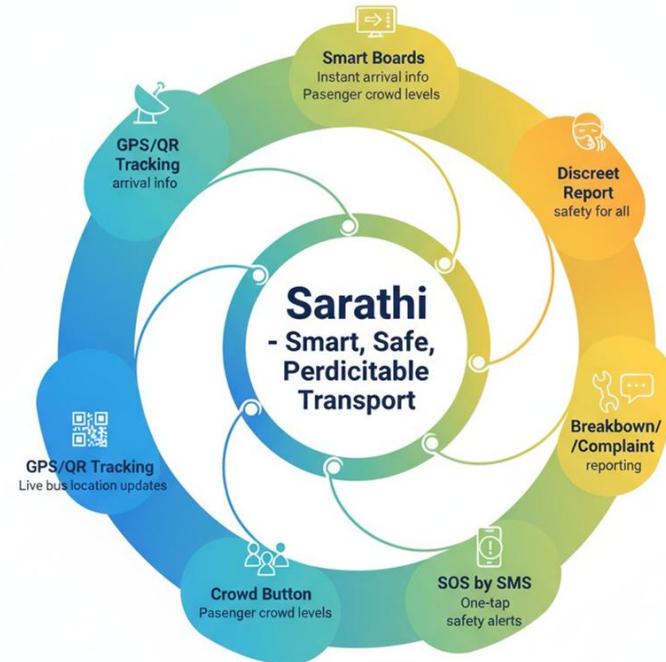


SARATHI OnTime NAVIGATOR



Proposed Solution

- **GPS + QR/NFC Tracking** → Accurate, reliable bus location
- **Live Arrival Boards** → Real-time info, even in low-connectivity areas
- **SMS SOS Alerts** → Quick safety support, no internet needed
- **Crowd Button** → Shows passenger density (Low / Medium / High)
- **Breakdown & Complaint System** → Faster issue resolution
- **Discrete Misbehavior Reporting** → Safe, secret passenger reporting



TECHNICAL APPROACH



◊ Technologies

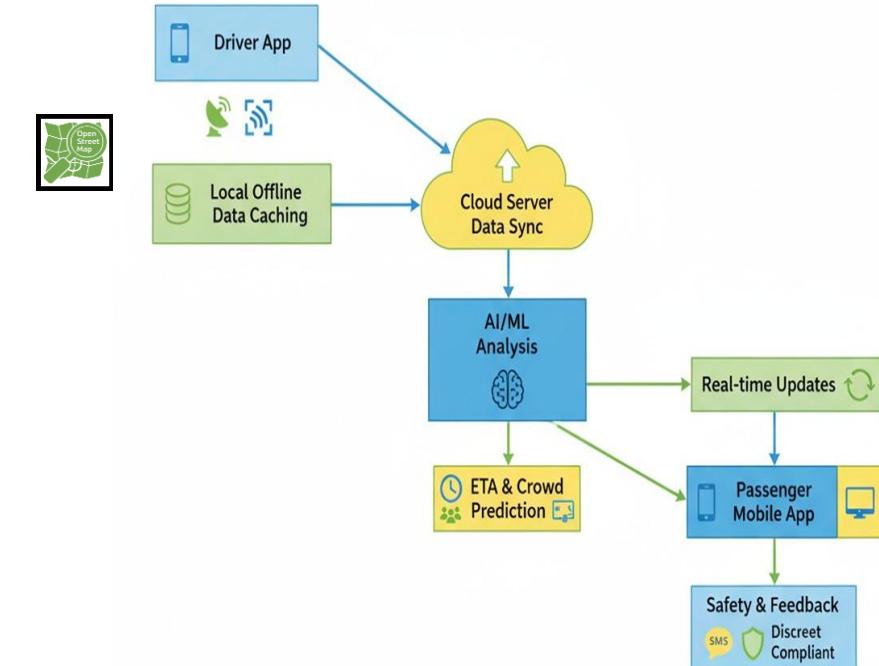


◊ Hardware

- **GPS modules** for real-time tracking
- **QR/NFC checkpoints** for bus validation
- **Digital arrival boards** at bus stops

◊ Methodology

- **Driver app** syncs GPS/QR data → updates arrival boards
- **SMS gateway** for SOS alerts & crowd reports
- **AI/ML models** for ETA prediction & crowd analysis



