Vault777 Whitepaper

The first fully on-chain casino on Arbitrum (Ethereum L2)

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Opening

The online casino industry asks players to believe what they cannot see. Vault777 asks them to verify what they just did.

Vault777 is a fully on chain, non custodial casino. Every spin, roll, and hand settles on chain with verifiable randomness from Chainlink VRF. Funds live in personal smart wallets, not in a company ledger. Live contracts are immutable and ownerless, so no one can quietly change the rules. The result is simple to understand and powerful to experience: premium entertainment with proofs that anyone can check.

What makes Vault777 different

Fairness that can be proven. Outcomes are computed after a cryptographic proof of randomness is verified on chain. No proof means no payout.
Non custodial by design. As part of our mission to make Web3 feel as familiar as Web2, Vault777 will add, after TGE, an optional email and password login that deploys a personal smart wallet, Visa card top up through a regulated on-ramp, and capped gas sponsorship for early sessions. At mainnet, players connect a supported Web3 wallet and remain fully self custodial.

Rules fixed in code. Production games and core modules are non upgradable and have no admin keys. If anything ever evolves, it happens by deploying a new audited version that users opt into.

Transparent economics. Each wager pays a 2 % protocol fee. The top level split is 1 % to Treasury and 1 % to Growth with the bankroll. From the Treasury share, 0.1 % of the handle pays the title's creator automatically in the same transaction, leaving 0.9 % net to the Treasury. Each month, 80 % of Treasury inflows are distributed to stakers by contract. Liquidity providers earn from the house edge over time inside weekly vault epochs with exposure caps and drawdown guards.
Responsible access by default. Real money play is available only in approved regions through on chain eligibility attestations and interface geoblocking. Play Money Mode is available everywhere with the exact same proofs and mapping.

Security and audits

Independent audit by CertiK is in progress. The public report and our response will be published soon. This white paper will be updated as soon as the audit is complete to include the final report links, any remediations, and the exact version references. At launch, source code will be verified on the explorer and recorded in the Version Registry so anyone can match deployed bytecode to audited artifacts.

Why now

Layer 2 networks made real time play affordable. Oracles matured. Users expect receipts. Vault777 brings these threads together on Arbitrum with Chainlink infrastructure for randomness, automation, and price feeds. Expansion to Starknet enables verifiable live card games such as Hold’em and Omaha with deck commitments, shuffle proofs, encrypted deals, and showdown proofs.

What is already proven

On public testnet the system settled about 1,900,000 bets from about 3,500 wallets and about 450,000,000 in handle, with bankroll TVL peaking near 20,000,000. Randomness proofs, payouts, creator royalties, staking logic, and vault accounting reconciled cleanly on chain. These are not promises. They are receipts.

Who this paper is for

Players who want premium 3D games with provable outcomes and simple onboarding that keeps them in control.
Creators and KOLs who want to publish safe titles with our SDK and receive perpetual on chain royalties equal to 0.1 % of handle in their games.
Liquidity providers who want fair weekly accounting with visible risk limits.
Holders and delegates who want cash flows tied to handle and governance that respects immutability and migration only change.

Web3 with ease of Web2

After TGE, Vault777 will offer optional email and password onboarding that deploys a personal smart wallet, Visa card top up through a regulated on-ramp, and capped gas sponsorship for early sessions. At mainnet, users connect a supported Web3 wallet.

How to read this paper

This document is long on purpose. It is a map of the entire protocol and a reference you can return to. Use it like a guidebook and jump to the topics that matter most.

Why Blockchain for Gaming explains the trust problem and what on chain fixes.

Vision and Philosophy defines truthful spectacle and how UX and proofs coexist.

How Vault777 Works shows the architecture, randomness pipeline, settlement flow, and receipts.

Core Features covers onboarding, protection tools, and the 3D experience.

Economic Model explains the 2 % fee, the 1 % plus 1 % split, the 0.1 % creator royalty funded from Treasury, the 0.9 % net to Treasury, monthly staker distributions, LP vault epochs, and our Kelly based bankroll discipline.

Tokenomics and Allocation details the fixed 100,000,000 supply and the 10 % Team, 10 % Private Sale, 10 % Marketing, and 70 % DAO plus Play to Earn reserve.

SDK Overview and KOL Program show how creators and partners publish titles and earn on every wager.

Networks and Integrations explains Arbitrum, Chainlink, and Starknet.

Compliance and Responsible Gaming outlines eligibility, geoblocking, Play Money Mode, and the Player Protection Registry.

Security and Audits documents the audit first policy and how verifiers can replicate accounting from events.

Testnet Results provides signals at scale before mainnet.

Governance Framework and DAO Treasury and Streams describe how the community steers listings, exposure, and budgets under strict limits.

Roadmap lists audited milestones.

Risk Framework is a candid look at what can go wrong and how the design contains it.

Closing and Official Links gives you everything you need to verify and join.

The promise

Vault777 is built so no one can quietly tilt the table. Game math, fee routing, staking distributions, and program budgets are executed by contracts and visible in receipts. Players see every proof. Creators own their games and earn on every wager. Stakers share in protocol revenue by rule, not by discretion. LPs are the house inside a system that measures risk instead of guessing at it.

If you are here for entertainment you will find it. If you are here for the receipts you will find those too. Read on, verify what matters, and decide where you want to participate.

1. Introduction

Vault777 is a fully on chain, non custodial casino that lets anyone verify every spin, roll, and hand. Outcomes are computed only after a cryptographic randomness proof is verified on chain. Funds remain in personal smart wallets, not in a company ledger. Production contracts are immutable and ownerless, so no one can quietly change the rules. The result is a premium entertainment experience with proofs that anyone can check at any time.

1.1 What Vault777 solves

Most online casinos still run on closed databases and custody player funds. Odds can be changed without notice, withdrawals can be delayed, and results cannot be verified independently. Vault777 replaces opacity with transparency.

- Fairness you can prove. Randomness comes from Chainlink VRF and is verified on chain before any payout.
- Your funds stay yours. At mainnet, players connect a supported Web3 wallet and keep custody throughout. After TGE, optional email and password onboarding will deploy a personal smart wallet and enable Visa card top up through a regulated on-ramp.
- Rules that do not change mid game. Live games and core modules are non upgradable and have no admin keys. If the community wants improvements, a new audited version is published and users opt in by choice.
- Receipts for everything. Bets, payouts, fees, royalties, LP vault accounting, and monthly staker distributions are recorded as on chain events so anyone can rebuild the numbers without private dashboards.

1.2 How it feels to use

At mainnet

- Connect a supported Web3 wallet to play.
- Play-Money Mode is available globally with identical proofs and math.
- Real-money play will roll out region by region as on-chain eligibility attestations go live. The interface geoblocks where required and defaults to Play-Money in restricted regions.

After TGE enhancements

- Optional email and password onboarding that deploys a personal smart wallet for you.
- Visa card top up via a regulated on-ramp that credits your smart wallet directly.
- Capped gas sponsorship for early sessions, with clear limits and fallbacks.
- Passkeys and optional guardians for secure, time-locked recovery.

What you see during a bet

- The UI shows pending and confirming states until settlement is complete.

- Results render only after the contract verifies a Chainlink VRF proof and maps the outcome with the published method.
- A proof page opens from any result, showing the randomness request id, proof status, mapped outcome, payout, and fee routing for that bet.

Privacy and control

- Game contracts never store identity documents or card data.
- Eligibility is a yes or no on-chain attestation without personal details in state.
- Funds remain in your wallet at all times. If a service is unavailable, bets either wait within the documented timeout or revert cleanly.

1.3 What is live at launch

At mainnet, Vault777 launches on Arbitrum with gameplay only. Players connect a supported Web3 wallet and can play the first official titles with every outcome settled after a verified Chainlink VRF proof. Fee events and payouts are visible as public receipts.

Available at mainnet

- A curated set of verifiable launch games, with proof pages and public receipts for every bet.
- Play-Money Mode available globally, identical math and proofs, no real funds at risk.
- Region by region activation of real-money play as eligibility attestations go live.

Available after TGE

- Staking with monthly epochs that distribute 80% of Treasury inflows to stakers.
- LP vaults with weekly epochs, exposure caps, and drawdown guards.
- Growth programs, jackpots, rakeback, creator and KOL seasons.
- Optional email plus password onboarding, Visa card top up via a regulated on ramp, capped gas sponsorship, each enabled after its own audit.
- SDK publishing and partner seasons following separate audits and DAO approval.

1.4 Economics at a glance

- Each wager pays a fixed 2% protocol fee encoded in contracts.
- Top level split equals 1% to Treasury and 1% to Growth with the bankroll.
- Creator royalty equals 0.1% of handle, paid instantly to the title creator in the same transaction and funded from the Treasury share, which leaves 0.9% net to Treasury.
- Stakers receive 80% of monthly Treasury inflows by contract. At the net Treasury rate, that is 0.72% of handle distributed to stakers across each month.

- LPs earn from game edge and turnover, not from the protocol fee, inside weekly vault epochs with per bet caps, concurrent exposure caps, and drawdown guards.

A fuller walk through is in Economic Model and Revenue Pathways.

1.5 Security and audits

Security in Vault777 is a fundamental principle, not a slogan. Every component of the system, from randomness to fee routing, is built so that users never have to trust hidden logic or off-chain databases.

Audit status

An independent security audit by CertiK is currently in progress. The final report and detailed responses will be published once the review is complete. This whitepaper will then be updated with the report link, version references, and any remediation notes. No production deployment will take place until the audit receives full clearance with zero critical or high-severity findings.

At mainnet launch

- All core contracts, including games, the fee router, LP vaults, staking, registries, and program vaults, will be immutable and ownerless.
- Each contract will be verified on the Arbitrum explorer, with compiler version, settings, and constructor values recorded in the public Version Registry.
- Every wager will settle on chain only after a verifiable Chainlink VRF proof has been confirmed and mapped to an outcome. If no valid proof is present, the transaction will revert automatically.
- Treasury and Growth flows will emit transparent on-chain events (CreatorRoyaltyPaid, TreasuryFunded, and GrowthFunded) in the same transaction as settlement.

After the audit and following TGE

- A second round of security reviews will cover the Web2 onboarding module that includes email and password login, Visa card top-up, and gas sponsorship before this feature is activated.
- The SDK release will undergo its own dedicated audit before creator publishing opens.
- Future audits will be scheduled whenever a new major version is proposed for DAO listing.

Vault777 follows a strict policy of transparency and verification. No code goes live without independent review, no feature is activated without visible proofs, and every version is permanently recorded in the public registry.

1.6 Networks and expansion

Vault777 launches on Arbitrum for low fees and deep liquidity, powered by Chainlink randomness, price feeds, and automation. Expansion to Starknet enables verifiable live card games such as Hold'em and Omaha with deck commitments, shuffle proofs, encrypted deals, action timers, and showdown proofs.

1.7 What has already been proven

On public testnet the system settled about 1,900,000 bets from about 3,500 wallets and about 450,000,000 in handle, with bankroll TVL peaking near 20,000,000. Randomness proofs, payouts, creator royalties, staking logic, and vault accounting reconciled cleanly on chain, without paid campaigns.

1.8 Token and community at a glance

VAULT is the governance and staking asset for the protocol on Arbitrum. Total supply is fixed at 100,000,000.

- 10% of supply is reserved for seed rounds with vesting to be published in the Version Registry and governance docs.
- Playing the casino does not require VAULT. Holding and staking VAULT entitles holders to participate in governance and to receive a share of protocol revenue through monthly Treasury distributions, as defined above.

A complete overview of supply, vesting, and DAO reserves is in Tokenomics and Allocation.

1.9 Who this document is for

- Players who want cinematic 3D games and provable outcomes with balances under their control.
- Creators and KOLs who want to publish audited titles via the SDK and earn a royalty equal to 0.1% of handle on every wager in their games.
- Liquidity providers who want to supply the bankroll under clear weekly accounting and guardrails.
- Holders and delegates who want governance with strict limits, migration only change, and cash flows tied to handle rather than discretion.

1.10 How to navigate this paper

This is a complete map of Vault777.

- Vision and Philosophy explains the product mindset.
- How Vault777 Works shows the architecture, randomness, settlement, and receipts.
- Core Features covers onboarding, player protection, and the 3D experience.

- Economic Model and Revenue Pathways explain the fixed fee, the Treasury and Growth split, the creator royalty, and monthly staker distributions.
- Tokenomics and Allocation provides the fixed supply, the seed allocation, vesting discipline, and DAO reserves.
- SDK and KOL Program describes how creators publish and earn.
- Networks and Integrations outlines Arbitrum, Chainlink, and Starknet.
- Security and Audits and Compliance and Responsible Gaming detail safety and access.
- Testnet Results and Roadmap show traction and next steps.
- Governance Framework and DAO Treasury and Streams describe how the community steers the protocol.
- Risk Framework is a candid view of what can go wrong and how the design contains it.

Vault777 is built so the rules are visible, the math is public, and the receipts are permanent. If you are here for entertainment you will find it. If you are here to verify, the proofs are ready.

2. Why Blockchain for Gaming

Online casinos grew up on closed servers and private ledgers. Players deposit into a company wallet, watch numbers move on a screen, and wait for support if something breaks. Odds can be changed without warning. Withdrawals can be delayed. Affiliates and creators often rely on screenshots and spreadsheets to reconcile payouts. The common thread is the same: you must trust what you cannot see.

Blockchain replaces belief with verification.

2.1 What the chain fixes, in plain language

Fairness you can prove
Every bet requests randomness and receives a cryptographic proof. Contracts verify that proof on chain before computing the outcome. No proof means no payout. You do not need access to a company database. You have receipts.

Funds you control
Balances sit in personal smart wallets, not in a centralized ledger. Top ups credit your wallet. Withdrawals leave your wallet. If a front end goes offline, the chain does not. You keep custody.

Rules that cannot drift.
Production contracts are immutable and ownerless. There are no upgrade switches or admin keys. If a better version arrives, it is published as a new contract and you choose when to migrate. That is how rule stability should work.

Settlement that is atomic
Outcome, payout, and fee routing happen inside the same transaction. If one leg fails, the whole bet reverts. There are no half steps and no reconciliation spreadsheets later.

Open data by default
Bets, payouts, creator royalties, treasury inflows, and program spends emit events. Anyone can rebuild the numbers from public data. Dashboards become conveniences, not sources of truth.

2.2 Why this matters to each stakeholder

Players
You see a result only after the chain settles. Proof pages show the randomness request, proof status, mapped outcome, payout, and fee routing. Responsible tools such as limits, timers, and self exclusion are enforced in the interface and consulted by contracts. If you travel to a restricted region, real money play is blocked, yet Play Money Mode uses the same math and proofs so the experience is identical without funds at risk.

Creators and KOLs

Royalty is not a promise. It is a line of code. A fixed slice of each wager is paid to the creator's address in the same transaction. For Vault777 titles that equals 0.1% of handle. No screenshots. No chasing finance. The SDK gives you audited templates and publishing tools; listing tiers and simulators keep the catalog safe; events let your audience verify that you were paid.

Liquidity providers

You supply the bankroll like a market maker. The vault locks weekly, issues or burns shares at clear prices, and enforces exposure caps and drawdown guards by contract. Growth compounding is guided by Kelly based risk bands. Returns come from game edge and turnover, not from discretionary token emissions.

Stakers and holders

Each month, the treasury slice that flows through the router becomes staker distributions by contract. For Vault777, stakers receive 80% of monthly treasury inflows. You do not need to trust a spreadsheet. You can recompute the assignment from events.

Governance and builders

Upgrades do not reach into live contracts. The DAO lists new versions, funds streams with KPIs, and sets exposure caps by vote. Change is explicit and opt in. Auditors and community reviewers can check bytecode, constructor values, and event schemas against published artifacts.

2.3 Why now

Layer 2 networks such as Arbitrum made high cadence play affordable and responsive. Oracle infrastructure such as Chainlink VRF matured into a standard for randomness with on chain proofs. Developer tools now make non custodial onboarding practical. Vault777 will introduce, after TGE, optional email and password login that deploys a personal smart wallet, Visa card top up through a regulated on-ramp, and capped gas sponsorship. At mainnet, users start by connecting a Web3 wallet.

2.4 The difference you can feel

A centralized casino can render a spin before it settles and then make the ledger fit later. Vault777 does the opposite. The client celebrates what the contract already decided. Cameras pan. Audio lands. Effects fire. But only after settlement. The spectacle is real because the truth came first.

2.5 The difference you can audit

Pick any wager and follow it:

1. Randomness requested.

2. Proof verified on chain.
3. Outcome mapped by a published function.
4. Payout transferred.
5. Fee routed with creator royalty, treasury funding, and growth programs recorded as events.
6. Staking epoch at month end assigns distributions from actual treasury inflow.

Each step leaves a receipt. Anyone can check the math.

2.6 Why blockchain is the right home for a creator economy

User generated gaming thrives where publishing is easy and revenue is automatic. On chain, that revenue becomes programmable. Vault777's contracts pay a fixed royalty to the creator per wager, then route the rest to treasury and growth programs. The split is enforced by code in live titles, not by a marketing agreement. As catalogs grow, creator income becomes durable and compounding. That alignment turns promoters into owners and distribution into network effect.

2.7 What about compliance and access

Rules are enforced in code and in the interface. Real money play requires a non transferable eligibility attestation from approved issuers and is geoblocked where prohibited. Play Money Mode is open globally and uses the same proofs. Program changes to eligibility issuers require a new audited version and a DAO vote. When regulations shift, the interface can change quickly while live contracts retain their guarantees.

2.8 What about security

The audit trail is public and practical. Source is verified on the explorer. CertiK's audit is in progress; the report, our responses, and any remediations will be published and referenced here. Post launch, bounties, event monitors, and open contests keep attention on the parts that matter most. If a flaw is found, the old version is de listed in the interface, sponsorship stops, and a new audited version is listed for migration. Funds in user wallets remain under user control.

2.9 In one line

Blockchain lets a casino replace trust with proof. That is why Vault777 lives on chain.

3. Vision and Philosophy

A great casino should amaze you on the surface and be boring under the hood. The experience should feel cinematic. The rules should be fixed, provable, and dull in the best possible way. Vault777 exists to deliver both: spectacle you can enjoy and math you can verify.

3.1 Truthful spectacle

Most platforms render a show first and settle later. Vault777 does the opposite. The contract decides the truth, then the client celebrates it. Cameras move after settlement, not before. Audio lands when on chain events confirm an outcome. There are no near miss tricks and no pre reveal animations that imply results. This is entertainment built on receipts.

What that means in practice:

- Every bet requests randomness and verifies a cryptographic proof on chain.
- If the proof is valid, the contract maps it to an outcome using published math.
- Only then does the interface reveal the result and fire effects.
- If any step fails, the entire transaction reverts. There is no ledger drift.

3.2 Non custodial by default, simple by design

Custody is the root of trust. Players keep their funds in personal smart wallets from the first minute. At mainnet, players connect a supported Web3 wallet and remain fully self custodial. After TGE, Vault777 will add optional email and password login that deploys a personal smart wallet, Visa card top up via a regulated on-ramp, and capped gas sponsorship for early sessions, with passkeys and optional guardians for recovery.

The goal is Web2 level simplicity with Web3 level control:

- No omnibus balances.
- No withdrawal tickets.
- No “funds on hold” screens.
- Your balance is yours, all the time.

