

Abstract

Our project aims to revolutionize the coffee industry in El Salvador by leveraging blockchain technology to enhance transparency and accountability in farm operations. By developing a decentralized ledger, we empower coffee farms to document their compliance with fair-trade standards. The solution features an app with tailored interfaces for farms, foremen, and workers utilizing tools like Expo Go, Polygon zkEVM, and The Graph. The final product ensures secure, immutable recordkeeping while promoting trust within the global coffee supply chain.

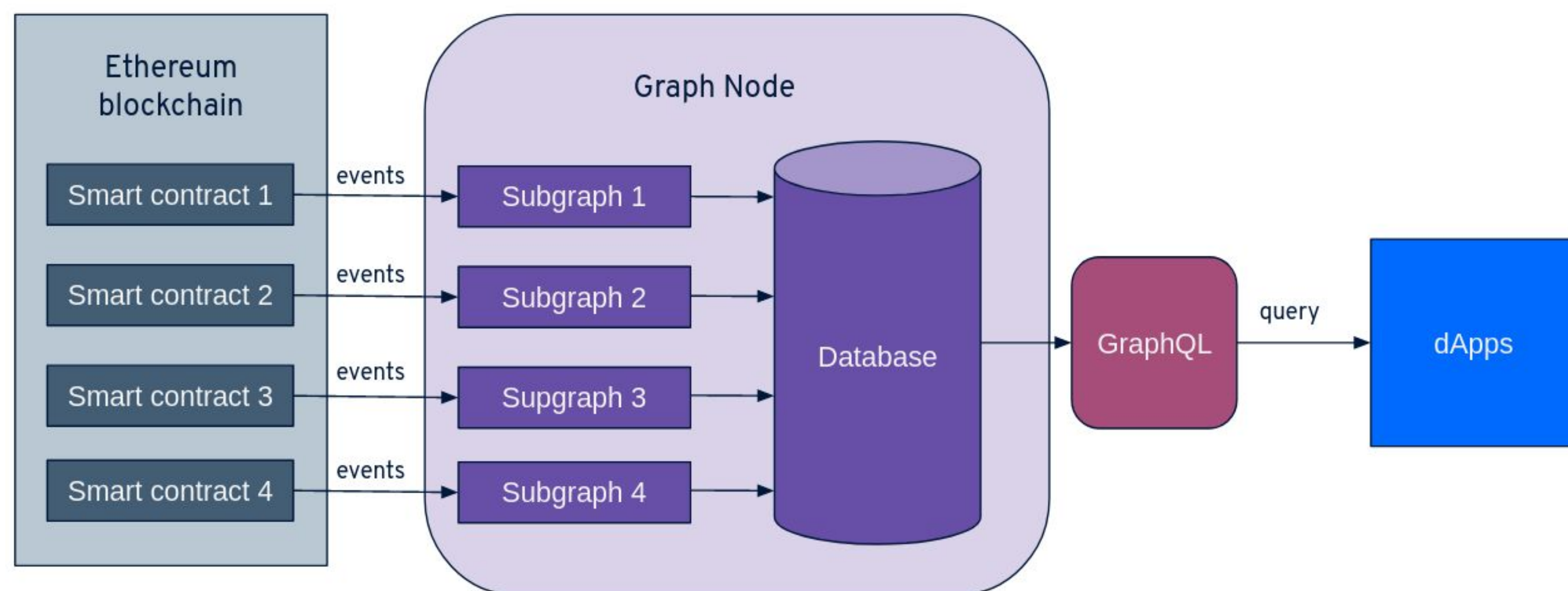
Deployment

We plan to deploy to the Google Play Store and Apple App Store. Most users in El Salvador use Android, but deployment to both platforms ensures thorough beta testing and broader accessibility.

