

# THE UNIVERSAL USERNAME & PAYMENTS LAYER

·Pagos NFC OnChain ·Omnichain Automático  
·DeFi ·Universal Username ·Wallet

@username es la nueva dirección



Binno Labs <https://binno.network> @binnonetwork

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**Notice.** This document describes the technical architecture, economic model, and roadmap of the Binno ecosystem. It is an informational document and does not constitute an offer to sell securities, financial, legal, or investment advice. Performance figures (TPS, finality) are design objectives subject to validation through public benchmarks. Market and adoption projections are estimates, not guarantees. Legal structure and regulatory compliance are subject to the corresponding professional advice in each jurisdiction.

## 1. Executive Summary

Binno is an on-chain payments, identity, and liquidity infrastructure designed to make sending money and paying as simple as writing a username, regardless of the blockchain, the token, or the device. Its goal is not to be "another blockchain," but the **open standard on which the next generation of digital payments is built** — just as card networks are the invisible infrastructure behind millions of merchants, but without custody, without mandatory banking intermediaries, and without the fees of traditional networks—.

The ecosystem is organized into six interdependent components:

- **BinnoChain** — a sovereign Avalanche L1, built on HyperSDK with Snowman++ consensus, optimized for mass-scale micropayments. Design target: over 50,000 TPS and sub-second finality, with internal transactions free for the user.
- **BinnoWallet** — an MPC-custody wallet with no single seed phrase, where the user chooses how many shares are needed to sign and how many to recover. Genuinely non-custodial.
- **BinnoHub** — the universal @username identity system, which lets users receive and send value and execute cross-chain actions without visible addresses or bridges.
- **BinnoPay** — the open on-chain settlement standard for physical payments (NFC/QR) and e-commerce, integrable by POS manufacturers, fintechs, and wallets.
- **BinnoDEX** — the ecosystem's liquidity layer, which converts and routes assets deterministically so that payments, transfers, and credit work without friction.
- **BinnoCredit** — a non-custodial credit layer backed by productive collateral, with a user experience equivalent to a credit card.

The native token, **BNN**, captures the value of the ecosystem through governance, staking with real (non-inflationary) yield, and a buyback flywheel funded by real protocol revenue. BNN is not used to pay gas.

**Current status (2026).** Unlike most projects at the funding stage, Binno starts from verifiable, functional technology: BinnoChain operates on testnet (HyperSDK + Snowman++), BinnoHub executes real cross-chain transactions via LayerZero between Ethereum and BNB Chain through receiving addresses, the MPC wallet is in its final phase, and BinnoPay—with NFC payment from a non-custodial wallet on a physical terminal— will be operational and demonstrable on testnet before the funding round begins.

## 2. Mission and Vision

**Mission.** To enable anyone, anywhere in the world, to pay, send value, and operate financially using a single @username, with speed superior to traditional networks, marginal fees, and without giving up control of their funds.

**Vision.** That sending value and making payments stop depending on addresses, bridges, gas tokens, or technical knowledge—and stop depending on fiat money and card networks as a mandatory layer—. Binno aspires to have millions of people and merchants using @username daily to pay and receive without noticing they are using a blockchain.

## 3. The Problem

Money moves around the world over expensive, slow, and fragmented infrastructure, and current crypto solutions—despite their promise— have not solved the problem for real people.

### In the traditional world:

- Global remittances moved around 905 billion dollars in 2024, with an average cost that remains high: sending 200 dollars costs on average close to 6.5%, and through banks it can exceed 14%. For millions of families who depend on these transfers, that difference is significant.
- Merchants pay card networks fees of between 1.4% and 3.9% per transaction, and receive their money in batches days later.

### In the crypto world, barriers that prevent mass adoption persist:

- Long addresses, impossible to remember, with the risk of irreversible error.

- Unpredictable gas, paid in different tokens on each network, which the user must acquire and manage.
- An inconsistent, fragmented experience across chains.
- The need for "bridges," historically the most hacked category in the space.
- To spend crypto in the real world, it is today almost mandatory to go through a Visa/Mastercard card or a custodial wallet —reintroducing the centralized intermediary and its fees that crypto was supposed to eliminate—.

The result is a system where the technology exists but the human experience remains too complex, and where "using crypto to pay" still means, in practice, depending on the same centralized networks as always.

#### 4. The Market Opportunity

The market Binno addresses is one of the largest in the world, and it is undergoing a structural transition toward on-chain rails.

**Digital payments.** The payments industry generated close to 2.5 trillion dollars in revenue in 2025. The digital payments market is estimated at around 170 billion dollars in 2025, with projections of sustained double-digit growth toward 2035. Visa and Mastercard moved, respectively, on the order of 14.5 and 9.2 trillion dollars in annual volume.

**Remittances.** A market of approximately 905 billion dollars annually, with costs that double the 3% target set by the UN, and where digital providers already prove to be up to 75% cheaper than banks. It is a market with real pricing pain and proven demand for cheaper alternatives.

**The stablecoin wave is already happening.** Stablecoins processed on the order of 28 trillion dollars in real economic volume in 2025, and over 4 trillion in transactions in the first half of the year alone. Industry analysts project that stablecoin payment volume could match Visa and Mastercard between 2031 and 2039. Payments infrastructure is moving toward on-chain rails irreversibly.

**The gap Binno occupies.** Today, crypto cards move around 18 billion dollars annualized, growing at more than 100% per year—but Visa captures more than 90% of that on-chain card volume—. This reveals the central problem: **the current way**

**to spend crypto in the real world depends on traditional card networks and custodial wallets.** Binno is the alternative that eliminates that layer: the first non-custodial, omnichain payment rail that does not need Visa, Mastercard, or a centralized custodian to function.

**Where we start.** The markets with the highest adoption of contactless (NFC) and QR payments, high micropayment frequency, and lower traditional banking penetration —Latin America and Southeast Asia— are the natural entry point. In those regions, contactless payments and QR systems already reach massive penetration, and stablecoin adoption responds to a real economic need.

*(The detailed market analysis, segments, and entry strategy are developed in the Go-to-Market Strategy chapter.)*

## 5. The Binno Solution

Binno solves the problem from the root, integrating six layers into a single experience where technical complexity disappears for the user.

The design principle is a single one: **the infrastructure must disappear from the eyes of those who use it.** The user does not see addresses, does not manage gas, does not choose bridges, does not understand from which chain to which chain their money travels. They only see a @username, an amount, and a destination network.

- **Universal identity (@username).** A unique, global name that replaces all of the user's addresses on all chains.
- **Frictionless custody (MPC).** No single seed phrase to lose; the user decides their own balance between security and convenience, and never cedes control of their funds.
- **Real payments (NFC/QR).** In a physical store or online, with the simplicity of a contactless payment and the instant settlement of a native transaction.
- **Invisible interoperability.** Value travels between chains without the user managing a single bridge.
- **Integrated liquidity and credit.** Automatic asset conversion and access to credit without selling what one owns.

- **Sustainable economics.** A token whose value comes from real protocol usage, not from inflation or speculation.

Each of these components is detailed in the following chapters.

## 6. Why a Sovereign L1 (and not a rollup)

The decision to build BinnoChain as a sovereign Avalanche L1 —instead of a rollup on an existing base layer— is the most consequential architectural decision of the project, and we address it head-on because it is also the largest execution commitment we assume.

### **The main reason: our core value proposition is impossible on a standard rollup.**

The heart of the Binno experience is that the user does not pay gas, does not manage gas tokens, and operates with a cost measured in a stable dollar-pegged unit. A rollup inherits the gas model of its base layer: the user pays in the base layer's native token, with volatile fees, and must hold that token to transact. Redefining how gas works —measuring it in USD, making it free for the user internally, and sustaining it structurally— **requires sovereign control of the virtual machine and the fee model.** That is only possible with one's own VM, not as a tenant of another network's blockspace.

**The second reason: dedicated performance.** Mass-scale micropayments at over 50,000 TPS with sub-second finality need a chain that does not compete for blockspace with NFTs, third-party DeFi, or unrelated activity spikes. A dedicated highway, not a shared lane.

**The third reason: end-to-end control.** The logic of identity, payments, liquidity, and credit is implemented as native VM modules, auditable and optimized, instead of depending on generic contracts. This reduces the attack surface and guarantees predictable cost and latency.

**Why Avalanche L1, specifically.** After the ACP-77 upgrade (Etna / Avalanche9000), a sovereign Avalanche L1 offers the full sovereignty of one's own blockchain — consensus, validators, gas, governance— **without the capital and security cost of bootstrapping an L1 completely from scratch**, since it inherits Avalanche's framework and security infrastructure. It is the combination we sought: L1 sovereignty with reduced bootstrapping cost.

**The commitment we assume honestly.** Operating a sovereign L1 is harder and more costly than deploying a rollup: it implies securing and decentralizing a set of validators, maintaining consensus, and assuming responsibility for the network's security. We assume it consciously because our value proposition demands it, and we mitigate it by leaning on Avalanche's framework and a validator model designed for high performance from day one. We do not underestimate the difficulty; we choose it.

## 7. Project Values

- **Simplicity first.** The infrastructure disappears for the user. No gas, no single seed phrase, no bridges, no choosing networks.
- **Progressive, not dogmatic, decentralization.** Security and performance are prioritized, with a gradual and honest transition toward community control, declaring at each phase what is decentralized and what is not.
- **Real sustainability.** All yield comes from real protocol revenue, never from inflation or emissions.
- **Transparency and verifiability.** Every critical operation —payments, swaps, intents, governance— is verifiable on-chain.
- **Independence from fiat and intermediaries.** The long-term goal is for people to be able to operate their financial lives without mandatory dependence on fiat money or card networks.
- **Global financial inclusion.** Payments and micropayments accessible from any country, with an initial focus on the markets of greatest need and adoption.

Binno — Whitepaper

The Universal Identity and Payments Layer for All Blockchains

**Version 2.0 · 2026**

*Pay, send value, and operate on any chain by writing just a @username.*

# Chapter 1. BinnoChain — High-Performance Architecture for Payments at Global Scale

BinnoChain was not designed to compete as a general-purpose blockchain. It is a **purpose-built financial infrastructure**, optimized for a single mission: to make possible the global @username identity system, instant micropayments, and frictionless omnichain execution.

Every architectural decision —consensus, virtual machine, gas model, and validator design—is subordinated to one measurable objective: to make paying and sending value faster, cheaper, and simpler than in any traditional financial system, without giving up on-chain verifiability.

Technically, BinnoChain is a **sovereign Avalanche L1** built on Avalanche infrastructure, using the **Snowman++** consensus and a proprietary virtual machine, **BinnoVM**, built on **HyperSDK**. This design allows it to operate as the base layer of the Binno ecosystem: a highly scalable, secure, interoperable chain entirely oriented toward the end user and commerce.

## 1. BinnoChain Base Architecture

### 1.1. BinnoChain as a sovereign Avalanche L1

Following the Etna / Avalanche9000 upgrade (ACP-77), Avalanche replaced the *Subnet* model with **sovereign Avalanche L1s**: independent networks with their own validator set, their own participation rules, and their own incentive model. BinnoChain is deployed under this model, which grants it:

- **Full sovereignty** over its economic logic, execution environment, gas model, and validation rules.
- **Low, predictable operating cost.** Under ACP-77, L1 validators no longer need to lock up 2,000 AVAX or validate the Avalanche Primary Network. Instead, they pay a continuous validation fee (initially on the order of ~1.33 AVAX per validator per month), which drastically reduces the network's economic barrier to launch.
- **Programmable validator management.** ACP-77 allows each L1 to define its own validator-set management logic via a validator management contract (ValidatorManager). BinnoChain leverages this capability to implement an

egalitarian, qualification-based validation model (Section 5), rather than a conventional competitive proof-of-stake scheme.

- **Native interoperability.** BinnoChain maintains interoperability with the Avalanche ecosystem via Interchain Messaging (ICM/Warp). Omnichain interoperability with external networks (Ethereum, BSC, Solana, and others) is handled at the BinnoHub layer through LayerZero V2, described in Chapter 3.

This choice is deliberate: it allows Binno to launch a high-performance, sovereign, interoperable network without the capital cost of an independent genesis and without sacrificing the security inherited from the Avalanche framework.

## 1.2. Snowman++ consensus

Snowman++ is the totally-ordered linear-chain consensus mechanism of the Avalanche ecosystem, optimized for high throughput through a proposer scheme that reduces contention in block production. Its properties relevant to BinnoChain are:

- **Sub-second deterministic finality.** The consensus is designed for fast, configurable finality; BinnoChain's design target is finality below 600 ms under reference network conditions. Definitive values will be confirmed through public benchmarks on the specified validator hardware (Section 5.3).
- **Scalability independent of validator count.** Unlike classical BFT (where communication grows quadratically with the number of validators), Snowman++ operates through constant-size sub-sampled random voting: each node queries a fixed subset of validators, regardless of whether the network has twenty or several thousand. Per-node communication overhead is therefore independent of the total set size during normal operation. This is the property that allows BinnoChain to decentralize its validator set **without degrading performance**.
- **Robust probabilistic security,** based on multiple rounds of repeated random sampling, making it exponentially improbable to reverse a decision once reached.

- **Configurable Byzantine tolerance.** Security and liveness depend on configurable consensus thresholds. Cross-chain message verification on the Avalanche P-Chain, for example, requires the aggregate signature of at least 67% of the originating validator set's weight.
- **Low communication overhead and high energy efficiency,** without the computational cost of proof of work.

