

IASF 2026 – Project Abstract

1. Title

Project Title: TravelAble – Barrier Reporter for PwDs in Public Transport

Team Name: Team YatraSetu

College Name: Anurag University

2. Chosen SDG Target

By 2030, provide **access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.**



3. Problem Statement

India's public transport systems remain largely unfriendly to Persons with Disabilities (PwDs). Daily commutes for millions are hindered by physical infrastructure gaps like missing ramps, uneven surfaces, absence of tactile pathways, no audio announcements, or inaccessible boarding points.

According to the 2011 Census, over 21 million Indians live with a disability. Yet, only 6% of India's 1.45 lakh public buses are fully accessible ([Tol, 2023]), and 40% of PwDs face regular difficulties using public transport ([Gol Disability Survey]). The situation is more critical in Tier-2 and Tier-3 cities and on educational campuses.

Lack of accessibility leads to exclusion from education, employment, healthcare, and civic life — reinforcing social and economic inequality.



4. Abstract

TravelAble tackles the urban and semi-urban accessibility crisis through a scalable digital platform that transforms how accessibility barriers are reported and acted upon.

Despite progressive frameworks like the Accessible India Campaign, most cities lack real-time systems to track ground-level accessibility issues. Current reporting methods are often paper-based, require physical presence, or fail to include input from the actual stakeholders — the PwDs themselves.

TravelAble is a crowd-powered platform where users can geotag inaccessible public transport locations — bus stops, pedestrian crossings, footpaths, entrances — and submit reports including photos, disability-specific filters, and severity. This data feeds a live dashboard and sends alerts to local civic authorities or NGOs. A community-driven approach ensures transparency, accountability, and citizen empowerment.

5. Proposed Solution & Objectives

Solution Overview:

TravelAble is a lightweight, user-centric web/mobile platform that enables people to report and track mobility barriers in public transport infrastructure.

Key Objectives:

- Establish a digital reporting channel for PwDs
- Provide a disability-specific filterable complaint feed
- Integrate civic alert systems to encourage real action
- Build an open database for smart city planners and NGOs
- Create campus-level impact that can be scaled city-wide



6. Detailed Explanation of the Solution

Technical Stack:

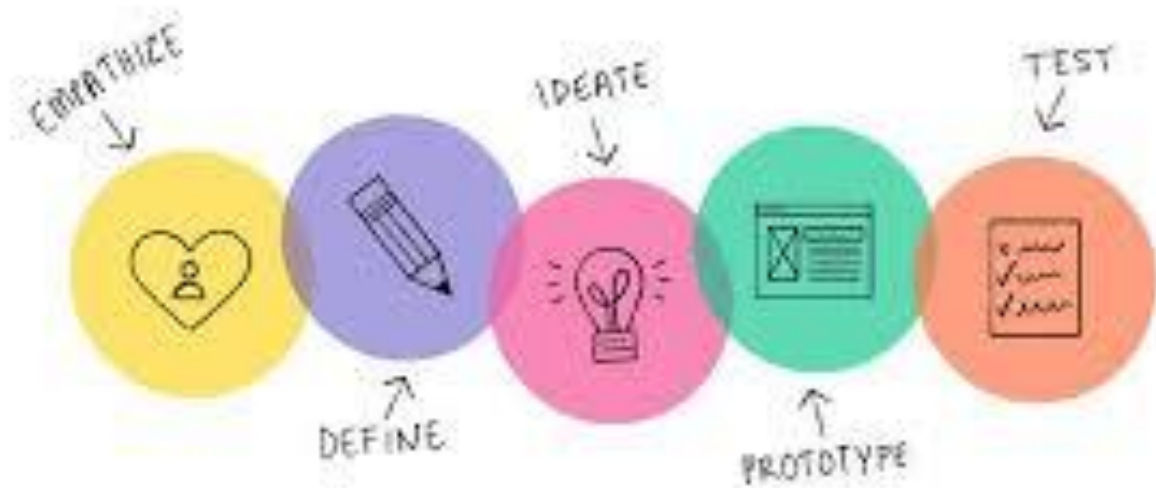
- **Frontend:** React.js, Tailwind CSS, Mapbox GL JS
- **Backend:** Firebase (Firestore, Auth, Cloud Functions)
- **Utility:** EmailJS for real-time civic alerts; OpenStreetMap APIs (optional)

