DIN

Decentralized Insurance

Whitepaper

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[Disclaimer]

This whitepaper summarizes the design, service architecture, and business strategy of the decentralized insurance service "DIN", which operates on the Kaia blockchain. It includes DIN's original business model, smart contract architecture, asset management approach, and ecosystem expansion strategy.

The DIN service, DINO, DINGO, and DIN Token were developed for participation in the Korea Stablecoin Hackathon. During the testing phase, there may be differences between the descriptions in this whitepaper and the actual implementation. This whitepaper does not constitute an investment solicitation or a legally binding commitment, and certain specifications and policies may change during future protocol design and operational processes.

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1. Introduction

1.1. Background

Decentralized finance (DeFi) is reshaping how assets are managed and how risk is handled, yet users remain exposed to high volatility, smart contract vulnerabilities, and uncertainties driven by external events. Traditional insurance addresses a broad range of risks, but its opaque claims assessment and dispute processes, slow settlement times, high operational costs, and, most critically, regulatory risk make it difficult to align with the Web3 market environment. Market events such as sharp price drops, specific indicator-triggered conditions, and irregular risks like weather or service outages are particularly challenging to capture with conventional product frameworks.

To date, many users have either built their own derivative-based hedges or accepted risks without protection. Derivatives require specialized knowledge and ongoing management, and introduce additional risks such as slippage and liquidations. **Insurance, by contrast, is inherently simple: a promise to pay upon occurrence of predefined conditions**. If designed and enforced appropriately on-chain, it can offer users a comprehensible alternative. The principal challenge is implementing that structure on-chain in a manner that is both trustworthy and efficient.

On-chain parametric insurance determines payouts solely based on predefined conditions and maturities, reducing the need for claims adjudication and dispute resolution while making automated settlement the default. The essential requirements are accurate data and predictable execution; achieving them requires transparent accounting units, reliable oracles, and automated settlement logic. Users must be able to verify outcomes themselves via clear terms, real-time status indicators, and independently verifiable on-chain records.

Kaia is a public chain with **EVM compatibility, low fees and fee delegation, fast finality, and a growing ecosystem**. DIN leverages Kaia and adopts a dual-oracle strategy: standard pricing feeds are sourced from Orakl oracles onboarded to Kaia, while special or hard-to-generalize events are handled by DIN's own oracle. Accounting is consistently denominated in USDT within Kaia to insulate payout capacity from token volatility. Combining round-based sales with automatic refunds for unfilled rounds achieves both capital efficiency and user predictability. **Insurance collateral is re-staked into other DeFi staking services within the Kaia ecosystem**, delivering greater value to users while increasing liquidity in the Kaia network.

1.2. DIN's Vision

DIN's vision is to build a foundational safety layer for Web3 by providing on-chain insurance that anyone can understand and use. Users select products from a catalog where conditions and maturities are explicit, pay premiums to secure coverage, and receive automatic payouts at maturity according to oracle determinations. DIN aims to replace complex derivative strategies with a simple parametric structure, underpinned by transparent data, automated settlement, and a predictable user experience.

DIN designs a **two-sided market to create virtuous liquidity cycles**. Users seeking hedge can easily transfer risk away, while users seeking yield can deposit capital to earn premiums and re-staking interest. Multiple tranches within the same product accommodate diverse risk appetites, and metrics such as fill rate and loss ratio are fed back into pricing for subsequent rounds to enable market-driven price discovery.

Trust is derived from data integrity and governance. DIN routes data between external oracles and its optimistic in-house oracle, **DIN Oracle (DINO)**, to balance data integrity and cost efficiency; all observations and finalizations are recorded on-chain. Initially, governance is secured by multisig and timelock controls; authority will be gradually transferred to the community through the **DIN Governance (DINGO)** framework, enabling stakeholders to govern fees, limits, oracle routing, re-stake whitelists, and other key parameters. The DIN Token will be used as an instrument for governance participation and oracle incentives under clearly defined objectives and performance criteria.

The project will decentralize and scale in phases. After proving operational stability on testnets and an MVP, the team will run mainnet operations to build trust and onboard whitelist-based professional underwriters and product designers. Ultimately, DIN will transition into an open marketplace where competition across categories can take place, expanding user reach through cross-chain and B2B API integrations. DIN's objective is to grow into the **core DeFi insurance infrastructure of the Kaia ecosystem**, prioritizing transparency, safety, and capital efficiency.

2. Service Overview and Business Model

2.1. User Scenarios

2.1.1. User Types and Value Propositions

[DIN Platform and User Groups]

The DIN platform primarily serves two user groups. **Insurance(policy) buyers** seek to hedge external risks, while **insurance(policy) underwriters (sellers)** provide capital to underwrite policies and earn both premiums and re-staking interest. When these two groups meet on a single platform, insurance contracts are formed and a two-sided market naturally balances supply and demand.

DIN Insurance (Policy) Buyers

Policy buyers are users who wish to hedge a variety of external risks; cryptocurrency price moves, occurrence of specific events, indicator changes, and more by paying a defined cost. Buyers review published product conditions, maturities, and premiums before subscribing; at maturity they receive automatic compensation according to oracle determinations. By offering the complex payoff profiles of DeFi derivatives as simple insurance products, DIN provides buyers with clarity around loss control and transparent payout rules. This approach appeals to a range of participants: short-term traders seeking protection from sudden price drops, Web3 teams hedging operational exposures, and general users managing weather- or politics-driven risks.

Buyer 1: Crypto trader A

To hedge the risk of a short-term Bitcoin price drop, Trader A selects a product on DIN that pays out if BTC falls more than 10% within seven days. By paying the premium and relying on automated settlement, the trader secures peace of mind.