The choice of Snowman++ prioritizes **ultra-low latency and early finality**, an indispensable condition for point-of-sale payments and for the massive processing of real-time micropayments.

**Note on the source of performance.** BinnoChain's throughput comes primarily from the execution layer (BinnoVM on HyperSDK) and its parallel processing model, not from consensus itself. Snowman++ provides fast finality, total ordering, and validator-set scalability; transactional capacity is determined by the VM and the hardware.

## **2. Execution Engine: HyperSDK + BinnoVM**

### **2.1. Why HyperSDK**

HyperSDK is a high-performance framework created by Ava Labs for building custom virtual machines, designed to maximize throughput and minimize per-transaction latency. Unlike a general-purpose EVM environment, HyperSDK allows the account model, action logic, fee structure, and execution rules to be defined from scratch. Its advantages in the context of BinnoChain are:

- **Ultra-low per-transaction execution latency**, optimized for intensive parallel workloads.
- **A fully customizable fee model**, which enables the USD-denominated gas described in Section 4.
- **CPU, memory, and state efficiency** that allows very high throughput to be sustained on high-performance server hardware.

It is important to clarify the scope of this choice: **BinnoChain is not an EVM-compatible chain and does not execute Solidity contracts.** The EVM path on Avalanche (C-Chain or Subnet-EVM) offers Solidity compatibility at the cost of substantially lower throughput, incompatible with Binno's massive-micropayment

thesis. BinnoChain deliberately chooses the opposite path: a specialized, high-performance VM.

## 2.2. BinnoVM: a payment-specialized virtual machine

**BinnoVM** is BinnoChain's proprietary virtual machine, built on HyperSDK. It is not a general-purpose smart-contract platform for third parties, but a **specialized execution engine** whose logic is implemented as **native VM modules**, auditable and optimized for the payments-and-identity use case. These modules include:

- **Identity module** — registration, uniqueness, and resolution of the @username (BinnoHub layer).
- **Payments module** — atomic settlement of payments and fees (BinnoPay layer).
- **Liquidity module** — deterministic conversion and routing (BinnoDEX layer).
- **Accounts and signatures module** — support for MPC custody, authorizations, and NFC operations (BinnoWallet layer).

Any interface specification included in this whitepaper is presented as **illustrative pseudocode** for the sole purpose of describing the expected behavior of these modules; it does not represent contracts deployable on an EVM. The actual logic is implemented as native actions and state transitions within BinnoVM.

This approach —a closed, specialized, high-performance VM rather than an open contract platform— **is a deliberate advantage for a payment network**: it reduces the attack surface, eliminates the compute unpredictability of arbitrary contracts, and makes it possible to guarantee stable latency and cost, exactly what a global-scale payment system requires.

## 3. Performance and Capacity

BinnoChain is designed to sustain throughput far above that of today's general-purpose networks. Its **design-target capacity is more than 50,000 transactions per second**, enabled by HyperSDK's parallel execution model and by BinnoVM's specialization.

It is important to interpret this figure correctly. It is a **theoretical design target**, not a measured and published sustained value. A network's effective performance depends on transaction type, validator hardware, the geographic distribution of the set, and network latency: execution capacity scales with hardware, while consensus is bounded by the latency of communication rounds. Binno will publish reproducible benchmarks on the reference validator hardware (Section 5.3) as the network advances toward mainnet, specifying methodology, transaction type, number of nodes, and measurement conditions.

Feature	BinnoChain	Solana	zkSync Era	Base	Avalanche C-Chain
TPS	>50,000 ( <i>design target</i> )	~2,500–3,500	~2,000–3,000	~1,500–2,500	~100–200
Finality	sub-second ( <i>target &lt;600 ms</i> )	~400–800 ms	~2–5 s	~1–2 s	~1–2 s
Cost to end user	0 (free internal tx)	\$0.0002–0.01	\$0.03–0.10	\$0.01–0.05	\$0.01–0.10
Stable USD-denominated fee	Yes	No	No	No	No
Payment-specialized VM	Yes	No	No	No	No

*BinnoChain figures correspond to theoretical design targets, pending validation through public benchmarks. Third-party figures correspond to publicly observed ranges and may vary with network conditions.*

## 4. Gas Economic Model

### 4.1. USD-denominated gas: a stable, predictable unit of measurement

Unlike traditional chains, where transaction cost fluctuates with the price of a native token, BinnoChain accounts for resource consumption (gas) in a **dollar-pegged unit** (USDC/USDT). HyperSDK's customizable fee model allows the weight of each transaction to be measured deterministically —on the order of 0.001 USD for a simple transaction and 0.002 USD for an extended-logic one—.

It is essential to understand the purpose of this unit: **it is neither a fee charged to the user nor a reimbursement paid per transaction.** It is an internal unit of resource measurement that serves two functions: (1) making the network's structural cost predictable and stable, and (2) serving as the basis for resource control and anti-spam protection. Within BinnoChain, the user pays no gas, and there is no per-transaction reimbursement to validators.

### 4.2. Free internal transactions and aggregate structural cost

All user transactions within BinnoChain are **free for the end user.** The user interacts freely, with no need to manage native tokens or stablecoins for fees, which is the central enabler of a Web2-equivalent user experience.

The real cost of operating the network —compute, state storage, and validator bandwidth— is a physical cost that exists, but **it is not charged or reimbursed transaction by transaction.** Instead, it is covered in **aggregate** by the validator reward model described in Section 5.4: validators are compensated through their share of the 15% pool of net protocol revenue (plus the minimum retainer in the early phase), not through micro-reimbursements for each operation. In this way, the internal gas subsidy is not a linear treasury liability, but a structural property of the network's economic model.

The sustainability of free transactions rests on two explicit pillars:

1. **Protocol revenue funds the network's structural cost.** The combined activities of payments (BinnoPay), liquidity (BinnoDEX), and credit (BinnoCredit) generate the revenue that feeds the validator pool. The more usage, the more revenue, which comfortably covers the cost of processing the associated free transactions.

2. **Fee-free transactions are bounded and protected against abuse.** Operations that generate no revenue (registering a @username from BinnoWallet, internal wallet operations) are subject to anti-spam limits and sybil resistance: access to free transactions is tied to **verified @username accounts**, with per-account quotas and anti-sybil mechanisms anchored in the identity layer. In this way, the cost of a saturation attack is tied to the friction of identity registration, and the network's resource consumption remains predictable and governable.

**Note on cross-chain operations.** Free transactions apply *within* BinnoChain. Operations leaving toward another network (cross-chain) incur the external network's gas and the LayerZero transport (Chapter 3), costs the network cannot sustainably subsidize at massive scale and which are borne by whoever initiates the operation.

#### 4.3. Treasury funding sources

The treasury is funded exclusively from real ecosystem revenue:

- **BinnoPay fees** (the per-payment fee portion bound to the treasury).
- **BinnoDEX fees** (Chapter 5).
- **BinnoCredit spread** (Chapter 6).

The model is structurally sustainable: operating cost scales with usage, but fee revenue scales with that same usage and at a higher multiple.

### 5. Validators: an Egalitarian, Qualification-Based Model

BinnoChain's validator design deliberately breaks with the conventional competitive proof-of-stake model. The reasoning is both technical and economic, and it clearly separates three concepts that most networks conflate:

1. **Set membership** — who operates a validator node.
2. **Consensus weight** — how much each validator's vote counts in Snowman++ sampling.
3. **User staking** — the economic yield product for BNN holders.

## 5.1. Membership by qualification, not by stake auction

In a network targeting more than 50,000 TPS with sub-second finality, **the slowest validator constrains the performance of the entire network**. Allowing the amount of stake to determine membership would introduce the risk of validators with insufficient hardware degrading finality for all users.

For this reason, membership in BinnoChain's validator set is determined by **technical qualification**, not by a capital auction:

- Verified hardware meeting the reference standard (Section 5.3).
- Deposit of an economic **bond** subject to slashing (Section 5.2).
- Initial approval managed by the Binno Foundation, evolving toward a permissionless, DAO-governed process as the network matures.

## 5.2. Egalitarian consensus weight and economic security

Each validator's consensus weight is **equal** (or subject to a uniform cap), regardless of the stake it manages. This is implemented natively through the ValidatorManager enabled by ACP-77, and produces two desired effects: no large-capital actor can dominate consensus, and the set remains equitable by design, in line with the project's decentralization philosophy.

The **economic security of consensus does not come from third-party delegated stake, but from bonds and slashing**. Each validator deposits a bond composed of two parts:

- **Stablecoin floor: 50,000 USDC/USDT**. Hard slashable value, immune to BNN price volatility. It guarantees that the network's economic security holds even under market stress.
- **BNN component: equivalent to 50,000–100,000 USD**, locked. It aligns the validator with the ecosystem and grants exposure to the token's upside.

This design is deliberate: a bond composed solely of the native token would see its security value collapse precisely during moments of greatest market stress. The stablecoin floor eliminates that risk. The bond is a governance parameter, scalable as the value secured by the network grows.

The bond can be partially or fully confiscated (slashed) according to a graduated scheme:

Offense	Penalty
Isolated equivocation (likely technical fault)	Slash 30% of bond + jail + review
Correlated equivocation ( $\geq f+1$ validators in the same window)	Slash up to 100% + permanent ejection
Downtime < 99% uptime/epoch	Loss of that epoch's rewards (no slash)
Downtime < 95% uptime/epoch	Slash 0.1% + temporary jail
Severe downtime (> 24h offline or 3 jails/quarter)	Slash 5% + ejection
Demonstrable censorship of valid transactions	Slash 10–30% + ejection (via governance)

The scheme is **graduated and proportional**: it tolerates honest technical error with moderate penalties, but economically annihilates coordinated attacks. Censorship is treated as a governance-mediated escalation, since its automatic detection would produce false positives. After a validator voluntarily exits, its bond remains locked and slashable during an **unbonding period of 21 days**, covering offenses discovered afterward.

### 5.3. Reference hardware for validators

BinnoChain requires high-performance server hardware to sustain its target throughput. The reference standard is:

- **CPU:** latest-generation server (AMD EPYC / Intel Xeon),  $\geq 32$  high-performance cores.
- **Memory:** 256 GB ECC DDR5 RAM.
- **Storage:** Gen5 NVMe,  $\geq 4$  TB, high IOPS and low latency.
- **Network:** symmetric 10 Gbps connectivity, low latency and high availability ( $\geq 99.9\%$ ), with redundancy.

Each component contributes directly to network performance: the high core count enables HyperSDK's parallel execution, Gen5 NVMe and ample memory minimize state-access latency, and 10 Gbps connectivity ensures block propagation without bottlenecks at high volume.

#### 5.4. Validator economics: income from real usage, not from third-party staking

BinnoChain's validator compensation model is **distinctive and sustained by real network usage, not by inflation or by third-party staking yield:**

- **Validators earn no yield from other users' staking.** Their income comes from their share of the protocol's real revenue, weighted by uptime and operational performance, plus the yield on their own bond on equal terms with any holder.
- **Minimum guarantee in the early phase (retainer).** During the first months of low volume, the treasury guarantees a minimum monthly retainer of **2,250 USD per validator**, calibrated to comfortably cover the operating cost of the acquired reference infrastructure (amortization, electricity, 10 Gbps connectivity, and the continuous L1 validation fee). This retainer decreases progressively as organic fee revenue replaces it.

The validator reward-pool distribution formula is:

$$\text{reward}_i = \text{epoch\_pool} \times (\text{score}_i / \sum \text{score}_j)$$

$$\text{score}_i = \text{uptime}_i \times \text{responsiveness}_i \quad (\text{uptime required } \geq 99\%)$$

$$\text{payout}_i = \max(\text{minimum\_retainer}, \text{reward}_i)$$

The base is **equal for all** validators, modulated by uptime and by a secondary, bounded responsiveness factor—which rewards good hardware and networking without inducing geographic centralization. The validator reward pool is set at **15% of the protocol's net revenue**, a parameter adjustable by governance vote. The max (retainer, reward) mechanism guarantees that in the early phase the validator earns the floor, and that as revenue grows, real income surpasses it and the subsidy naturally winds down.

**Illustrative profitability exercise (explicit assumptions).** With an owned-hardware operating cost on the order of ~1,000 USD/month, a retainer of 2,250 USD guarantees profitability from day one, even at zero volume. Assuming net treasury revenue of ~\$0.0115 per payment and a validator pool of 15% of net revenue, profitability evolves as follows:

Daily volume	Validator pool/month	Income per validator (21)	Income per validator (100)
Bootstrap (~0)	—	2,250 (retainer)	2,250 (retainer)
1M payments/day	~52k	2,250 (retainer)	2,250 (retainer)
10M payments/day	~517k	~24,600	~5,175
100M payments/day	~5.18M	~246,400	~51,750

The retainer ceases to be the determining factor at around ~900,000 daily payments, the point at which real fee revenue surpasses it. The maximum treasury burden in the bootstrap phase is  $(21 \times 2,250 \text{ USD} \approx 567,000 \text{ USD/year})$ , decreasing).

This design demonstrates a key point: the percentage a validator would earn from third-party staking yield in a conventional PoS model is **economically trivial** compared to its share of real transactional revenue at scale. Forgoing that cut does not compromise validator profitability and, in exchange, allows the user to receive

100% of their staking yield, simplifies the experience (the user does not choose a validator), and reinforces the network's egalitarian philosophy.

