

Cross-Chain Explorer PRD

1. Feature Introduction

Overview

The Cross-Chain Explorer is a comprehensive analytics and discovery platform that provides real-time visibility into all Canopy ecosystem activity. It enables validators, stakers, and traders to discover opportunities, monitor performance, and make informed decisions across all Nested Chains through unified dashboards and analytics.

Problem Statement

Users currently lack a centralized view of the Canopy ecosystem, making it difficult to discover staking opportunities, compare validator performance, assess chain health, and track cross-chain activity. This fragmentation leads to missed opportunities, suboptimal staking decisions, and poor risk assessment across the ecosystem.

2. Principles & Objectives

Goals

- Unified Visibility: Provide single source of truth for all Canopy ecosystem data
- Opportunity Discovery: Surface staking, trading, and rewards opportunities
- Risk Transparency: Enable informed decision-making through comprehensive metrics
- Performance Tracking: Monitor validator, chain, and portfolio performance
- User Empowerment: Democratize access to blockchain data and analytics

Success Metrics (KPIs)

- Daily active users > 1,000 within 6 months
- Average session duration > 3 minutes
- Staking discovery conversion rate > 10%
- Data refresh latency < 5 seconds

Non-Goals

- Providing financial advice or recommendations
- Managing user funds directly
- Supporting non-Canopy blockchains initially
- Offering trading execution (handled by AMM)

3. Users

Primary Personas

1. Staker/Delegator

- Background: Token holder seeking staking opportunities
- Technical Level: Medium
- Needs: Validator discovery, risk assessment, reward tracking
- Pain Points: Validator selection, performance monitoring, unstaking management

2. Validator Operator

- Background: Professional running validator nodes
- Technical Level: High
- Needs: Performance monitoring, opportunity identification
- Pain Points: Multi-chain management, reputation building

3. Chain Developer

- Background: Team launching or managing a Nested Chain
- Technical Level: High
- Needs: Chain health metrics, usage analytics, validator recruitment
- Pain Points: Ecosystem visibility, performance optimization, growth tracking

Key User Stories

1. As a staker, I want to discover the most profitable staking opportunities across all Nested Chains so that I can maximize my returns while managing risk.
2. As a validator operator, I want to monitor my performance across multiple Nested Chains so that I can maintain high uptime and grow stake.
3. As a chain developer, I want to track my chain's growth and health metrics so that I can make informed decisions about development priorities.

4. Requirements

P0 - Must Have

Blockchain Explorer Landing Page

- Chain selection (default: Canopy)
- Recent blocks
- Recent transactions
- Nested Chains
- Validators / Security information

- Swap history, open interest
- Search by account/address lookup, transaction, etc.

Chain Discovery Dashboard

- Display all active Nested Chains
- Show key metrics (stake, market cap, validators, transactions, age, security root, price history (line chart), sentiment)
- Rank by multiple criteria (TVL, trending, new, rewards, trading volume)
- Search and filter functionality
- Real-time status indicators

Chain View (same as launchpad + live chain information)

- Critical project information (Always displayed)
 - Chain/token naming and one liner
 - One-liner (short text)
 - Via icons
 - Website (URL)
 - Social accounts
 - Github repository (URL)
 - Creator wallet address or username
 - Launch creation time (hours/days since launch)
- Project Information Tab
 - Description (long text)
 - Video for branding
 - Whitepaper (URL)
 - Show template type, launch date,
- Tradingview-like chart (see pump.fun) with key information like volume
 - Market Cap
 - Percent change (24 hours)
- Top Holders by percentage
- Show simple bonding curve progress
- Easy to use Buy/Sell interface
- Simple position indicator
- Staking metrics
 - Total stake
 - Validators
 - Security root
 - Unstaking metrics
- Block explorer view (with explorer basics (see above))
- Stats View
- Live updates

Staking Interface (validator list)

- Validator listings (based on chain selection)
- Current rewards and historical rewards
- Stake weight (by chain selected)
- Live updates

Validator Performance Dashboard (per validator view)