FEASIBILITY AND VIABILITY

Feasibility and Viability of GPS/NFC System

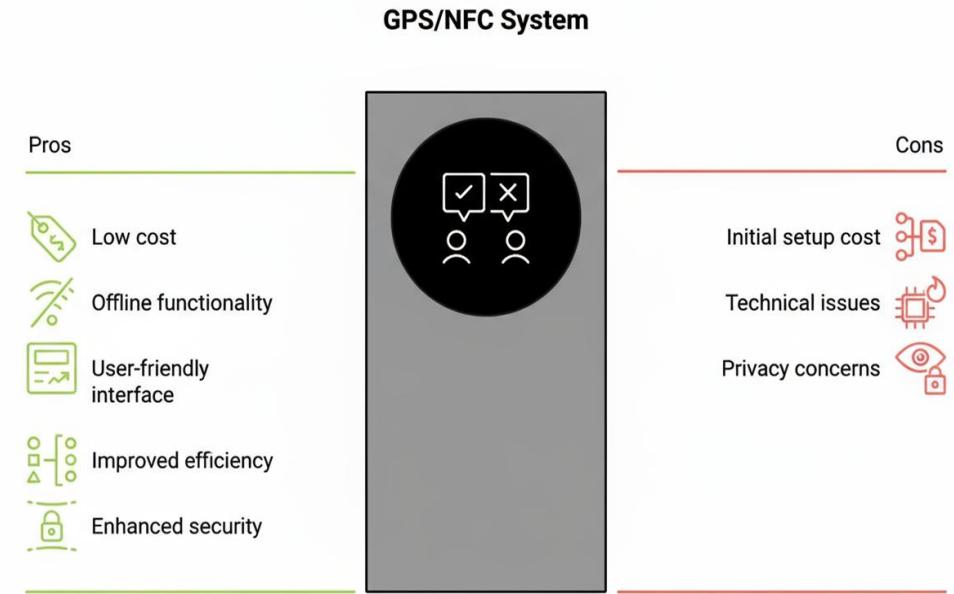
- Low-cost GPS/NFC ensures affordability.
- Easy driver/staff training ensures smooth adoption.

Challenges

- Network gaps and downtime in remote areas.
- Hardware upkeep issues.
- User adoption hurdles.
- Scaling to cover larger cities and multiple transport modes.

Mitigation

- Offline sync and SMS backup for service continuity.
- Regular device maintenance and support.
- Awareness and onboarding programs for passengers and staff.



IMPACT AND BENEFITS



- **Potential impact on the target audience**
 - ❖ Real-time tracking improves safety and allows quick emergency responses
 - ❖ Notifications about arrivals, delays, and route changes minimize uncertainty
 - ❖ Data analytics help transport providers streamline operations and enhance user service
- **Benefits of the solution (social, economic, environmental, etc.)**
 - ❖ Enhanced safety and peace of mind for parents and commuters.
 - ❖ Increased productivity as users spend less time waiting and planning journeys.
 - ❖ Encouragement of public transport use over private vehicles, reducing road congestion and pollution

Environmental Impact

Reduced congestion and pollution



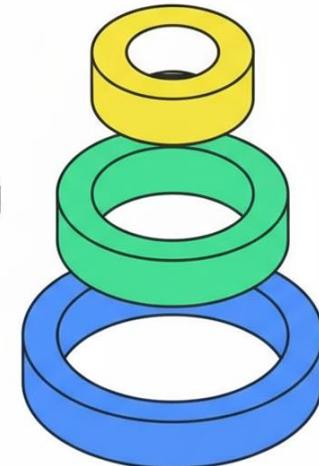
Economic Efficiency

Lower costs and increased productivity



Safety & Communication

Enhanced safety and transparency in transport



RESEARCH AND REFERENCES



- “A Coordinated Routing Approach for Enhancing Bus Timeliness and Travel Efficiency in Mixed-Traffic Environment” — Tanlu Liang, Ting Bai, Andreas A. Malikopoulos. arXiv preprint arXiv:2505.01566. [arXiv](#)
- Improving Transportation Management by Real-Time Bus Tracking Using GPS — IJRASET, DOI: 10.22214/ijraset.2025.73741.
- Journal Article — Improving Transportation Management by Real-Time Bus Tracking Using GPS, [IJRASET](#).
- Smart Transit with GPS Based Real-Time Bus Tracking — [Sanjana Prabha](#) et al., published in ICICC 2024
- Pedestrian Crowd Management Experiments- A Data Guidance Paper ([CroMa](#)) .
- Intelligent Transportation System in City Bus Shelter ([Hackster project](#))

[PROTOTYPE LINK](#)
[DEMO VIDEO](#)