### 5.5. Progressive decentralization and honesty about the trust model

Binno prioritizes **progressive decentralization over premature decentralization**. It is important to be precise about the trust model at each phase:

- **Initial phase (early mainnet)**. With a genesis set of **21 validators** of equal weight, qualified and backed by bonds, BinnoChain's trust model resembles a **BFT with bonds and managed membership**, rather than a full permissionless proof-of-stake. This is a conscious decision that guarantees sub-second latency and commercial stability from day one.
- **Decentralization trajectory**. The set expands in a DAO-governed manner along a path of **21 → ~50 → 100+ validators**, and the admission process evolves toward a permissionless model. Thanks to Snowman++'s constant-size sampling property, this expansion **does not degrade network performance**: per-node communication overhead remains independent of set size. There is therefore no permanent ideological cap; growth of the set is a matter for governance.

This transparency about the security guarantees at each stage is deliberate: the network's value is built on verifiable claims, not on over-promises.

## 6. Role of the BNN Token

The native **BNN token serves three clearly delimited economic functions**:

- **Governance** — voting on VM parameters, economic parameters, the validator set, and network expansions.
- **Staking with real yield** — participation in protocol revenue through a staking product *decoupled from consensus* (users earn yield without needing to choose or assign validators).
- **Validator bond** — economic collateral subject to slashing that backs consensus security.

The distinctive and deliberate feature of the design is that **BNN is not used to pay gas**. Resource consumption is accounted for in a dollar-pegged unit as an internal measure, and internal transactions are free for the end user. This decouples the medium of payment from token speculation and guarantees a stable operating cost for merchants and users.

## 7. BinnoChain Security

BinnoChain's security is not oriented toward protecting speculative balances, but **real payment flows, physical merchants, and millions of daily transactions**. Its pillars are:

- **Consensus security.** Fast finality that mitigates the risk of deep reorganizations; collusion-resistant probabilistic sampling; a set of qualified validators backed by slashable bonds.
- **Network security.** Cryptographic per-block attestation, rate-limited P2P channels against saturation attacks, and deterministic state verification.
- **Execution security (BinnoVM).** As a specialized VM with audited native modules —rather than an arbitrary contract platform— BinnoChain eliminates entire classes of vulnerability inherent to open contract environments. The modules undergo external audit and strict resource-consumption limits.
- **Interoperability security.** Omnichain interoperability is channeled through the BinnoHub layer (Chapter 3), which employs verified messaging and replay prevention; the details of its cross-chain security model are developed in that chapter.

## 8. Primary Use Case: Real On-Chain Micropayments

The entire architecture converges on one central use case: **on-chain micropayments at global scale**. BinnoChain is designed to enable:

- Identity and automatic omnichain payments.
- Instant NFC/QR payments in physical stores.
- Integrations invisible to the end user.

- Elimination of blockchain's historical barriers: managing tokens for gas, bridges, and technical understanding.

## 9. Chapter Conclusion

BinnoChain is the technological foundation on which the entire Binno ecosystem is built. Its architecture —sovereign Avalanche L1, Snowman++ consensus, BinnoVM on HyperSDK, free internal transactions with aggregate structural cost, egalitarian qualification-based validators backed by bonds, and interoperability channeled through BinnoHub— solves one of the industry's greatest challenges: delivering a blockchain that is **usable at massive scale**, with the simplicity and speed of traditional financial solutions, while preserving the verifiability and security of Web3.

It is not just another L1. It is a payments-and-identity infrastructure designed, from consensus to user experience, to disappear before the eyes of those who use it.

## Chapter 2. BinnoWallet — Flexible MPC Custody and Frictionless User Experience

BinnoWallet is not a standalone product: it is the **human interface** of the @username system and of BinnoPay. Its purpose is not to store keys, but to allow millions of people to pay, send value, and operate in Web3 **without understanding how Web3 works**.

It is the native wallet of the Binno ecosystem, designed to eliminate the complexity of blockchain technology and to let any user —regardless of technical level— interact with BinnoChain and its applications securely, quickly, and transparently. It provides a simple interface over a robust cryptographic system, delivering a Web2-equivalent experience without sacrificing the cryptographic guarantees of Web3.

Its design rests on three pillars:

- **Decentralized custody via MPC** (Multi-Party Computation).
- **Simplified flows** for daily payments and Web3 experiences.
- **Advanced, modular, user-chosen recovery**.

BinnoWallet is 100% compatible with the Web3 ecosystem: it integrates full **WalletConnect v2** for instant connection to any dApp, and a priority *deep link* for BinnoPay payments.

### 1. BinnoWallet Cryptographic Architecture

#### 1.1. MPC custody as the base model

BinnoWallet uses Multi-Party Computation as the primary mechanism for key generation, signing, and recovery. This means that:

- The private key **never exists as a complete value** on any device, at any time.
- It is generated in a distributed manner and split into **independent cryptographic fragments** (key shares).
- Signatures are produced through MPC protocols, **without ever reconstructing the key**.

BinnoWallet implements the **Threshold ECDSA protocol over secp256k1, based on the GG20 specification** (Canetti et al., 2020), incorporating the performance and security improvements introduced by industry research in 2023–2024. GG20 is a protocol extensively analyzed and audited by firms such as Trail of Bits, Kudelski Security, and NCC Group in industry reference implementations (Zengo, Fireblocks) operating at the scale of more than 10 million active wallets. **BinnoWallet's specific implementation will undergo independent external audit before mainnet.**

This model provides protection against physical key extraction, resistance to partial infrastructure compromise, and security structurally superior to the traditional single-seed-phrase model.

### 1.2. User-chosen MPC configurations

BinnoWallet eliminates the traditional single seed phrase and replaces it with a flexible **m-of-n scheme chosen by the user**, which explicitly separates two independent thresholds:

- **Signing threshold** — how many fragments are required to authorize transactions.
- **Recovery threshold** — how many fragments are required to restore the full wallet.

This separation —uncommon in the market— allows daily operation to be agile while recovery remains highly protected. The available schemes are:

Threshold	Standard schemes	Advanced schemes (high-demand)
Signing	2-of-2, 2-of-3, 3-of-5	4-of-5, 5-of-5
Recovery	2-of-3, 3-of-5	4-of-5, 5-of-5

The signing threshold is **always at least two fragments**: no single fragment can ever control the wallet on its own. A typical daily-operation example is *phone enclave + 2FA (2-of-2)*.

**Non-custodial invariant.** The user can reach both the signing and the recovery threshold **without depending on any fragment held by Binno**. In fact, the user may choose **not to store any fragment on Binno's infrastructure at all**. As a result, Binno can never sign unilaterally, censor, or block the user's access to their funds. The optional fragment hosted on Binno's servers acts exclusively as a convenience and 2FA factor —never as a custodial dependency—. BinnoWallet is, by design, genuinely non-custodial.

## 2. Fragment Distribution and Storage Methods

One of BinnoWallet's innovations is that **the user chooses where their key shares are stored**, adapting the wallet to their desired level of security and convenience. The available methods are:

- **Device Secure Enclave** — fragment protected by FaceID, fingerprint, or passcode, which assists in signing daily transactions and never permits extraction.
- **24-word phrase** — representing **one fragment**, not the complete key.
- **Offline USB device** — fragment on disconnected physical storage.
- **Personal cloud** — encrypted fragment on Drive, iCloud, Samsung Pass, or others.
- **2FA fragment on Binno servers** (*optional*) — encrypted and protected by two-factor authentication; subject to the non-custodial invariant described in Section 1.2.
- **Human guardians** — social recovery, described below.

**Social recovery via guardians.** The guardians collectively represent **a single fragment** within the user's m-of-n scheme. To reconstitute that fragment, a small, user-chosen quorum applies (for example, 2-of-3 guardians, or 2-of-2 for those with only two trusted people). This design provides two simultaneous guarantees:

- No individual guardian holds the fragment alone, and losing one guardian does not mean losing the fragment.

- Since the guardians represent **at most one fragment of the total**, even full collusion among all guardians would grant them a single share —never the wallet—, because the user's threshold would still require other fragments.

**Hardware wallet compatibility.** BinnoWallet is compatible with external hardware wallets (Ledger Nano X/S Plus, Trezor Safe 3/5, Keystone 3 Pro) as an **external custody and signing location** —for example, holding a fragment offline or acting as an external signer in the high-value flow—. The hardware device functions as one of the user's custody methods, not as a participant in the MPC ceremony.

### **3. Signing Model and Daily Operation**

#### **3.1. Normal transactions and instant NFC payment**

For everyday operations —physical payments, dApp interactions, regular transfers— only the fragments defined in the user's signing threshold are required. The goal is for the user to pay without complex processes and without losing security.

**Instant NFC payment** is achieved through signature precomputation: when the user opens the NFC payment screen, BinnoWallet immediately requests the chosen security factors (Secure Enclave biometrics and/or 2FA) and **begins the MPC protocol's computation rounds in the background**. In this way, while the user confirms the amount and brings the phone to the terminal, the heavy cryptographic work has already been done, and the final payment confirmation is reduced to a near-instant step. The definitive latency of the signing flow will be confirmed through measurements on reference devices.

#### **3.2. High-value operations (advanced option)**

Advanced or institutional users can enable the "**High-Value Protection**" function. Once enabled, the user defines a custom threshold (for example, transactions above 5,000 USDT) that requires additional signing fragments. This layer is completely optional and **disabled by default**.

#### **3.3. Full wallet recovery**

To restore the wallet on a new device or after losing the phone, the fragments defined in the user's **recovery threshold** —independent of the signing threshold— are required. This makes it possible to keep daily signing agile without compromising the robustness of recovery.

## 4. User Experience and Interaction Flow

### 4.1. Elimination of complexity

BinnoWallet fully abstracts cryptographic processes. The user **never sees** private keys, complete seed phrases, signing processes, or gas/fee operations. Their actions are reduced to accepting a payment, confirming a transaction, and choosing where to keep their fragments.

### 4.2. Native integration with BinnoChain

BinnoWallet is designed specifically for BinnoChain: it does not require the user to hold USDT/USDC for gas or native tokens, all transactions within BinnoChain are free for the user, and the experience unfolds with no waiting, no bridges, and no friction.

## 5. Operational Security

### 5.1. Protection against extraction and malware

Thanks to the MPC model, no fragment reconstructs the complete key, and the full key is never exposed on the device. An attacker would need to compromise **multiple fragments stored in distinct physical and logical locations**—and reach the user's signing threshold—to operate the wallet.

### 5.2. Tolerance to partial loss

The wallet remains operational even if the user loses one of its elements—the smartphone, a USB, a cloud service, or a guardian—as long as enough fragments remain to reach their threshold. This resilience is a direct consequence of the m-of-n scheme.

### 5.3. Protection against coordinated attacks

Since no guardian holds a complete fragment, the guardians represent at most one share of the total, the cloud and servers store only encrypted fragments, and the Secure Enclave permits no extraction, the system is resistant to physical attacks, advanced phishing, partial infrastructure compromise, and external provider failures (Google, Apple, etc.).

## **6. Chapter Conclusion**

BinnoWallet redefines the Web3 user experience by combining institutional-grade decentralized MPC custody, separation of signing and recovery thresholds, robust quorum-based social recovery, gas-free transactions, and an intuitive interface oriented toward real micropayments. Its architecture removes the historical barriers that hold back mass adoption —without sacrificing the technical fundamentals of security and decentralization— and embodies the ecosystem's guiding principle: that the technology disappear before the eyes of those who use it.

## Chapter 3. BinnoHub — Universal User (username), Automatic Interoperability and Omnichain Web3

BinnoHub is the flagship of the Binno ecosystem and its operational core. It pursues a single, radical objective: **the absolute simplification of the blockchain**. To reduce sending value or executing an action on any chain to writing a @username and a destination network—with no addresses, no bridges, no gas management, no fragmentation—.

Just as DNS turned IP addresses into human-readable names, BinnoHub turns the set of all blockchains into a single continuous space where technical complexity disappears before the user's eyes.

BinnoHub combines three components into a single verifiable protocol:

- **Universal user** based on @username.
- **Deterministic receiving addresses**, the transition mechanism that coexists with the @username mode.
- **Omnichain Web3 execution** of transfers, swaps, and interaction with external dApps through secure intents.

### 1. User vision — a realistic evolution toward the universal user

BinnoHub is designed to coexist with two worlds: that of wallets that already integrate @username and that of those that do not yet. During the transition, the system automatically chooses the most efficient path without the user noticing any difference.

Action	Initial phase	Maturity phase
Receive from another chain	The sender sends to your receiving address	The sender writes @username + your network and taps "send"

Action	Initial phase	Maturity phase
Send to another chain	You paste the destination wallet and select the network	The sender writes @username + network, now universal
Intents with external dApps	1 click from BinnoWallet	1 click from any @username-compatible wallet

## 2. Global architecture — three coupled layers

**Layer 1 — BinnoHub (on BinnoChain): the single source of truth.** It resides on BinnoChain and concentrates: the registration, global uniqueness, and control of the @username; deterministic generation of receiving addresses; omnichain resolution of users; construction and authorization of the cross-chain payload; routing via LayerZero V2 (OFT/OApp); intent management; synchronization of identity state with all SatelliteHubs; and the assignment of global nonces with replay prevention.

BinnoChain has two identifiers that must not be confused: its **Avalanche blockchainID** (base58 format, identifying it as an L1) and its **LayerZero Endpoint ID** (integer, identifying it as an endpoint in the messaging network).