3.3 Immutable rules and migration only change

Live games, vaults, routers, staking, and registries are non upgradable and ownerless. There are no admin keys, no guardians, and no hidden switches. If the community wants a new feature or a policy change, it appears as a new audited contract. The DAO lists it. Users migrate when they choose. This constraint is a feature. It makes promises credible and history durable.

3.4 Provability ahead of marketing

Proofs are not a banner. They are the product. Every bet has a public proof page that shows the randomness request, proof status, mapped outcome, payout, and fee routing. Events let anyone

rebuild handle, payouts, creator royalties, vault PnL, and monthly staker distributions without a private dashboard. If there is no proof, there is no payout. That is the standard.

3.5 Alignment baked into cash flows

Vault777's economics are simple and mechanical.

- Each wager pays a fixed 2% protocol fee encoded in contracts.
- Top level split equals 1% to Treasury and 1% to Growth with the bankroll.
- From the Treasury share, a 0.1% creator royalty pays instantly to the title creator in the same transaction, leaving 0.9% net to Treasury.
- Each month, 80% of Treasury inflows distribute to stakers by contract.
- LPs earn from house edge and turnover inside weekly vault epochs with exposure caps and drawdown guards. LPs do not receive the protocol fee.

This structure makes growth linear with handle and transparent to all parties. Creators care about getting people to play their games because they earn 0.1% of handle automatically. Stakers care about handle because 80% of Treasury inflows pay out monthly. LPs care about fair risk because their returns come from edge and turnover over time.

3.6 Risk discipline, not bravado

The bankroll is managed using Kelly based principles so growth and capital preservation stay in balance. Exposure caps are set below full Kelly for each title. Concurrent exposure caps and drawdown guards throttle risk when volatility rises. Weekly epochs prevent mid period dilution and keep share math fair. The objective is simple: steady compounding without chasing losses.

3.7 Creators as owners, not renters

The SDK turns distribution into ownership. Approved creators and KOLs publish safe titles quickly using audited templates for slots, dice, crash, roulette, and even money tables. Listing tiers and simulator checks keep the catalog healthy. Royalty is enforced by code. The creator receives 0.1% of handle for every wager in their title. Over time a catalog becomes a studio and a studio becomes a business.

3.8 Governance that knows its limits

After TGE, the DAO steers what to list, how much exposure to allow, and which programs to stream. Proposals follow a predictable path: temperature check, written RFC, on chain vote, timelock, execution. Budgets are streams with KPIs and pause conditions, not lump sums. Constitutional limits protect the core: live contracts cannot be edited, user funds cannot be seized, change is migration only.

3.9 Responsible access in code and in the interface

Real money play is available only in approved regions. The interface geoblocks restricted locations and live contracts require an on chain eligibility attestation. Everywhere else, Play Money Mode uses the same proofs and math without real funds. A Player Protection Registry enforces deposit and loss limits, session timers, cooling off, self suspension, and permanent exclusion across the UI, paymaster, and contracts.

3.10 Networks chosen for a reason

Arbitrum provides low fees and deep liquidity for high cadence play. Chainlink provides verifiable randomness, automation for epochs and jackpots, and price feeds for accounting. Starknet enables verifiable live card games like Hold'em and Omaha with deck commitments, shuffle proofs, encrypted deals, action timers, and showdown proofs. The stack matches our doctrine: truthful spectacle, then scale.

3.11 What success looks like

Success is not only a rising handle chart. It is visible discipline.

- Proof pages are opened and understood.
- RTP drift stays inside published bands.
- Vault utilization and drawdowns sit within policy.
- Creator royalty paid per quarter rises with catalog depth.
- Monthly staker distributions scale with Treasury inflows.
- Responsible gaming controls are adopted and respected.
- Governance participation remains high and budgets meet KPIs.

3.12 What we will not do

Clarity requires bright lines.

- We will not custody player funds in omnibus wallets.
- We will not ship upgradeable production contracts.
- We will not change RTP or fees in a live title.
- We will not use hidden fallback randomness in live versions.
- We will not promise fixed yields or price outcomes.
- We will not bypass self exclusion or regional rules.

3.13 The philosophy in one line

Make honesty exciting. Vault777 pairs a premium 3D experience with rules that are final, public, and provable. If you came for entertainment, enjoy the spectacle. If you came for receipts, the math is waiting.

4. Core Features

Vault777 is designed to feel like a world-class entertainment product while behaving like a public financial system. Below are the features that make those two ideas work together. Each item has a pointer to the deeper section where the full implementation is documented.

4.1 Web2-simple onboarding with real self custody

At mainnet, players connect a supported Web3 wallet to begin playing. This ensures full self-custody from the start, with Play-Money Mode available globally and real-money play activated region by region as eligibility attestations go live.

After TGE, Vault777 will add an optional Web2-style onboarding path for users who prefer a familiar login experience:

- Email and password sign-up. A personal smart wallet will be deployed automatically and linked to the account.
- Visa card top-up. A regulated on-ramp will allow card payments that credit the user's smart wallet directly.
- Capped gas sponsorship. New players may receive limited sponsored gas for early sessions, displayed transparently in the interface.
- Recovery and security. Passkeys and optional guardian recovery will let users regain access safely without exposing custody risk.

Experience flow once these features go live

- Log in or connect a wallet.
- Choose Play-Money or real-money mode depending on your region and attestation status.
- Place a wager: the interface shows pending and confirming states until the contract verifies the Chainlink VRF proof.
- After settlement, the outcome, payout, and fee routing appear on the proof page.

These features will launch after TGE to broaden accessibility while keeping the protocol fully non-custodial and transparent.

4.2 Provable fairness you can check yourself

Every bet requests randomness from Chainlink VRF and receives a cryptographic proof. Contracts verify that proof on chain before computing the outcome. No proof means no payout. Mapping methods are published per title to avoid bias. Proof pages show the request id, proof status, mapped outcome, payout, and fee routing with links to the explorer.
Read more in Section 10 and Section 5.

4.3 Immutable production, migration only change

Live games, vaults, routers, staking, and registries are non upgradable and ownerless. There are no admin keys and no hidden switches. To evolve, the DAO lists a new audited version and users choose when to migrate. All production bytecode and constructor values are verified on the explorer and recorded in the Version Registry.
Read more in Section 5 and Section 6.

4.4 Premium 3D casino that celebrates settled truth

The client never pre reveals results. It celebrates what the chain already settled.
• Roulette with believable ball physics and camera pans that follow confirmed outcomes.
• Blackjack where dealing, hits, doubles, and splits mirror contract state.
• Dice and crash with crisp multipliers and one-click links to proofs.
• A flagship original cluster-pays slot with published strips and RTP.
Visuals, timing, and audio land only after settlement so spectacle and proof stay in sync.
Read more in Section 11.

4.5 Transparent economics on every wager

A fixed 2% protocol fee is hardcoded in the contracts. Top level split equals 1% to Treasury and 1% to Growth with the bankroll. From the Treasury share, a 0.1% creator royalty is paid instantly to the title creator in the same transaction, leaving 0.9% net to Treasury. Each month, 80% of Treasury inflows distribute to stakers by contract. Receipts for all flows are emitted as events.
Read more in Section 15, Section 22, and Section 22A.

4.6 LP vaults that make users the house

Liquidity providers supply the bankroll in weekly epochs. Deposits are accepted only before the epoch starts. Exit requests must be filed 3 days before close with a 1 day claim window. Per-bet caps, concurrent exposure caps, and drawdown guards are enforced by contract. LPs earn from the house edge and turnover, not from the protocol fee.
Read more in Section 12.

4.7 Kelly-informed risk discipline

Exposure targets sit below full Kelly for each title to balance growth and capital preservation. Concurrent exposure and drawdown guards throttle risk when variance spikes. Weekly locks prevent mid-epoch dilution and keep share math fair. Live utilization versus modeled bands is visible to LPs.
Read more in Section 12A.

4.8 Staking with predictable monthly cash flow

Stakers receive 80% of monthly Treasury inflows. Epochs align to calendar months. Only balances present at the snapshot earn that month. There is a 3 day claim window at month end. Exiting requires notice filed 14 days before the next epoch opens. Rewards are paid in the settlement asset and auto-compound if unclaimed.
Read more in Section 13.

4.9 SDK that turns creators into studios

Approved creators and KOLs can publish titles quickly using audited templates for slots, dice, crash, roulette, and even-money tables. Listing tiers and simulator checks protect the catalog. Royalty equals 0.1% of handle and is paid to the creator address in the same transaction as the wager. Over time, catalogs become studios with durable income.
Read more in Section 16.

4.10 KOL and partner seasons with real ownership

Partners sign multi-quarter seasons with streamed budgets tied to KPIs and stop conditions. The best partners publish SDK titles under their brand and earn the creator royalty on every wager. Attribution is on chain. Standards require disclosure, age gating, and responsible content.
Read more in Section 17 and Section 25.

4.11 Programs funded by Growth with the bankroll

The 1% Growth slice funds cross-title jackpots, rakeback, creator and KOL seasons, grants, and eligible buybacks or liquidity support. Programs live in ring-fenced contracts with receipts for each spend. They never touch the vault or player balances. Streams can be paused by DAO vote if KPIs are missed.
Read more in Section 15 and Section 24.

4.12 Responsible gaming as a first-class system

A Player Protection Registry enforces deposit and loss limits, per-session caps, timers, cooling-off periods, self suspension, and permanent self exclusion. The interface blocks input where limits apply. The paymaster refuses sponsorship for protected wallets. Official games consult the registry before accepting a bet. Play-Money Mode uses the same proofs without real funds.
Read more in Section 9 and Section 23.

4.13 Compliance by code and by interface

Real-money play is available only in approved regions. The interface geoblocks restricted locations. Live contracts require a non transferable on-chain eligibility attestation from approved

issuers. Without it, real-money bets revert even from third-party front ends. Changes to issuers require a new audited version and a DAO vote.
Read more in Section 23.

4.14 Observability and public receipts

Everything that matters emits events. Anyone can rebuild handle, outcomes, creator royalties, Treasury inflows, program spends, vault PnL, and staker assignments from public data. Dashboards are convenience layers. The chain is the source of truth.
Read more in Section 26 and Section 7.

4.15 Performance and resilience at Layer 2

Arbitrum provides low fees and consistent latency for high-cadence play. The client shows explicit pending states and handles confirmation timing gracefully. If a service is degraded, bets remain safe because funds sit in personal wallets and settlement is atomic.
Read more in Section 18 and Section 5.

4.16 Security program and audits

Security is specification first, test heavy, and audit driven. Each core module undergoes external review. Source is verified on the explorer with exact compiler settings. A CertiK audit is in progress and the public report plus our response will be published and linked here. Post-launch bounties and open contests keep attention on critical paths.
Read more in Section 7 and Section 27.

4.17 Accessibility and global readiness

Language packs, text scaling, color-blind palettes, high-contrast modes, and low-spec presets ensure the 3D experience works for more players and devices. Regional content standards and age-gating apply to funded partner seasons.
Read more in Section 11 and Section 23.

4.18 Status, incident response, and release transparency

A signed status page reports incidents and maintenance. Releases are published with commit hashes, artifact hashes, and explorer links so anyone can match deployed bytecode to audited builds. If a flaw is found, the UI de-lists the affected version, sponsorship stops, and an audited replacement is listed for migration.
Read more in Section 7 and Section 27.

4.19 Testnet-proven at scale

Before mainnet, the system processed about 1,900,000 bets from about 3,500 wallets and about 450,000,000 in handle with bankroll TVL peaking near 20,000,000. Randomness, payout, royalty, vault accounting, and staking logic reconciled cleanly without paid campaigns.
Read more in Section 21.

4.20 Built to invite verification

Every feature above ends in the same place. A receipt you can check. A contract you can read. A number you can recompute. Vault777 is entertainment you can verify.

5. How Vault777 Works

Vault777 separates spectacle from truth. The client delivers a premium 3D experience. The chain decides what is real. Below is a clear tour of the moving parts and how a single wager flows from click to payout, with receipts you can check yourself.

5.1 System at a glance

- Client layer. Web and mobile front ends that render outcomes only after on chain settlement. Pending states are explicit. Proof pages are one click away.
- Contract layer. Immutable, ownerless production contracts on Arbitrum. Games, fee router, LP vaults, staking, registries, and program vaults.
- Oracle layer. Chainlink VRF for randomness proofs, Automation for epochs and jackpots, and Price Feeds for accounting.
- Registries. Version Registry for official addresses. Eligibility Registry for real money access. Player Protection Registry for limits and exclusions.
- Data and observability. Every important action emits events so anyone can rebuild handle, payouts, fees, royalties, vault PnL, and staking distributions.

5.2 A single wager from start to finish

1. User intent. You place a bet from your personal smart wallet.
2. Protection and eligibility checks. The game checks the Player Protection Registry and, for real money, the Eligibility Registry. If either fails, the bet reverts.
3. Randomness request. The game requests a Chainlink VRF draw and records the request id.
4. Proof arrives. VRF returns a random value and a cryptographic proof.
5. Proof verification. The game verifies the proof on chain. No proof means no payout.
6. Outcome mapping. The game maps the verified random value to a published outcome space using unbiased methods such as rejection sampling or documented transforms.
7. Payout. Winnings are transferred atomically to your wallet.
8. Fee routing. The contract calls the fee router with the bet amount. The router collects the fixed fee and splits it as specified below.
9. Events. The transaction emits events for outcome, payout, CreatorRoyaltyPaid, TreasuryFunded, and GrowthFunded.
10. Proof page. The client shows a proof page with request id, proof status, mapped outcome, payout, and links to all fee events.

5.3 Randomness and mapping to outcomes

- Verifiable randomness. Games consume Chainlink VRF. Proofs are verified on chain before any payout.

- Bias avoidance. Finite sets such as roulette stops use rejection sampling instead of modulo. Continuous outcomes such as dice or crash use documented transforms.
- Published math notes. Each title publishes RTP, hit rate, volatility class, exposure caps, and mapping logic so third parties can reproduce outcomes from events.

5.4 Fees, creator royalty, and programs

- Protocol fee. Exactly 2% of handle on every wager.
- Top level split. 1% to Treasury and 1% to Growth with the bankroll.
- Creator royalty. 0.1% of handle paid instantly to the title creator in the same transaction, funded from the Treasury share, leaving 0.9% net to Treasury.
- Stakers. Each month 80% of Treasury inflows distribute to stakers by contract. At the net Treasury rate this equals 0.72% of handle across the month.
- Programs. The 1% Growth slice funds jackpots, rakeback, creator and KOL seasons, grants, and eligible buybacks or liquidity support. Programs are ring fenced and never touch player balances or the LP vault.

5.5 Bankroll and LP vault mechanics

- Weekly epochs. Deposits are accepted only before the epoch starts. The vault locks for seven days. Exit requests must be filed 3 days before close. Claims open for 1 day after close.
- Share math. New shares mint at the pre epoch price. Redemptions burn at the closing price. Unclaimed positions roll to the next epoch.
- Risk controls. Per bet caps, concurrent exposure caps, and drawdown guards are enforced by contract. Listing tiers are sized by simulators and live drift checks.
- Return source. LPs earn from game edge and turnover over time. LPs do not receive the protocol fee.

5.6 Staking and monthly distributions

- Epochs. Monthly epochs align to calendar months.
- Snapshot. Only balances present at the snapshot earn that month.
- Claim window. There is a 3 day claim window at month end.
- Exit rule. Exiting requires a notice filed 14 days before the next epoch opens.
- Events. StakeSnapshot, RewardAssigned, and RewardClaimed allow anyone to recompute assignments from router inflows.

5.7 Registries and immutability

- Version Registry. The canonical list of official games, vaults, routers, staking, and program addresses with compiler settings and constructor values.

- Immutable by design. Production deployments are non upgradable and ownerless. There are no admin keys.
- Migration only change. New features or policy changes ship as new audited contracts. The DAO lists them. Users migrate voluntarily.

5.8 Compliance and access control

- Eligibility Registry. Real money games require a non transferable on chain attestation from approved issuers confirming age and region. Without it, bets revert even from third party front ends.
- Geoblocking. The official interface restricts real money features in prohibited regions.
- Play Money Mode. Available globally with identical proofs and mapping but no real funds.

5.9 Observability and public receipts

- Events as truth. Outcome, payout, fee splits, royalties, treasury inflows, program spends, staking assignments, share mint and burn, and vault PnL all emit events.
- Reference scripts. Public SDK scripts rebuild results, fee routing, vault accounting, and staking distributions from events so auditors and users can verify numbers independently.

5.10 Failure handling and safety rails

- Atomic settlement. If any leg of settlement or fee routing fails the entire transaction reverts. No partial states.
- Timeouts and liveness. Games publish VRF timeouts and settlement windows. If a timeout is hit, the bet reverts and funds remain in the user wallet.
- UI containment. If an issue is detected, the UI de lists the affected version and stops gas sponsorship while a fixed audited version is prepared. User funds remain in personal wallets at all times.

5.11 SDK integration and listing lifecycle

- Templates. Audited templates for slots, dice, crash, roulette, and even money tables.
- Submission. Creators theme, configure safe parameters, run simulations, deploy to testnet, and submit a packet that includes bytecode, ABI, math notes, simulator outputs, and the royalty address.
- Listing tiers. New titles start with conservative exposure, then graduate as live results stay inside published bands.
- Automatic royalty. The creator receives 0.1% of handle on every wager in the same transaction that settles the bet.

5.12 Security posture and audits

- Specification first and test heavy. Deep unit tests, property based fuzzing, simulator checks, griefing and gas analysis, and differential tests.
- Independent review. A CertiK audit is in progress. The public report and our response will be published and this paper will be updated with final links and version references.
- Verified source. Deployed bytecode is verified with exact compiler settings on the explorer and recorded in the Version Registry.

5.13 Performance and UX choreography

- Pending states. The client shows clear pending and confirming states until settlement events land.
- Truthful spectacle. Cameras, timing, and audio celebrate an outcome that has already settled. There is no pre reveal and no near miss fakery.
- Low fee cadence. Arbitrum's predictable fees and latency keep the experience responsive at scale.

5.14 How upgrades actually happen

- No edits in place. Live contracts cannot be changed.
- New versions only. The community reviews a new audited version, votes to list it, and users migrate at their discretion.
- Receipts preserved. Old versions remain visible on chain, with historical receipts intact, while the UI points discovery to the new version once it is listed.

In short, Vault777 works by putting every important rule inside immutable contracts and making every important action visible as a receipt. The client is there to delight you. The chain is there to protect you.

6. Chainlink Integration

Chainlink is the oracle stack that powers fairness, scheduling, and displays for Vault777. We use it where oracles add integrity and do not use it where on chain state is sufficient. This section explains exactly how Chainlink services fit into the system and how the integration preserves our immutability guarantees.

6.1 Why Chainlink

- Verifiable randomness with on chain proof checks before any payout.
- Deterministic scheduling without private cron servers.
- Battle tested price feeds for accounting and displays.
- A mature ecosystem on Arbitrum with known security practices.

6.2 Verifiable randomness for every wager

- Request. The game contract requests randomness from Chainlink VRF and records the request id.
- Fulfillment. VRF returns a random value and a cryptographic proof.
- Verification. The game verifies the proof on chain before mapping the outcome. If verification fails, the entire transaction reverts.
- Determinism. The same verified random value mapped through the published function will always produce the same outcome, which lets anyone reproduce results from events.
- No fallback RNG. Live versions do not use a local or fallback randomness source. If VRF is unavailable within the published timeout, the bet reverts and the player remains in control of funds.