Buyer 2: Web3 startup operator B

To protect the team treasury from abrupt FX movements, Operator B purchases insurance linked to an exchange rate at a specified observation time. Instead of using complex derivatives, the startup uses an intuitive on-chain insurance contract to manage risk.

DIN Insurance (Policy) Underwriters (Sellers)

Underwriters deposit USDT to assume insurance exposure and earn premiums plus interest from re-staked collateral. Premium revenue is realized at the time of matching, and additional stable yields accrue while collateral is actively managed. This presents an alternative to simple lending or staking in DeFi: participants can choose tranches aligned with their risk tolerance. Conservative underwriters select low-loss-probability tranches to pursue steady yields, whereas aggressive participants allocate capital to higher-risk tranches for greater premium income.

Seller 1: Yield-seeking investor C

A conservative investor deposits into a low-probability tranche, securing premium income upon matching plus stable interest through maturity.

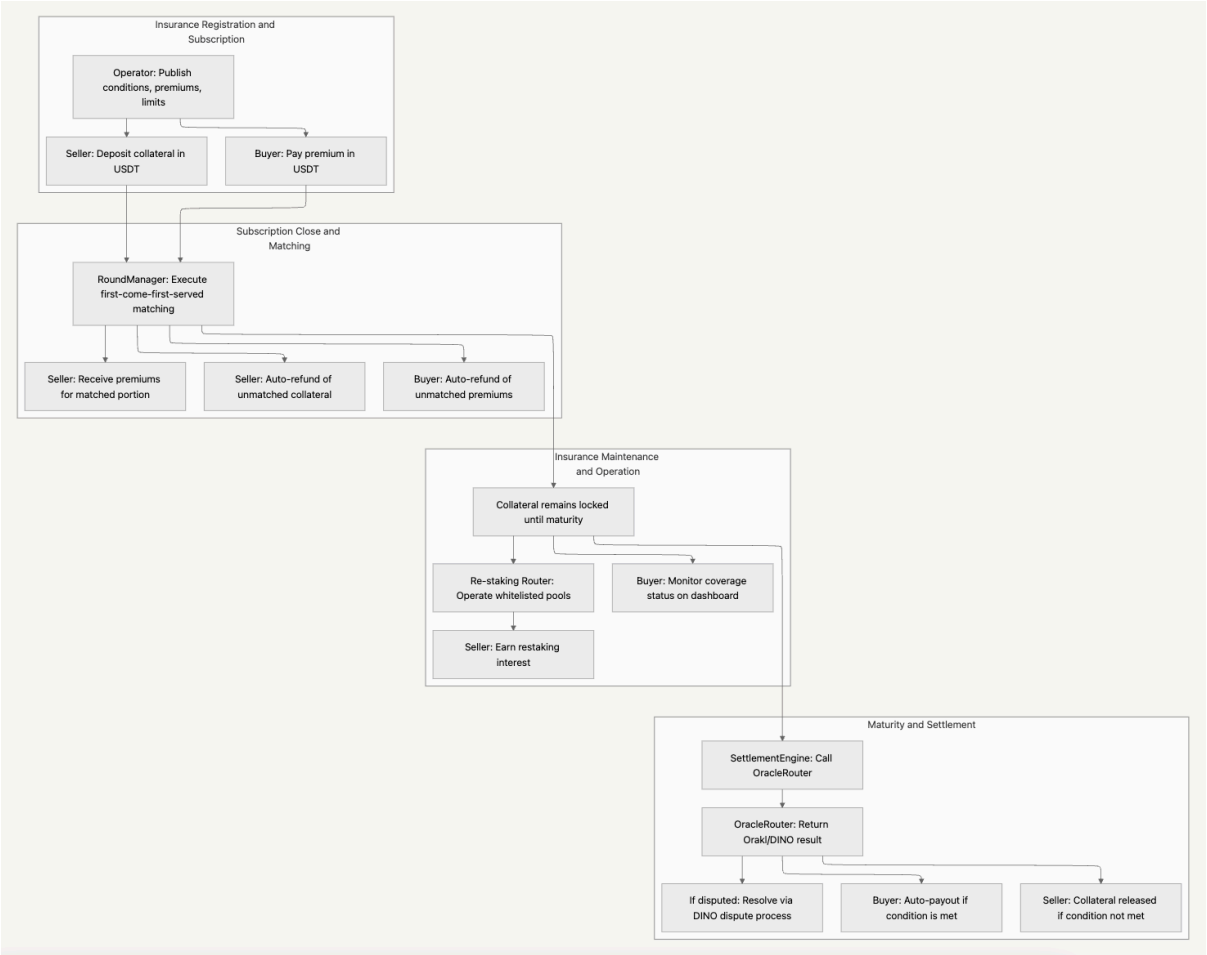
Seller 2: Aggressive allocator D

An aggressive participant allocates capital to higher-risk tranches targeting elevated premium returns, using diversification to tolerate occasional losses while maximizing overall premium yield.

Value of the Two-sided Structure

By bringing buyers and underwriters together, the platform does more than facilitate transactions: it enables price discovery and liquidity formation. Matching rates vary by condition and maturity combinations and are directly reflected in premium levels. Supply-demand imbalances are fed back into the next round's conditions and limits, producing a market-friendly, predictable cycle. Automatic refunds for unmatched assets improve capital efficiency for both sides, delivering a stable and transparent user experience.

2.1.2. From Product Offering to Settlement



[DIN Insurance Product User Journey]

The lifecycle of an insurance product is divided into four phases, and all procedures are executed by automated smart contract logic. Unmatched assets are refunded automatically, and settlement is also executed based on oracle determinations, eliminating the need for manual intervention.