*The BinnoHub code presented in this chapter is **illustrative pseudocode** describing the behavior of native BinnoVM actions. It does not represent Solidity contracts deployable on BinnoChain. The SatelliteHubs (Layer 2), by contrast, are real contracts on external chains: on EVM chains (Ethereum, BSC, Base) they are real Solidity contracts; on Solana, native programs.*

**Layer 2 — SatelliteHubs (ultra-light contracts on each external chain).** Translators of fewer than 300 lines, with no sovereign state, exposing a minimal set of functions (resolveUsername, executeIntent, notifyDeposit). Each SatelliteHub **only accepts messages that (a) come from the authorized BinnoHub peer and (b) have been verified by the DVN Security Stack.**

**Layer 3 — Omnichain Messaging (LayerZero V2: DVN Security Stack + Executors).** It is the nervous system ensuring all chains converge on the same final

state. In LayerZero V2, message verification is performed by a Security Stack of **DVNs (Decentralized Verifier Networks)** and execution is performed by **Executors**, in separate phases. BinnoHub configures its Security Stack to require verification by **2 of 3 independent DVNs** for each cross-chain message: a message is only valid at the destination if two independent verifiers confirm its integrity, eliminating any single point of failure in transport.

The guarantees of this layer are:

- **Transport integrity verified by multiple DVNs.** The payload arriving at the destination is, provably, the one BinnoHub authorized. Forging it would require simultaneously corrupting 2 independent verifiers.
- **Sovereignty and resilience.** LayerZero is permissionless at the verification level: should the external DVNs fail, BinnoHub retains the ability to deploy and operate its own DVN to maintain protocol continuity (a contingency option that implies operating one's own verification infrastructure, activatable as needed).
- **Peer authentication**, ordering via global nonces, and replay prevention.
- **Destination gas abstraction.** The LayerZero Executor covers the execution gas on the destination network; the user pays once at the origin and does not need to hold the destination network's gas token.

### 3. How a transaction is confirmed — the two-phase model

A BinnoHub omnichain transaction is confirmed in two clearly separated phases, which constitute the heart of its security:

- a) Authorization and ordering (on BinnoChain).** BinnoHub is the source of truth: it resolves the @username to the destination address, verifies the **user's MPC signature**, checks limits and nonce, and constructs the authoritative payload (destination wallet, amount, network, sender). This is where the data originates and is authorized.
- b) Transport, verification, and execution (LayerZero + destination network).** LayerZero does not originate or hold the data: it transports the payload BinnoHub constructed, and its DVN Security Stack guarantees it arrives at the destination exactly as authorized. The destination SatelliteHub performs

the final delivery, accepting the message only if it comes from the authorized peer, was verified by the DVNs, and matches the authorized nonce and hash.

Two cryptographic elements operate on different planes: the **user's signature** authorizes the intent (validated on BinnoChain), while **peer authentication and DVN verification** guarantee the integrity of the message in transit. Authorization happens on BinnoChain; final execution on the destination network; LayerZero guarantees that what is executed is exactly what was authorized.

#### 4. Data model — universal user

The user profile is the central structure (*illustrative pseudocode of a BinnoVM action*):

```
struct UserProfile {  
  
    owner      // User's MPC control on BinnoChain  
  
    username   // Immutable and globally unique (@alice)  
  
    addresses  // mapping(network → native address, cryptographically verified)  
  
    receivingAddrs // mapping(network → deterministic receiving address)  
  
    lastUpdate // Last update block  
  
    frozen     // Manual or governance freeze  
  
}
```

**The @username is the identity and the control.** In BinnoWallet there is no visible "wallet number": the @username *is* the account. Recovering the MPC control of the profile (through the recovery threshold described in the BinnoWallet chapter) is equivalent to recovering the @username and everything associated with it. There is no way to lose one while keeping the other: they are the same thing. This unifies identity and recovery into a single mechanism.

The association of external addresses requires a verifiable on-chain signature (ECDSA secp256k1 + ecrecover on EVM; Ed25519 or equivalents on Solana/SVM/Move), which makes impersonation impossible.

## 5. Address linking and onboarding

A user may have a @username and want to associate wallets on different networks, or arrive at the ecosystem through different doors. BinnoHub resolves both cases with a **dual proof-of-ownership** mechanism that makes fraudulent linking impossible:

- a) **Authorization from the @username.** The profile owner, with their signature, authorizes the linking of a new address on-chain.
- b) **Proof of control of the new address (challenge-response).** The address to be linked must sign a unique nonce issued by BinnoHub with its own key, proving that the user actually controls it.

The link is only registered when both signatures match. Requiring control of **both** sides eliminates identity hijacking.

### Onboarding paths and costs:

- **Creating the @username upon opening BinnoWallet:** free (it is an internal operation on BinnoChain and a native ecosystem user).
- **Creating the @username from a third-party wallet (first time, on any network):** 0.5 USD + gas, split 0.3 USD integrator / 0.2 USD treasury. Charging the full registration regardless of where it is created prevents the abuse of creating "cheap" identities that are never used.
- **Linking each additional network** to an existing @username: 0.1 USD, split 0.05 USD integrator / 0.05 USD treasury.
- **Bringing to BinnoWallet a @username already created and paid for** on another network: free (already paid).

In all cases, network gas and, where applicable, the LayerZero messaging for cross-chain synchronization are additional costs, separate from the protocol fee, borne by whoever performs the operation (or, from BinnoWallet, by the ecosystem as an investment in retention).

## 6. Receiving addresses — the transition mechanism

Receiving addresses allow value to be received from wallets that **do not yet integrate** @username. They are not the future of the system, but the bridge until @username is universal.

**Deterministic and lazy (on-demand) creation:** upon creating a @username, 0 receiving addresses are deployed (0 initial gas). The first time the user taps "Receive on [network]," BinnoWallet deploys the address via **CREATE2 (EVM chains)** or **PDA (Solana)**, and it remains permanently active.

The derivation is public and verifiable from a public, versioned salt:

```
receivingAddress = derive(username, chainId, saltVersion)
```

This derivation is **public and deterministic by design**—anyone can recompute and verify the address, which enables its use without prior coordination—. Security does not depend on hiding any value, but on control of the contract/account actually deployed. The salt versioning allows the scheme to evolve under governance without breaking existing addresses.

**Coverage by chain family.** Deterministic deployment is natively supported on EVM chains (CREATE2) and Solana (PDA). Support for other families (Move, Cosmos) is incorporated progressively in phases; immediate universal support is not assumed.

**Honest limitation of the transition phase.** When a payer uses a wallet **without Binno integration** and sends to a receiving address, their wallet does not know the protocol: it shows a common transfer and charges only its network's gas, without breaking down Binno's fees. In that case, the protocol fees are deducted from the amount when processed at the destination (the recipient receives the net, and BinnoWallet shows it transparently). This is precisely why native @username integration is superior: an integrated wallet shows the full breakdown before signing. It works in both cases; the integrated path offers a better experience, which constitutes the natural incentive for wallets to integrate the standard.

## 7. Omnichain transfers

*(Illustrative pseudocode of a BinnoVM action):*

```
action sendToUsername(username, token, amount, targetChainId)
```

Internal flow: automatic conversion via BinnoDEX if the token is missing at the destination; OFT send to the destination SatelliteHub via LayerZero V2 (verified by the Security Stack); final delivery to the recipient's native address or receiving address. Operations **within BinnoChain** are free; **cross-chain** operations incur the gas and the LayerZero transport, borne by whoever initiates the operation (including BinnoWallet users, since the network cannot subsidize external-network costs at massive scale).

## 8. Omnichain Web3 — secure intent execution

Automatic intent execution allows a user, from a single wallet, to interact with any dApp on any chain. Since this implies executing actions on the user's behalf on external networks, BinnoHub implements a layered security architecture with **per-user isolation**:

- a) **Per-user execution account at the destination.** Each user has a deterministic smart account per network, deployed lazily. Intents execute **from the user's own account**, not from a shared proxy. The blast radius of any fault is confined to the individual account and never propagates across users.
- b) **Binding authorization, no blind signing.** BinnoWallet decodes and displays each intent in human-readable form before signing (e.g., "Swap 100 USDC for ETH on Uniswap (Base), minimum 0.03 ETH"). The user authorizes with their MPC signature over structured data that binds identity, network, destination contract, action, amount, limits, nonce, and deadline.
- c) **Validation on BinnoChain before sending:** MPC signature, nonce (anti-replay), per-user limits, frozen status, and **destination-contract allowlist** (in initial phases, only verified dApps; expanded by governance).
- d) **Integrity in transit:** the intent travels with its authorized hash; the 2-of-3 DVNs guarantee it arrives intact; the destination account only proceeds if the peer is authorized, the DVNs verified, the hash matches, the nonce was not used, and the deadline has not expired.
- e) **Protocol-level controls:** per-intent and daily limits, mandatory expiry, per-user freezing (frozen), and a **global circuit breaker / pause** governed by timelock for emergencies.

f) **Optional pre-simulation** of the expected outcome before authorizing.

**Trust model summary:** the user only signs what they see; their authorization travels tamper-proof; execution happens in their own isolated account; actions target only vetted contracts; every intent has limits and an expiry; and there is a governed emergency brake. Automatic cross-chain Web3, powerful and at the same time secure and auditable.

## 9. Failure handling in payments and cross-chain operations

A payment system must contemplate the unhappy path, not just the happy one. If a cross-chain operation fails at destination execution (lack of gas, congestion, transient infrastructure error), **funds are not lost**. BinnoHub implements a **non-blocking** messaging architecture: the failed message is stored verifiably on-chain and can be retried (retry) without blocking the rest of the operations on that route. If after retries the operation cannot be completed at the destination, the protocol executes a **verifiable refund to the origin** (value returns to the payer). In no case does an individual failure leave funds in a state where they disappear, nor does it freeze the payment queue. A failure of this type is attributable to the infrastructure (messaging, mis-estimated gas), not the user, and the design turns it into a recoverable contingency.

## 10. Economics and third-party integrations

BinnoHub's economic model is designed to **incentivize adoption of the @username standard by third-party wallets** (MetaMask, Trust Wallet, etc.) without imposing perceptible costs on native BinnoWallet users.

Item	From BinnoWallet	From third-party wallet	Split
@username registration (first time)	Free	0.5 USD + gas	0.3 integrator · 0.2 treasury
Link additional network	Free	0.1 USD + gas	0.05 integrator · 0.05 treasury

Item	From BinnoWallet	From third-party wallet	Split
Transaction within BinnoChain	Free	—	—
Cross-chain transaction (transfer/intent)	Gas + transport (no protocol fee)	Gas + transport + 0.002 USD	0.001 protocol · 0.001 integrator

When an operation is performed from BinnoWallet (with no third-party integrator), the integrator portion is captured by BinnoWallet (Binno Labs), which acts as the integrator of its own product. When no entity fulfills the integration function, that portion is directed to the protocol treasury. The exact split between flows to the company and flows to the protocol is detailed in the Tokenomics chapter.

The 0.002 USD fee per cross-chain transaction is deliberately marginal: on a 5 USD micropayment it represents 0.04%, versus the 2–3% of traditional processors. Imperceptible to the user and, at the scale of millions of transactions, sustainable for protocol and integrators—aligning third-party wallets' interest with the growth of the network—. Parameters are adjustable by governance.

## 11. Cost transparency table

It is essential to separate what Binno charges from what the underlying infrastructure costs. A cross-chain operation incurs: origin-network gas, LayerZero transport (DVN and Executor fees, which already include the execution gas at the destination), and—only for stablecoins and tokens that are not native OFT—the Stargate fee (~0.06% under normal conditions, variable upward under route liquidity imbalance). Native OFT assets (like BNN) do not use Stargate or incur that fee, since they are burned and minted without need for liquidity. The following breakdown is illustrative; gas and transport fluctuate with networks and congestion:

Scenario	Origin gas	LayerZero transport	Stargate fee (non-OFT only)	Binno fee	Who bears it
Internal transfer in BinnoChain	0	—	—	0	Fully free
BNN (OFT) cross-chain transfer from BinnoWallet	0	~0.05–0.20 USD	0 (OFT)	0.002 (0.001+0.001)	Payer
USDC cross-chain transfer (Stargate) from BinnoWallet	0	~0.05–0.20 USD	~0.06 USD	0.002 (0.001+0.001)	Payer
USDC cross-chain transfer from third-party wallet	origin gas	~0.05–0.20 USD	~0.06 USD	0.002 (0.001+0.001)	Payer
Operation with Ethereum L1 destination	per origin	~1–8 USD (L1 gas dominates)	~0.06 USD if non-OFT	0.002	Payer
Receive via receiving address (USDC from another network)	paid by sender	~0.05–0.20 USD	~0.06 USD if cross	deducted from net (~cents)	The recipient

Three conclusions follow: Binno's fee is always **marginal** relative to the real cost; the dominant cost is the underlying network's gas (especially Ethereum L1) and the transport, which the protocol does not control; and native OFT assets are the cheapest route, which incentivizes their use naturally and honestly.

## 12. Security mechanisms

- **Incremental global nonces** → strong cross-chain ordering.
- **Owner MPC signatures** → the private key is never reconstructed.
- **2-of-3 DVN Security Stack** → transport integrity with no single point of failure, with the option of an own DVN as contingency.
- **Commit-Reveal + 3-block challenge window** → protection against front-running, sniping, and typosquatting in name registration.
- **Strict cryptographic verification** of all external addresses (dual proof-of-ownership in linking).
- **Per-user isolation** in intents (individual execution accounts) + allowlist + limits + expiry.
- **Non-blocking failure handling** with retry and refund to origin.
- **Profile freezing** (frozen) and **global circuit breaker** governed by timelock.

