

CAT Bond Rail Blueprint

Strategic planning for resilient rail infrastructure financing

Objective & Positioning

Building a Programmable CAT Bond Issuance Factory

Programmable CAT Bond Factory

Develop a repeatable, scalable system for issuing catastrophe bonds with integrated components.

System Integration

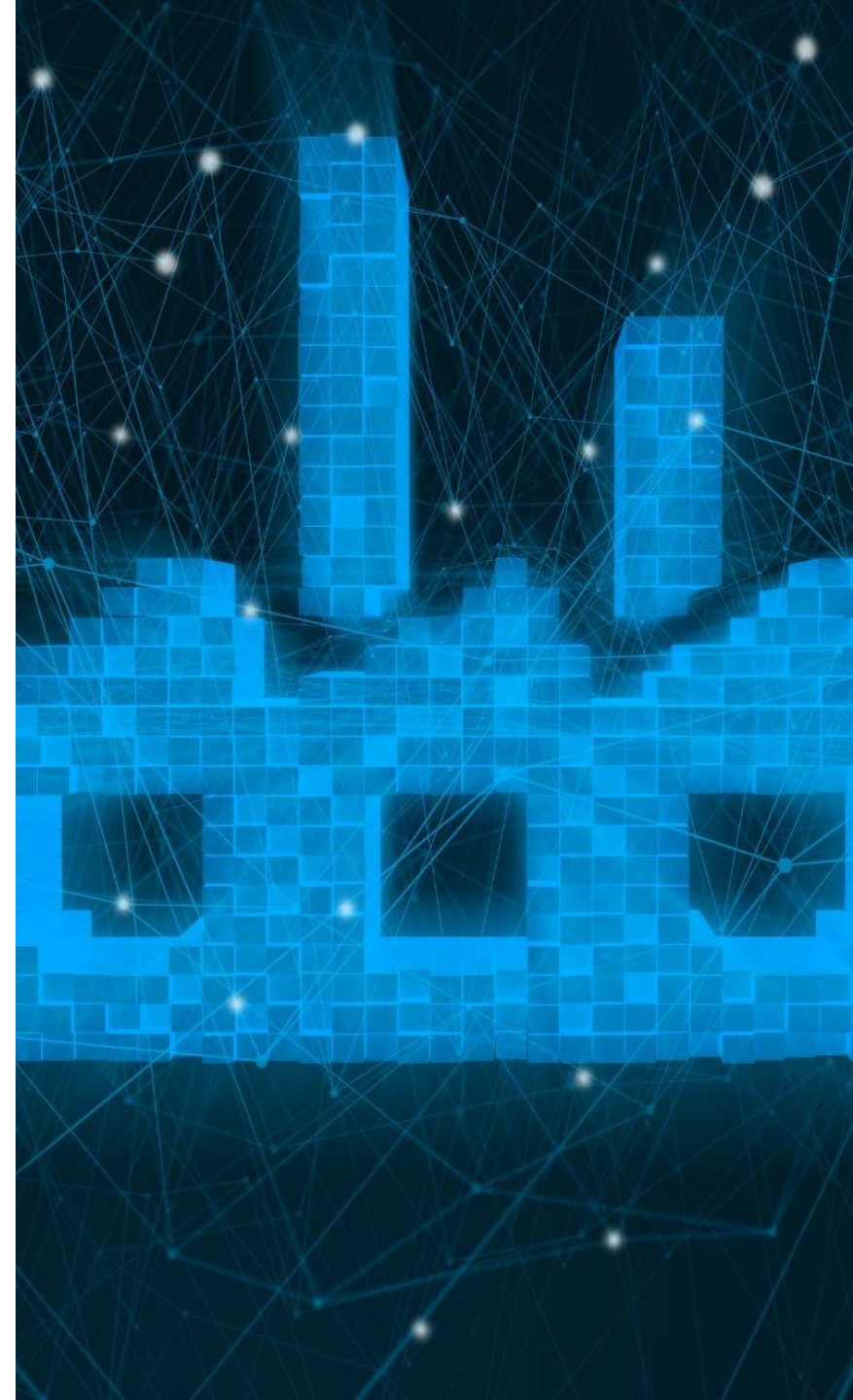
Integrate vaults, tranches, collateral flow, triggers, settlement, and compliance into one unified platform.

Automation and Modularity

Focus on modular design and automation to facilitate efficient bond issuance and lifecycle management.

Regulatory Compliance and API Access

Embed compliance and lifecycle management to enable API-based interaction for insurers and asset managers.



System Map

Six Core Modules

Deal Configuration Engine

This module structures bond parameters and metadata for precise deal setup and customization.

Investor Onboarding & Token Issuance

Handles investor subscriptions and tranche token issuance, facilitating smooth onboarding.

Collateral Management Layer

Manages stablecoins, tokenized treasury bills, and yield flows within a secure vault.

Event Monitoring & Settlement Trigger

Monitors parametric events via oracle feeds and initiates settlement processes automatically.

Deterministic Settlement Engine

Executes deterministic payout logic ensuring accurate and timely bond settlements.

Compliance Reporting & Lifecycle

Manages reporting, lifecycle events, and redemption workflows to meet regulatory compliance.

Object Model



On-Chain Schema Components

Series NFT Overview

Represents the full issuance with details like peril type, geography, term, and collateral rules.

Tranche Tokens Functionality

Fractional regulated interests partitioned by tranche enabling compliance and secondary market trading.

Collateral Vault Role

Holds stablecoins and tokenized assets managing coupon schedules and payout waterfalls securely.

Lifecycle Phases

Structuring to Maturity



Structuring Phase

Configure peril definitions, thresholds, and collateral rules into Series NFT metadata for risk management.