Phase 1: Policy Registration and Offering

When a round opens, its conditions, premium rate, sale cap, and minimum/maximum participation amounts are published. Sellers signal underwriting intent by depositing USDT as collateral into tranche pools, and buyers subscribe by paying premiums. All transactions during this period are recorded on-chain and cancellations are not permitted.

Example: A sale window runs from March 1 to March 3. If BTC at 00:00 on March 4 is down 10% or more, the product pays out in USDT. Premium = 10%.

Phase 2: Offering Close and Matching

When the sale period ends, the RoundManager matches buyer premiums with seller collateral on a first-come, first-served basis to finalize contracts. Only matched portions become active policies, and sellers receive premium income immediately. Unmatched buyer premiums and seller collateral are refunded automatically.

Example: For a 10% premium product, if five sellers each deposit 100,000 USDT and buyers paid 7,500 USDT in premiums, only 75,000 USDT worth of exposure will be matched and the remaining 25,000 USDT will be refunded to sellers.

Phase 3: Policy Maintenance and Asset Management

Matched collateral remains locked until maturity and is conservatively re-staked into other liquidity pools to earn additional interest during the coverage period. Re-stake targets are limited to whitelist-approved stable pairs and pools, with priority given to the ability to withdraw before maturity. Accrued interest is periodically reflected in the tranche pool's net asset value (NAV) and attributed to underwriters. Buyers can monitor coverage status and expected settlement timing via the UI dashboard.

Phase 4: Maturity and Settlement

At maturity, the SettlementEngine calls the OracleRouter to retrieve outcome data. If the conditions are met, payouts are automatically distributed to buyers from tranche collateral; if not, collateral is released back to sellers. Regardless of the outcome, underwriters retain interest earned during the maintenance period. After the oracle determination, a waiting window of 1 to 24 hours applies; if disputes arise, they are handled according to DINO oracle procedures before finalization. All steps are recorded as on-chain events, and emergency pause and staged-resume procedures may be triggered if necessary.

2.1.3. DeFi Insurance Architecture

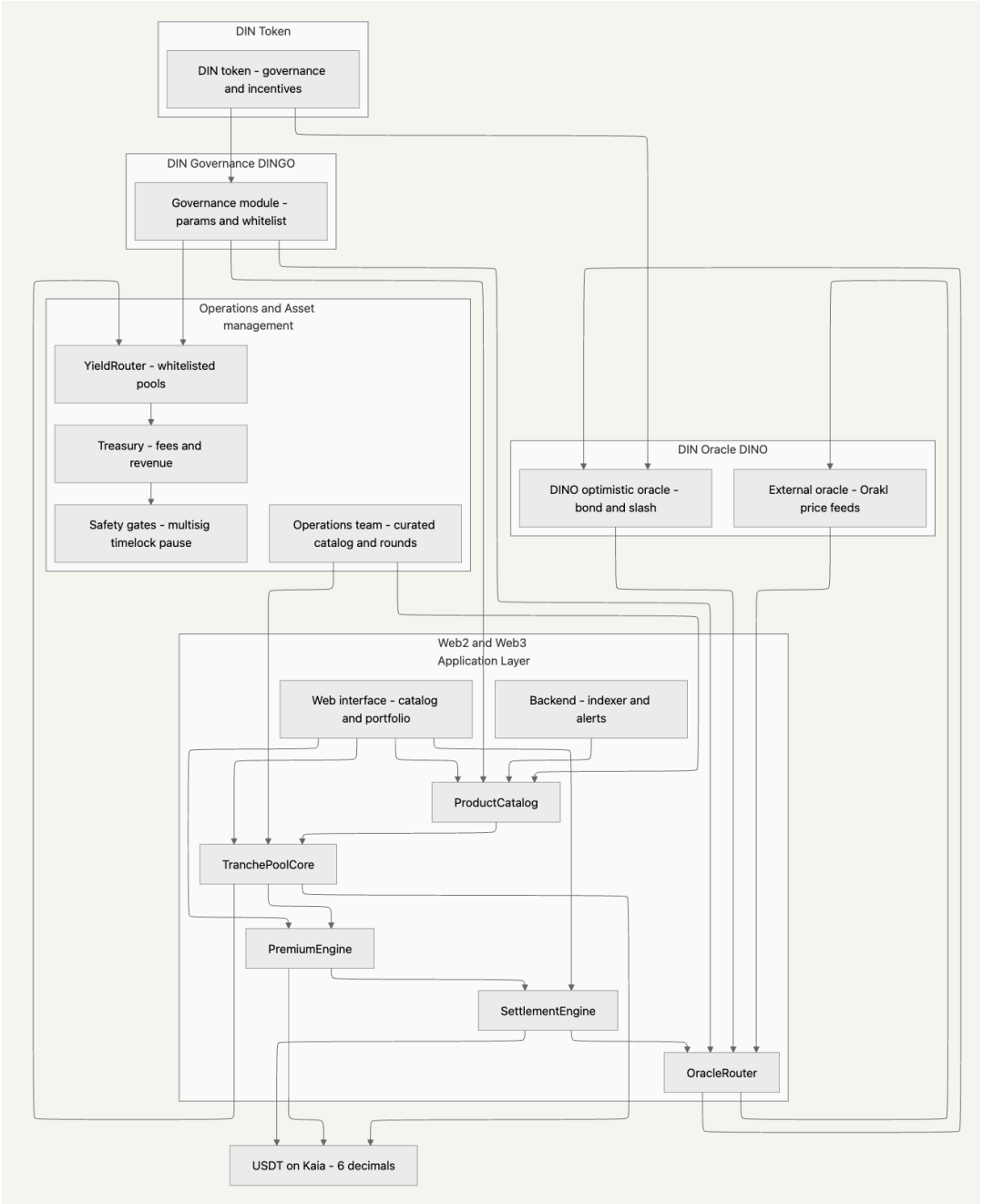
DIN's insurance products follow a **round-based sales architecture**. Each round is divided into multiple tranches according to product, maturity, and trigger combinations. Each tranche specifies minimum/maximum participation limits, sale caps, premium rates, and duration. Buyers can immediately see how much premium is required for a given payout, and underwriters can observe tranche-level premiums and annualized returns. When a round closes, only matched portions remain effective contracts and unmatched assets are refunded automatically. This prevents capital from being locked unnecessarily for extended periods and provides participants with clear capital management schedules.

