Multi-Module School Transportation Solution

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How developing a multifunctional app for students' safety with real-time location tracking, notification system, in-app messages and voice calls, and other top-tier capabilities improved security and efficiency of school transportation management.

Domain:
Education

Expertise:
Web/Mobile development

Team:
30 specialists

Duration:
approx. 2 years

Project description

A multifunctional application (Web/iOS/Android) for school enabling communication between several stakeholders: teachers, students, parents and external transportation service providers (bus drivers and transportation managers).

Challenge

Understanding customer's pains and goals we defined the following objectives that the final product should solve:

Optimize and simplify the process of students' transportation

Provide information sharing and communication between stakeholders in a more fast and convenient way

Thus the main **requirements** to the multi-module application were set:

Mobile notifications of multiple school events via location

Possibility of planning and tracking the transportation of students

Communication between the staff members and other stakeholders like Students, Parents and contracted external service providers

Dedicated Apps for mobile phones (Android and iOS), the corresponding web interfaces and the needed backend service logic.

Task

The main task set for the *instinctools team was to design and develop multipurpose management system with applications integrated with iSAMS, DAKS systems. 30 specialists in the software development, the architecture and the project management were employed in a turnkey project development.

Solution

The final result was delivered as cloud solution including a web part for staff members and mobile apps for Students, Parents and Drivers based on logged in user role. It also includes third-party systems integration and has a range of functional features:

Key features

iOS/Android applications for Students, Parents, School staff and Drivers

In-app messages and voice calls with several parties involved

Transportation Web-dashboard (Routes, Drivers and Buses management and communication)

Events/actions history accessible anytime

One-click check-in/out for users

Map localization of students

Data storage & synchronization (The app can be used in an offline mode and the data will be saved and synched after connection is back)

Alarm System sending fire/lockdown alarm signals to recipients

Assistance request option in case of emergency

Notification system (personal and mass-notifications of bus delays, accidents, student absence, and other events/actions)

Value

The final solution brings special value to every participant and system as a whole.

- Drivers now can manage their routes and notify Transportation Managers about breakdowns or incidents through delay announcements, alarms and voice calls.

- Any user in case of emergency situations can quickly communicate via voice calls to get some help.

- Since the security of children is one of the most important points, the parents now have the ability to track their children location and receive notifications of any emergencies.

- All school updates, changes in the schedule, delays in transportations, emergency signals and other options available in these apps facilitate communication and information exchange between parties.

Technologies

- Java
- Spring Boot
- D Gradle
- PostgreSQL
- MongoDB
- Pickmeup

AWS:
- Cognito
- SNS
- S3
- EC2
- Load Balancer

IOS:
- iOS SDK
- Swift 4.1
- Cocoapods libs
- Geolocation services
- HTTPS/REST/Alamofire
- DB - Realm

Integrations with external systems:
- DAKS
- ISAMS
- Twilio
- Firebase Cloud Messaging

Android:
- Android SDK / API Level 26
- Rxjava2
- Dagger
- Room
- Moxy
- Butterknife
- Retrofit2
- Okhttp3

Front-End:
- React
- Redux
- React-router
- Redux-thunk
- Sass
- Webpack
- Babel

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