The system is designed so that no message can execute out of order, be duplicated, or be forged under the trust model of its Security Stack, even under extreme congestion or coordinated attack attempts.

## 13. Contract evolution and governance

BinnoHub is the ecosystem's identity core and must combine **rule stability** with **long-term correction capability**. Instead of an absolutely immutable contract — which would leave any error uncorrectable for years— it adopts a model of **immutable core logic with strictly bounded, governed evolution paths**:

- Critical logic (@username uniqueness, user ownership, resolution rules) is stable and not altered at discretion.
- Updates —bug fixes, parameter adjustments, allowlist expansions, and critical contingencies such as **post-quantum cryptographic migration** (Dilithium/Falcon-type schemes)— are made exclusively through DAO

governance with a **timelock**, guaranteeing transparency and a public review period before any change.

This model preserves the spirit of the "eternal contract" —no one changes the rules at will— without the fragility of absolute immutability, and resolves the need to evolve cryptography over the decades.

#### **14. Dependence on the interoperability layer — honest declaration**

BinnoHub is built on LayerZero V2 and its OFT standard because it is the most mature and proven interoperability infrastructure on the market, with the greatest chain coverage and, via Stargate, the greatest liquidity for non-OFT assets. It is a **conscious and declared dependency**. The OFT standard is proprietary to LayerZero; replacing the interoperability layer with another (Wormhole, Axelar, CCIP) would be a significant engineering effort, not a simple reconfiguration. Binno assumes this dependency as part of choosing the best technology available today, and mitigates it at the security level via the 2-of-3 DVN Security Stack, the ability to operate its own DVN, non-blocking failure handling, and the emergency circuit breaker. This dependency is detailed, together with its mitigation, in the Risks chapter.

#### **15. Conclusion**

BinnoHub turns the promise of interoperability into a real experience: sending value or executing actions on any chain with the simplicity of writing a name. It achieves this with a three-layer architecture (BinnoHub as source of truth, SatelliteHubs as light translators, LayerZero V2 with a multi-DVN Security Stack as verified transport), a secure, per-user-isolated intent model, honest failure handling, and an economic model that incentivizes adoption of the standard without perceptible costs. It is the ecosystem's flagship because it embodies its central thesis: that the blockchain, in the user's hands, simply disappears.

## Chapter 4. BinnoPay — The Open On-Chain Settlement Standard for Payments

BinnoPay is the payments layer of the Binno ecosystem. Its purpose is not to be a bank or a closed payment processor, but the **open on-chain settlement standard** that any third party —POS manufacturers and distributors, fintechs, e-commerce platforms, and wallets— can integrate into their products.

The analogy is precise: just as Visa and Mastercard are not banks, but the network and technology that third parties integrate to move money, **BinnoPay is the settlement rail; integrators build the merchant- and user-facing products and share the revenue generated.** Binno does not compete with its integrators: it provides them with the infrastructure.

BinnoPay introduces a payment system with a set of properties that is hard to match: instant finality for native payments (real settlement in under 600 ms on BinnoChain); an ultra-low fee (0.02 USD + 0.1% per transaction); omnichain universality (the payer can pay from any chain and with any token, and the merchant always receives settlement in stablecoin); and real physical micropayments via NFC or QR.

### 1. Philosophy and design objectives

BinnoPay is designed as neutral infrastructure: a standard anyone can integrate without protocol-level permissions, and on top of which a competitive market of payment products is built.

Feature	Current systems (2025)	BinnoPay
Merchant confirmation	2–30 s	<600 ms (native payment)
Cost to the user	0.01–0.30 USD + gas	0 within BinnoChain

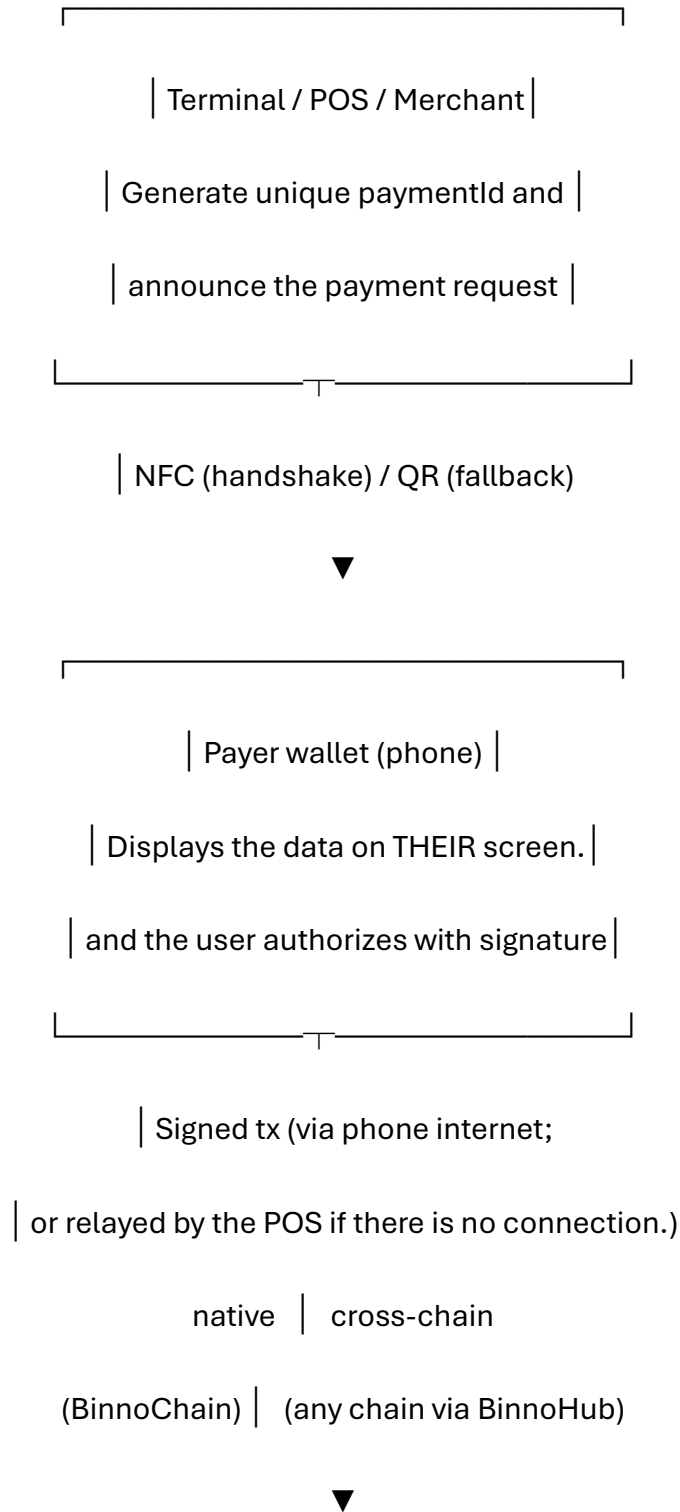
Feature	Current systems (2025)	BinnoPay
Cost to the merchant	1.4–3.9%	0.02 USD + 0.1%
Real multichain	No	Yes (any token → USDC/USDT)
POS integration	Closed	Open (SDK, no protocol permissions)
Merchant settlement	Next-day batch	On-chain stablecoin, immediate (native payment)
Trust model	PCI / intermediaries	On-chain verifiable + signature

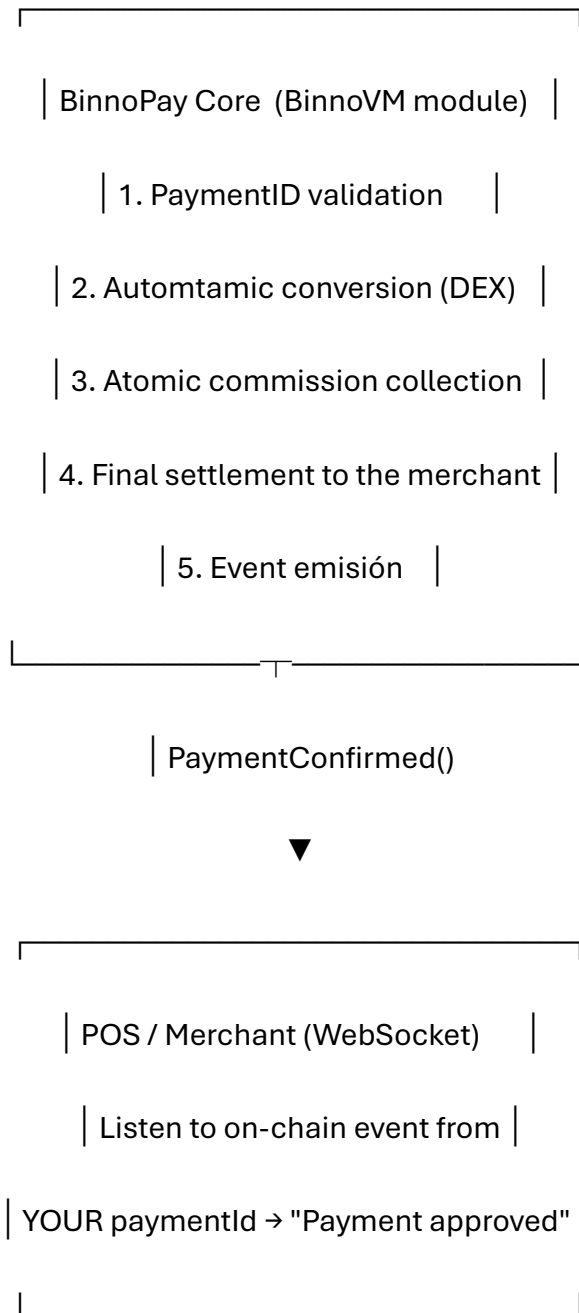
**The distribution model: integrate the manufacturer, not the merchant.** BinnoPay does not seek to convince merchants one by one, but to integrate through agreements with **POS terminal manufacturers and distributors** (Ingenico, Verifone, PAX, and similar), who integrate the BinnoPay SDK as an additional payment method on their devices—separate and independent from the cards' EMV rail, just as Alipay and WeChat Pay operate alongside cards on the same terminal—. A single agreement with a distributor places BinnoPay in the hands of its entire merchant network. Integration is performed per family of programmable devices (POS with an open operating system, typically Android), and does not depend on the card networks' rails.

**Closed-loop over NFC and QR.** BinnoPay operates in *closed-loop* mode: its own payment circuit over NFC or via QR. This means it **never emulates a card or uses the Visa/Mastercard EMV protocol**—which would route through the card rail and its fees—; instead it exchanges its own payment payload that goes directly to the blockchain. The NFC method works on terminals that allow access to the NFC reader in data mode (programmable Android POS); the **QR method offers universal coverage**, since it only requires a screen and does not touch the NFC reader or the certified payment firmware, working even on terminals whose NFC is restricted to

EMV. QR is therefore the guaranteed path that does not depend on any manufacturer; NFC is the premium experience where the device allows it.

## 2. General payment flow architecture





The guiding security principle is that **the arbiter of truth is the chain, not the phone or the POS**: the merchant trusts the irreversible on-chain event, not a message from the customer's device.

### 3. The NFC payment flow in detail

The flow combines the convenience of contactless with the security of on-chain authorization. No physical tap executes a payment on its own: bringing the phone close is the user's deliberate confirmation, never an automatic trigger.

- a) **The POS announces the charge.** The merchant enters the amount; the POS generates the paymentId and exposes the charge payload via NFC (and/or QR): merchant address, amount, paymentId, settlement network, and deadline. At this stage the POS only proposes; it receives nothing from the phone.
- b) **The phone reads the request and displays it on its own screen.** When brought close, the phone receives the charge data and displays it on the user's screen —not the merchant's—. This is key: the user verifies the amount and recipient on an interface the merchant does not control, neutralizing a tampered POS.
- c) **The user authorizes with their MPC signature** (Secure Enclave biometrics / 2FA). Thanks to the presignatures described in the BinnoWallet chapter, the heavy MPC computation begins when the payment screen opens, so the final authorization is near-instant.
- d) **The signed transaction reaches BinnoPay Core** via the phone's own internet connection.
- e) **The POS receives the on-chain confirmation** via WebSocket (<600 ms in the native case) and displays "Approved." The merchant learns of it from the chain, not from the customer's phone.

**QR as an equivalent alternative.** If NFC is unavailable, the POS displays a QR with the same paymentId; the user scans it and the rest of the flow is identical. One backend, two handshake methods.

#### 4. PaymentId — unique and idempotent identifier

Each payment generates a 256-bit paymentId that guarantees an astronomically low collision probability (idempotency: a paymentId executes only once) and full on-chain verifiability. It is generated at the POS/merchant and travels in the payment payload.

paymentId = hash(merchantAddress, amount, randomNonce256, deadline)

Two security considerations are specified as implementation requirements: the nonce must come from a cryptographically secure generator (CSPRNG), since the uniqueness and unpredictability of the paymentId rest entirely on its quality; and the

charge is bound to a verifiable merchant authorization, so that a third party observing the QR/NFC cannot redirect or forge the charge.

## 5. BinnoPay Core — atomic process (native case)

For payments settled on BinnoChain, the entire flow —token conversion, fee collection, and merchant settlement— occurs in a **single atomic transaction**. There are no intermediate states, no temporary custody, and no possibility of partial execution.

