Case Study
Visitor Management System (Mobile App)

Technology Stack: React Native (Android & iOS), Firebase
Client Objective: Enhance user engagement and responsiveness in visitor approval workflows

1. Background & Problem Statement

The existing Visitor Management System allowed guards to raise visitor requests, which triggered push notifications to residents for approval or rejection. While functional, this mechanism lacked interactivity:

- Notifications appeared passively and could be missed.
- Users had to open the app to take action.
- No immediate response capability from the lock screen.

This reduced efficiency and created friction in the visitor approval process, especially in scenarios requiring quick decisions.

2. Preferred Solution

The client envisioned a **popup notification system** that would behave like an incoming call:

- A ringing-style popup appears instantly when a visitor request is raised.
- Users can approve or reject directly from the popup.
- Actions trigger backend HTTP requests seamlessly.
- The popup functions even when the app is closed or the phone is locked.

This solution aimed to deliver real-time interactivity, ensuring residents never miss critical visitor requests.

3. Execution Strategy

Our team approached the project with a structured methodology:

Requirement Analysis

- Conducted workshops with stakeholders to understand pain points.
- Defined user experience goals: immediacy, simplicity, and reliability.
- Outlined technical constraints for lock-screen notifications.

Technology Selection

- **React Native**: Ensured cross-platform compatibility (Android & iOS).
- **Firebase Cloud Messaging (FCM)**: Provided robust push notification delivery.
- **Custom Native Modules**: Integrated call-like UI behaviour for popup notifications.

System Design

- Designed a notification handler that intercepts FCM messages.
- Built a popup interface mimicking call screens with “Approve” and “Reject” buttons.
- Configured backend APIs to process HTTP requests instantly upon user action.
- Ensured lock-screen compatibility by leveraging native OS capabilities.

Development & Integration

- Implemented modular React Native components for reusability.
- Integrated Firebase for real-time message delivery.
- Developed backend endpoints to handle approval/rejection securely.
- Conducted rigorous testing across devices, OS versions, and lock-screen states.

Quality Assurance

- Simulated visitor requests under varied conditions (app closed, device locked).
- Verified latency: popup appeared within milliseconds of guard request.
- Ensured secure transmission of user actions to backend.
- Collected user feedback and refined UI for clarity and responsiveness.

4. Outcome & Impact

The new popup notification system delivered significant improvements:

- **Instant Engagement:** Users respond without opening the app.
- **Lock-Screen Accessibility:** No missed requests due to inactive devices.
- **Faster Decision-Making:** Approval/rejection processed in real time.
- **Enhanced User Experience:** Call-like interface felt intuitive and familiar.

This innovation transformed the Visitor Management System into a **proactive, interactive solution**, strengthening trust and satisfaction among residents.

5. Key Learnings & Strengths Demonstrated

- Expertise in **cross-platform mobile development**.
- Ability to integrate **real-time communication systems**.
- Strong focus on **user-centric design and experience**.
- Seamless collaboration between frontend, backend, and QA teams.

6. Conclusion

By combining **React Native** and **Firebase**, our team successfully delivered a **next-generation visitor approval system** that is fast, interactive, and reliable. This project showcases our ability to solve complex user experience challenges with innovative, scalable solutions.