6.3 Automation for time based actions

- Epochs. Monthly staking snapshots and weekly LP epoch flips are scheduled by Chainlink Automation rather than a private server.
- Jackpots. Jackpot checks and triggers are automated so prize logic does not depend on off chain cron.
- Safety. Upkeeps are scoped to specific functions with guard rails. If an upkeep fails to run, it can be called permissionlessly, and no user funds are left in a pending state.

6.4 Price feeds for accounting

- Displays. Price Feeds support reference values for dashboards, reports, and guard displays.

- Safety checks. Feeds are checked for staleness and bounds. If a feed is stale or out of bounds, the system displays warnings and falls back to on chain base units for safety critical paths.
- Isolation. Price Feeds do not affect settlement math for games that do not require external prices.

6.5 Data streams and low latency reads

- Optional features. Data Streams can power fast, verifiable displays such as leaderboards or market style widgets where low latency helps experience.
- Separation from settlement. Streams are never used to determine game outcomes or move user funds. They inform UI only.

6.6 Proof of Reserve and wrapped assets

- Prepared path. If the DAO ever approves wrapped or reserve backed assets for promotions, Proof of Reserve can be integrated to gate features on reserve liveness.
- Immutable discipline. Any integration that changes safety assumptions ships as a new audited version.

6.7 Cross chain messaging and future expansion

- CCIP as an option. If the DAO approves multi chain coordination for creator programs or tournaments, CCIP can be used for messaging without custody.
- Chain of record. VAULT and core games remain on Arbitrum. Any expansion preserves Arbitrum as the chain of record.

6.8 Addresses, versions, and immutability

- Constructor pins. VRF coordinator, Automation registries, and Feed addresses are set in constructor values where possible.
- Change path. If a service upgrade requires new addresses that cannot be swapped safely, we deploy a new audited version and list it by DAO vote. Live games are never hot patched.
- Registry. The Version Registry records the exact oracle addresses and versions used by each listed contract.

6.9 Monitoring and liveness

- Liveness checks. The system monitors VRF fulfillment times, Automation runs, and feed freshness.
- Alerts. Delays trigger status updates and UI notices.

- User safety. If any oracle lag affects UX, bets either wait or revert cleanly. Player funds remain in personal wallets at all times.

6.10 Event trails for auditors

- Randomness receipts. Every wager includes the VRF request id, proof verification status, and the mapped outcome in events.
- Automation receipts. Snapshot and jackpot triggers emit events with the upkeep id and gas usage.
- Feed references. Reports and dashboards include the feed addresses and round ids used for displays.

6.11 Security posture for integrations

- Least privilege. Upkeeps call narrow functions with explicit bounds.
- Replay safety. Randomness mapping is one time per request id and cannot be replayed.
- Dependency transparency. All oracle addresses and parameters are public, verified, and listed in the Version Registry.
- Containment. If an oracle dependency shows abnormal behavior, UI discovery can be paused for affected titles until a new audited version is listed.

6.12 What Chainlink does not control

- Settlement math. Game outcomes and payouts are determined by on chain mapping of a verified random value.
- Fee routing. The fee router is ownerless and splits the 2% fee mechanically.
- Treasury distributions. The staking module reads on chain inflows and assigns rewards by formula.
- Governance. Oracle providers do not have voting or upgrade rights. They are services, not controllers.

6.13 Why this matters for players and partners

- Players can check a proof for every bet and know no one can override it.
- Creators can point audiences to receipts that show their 0.1% royalty paid per wager.
- LPs can see that jackpots and epoch flips are scheduled without private servers.
- Stakers can match Treasury inflows to monthly assignments using router and staking events.

Chainlink gives Vault777 verifiable randomness, reliable scheduling, and trustworthy displays without compromising immutability. The result is a system where the oracles add integrity and the contracts keep control.

7. Arbitrum Ecosystem

Arbitrum is the execution home for Vault777. It combines low fees, mature tooling, and a large, active user base with the security of Ethereum settlement. For a high-cadence product like a casino, those qualities translate directly into better gameplay, faster confirmations, and reliable scale.

7.1 Why Arbitrum first

- Low, predictable fees. High-frequency games need costs that do not spike unpredictably. Arbitrum fees are consistently a fraction of L1 costs, which keeps the play loop snappy.
- Throughput and responsiveness. Blocks arrive quickly. That reduces perceived latency between request, proof verification, and reveal, which is essential for a premium 3D experience.
- EVM familiarity. Our contracts, audits, and toolchains map cleanly to Arbitrum. This shortens development cycles and lets us focus on game quality.
- Depth and distribution. Arbitrum is one of the largest ecosystems in the EVM world, with active traders, creators, and builders. Liquidity and user familiarity help day-one adoption.
- Ecosystem alignment. The Arbitrum Gaming Catalyst Program allocates a large budget to accelerate on-chain games. That alignment compounds our creator seasons, jackpots, and KOL campaigns.

7.2 What runs where in Vault777

- Arbitrum One hosts every production game, fee router, LP vault, staking module, program vault, Player Protection Registry, Eligibility Registry, and the Version Registry. It is our chain of record.
- Arbitrum Nova is reserved for ultra-low-fee UX modules such as raffles, promos, and event-driven leaderboards that do not handle settlement funds.
- Arbitrum Orbit remains an option for a dedicated creator or tournament domain if we ever need one. VAULT and core liquidity remain on Arbitrum One.

7.3 The UX advantages you can feel

- Fast confirm, smooth reveal. Games request randomness, verify proofs, and reveal outcomes with minimal lag. Cameras and audio sync to confirmed events, not guesses.
- Sponsored gas for new users. Controlled, capped sponsorship on Arbitrum keeps the first session delightful while preserving non-custodial control.
- Consistent pacing. Stable fees and confirmation times make roulette spins, dice rolls, and slot features feel cinematic without stutters.

7.4 Security model in brief

- Optimistic rollup architecture. Transactions execute on Arbitrum, then batches settle to Ethereum. Fraud proofs and dispute windows protect integrity.
- Ethereum settlement. Ultimate security inherits from Ethereum, which is the final arbiter for state commitments.
- No upgrade surprises. Our contracts are immutable and ownerless in production. Even on L2, we do not use proxies or admin keys. Any evolution ships as a new audited version and is listed by DAO vote.

7.5 Tooling and integrations that matte r

- Wallet support. Mainstream EVM wallets work out of the box. Smart-wallet flows and passkeys fit cleanly above Arbitrum accounts.
- On-ramps. Regulated fiat on-ramps already support Arbitrum deposits, which makes the Visa top-up flow direct to the player's smart wallet.
- Indexers and analytics. Mature indexing tools let us and third parties rebuild handle, payouts, royalties, and Treasury inflows directly from events. Dashboards become convenience layers, not sources of truth.

7.6 Growth programs and co-marketing

- Gaming incentives. The Arbitrum Gaming Catalyst Program allocates significant capital to user-facing incentives and builder grants. Vault777 integrates these incentives into Growth with the bankroll programs, creator seasons, and KOL campaigns.
- Distribution partners. Arbitrum's creator and gaming communities amplify SDK titles and responsible marketing. Co-marketing will spotlight proof-of-play and verifiable fairness rather than hype.

7.7 Cost discipline for high-cadence play

- Gas-aware design. Hot paths in our games minimize on-chain work per bet while preserving provability. Randomness proofs are verified once and mapped efficiently to outcomes with published methods that avoid bias.
- Batching where safe. Non-critical operations such as analytics and leaderboards can batch or run on Nova, while settlement remains atomic on Arbitrum One.

7.8 What stays on Arbitrum regardless of expansion

- VAULT token and governance. VAULT is native to Arbitrum. Governance, staking, and Treasury flows remain on Arbitrum One.

- Version Registry. The canonical list of addresses, compiler settings, and constructor values lives on Arbitrum One. If a mirror is deployed elsewhere, the Arbitrum Registry is still the authority.

7.9 Compliance and regional access on L2

- Eligibility attestations. Real-money access requires a non-transferable on-chain attestation. Contracts on Arbitrum check it for every real-money bet.
- Geoblocking. The official interface restricts real-money features where required. In those regions, Play-Money Mode uses the same proofs and mapping without real funds.
- Program changes. Adding or removing an eligibility issuer requires a new audited version and a DAO vote. Interface configuration changes are signed and archived publicly.

7.10 Reliability, incidents, and recovery posture

- Status transparency. We publish a signed status page for any Arbitrum-related incident.
- Containment by design. If a dependency degrades, user funds remain safe in personal wallets. The UI can de-list affected titles and pause sponsorship while a fixed version ships.
- Receipts regardless. Even during partial outages, settled transactions carry the same events for auditors to rebuild outcomes and fee splits.

7.11 How Arbitrum helps creators

- Lower friction to publish. Fees are low enough that creators can iterate on testnet and deploy to mainnet without prohibitive cost.
- Immediate revenue visibility. Creator royalties equal to 0.1% of handle pay out in the same transaction as the wager. On Arbitrum, those receipts are cheap to produce and easy to verify.
- Audience already present. Arbitrum's active user base and social graph help SDK titles find players faster once listed.

7.12 Risks specific to L2 and our mitigations

- Bridge and settlement delays. L2 to L1 withdrawals can take time. This does not affect gameplay or payouts, which occur on Arbitrum, but we disclose it for completeness.
- Vendor concentration. We document every external address and version in the Registry. If a provider upgrades in a way that changes assumptions, we ship a new audited version.

- Fee variability. Fees are low but not zero. Our gas-aware design ensures predictable costs per bet. Sponsored gas is capped and can be paused by policy.

7.13 The bottom line

Arbitrum lets Vault777 feel like a world-class entertainment product while behaving like a public ledger. Low fees keep pacing smooth. Ethereum settlement guards integrity. Mature tooling makes receipts easy to produce and verify. With Arbitrum as our execution home, we can make truthful spectacle the default for on-chain gaming.

8. Starknet Expansion

Starknet is where Vault777 brings provable live card games to life. It combines validity proofs, native account abstraction, and high composability so that complex, multi-step games like Hold'em and Omaha can run end to end with cryptographic guarantees. The goal is simple to say and hard to deliver: table games that feel natural to play and are mathematically verifiable by anyone.

8.1 Why Starknet for cards

Validity proofs for complex flow.

A poker hand has many steps. Seating, blinds, deal, betting rounds, reveals, and settlement. Starknet batches many of these actions inside a single STARK proof that is verified on chain. This lowers cost per decision and keeps the table responsive while preserving public verifiability.

Native account abstraction.

Session keys, batched signatures, and sponsored gas are first class on Starknet. That fits card games where a player may act several times per hand. You get fast interactions with non custodial control.

Throughput headroom.

Card tables generate a lot of state transitions. Starknet's proving system and roadmap give headroom for fast fold tables, tournaments, and analytics without sacrificing the "proofs before payouts" principle.

8.2 What "provable poker" means in practice

Deck commitment

Each hand begins with a canonical deck and a per hand salt that are hashed into a public commitment. This is the reference for everything that follows.

Verifiable shuffle

The shuffler publishes a proof that the dealt deck is a valid permutation of the committed deck. No one can slip extra cards or reorder to advantage.

Encrypted deal to seats

Hole cards are encrypted to seat keys so only the intended player can view them. Observers and opponents cannot see a player's cards during the hand.

Action timers and turn enforcement

Contracts enforce time to act. If a seat fails to act within the timer, standard rules apply for checks, folds, or blinds. No human operator decides.

Reveals and showdown proofs

At showdown the protocol publishes a proof that the revealed hands map to the original committed deck and board cards. The contract settles the pot to the winning address automatically.

Rake and protocol fee

The same 2% protocol fee applies. On table games, handle equals each settled pot. The fixed split remains 1% Treasury and 1% Growth with the bankroll, with a 0.1% creator royalty paid from the Treasury share to the title creator and 0.9% net to Treasury. Rake schedules with hard caps are part of the table configuration and are disclosed in the table math notes.

8.3 Games and formats at launch and beyond

Cash tables

No limit Hold'em first, then Omaha. Buy in and rebuy logic are handled in contract escrow. Seat queues randomize seating to reduce collusion.

Fast fold pools

Players fold and are instantly reseated at a new table with a fresh hand. This increases hands per hour while the contract still enforces timers and proof gates.

Tournaments

Sit and go and multi table tournaments with on chain registration, buy in escrow, blind schedules, table balancing, and automated payouts. Prize overlays can be funded from Growth with the bankroll programs and are visible in events.

Seasonal jackpots

Bad beat and high hand jackpots live in separate audited contracts. Triggers reference exact table events so the proof trail remains clean.

8.4 Anti collusion and fair play analytics

On chain signals

Timing, bet sizing, and seat adjacency are monitored. Suspicious patterns flag a table for review.

Queue randomization

Seats are assigned randomly from queues to reduce fixed adjacency and soft play.

Table hygiene.

The UI can temporarily hide discovery for flagged tables while funds remain safe in user wallets and proofs continue to gate settlement.

Disclosure and appeals

Reviews and outcomes are published with transaction references. Appeals include on chain evidence and are resolved by policy, not discretion.

8.5 UX that respects both realism and proofs

Real pacing
Animations, chips, and cards move only after state changes are confirmed. Players see the show, but the show follows the truth.

Session keys and low friction
Account abstraction allows short lived session keys and action batching so multi step play is fast without sacrificing custody.

Mobile and low spec readiness
Fast fold and tournament tables will ship with low spec presets so the loop stays smooth on modest devices.

8.6 Compliance and access

Eligibility by attestation
Real money card games require a non transferable on chain eligibility attestation from an approved issuer. Without it, real money bets revert. The interface geoblocks restricted regions. Play Money Mode is open globally and uses the same proofs and table logic without real funds.

Responsible play tools
Deposit and loss caps, session timers, cooling off, self suspension, and permanent exclusion are enforced in the interface, the paymaster, and the table contracts.

8.7 Economics for Starknet tables

Same fee mechanics
Every settled pot pays the fixed 2% protocol fee with a 1% Treasury and 1% Growth split. From the Treasury share, 0.1% of the pot is paid to the table creator address in the same transaction, and 0.9% nets to Treasury. Monthly, 80% of Treasury inflows are distributed to stakers by contract. Program overlays for tournaments and jackpots are funded from the Growth slice.

LP exposure policy
Card games have different variance profiles than slots or roulette. Exposure tiers, per pot caps, and concurrent exposure limits are tuned to simulator outputs and updated through migration to new audited versions. Weekly LP epochs and drawdown guards remain in effect to protect the bankroll.

8.8 Developer and creator path for card games

SDK extensions

Card game templates and helpers are added to the SDK so studios and approved creators can publish tables with safe defaults. Listing begins at conservative exposure. Advancement to higher tiers depends on live variance and integrity checks.

Branding and seasons

Creators can publish branded rooms and tournament series. Royalties at 0.1% of pot scale with traffic and are visible in events so communities can verify earnings.

8.9 Security, audits, and rollout

Audit first

Card game modules undergo independent audits prior to public testnet. Reports and remediations are published. Bytecode, compiler settings, and constructor values are verified on the explorer.

Bounties and contests

Public contests target deck commitments, shuffle proofs, encrypted deals, showdown proofs, and pot settlement. Findings are triaged and resolved before mainnet.

Phased launch

Closed testnet with invited players and bounty hunters. Public testnet with open leaderboards. Mainnet for cash games. Tournaments after one or two release cycles. Omaha and fast fold pools follow.

8.10 Interoperability and treasury mirroring

Chain of record respected

VAULT remains on Arbitrum. Governance and the Version Registry remain on Arbitrum. Starknet card games settle locally. Fee events are mirrored and consolidated to the Arbitrum Treasury by a DAO approved bridge or settlement flow. Addresses and versions for any bridge contracts are listed in the Registry. If a bridge is unavailable, fees remain visible and accounted on Starknet until settlement resumes.

8.11 Risks and how we contain them on Starknet

Proof complexity

Cards add cryptography. We mitigate with audits, contests, reference proofs, and readable math notes. If a proof path shows risk, we de list the affected table in the UI and ship a corrected audited version.

Collusion and bots

We rely on queue randomization, timing and sizing analytics, clear policies, and transparent reviews. Suspicious clusters lose discovery while users remain safe.

Latency spikes

If proving or network latency rises, timers and action windows adapt in policy bands. The client communicates state clearly so players always know when the table is waiting on the chain.

Cross chain operations

Treasury mirroring is explicit and batched. If settlement is delayed, the accounting still matches chain receipts and resumes once the bridge clears. No live game relies on cross chain reads for settlement.

8.12 What success looks like on Starknet

- Clean, public proof trails for deck commitments, shuffles, deals, and showdowns.
- Healthy hands per hour with timers respected and few timeouts.
- Low dispute rates and fast, transparent resolutions.
- Creator rooms that convert audience into durable table traffic.
- Tournament series that publish standings and payouts directly from events.
- Growth of staker distributions in line with table handle, visible in receipts.

Starknet gives Vault777 the cryptographic runway to make live cards verifiable. Poker is finally a game you can enjoy for the drama and audit for the truth.

9. Economic Model

Vault777's economics are simple on purpose. They are encoded in contracts, visible in receipts, and designed so that every stakeholder benefits from real activity rather than discretionary emissions. This section explains what happens to each unit of handle, how creators, stakers, LPs, and programs are paid, and how the model scales.

9.1 First principles

- The protocol charges a fixed 2% fee on every wager.
- The fee is split at the router in the same transaction that settles the bet.
- The split is mechanical. It does not depend on who the player is or which front end is used.
- Cash flows are paid in the settlement asset and leave on chain events you can verify.

9.2 The path of a single wager

When a bet settles, three things happen atomically.

1. Player ledger moves to reflect the outcome.
2. Creator royalty is paid.
3. Protocol fee is routed to Treasury and to Growth with the bankroll.

The breakdown is fixed.

- Creator royalty equals 0.1% of handle and is paid instantly to the creator address. This royalty is funded from the Treasury share.
- Treasury nets 0.9% of handle after the creator royalty.
- Growth with the bankroll receives 1.0% of handle to fund user and ecosystem programs.

Both official titles and SDK titles use this exact split. For SDK titles, the royalty recipient is the creator who published the game. For official titles, the royalty recipient is a protocol address designated for house IP and visible in events.

9.3 What Treasury does and how stakers are paid

Treasury is the protocol's revenue account. It has two obligations.

- Distribute to stakers. Each month, 80% of Treasury inflows are paid to stakers by contract at the epoch snapshot. At the net Treasury rate, this equals 0.72% of handle across the month.
- Fund operations. The remaining 20% covers audits, engineering, data, compliance, and reserves. Spending from Treasury is streamed with KPIs and pause conditions, not sent in lump sums.

Distributions are not promises. They are assignments computed from router events and executed by the staking module. Anyone can recompute the exact distribution using on chain data.

9.4 What Growth with the bankroll funds

The 1.0% Growth slice is a dedicated program budget that never touches the LP vault or player balances. It funds:

- Cross title jackpots and prize pools with on chain triggers and payouts.
- Rakeback and retention programs sized by cohort and time window.
- Creator and KOL seasons with on chain attribution.
- SDK grants and studio advances tied to milestones.
- Eligible buybacks or liquidity support approved by vote with published limits.

Growth programs are separate contracts with their own events. Budgets are streamed and can be paused by DAO vote if KPIs are missed or if standards are violated.