Products are parametric: payout decisions are determined solely by predefined conditions and maturities. For example, **"If the BTC/USD closing price at maturity is 10% or more below the reference price."** Product definitions include the reference price calculation method, observation timestamps, oracle sources, payout amount or ratio, premium, and sale cap; this information is published in a catalog for public inspection. Within the same product, users can select among tranches that reflect different risk profiles.

Premiums are calculated based on expected payouts plus operational overheads, oracle fees, and liquidity management costs. Initially, DIN will publish conservative premiums using fixed tables; as performance data accumulates, pricing will become dynamic, incorporating market demand, fill rates, and volatility indicators.

Settlement is executed automatically after a maturity waiting period following oracle determination. If conditions are met, payouts are debited from the tranche pool; if not, collateral is returned to sellers. Every settlement event is recorded on-chain so users and external auditors can transparently verify outcomes. By combining clear participation criteria, transparent execution, and automated risk management, DIN delivers an insurance marketplace that balances trust and efficiency.

2.2. Detailed DIN Service Architecture



[DIN Service Architecture]

DIN aims to deliver a trustworthy on-chain insurance experience with best-in-class usability. To achieve this, we introduce five core components that make it intuitive and secure for users to purchase coverage and deposit collateral: (1) **Web2 & Web3 application layers**, (2) **DIN Token**, (3) **DIN Oracle (DINO)**, (4) **DIN Governance (DINGO)**, and (5) **insurance operations and asset management systems**.

2.2.1. Web2 & Web3 Application Layers

DIN's user experience is provided by a tightly integrated stack combining Web2 front/back ends with Web3 on-chain modules. Users browse the product catalog on a web dashboard, review key metrics (trigger, maturity, premium, participation limits, total cap), and then execute **premium payments (purchase) or USDT deposits (underwrite)**. The UI visualizes decision metrics such as fill rate, loss ratio, and expected yield, and all states are synchronized with on-chain events for transparent display. The backend supports auxiliary functions like notifications (round open, match, maturity, settlement), indexing, and report generation.

The on-chain (Web3) layer is composed of five modules:
1) **The insurance catalog** acts as the single source of truth (SSoT) for product, tranche, and round metadata, publishing and managing sale windows.
2) **Tranche pools** manage sellers' deposits and matching results, automatically refund unmatched funds and distribute premiums.
3) **The premium engine and settlement engine** attribute fees and collateral appropriately to sellers and the protocol, and at maturity query oracle results to automatically pay claims or release collateral.
4) **The oracle router** serves as a gateway that connects each product to the appropriate data source: standard price and indicator feeds use external **Orakl**, while bespoke events or cost-sensitive cases utilize the in-house DINO oracle.

Users complete transactions on the Kaia network via personal wallets such as Kaia Wallet or MetaMask, and future integrations (e.g., **LINE Mini DApp**) will enable even simpler subscription flows. Technical details are described in Section 3: Technical Design.

2.2.2. DIN Token

[DIN Token Logo]

The DIN token is a utility asset focused on governance and incentive-driven ecosystem growth. In the early phase, DIN may be used for limited rewards (testnet, early adopters), community campaigns, and contributor incentives, and will progressively expand to act as a prerequisite for governance participation (proposal rights, vote staking, etc.). Token supply, distribution, and vesting policies will be published transparently and linked to protocol safety limits (fee caps, re-stake caps, etc.) to avoid risks from excessive incentives.

DIN functions as a **catalyst to connect and grow the entire ecosystem**.

Initially, DIN serves as the bond and slashing asset for the DINO oracle, backing data integrity (rewards for correct assertions; penalties for malicious behavior).

As DINGO governance is onboarded, DIN holders will gain rights to decide parameters that directly affect revenue and stability—fee schedules, oracle routing, re-stake whitelists, tranche risk limits, and so on. Permissioned roles (whitelisted underwriters, product proposers, data providers) will require DIN-based performance bonds or reputation staking to encourage quality participation and long-term accountability.

Longer term, benefits proportional to DIN staking; **fee incentives, onboarding priority, and weighted rewards**, can be designed. While issuance, burning, and distribution will be tied to financial sustainability metrics (loss ratio, fill rate, treasury cash flow) to prevent over-incentivization. Critically, core accounting (premiums, collateral, payouts) will always be denominated in USDT so token price volatility does not impair the protocol's ability to pay claims.

2.2.3. DIN Oracle (DINO)

DINO is an optimistic oracle built specifically for the types of insurance DIN underwrites. It resolves bespoke events and conditions that standard price feeds cannot readily cover, using an economic, game-theoretic process. The procedure follows Assertion → Liveness → Dispute → Settle, and both claimants and disputants post DIN token bonds. If no dispute occurs during the liveness window the assertion becomes final; if a dispute occurs, predefined rules determine which party is rewarded and which party is slashed.

For general price and indicator data, external Orakl feeds are prioritized; DINO focuses on cost efficiency and coverage expansion for special cases. Routing, liveness windows, and bond sizes are tiered by tranche risk, and every interaction is recorded on-chain to ensure auditability.

