Refined Development Approach

Phase 1: Project Discovery & Requirement Analysis

- Document Analysis: Review provided documentation thoroughly.
- Requirement Elicitation: Gather detailed requirements from the client.
- Scope Definition: Define project constraints (time, budget, resources).
- Risk Assessment: Identify risks (e.g., security, scalability) and mitigations.
- Tech Stack Finalization: React.js, Node.js, Express.js, PostgreSQL, Firebase/AWS, Flutter.

Phase 2: UI/UX Design

- Wireframing & Prototyping (Figma): Design web, mobile, and kiosk screens.
- User Flow Design: Ensure intuitive navigation for different user roles.
- Client Approval & Revisions: Gather feedback and revise before development.

Phase 3: Development (Agile & Modular Approach)

- Module-Based Development: Core modules - authentication, HR management, time tracking.
- CI/CD Pipeline Setup: Automate builds and testing.
- Database Schema Design: Structure PostgreSQL efficiently for multi-tenancy.
- API Development: Secure and scalable APIs using Node.js & Express.js.
- Mobile & Kiosk App Development: Develop in parallel for feature consistency.

Phase 4: Testing & Quality Assurance (QA)

- Unit & Integration Testing: Each module is tested upon completion.
- Performance Testing: Ensure scalability and fast response times.
- Security Testing: Identify vulnerabilities in authentication & data handling.
- User Acceptance Testing (UAT): Deploy beta versions for client feedback.
- Bug Tracking & Fixes: Gather feedback and resolve defects before launch.

Phase 5: Deployment & Release

- Staging Deployment: Test in a real-world environment.
- Final Deployment: Web app (AWS/Firebase), mobile app (App Store/Play Store), kiosk app on Google Chrome.

Refined Development Approach

- Monitoring & Optimization: Set up logging and performance monitoring.
- Training & Documentation: Provide manuals and training materials.

Phase 6: Post-Launch Support & Maintenance

- Bug Fixes & Updates: Provide hypercare support for 3 months.
- Feature Enhancements: Plan future upgrades based on client needs.
- Performance Monitoring: Ensure uptime and security compliance.