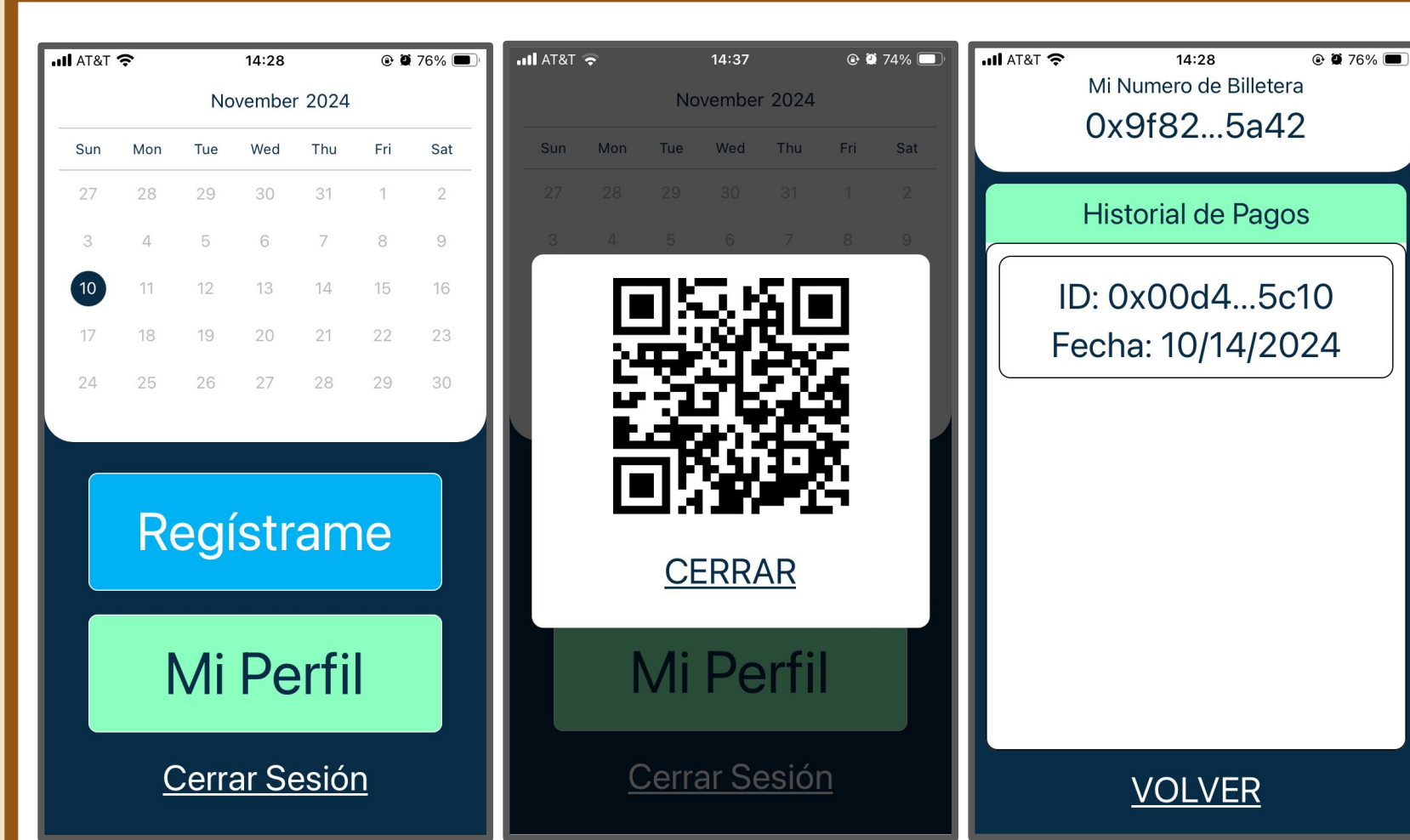
Testing

We used Expo Go for development testing and plan to use TestFlight for beta testing. We planned testing to span several weeks with 1-2 users per profile. Participants would receive an introductory session, and we would gather their feedback periodically throughout the testing period.