2.2.4. DIN Governance (DINGO)

DINGO is the governance framework for DIN. Over the long roadmap, key ecosystem decisions will be managed via DIN token governance. In the initial operating phase, the DIN team will secure operations with multisig and timelock controls; authority will be progressively transitioned to DINGO through a community proposal → review → on-chain approval flow.

Governance scope includes fee schedules, oracle routing policies, re-stake whitelist, tranche sale parameters, and risk limits (tranche caps, portfolio exposure ceilings). Proposals will require minimum staking or reputation thresholds to prevent spam, and higher-risk changes will be subject to longer timelocks and additional verification. Governance outcomes are applied immediately as on-chain parameters and communicated transparently via the UI and announcements.

2.2.5. Insurance Operations and Asset Management System

In the early stages, the DIN team will lead product design and round operations to build trust. Tranche construction (premiums, participation limits), exposure caps, and re-stake caps will be set conservatively, and deposited USDT will only be allocated to whitelist-approved stable pairs and pools. We will continuously monitor maturity liquidity, pool depth, and fee structures, and employ automated de-leveraging, emergency pause, and staged-resume procedures to control risk as needed. Over time, we will pursue gradual decentralization via onboarding whitelisted underwriters, delegating product submission rights, and moving revenue distribution policies under governance.

2.3. Business Model and Strategic Approach

DIN's core strategy is to rapidly activate a **two-sided market with designed liquidity**. Initially, the team will operate a curated catalog, designing and underwriting products directly, and provide 3–5 parallel tranches per product to match diverse risk appetites and premium expectations. First-come, first-matched allocation, automatic refunds for unmatched funds, and on-chain disclosure deliver superior UX and build trust; a feedback loop will feed metrics (fill rate, loss ratio, premium skew) into subsequent rounds' pricing and limits.

Value propositions are clear by role. Buyers receive simple parametric protection and automated settlement as an alternative to complex derivative strategies. Underwriters receive immediate premium upon match plus additional interest during the lockup period. Corporates and DAOs can cap event costs for compensation, marketing, and operational risk, while partners can run joint campaigns to drive new user acquisition. All participation is verifiable against on-chain metrics and explicit terms.

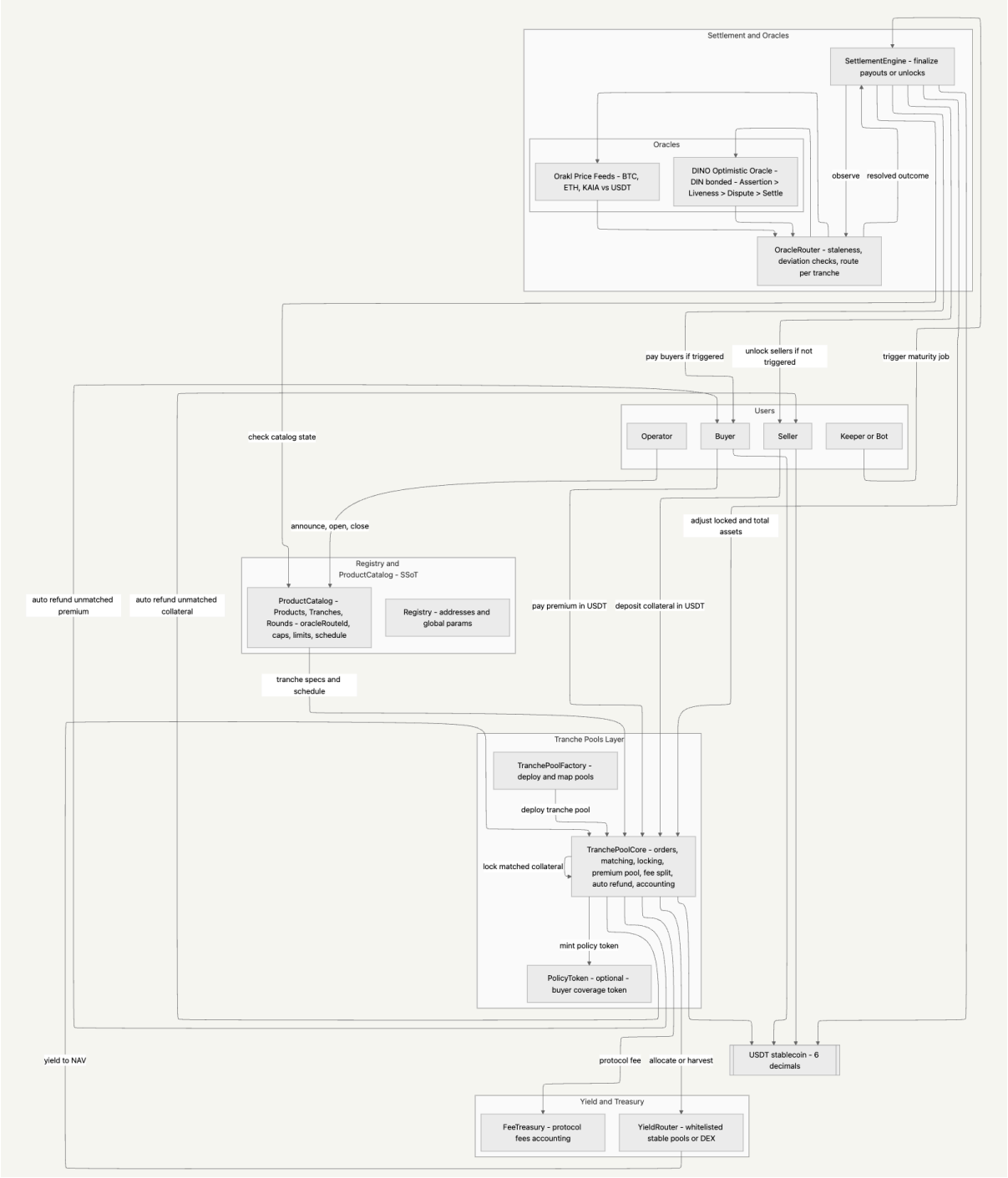
Revenue is simple but diversified. DIN collects a fee portion of insurance premiums as core revenue. Fees will be variable by product category, fill rate, and loss experience to optimize return. Re-stake performance fees are retained in the treasury up to a capped share of net gains, with the remainder allocated for operations and growth. After onboarding whitelist underwriters and professional sellers, marketplace fees and revenue-sharing models will be introduced. Corporates and DAOs may subscribe to packages—including data and audit trails—that provide recurring revenue. Oracle routing and dispute costs will be published transparently with a reasonable margin over cost.