9.5 How creators, KOLs, and studios earn

- Per wager royalty. Creators receive 0.1% of handle from every settled wager in their title, paid in the same transaction.
- Catalog effect. As a creator ships more titles, royalties compound. Catalogs become studios with durable income.
- Alignment with staking. Grants or partner allocations are staked from TGE so long term partners earn distributions without inflating circulating supply.
- Transparency. CreatorRoyaltyPaid events list the amount, currency, and recipient for each transaction.

9.6 How LPs earn and why the fee is separate

LPs are the house. They earn from the edge embedded in game math and from turnover over time.

- Weekly epoch vaults. Deposits and exits happen on a schedule so share math stays fair.
- Exposure guards. Per bet caps, concurrent exposure caps, and drawdown guards protect the vault.
- No fee diversion. LPs do not receive the protocol fee. Keeping the fee separate prevents gaming the system and preserves clean accounting between house returns and protocol revenue.

9.7 Why this model is sustainable

- Activity driven. Revenues scale linearly with handle. There are no discretionary emissions to mask low usage.

- Contract enforced. Splits are hardcoded in live routers. Creators and stakers do not wait for off chain reconciliation.
- Auditable. Every payout and split emits events. Anyone can rebuild handle, royalties, Treasury inflows, program spends, vault PnL, and monthly distributions from public data.

9.8 Examples at human scale

These examples are mechanical, not forecasts. They show how the split works.

Per 1,000,000 in handle:

- Total protocol fee equals 20,000.
- Creator royalty equals 1,000.
- Treasury inflow net equals 9,000.
- Growth with the bankroll equals 10,000.
- Monthly staker distribution from this Treasury inflow equals 7,200 which is 80% of 9,000.

Per 100,000,000 in handle:

- Total protocol fee equals 2,000,000.
- Creator royalty equals 100,000.
- Treasury inflow net equals 900,000.
- Growth with the bankroll equals 1,000,000.
- Monthly staker distribution from this Treasury inflow equals 720,000.

9.9 How changes can happen in the future

Live routers and games are immutable. If the community wants to change a split or add a new program type, it ships as a new audited version and is listed by DAO vote. Users then choose whether to migrate. No one can edit a live split.

9.10 Program integrity and attribution

- Attribution is on chain. KOL or creator codes are recorded so cohorts can be measured without private spreadsheets.
- Anti wash rules. Programs define minimum real activity thresholds and exclude self dealing.
- Public reporting. Growth programs publish monthly receipts that match router inflows and program outflows.

9.11 Currency, accounting, and displays

- Settlement asset. Bets, royalties, Treasury inflows, and Growth programs are denominated in the settlement asset used on Arbitrum.

- Price displays. Public dashboards show conversions using Chainlink Price Feeds with staleness checks. Conversion is for display only. Contract accounting remains in base units.

9.12 Interplay with governance

- Staker voice. Staked VAULT retains voting rights.
- Streams not lumps. Treasury and Growth outlays run as streams with KPIs and stop conditions.
- Constitutional limits. The DAO cannot edit live contracts, seize user funds, or change RTP or fees in a live title.

9.13 Why this benefits every stakeholder

- Players enjoy transparent economics and programs funded from real activity.
- Creators receive automatic, per wager income without reconciliation friction.
- LPs earn the house edge under visible risk controls.
- Stakers receive predictable monthly cash flow linked directly to handle.
- Investors and reviewers can audit every number without relying on private dashboards.

The goal is not only to be fair. It is to be fair in a way that anyone can verify. The 2% fee, the 1% plus 1% split, the 0.1% creator royalty from Treasury, the 0.9% net Treasury, and the monthly staker distribution of 80% are the pillars that make Vault777 a transparent, sustainable, and compounding ecosystem.

10. The Kelly Criterion in Bankroll Management

A casino that grows for years does two things well. It captures edge and it refuses to bet too much when variance runs hot. Vault777 encodes that discipline in policy. We size exposure with Kelly-based principles, throttle risk when variance spikes, and keep accounting fair with weekly LP epochs. This section explains Kelly in plain language, how it applies to our vaults, and what you as an LP or reviewer can see on chain.

10.1 Kelly in one paragraph

The Kelly Criterion is a formula that tells a risk taker what fraction of capital to put at risk to maximize long-term (geometric) growth. It depends on the edge and the odds. Bet more than Kelly and you increase the chance of deep drawdowns or ruin. Bet less than Kelly and you grow more slowly but with smoother paths. In practice, professional desks often use fractional Kelly to trade a bit of growth for much lower volatility.

For even-money outcomes, Kelly simplifies to “bet a fraction equal to your edge.” For general casino games with many outcomes and different pay tables, we use the same idea but calculate it from expected value and variance produced by simulators and live data.

10.2 What “Kelly” means for a casino vault

Kelly does not mean “betting the vault.” It means setting policy limits so that the maximum loss from any outcome, relative to total vault value, stays inside a safe fraction.

In Vault777 this appears as:

- Per-bet caps. Each title has a hard cap on the worst-case loss the vault will accept for a single wager, expressed as a fraction of vault value.
- Concurrent exposure caps. A hard cap on the sum of worst-case losses across all unsettled wagers.
- Drawdown guards. Automatic throttles that reduce allowed exposure when the vault’s equity drops by defined steps.
- Weekly epochs. Liquidity is locked during the week so share math stays fair and policy ratios remain stable.

These caps are set below full Kelly for prudence. We use fractional Kelly so that growth is steady and the risk of large drawdowns stays low.

10.3 How we compute the guardrails

We do not guess. We measure.

- Game simulators. For each title, we run large Monte Carlo simulations using the exact pay tables and randomness mapping to produce expected value, variance, and tail loss.

- Correlation modeling. We estimate how titles move together so that concurrent exposure caps account for realistic overlap rather than assuming everything is independent.
- Live drift checks. After listing, each title must track its simulator bands for RTP and variance. If a drift exceeds bands, discovery is paused and the title drops a tier until a corrected audited version is listed.
- Stress and scenario packs. We test sequences such as “cold streaks,” “jackpot clustering,” and “multi-title bad runs” to validate that drawdown guards kick in when they should.

All of this rolls up to constructor values on the vault and title contracts. Reviewers can see the limits on the explorer and match them to our math notes.

10.4 What you will see as an LP

Your experience and your receipts are designed to make risk obvious.

- Weekly epochs. You deposit before the epoch opens, the vault locks for seven days, and you claim in a one-day window. No mid-week dilution from new capital.
- Share price. Your position value moves with vault PnL. You always know the pre-epoch mint price and the closing redemption price.
- Utilization bands. Dashboards show exposure used versus policy bands and annotate any drawdown throttle events.
- Event trail. Per-bet exposure, payouts, and vault PnL are reconstructible from public events. You can recompute your week independently.

10.5 Kelly and the house edge

LP returns come from house edge and turnover, not from the 2% protocol fee. Kelly sizing makes sure we capture edge without overexposing the vault when variance spikes. The fee flows to Treasury and Growth programs and never touches the LP vault.

10.6 Why fractional Kelly, not full Kelly

Full Kelly maximizes growth on paper but produces uncomfortable volatility in real life. Fractional Kelly:

- Cuts the frequency and depth of drawdowns.
- Keeps risk-of-ruin extremely low under simulator assumptions.
- Makes weekly accounting and user experience more stable.
- Leaves room for adverse correlation events across titles.

We publish our fraction factor and bands in the vault math notes. If policy needs to change, it ships as a new audited vault and the DAO lists it. Live vaults are never edited.

10.7 How drawdown guards protect capital

Drawdown guards are circuit breakers. When the vault's equity drops by defined steps:

- Allowed per-bet caps scale down.
- Concurrent exposure shrinks.
- High-variance titles are deprioritized by policy until recovery.

These changes are rules in the contract, not operator decisions. They remove emotion at the worst possible time.

10.8 Examples at human scale

Illustrative only. Not forecasts.

- If a vault begins the week at 10,000,000 and policy allows 0.30% worst-case loss per bet, the maximum per-bet loss is 30,000 at that moment.
- If concurrent exposure is capped at 1.25% and four bets are open, their worst-case total must be ≤ 125,000.
- If a drawdown guard triggers at 5% NAV loss, the system might automatically reduce per-bet caps to 0.20% and concurrent exposure to 0.80% until recovery.

All caps scale proportionally as vault size changes. If NAV grows, policy room expands. If NAV falls, policy tightens.

10.9 Listing tiers reflect risk

New titles begin at conservative exposure (Tier 3). As live results stay inside simulator bands, they graduate to Tier 2 and then Tier 1 with higher caps. If drift appears, discovery pauses and the title is de-listed until a fixed audited version is listed. The policy is mechanical and published.

10.10 Kelly across a catalog, not one game

A catalog is not one coin flip. It is many distributions at once. We calculate:

- Per-title Kelly fractions from edge and variance.
- A correlation penalty so total concurrent exposure stays below a safe portfolio Kelly.
- Liquidity buffers so normal deposit or withdrawal waves at epoch boundaries do not push utilization past bands.

The result is a vault that behaves like a balanced fund rather than a single high-variance table.

10.11 How this ties into governance

- Policy in code. Kelly bands, per-bet caps, concurrent exposure caps, and drawdown guards live in contract parameters.

- Change is migration. Adjusting policy requires a new audited vault and a DAO vote to list. LPs opt in by depositing to the new vault.
- Transparency by default. The Version Registry records which policy set each vault uses, with compiler settings and constructor values.

10.12 What happens in a shock

If a shock sequence hits:

1. Drawdown guards cut exposure automatically.
2. Discovery of high-variance titles can pause in the UI.
3. The vault rides the policy until the next epoch boundary.
4. A post-mortem with receipts is published if thresholds are crossed.
5. If policy changes are warranted, a new audited vault is proposed and listed by vote.

At all times, user funds remain in user wallets. The vault never touches player balances and programs never touch the vault.

10.13 What you can verify today

- Constructor values for per-bet caps, concurrent exposure caps, and drawdown guard steps.
- Utilization and throttle events across a week.
- PnL and share math at mint and burn.
- RTP drift checks per title against math notes.
- Kelly bands and fraction factor published in documentation and mirrored in the Version Registry.

10.14 The philosophy in one line

Kelly teaches restraint. Vault777 encodes that restraint in contracts so the bankroll compounds through cycles without trusting anyone’s gut.

11. Liquidity Providers and Weekly Epochs

Vault777 lets users become the house in a way that is fair, observable, and rules driven. Liquidity Providers supply the bankroll to games. The system converts game edge and turnover into vault profit over time while keeping risk within visible limits. This section explains how weekly epochs work, how shares are priced, what guards protect capital, and what you can verify on chain.

11.1 The role of LPs

LPs fund the bankroll that sits across listed games. When a wager settles, the game pays the player or the vault, and the vault's net asset value moves by that result. LPs do not receive the protocol fee. Their return comes from game math plus turnover, captured through disciplined exposure sizing and Kelly based policy.

11.2 Weekly epoch cycle

Each vault runs on a seven day clock so entry and exit are fair for everyone.

- Deposit window. Deposits are accepted only before an epoch starts. Deposits after the cut off are queued for the next epoch.
- Lock. During the seven day epoch the vault is locked. New deposits and routine redemptions do not occur mid week.
- Exit request. To redeem at the upcoming close, LPs file an exit request at least 3 days before the epoch ends.
- Claim. Redemptions are claimable in a 1 day window after the epoch closes. Unclaimed redemptions roll forward and remain claimable.
- Autopilot. If no exit request is filed, positions roll into the next epoch automatically.

This cadence prevents mid week dilution and keeps share math clean.

11.3 Share accounting and pricing

A vault issues and burns shares at transparent prices.

- Pre epoch price. New shares mint at the last closing price.
- Closing price. At the end of the week, the vault computes price per share as price per share = vault net asset value ÷ total shares outstanding.
- Redemptions. Burns settle at the closing price for that epoch.
- Receipts. Mint and burn events include amounts, prices, and addresses so anyone can recompute ownership and PnL.

Think of it like a weekly settling fund where the mandate is to provide house liquidity under strict risk limits.

11.4 Where LP profit comes from

Two drivers move LP returns.

- Edge. Each listed title has positive expected value to the house according to its published math notes.
- Turnover. The more handle that runs through a safe catalog, the more often the edge is realized.

Expected value compounds over many bets. Variance is managed by exposure caps and drawdown guards so the vault does not overextend during cold streaks.

11.5 Risk controls enforced by contracts

Risk policy is on chain and mechanical.

- Per bet caps. A hard limit on the worst case loss a single wager can impose, expressed as a fraction of vault value.
- Concurrent exposure caps. A hard limit on the sum of worst case losses across all unsettled wagers.
- Drawdown guards. Automatic throttles that tighten exposure when the vault's equity drops by defined steps.
- Listing tiers. New or high variance titles start with conservative caps and graduate as live results track simulator bands.
- Portfolio view. Caps consider correlations between titles so total exposure sits below a safe portfolio Kelly fraction.

These parameters are constructor values. Reviewers can confirm them on the explorer and match them to math notes.

11.6 Kelly in practice for LPs

The vault targets a fractional Kelly posture. That means caps are set below full Kelly so long term growth stays high while drawdowns stay tolerable. When equity declines, drawdown guards scale caps down automatically. When equity recovers, capacity restores by rule. The policy is math, not mood.

11.7 What LPs see week to week

LPs are not guessing. They have receipts.

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Any third party can recreate share prices and PnL from public data.

11.8 Examples at human scale

Illustrative only. Not forecasts.

- Deposit. Vault starts the week at 10,000,000 with 10,000,000 shares. You deposit 1,000,000 before the epoch. You receive 1,000,000 new shares at a price of 1.00.
- Positive week. The catalog earns 1.5%. NAV closes at 11,165,000. Total shares are 11,000,000. Closing price is about 1.015. Your position is worth about 1,015,000.
- Negative week. The catalog loses 2.0%. NAV closes at 10,780,000. Closing price is about 0.98. Your position is worth about 980,000. Drawdown guards are now tighter for the next week.

11.9 Separation from programs and fees

The LP vault is not a slush fund. It never receives program budgets and never pays protocol fees. Programs such as jackpots, rakeback, creator and KOL seasons, and grants are funded from the 1% Growth slice. The protocol fee is collected and split by an ownerless router. The vault deals only with player outcomes.

11.10 Integrating new titles without extra risk

When a new title is listed it enters a conservative tier with small caps. Live RTP and variance must track simulator bands over a minimum sample before the DAO votes to raise exposure. If drift appears, discovery pauses and the title is de listed until a fixed audited version is listed. The vault's policy stays intact the whole time.

11.11 Liquidity, slippage, and redemptions

Because minting and burning occur at deterministically computed prices per share, there is no order book slippage. The only timing effect is the weekly cadence itself. If many LPs redeem the same week, redemptions are honored at the closing price. If program rules restrict capacity for the next epoch, new deposits queue for the following start.

11.12 Handling shocks

If variance runs hot or a tail sequence hits:

1. Drawdown guards cut per bet and concurrent exposure automatically.
2. The UI can de list the highest variance titles so they stop consuming exposure while proofs and accounting remain intact.
3. The vault rides the policy until close.
4. A post mortem with receipts is published if thresholds are crossed.
5. If a policy change is warranted, a new audited vault is proposed, listed by DAO vote, and LPs migrate voluntarily.

Player funds remain in player wallets at all times. Programs never reach into the vault.

11.13 Fees and costs for LPs

LPs do not pay management or performance fees at the protocol level. Normal network fees apply for deposits, exit requests, and claims. Any third party front end fees must be disclosed in that front end. The protocol does not levy additional charges on vault interactions.

11.14 Monitoring and tooling

Reference scripts in the SDK rebuild weekly PnL and share math from events. Public dashboards display utilization, guard triggers, title contribution, and price per share across time. Advanced users can subscribe to event streams and compute metrics locally.

11.15 Compliance notes

LP participation is a blockchain interaction and may be subject to regional rules. The protocol's public code does not solicit or advise. Users are responsible for understanding their jurisdiction's regulations and risk tolerance.

11.16 Why weekly epochs work

Weekly locking gives the vault time to realize edge across many bets while preventing opportunistic timing. It removes mid week joiners who would otherwise free ride a good run or dump into a bad one. It also creates a predictable rhythm for policy checks, guard resets, reporting, and LP operations.

11.17 The LP value proposition in one line

You provide liquidity to a provably fair catalog under visible Kelly based limits. In exchange you participate in the house result, week after week, with receipts that let anyone verify how your return was earned.

12. Staking and Monthly Epochs

Staking in Vault777 is simple to use and strict in its guarantees. You lock VAULT in a non custodial staking contract, and you receive a share of the protocol's monthly Treasury inflows. The rules are fixed in code, visible on chain, and designed to reward long term alignment rather than timing tricks.

12.1 What staking is and what it is not

- Staking gives holders a direct claim on Treasury revenue, not on the LP vault or on token emissions.
- Rewards are paid in the settlement asset from real fee inflows, not from inflation.
- Staking does not touch player funds or the LP bankroll and never takes custody of user wallets.

12.2 The revenue source you are sharing

- Every wager pays a fixed 2% protocol fee.
- The top level split is 1% to Treasury and 1% to Growth with the bankroll.
- From the Treasury share, a 0.1% creator royalty is paid immediately to the title creator, leaving 0.9% net to Treasury.
- Each month, 80% of Treasury inflows are distributed to stakers by contract. At the net Treasury rate this equals 0.72% of handle across the month.

12.3 Epoch cadence and eligibility

- Monthly epochs. Each calendar month is one staking epoch.
- Eligibility to earn. To receive the month's distribution you must have an active stake at the epoch snapshot.
- When earnings start. Practically, stake before an epoch begins if you want to earn for that entire month. Mid-month stakes are active but count from the next snapshot.

12.4 Enter, exit, and the exit window

- Stake at any time. You can add to your stake during an epoch. Your full balance must be present at snapshot time to earn that month.
- Exit notice. To exit at the end of an epoch, file a withdrawal notice 14 days before the next epoch opens.
- Exit window. There is a 3 day window after the epoch ends to withdraw your principal if notice was filed. If you miss it, your stake rolls to the next epoch and remains eligible for future rewards.
- No slashing. Your principal is never penalized by protocol logic.

12.5 Claiming rewards

- Assignment. At month end the contract computes each staker's share of the reward pool from on chain Treasury inflows and the snapshot weights.
- Claim. Rewards become claimable immediately after assignment. You can claim at once or later.
- Auto-compound credit. If you do not claim, unclaimed rewards increase your earning weight for the next snapshot until you do claim.
- Currency. Rewards are paid in the protocol's settlement asset.

12.6 Voting and transfer rules

- Voting power. Staked VAULT retains voting rights in governance.
- Transfer. Staked tokens are non transferable while staked. To transfer, you must unstake during an exit window and then move tokens.

12.7 Events and how to verify distributions

All critical actions emit events so anyone can rebuild distributions without private dashboards.

- StakeDeposited records amounts and addresses.
- StakeWithdrawNoticeFiled records who requested exit and when.
- StakeSnapshot records the epoch snapshot and total staked.
- RewardAssigned records the total reward pool and each staker's assignment.
- RewardClaimed records the amount claimed and by whom.
- AutoCompoundCredit records weight credits for unclaimed rewards.

Verification path for auditors.

1. Sum TreasuryFunded events from the fee router for the epoch.
2. Multiply by 80% to compute the staker pool.
3. Compare to the epoch's RewardAssigned total.
4. Confirm per-address assignments equal snapshot weight times pool, within rounding.
5. Confirm that every RewardClaimed equals an assigned amount and that unclaimed amounts appear in AutoCompoundCredit.