The Graph

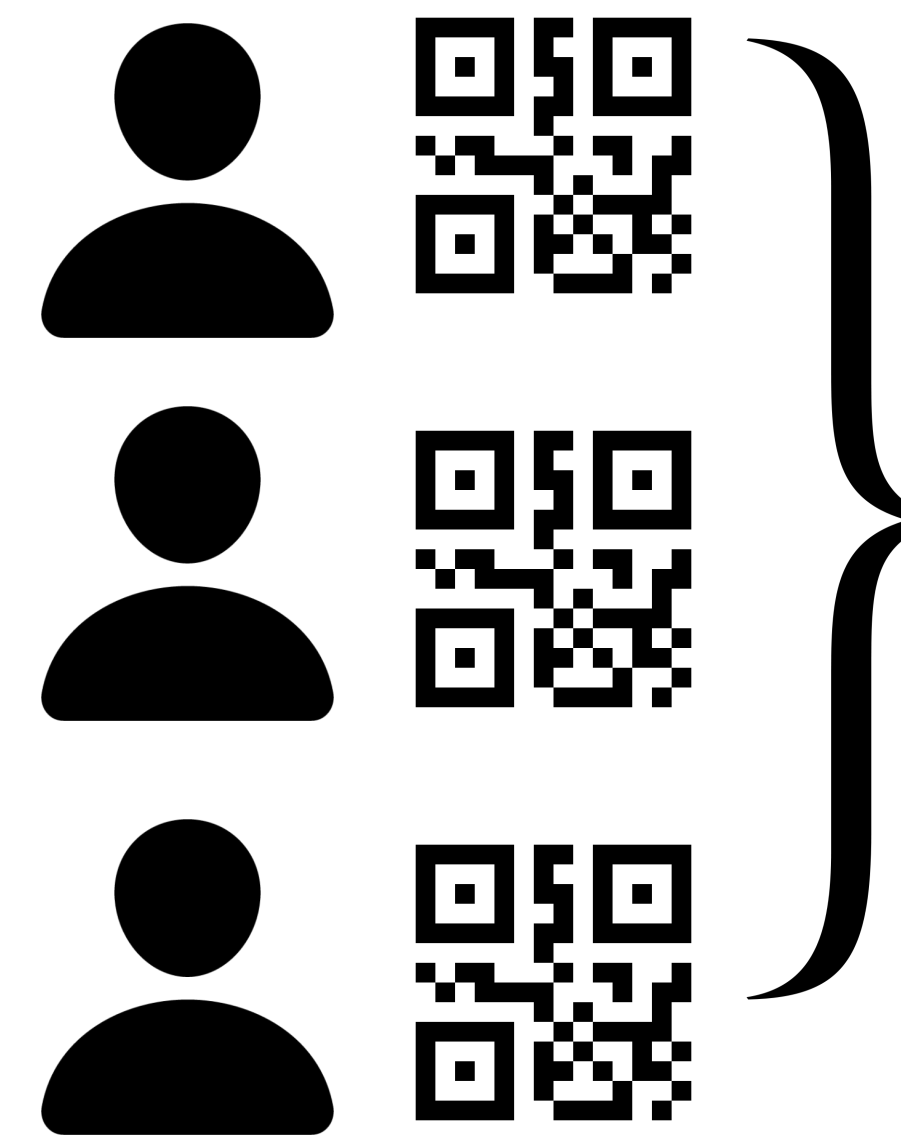


Worker



The worker interface allows laborers to display their unique QR codes to foremen for check-in. This ensures accurate tracking of attendance. Workers can also view their profile, which includes a detailed history of their payments, providing transparency and accountability for their earnings.

Worker Check-In



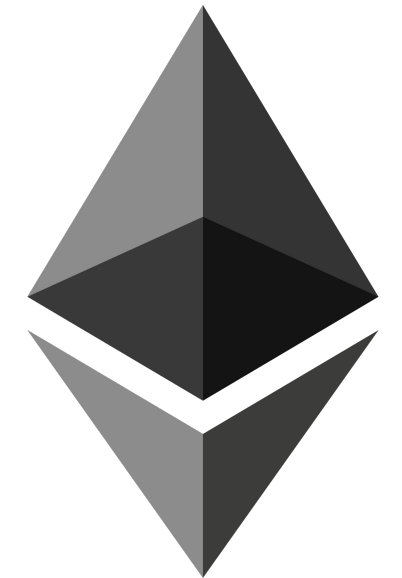
Foreman Scans Worker

0x2300f18166Cf
323E3e9a29b764
292E4ef5fAc0f4

0x2300f18166Cf
323E3e9a29b764
292E4ef5fAc0f4

0x2300f18166Cf
323E3e9a29b764
292E4ef5fAc0f4

Recorded on the Blockchain



Expo Go

To develop and refine the mobile app, we used Expo Go, a framework that facilitated rapid testing during development. This allowed us to iterate on features quickly and ensure compatibility across different devices during the development process.