Subscription Phase

Onboard investors, mint tranche tokens, enforce KYC, and fund vaults to initiate investment.

Trigger Monitoring and Event

Monitor parametric triggers using oracle feeds and activate automated settlements on trigger events.

Maturity and Settlement

Unwind positions, finalize coupons, return principal pro-rata, and archive Series NFT records efficiently.

Settlement and Oracle Logic

AFO Settlement and Oracle Path



Deterministic Settlement Logic

The engine calculates payouts using a clear formula ensuring fair transfers to sponsors and investors.

Secure Oracle Integration

Data flows securely from NOAA/JMA/USGS through Chainlink OCR and Unykorn to the trigger module.

Consensus and Compliance Features

Supports N-of-M oracle consensus, dispute windows, and manual overrides for regulatory compliance.

Auditability and Resilience

Architecture ensures zero ambiguity, full audit logs, and protection against data tampering.

Compliance and Regulatory Alignment



Standards and Controls

Regulatory Adherence

CAT Bond rail follows MiCA and FATF guidelines ensuring compliant investor participation and security.

Investor Verification

Whitelisted investors undergo KYC passports and sponsor verification to maintain platform integrity.

Collateral Protection

Collateral structured as bankruptcy-remote SPV replicas ensures legal segregation and investor protection.

Integrated Compliance Modules

ISO standards enable messaging, reporting, and audit bundles compatible with traditional finance infrastructures.

Monetization Model

Revenue Streams



Primary Revenue Streams

Monetization includes structuring fees, AUM fees, coupon flow routing fees, and redemption/settlement fees.



Optional Revenue Channels

Additional income from marketplace fees, government licensing, and white-labeled issuance rails for insurers.



Perpetual Revenue Model

Model balances upfront structuring income with recurring platform-based cash flows for sustainability.

Deployment Roadmap

Phased Implementation



Phase 1: MVP Delivery

Initial 4-6 weeks focus on Series NFT, Vault v1, tranche tokens, parametric triggers, and manual subscriptions.

Phase 2: Institutional Mode

Over 8-12 weeks, adds collateral options, compliance partitions, oracle feeds, and automated coupon logic.

Phase 3: Factory Mode

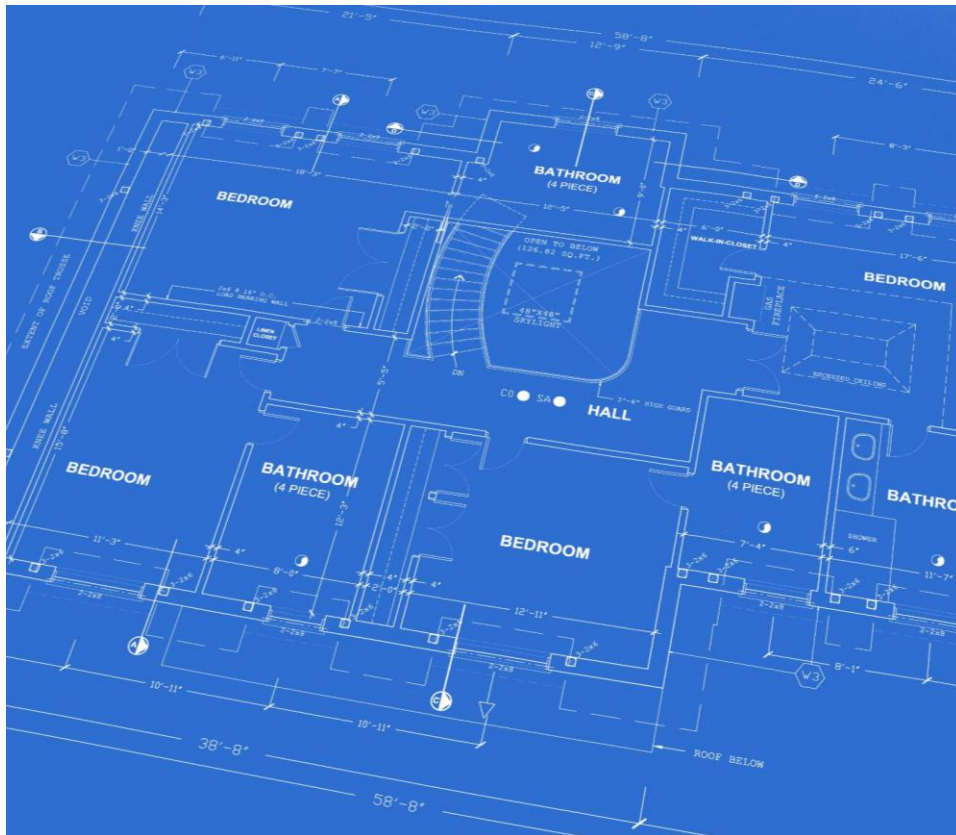
One quarter to implement issuer dashboards, templates, waterfall engines, and marketplace functionality.

Phase 4: Sovereign Mode

Enables API issuance, RLN/SWIFT connectors, multi-peril frameworks, ratings, and distribution desks.

Final Blueprint

Actionable Path



Comprehensive Issuance Infrastructure

The blueprint offers a structured path for building a fully operational issuance infrastructure from scratch.

Multidisciplinary Design Approach

Designed for engineers, legal teams, insurers, sovereigns, and investors ensuring clarity across multiple domains.

Modular and Compliant Architecture

Combines modular design, deterministic logic, and regulatory alignment for scalable and compliant deployment.

Next-Generation Insurance Infrastructure

Positions Unykorn as a scalable, sovereign-grade insurance infrastructure provider for the future.