- Portfolio view of all staking positions and weight
- Information about validator (URL, github)
- Uptime and reliability metrics
- Slashing history
- Commission rates and changes
- Performance across all chains
- Rewards history
- Unstaking countdown timers
- Data exports
- Live updates

Address view

- Balance (change value, %)
- Creation information
- Aggregated portfolio value (in CNPY)
- Staking view by chain, weight
- Transactions
- LP positions
- Asset allocation visualization
- Live updates

P1 - Great to Have

Advanced Analytics

- Validator reputation scoring
- Network health indicators
- Decentralization metrics (per chain)

P2 - Nice to Have

Alert System

- Price movement alerts
- Validator performance alerts
- Unstaking reminders
- New chain notifications

- Governance proposal alerts

Social Features

- Validator reviews/ratings
- Chats (chain view)
- Chain announcements (chain view)
- Developer updates feed

P3 - If We Have Time

Advanced Tools

- API access for developers
- Custom dashboard builder
- Data export/reporting
- Mobile application
- Browser extension

Governance Tracking

- Active proposals by chain
- Validator voting history
- Proposal outcomes tracking
- Governance calendar

5. Technical Architecture

System Components

Data Indexing Layer

- Multi-chain data indexer
- Real-time event streaming
- Historical data storage
- Data aggregation service
- Cache management system

Backend Services

- Chain monitoring service
- Validator tracking service
- Analytics calculation engine
- Alert management system
- API gateway

Frontend Application

- React-based web application
- Responsive design system
- Interactive data visualizations
- Progressive web app features

Integration Requirements

Launchpad Integration

- Automatic chain tracking upon graduation
- Launch metrics display
- Validator onboarding tracking
- Community growth metrics

AMM Integration

- Liquidity pool metrics
- Trading volume per chain
- Yield opportunity comparison
- LP position tracking

Wallet Integration

- Account connection for portfolio view
- Staking position detection
- Transaction history import
- Delegation execution

6. User Experience Design

Information Architecture

None

Home Dashboard

├— Chains (see below)

├— Blocks View

├— Transactions View

├— Accounts View

├— Trending Activity (list view - hot chains)

└— New Launches (list view - new chains)

Launchpad

- └─ New Launches
- └─ Previous Launches

Staking

- └─ Validator Directory
- └─ Validator View

Chains

- └─ Chain List
- └─ Chain Details View
 - └─ Validator information
- └─ Governance View
 - └─ Governance by chain

Analytics

- └─ Performance
- └─ Network Stats

Key UX Principles

- Data Density: Maximum information with minimal clicks
- Visual Hierarchy: Important metrics prominently displayed
- Real-Time Updates: Live data refresh without page reloads
- Responsive Tables: Mobile-optimized data presentation
- Intuitive Navigation: Clear pathways to key information

7. Metrics and Analytics

Usage Metrics

- Daily Active Users: Unique visitors per day
- Page Views: Most visited sections
- Search Queries: Common search terms
- Feature Adoption: Usage of specific tools
- User Retention: Return visitor rate

Data Quality Metrics

- Data Freshness: Time since last update
- Data Completeness: Coverage across chains
- Query Performance: Average response time
- Error Rate: Failed data fetches
- Indexing Lag: Block processing delay

Business Metrics

- Staking Conversion: Views to delegation rate
- Discovery Effectiveness: New chain adoption
- Validator Growth: New validators onboarded
- Ecosystem Growth: Total chains and validators
- User Satisfaction: NPS and feedback scores

8. Open Questions / Next Steps

Pending Decisions

- Data retention policy (how long to store historical data)
- Rate limiting for API access
- Third-party data provider selection
- Mobile app prioritization

Considered but Deferred

- Automated Trading Signals: Technical analysis indicators
- Validator Automations

Next Steps

1. Define data schema and indexing strategy
2. Select infrastructure providers for data nodes
3. Design real-time data pipeline architecture
4. Create UI/UX mockups for key dashboards
5. Develop validator scoring methodology
6. Plan phased rollout strategy
7. Establish data partnerships and APIs