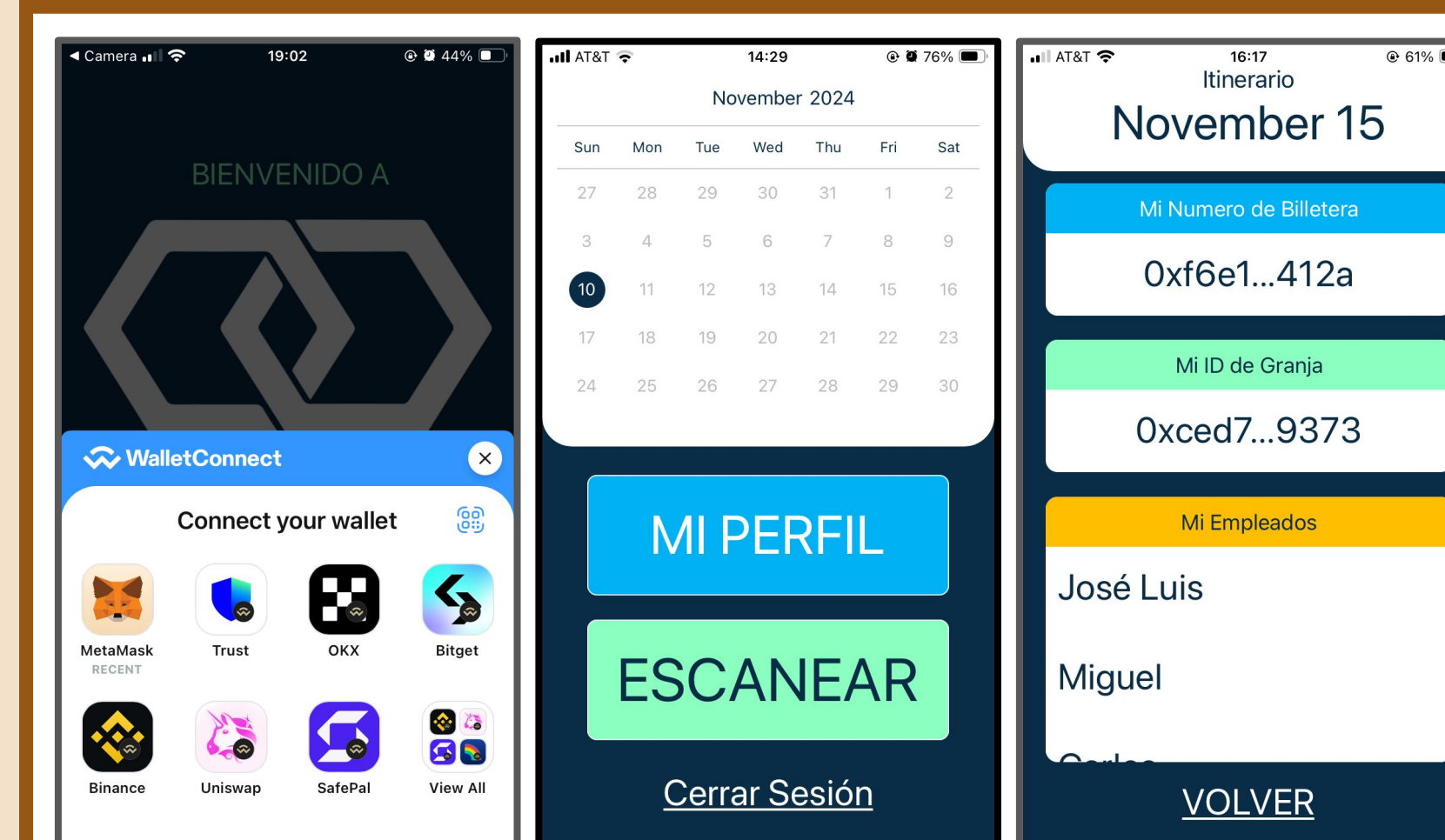
GraphQL

Our app uses The Graph to simplify data management by indexing blockchain events and making them easily queryable. This integration ensures that the app provides fast, accurate, and up-to-date information for all user interfaces.

Polygon zkEVM

To optimize the performance of our blockchain-based app, we deployed it on Polygon zkEVM. This platform ensures compatibility with Ethereum, provides robust security through zero-knowledge proofs, and minimizes transaction costs—crucial for our user base in El Salvador.

Foreman



Foremen can use this interface to scan and check in workers via their QR codes. The profile section displays their farm and personal IDs, along with a worker list they can rename. WalletConnect functionality ensures secure access to blockchain features.

Farm



The farm interface provides a comprehensive employee list with renaming options, a payment page for compensating workers, and a QR code scanner to promote workers to foreman roles. The interface supports both English and Spanish, with an easy toggle for language preferences.