

Project Report

Organizing Urban E-Rickshaw Mobility: The Case for QR-Based & Fixed Route Integration with City Hubs

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1. Executive Summary

Indian cities are witnessing an exponential rise in the number of E-Rickshaws—offering affordable, clean mobility—but largely operating in an unregulated, chaotic fashion. This project proposes a **QR code-based identity system combined with fixed-route operations** to connect E-Rickshaws to major urban transit points and commercial hubs such as **metro stations, railway stations, bus terminals, key markets, and tourist destinations**.

The proposed system aims to streamline urban transport, improve last-mile connectivity, and enhance commuter experience—while empowering drivers through verified, tech-enabled operations.

2. Background & Problem Statement

Current Situation:

- Over **2.5 million e-rickshaws** operate in Indian cities, most in the **informal sector**
- Cities like Delhi, Jaipur, Lucknow, and Varanasi face:
 - **Route congestion**
 - **Overcharging & lack of fare regulation**
 - **Unverified drivers & safety concerns**
 - **Haphazard pick-up/drop zones around major transport nodes**

The Gap:

- Metro and bus systems lack **organized last-mile feeders**
 - Tourists and commuters struggle for consistent, safe, and transparent local mobility
 - City authorities face difficulties in **regulation, tracking, and enforcement**
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3. Project Objectives

This project aims to:

- **Organize E-Rickshaw fleets** through verified onboarding and fixed route operations
 - Use **QR code-based registration and fare system** to ensure safety and traceability
 - Connect E-Rickshaws directly with:
 - Metro Stations
 - Railway Stations
 - Bus Terminals
 - Key Marketplaces
 - Tourist Landmarks
 - Enable **real-time monitoring**, digital payments, and commuter feedback
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4. Proposed System Design

A. QR Code-Based Driver & Vehicle Verification

- Each E-Rickshaw registered in a central database
- Unique QR code linked to driver profile, vehicle ID, route, and fare
- QR displayed on vehicle for Administration or commuter scan & verification (safety + transparency)
- Enables digital fare payment, trip tracking, feedback

B. Fixed Route & Geo-Fenced Operation

- Feeder routes mapped from key hubs:
 - Metro station → Local colonies/markets
 - Railway station → Hotels, bazaars
 - Tourist hub → Parking zone or last-mile stop
 - Route maps uploaded on app platforms
 - Vehicles tracked using GPS; out-of-route travel restricted
 - Central control room for real-time oversight
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5. Strategic Benefits

Stakeholder	Benefits
Commuters	Predictable travel, verified drivers, fixed fares, app-based bookings
Tourists	Easy local movement from heritage sites to hotels or shopping areas

Stakeholder	Benefits
E-Rickshaw Drivers	Increased demand via official platforms, digital earnings, incentives
City Traffic Police/Municipal Bodies	Regulation, reduced congestion, enhanced safety, data insights
Metro & Rail Corporations	Increased ridership due to seamless last-mile connection

6. Implementation Zones: Priority Hubs

City Hub Type	Sample Integration Areas
Metro Stations	Jaipur Metro (Chandpole, Mansarovar, Badi Chaupar)
Railway Stations	Jaipur Junction,
Bus Terminals	Sindhi Camp (Jaipur),
Key Markets	Johri Bazaar,
Tourist Spots	Hawa Mahal,

7. Technology Stack

- **Driver App** with QR validation, trip start/end
 - **Central Dashboard** (admin view of routes, vehicles, earnings)
 - **GPS tracking + Geo-fencing API**
 - **Digital Wallet & UPI Integration**
 - **AjeGo App** for passengers (real-time booking, fare, feedback)
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8. Pilot Program Outcomes (Jaipur Metro Feeder, July 2025)

- 100+ QR-verified e-rickshaws operational
- Fixed feeder routes from metro to local colonies
- 95% commuters reported satisfaction on pricing, safety
- 20% increase in metro ridership from connected zones
- Improved traffic discipline at stations due to zoned pick-up points

9. Challenges & Risk Mitigation

Challenge	Solution
Resistance from informal drivers	Awareness & incentives for official onboarding
Misuse of QR codes	Backend monitoring, duplicate detection, OTP-based trip start
Enforcement in crowded hubs	Station marshals & traffic coordination
Tech onboarding of low-literacy drivers	Assisted setup, vernacular training modules

10. Conclusion & Recommendation

As cities move towards **smart mobility**, integrating e-rickshaw services into a structured, tech-driven framework is no longer optional—it is critical. A **QR code and fixed-route system linked to metro, rail, bus, markets, and tourism hubs** can:

- Enhance **commuter convenience and safety**
- Promote **green, last-mile mobility**
- Bring **discipline and dignity** to the informal driving sector
- Support **city traffic planning and data-driven governance**

Ajivika eMobility recommends state governments, metro authorities, and urban local bodies collaborate to replicate this model across Tier 1 and Tier 2 cities.