

Cross-Chain Wallet PRD

1. Feature Introduction

Overview

The Cross-Chain Wallet is a unified multi-chain wallet interface that enables seamless management of assets, staking positions, and governance participation across all Canopy Nested Chains. It abstracts away chain complexity while providing comprehensive portfolio management, integrated staking, and governance tools in a single secure interface.

Problem Statement

Users would currently be forced to juggle multiple wallets and interfaces to manage assets across different chains, leading to fragmented experiences, missed opportunities, and risks. The complexity of cross-chain operations, staking management, and governance participation creates significant barriers to ecosystem participation and growth.

2. Principles & Objectives

Goals

- Unified Experience: Single interface for all Canopy ecosystem interactions
- Security First: Industry-leading security practices and user protection
- Simplicity: Abstract technical complexity while maintaining power user features
- Integration: Seamless connection with all Scanopy components
- Accessibility: Support both crypto natives and newcomers

Success Metrics (KPIs)

- Monthly active wallets > 50,000 within 6 months
- Cross-chain transaction success rate > 99%
- Average time to complete cross-chain transfer < 30 seconds
- Security incident rate < 0.01%
- User satisfaction score > 4.5/5

Non-Goals

- Managing private keys on centralized servers

3. Users

Primary Personas

1. Multi-Chain User

- Background: Active participant across multiple Nested Chains
- Technical Level: Medium
- Needs: Unified portfolio view, easy transfers, transaction management
- Pain Points: Wallet switching, network management, fragmented balances

2. Staking Participant

- Background: Token holder actively staking across chains
- Technical Level: Medium to High
- Needs: Staking management, reward tracking
- Pain Points: Complex staking process, reward claiming, unstaking periods

3. Governance Participant

- Background: Active voter in ecosystem governance
- Technical Level: Low to High
- Needs: Proposal notifications, voting interfaces, delegation management
- Pain Points: Missing votes, proposal discovery, multi-chain governance

Key User Stories

1. As a multi-chain user, I want to manage all my crypto assets from a single interface without switching between different wallets so that I can efficiently manage my portfolio.
2. As a staking participant, I want to easily stake, track rewards, and manage validators across all chains so that I can optimize my staking returns.
3. As a governance participant, I want to stay informed about and vote on proposals across all chains where I hold voting power so that I can actively participate in ecosystem decisions.

4. Requirements

P0 - Must Have

Multi-Wallet Management

- Single seed phrase for all Canopy chains
- Multiple account creation and management
- Account labeling and organization
- Watch-only address support

Cross-Chain Portfolio View

- Unified balance display across all chains
- Real-time USD value calculations
- Asset allocation visualization
- Transaction history aggregation
- Portfolio performance tracking

Basic Transaction Features

- Send/receive across any Canopy chain
- Cross-chain transfers
- Transaction fee estimation
- Transaction status tracking
- Address book management

Staking Management

- Validator discovery and selection
- One-click delegation
- Reward tracking and claiming
- Unstaking management with timers
- Staking position overview

Security Features

- Session timeout management
- Transaction confirmation screens
- Approval management

P1 - Great to Have

Advanced Staking Features

- Auto-compounding rewards
- Validator performance tracking
- Yield optimization suggestions

Governance Integration

- Proposal discovery and notifications
- In-wallet voting interface
- Delegation management
- Voting history tracking
- Proposal impact analysis

DeFi Position Tracking

- LP position monitoring
- Yield farming tracking
- Lending/borrowing positions
- Impermanent loss calculation

P2 - Nice to Have

Enhanced UX Features

- Recurring transactions
- CSV export for taxes

P3 - If We Have Time

Advanced Features

- Slashing alerts
- WalletConnect support

5. Technical Architecture

System Components

Wallet Core

- Key management system
- HD wallet implementation
- Encryption layer
- Signature generation
- Multi-chain address derivation

Backend Services

- Balance aggregation service
- Transaction relay service
- Price feed aggregator
- Notification service
- Backup service

Frontend Application

- React-based web application
- Secure state management
- WebCrypto API usage

- Responsive design
- PWA capabilities

Security Architecture

Key Management

- Client-side key generation
- Encrypted local storage
- Secure key derivation
- Hardware wallet support
- Multi-factor authentication

Transaction Security

- Transaction simulation
- Approval verification
- Phishing protection
- Rate limiting
- Suspicious activity detection

Integration Requirements

Launchpad Integration

- New chain auto-detection
- Token addition for graduated projects
- Launch participation tracking
- Virtual pool position management

AMM Integration

- Swap interface access
- LP position management
- Reward claiming
- Pool discovery

Explorer Integration

- Account data synchronization
- Transaction history import
- Staking position detection
- Validator information

6. User Experience Design

Wallet Setup Flow

1. Choose setup method (new/import)
2. Generate/enter seed phrase
3. Set password and biometrics
4. Backup verification
5. Account creation
6. Chain selection

Transaction Flow

1. Select action (send/receive/stake)
2. Choose source chain/account
3. Enter recipient/validator
4. Input amount
5. Review fees and details
6. Confirm with password/biometric
7. Track transaction status

Portfolio Dashboard Layout

None

Portfolio Overview

- └─ Total Value (USD)
- └─ 24h Change
- └─ Asset Distribution Chart
- └─ Quick Actions

Assets Tab

- └─ Token Balances
- └─ Chain Breakdown
- └─ Price Changes
- └─ Send/Receive

Staking Tab

- └─ Active Stakes
- └─ Pending Rewards
- └─ Unstaking Queue

└─ Available Validators

Activity Tab

└─ Recent Transactions

└─ Pending Transactions

└─ Transaction History

└─ Export Options

Key UX Principles

- Security Without Friction: Secure by default, convenient by design
- Progressive Disclosure: Show advanced features only when needed
- Clear Feedback: Immediate response to all user actions
- Error Prevention: Validate before execution
- Mobile-First: Optimized for mobile usage patterns

7. Metrics and Analytics

User Engagement Metrics

- Daily Active Users: Unique wallets accessed per day
- Transaction Volume: Number and value of transactions
- Feature Adoption: Usage rates of staking, governance, cross-chain features
- Session Duration: Average time spent in wallet
- Cross-Chain Activity: Percentage using multiple chains

Security Metrics

- Security Incidents: Attempted breaches or compromises

Performance Metrics

- Load Time: Time to display portfolio
- Sync Latency: Chain data update delay
- Error Rate: Application errors per session
- Cross-Chain Transfer Time: Average completion time

8. Open Questions / Next Steps

Pending Decisions

- Login (privy style with email auth?)
- Mobile app (?)
- Fee structure for premium features

Considered but Deferred

- Fiat On/Off Ramps: Direct fiat currency conversion
- Multi-Signature Wallets: Shared wallet management

Next Steps

1. Complete security architecture review
2. Conduct user research on wallet preferences
3. Design key management system
4. Develop secure storage implementation
5. Create UI/UX prototypes
6. Plan beta testing program
7. Establish security audit schedule
8. Define backup and recovery procedures