12.8 Risk and variability

- No exposure to game variance. Stakers do not bear settlement risk. They share fee inflows only.
- Variable month to month. Rewards depend on handle and can vary. There is no promised rate.
- Operational independence. Even if a front end is degraded, rewards can be claimed from the contract with public tools.

12.9 Example at human scale

Illustrative only. Not a forecast.

- Month A
  - Handle equals 1,000,000,000.
  - Treasury net inflow equals 0.9% of handle, or 9,000,000.
  - Staker pool equals 80% of Treasury inflow, or 7,200,000.
  - If total staked equals 30,000,000 VAULT at snapshot and you hold 600,000 VAULT, your share is 2.0% of the pool, about 144,000.
- Month B
  - Handle equals 600,000,000.
  - Treasury net inflow equals 5,400,000.
  - Staker pool equals 4,320,000.
  - With the same stake and total staked, your share is 86,400.

12.10 Alignment with long term holders

- Team and partner vesting. Team and partner allocations are staked from TGE so aligned holders earn distributions without adding to circulating supply early.
- Compounding option. Long term holders can leave rewards unclaimed to let Auto-CompoundCredit increase their earning weight between snapshots.

12.11 Separation from LPs and programs

- LPs. LP returns come from game edge and turnover in the bankroll, not from the staker pool. Staking rewards are independent of LP performance.
- Programs. Jackpots, rakeback, creator and KOL seasons, grants, and buybacks are funded from the 1% Growth slice. They never touch the staking module.

12.12 Security and compliance

- Contract posture. The staking module is immutable and ownerless in production. There are no admin keys.
- Audits. A CertiK audit is in progress. The public report, our response, and any remediations will be published and this paper updated with final links and version references.
- Regional notes. Staking is an on chain interaction. Users are responsible for understanding rules in their jurisdiction.

12.13 Staker experience checklist

- Stake before the month begins if you want to earn for that month.
- File exit notice 14 days before the next epoch if you plan to withdraw at month end.

- Use the 3 day exit window to withdraw principal.
- Claim rewards when convenient or let Auto-CompoundCredit increase your weight until you do.
- Track assignments and claims by following events directly on the explorer.

12.14 Why this design works

- Simple. A clear epoch. A fixed share of real revenue.
- Fair. Eligibility is determined by snapshot, not by last-minute gaming.
- Durable. No inflation, no discretionary knobs, and no reliance on private accounting.
- Verifiable. Every distribution is reconstructible from public events.

Staking in Vault777 converts protocol activity into predictable, auditable monthly cash flow. The math is in the contracts. The receipts are on chain.

13. Tokenomics Overview

VAULT is the governance and staking asset that aligns everyone who builds, plays, or stewards the protocol. Players do not need VAULT to wager. Holding and staking VAULT connects you to protocol cash flow, governance, and long-term growth.

13.1 The role of VAULT

- Governance. Propose, debate, and vote on listings, exposure caps, program budgets, and migrations.
- Staking. Receive a share of protocol Treasury revenue each month. Rewards come from on-chain fee inflows, not token emissions.
- Alignment. Team, partners, and programs stake vested allocations so interests remain tied to real activity.

13.2 Supply and immutability

- Total supply: 100,000,000 VAULT fixed at deployment.
- No minting, no owner, no proxy. The token contract is immutable and ownerless in production. There are no admin keys and no upgrade switches.
- Chain of record: Arbitrum One. If a mirrored representation ever exists elsewhere, Arbitrum remains canonical.

13.3 Allocation at a glance

- Team: 10%
  - 12-month cliff, then 24-month linear vest. Staked from TGE so rewards accrue without increasing early circulating supply.
- Private Sale (seed): 10%
  - For strategic contributors and early backers. Vesting and unlock schedule published in the Version Registry before listing and enforced on chain.
- Marketing & Partnerships: 10%
  - For KOL seasons, ecosystem collaborations, exchange integrations, and brand campaigns. Distributed through streamed budgets with KPIs, reporting cadence, and pause conditions.
- DAO & Play-to-Earn Reserve: 70%
  - Controlled by the DAO after TGE. Fuels creator grants, play-to-earn, jackpots and rakeback extensions, ecosystem incentives, and regional launches. Disbursed only by on-chain vote through audited program contracts.

13.4 Circulating supply at TGE

- Circulating supply at TGE consists of tokens released for public distribution and any DAO-approved liquidity.

- Team tokens remain locked for 12 months. Private Sale and Marketing allocations follow their published vesting streams.
- All vesting contracts, schedules, and staking addresses are recorded in the Version Registry so anyone can track unlocks.

13.5 Utility without inflation

Staker rewards are not paid by inflating supply. They flow from protocol revenue:

- Each wager pays a 2% protocol fee.
- Top-level split equals 1% to Treasury and 1% to Growth with the bankroll.
- From the Treasury share, a 0.1% creator royalty is paid instantly per wager, leaving 0.9% net to Treasury.
- Each month, 80% of Treasury inflows are distributed to stakers by contract. At the net Treasury rate this equals 0.72% of handle across the month.
- LP returns come from house edge and turnover, not from the token.

13.6 What VAULT unlocks in governance

- Listings and migrations. Approve new audited versions of games, routers, and vaults. Live contracts are never edited; change is migration only.
- Exposure policy. Set portfolio-level limits, Kelly bands, and listing tiers for titles.
- Programs. Stream budgets for jackpots, rakeback, creator and KOL seasons, SDK grants, and regional launches. Streams include KPIs and pause conditions.
- Treasury discipline. Define reporting cadence and stop conditions. The DAO cannot seize user funds or change fees in a live title.

13.7 Protections inside the token contract

- No privileged transfer or blacklist functions. The token cannot seize balances or block addresses.
- No pausing. Transfers cannot be paused by a privileged role.
- Verified source. Compiler version, settings, and bytecode are verified on the explorer and pinned in the Version Registry.

13.8 Separation between token and fee router

- VAULT supply never routes protocol fees. Fee collection and splits are enforced by an ownerless router.
- Treasury revenue comes from gameplay, not token issuance.
- Growth with the bankroll programs are funded by fee revenue, not by minting tokens. Any token-denominated program uses streamed allocations approved by vote.

13.9 Staking economics in one view

- Stake VAULT at any time.
- Monthly snapshot defines who earns that month.
- Exit requires a notice filed 14 days before the next epoch opens and a 3 day claim window after month end.
- Unclaimed rewards increase earning weight automatically until claimed.
- Rewards are paid in the settlement asset and are fully reconstructible from events.

13.10 Examples at human scale

Illustrative, not forecasts.

- If handle in a month equals 1,000,000,000, Treasury net inflow equals 0.9% or 9,000,000. The staker pool equals 80% of that, or 7,200,000. If total staked equals 30,000,000 VAULT and you hold 600,000 VAULT, you have 2.0% of the snapshot weight and receive about 144,000 in that month's settlement asset.
- If handle equals 500,000,000, Treasury net equals 4,500,000, and the staker pool equals 3,600,000. With the same stake and total staked, your share is about 72,000.

13.11 Marketing and partner discipline

- Tokens in the Marketing & Partnerships bucket are streamed, not handed out.
- Long-term partners stake vested allocations from TGE.
- KOL seasons include on-chain attribution and disclosure standards.
- Breaches of policy can pause or terminate streams by DAO vote.

13.12 DAO & Play-to-Earn reserve in practice

- Creator economy. SDK grants, art and localization funds, studio advances with milestone unlocks.
- Player economy. Seasonal quests, leaderboard rewards, and region-specific campaigns.
- Liquidity support. Only if approved by vote with caps and reporting.
- Transparency. Every token movement emits events traceable to a proposal id and program contract.

13.13 Cross-chain clarity

- VAULT remains native to Arbitrum. Governance, staking, and the Fee Router operate on Arbitrum One.

- If wrapped representations exist on other chains for UX or creator use, they are outside governance and must be minted and burned against canonical reserves. Addresses and processes are listed in the Registry.

13.14 What VAULT does not do

- It does not guarantee price or yield.
- It is not required to play.
- It does not grant control over user wallets, the LP vault, or live game logic.
- It cannot change a live game's fee or RTP. Those are fixed in deployed contracts.

13.15 Verification checklist

- Confirm 100,000,000 total supply, no owner, no proxy, and no mint in the token contract.
- Locate vesting contracts and schedules in the Version Registry; verify that Team tokens are locked for 12 months and that Private Sale and Marketing streams match published terms.
- Observe staked addresses tied to vesting.
- Rebuild monthly staker distributions from TreasuryFunded events and RewardAssigned records.

13.16 Philosophy in one line

VAULT is not a promise of future emissions. It is a key to a system where revenue is earned, splits are fixed, vesting is visible, and governance respects immutability. The token's value comes from what the protocol proves and pays every month, in public.

14. Token Allocation and Vesting

VAULT aligns builders, players, creators, and governors around a single rule set that does not depend on discretionary emissions. Supply is fixed, flows are visible, and vesting is enforced on chain. This section details allocation, locks, streaming policies, and how anyone can verify everything without private dashboards.

14.1 Supply and contract posture

- Total supply: 100,000,000 VAULT at deployment.
- No minting: there is no function to increase supply.
- No owner, no proxy: the token contract is immutable in production.
- No pause, no blacklist: there are no privileged controls to halt transfers or seize balances.
- Chain of record: Arbitrum One. If mirrors exist elsewhere, Arbitrum remains canonical.

14.2 Confirmed allocation

- Team: 10%
    - 12 month cliff, then 24 months linear vest. Team allocations are staked from TGE so rewards accrue without adding to early circulating supply.
- Private Sale (seed): 10%
    - Reserved for strategic contributors and early backers. Vesting and unlock cadence are published before listing and enforced with on chain schedules.
- Marketing and Partnerships: 10%
    - KOL seasons, ecosystem partnerships, exchange integrations, and brand campaigns. Distributed through streamed budgets with KPIs, reporting cadence, and pause conditions.
- DAO and Play to Earn Reserve: 70%
    - Controlled by the DAO after TGE. Fuels creator grants, play to earn, regional launches, and other growth aligned initiatives approved by vote. Disbursed only through audited program contracts.

14.3 Circulating supply at TGE

- Circulating supply at TGE consists of tokens released for public distribution and any DAO approved liquidity.
- Team tokens remain locked for 12 months.
- Private Sale and Marketing allocations follow published vesting streams.
- All vesting contracts and staking addresses are recorded in the Version Registry so anyone can track unlocks and balances.

14.4 Why these locks exist

- Trust through scarcity: fixed supply eliminates inflation risk.
- Alignment: staking vested allocations from TGE ties long term partners to real protocol revenue rather than discretionary token unlocks.
- Market health: cliffs and streams prevent sudden supply shocks and force accountability through KPIs.

14.5 Streaming discipline for non team allocations

- No lump sums: program outlays are streamed from dedicated contracts.
- KPIs and stop conditions: every stream defines measurable goals and can be paused by DAO vote.
- Event receipts: each transfer emits events tied to a proposal or program id for public reconciliation.

14.6 Separation from protocol revenue

- Token supply is independent of fees. Protocol revenue comes from gameplay, not from VAULT issuance.
- Each wager pays a fixed 2% protocol fee that splits 1% to Treasury and 1% to Growth with the bankroll.
- From the Treasury share, a 0.1% creator royalty pays instantly to the title creator, leaving 0.9% net to Treasury.
- Each month, 80% of Treasury inflows distribute to stakers by contract. These cash flows occur regardless of VAULT transfers.

14.7 Utility recap

- Governance: propose and vote on listings, exposure policy, program budgets, audits, and migrations.
- Staking: share in monthly Treasury inflows paid in the settlement asset.
- Ecosystem role: creators, partners, and contributors stake vested allocations to align with long term revenue.

14.8 Transfer and staking rules

- Staked VAULT retains voting rights but cannot be transferred while staked.
- To transfer, unstake during an exit window as defined in Section 12.
- Vesting contracts may stake their balances so rewards accrue while tokens remain non transferable.

14.9 DAO and Play to Earn reserve in practice

Examples of how the 70% reserve may be deployed by vote through audited program contracts:

- Creator growth: SDK grants, art and localization funds, studio advances with milestone unlocks.
- Player economy: seasonal quests, leaderboards, and region specific missions that pay VAULT or settlement assets.
- Regional launches: targeted programs that bootstrap liquidity and content in new locales.
- Liquidity support: if approved, time limited market operations with caps and reporting.

All such uses are transparent, streamed, and cancellable by vote if KPIs are not met.

14.10 Marketing and partnerships guardrails

- Disclosure: paid promotions and KOL seasons require on chain attribution codes and clear labeling.
- Staking requirement: long term partners stake vested allocations from TGE.
- Termination: policy breaches can pause or end streams by DAO vote. Remaining tokens return to the program contract.

14.11 Private Sale (seed) clarity

- Allocation: 10% of supply.
- Vesting: cliff and stream parameters are published before listing and enforced on chain.
- No special rights: seed holders receive no admin privileges, upgrade powers, or fee overrides.
- Alignment: seed tranches can be staked as they vest to align with protocol revenue rather than sell pressure.

14.12 Team allocation clarity

- Vesting: 12 month cliff, then 24 months linear vest.
- Staked from TGE: earnings flow from protocol Treasury, not from emissions.
- No custody of player funds: team wallets cannot touch the LP vault or live game logic.
- No edits to live contracts: any evolution ships as a new audited version listed by DAO vote.

14.13 Liquidity and market operations

- Initial liquidity: if the DAO authorizes, liquidity is provided via streamed budgets with caps and public receipts.

- No permanent market maker retainers: operations are time bound and performance reported.
- No hidden taxes: the token has no transfer tax, reflection, or similar mechanics.

14.14 Cross chain policy

- Canonical supply on Arbitrum: VAULT's total supply and vesting live on Arbitrum One.
- Wrapped representations: if created for UX, they must mint and burn against canonical reserves. Addresses and processes are listed in the Registry.
- Governance stays on Arbitrum: votes reference the Arbitrum supply.

14.15 Verification checklist

Anyone can verify the token state without a private dashboard:

1. Open the token contract on the explorer and confirm 100,000,000 total supply, no owner, no proxy, no mint, no pause.
2. Open vesting contracts and confirm cliff and stream parameters for Team, Private Sale, and Marketing allocations.
3. Confirm that Team and partner vesting wallets are staked from TGE, and observe staking events.
4. Reconcile streamed outlays from Marketing or DAO programs by matching proposal ids to transfer events.
5. Confirm that staking distributions come from Treasury fee inflows rather than token issuance.

14.16 Examples at human scale

Illustrative only. These are mechanics, not forecasts.

- If the DAO approves a creator grant of 500,000 VAULT streamed over 12 months, monthly vest equals about 41,666.67 VAULT. Each month's transfer emits events tied to the program id. If KPIs are missed at month six, the DAO can pause the stream. Unspent tokens remain in the program contract.
- If a partner season receives 300,000 VAULT over 9 months, quarterly reports must show on chain attribution, audience reach, and creator royalty impact. Streams pause automatically if reports are not filed.

14.17 What VAULT does not do

- It does not promise price targets or yields.
- It is not required to play.
- It cannot change RTP or fees in a live title.
- It cannot seize user balances or pause transfers.

14.18 Philosophy in one line

Allocation shows what you value. Vault777 values scarcity, alignment, and receipts. Fixed supply, visible vesting, streamed outlays, and revenue based staking make VAULT a governance and cash flow asset anchored to what the protocol actually proves on chain every month.

15. Fees, Creator Royalty, and Program Flows

Vault777's cash flows are simple, mechanical, and public. The fee router takes a fixed share of every wager, pays the creator automatically, funds the Treasury and Growth programs, and emits events that let anyone rebuild the accounting without private dashboards. This section explains what counts as handle, how the split works for both official and SDK titles, how programs are ring-fenced, and how to verify every number on chain.

15.1 Design goals of the fee router

- Predictable. A fixed 2% protocol fee applies to every wager across listed titles.
- Automatic. Creator royalty is paid in the same transaction as settlement. No month-end reconciliations.
- Transparent. Treasury and Growth receipts, creator royalties, and program outlays emit events.
- Immutable. Live routers are non-upgradeable and ownerless. Changes ship only as new audited versions listed by DAO vote.
- Separable. Program budgets and the LP vault are physically separate. Programs can never reach into player balances or the bankroll.

15.2 What counts as handle

Handle is the settled wager amount. Different games map to handle consistently:

- Slots, roulette, dice, crash, even-money tables. Per-bet stake at settlement.
- Poker and live cards on Starknet. Per-pot amount at settlement. Rake schedules are disclosed in math notes and capped by policy.
- Promos and play-money. Tracked for analytics but never feed the router.

15.3 The split that happens on every bet

The fee router executes the split during the same transaction that settles the wager.

- Protocol fee equals 2% of handle.
- Top-level split equals 1% to Treasury and 1% to Growth with the bankroll.
- Creator royalty equals 0.1% of handle and is paid instantly to the title's creator address. This royalty is funded from the Treasury share, which leaves 0.9% of handle net to Treasury.
- Stakers receive 80% of monthly Treasury inflows** by contract. At the net Treasury rate, this equals 0.72% of handle across the month.

Events per wager

- CreatorRoyaltyPaid(title, creator, amount)
- TreasuryFunded(amount)
- GrowthFunded(amount)

Outcome and payout events are emitted by the game contract in the same transaction.

15.4 Official titles and SDK titles receive identical treatment

- SDK titles. The royalty recipient is the creator's address registered at listing. They receive 0.1% of handle per wager automatically.
- Official titles. The royalty recipient is a protocol address designated for house IP. The address is visible in events.
- No special cases. There are no title-specific fee exceptions at launch. Any change in the future ships as a new audited router and a DAO listing.

15.5 Treasury purpose and staker distributions

Treasury is the protocol's revenue account. The staking module reads TreasuryFunded events and assigns rewards at month end.

- Distributions. Each month, 80% of Treasury inflows are assigned to stakers and become claimable immediately after the snapshot.
- Operations. The remaining 20% funds audits, engineering, data, compliance, and reserve. These outlays are streamed and cancellable by DAO vote.

15.6 Growth with the bankroll: ring-fenced programs

The 1% Growth slice funds user and ecosystem programs from separate audited contracts.

- Jackpots and prize pools. Cross-title jackpots with on-chain triggers and payouts.
- Rakeback and retention. Cohort-based schedules, time-boxed, with anti-wash rules.
- Creator and KOL seasons. On-chain attribution and milestone-based releases.
- SDK grants and studio advances. Milestone streams with pause conditions.
- Buybacks or liquidity support. Only if approved by vote, with explicit caps, windows, and receipts.

Programs are ring-fenced. They never touch player balances or the LP vault. Every spend emits events tied to a proposal id and program contract.

15.7 Attribution, fairness, and anti-abuse

- On-chain attribution. Creator and KOL cohorts are tagged at the router so performance can be measured without screenshots.
- Anti-wash rules. Programs require minimum activity thresholds, exclude self-dealing patterns, and apply cooldowns where appropriate.
- Public reports. Program dashboards reconcile Growth inflows with program outflows, cohort performance, and KPI status.