The medium-to long-term strategy focuses on **staged opening and sustainable economics**. After testnet and closed beta validation and team-led mainnet stabilization, whitelist underwriters and professional product designers will be onboarded, and authority will be gradually transferred to an **open marketplace and DINGO governance**. DIN tokens will be used as incentives only for clearly defined purposes, covering shortfalls in scarce tranches or seeding new markets, and subject to vesting and performance criteria to dampen excessive liquidity. Overall operations will be governed by core KPIs: loss ratio, fill rate, liquidity coverage, and treasury cash flow, with strict enforcement of tranche caps, portfolio exposure, and re-stake limits.

3. Technical Design

3.1. Smart Contract Architecture

This section introduces the core modules implemented as smart contracts in DIN's on-chain application layer and describes their interaction model.



[DIN Smart Contract Architecture]

DIN's on-chain architecture is composed of six core modules. Each module is responsible for a stage of a product's lifecycle and the asset management flow. All accounting and settlements are denominated in USDT. The system adopts an Auto-Refund model for unmatched assets so participants receive a transparent, predictable experience without manual procedures.

1) ProductCatalog

The ProductCatalog manages metadata and schedules for products, tranches, and rounds. For each tranche it stores trigger conditions, maturity, premium rate, per-account min/max limits, tranche cap, and oracle routing configuration. The catalog records round creation, publication, and sale window open/close events and thus serves as the single source of truth (SSoT) for a round's lifecycle. SettlementEngine must always reference the catalog as the canonical product definition during settlement.

2) TranchePoolCore

The TranchePoolCore is the executor for matching and distribution. It holds buyer premiums and seller collateral per round, finalizes matches at sale close, locks collateral for matched exposures, and triggers automatic refunds for unmatched funds. Sellers receive premium proceeds immediately upon matching, and buyers' positions become confirmed. All transactions and state transitions are recorded on-chain to provide transparent tracking of underwriter rights and P&L.

3) TranchePoolFactory

The TranchePoolFactory deploys dedicated tranche pools whenever a new tranche is created and maps pool addresses to catalog entries. By centralizing deployment and registration, the factory preserves consistency across settlement and distribution flows and enables safe, standardized upgrades as the system scales.

4) YieldRouter

The YieldRouter holds exclusive runtime authority to operate assets locked in tranche pools. It borrows USDT from tranche pools and re-stakes those funds into whitelist-approved yield products on other DeFi services to generate additional interest for underwriters. To guarantee settlement safety, the YieldRouter must ensure asset coverage sufficient for claims — i.e., it must maintain the ability to repay tranche pools at or above 100% of principal exposure when needed.

5) SettlementEngine

The SettlementEngine orchestrates the full settlement process after maturity. It reads the round state from the ProductCatalog, calls the OracleRouter to obtain outcome data, and executes payout or collateral release logic according to the product definition. The engine implements a short waiting window to allow for data validation and dispute handling. Every payment and release event is logged on-chain, with idempotency protections to prevent double settlements.

6) OracleRouter

The OracleRouter delivers data required for claim adjudication. Standard price and indicator feeds are sourced from Orakl instances onboarded to Kaia, while bespoke or special-event products are resolved via the in-house optimistic oracle, DINO. The router validates freshness and divergence, and when necessary applies failover rules or synthetic aggregation to ensure resilience. Finalized data is forwarded to the SettlementEngine as the authoritative basis for payout or collateral release.

3.2. Asset Deposits and Management Methods

Collateral backing insurance products are deposited into **tranche pool vaults** rather than being retained in individual wallets, and depositors' entitlements are represented by pool share tokens which act as the accounting unit for settlement and revenue distribution. This vault-based design removes discrepancies and transparency problems associated with dispersed wallet custody and enables all participants to verify accounting state against a common baseline.

During coverage periods only the **YieldRouter** may access tranche pool assets for re-staking, and re-staking is strictly limited to whitelist-approved, conservative protocols; any addition or modification of yield paths must pass timelock, public proposal, and approval procedures to prevent routing funds into opaque or high-risk strategies. Withdrawals and refunds are governed exclusively by smart contract logic: unmatched amounts are refunded automatically at sale close without user action, matched collateral is locked until maturity and is released or used for payouts in accordance with SettlementEngine outcomes, and manual withdrawals are disallowed except under tightly controlled emergency procedures. In exceptional circumstances such as prolonged network outages, oracle failures, or catastrophic risk on a re-stake path, emergency withdrawals may be executed subject to multisig consensus or on-chain voting and a mandatory pre-notification window; these emergency controls are designed to protect users while preventing misuse, preserving asset safety and the protocol's claim-paying capacity.