*(Illustrative pseudocode of a BinnoVM action; not a deployable Solidity contract):*

action executePayment(paymentId, payer, merchant, integrator, grossAmount, tokenIn):

```
require not payments[paymentId].executed // idempotency
```

```
require now <= payments[paymentId].deadline // not expired
```

```
stableAmount = (tokenIn in [USDC, USDT]) ? grossAmount :  
binnoDex.swapToStable(tokenIn, grossAmount)
```

```
flatFee = 0.02; varFee = stableAmount * 0.001; totalFee = flatFee + varFee
```

```
transfer(merchant, stableAmount - totalFee)
```

```
transfer(treasury, flatFee/2 + varFee/2) // protocol portion
```

```
transfer(integrator, flatFee/2 + varFee/2) // integrator portion
```

```
payments[paymentId].executed = true
```

```
emit PaymentConfirmed(paymentId, merchant, stableAmount - totalFee)
```

*Execution-model note: BinnoPay's NFC/QR flow is "push" —the payer authorizes and originates the transfer with their MPC signature—, not a "pull" model based on prior approvals.*

## 6. Omnichain processing — three routes, one confirmation

BinnoPay leverages BinnoHub to accept payments from any chain. In all routes the merchant receives the same verifiable PaymentConfirmed event.

**Clarification on cross-chain atomicity and latency.** Atomic settlement in <600 ms applies to **native** payments on BinnoChain. A payment originating on another chain cannot be atomic or instant end-to-end: it depends on the origin network's finality and on DVN Security Stack verification, which takes on the order of seconds —and notably more if the origin is Ethereum L1—. In this case, BinnoPay offers **guaranteed settlement in seconds**, not instant. This distinction is deliberate and honest: the native case —the bulk of payments within the ecosystem— is instant; the cross-chain case is fast and guaranteed.

## 7. Fee structure

BinnoPay charges the merchant a fee of **0.02 USD flat + 0.1% variable**, split equally between the protocol treasury and the integrator providing the point of sale. This treasury portion (0.01 USD + 0.05%) is the economic model described in the BinnoChain chapter.

**Example:** a 100 USD payment generates a fee of 0.12 USD. The merchant receives **99.88 USD** net in USDC/USDT; the treasury and the integrator each receive 0.06 USD. The integrator split aligns the interest of POS manufacturers, fintechs, and e-commerce platforms with adoption of the standard —the mechanism by which a payment network reaches global scale—. Parameters are adjustable by governance.

## 8. Settlement: the merchant receives stablecoin, and is free

At the protocol level, the merchant always receives **settlement in stablecoin (USDC/USDT)**. This is where BinnoPay's responsibility and regulatory surface deliberately ends: the protocol does not convert to fiat, does not custody fiat funds, and does not perform KYC. This is what keeps BinnoPay decentralized and free of the regulatory burden of a bank or processor.

From there, the merchant is **free**: they can keep their stablecoins, use them to pay suppliers or employees within the ecosystem itself (via @username), or convert them to their local currency whenever they wish through the off-ramp service of their

choice, entirely external to the protocol. Binno does not impose, intermediate, or recommend any converter.

This neutrality is consistent with the project's vision: the long-term goal is not to facilitate fiat conversion, but to **reduce dependence on fiat**. A merchant who receives in stablecoin and pays workers in stablecoin needs to convert nothing. The more digital money is used end-to-end, the less relevant the conversion moment becomes—and that moment, when it occurs, remains outside the protocol, in the hands of regulated services the merchant freely chooses—.

## 9. Local-currency price denomination

To ease adoption for merchants who think in their local currency, BinnoPay allows **displaying the price in local currency and charging the equivalent in stablecoin**, without this implying real fiat conversion or centralization. The distinction matters: the protocol only *displays* a converted price as a reference; the merchant still receives stablecoin, never fiat.

The equivalent is calculated by currency type:

- **USD:** 1:1 with the stablecoin (USDC/USDT), no oracle. If the merchant charges 100 USD, the user pays 100 USDT.
- **EUR / GBP with a stablecoin of the same type** (e.g., a EUR stablecoin): 1:1, no oracle.
- **EUR / GBP paying with USDC/USDT:** the FX rate via Chainlink oracle is used, for its stability and reliability, only to calculate the equivalent amount.
- **Other currencies (e.g., Latin American):** an **aggregated real market rate from multiple P2P platforms** is used (not the official forex rate, which in many of these markets differs notably from the real rate), taking the midpoint between buy and sell and cross-checking several sources to discard manipulation. This is the same approach used by the region's fintechs and conversion services.

In all cases, the displayed rate is a **market reference price, not a conversion guarantee**: the merchant receives stablecoin and freely decides what to do with it. This mechanism is fully decentralized, since the protocol never custodies or converts fiat.

## 10. "Pay with Crypto" button for Web2

BinnoPay extends its standard to Web2 e-commerce through a payment button integrable with a single line of code: on desktop, a popup shows a QR; on mobile, a deep link opens the installed wallet; automatic QR fallback if no wallet is detected; and an instant payment.success webhook to the merchant, triggered by the on-chain event. The merchant decides whether to keep their USDC/USDT or convert them to local currency with the external service of their choice.

## 11. Refunds and returns

Since on-chain payments are irreversible by design, BinnoPay implements refunds as an **explicit merchant-initiated operation**: a refund is a new payment transaction from the merchant to the payer, referenced to the original paymentId. This preserves on-chain verifiability, prevents card-style chargeback fraud, and leaves an auditable record of each refund.

## 12. BinnoPay security

- **Strict idempotency** (executed = true): a paymentId cannot execute twice.
- **256-bit nonces from a CSPRNG** at the POS, bound to the merchant's authorization.
- **Full atomicity** of the native flow (conversion + fee + settlement) with no intermediate states.
- **Authorization via the payer's MPC signature**: the key is never reconstructed, and the user confirms the amount on their own screen.
- **Cross-chain integrity** guaranteed by the 2-of-3 DVN Security Stack and the peer authentication of the official SatelliteHubs.
- **The merchant trusts the chain, not the customer's device.**

### 13. Open integration and protocol economics

BinnoPay is distributed as an open standard, designed so that integrating is trivial (the model that makes a platform a standard):

- **Pre-built payment component for Android:** a ready-to-use "BinnoPay" button that the integrator incorporates into its app with minimal effort. It internally handles paymentId generation, QR and NFC (where the device allows), subscription to the confirmation event, and payment states. The integrator only enters the amount and receives the result.
- **Customizable interface components** over that button, for the integrator to apply its brand and flow without touching payment logic.
- **Open, documented API** underneath, for the advanced integrator who wants full control.
- **SDKs** for Android, iOS, React Native, and POS hardware, designed without mandatory dependence on Google services (GMS), so they work on any Android terminal, with or without GMS.
- **Direct WebSocket subscription** to the PaymentConfirmed event.
- **Automatic revenue-share** with the integrator, settled on-chain on every transaction.
- **No protocol-level permissions** to integrate.

The protocol revenue generated by BinnoPay is directed toward the sustenance and growth of the ecosystem—including the validator reward pool, BNN buybacks, the insurance fund, and expansion—according to the model detailed in the Tokenomics chapter.

### 14. Chapter conclusion

BinnoPay does not seek to frontally replace Visa, Apple Pay, or Solana Pay, but to become the **open settlement rail** on which the next generation of payment products is built. With instant finality for native payments, guaranteed settlement for omnichain payments, marginal fees, decentralized settlement in stablecoin, and full merchant freedom over their funds, BinnoPay offers POS distributors, fintechs,

and merchants an infrastructure that is faster, cheaper, and simpler to integrate than any current alternative. The long-term goal is for accepting a payment to stop meaning "accepting crypto" and to mean, simply, receiving a @username through BinnoPay.

## Chapter 5. BinnoDEX — The Ecosystem's Liquidity Layer

BinnoDEX is not just another decentralized exchange designed for traders. It is the **liquidity layer that makes the entire Binno ecosystem work**: the silent engine of asset conversion and routing that lets a payment settle in the right stablecoin, a transfer arrive in the token the recipient wants, BinnoCredit liquidate collateral without collapsing prices, and the treasury execute its buybacks. Its success is not measured in speculative volume, but in the user never having to think about it.

### 1. Role in the ecosystem

BinnoDEX exists to solve a concrete problem: in a system where the user pays, sends, and receives in any token and any chain, **someone has to convert and route value instantly, cheaply, and without friction**. That is its sole mission. Its consumers are the other protocol modules:

- **BinnoPay** uses it to convert the token the user pays with into the stablecoin the merchant receives.
- **BinnoHub** uses it so that a transfer arrives in the correct asset on the destination network.
- **BinnoCredit** uses it to liquidate collateral in a controlled manner, without over-selling.
- **The treasury** uses it to execute BNN buybacks with protocol revenue.

### 2. Architecture: unified accounting state and distributed inventory

The technical challenge of an omnichain liquidity layer is that **tokens physically exist on different chains** and cannot be teleported. BinnoDEX solves this with an honest hybrid design:

- **Unified accounting state on BinnoChain.** The accounting of liquidity—how much there is, of what, and where— is a single source of truth on BinnoChain. This eliminates *accounting* fragmentation and enables deterministic routing.

- **Distributed physical inventory.** Assets live on the chains where they are needed. For the main tokens, BinnoDEX does not reinvent liquidity: it leans on LayerZero's OFT/Stargate infrastructure (Section 12.3).
- **CLMM engine for ecosystem pairs.** For its own pairs —especially BNN and payment conversions— BinnoDEX implements a Concentrated Liquidity Market Maker (Algebra v3-type model) with dynamic fees, concentrating liquidity where it is most used and maximizing capital efficiency.

It is important to be precise: what is unified is the **accounting and routing**, not the physical location of the tokens. To claim "there is no fragmented liquidity" would be inaccurate; the correct statement is that **accounting fragmentation disappears, and physical fragmentation is managed through distributed inventory and the OFT/Stargate layer**. This design reduces —does not eliminate— the attack surface of traditional bridges, since it minimizes liquidity locked in custodial bridge contracts.

### 3. Token liquidity: native OFT vs. Stargate

BinnoDEX and BinnoHub distinguish two classes of assets, with different liquidity economics:

- **Native OFT tokens (like BNN).** They need no liquidity: they are burned on the origin chain and minted on the destination chain. The only cost is the LayerZero message. It is the most efficient and cheapest route, and constitutes a natural incentive for the use of BNN and of stablecoins that adopt the OFT standard.
- **Non-OFT tokens (USDC, USDT, and others).** They exist physically and cannot be freely burned/minted. To move them between chains, BinnoHub leans on **Stargate** (LayerZero's liquidity layer), which maintains native liquidity pools on the main chains: it locks at the origin and releases from the pool at the destination. This adds the Stargate fee (~0.06% under normal conditions, variable upward under route liquidity imbalance), reflected transparently in the cost table of the BinnoHub chapter.

BinnoDEX does not tie itself to Stargate for its internal operation; Stargate is a resource the ecosystem uses specifically for the cross-chain transport of non-OFT stablecoins. This is a declared third-party dependency, addressed in the Risks chapter.

## 4. Technical operation

- **CLMM with dynamic fees.** Concentrated liquidity that adapts to the volatility of the pair, maximizing liquidity providers' (LPs') yield and minimizing slippage for the ecosystem.
- **Deterministic pathfinding.** For any conversion, the engine finds the optimal route (direct or multi-hop) deterministically and verifiably.
- **Gas abstraction.** The user can pay for the result of a swap with any token, without managing the process's gas.
- **Latency.** Conversions within BinnoChain confirm with the network's finality (sub-second target). Conversions involving cross-chain transport inherit that transport's latency (seconds), as described in the BinnoHub chapter.

## 5. Fees

BinnoDEX's swap fee is **0.05%**, clearly separated from BinnoPay's fee (which is a *payment* fee, not a *swap* fee). This fee is split between liquidity providers and the protocol treasury, and is adjustable by governance. The CLMM's dynamic fees may adjust this value according to the pair's volatility, within the parameters defined by governance.

## 6. Controlled liquidation for BinnoCredit

One of BinnoDEX's critical functions is to serve as a **controlled liquidation path** for BinnoCredit. When a credit position must be liquidated, BinnoDEX executes the sale of the collateral in a staggered manner and with strict slippage limits, avoiding the over-selling that causes liquidation cascades. This design is deliberate: it protects both the liquidated user (who does not suffer a fire-sale price) and the ecosystem (which does not suffer a price collapse spiral). The detail is developed in the BinnoCredit chapter.

## 7. Yield for liquidity providers

Liquidity providers obtain a yield from the ecosystem's real swap fees. This yield is **variable according to real protocol usage**, not a fixed guaranteed rate. In the initial phase, part of the Community/Ecosystem allocation (described in the Tokenomics chapter) incentivizes the first LPs, and the treasury seeds the initial liquidity of the

critical pairs until the ecosystem attracts sufficient organic liquidity. This resolves the liquidity bootstrap without compromising sustainability: long-term yield comes from real volume, not perpetual emissions.

## 8. Security

- **Redundant price oracles** (Chainlink as primary source) to prevent price manipulation, with special care on the BNN pair —whose market, being a new token, requires reinforced protection against price manipulation—.
- **Liquidation with slippage limits** to prevent cascades.
- **On-chain verification** of every conversion and routing.
- Cross-chain integrity is inherited from the 2-of-3 DVN Security Stack described in the BinnoHub chapter.

## 9. Conclusion

BinnoDEX is the invisible liquidity layer that makes the ecosystem's frictionless experience possible. It does not compete to be the largest DEX for traders; it competes to be so efficient and reliable that the user never notices it exists. It is infrastructure, not a product for the speculator, and that specialization is precisely its strength.