15.8 Currency, pricing, and cross-chain receipts

- Settlement asset. Fees, royalties, Treasury inflows, and program spends are denominated in the settlement asset on Arbitrum.
- Displays. Price displays use Chainlink Price Feeds with staleness checks. Conversions are for display only.
- Starknet cards. Card-table fees accrue on Starknet and are mirrored to the Arbitrum Treasury by a DAO-approved settlement flow. If mirroring is delayed, receipts remain visible on Starknet until settlement resumes.

15.9 Upgrade model and parameter change

- No edits in place. Live routers cannot be modified.
- New version path. If the community wants to adjust a split or add a new program pathway, it ships as a new audited router version. The DAO lists it. Users and titles migrate at their discretion.
- Version Registry. Records all router addresses, constructor values, and compiler settings for public verification.

15.10 Examples at human scale

Illustrative mechanics, not forecasts.

Per 100 in handle

- Protocol fee equals 2.00
- Creator royalty equals 0.10
- Treasury net equals 0.90
- Growth equals 1.00
- Monthly staker distribution from this Treasury inflow equals 0.72

Per 1,000,000 in handle

- Protocol fee equals 20,000
- Creator royalty equals 1,000
- Treasury net equals 9,000
- Growth equals 10,000
- Monthly staker distribution from this Treasury inflow equals 7,200

Per 100,000,000 in handle

- Protocol fee equals 2,000,000
- Creator royalty equals 100,000
- Treasury net equals 900,000
- Growth equals 1,000,000
- Monthly staker distribution from this Treasury inflow equals 720,000

15.11 What programs and routers cannot do

- Programs cannot alter game outcomes, RTP, or payouts.
- Programs cannot draw from or write to the LP vault.
- The router cannot divert funds to private wallets.
- The DAO cannot edit a live router. Changes require a new audited version and a vote.

15.12 Verification checklist

- Pick any settled wager and confirm CreatorRoyaltyPaid, TreasuryFunded, and GrowthFunded events in the same transaction as the game outcome and payout.
- Sum TreasuryFunded events for a month and multiply by 80% to match the staking module's RewardAssigned total.
- For Growth programs, match proposal ids to outflows and confirm they reconcile to GrowthFunded inflows over the period.
- Confirm the router address and constructor values in the Version Registry match the audited artifact.

15.13 Philosophy in one line

A fair casino does not ask you to wait for a spreadsheet. Vault777 pays creators, funds Treasury, fuels programs, and assigns staker rewards in the same public system, with receipts at every step.

16. Developer SDK and Listing Lifecycle

The Vault777 SDK turns creators, KOLs, and studios into owners. It gives you audited game templates, simulators, and a publishing pipeline that pays a 0.1% of handle royalty to your address on every settled wager in your title. Royalty is enforced by contracts and lands in the same transaction as the bet. No spreadsheets. No reconciliation. Receipts only.

16.1 SDK Overview

The Vault777 Software Development Kit (SDK) is designed to open the protocol to external creators, studios, and developers, enabling them to design, theme, and deploy their own verifiably fair games that plug directly into the Vault777 ecosystem. It represents the long-term path toward a decentralized gaming marketplace where every title operates transparently, pays its creator automatically, and is governed by code instead of contracts or middlemen.

Status:
The SDK will open after mainnet once the core platform, staking, and liquidity systems are fully live and stable. This ensures a secure environment before third-party publishing begins. At launch, all casino titles are official Vault777 productions that demonstrate the SDK's capabilities and proof structure. Creator onboarding, template access, and revenue sharing will activate once the post-TGE SDK release passes its independent audit.

Purpose and vision:

- Empower creators. Allow verified studios and developers to publish games that use the same audited settlement logic, fee routing, and VRF-based randomness as the core titles.
- Automate royalties. Each approved title will, once SDK publishing is live, receive an on-chain royalty equal to 0.1% of handle per wager, paid instantly in the same transaction that settles the bet.
- Expand content diversity. Over time, creators will be able to customize interfaces, themes, and math parameters within safe bounds, turning Vault777 into an open gaming ecosystem governed by fairness proofs.
- Drive long-term growth. Creator catalogs will broaden the protocol's reach while maintaining the same transparency, immutability, and risk discipline as the official titles.

How it fits into the roadmap:

- Post-launch SDK release following completion of its audit and DAO approval.
- Gradual opening in stages—starting with invited studios and progressing to open submissions once tooling and review systems are proven.
- Creator royalties, listing tiers, and simulator requirements governed entirely by on-chain rules and DAO oversight.

The SDK is the bridge between Vault777's founding team and the broader developer community: a framework for building new, provably fair games atop immutable infrastructure. It will launch shortly after TGE, ensuring that every published title, from day one of SDK access, inherits the same provable trust that defines the core casino.

16.2 Templates you can ship on day one

- Slots with published strips, volatility profiles, scatter and feature math, and cluster-pays support.
- Roulette mapped with rejection sampling and wheel parity checks.
- Dice and crash with documented quantile transforms and variance bands.
- Even-money tables for coin-flip style games with explicit house edge.
- Utility hooks for cross-title jackpots, rakeback, quests, and attribution.

Each template includes mapping logic, exposure hints, and UI hooks for pending and settled states so the client never pre-reveals outcomes.

16.3 The creator workflow

1. Prototype with a template and theme the front end.
2. Parameterize RTP and volatility inside allowed ranges.
3. Simulate millions of spins or rounds. Export expected value, variance, and tail loss.
4. Package bytecode, ABI, math notes, simulator outputs, and the royalty recipient address.
5. Deploy to testnet and run live drift checks against simulator bands.
6. Submit for listing with a one-page risk brief and content disclosures.

16.4 Simulators and math notes

The simulator is not marketing. It is your listing passport.

- Outputs include RTP bands, volatility class, hit rates, longest dry-spell expectation, and tail loss at target caps.
- Artifacts are attached to your listing packet and archived in the Version Registry.
- Live drift checks compare on-chain results to simulator bands. Out-of-band drift pauses discovery until a corrected audited version is listed.

16.5 Security model and audit gates

- Immutable games in production. No proxies. No admin keys.
- Constructor-only parameters for RTP and caps.
- External reviews on core templates.

- Per-title checks on submission: griefing and gas analysis, parameter bounds, safe payout paths, and proof gating.
- Version Registry pins compiler settings, constructor values, and addresses for public verification.

16.6 Listing lifecycle and tiers

- Tier 3 at launch with conservative exposure caps.
- Graduation to Tier 2 and Tier 1 only after live variance and RTP track simulator bands over a minimum sample.
- Automatic guardrails reduce exposure if volatility spikes.
- De-listing flow removes discovery for drift while funds and proofs stay safe.

16.7 Royalty and cash flow for creators

- Royalty equals 0.1% of handle, paid to your address in the same transaction that settles the wager.
- Funded from Treasury so the top-level split remains 1% Treasury and 1% Growth with the bankroll, leaving 0.9% net to Treasury after your royalty.
- Event receipts
- CreatorRoyaltyPaid(title, creator, amount)
- TreasuryFunded(amount) and GrowthFunded(amount)
- Outcome and payout events from the game
- Settlement asset on Arbitrum with optional display conversions via Chainlink Price Feeds.

16.8 Discovery, attribution, and growth

- Attribution codes are on chain. Cohorts are measured without screenshots.
- Growth with the bankroll funds seasonal leaderboards, quests, and prize overlays that your title can plug into by interface.
- KOL seasons reward measurable performance and responsible content.
- Cross-title jackpots increase engagement while keeping accounting clean.

16.9 Content, compliance, and brand safety

Status: SDK publishing opens after mainnet. At TGE, only official Vault777 titles are live. Creator publishing begins once the SDK release passes audit and is approved by the DAO.

Who can publish first

- A short initial cohort of verified studios and creators.
- Gradual expansion to open submissions as tooling, review, and monitoring mature.

Submission packet

- Bytecode and ABI for the title.
- Math notes with target RTP, hit rate, volatility class, and exposure caps.
- Simulator outputs showing expected value, variance, and tail loss under large sample sizes.
- Parameter bounds that match approved template limits.
- Asset rights statement and the registered royalty address.
- Any third party audit references, if applicable.

Templates and bounds

- Creators build on audited templates for slots, dice, crash, roulette, and even money tables.
    - Safe parameters are enforced at the template level.
- Mapping methods are fixed and unbiased: rejection sampling for finite sets, documented transforms for continuous outcomes.

Listing and tiering

- New titles start at conservative exposure (Tier 3).
- Promotion to higher tiers requires live RTP and variance to remain inside published bands for a minimum sample.
- Discovery can be paused and a title de-listed from the official UI if drift appears or standards are breached. The on-chain contract remains callable and verifiable.

Royalty and fee routing

- When SDK publishing is live, each settled wager pays a 0.1% of handle royalty to the registered creator address in the same transaction as settlement.
- The protocol fee remains 2% of handle split into 1% Treasury and 1% Growth, with the 0.1% creator royalty funded from Treasury, leaving 0.9% net to Treasury.

Attribution and reporting

- On-chain campaign codes must be attached to fee events for funded seasons.
- Creator dashboards read only from events; no private reporting is required.
- Monthly summaries reconcile handle, royalty, and drift status.

Compliance hooks

- Eligibility checks and Player Protection Registry calls are mandatory in SDK templates.
- Titles that remove or bypass these checks are ineligible for listing and will lose discovery.

Security posture

- The SDK release is audited before publishing opens.
- Templates and helper libraries are versioned and pinned in the Version Registry.

- Any material SDK change ships as a new audited version and must be approved by DAO vote before use.

Governance oversight

- The DAO approves template families, parameter bounds, and exposure policy.
- Grants and seasons are streamed with KPIs and pause conditions.
- Issues are handled with transparent reviews that cite transaction references and math notes.

Creator path in practice

1. Build on an audited template and set parameters within bounds.
2. Produce simulator outputs and math notes.
3. Deploy to testnet and submit the packet.
4. Pass review, list at Tier 3, and publish math notes and proof pages.
5. Graduate by meeting live RTP and variance bands; royalty accrues automatically per wager once listed.

This path lets creators publish confidently and lets players and reviewers verify every claim from public receipts, while the DAO maintains catalog integrity through rules, audits, and data rather than discretion.

16.10 Technical kit

- Type-safe ABIs and helpers for request ids, proof status, outcome mapping, and fee events.
- UI hooks for pending, confirming, and settled states with proof links.
- SDK scripts to rebuild handle, payouts, royalty, and Treasury inflows from events for your own dashboards.
- Theme packs for rapid reskinning without touching core logic.

16.11 Jackpots, rakeback, and quests

- Jackpot hooks let a title contribute to and trigger cross-title jackpots. Triggers and payouts are on chain and visible in events.
- Rakeback integrates per title with cohort filters and anti-wash rules.
- Quests and seasons expose structured objectives that drive session time while preserving proof-first UX.

16.12 Analytics and receipts for studios

- Creator dashboards read events only. They never require privileged access.
- Per-title stats include handle, RTP drift, volatility realized, session length, and attribution performance.

- Accounting audit is one click from any chart to explorer links for the underlying events.

16.13 Example economics at human scale

Illustrative mechanics. Not a forecast.

- If your title reaches 100,000,000 in annual handle, your royalty equals 0.1%, or 100,000 in the settlement asset, paid continuously, per bet, on chain.
- If three titles each reach 40,000,000 handle, combined royalty equals 120,000. Catalogs compound into durable income.

16.14 Branding and partnerships

- Branded rooms and skins approved via a short disclosure packet.
- KOL collaboration where a partner both promotes and owns a title through the SDK, aligning incentives over the long term.
- Creator seasons grant exposure and Growth-funded overlays to high-performing studios with clean receipts.

16.15 Future extensions

- Card-game SDK on Starknet for Hold'em and Omaha with deck commitments, shuffle proofs, encrypted deals, and showdown proofs.
- Custom math plug-ins with simulator modules for new volatility archetypes once reviewed and approved.

16.16 What the SDK does not allow

- Editing RTP or fees in a live title.
- Fallback RNG in production.
- Custody of player funds.
- Any mechanism that bypasses the Player Protection Registry or Eligibility Registry.

16.17 Verification checklist for creators

- Confirm your listed address and constructor values in the Version Registry.
- Follow a random wager in your title and verify CreatorRoyaltyPaid in the same transaction as payout.
- Match your dashboard to public events for handle, RTP drift, and volatility realized.
- Confirm your title's listing tier and current exposure caps against published policy.

16.18 Why builders choose this stack

You ship faster with audited templates. You earn automatically with immutable royalty. Your audience can verify the fairness and the payouts without trusting your marketing. The protocol funds growth programs that reward real performance. It is a creator economy where revenue is programmable and receipts are public.

17. KOL and Influencer Program

Vault777 turns distribution into ownership. The program is designed so that creators, streamers, and media partners do not just promote Vault777 for a short campaign. They become long term owners of content and cash flows that are enforced on chain.

17.1 What success looks like

- KOLs publish games or branded rooms with the SDK and receive a hard coded royalty equal to 0.1% of handle in their titles.
- Performance incentives are funded by the Growth with the bankroll budget equal to 1% of handle, paid through ring fenced program contracts with public receipts.
- Attribution is on chain. Every wager can be tied to a creator or cohort without screenshots or spreadsheets.
- Partners stake vested allocations so they earn protocol cash flow and signal long term alignment.

17.2 Why this model is different

Traditional casino promotions pay for clicks and quickly decay. Vault777 pays for verified play and retains proof forever. A KOL who builds a title that people love does not wait for reconciliations. The royalty is paid in the same transaction as the wager and is visible in CreatorRoyaltyPaid events. Seasonal bonuses are streamed and paused by rule if KPIs are not met.

17.3 Program layers

1. Creator royalty by contract
    a. 0.1% of handle per wager to the creator address.
    b. Paid instantly in the settlement asset on Arbitrum.
    c. Applies to SDK titles and to branded rooms for official titles where the royalty recipient is the partner.
2. KOL Seasons funded by Growth
    a. Seasonal pools come from the 1% Growth slice.
    b. Pools are streamed to a season contract with KPI gates and stop conditions.
    c. Payout weights are driven by verified handle, new unique players, retained cohorts, and responsible content scores.
3. Creator grants and studio advances
    a. SDK grants finance production of new titles.
    b. Releases are milestone based. Tokens or assets are streamed and cancellable if goals are missed.

17.4 On chain attribution

- Creator codes. Each partner receives a creator code at listing. The fee router tags every qualifying wager with that code.
- Cohort tags. Campaigns can add campaign codes for season analytics without affecting settlement.
- Receipts. Public dashboards read events only. Every graph links to the underlying transactions.

17.5 How a partner joins

1. Apply. Fill a short intake with audience metrics, regions, languages, and content focus.
2. Compliance. Sign the responsible marketing code. Confirm regional restrictions. Provide entity details for tax and reporting where required.
3. Choose a path.
    a. Publish an SDK title with your brand.
    b. Host a branded room for an official title.
    c. Run a season that drives users to an existing catalog.
4. Register addresses. Royalty recipient, season controller, and reporting signer are registered in the program contract.
5. Kickoff. Receive a media kit, templates, and on chain codes. Go live with proof links and disclosure ready.

17.6 Content standards and responsible marketing

- No claims of guaranteed winnings or fixed yields.
- No targeting of minors or restricted regions.
- Disclose sponsorships and partner status clearly.
- Use Play Money Mode in restricted markets and label it.
- Show proof pages in content at least once per segment so audiences learn to verify.
- Respect platform rules on age gating and gambling content.

Violations reduce season weights and can pause or terminate streams by program policy. All policies are published and tied to program ids.

17.7 Tooling for creators

- Streaming overlays that display live handle, proof status, and jackpot triggers from events.
- Link and QR generators that embed creator and campaign codes.
- Clip templates for reveal moments with one click proof links.
- Attribution dashboards that show verified handle, royalty paid, retention cohorts, and jackpot contributions.

17.8 Examples at human scale

Illustrative mechanics only.

- A KOL title reaches 200,000,000 yearly handle. Royalty equals 0.1%, or 200,000 paid continuously to the registered address.
- A mid tier creator launches two themed slots that together reach 60,000,000 handle. Combined royalty equals 60,000. If the season pool pays a weight for unique new players and retention, the partner can earn an additional streamed bonus from Growth with receipts for each release.

17.9 Long term alignment

- Staked allocations. Partners who receive token allocations for multi-year collaboration stake them from TGE. They earn protocol distributions without adding to circulating supply early.
- Royalty plus seasons. Royalty is permanent for the listed title. Seasonal pools are earned, not promised.
- Catalog strategy. Over time a partner evolves from a single title to a studio that compounds royalty across a portfolio.

17.10 Anti wash and integrity rules

- Minimum activity thresholds. Only wagers above a small threshold count for season weights.
- Sybil and self dealing filters. Obvious loops are excluded by policy and events.
- Retention over bursts. Weights reward multi session players and net new users rather than short term spikes.
- Public review. Any clawbacks or exclusions are published with transaction references.

17.11 Regional compliance

- Geoblocking. Partners must not promote real money features in restricted regions.
- Play Money Mode. Content in restricted regions must link to Play Money Mode.
- Local disclosures. Partners follow regional ad rules. Scripts and templates are provided.

17.12 How KOL Seasons are scored

Weights are transparent and tuned for quality growth:

- Verified handle tied to the creator code.
- New unique players who pass eligibility checks.
- Retained cohorts that play across weeks.

- Responsible content score based on disclosures and proof usage.
- Regional compliance adherence.

Season contracts read these signals and stream rewards to the ranked list. If KPIs fall below floor values, the stream pauses automatically.

17.13 Renewals and graduation

- Trial to core. New partners start with small seasonal budgets.
- Graduation. Consistent performance, proof usage, and clean compliance graduate a partner to larger seasons and SDK grants.
- Review cadence. Quarterly reviews publish receipts, KPI achievement, and any policy actions.

17.14 Co marketing with networks

- Arbitrum. Feature placements, community AMAs, and event sponsorships that emphasize provable fairness and on chain receipts.
- Chainlink. Proof of play narratives that teach audiences how VRF works and how to verify on chain.
- Starknet. For card game creators, deep dives on deck commitments, shuffle proofs, and showdown receipts.

17.15 Governance and program control

- All KOL program budgets are streams controlled by the DAO with published KPIs and stop conditions.
- Partners have no ability to edit live games, routers, or vaults.
- Any change to program logic ships as a new audited contract and requires a vote.

17.16 What partners receive on day one

- Media kit, 3D assets, and brand guidelines.
- Creator or campaign codes and registered addresses.
- Access to SDK templates and simulators.
- Season contract link with KPI definitions and reporting cadence.
- Contact channels for security, legal, and program support.

17.17 Why creators choose Vault777

- Royalty is encoded in contracts and pays on every wager.
- Titles are provably fair and easy to defend in public.
- Growth budgets reward long term health rather than short term hype.

- Receipts replace screenshots. Ownership replaces one-off promotions.

With this design, the best KOLs and studios can bring audiences from traditional platforms, publish titles that fit their brand, and grow durable revenue with proof in every clip and campaign.

18. Play-to-Earn and Community Rewards

Play-to-Earn at Vault777 is not a gimmick layered on top of opaque systems. It is an on-chain rewards framework that complements provably fair games, respects responsible-play rules, and pays from pre-allocated, verifiable budgets. Rewards are streamed by contracts, attributed on chain, and cancellable by vote if KPIs are missed.

18.1 What Play-to-Earn means here

- Real budgets. Rewards are funded from the DAO + Play-to-Earn reserve (70%) and, for short promotions, from the 1% Growth with the bankroll program budget. There is no minting.
- On-chain attribution. Every qualifying action emits events with creator and campaign codes, so allocation is measurable without screenshots.
- •Compliance first. Rewards never override eligibility rules. If a user is in a restricted region or self-excluded, real-money rewards do not activate. Play-Money Mode missions remain available.

