

TRANS-IT: Panel Overview

Key Features of Student, Driver, and Admin Panels

1. STUDENT PANEL

Real-Time Tracking & Navigation

- Live bus location tracking with 3-5 second GPS updates on interactive maps
- ETA calculations and distance to boarding point with analog speedometer display
- Route visualization showing all stops, previous stops, and complete path
- Bus selection (101-124) with dynamic boarding point assignment

Profile & Registration Management

- Comprehensive profile: name, email, department, year, bus number, stop name
- Phone numbers (student and parent) for notifications and emergencies
- Editable registration details with real-time Firebase synchronization

QR Boarding & Attendance

- Camera-based QR code scanning with bus validation and duplicate prevention
- Automated parent SMS notifications upon successful boarding
- Complete travel history with calendar view and date-wise records
- Monthly/weekly summaries with export capability for attendance tracking

Communication & Feedback

- Submit bus-specific feedback with 1-5 star ratings and text comments
- Query/support ticket system with status tracking (noted/resolved)
- View admin responses and announcement notifications
- Dark/light mode toggle with responsive mobile-first design

2. DRIVER PANEL

Trip Management

- Start/end trip functionality with bus number and route selection
- Active trip dashboard showing elapsed time and current status
- Automatic trip log creation with timestamps in Firestore database

GPS Broadcasting & Navigation

- Continuous GPS position updates every 3-5 seconds during active trips
- Real-time speed, heading, and location transmitted to all panels
- Interactive route map with stop markers and destination highlighting
- Analog speedometer (0-120 km/h) with color-coded speed zones

Delay Reporting & Communication

- Quick delay reporting: traffic, breakdown, weather, construction, or custom
- Automatic admin notification with timestamp and status tracking
- View admin announcements with priority indicators and read status

3. ADMIN PANEL

Dashboard & Analytics

- Real-time statistics: total trips, active buses, registered students, pending queries
- Comprehensive trip logs with date/bus filtering and export functionality
- Quick actions for announcements, live map, delay reports, and user management

User & Fleet Management

- Complete student registry with search by name, email, bus, department, or stop
- Driver management: add, edit, delete profiles with bus assignments
- Bus fleet (101-124) with maintenance mode, capacity, and status tracking
- Route configuration: create, edit, delete routes with stop management

Live Tracking & Monitoring

- Real-time map showing all active buses with speed and driver information
- Stale data detection (>5 minutes) with auto-refresh every few seconds
- Movement animations and status indicators (active/inactive/stale)

Communication & Issue Management

- Post announcements with target audience (all/students/drivers) and priority levels
- Delay report management: active issues with red pulsing alerts and acknowledge action
- Student feedback analytics: view ratings, comments, and calculate averages per bus
- Query resolution: mark as resolved, add responses, assign priority, and escalate
- SOS/emergency alert handling with location, dispatch, and resolution logging

All panels synchronize in real-time via Firebase Firestore for seamless operation