## Chapter 6. BinnoCredit — Non-Custodial Credit with Productive Collateral

BinnoCredit is the ecosystem's credit layer: it allows users to access liquidity without selling their assets, with an experience equivalent to a credit card, but built on non-custodial, verifiable DeFi infrastructure. Its guiding principle is that **no one decides who pays and who does not; code executes transparent mathematical rules that the user accepts when opening their credit line.**

### 1. Concept: productive collateral

BinnoCredit's central innovation is **productive collateral**: the asset the user deposits as a guarantee (BNN, BTC, ETH, or liquidity positions) does not remain inert, but **generates yield through staking**, and that yield is directed toward paying the credit's interest. Thus, the user can access liquidity while their collateral keeps working for them.

- **Loan against collateral**, without selling the asset.
- **The collateral's yield pays the interest** automatically.
- **Credit-card-like user experience**, on a robust DeFi base.

### 2. Credit parameters

- **Maximum LTV (Loan-to-Value): 50%** on the principal of the collateral. Conservative by design, to withstand the volatility of crypto assets.
- **Fixed-duration contracts** (from 1 to 60 months), which give the user clarity and reduce systemic risk versus perpetual credit.
- **Variable rates by utilization.** Interest rates —both what borrowers pay and the yield depositors receive— are **variable according to real protocol usage**, not fixed guaranteed figures. The model is designed to sustain a healthy spread between the two (on the order of a few percentage points) that funds the system's sustainability. In the initial phase, the treasury may partially subsidize the yield as a decreasing bootstrap mechanism, clearly identified as a bootstrap subsidy and not as organic yield.

### 3. Future yield pays interest (without lending against the future)

The yield the collateral generates in staking is automatically directed toward servicing the credit's interest while debt exists. A deliberate design distinction is important: **BinnoCredit does NOT lend against unmaterialized future yields** (it does not capitalize them as additional collateral). Future yield is only used to **pay interest**, which is its natural cash flow, not to expand the lendable amount. This decision eliminates the risk of lending against an asset that might not materialize, a pattern that has caused crises in other protocols.

The collection of yield to pay interest is **authorized by the user upon opening the credit line**, as a condition of the contract they accept. From there, code executes it automatically while debt exists. It is not a discretionary protocol decision to "collect by force"; it is the execution of the rules the user accepted.

### 4. Liquidations: automatic, staggered, code-governed

This is where BinnoCredit proves to be genuinely decentralized. **The protocol does not "extract" collateral by anyone's decision.** There is a **Health Score** computed on-chain from the relationship between debt (plus accrued interest) and collateral value. If the Health Score falls below a threshold —because debt grew or collateral lost value— the contract executes an **automatic, staggered liquidation**, governed exclusively by code:

- The liquidation is **staggered** (for example, 10% → 20% → 30% of the collateral), never a sudden total sale.
- It executes through BinnoDEX's **controlled liquidation path**, with slippage limits, avoiding over-selling and cascades.
- **No one decides or directs the liquidation.** It is a mathematical threshold and an automatic execution that anyone can verify on-chain.

The **warning notifications** ("your credit health is declining, pay or add collateral") are a **UX convenience layer**, not a security mechanism or a requirement for the protocol's fair operation. The credit state resides on-chain as a public source of truth: anyone can read it via an explorer or a third-party service, not only BinnoWallet. That BinnoWallet offers these notifications does not centralize the protocol, because the liquidation is triggered by code according to the on-chain state, and the data is public and not exclusive to Binno.

## 5. Staking as collateral: locking and debt priority

When a user uses their staking as collateral:

- **The collateral is locked** while debt exists. The user cannot withdraw staking if doing so would leave their position below the health threshold (they cannot withdraw and leave less than what they owe).
- **The staking yield services the debt** with priority and automatically, as authorized when opening the line.
- If the debt cannot be covered and the Health Score reaches the threshold, the staggered liquidation of Section 13.4 operates.

## 6. Reflexive risk of BNN as collateral

BinnoCredit openly acknowledges a specific risk: since BNN is the ecosystem's native token and an accepted collateral, a sharp drop in its price could trigger BNN liquidations that, sold on the market, pressure the price further—a reflexive spiral risk—. BinnoCredit mitigates it with several defenses:

- **Exposure limits:** a cap on how much BNN can be used as collateral across the system.
- **Staggered, controlled liquidation** via BinnoDEX, without sudden sale.
- **Treasury backstop without market sale:** the treasury can absorb BNN collateral in liquidations **without selling it on the market**, using its stablecoin reserve (from ecosystem fees) to break the spiral. This works as long as the treasury maintains a sufficient stablecoin reserve relative to the BNN exposure, a sizing addressed in the Tokenomics chapter.

Acknowledging this risk explicitly and showing its mitigations is part of the project's commitment to transparency.

## 7. Risk reduction versus traditional credit

BinnoCredit's design—conservative 50% LTV, staggered rather than sudden liquidations, fixed-duration contracts, and productive collateral—substantially reduces risk versus both traditional credit and more aggressive DeFi lending

models. We do not promise unverifiable risk-reduction figures; we state that the combination of these mechanisms is designed to minimize the risk of disorderly liquidation and loss for the user.

## **8. Decentralized nature and regulatory considerations**

BinnoCredit is designed as a non-custodial protocol: funds and collateral live in audited contracts, rules execute by code, and there is no entity that makes discretionary decisions about users' credits. These properties —non-custody, automatic execution by immutable and audited code, absence of discretionary intervention— are those that various regulatory frameworks consider when distinguishing a decentralized protocol from a regulated financial service.

This description does not constitute legal advice, and the regulatory treatment of decentralized credit protocols varies by jurisdiction and evolves constantly. Binno addresses compliance with the corresponding legal advice, as detailed in the Legal Considerations chapter.

## **9. Conclusion**

BinnoCredit offers access to liquidity without selling assets, with the simplicity of a credit card and the transparency of an on-chain protocol. Its productive collateral, conservative LTV, automatic and staggered liquidations, and honest acknowledgment of reflexive risks position it as a credit layer designed to last, not to maximize leverage at the cost of stability. It is the piece that completes Binno's financial ecosystem: pay, send, convert, and —now— access credit, all without custody and without friction.

## Chapter 7. Tokenomics — The BNN Token

BNN is the native token of the Binno ecosystem. Its design is governed by a non-negotiable principle: **all its value comes from real protocol usage, never from inflation or speculation**. BNN is not a gas token or a payment instrument; it is the asset that captures the economic value the ecosystem generates and redistributes it among those who build it, secure it, and use it.

### 1. Token functions

BNN fulfills three clearly delimited economic functions:

- **Governance** — voting on protocol parameters, economic parameters, the validator set, and network expansions.
- **Staking with real yield** — participation in protocol revenue through a staking product decoupled from consensus; users obtain yield without needing to choose or assign validators.
- **Validator bond** — slashable economic guarantee that backs the security of BinnoChain's consensus.

The distinctive and deliberate feature of the design is that **BNN is not used to pay gas**. The network's resource consumption is measured in a dollar-pegged unit, and internal transactions are free for the user. This decouples the network's medium of use from token speculation.

### 2. Supply and distribution

The total supply of BNN is **fixed: 1,000,000,000 (one billion) tokens**, with no inflation or future emission. The distribution is designed to prioritize community and decentralization, keeping internal participants (team, investors, company) at a minority of the supply:

Category	%	Tokens	Purpose
Community / Ecosystem	33%	330,000,000	Usage rewards, liquidity incentives, merchant and POS acquisition, testnet airdrop
Treasury / DAO	21%	210,000,000	DEX liquidity, bootstrap staking subsidy, buybacks, reserves
Private investors	17%	170,000,000	Early backers (3%) + private rounds (14%), all with vesting
Team (Core Team)	15%	150,000,000	Core team, long-term vesting.
Public Sale	7%	70,000,000	Public distribution with traction
Company & Advisors	7%	70,000,000	Binno Labs operation (4%) and advisors (up to 3%)
<b>Total</b>	<b>100%</b>	<b>1,000,000,000</b>	

This distribution places community, ecosystem, treasury, and public sale together at 61% of the supply, versus 39% for internal participants (team, private investors, company, and advisors) —a proportion aligned with the standards of serious projects and with the project's decentralization philosophy—. Private investors group together the *early backers* (close people who contributed the earliest initial capital, in the highest-risk phase) and the private funding rounds; all are subject to vesting on equal terms, with no preferential terms for early participants.

### 3. Vesting schedule

Vesting is designed to institutional standards, with the deliberate signal that **internal participants have no early access and bear the longest locks**, while the community and market access earlier.

Category	TGE	Cliff	Vesting	Note
Team	0%	12 months	4 years linear	—
Private investors (early + rounds)	0%	6–12 months	24–36 months linear	No preferential terms for early backers
Company & Advisors	0%	6–12 months	24–36 months	Advisors with potentially shorter cliff
Public Sale	10–25%	—	6–12 months linear	Market liquidity
Community / Ecosystem	variable	—	Release against usage metrics, 4–5 years	By real activity
Treasury / DAO	0%	—	Governed linear release, 4–5 years	Liquidity and buybacks

### 4. Community distribution strategy (the 33%)

The allocation to Community/Ecosystem is not a "giveaway": it is **growth capital deployed against real usage, with vesting, over 4–5 years**. Its objective is to build

genuine adoption and broad decentralization, avoiding the pattern of indiscriminate airdrops that only attract speculators who sell immediately. The mechanisms are:

- **Usage rewards.** The bulk of the allocation rewards measurable on-chain economic activity: payment volume processed, real cross-chain transactions, liquidity contributed, and time as an active user. It attracts users who *use* the product, not airdrop hunters.
- **DEX liquidity-provider incentives.** To seed and deepen the liquidity of critical pairs, especially BNN and stablecoins.
- **Merchant and POS distributor acquisition program.** Binno's unique differentiator: BNN subsidies to merchants who process real volume and to distributors who activate terminals. It turns the community allocation into a force for physical adoption —something no purely digital protocol can replicate—.
- **Rewards to integrating wallets.** Incentives to third-party wallets that adopt the @username standard, accelerating the network.
- **Retroactive airdrop to testnet users.** A smaller portion that rewards early loyalty and generates social proof, without being the main mechanism.

To guarantee durability, the allocation does not release at a fixed rate but with a **decreasing, "halving"-type model**: higher emissions at the start (to bootstrap adoption when most needed) that reduce by stages, so that the allocation lasts 4–5 years or more and never depletes suddenly. Each sub-allocation has a **fixed periodic budget** that is never exceeded: if there is much activity, each participant receives proportionally less of that fixed budget (but the token is worth more from the usage); if there is little, they receive more (attracting the first ones). This makes it mathematically impossible to deplete the allocation quickly. All mechanisms release tokens **against verifiable on-chain metrics and with vesting**, so that whoever receives BNN is incentivized to stay, not to sell.

## 5. The economic flywheel

BNN's value-capture model is a flywheel funded by real revenue, not emissions:

1. Ecosystem usage (payments, swaps, credit) generates **real revenue** in fees.

2. Revenue flows to the treasury, which covers protocol costs and directs a portion to **BNN buybacks** on the market.
3. **Staking** distributes real yield (from that revenue) to those who lock BNN.
4. Buybacks and staking reduce the effective circulating supply, while usage grows.
5. More usage → more revenue → greater buyback and yield capacity → greater incentive to participate.

Buybacks reduce the circulating supply; the effect on token value depends on market conditions. This document does not project or guarantee price appreciation.

## 6. Protocol revenue flow

Protocol revenue does not go "100% to the treasury" indiscriminately; it follows a defined flow:

Ecosystem revenue (Pay, DEX, Credit, Hub)

└─ Integrator portion → paid to the third-party integrator (or to Binno Labs when it operates as integrator via BinnoWallet; or to the treasury when no entity fulfills the integration function)

└─ Protocol portion → Treasury

└─ Validator reward pool (15% of net revenue)

└─ Staking yield (BNN stakers)

└─ BNN buybacks

└─ Insurance fund / reserves

└─ Operation and expansion

The "**treasury surplus**" that funds buybacks is defined as the protocol's net revenue **after** covering all its expenses: the validator pool, staking yield, the insurance fund,

and operation. Only the surplus over those commitments is directed to buybacks, ensuring the flywheel does not compromise operational sustainability.

## **7. Staking sustainability**

BNN staking yield is **variable according to real protocol revenue**. In the initial phase, while organic revenue grows, the treasury may subsidize a bootstrap yield with the corresponding allocation (part of the 21%), clearly identified as a **decreasing bootstrap subsidy**, not as permanent organic yield. As ecosystem usage grows, real revenue replaces the subsidy. The project does not promise a fixed, perpetual APR figure; it describes a known bootstrap target in the initial phase that transitions to a variable yield sustained by real revenue.

## **8. Token legal structure**

Following the standard of serious projects in the sector, the BNN token is issued and administered through an **independent foundation (Cayman Foundation-type structure)**, separate from the operating company **Binno Labs (incorporated in Delaware, USA)**. This separation is deliberate: the company develops the software and operates the products; the foundation custodies the token and the protocol treasury and evolves toward DAO control. The structure is subject to the corresponding legal advice and is detailed in the Legal Considerations chapter.

## Chapter 8. Governance

Binno's governance is guided by the principle of **progressive and honest decentralization**: control of the protocol migrates gradually toward the community, but the project is transparent about what is decentralized and what is not in each phase.