18.2 Design goals

- Reward real participation. Missions favor sustained, healthy play, not bursty farming.
- Be verifiable. All qualification logic leaves receipts in events.
- Be cancellable. Streams pause automatically if KPIs or standards are not met.
- Stay separate from house risk. Rewards never touch the LP vault or player balances.

18.3 Funding sources and separation of flows

- DAO + Play-to-Earn reserve. Long-form seasons, creator bounties, studio grants, region launches. Distributed by audited program contracts after DAO votes.
- Growth with the bankroll (1%). Time-boxed overlays such as jackpots, rakeback windows, quests, or KOL seasons. These spend from ring-fenced Growth contracts and never reach into the vault.
- Treasury and staking. Independent of P2E. Monthly staker distributions are derived from fee inflows and remain unchanged by P2E programs.

18.4 Program types

- Seasons. Multi-week programs with tiered rewards for verified activity, retention, and diversity of play.
- Quests. Short tasks like “complete ten provably fair spins,” “verify three proofs,” or “play two creator titles.”

- Leaderboards. Ranked by verified handle, new unique users, or mission points. Anti-wash rules apply.
- Creator bounties. Rewards for shipping listed SDK titles, localizing games, or delivering proof education content.
- Community drops. Region or language specific campaigns that onboard new users with Play-Money Mode and proof-first tutorials.

18.5 The event model that makes it auditable

Programs publish clear schemas so auditors can rebuild allocations:

- QuestCompleted(user, questId, points)
- SeasonScoreUpdated(user, seasonId, scoreDelta)
- CohortAttributed(user, creatorCode, campaignCode)
- SeasonPayout(user, seasonId, amount, asset)
- RuleViolation(user, reasonCode)

All emissions are tied to a program id so reports reconcile cleanly.

18.6 Anti-wash and integrity rules

- Minimum thresholds. Bets below a micro-stake floor do not count for season points.
- Cooling intervals. Repeated actions inside tight windows do not accrue extra points.
- Sybil filters. Obvious self-dealing patterns or circular flows are excluded by policy and emitted as RuleViolation events.
- Responsible-play gates. If a wallet has an active self-exclusion, missions that require wagering are disabled. Non-wager education quests remain available.

18.7 Responsible-play alignment

- Deposit and loss caps from the Player Protection Registry are respected by mission logic.
- Session timers count toward missions only inside safe bounds.
- Self-suspension and permanent exclusion deactivate reward accrual in real-money programs immediately.
- Play-Money Mode parity. In restricted regions, players can complete education and verification quests using the same proof pipeline without real funds.

18.8 How rewards are paid

- Streaming, not lump sums. Season budgets stream linearly to a program contract.
- Milestone gates. The contract releases tranche amounts only when metrics cross thresholds.

- Clawback on failure. If KPIs are not met, the stream pauses and unspent tokens stay in the program contract.
- Currency. Payouts use the settlement asset or pre-allocated VAULT from the DAO reserve, as defined up front.

18.9 Player journey examples

Illustrative mechanics. Not forecasts.

- Starter path. A new user completes a proof tutorial, verifies one bet's randomness, plays two titles in Play-Money Mode, and links a protection profile. The season credits points and a small reward from a public program contract.
- Retention path. Over four weeks, the user returns for three sessions each week, tries one SDK title, and participates in a cross-title jackpot. A higher tier reward unlocks with receipts for every step.
- Creator path. A studio publishes a listed slot and meets a mission for unique active users and variance-within-bands. The studio earns a season bonus while continuing to receive the 0.1% creator royalty per wager automatically.

18.10 Creator and KOL synergy

- Royalty is the base. Partners earn 0.1% of handle on every wager in their titles, paid per transaction.
- Season overlays augment. Verified new users, retention cohorts, and proof education content can earn additional seasonal payouts.
- No double-counting. Season logic excludes self-generated handle from the same address cluster and uses cohort thresholds to measure real growth.

18.11 Fairness for smaller communities

- Weighted brackets. Smaller creators compete in tiered brackets so large audiences do not dominate every season.
- Growth multipliers. % growth in verified users can score alongside absolute handle.
- Localization missions. Translation and regional asset work count toward creator bounties, with deliverables archived publicly.

18.12 Regional programs and access

- Geoblocking respected. Real-money missions are not visible in restricted regions.
- Education-first tracks. Players earn small rewards for completing proof-of-play lessons and Play-Money Mode missions.
- Attestation required. Real-money rewards require an on-chain eligibility attestation; without it, season contracts will not release funds to that wallet.

18.13 How budgets are approved and changed

- DAO proposals. Each season's scope, KPIs, budget, and end date are proposed, discussed, and voted on.
- Streams with pause. The approved budget streams to the program contract. A fail-safe pause is available by vote.
- Migration only. Any logic change ships as a new audited program contract. The DAO lists the new version and shuts down the prior stream.

18.14 What programs cannot do

- Programs cannot change RTP, fees, or settlement math.
- Programs cannot withdraw from or credit the LP vault.
- Programs cannot bypass responsible-play gates or regional restrictions.
- Programs cannot issue new tokens. All rewards come from pre-allocated reserves.

18.15 Reporting and dashboards

- Public reports. Each season posts a start brief, weekly metrics, and a close report with on-chain links.
- Drill-downs. Every aggregate chart links to events on the explorer.
- Third-party mirrors. Community dashboards can rebuild scores from events without privileged access.

18.16 Examples of program sizing

Illustrative only.

- Creator Season A. Budget equals 1,200,000 VAULT streamed over 12 months. Quarterly gates require verified new users, retention, and proof education content. If two gates fail in a quarter, the stream pauses automatically.
- Quest Series B. Budget equals 250,000 in settlement asset streamed over 8 weeks, paying small fixed rewards for proof tutorials, Play-Money Mode sessions, and first real-money eligibility checks where allowed.
- Regional Launch C. Budget equals 400,000 VAULT streamed over 6 months for localized content, SDK templates, and partner room launches, with strict geoblocking compliance.

18.17 Verification checklist

- Confirm the season contract address and stream parameters in the Version Registry.
- Match total SeasonPayout to the approved budget stream over the period.

- Validate that every payout correlates to qualifying events such as QuestCompleted or SeasonScoreUpdated.
- Confirm that RuleViolation events exclude disallowed patterns and that excluded addresses did not receive payouts.

18.18 Philosophy in one line

Play-to-Earn should reward real contribution, not button-mashing. Vault777 treats P2E as a civic budget with receipts. It turns entertainment and education into measurable participation while respecting responsible-play rules and keeping core economics intact.

19. Compliance and Responsible Gaming

Compliance and player protection are not add-ons in Vault777. They are part of the product. Real-money access is governed by on-chain attestations, the interface enforces regional rules, and a Player Protection Registry applies limits and exclusions that contracts consult before taking a bet. The result is simple to understand and auditable in public.

19.1 Regional access and legal scope

- Geoblocking in the interface. Real-money features are hidden in regions that do not permit them. Location controls use IP and device signals.
- On-chain eligibility for real money. To place a real-money bet, a wallet must hold a non transferable eligibility attestation issued by an approved provider. The attestation proves age and region status without exposing personal data to game contracts.
- Play-Money Mode worldwide. Where real-money play is not available, users can still play with practice chips. The games use the same math, Chainlink VRF proofs, payout logic, and proof pages.
- DAO controlled allowlists. Adding or removing eligibility issuers requires a new audited version and a DAO vote. The Version Registry records the active issuers and versions.

19.2 Data minimization and privacy

- No identity documents in game systems. KYC, where required, is handled by regulated on-ramps and attestation issuers. Game contracts never store identity files.
- Attestations without PII. Eligibility checks read a yes or no flag on chain. Age or jurisdiction details are not embedded in game state.
- Separation of duties. On-ramps process card payments, risk checks, and chargeback handling. Vault777 never takes custody of card data and does not run a private ledger.

19.3 Player Protection Registry

A dedicated contract enforces responsible gaming settings across the product. The interface writes to it, the paymaster reads it for gas sponsorship, and official games consult it before accepting a bet.

- Deposit and loss limits. Daily, weekly, and monthly caps. Exceeding a cap disables new wagers until the next window.
- Session timers and reality checks. The interface surfaces elapsed time and prompts scheduled breaks.
- Cooling off periods. Temporary suspensions with defined durations that cannot be revoked early.

- Self suspension. User initiated suspension for a chosen period. The paymaster stops sponsorship and the UI removes discovery during the lock.
- Permanent self exclusion. A non reversible block at the registry level. Official games and the paymaster refuse service to excluded wallets.
- Cross device enforcement. Limits and exclusions apply to the wallet, not the browser. Moving devices does not bypass them.

All settings emit events. Anyone can confirm that limits and exclusions were active at the time of a bet.

19.4 Marketing standards and KOL compliance

- Age gating and regional rules. KOL content must not target minors and must comply with regional disclosure rules. Links to real-money features must originate from allowed regions only.
- On-chain attribution. Campaign codes are recorded in events so cohort performance can be measured without screenshots or private reports.
- Disclosure and moderation. Streams and posts must carry clear disclaimers and links to responsible gaming resources. Violations can pause seasons by DAO vote and terminate streams.

19.5 Anti abuse and platform hygiene

- Multi-account and collusion detection. Timing, bet sizing, seat adjacency, and other on-chain signals are monitored. Flagged patterns remove discovery in the interface while funds remain safe in user wallets.
- Wallet and address screening. Integrations with third-party risk scoring can restrict gas sponsorship or UI access for sanctioned addresses. The protocol cannot seize funds but can refuse service at the UI, paymaster, and eligibility layers.
- Table integrity for cards. Queue randomization and enforced action timers reduce soft play. Dispute resolution cites transaction references and proof pages.

19.6 Program compliance

- Ring-fenced budgets. Growth with the bankroll programs live in separate contracts and never touch the LP vault or player balances.
- Anti wash rules. Rakeback and rewards require minimum real activity and exclude self dealing patterns.
- Public reporting. Programs publish monthly receipts that reconcile inflows to outflows and show KPI status. Streams can be paused by vote if standards are missed.

19.7 How compliance appears in code paths

- UI controls. Regions and responsible gaming states alter available buttons and discovery.
- Paymaster rules. Gas sponsorship is denied for ineligible or protected wallets.
- Contract gates. Real-money games check for an active eligibility attestation and consult the Player Protection Registry. If a check fails, the transaction reverts.

19.8 Transparency and audits

- CertiK audit in progress. The public report and our response will be published soon and linked in this paper. Any remediations ship as new audited versions.
- Verified source and versions. Live addresses, compiler settings, and constructor values are recorded in the Version Registry, including the Player Protection Registry, Eligibility Registry, and paymaster.
- Quarterly compliance reports. Summaries cover regional access changes, program enforcement, incident reviews, and adoption of protection features.

19.9 Responsibilities and disclaimers

- User responsibility. Users are responsible for understanding and following laws in their jurisdiction and for setting limits that match their risk tolerance.
- Protocol responsibility. Vault777 enforces rules at the interface, paymaster, and contract layers and publishes receipts for independent verification.
- No legal advice. This section describes product controls and public commitments. It is not legal guidance.

19.10 What you can verify today

- The Player Protection Registry address and event history.
- Eligibility issuer addresses and the structure of the on-chain attestation.
- Bets reverting for ineligible or excluded wallets in test environments.
- Campaign attribution on fee events for KOL and creator seasons.
- Program spend receipts reconciling to Growth with the bankroll inflows.

19.11 Philosophy in one line

A fair casino protects outcomes and people. Vault777 uses the chain to prove the first and code to enforce the second, with receipts that let anyone confirm both.

20. Web2-Simple Onboarding that remains non-custodial

Onboarding should feel familiar and fast without sacrificing self-custody. Vault777 uses account-abstraction smart wallets, a regulated on-ramp for card payments, and clear identity attestations for real-money access. You sign up like a modern app. You play and withdraw from a wallet that you control.

20.1 Goals of the onboarding flow

At mainnet, onboarding begins through standard Web3 connections. Players link a supported wallet such as MetaMask or Rabby, keeping full custody of their funds from the first moment. Play-Money Mode is available globally with identical proofs and math, while real-money play activates region by region as on-chain eligibility attestations become available.

After TGE, Vault777 will introduce an optional Web2-style onboarding system to make access simpler without sacrificing self-custody:

- Email and password login. A personal smart wallet will be deployed automatically and tied to the user's credentials.
- Visa card top-up. A regulated on-ramp will let users fund their wallet directly by card.
- Capped gas sponsorship. Early sessions may include limited sponsored gas for smoother first-time play.
- Secure recovery. Passkeys and optional guardian-based recovery will allow users to restore access safely.

This staged approach ensures Vault777 remains fully decentralized at launch while steadily lowering barriers for mainstream users after TGE.

20.2 Account Creation and Funding

At mainnet:

- Connect a supported Web3 wallet.
- Choose Play-Money or, where enabled, real-money mode.
- Deposit supported crypto directly into your wallet to play.

After TGE (enhanced onboarding):

- Players will be able to register with email and password to deploy a non-custodial smart wallet automatically.
- Card payments through a regulated on-ramp will fund that wallet directly; no omnibus custody or centralized balances will ever exist.
- Capped gas sponsorship will make initial transactions seamless while keeping all balances in the player's control.

Regardless of method, balances always remain in the player's personal wallet.

20.3 Early Experience and Play Flow

When a player places a wager:

1. The game contract requests randomness from Chainlink VRF.
2. The interface shows "pending" and "confirming" states while the proof is generated.
3. The contract verifies the proof and maps it to an outcome using the published method.
4. The payout, fee routing, and proof data are displayed in the result screen.

After TGE enhancements—including Web2 login, card top-up, and gas sponsorship—this same flow will remain entirely on chain, giving both newcomers and experienced players an experience that feels familiar yet verifiable at every step.

20.4 Gas sponsorship that respects safety

- Sponsored gas for new users: early actions may be sponsored by a paymaster with strict per-user caps and time windows.
- Clear limits: once sponsorship limits are reached, the interface explains how to continue with self-paid gas.
- Safety rules: the paymaster consults the Player Protection Registry and eligibility status before sponsoring any transaction.

20.5 Real-money access and regional rules

- Eligibility attestation: real-money play requires a non-transferable on-chain attestation from an approved issuer that confirms age and regional eligibility.
- Geoblocking: the interface hides real-money features in prohibited regions. The same login shows Play-Money Mode instead.
- Enforcement in contracts: live real-money games check for an eligibility attestation. Without it, bets revert even from third-party front ends.

20.6 Play-Money Mode that mirrors reality

- Identical randomness proofs, mapping, and payout logic, but with practice chips that are not redeemable.
- Lets users learn the loop, see proof pages, and try titles without funds at risk.
- Creators can demo SDK titles with the exact same verification path.

20.7 Recovery that does not compromise custody

- Passkeys: recommended as the default sign-in and recovery method across devices.
- Guardians (optional): add trusted recovery contacts. Recoveries are time-locked and visible in a pending state before activation.
- Fallback email: if a device is lost, sign-in via email plus 2FA can re-bind a new passkey.
- Export options: advanced users can link or export to a compatible wallet for additional control.

20.8 Fraud and abuse controls

- Velocity limits: onboarding and top-up actions have rate limits and cool-downs to reduce abuse.
- On-ramp risk checks: card risk, KYC where required, and dispute handling are performed by the on-ramp provider.
- UI hygiene: suspicious patterns may reduce discovery or pause sponsorship; funds remain in user wallets.

20.9 What you see during a bet

- Pending, confirming, confirmed: the UI shows clear states tied to on-chain events.
- Proof page: every result links to a page with the randomness request id, proof status, mapped outcome, payout, and fee routing.
- Receipts first: visuals and audio celebrate confirmed outcomes only.

20.10 Privacy by design

- Data minimization: game contracts never store personal data or identity documents.
- Attestations without PII: eligibility is a yes/no check on-chain; age and region details are not embedded in game state.
- Separation of duties: the on-ramp manages KYC where required and card data; Vault777 runs audited, immutable game and wallet logic.

20.11 Device, session, and family settings

- Device trust: view and revoke active sessions from settings.
- Session limits: optional logout timers and device-level locks to prevent unattended play.
- Family profiles: optional age-gated profiles for Play-Money Mode where local rules allow, with strict blocks for real-money access.

20.12 For creators and partners

- Login bridge: partners can use a standards-based login bridge to verify that a user controls a Vault777 smart wallet.
- Royalty binding: creators register a royalty address at listing; the fee router pays 0.1% of handle per wager to that address automatically.
- Attribution: campaign codes are attached on-chain so traffic can be measured without screenshots.

20.13 For auditors and reviewers

- Deterministic wallet creation: constructor settings and wallet factory addresses are listed in the Version Registry.
- Paymaster policy: sponsorship caps and registry checks are visible in source.
- Attestation issuers: issuer addresses and version history are recorded, with any change requiring a new audited deployment and a DAO vote.

20.14 Failure and fallback behavior

- If the UI is unavailable, your smart wallet remains usable with public tools.
- If the on-ramp is degraded, card top-ups pause; crypto deposits continue to work.
- If eligibility services are unavailable, real-money games gracefully reject bets until issuers resume. Play-Money Mode remains open.

20.15 Why this matters

Most casinos ask for trust up front and clarity later. Vault777 flips that script. You sign up like any modern app, but every meaningful action is visible on-chain. You keep custody from the first minute. You can verify outcomes, fee splits, and distributions yourself. Onboarding is smooth by design and honest by default.

21. Security and Audits

Security at Vault777 is a product requirement, not a checkbox. The goal is simple to state and strict to execute: users keep custody, outcomes are provable, cash flows are mechanical, and every meaningful invariant is easy to audit in public. This section documents the security model, the external audit process, what we test, how we release, and how anyone can verify the guarantees themselves.

21.1 First principles

- Self custody always. Player balances live in personal smart wallets. The protocol never holds omnibus funds.
- Immutable production. Live games, routers, vaults, staking, and registries are non-upgradeable and ownerless. There are no admin keys.
- Proof before payout. No randomness proof means no payout. All outcomes require a verifiable Chainlink VRF proof checked on chain.
- Separation of concerns. The LP vault cannot be reached by program budgets. Programs cannot affect game outcomes. Staking is fed by Treasury inflows, not token emissions.
- Receipts by default. Every important action emits events so third parties can rebuild accounting without private dashboards.

21.2 Threat model in plain language

We design as if an attacker tries to:

- Bias randomness or replay a prior draw.
- Exploit settlement paths or reentrancy to divert funds.
- Overdraw the LP vault through edge cases in odds or exposure math.
- Abuse routers or program contracts to siphon fees.
- Manipulate oracles, upkeep timing, or price displays.
- Extract user data or bypass regional and protection controls.

Controls exist at each layer to contain these cases and to make misbehavior visible.

21.3 Development discipline

- Spec first. Each module ships with a written specification of invariants, accepted inputs, state transitions, and event schemas.
- Tests that matter. Unit tests, property-based fuzzing, differential testing between reference models and on-chain code, and griefing/gas analysis on hot paths.
- Economic simulators. Monte Carlo simulators for each title produce expected value, variance, tail loss, and RTP bands used by exposure policy and drift alarms.

- Static and symbolic checks. Automated static analysis, stack-depth and storage-collision checks, and coverage targets that block release if unmet.

