MVP Phase Plan (2-3 Months)

Stack: Flutter (iOS-optimized) + Supabase (PostgreSQL/PostGIS) + Firebase Auth/FCM + NestJS
Team: 4 Developers (2 Flutter, 1 Backend, 1 Full-stack)
Target: Functional MVP for 400 employees

Phase 1: Foundation Setup (Weeks 1-2)

Goal: Hybrid auth system + geofence validation prototype
iOS Focus:
Tasks:
1. **Auth Integration**
   - Implement Firebase Auth (Apple/Google sign-in)
   - Configure Supabase RLS with custom JWT claims:
2. WITH CHECK (current_role = 'worker');
   - Bridge Firebase → Supabase auth via `firebase_user_id` mapping
3. **Geofencing Prototype**
   - Client-side: Flutter `geolocator` + `turf` for preliminary checks
   - Server-side: PostGIS table structure:
   - Sync geofences to client via Supabase Realtime
4. **iOS Optimization**
   - Background location permissions in `Info.plist`
   - Keychain storage for session tokens

Deliverable: Login + basic site geofence validation (iOS/Android)

Phase 2: Rostering Engine (Weeks 3-5)

Goal: Availability/shift management + poaching workflow
Key Flows:
1. **Constrained Assignment Logic**
   - Supabase Edge Function for conflict checks:
2. **Poaching Workflow**
   - Use Supabase Realtime for cross-manager worker availability
   - Firebase FCM for instant worker notifications
3. **iOS Calendar Sync**
   - `flutter_calendar` with Cupertino styling
   - Background fetch for shift updates

Deliverable: End-to-end rostering with poaching (iOS-first UI)

Phase 3: Time Tracking & Payments (Weeks 6-8)

Goal: GPS clock-ins + ABA payroll generation
Tasks:
1. **Geovalidated Clock-ins**
   ○ Hybrid validation approach:
2. **NestJS Payment Microservice**
   ○ REST endpoint for ABA generation:
3. **iOS Security Enhancements**
   ○ Secure Enclave storage for banking details
   ○ Face ID/Touch ID for payment approvals

Deliverable: GPS clock-ins + ABA payroll export (TestFlight ready)

Phase 4: Notifications & Compliance (Weeks 9-12)

Goal: Role-based notifications + AU compliance
Tasks:
1. **Notification Matrix Implementation**

Trigger	Target	Tech Stack
Shift Assigned	Worker	Supabase Realtime + FCM
Late Clock-in	Manager	Supabase Trigger → Twilio
ABA Generated	SuperAdmin	NestJS Event → Email

2. **Compliance Safeguards**
   ○ Audit logging via Supabase PostgreSQL:
   ○ Automated certification expiry:
3. **iOS Final Polish**

- App Store screenshots with AU-specific UI
- Background notification handling with `flutter_background_service`
- Battery optimization profile

Deliverable: App Store submission + Play Store beta

Why This Works for 400 Employees

1. **Supabase Capacity**:
   - Basic tier (free) supports:
     - 500MB database (est. 50MB for 400 users)
     - 50K realtime connections/month
     - 1GB file storage
2. **Firebase Synergy**:
   - Auth scales to 10K MAU free
   - FCM handles 500K messages/month free
3. **Cost Control**:
   - Total MVP cost: $0 (free tiers cover all services)

Post-MVP Scaling Tip: At 1,000+ users, upgrade to Supabase Pro ($25/month) for connection pooling and enhanced monitoring.