3.3. Oracle (Router-based DINO & Orakl)

The OracleRouter selects between external Orakl feeds and the internal optimistic DINO flow according to the product and tranche settings. For data that require reliable market references(e.g. standard prices, FX rates, or common indicators), **Orakl** is designated as the primary source; for custom events, bespoke conditions, or cases where cost efficiency is paramount, **DINO** provides an optimistic assertion-based decision path. Tranche metadata encodes observation rules including snapshot timing, allowable delay, divergence thresholds, liveness windows, bond sizes, and failover priority, and the router automates calls, verification, and failover switching according to these policies.

In the **Orakl path** the router queries the specified feed identifier and observation rule, validates freshness and proof artifacts where available, and withholds or applies alternative rules when predefined divergence or staleness thresholds are exceeded; validated observations are forwarded to the SettlementEngine and all call/response metadata are emitted as on-chain events.

The **DINO path** follows an Assertion → Liveness → Dispute → Settle lifecycle: after the observation point an assertor posts a result and deposits a DIN token bond, the liveness window permits any party to raise a dispute by posting a bond, and if no dispute occurs the assertion finalizes at the end of the window; if a dispute is raised, predefined economic-resolution rules; slash and reward mechanics and, where applicable, a vote or arbiter flow determine the final outcome, with correct participants' bonds refunded and incorrect actors slashed and redistributed to challengers and the protocol. DINO parameters such as bond size, liveness duration, and dispute fees are tiered by tranche risk and published on-chain; changes respect safety limits and require on-chain notification.

Data snapshots required at round close and at maturity are strictly enforced to align settlement with oracle policy: upon receiving router results the SettlementEngine validates the observation, optionally waits if required, and then finalizes; ambiguous or disputed results leave the engine in pending state until resolution, and once final the engine executes batched payouts or collateral releases while maintaining duplicate-claim guards and comprehensive on-chain logs for auditability.

3.4. Web Interface

DIN's web interface is designed for immediate comprehension and operational transparency. Users browse the **catalog** and, for each tranche, observe trigger criteria, maturity, premium rate, sale cap, minimum and maximum participation, fill rate, and estimated payout at a glance; filters and sorting enable rapid discovery by maturity, asset, risk level, or premium band, and each product summary highlights the oracle routing method, observation timestamps, and historical loss metrics with all figures synchronized to on-chain events.

The buyer flow is intentionally simple: a user selects a tranche, pays the premium in USDT through a Kaia-compatible wallet, and completes subscription with a single signature, after which a **KIP-17 compliant insurance certificate** is issued and the position is visible in the portfolio view in real time with full details including insured amount, premium paid, maturity and oracle observation times, oracle types and data sources, estimated payout, and settlement rules.

The underwriter experience prioritizes safety and clarity: after choosing a tranche and depositing funds, the dashboard displays share balance, locked assets, available balance, fill ratio, distributed premiums, and accumulated interest from re-staking, and the system provides a pre-deposit preview of expected match range, premium income, and a **conservative estimate of annualized return** to reduce decision friction.

Settlement and claims processes are **fully automated and visualized** step by step: oracle request creation, liveness countdowns, result finalization, and payout completion are shown on a timeline with direct block-explorer links for verification, and in cases of transaction backlogs, network delays, oracle outages, or emergency pauses the UI presents clear status messages and recommended next steps. The interface conforms to accessibility standards, supports multiple languages, is mobile-responsive, minimizes personal data collection, and relies on wallet-centric authentication to protect user privacy.

4. Operational Plan

4.1. Initial Operating Model: Team-led Underwriting and Trust Building

In the initial phase, the DIN team will assume **full responsibility for product design, premium setting, exposure limits, collateral management, and settlement operations**. By operating on a round-based sales cadence, the team will make inflows and outflows predictable, and by matching on a first-come, first-served basis while automatically refunding any unmatched residuals, the system will avoid unnecessary capital lockup. All fund movements and state transitions will be transparently published as on-chain events so that users can verify identical information via the dashboard and block explorer.

The foundational principle of risk management is conservative limits and data-driven adjustments. Loss ratio, fill rate, liquidity coverage, and treasury cash flow will be monitored daily as core KPIs, and premiums, tranche caps, and sale windows will be adjusted periodically in small increments. As operational history accumulates, pricing that initially uses conservative tables will be refined to reflect volatility, demand skew, and maturity structure. To prevent premature expansion, portfolio exposure limits will be strictly enforced by event type, and buffer liquidity will be maintained for segments with elevated refund risk.

External validation will run in parallel with operational controls to build trust. Prior to and following launch, DIN will commission security audits and operate a bug bounty program, and will publish regular operational reports disclosing loss ratios, fill rates, revenues and costs, and incident and remediation histories. Internally, the team will maintain stage-gate checklists that require KPI attainment and incident-free run periods as preconditions for expanding round sizes or adding product families; only upon meeting these checks will the project move to larger-scale operations.