### 1. Distinction between protocol and company

It is essential to distinguish two planes:

- **The Binno protocol** (BinnoChain, BinnoHub, BinnoPay, BinnoDEX, BinnoCredit, the token, and the treasury) advances toward progressive control by the **DAO**, governed by BNN holders.
- **Binno Labs** (the company) operates commercial products on top of the protocol—such as the BinnoWallet application—just as any company can build on open infrastructure. Binno Labs is not a DAO nor does it intend to be one.

### 2. Governance evolution

- **Initial phase.** The protocol launches with the Binno Foundation managing critical parameters and the genesis validator set, with security mechanisms (timelocks, circuit breakers) already in code. In this phase, community control over the core is limited, and the project declares this openly.
- **Transition phase.** The DAO progressively assumes control of economic parameters, allowlists, validator-set expansion, and treasury allocation, through BNN holder voting with timelock.
- **Maturity phase.** The protocol operates under substantial DAO control, with the Foundation in a facilitation role.

### 3. Scope of governance

The DAO governs the protocol and its parameters. The commercial products operated by Binno Labs (such as BinnoWallet and its services) are not governed by the DAO, just as the DAO does not govern any third party that builds on the protocol.

Payments to Binno Labs for its development and operation work are made through milestone-based treasury grants, transparently and verifiably.

#### **4. Transparency of the trust model**

Consistent with the entire project, governance is described honestly about its limits in each phase. Binno's value is built on verifiable claims and on a credible path to decentralization, not on the pretense of total and immediate decentralization that would be false.

## Chapter 9. Go-to-Market Strategy

Binno's technology solves a real problem, but success depends on adoption. Binno honestly recognizes that its greatest challenge is not technical, but conquering the classic "chicken-and-egg" problem of any payment network: merchants accept a payment method if users use it, and users use it if merchants accept it. The strategy is designed to break that cycle deliberately and in phases, not through spontaneous diffusion.

### 1. The beachhead: remittance corridors and de facto dollarized economies

Instead of attacking "the world," Binno begins with niches where the pain is greatest and stablecoin adoption is already a reality born of economic necessity:

- **High-cost remittance corridors** (for example, the United States to Latin America), where the current cost of sending money is around or above 6.5% and where the recipient often already prefers to preserve value in digital dollars.
- **Economies with high de facto dollarization and stablecoin adoption** (several Latin American countries), where workers and freelancers already get paid in USDT but lack a simple way to spend it in daily life.
- **Markets with massive QR and NFC payment penetration** (Latin America and Southeast Asia), where the acceptance infrastructure and user habit already exist.

The natural initial user is **someone who already holds stablecoins and cannot easily spend them**: that user has an immediate need that Binno solves, with no need to evangelize about crypto.

### 2. The distribution lever: integrators, not merchants one by one

Binno does not seek to convince individual merchants one by one. Its distribution model relies on **integrators** —POS terminal distributors and manufacturers, fintechs, and wallets— that already have relationships with thousands of merchants. A single agreement with a POS distributor places BinnoPay in the hands of its entire network. The revenue-share and BNN incentives (from the 33%

Community/Ecosystem allocation) align the integrator's interest with real adoption, not the mere distribution of hardware.

### 3. Adoption phases

- **Phase 1 — Validation.** Functional demonstration (real NFC payment from a non-custodial wallet), usability pilots with real merchants and users, and obtaining letters of intent with integrators. The goal is to prove the product works and is usable in real conditions.
- **Phase 2 — Beachhead.** Deployment in a specific remittance corridor and local market, with onboarding programs for merchants (adoption incentives) and campaigns targeting users who already hold stablecoins.
- **Phase 3 — Expansion.** Replication of the model to new corridors and markets, integration with more POS distributors and wallets, and consolidation of the @username standard.

### 4. Honesty about the current state

Binno does not yet have signed letters of intent or closed distribution agreements; it has prioritized building functional technology before committing to adoption. Validating demand with real integrators and merchants is the immediate focus of the first round's use of funds. This transparency is deliberate: the project does not present adoption hypotheses as if they were proven traction.

## Chapter 10. Roadmap

The roadmap reflects the real state of the project and a technical sequence with explicit dependencies, not a list of promises.

### 1. Current state (2026)

- **BinnoChain:** operational on testnet (Avalanche L1 on HyperSDK with Snowman++ consensus).
- **BinnoHub:** functional on testnet, executing real cross-chain transactions via LayerZero between Ethereum and BNB Chain through receiving addresses.
- **BinnoWallet (MPC):** Built on testnet, under testing.
- **BinnoPay:** NFC and QR payment built, under testing.

### 2. Next phases

- **After the financing round:** expansion of the development team; security audits with recognized firms (consensus, BinnoVM, SatelliteHub contracts, MPC); completion of BinnoWallet and BinnoPay; expansion of chain coverage.
- **Path to mainnet:** security hardening, bug bounty program, genesis validator set, and public load testing with documented methodology on the reference validator hardware.
- **Mainnet launch and TGE:** activation of the main network, token generation (TGE), and public sale around the mainnet launch.
- **Post-mainnet:** deployment of the @username standard with integrators, expansion of BinnoCredit and BinnoDEX, and progressive transition of governance toward the DAO.

*(Specific dates are adjusted to real progress and communicated responsibly; the project avoids committing to dates that depend on audits and security validations not yet completed.)*

### 3. Projections — scenarios, not promises

Binno operates in large markets (digital payments, remittances, stablecoins), and its long-term potential is significant if adoption materializes. However, this document **does not present projections of users, volume, or revenue as guaranteed figures or as "conservative scenarios."** Any projection should be understood as an illustrative scenario, dependent on execution, adoption, and market conditions, and anchored to the percentage of the addressable market the project manages to capture. Binno's value rests on its verifiable technology and the magnitude of the problem it solves, not on optimistic projections.

## Chapter 11. Team

*(Structure note: the names and data below are placeholders to be replaced with the team's real, verified information, including photographs, profiles, and professional links. Investors value the team above almost any other factor; this section must be completed with real, verifiable credentials.)*

Binno is built by a team that combines obsession with the problem and direct experience in payment infrastructure.

- **José Daniel Ramírez — CEO and Founder.** Civil engineer by training, immersed in the crypto ecosystem since 2015. Binno's vision was born from eight years of studying and living the problem of payment friction and dependence on intermediaries. He is not a technical code founder, but a product and vision founder, obsessed with solving a concrete problem and with the ability to orchestrate the team that executes it.
- **Leonardo Melendez — Senior Engineer / Technical Co-founder.** Over 12 years of software development experience, with an international track record in banking payment systems and POS terminals.
- **Leonardo Alvarado — Senior Engineer.** Over 12 years of experience, with direct experience in bank-level payment and POS infrastructure.
- **Luis Lugo — Product and Experience Design.** Responsible for the design of the ecosystem's interfaces and community.

**Team strength.** The engineers' direct experience in banking payments and POS is especially relevant: Binno's challenge is, in large part, one of payment infrastructure, and the team knows that domain firsthand.

## Chapter 12. Security and Contingency

Binno's security is addressed in layers, and the project is explicit about both its defenses and the risks it assumes.

### 1. Security by layer

- **Consensus:** fast finality, collusion-resistant probabilistic sampling, qualified validators with slashable bonds.
- **Execution (BinnoVM):** specialized VM with audited native modules, without the attack surface of an arbitrary contract platform.
- **Custody (BinnoWallet):** MPC with no reconstructable single key, with separate signing and recovery thresholds.
- **Interoperability (BinnoHub):** 2-of-3 DVN Security Stack, peer authentication, global nonces, and replay prevention.
- **Auditing:** all critical components undergo independent external audit before mainnet, with a continuous bug bounty program.

### 2. Cross-chain failure handling

Cross-chain operations use **non-blocking** messaging: a destination execution failure does not block the queue or make funds disappear; the failed message is stored and can be retried, and if it does not complete, a verifiable refund to the origin is executed.

### 3. Third-party dependency (honest declaration)

Binno depends on **LayerZero V2 (and Stargate)** as the interoperability and cross-chain liquidity layer for non-OFT assets. It is a conscious dependency, chosen for being the most mature infrastructure on the market. It is mitigated through: the multi-DVN Security Stack (which requires corrupting several independent verifiers to forge a message), the ability to operate a proprietary DVN as a contingency, and a circuit breaker that pauses messaging upon anomalies, protecting funds. Replacing the interoperability layer with another (Wormhole, Axelar, CCIP) would be a

significant engineering effort, since the OFT standard is proprietary to LayerZero; the project assumes this dependency transparently.

#### **4. Other vectors**

- **MEV / reordering:** by controlling its own sequencing and operating with equal-weight validators without a blockspace auction, BinnoChain structurally mitigates value extraction through reordering, which is especially irrelevant for payment flows.
- **State availability:** all critical state resides on-chain on BinnoChain, accessible through explorers and third-party services, without depending on Binno Labs' infrastructure.

## Risks

Binno presents its risks honestly. A project that hides its risks is less trustworthy than one that acknowledges and mitigates them.

- **Adoption risk.** The project's greatest risk. Breaking the "chicken-and-egg" cycle of a payment network is difficult and not guaranteed. *Mitigation:* focused beachhead strategy, distribution via integrators, and incentives from the 33% Community/Ecosystem allocation.
- **Sovereign L1 execution risk.** Operating and securing an L1 is costly and complex. *Mitigation:* reliance on the Avalanche framework, a validator model designed for performance, and use of funds focused on development and auditing.
- **Third-party dependency risk.** Dependence on LayerZero/Stargate and oracles (Chainlink). *Mitigation:* multi-DVN, proprietary DVN, circuit breaker, redundant oracles.
- **Regulatory risk.** A non-custodial payment system at scale will attract scrutiny (AML, money transmission) in some jurisdictions. *Mitigation:* neutral protocol that does not touch fiat, fiat conversion pushed outside the protocol, Delaware + Cayman legal structure, and ongoing legal counsel.
- **Token reflexivity risk.** BNN as collateral in BinnoCredit carries spiral risk in sharp declines. *Mitigation:* exposure limits, staggered liquidation, and treasury backstop without market selling.
- **Market and funding risk.** The ability to complete development depends on funding; crypto market conditions are volatile. *Mitigation:* prudent capital sizing, clear milestones, and a staged financing sequence.
- **Team risk.** Team without prior experience in crypto in production. *Mitigation:* Tier-1 audits, onboarding of advisors with crypto experience, and the team's direct experience in payment infrastructure.

## Legal Considerations

- **Structure.** The ecosystem is organized into two entities: **Binno Labs, Inc. (Delaware, USA)** as the operating company that develops the software and operates the products, and an **independent foundation (Cayman-type structure)** that issues and administers the BNN token and the protocol treasury, evolving toward DAO governance. This structure is subject to the corresponding legal counsel.
- **Nature of the token.** BNN is a utility and governance token of the protocol, not an investment instrument or a promise of return. Its value depends on the use of the protocol and market conditions.
- **Not advice.** This document is informational and does not constitute financial, legal, tax, or investment advice, nor an offer to sell securities. Participation in any financing round or token sale is subject to the corresponding legal terms and the restrictions of each jurisdiction.
- **Compliance.** The protocol is designed as neutral, non-custodial infrastructure. Regulated services (such as conversion to fiat currency) remain outside the protocol, in the hands of licensed third parties that the user or merchant freely chooses. Regulatory treatment varies by jurisdiction and evolves; Binno addresses it with professional counsel.

## Glossary

- **@username** — universal, unique, global identity that replaces the user's addresses across all chains.
- **Sovereign Avalanche L1** — an independent network with its own consensus, validators, and rules, under the Avalanche framework (post-ACP-77).
- **BinnoVM** — BinnoChain's proprietary virtual machine, built on HyperSDK, specialized in payments and identity.
- **Bond (validator)** — slashable economic collateral that a validator deposits as a guarantee of good behavior.
- **CLMM** — Concentrated Liquidity Market Maker; a DEX model that concentrates liquidity for greater capital efficiency.
- **DVN** — Decentralized Verifier Network; LayerZero's verifier network that confirms the integrity of cross-chain messages.
- **FDV** — Fully Diluted Valuation; the theoretical valuation of the project if the entire token supply were in circulation.
- **Finality** — the moment a transaction becomes irreversible.
- **Gas sponsoring / free internal transactions** — the model whereby the user does not pay to transact within BinnoChain; the structural cost is covered by the validator reward model.
- **MPC (Multi-Party Computation)** — a cryptographic technique that distributes a key into fragments so it is never fully reconstructed.
- **OFT (Omnichain Fungible Token)** — LayerZero's standard for tokens that move between chains by burning at the origin and minting at the destination, with no need for liquidity.
- **Receiving address** — a deterministic address that allows receiving value from wallets that do not yet integrate @username; a transition mechanism.

- **SAFE / SAFT** — investment instruments to receive future equity (SAFE) or future tokens (SAFT/warrant).
- **SatelliteHub** — an ultra-light contract on each external chain that connects with BinnoHub.
- **Slashing** — partial or total confiscation of a validator's bond for misbehavior.
- **Snowman++** — Avalanche's consensus mechanism, based on sub-sampled sampling, with overhead independent of the number of validators.
- **Stablecoin** — a token pegged to the value of a fiat currency (USDC, USDT, etc.).
- **Stargate** — LayerZero's liquidity layer for moving non-OFT assets (such as USDC/USDT) between chains.
- **TGE (Token Generation Event)** — the moment the token is generated and begins trading.