

SMART SCHOOL & CARE CENTER MANAGEMENT SUITE

End-to-End Safety, Transport & Attendance Automation Powered by
QR, RFID & Face Recognition

1. Client Profile

Industry:

Education Technology, Healthcare & Senior Care

Regions Served:

India & United States

Client Segments:

- Govt and Private Schools (India & US)
- Senior Citizen Care Centers (US)

Technology Partner:

Taasha Technologies Pvt. Ltd.

Business Need:

To build an integrated digital ecosystem that automates school and care-center transportation, identity verification, attendance management, and real-time communication using **QR Code, RFID, AI-based Face Recognition, and GPS technologies.**

2. Executive Summary

Taasha Technologies developed a powerful suite of mobile and web applications designed to modernize safety, transport, attendance tracking, and communication for **schools and senior care centers.**

This multi-solution platform consists of:

- **iBus** – Smart School Bus Transport Management System
- **iRide** – Senior Citizen Transport Automation for Care Centers

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CIN: U72900GJ2019PTC108141

- **iAttendance** – Attendance Management System for students, staff, teachers & admins

Powered by **QR codes, RFID cards, AI-driven Face Recognition using AWS Rekognition, real-time GPS tracking, and automated alerts**, the suite ensures transparency, safety, and operational efficiency.

The system replaces outdated paper-based processes with automated verification, real-time notifications, and digital dashboards, creating an intelligent, insight-driven ecosystem for parents, guardians, administrators, and caregivers.

3. Challenges

Schools and care centers were facing several operational obstacles that impacted safety, efficiency, and communication.

Transport Management Challenges (iBus & iRide)

- Manual creation of routes and driver assignments
- No real-time tracking for parents or guardians
- No secure mechanism to verify that a child/senior boarded or deboarded safely
- Frequent delays and poor communication
- No visibility into trip progress for administrators
- Difficulty maintaining compliance and monitoring driver behavior

Attendance Management Challenges (iAttendance)

- Manual attendance data entry created errors
- Limited visibility for administrators into faculty/student presence
- Zero real-time transparency for stakeholders
- Need for secure, tamper-proof attendance logs
- No automation for reporting or compliance

The need was clear: a **centralized digital system with reliable identity verification and real-time mobility tracking**.

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4. Solution Delivered

Taasha Technologies built a **fully modular and scalable enterprise-grade suite** — iBus, iRide, and iAttendance — compatible with both **Android and iOS**, and powered by next-generation identity and tracking technologies.

4.1 iBus – Smart School Bus Transport Management System

A comprehensive platform that automates and secures the entire school transportation workflow.

Key Features

- Automated route creation and optimization
- Driver and student assignment to routes
- Android/iOS mobile app for drivers
- Real-time GPS trip tracking
- Live notifications to parents, including:
 - Bus arrived
 - Child boarded
 - Child deboarded at school/home
 - Delays or unexpected route changes
- **Multi-layer identity verification:**
 - **QR code scanning**
 - **RFID card detection**
 - **Face Recognition using AWS Rekognition**
- Web admin dashboard for trip monitoring
- Emergency and delay alerts

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This system boosts safety and gives parents peace of mind with real-time visibility.

4.2 iRide – Senior Citizen Transport Management System

A specialized variant of iBus tailored for senior care centers in the US.

Key Features

- Resident-to-route assignment
- Guardian notifications
- Driver app for pickup/drop verification
- **QR, RFID & Face Recognition verification**
- Live trip monitoring
- Alerts for delays, emergencies, or missed pickups
- Care center dashboard for compliance and reporting

The system ensures secure mobility and strengthens trust between caregivers and families.

4.3 iAttendance – Smart Attendance Management System

A real-time attendance platform for **principals, teachers, support staff, and students**.

Key Features

- QR-code attendance
- RFID-based card scanning
- AI-powered **Face Recognition via AWS Rekognition**
- Daily, weekly, and monthly attendance dashboards
- Class-wise and organization-level reporting
- Auto-synced attendance logs
- Web & mobile access for admins

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This brings transparency, accuracy, and automation into daily attendance operations.

5. Technology Stack

Mobile Applications:

- Flutter

Web Applications:

- Java, React
- HTML, CSS, JavaScript

Backend:

- Java Spring Boot
- Node.js Microservices

Cloud Infrastructure:

- AWS (Lambda, S3, EC2, RDS, SNS)

Identity & Security:

- AWS Rekognition (Face Recognition)
- JWT Authentication
- Role-based Access Control
- Encrypted API communications

Database:

- MySQL
- PostgreSQL

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Mapping & GPS Services:

- Google Maps API
- Real-time location streaming

6. Implementation Details

System Architecture

- Modular, microservices-driven backend
- Real-time synchronization between mobile apps and web dashboards
- Live GPS tracking logic for driver apps
- AI-driven face recognition verification
- Highly scalable backend supporting thousands of trips per day

Deployment

- **Android App:** Published on Google Play Store
- **iOS App:** Published on Apple App Store
- Web admin portal deployed on AWS cloud
- Configurable for India & US operational workflows

Security & Compliance

- End-to-end encrypted communication
- Role-based user access
- Secure user authentication

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7. Results & Impact

Schools Using iBus & iAttendance

- **90% reduction** in manual transport tasks
- **100% verified** boarding/deboarding
- Improved parent trust due to real-time updates
- Higher on-time trip success rate
- Lower operational errors and delays

Care Centers Using iRide

- Increased accountability during senior transport
- Improved communication between caregivers and families
- Enhanced safety through multi-layer identity checks

Overall Platform Impact

- Complete operational transparency
- Digitized attendance and transport logs
- Faster issue resolution with real-time alerts
- Strong compliance and auditing
- Improved stakeholder satisfaction across all touchpoints