4.2. Risk Management and Security

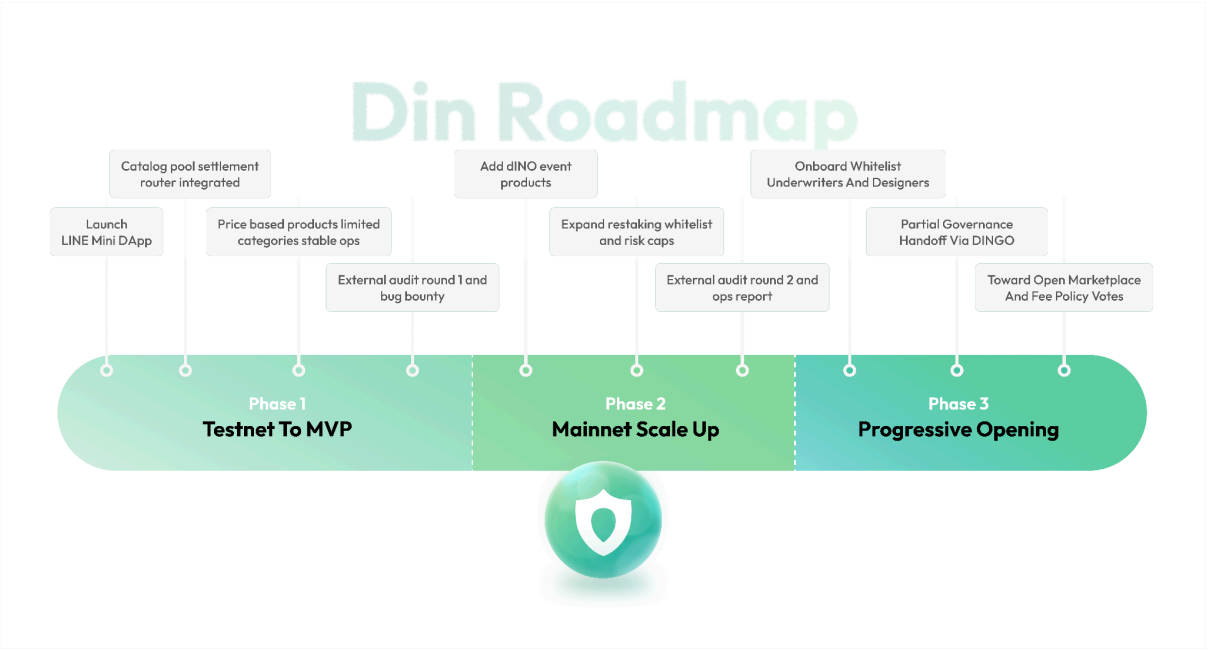
Contract security risk is addressed from the development stage by prioritizing code safety. The protocol will use standardized, well-audited libraries and strict verification processes, and will engage external specialist auditors for periodic security reviews to detect and remediate potential vulnerabilities early. A bug bounty program will enable ecosystem participants to contribute actively to security hardening. This layered approach is intended not only to prevent defects but also to create a durable foundation of trust.

Oracle risk is central to settlement integrity. DIN adopts a multi-source strategy that pairs Kaia-native Orakl feeds with the in-house DINO optimistic oracle so that when outages or price divergences occur, alternative sources can be invoked immediately. The optimistic oracle embeds dispute procedures so that incorrect data is unlikely to be accepted into settlement, thereby reducing the risk of a single point of failure or manipulation.

Liquidity and financial risk are mitigated by strict exposure controls and alignment of asset locks with maturity timelines. Tranche-level sale caps and portfolio-level exposure ceilings prevent excessive concentration on any single event. Re-stake ratios are limited and the lock-up periods of deployed assets are matched with expected maturities to minimize mismatch risk. In the event of large refund demands, staged processing and enforced waiting periods will blunt systemic shock, and emergency pause and staged-resume mechanisms are in place to restore stability when required.

Operational and monitoring risk is managed through continuous observability rather than reactive responses. Core metrics, like loss ratio, fill rate, re-stake yield, withdrawal queue length, and treasury balances, are surfaced on real-time dashboards and trigger automated alerts and policy adjustments when predefined thresholds are breached. Regular stress tests and scenario planning exercises will be used to validate controls and contingency plans. To protect users, clear risk disclosures and educational materials will be provided, and procedures will be updated responsively to reflect changes in the regulatory environment.

4.3. Roadmap and Future Expansion Plans



[DIN Roadmap]

In the first phase, spanning testnet through MVP, the focus will be on price-based products and on integrating the Product Catalog, Tranche Pool, Settlement Engine, and Oracle Router to validate stable operations within a controlled scope. Key metrics such as loss ratio, fill rate, liquidity coverage, and treasury cash flow will be collected to conservatively calibrate premium tables and limits, and an initial external security audit combined with a bug bounty will establish baseline trust. A LINE Mini DApp interface will be introduced to broaden user accessibility.

The second phase centers on mainnet expansion: DINO-driven special-event products will be added, whitelist re-stake targets and risk limits will be gradually expanded, and a second external audit and public operational reporting will enhance transparency. Enterprise and DAO pilot programs will validate B2B demand, and DIN token incentives will be applied only for narrowly defined purposes, such as filling scarce tranches or seeding new categories, and structured with vesting and performance conditions to discourage short-term liquidity chasing.

The third phase is progressive opening and governance transition. Whitelisted professional underwriters and product designers will be onboarded, and selected parameters—fees, limits, and parts of oracle policy, will be delegated to DINGO governance. Role-based DIN staking and lockup requirements will ensure participation quality and accountability, and authorities and caps will be adjusted in line with performance metrics. The ultimate objective is to transition to an open

marketplace where multiple categories compete, to extend cross-chain and external protocol integrations, and to provide enterprise-grade APIs for corporations and DAOs.

Throughout the roadmap, the DIN team will adhere to **staged opening and sustainable economic design**. Operations will be governed by core KPIs; loss ratio, fill rate, liquidity coverage, and treasury cash flow, and strict enforcement of tranche caps, portfolio exposure limits, and re-stake ratios is mandatory. Only when KPIs meet the defined thresholds will limits be increased, and in periods of market stress automatic de-leveraging, emergency pauses, and staged-resume procedures will be employed to prioritize system stability.

By following this roadmap, **DIN aims to evolve into the Kaia ecosystem's core DeFi insurance infrastructure, founded on trust, transparency, and capital efficiency**.