Core Features:

- Interactive map to mark accessibility barriers
- Drop-down filters by type of disability (wheelchair, hearing, visual, cognitive)
- User comment thread and upvoting
- Civic dashboard with severity-based heatmaps
- Auto-escalation via email to local administrators/NGOs
- Report acknowledgment and status tracker (future version)

Design Thinking Process:

- **Empathize:** Interviews with disabled students/staff on campus
- **Define:** Identified critical locations with accessibility gaps
- **Ideate:** Conceptualized map-based interface with civic loop
- **Prototype:** Web-based MVP with sample test cases
- **Test:** Initial feedback shows usability and impact in closed group



7. Proof of Concept

1. Feasibility and Practicality

TravelAble is a cost-effective, low-tech, and software-only solution that can be built using open-source tools by a team of CSE students. The core technologies — React, Firebase, and Mapbox — offer free-tier plans that allow for full MVP development without additional financial burden.

A functional prototype with core features (map, reporting, filtering, civic alert) can be completed in 8–10 weeks, followed by a 2-week campus pilot. It requires no hardware, IoT devices, or complex backend infrastructure — making it highly practical for a student-led initiative.

2. Existing Solutions & Their Limitations

While there are a few global tools addressing accessibility (like Wheelmap, AccessNow, and WalkRollMap), they have notable limitations:

- Focus mostly on commercial buildings (restaurants, public toilets), not transport infrastructure
- Not designed for Indian public transport or Tier-2/Tier-3 city contexts
- No built-in system to report issues to civic bodies
- Most are not actively used or known among Indian PwDs

Google Maps offers basic wheelchair-accessible route options in some metros but lacks a barrier reporting feature or real-time feedback mechanism.

3. What's New in TravelAble

TravelAble introduces a crowd-powered, disability-specific, transport-focused reporting tool for Indian users. What makes it stand out:

- Real-time geo-reporting of accessibility barriers at bus stops, footpaths, metro entries
- Disability-based filters for wheelchair, hearing impaired, visually impaired
- Automated civic alert system (email integration with admin IDs)

- Admin dashboard for heatmap visualizations and action prioritization
- Feedback loop: Users see action progress, encouraging participation and trust

This direct reporting + action loop doesn't exist in current solutions, especially in the Indian ecosystem.

4. Supporting Data

- Only 6% of India's 1.45 lakh public buses are fully accessible ([Tol, 2023])
- Over 40% of PwDs in India face daily transport difficulties ([Govt Disability Survey])
- No official public app allows crowd-sourced barrier reporting
- Lack of civic feedback channels for persons with disabilities leads to policy blind spots

This gap highlights the urgent need for a scalable, participatory tool like TravelAble.

8. Expected Outcomes

Short-Term Impact:

- Creates visibility for neglected accessibility gaps
- Initiates direct response from facility managers or local NGOs
- Empowers the PwD community with civic agency

Long-Term Vision:

- Expand to city-level adoption via Smart City partnerships
- Use data to influence municipal accessibility audits
- Build nationwide crowdmap of India's transport accessibility barriers

Broader Effects:

- Reduces dependency and isolation among PwDs

- Encourages community inclusiveness and accountability
- Enables data-driven policy making

9. Resources Required

Technology:

- Firebase (free tier), Mapbox (open tier), GitHub Actions for CI/CD

Material/Logistics:

- Hosting
- UI Testing
- Marketing/Outreach

Mentorship/Advisory Areas:

- Accessibility UX Design
- Civic tech integration with government
- Open data privacy and compliance

10. Team Details

Name	Department	Year
Rekha Korubothu	CSE	4th
Aksh Kura	CSE	4th
Ashwini K	CSE	2nd
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11. Faculty Mentor

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