21.4 External audit and public reporting

An independent security audit by CertiK is currently in progress. The audit covers all production contracts, including games, the fee router, LP vaults, staking, registries, program vaults, and the paymaster.

Reporting and publication

When the review is complete, Vault777 will publish the full CertiK report together with the team's detailed responses. This whitepaper will be updated immediately to include the official report link, version references, and any remediations that were implemented.

Audit requirements before mainnet

- The protocol will not proceed to full mainnet deployment until the CertiK audit reaches final clearance with zero critical or high-severity findings.
- Every audited contract will be verified on the Arbitrum explorer, with compiler versions, constructor values, and addresses recorded in the public Version Registry.
- The audit report, hash of the verified source, and deployment artifacts will all be available for public review.

Post-TGE audits

- The Web2 onboarding module (email login, Visa top-up, and gas sponsorship) will undergo its own review before activation.
- The SDK release will receive a separate independent audit before creator publishing opens.
- Any new major version proposed for DAO listing will be audited before deployment and published with the same transparency standards.

This approach ensures that every critical component of Vault777 is reviewed, verified, and published for public inspection before it can affect user funds or gameplay.

21.5 Release management and immutability

- No upgrades in place. Production contracts cannot be edited or paused.
- Migration only. New features or policy changes ship as new audited versions. The DAO lists them. Users migrate voluntarily.
- Version Registry. The canonical list of addresses, constructor values, compiler settings, and oracle endpoints used by each listed contract. This lets anyone diff versions across time.

21.6 Oracle and external dependency safety

- Randomness. Chainlink VRF returns a random value and proof. Contracts verify proofs on chain. If verification fails or times out inside the published window, the bet reverts and funds remain in user wallets. No fallback RNG exists in live titles.
- Automation. Chainlink Automation triggers monthly staking snapshots, weekly LP epoch flips, and jackpot checks. Upkeeps are scoped to narrow functions. If an upkeep is missed, functions remain callable permissionlessly. No user funds are stranded by a missed timer.
- Price feeds. Used for displays and guardrails only. Feeds are checked for staleness and bounds. Settlement paths for games do not depend on external price feeds.

21.7 Bankroll protection and Kelly-based policy

- Per-bet caps and concurrent exposure caps. Hard limits on worst-case losses at the bet and portfolio levels.
- Drawdown guards. Automatic scaling down of exposure when vault equity drops by policy steps.
- Weekly epochs. Deposits and exits are bounded to a schedule so share math stays fair and policy ratios remain stable.
- Auditable math. Caps and guard steps are constructor values visible on the explorer and mirrored in math notes.

21.8 Player protection and compliance controls

- Eligibility Registry. Real-money bets require a non-transferable on-chain attestation from an approved issuer. Without it, bets revert even from third-party front ends.
- Player Protection Registry. Deposit and loss caps, session timers, cooling off, self suspension, and permanent exclusion are enforced at the UI, paymaster, and contract layers.
- Geoblocking. The interface hides real-money features in restricted regions. Play-Money Mode remains open and uses the same proofs.

21.9 Wallet, paymaster, and onboarding safety

- Account abstraction. Personal smart wallets with explicit session and guardian controls.
- Paymaster rules. Sponsored gas has per-user caps and checks both Eligibility and Player Protection registries before sponsoring a transaction.
- Data minimization. Game contracts never store identity documents. Attestations are yes/no flags without embedded PII.

21.10 Monitoring and liveness

- Oracle liveness. VRF fulfillment latency, upkeep runs, and feed freshness are monitored. Delays trigger status updates and, where needed, interface notices.
- Event integrity. Watchers validate event sequences on settlement paths and flag anomalies such as missing CreatorRoyaltyPaid or TreasuryFunded events.
- Utilization and drift. Live RTP, variance, and vault utilization are compared to simulator bands. Drift pauses discovery until a corrected version is listed.

21.11 Incident posture and containment

- What we will not do. We will not pause or hot-edit a live contract.
- Containment tools. The interface can de-list an affected version, stop gas sponsorship, and route discovery to unaffected titles while a fixed audited version is prepared and listed.
- Post-mortems. If thresholds are crossed, we publish a signed incident report with transaction references, timelines, and lessons learned.

21.12 Bug bounties and open review

- Bounty program. A public bounty program rewards findings on settlement paths, fee routing, vault math, registries, and protection checks.
- Open contests. Targeted contests for high-risk modules such as vault policy and card-game proofs precede or accompany major launches.
- Reproducible analyses. SDK scripts let researchers rebuild handle, payouts, royalties, PnL, and staking distributions directly from events.

21.13 What auditors and users can verify today

- Immutability. Token, router, vaults, staking, and registries show no owner, no proxy, no upgrade paths.
- Randomness receipts. Any settled wager contains the VRF request id, proof verification status, mapped outcome, payout, and fee events.
- Fee routing. CreatorRoyaltyPaid, TreasuryFunded, and GrowthFunded are emitted in the same transaction as settlement.
- Staker math. Sum TreasuryFunded for the month, multiply by 80%, and match the staking module’s RewardAssigned total.
- Vault policy. Per-bet caps, concurrent exposure caps, and drawdown steps are visible as constructor values and can be matched to the vault’s public math notes.

21.14 Known limitations and how we handle them

- L2 settlement windows. L2 to L1 withdrawals can take time. Gameplay and payouts occur on Arbitrum; this does not affect user withdrawals from personal wallets.
- Oracle dependencies. If an oracle is delayed, bets either wait within the timeout or revert cleanly. We do not substitute local randomness or hidden feeds.
- Human factors. Users can still over-extend. Limits, timers, and exclusions exist to help, with enforcement at UI, paymaster, and contract layers.

21.15 Security checklist before mainnet

- CertiK audit report and response published.
- Zero critical and zero high issues outstanding.
- Source verified on the explorer with exact compiler versions and settings.
- Version Registry populated with all addresses, constructor values, and oracle endpoints.
- Status page and incident runbooks public.
- Bounty program and reporting channels live.

Security is not a one-time event. It is a habit. Vault777 binds that habit to code you can read, proofs you can check, and receipts you can recompute. When the CertiK report is public, this section will link directly to it and record any changes we make in response.

22. Testnet Results and What They Prove

The public testnet was designed to answer one question with receipts: can Vault777 deliver premium gameplay while every outcome, fee, and distribution remains verifiable on chain. The answer is yes. This section summarizes scale, fairness, economics, vault behavior, and the changes we shipped based on what we learned.

22.1 Objectives of the test

- Prove that every settled bet includes a verifiable Chainlink VRF proof and that bets without a proof revert by design.
- Validate the fixed 2% fee pipeline and on-chain split into Treasury and Growth, including the 0.1% creator royalty paid from the Treasury share.
- Observe LP vault behavior under weekly epochs, exposure caps, and drawdown guards.
- Dry run the staking epoch logic and monthly assignment math.
- Exercise SDK listing flow and proof pages at user scale.
- Run the entire system without paid campaigns to isolate product-level adoption and throughput.

22.2 Scale and usage at a glance

- Bets settled: about 1,900,000
- Total handle: about 450,000,000
- Unique wallets: about 3,500
- On-chain transactions: over 1,000,000 including wagers, fee splits, and program events
- Bankroll TVL peak: about 20,000,000 (testnet units)
- Campaigns: no paid KOL or performance marketing during this phase

These numbers establish that the system can sustain high-cadence play while keeping receipts readable and costs predictable.

22.3 Fairness and proof trail

- No proof, no payout: every settled wager verified a Chainlink VRF proof on chain before computing the outcome. Bets without a proof reverted.
- Mapping clarity: roulette and other finite sets used rejection sampling rather than naive modulo to avoid bias. Continuous games published documented transforms.
- Public math notes: each title exposed RTP targets, volatility class, and mapping logic so outcomes could be reproduced from events.

- Explorer parity: outcome, payout, CreatorRoyaltyPaid, TreasuryFunded, and GrowthFunded events appeared in the same transaction, which let reviewers follow a single link to check the full path.

22.4 Economics proven by receipts

The fee router behaved as specified for every settled bet. If you apply mainnet math to the testnet handle, the mechanics look like this:

Per 450,000,000 in handle (illustrative math, not revenue on testnet):

- Protocol fee at 2% equals 9,000,000
- Creator royalty at 0.1% of handle equals 450,000 and is paid from the Treasury share
- Treasury net at 0.9% equals 4,050,000
- Growth with the bankroll at 1.0% equals 4,500,000
- Monthly staker distribution at 80% of Treasury equals 3,240,000

The important point is not the nominal units on testnet. It is the mechanical correctness of every split and the presence of receipts that let anyone recompute them.

22.5 LP vault behavior and risk controls

- Weekly epochs worked: deposits before start, seven-day lock, exit request 3 days before close, 1 day claim window. No mid-week dilution.
- Exposure caps enforced: per-bet and concurrent exposure limits held at or below policy. Trades that would breach policy reverted.
- Drawdown guards triggered correctly: when vault equity crossed defined steps, caps scaled down automatically and restored after recovery.
- PnL reconstruction: independent scripts rebuilt weekly PnL and price per share from events, matching vault calculations.

22.6 Staking dry run

- Snapshot logic: end-of-month snapshots captured weights correctly.
- Assignment math: rewards assigned from TreasuryFunded sums matched the 80% policy.
- Auto-compound credit: unclaimed rewards increased snapshot weight until claim, exactly as designed.
- Exit rules: 14-day notice and 3-day exit window enforced.

22.7 SDK listings and creator receipts

- Template safety: creators deployed themed versions of audited templates with safe parameters and simulator outputs.

- Royalty enforcement: each wager in an SDK title emitted CreatorRoyaltyPaid equal to 0.1% of handle to the creator's address.
- Attribution accuracy: campaign tags attached to fee events let cohorts be measured without screenshots or private spreadsheets.

22.8 Performance and UX signals

- Cadence on Arbitrum: confirmation times kept the loop responsive. Pending and confirming states were clear, and the client revealed results only after settlement.
- Cost predictability: gas per wager remained stable within expected bands for each title.
- Proof-first choreography: camera moves, audio, and effects aligned cleanly with on-chain confirmation to avoid any pre-reveal illusions.

22.9 Incidents, fixes, and changes shipped

We use testnet to find edges and resolve them in public. Highlights:

- Rejection sampling made default across finite-set titles after reviewers flagged potential modulo misuse in one early build.
- Exposure cap smoothing improved to reduce oscillation when guards toggled near thresholds.
- Proof page design updated so every element is one click from the explorer and labeled with plain-language explanations.
- Timeout policies clarified and surfaced in UI for transparency when a randomness request takes longer than expected.

All changes are now part of the mainnet release candidates.

22.10 What this proves, formally

- Fairness: verifiable randomness precedes every payout.
- Immutability discipline: live logic can run at scale without hot-patches or admin keys.
- Accounting integrity: the fee split, creator royalty, Treasury inflow, and Growth funding reconcile end-to-end from events.
- Risk governance: Kelly-based policy, weekly epochs, and drawdown guards produce predictable vault behavior under stress.
- Creator alignment: automatic per-wager royalty makes catalogs repeatable businesses rather than monthly reconciliations.

22.11 What remains before mainnet

- CertiK audit completion: report and responses will be published, and this paper will be updated with links and version references.

- Final source verification: compiler versions and settings pinned in the explorer and the Version Registry.
- Public datasets: release of event snapshots and reference scripts so third parties can rebuild testnet accounting quickly.

22.12 How to verify the test yourself

Pick any testnet transaction and follow this path:

1. Confirm the game's VRF request id and proof verification status.
2. Recompute the mapped outcome from the published method.
3. Check the payout to the player wallet.
4. Confirm the fee router emitted CreatorRoyaltyPaid, TreasuryFunded, and GrowthFunded in the same transaction.
5. Sum a month of TreasuryFunded events and match 80% to the staking module's RewardAssigned total.
6. Rebuild a vault week from per-bet results and confirm the price per share at close.

22.13 The takeaway in one line

Testnet did not ask for trust. It produced receipts. Scale, fairness, cash-flow mechanics, LP policy, staking logic, and creator royalties all behaved exactly as the contracts specify, without paid promotion. That foundation is what we are taking to mainnet.

23. Compliance Architecture

Compliance in Vault777 is not a banner or a toggle. It is an architecture. Real-money access, player protection, and privacy are enforced by a set of audited components that work the same way for every user and every title. This section explains the moving parts, how they interact, and what you can verify on chain.

23.1 Objectives

- Allow real-money play only where permitted and only for eligible adults.
- Offer Play-Money Mode everywhere with identical fairness and proofs.
- Enforce responsible-gaming limits across the UI, the paymaster, and contracts.
- Keep personal data out of game logic and on-chain state.
- Leave a receipt for every compliance-relevant decision.

23.2 Core components

- Eligibility Registry
  Smart-contract registry that recognizes non-transferable eligibility attestations issued by approved providers. Real-money games check this registry on every bet.
- Player Protection Registry
  Contract that stores per-wallet limits and exclusions. Games and the paymaster consult it before accepting or sponsoring a bet.
- Geoblocking Layer
  Interface controls that hide real-money features in restricted locations using IP and device signals.
- Paymaster Policy
  Sponsored gas adheres to both registries. Ineligible or excluded wallets are not sponsored.
- Version Registry
  Canonical list of addresses, compiler settings, constructor values, and the currently approved eligibility issuers.

23.3 Real-money eligibility by attestation

- What it is
  A non-transferable on-chain credential bound to a wallet that signals the holder has passed age and region checks with an approved issuer.
- What it is not
  It is not KYC data in game contracts. No personal information is embedded on chain.
- How it is used

Before settlement, a real-money title calls the Eligibility Registry to confirm the wallet has a valid attestation for the current ruleset. If missing or expired, the transaction reverts.

- Issuer governance
  Adding or removing an issuer requires a new audited deployment and a DAO vote. The Version Registry records active issuers and versions.

23.4 Geoblocking and regional configuration

- Interface rules
  Real-money features are disabled in restricted locations. Users in those locations see Play-Money Mode by default.
- Regional bundles
  The app loads a signed configuration bundle that maps regions to access modes, disclosure copy, and responsible-gaming resources.
- Authoritative list
  The current allowlist and denylist are mirrored in the repository and referenced from the Version Registry to avoid ambiguity. Regional rules change; the signed bundle keeps the interface current without touching live contracts.

23.5 Play-Money Mode that mirrors reality

- Same proofs, same math
  Chainlink VRF proofs, outcome mapping, and payout logic are identical. Practice chips replace real funds.
- Why it matters
  Anyone, anywhere can experience the product, examine proof pages, and learn the loop without risking money.
- Creator demos
  SDK titles ship with Play-Money toggles so studios can demonstrate mechanics under the exact verification path.

23.6 Responsible-gaming enforcement

- Limits
  Daily, weekly, and monthly deposit and loss caps set at the wallet level. Crossing a cap disables new real-money bets until the window resets.
- Session hygiene
  Timers, reality checks, and optional auto-logout keep sessions healthy.
- Cooling-off and self-exclusion
  Temporary suspensions and permanent self-exclusion are enforced at the registry. Official games and the paymaster refuse service to excluded wallets.
- Cross-surface enforcement

Limits apply regardless of device or front end because checks live in contracts and the paymaster, not only in the UI.

- Auditability
  All changes emit events with timestamps and parameters. Reviewers can confirm a limit or exclusion was active at bet time.

23.7 Separation of duties and privacy

- On-ramps handle identity
  Where identity checks are required, they occur with regulated on-ramp providers. Vault777 never stores identity documents in game systems.
- Attestations without PII
  Eligibility checks are yes/no reads from the registry. Age and region details never enter game state.
- Data minimization
  Game contracts process wagers and proofs only. No analytics or profile data is written on chain by game logic.

23.8 Paymaster rules

- Sponsored gas with guardrails
  Early actions may be sponsored to reduce friction. The paymaster denies sponsorship for ineligible or excluded wallets and respects velocity limits.
- Receipts
  Sponsorship decisions emit events so reviewers can confirm policy adherence.

23.9 Content and marketing standards

- Age gating and disclosure
  Partner content must not target minors and must include clear disclosures with links to responsible-gaming resources.
- Regional integrity
  Links to real-money features originate only from allowed regions.
- On-chain attribution
  Fee events carry campaign codes so cohorts are measured without screenshots.
- Enforcement
  Streams are funded via Growth programs with KPIs. Violations can pause or terminate streams by DAO vote.

23.10 Cards, collusion, and fair-play posture

- Seat queues and timers
  Seating is randomized from queues. Turn timers are enforced by contract.
- Signals

Bet sizing, timing, and seat adjacency help flag suspicious patterns.

- Containment
  The UI can remove discovery for flagged tables while funds remain safe. Reviews reference transaction IDs and proof pages and are logged for transparency.

23.11 Audit and incident workflow

- CertiK audit
  Underway. The public report and our response will be linked here and in the Version Registry.
- Change control
  Compliance-critical modules (registries, paymaster, router) are immutable. Any policy change ships as a new audited version and is listed by DAO vote.
- Incidents
  Status page posts signed updates. The UI can de-list affected versions and pause sponsorship while a fixed audited version is listed. Post-mortems cite transaction references and timelines.

23.12 Developer responsibilities

- SDK requirements
  Creators submit a packet with bytecode, ABI, math notes, simulator outputs, and a royalty address. Titles are listed in conservative tiers with exposure limits.
- Compliance hooks
  SDK templates include calls to Eligibility and Player Protection registries. Custom titles must retain these checks to qualify for listing.
- Attribution
  Creators attach a campaign code to fee events for transparent measurement.

23.13 Verifier checklist

- Confirm Eligibility Registry and Player Protection Registry addresses and versions in the Version Registry.
- Inspect a real-money bet reverting from a wallet without an active eligibility attestation.
- Toggle a limit in the Player Protection Registry and confirm betting is blocked until reset.
- Review paymaster sponsorship events for an ineligible wallet and confirm denial.
- Match campaign codes in fee events to published partner seasons.
- Confirm that program contracts never touch the LP vault or player balances.

23.14 Legal framing and responsibilities

- User duty
  Users must understand and follow the rules in their jurisdiction and set limits that match their risk tolerance.
- Protocol duty
  Vault777 enforces regional and protection rules at the interface, paymaster, and contract layers and publishes receipts so third parties can verify compliance.
- No legal advice
  This section explains the architecture and public commitments. It is not legal counsel.

23.15 Philosophy in one line

Compliance should be predictable, private, and provable. Vault777 keeps personal data out of game logic, enforces rules in code, and leaves receipts so anyone can confirm that access and protection worked exactly as promised.

24. DAO Treasury and Streamed Budgets

Vault777's operating model is simple to understand and strict to verify. Treasury income is earned on chain from gameplay. Budgeting is executed as streams, not lump sums. Programs are ring-fenced contracts. Live production contracts remain immutable and ownerless. This section explains what the Treasury is, how money moves, which budgets exist, how proposals pass, and exactly what you can verify in public data.

24.1 What the Treasury is, and what it is not

- It is the protocol's revenue account. Each wager pays a fixed 2% fee. The fee router splits this 1% to Treasury and 1% to Growth with the bankroll. From the Treasury share, a 0.1% creator royalty is paid in the same transaction, leaving 0.9% net to Treasury.
- It is not custody of user funds. Player balances remain in personal smart wallets. The Treasury never holds player deposits.
- It is not the LP bankroll. The LP vault is separate. Treasury and programs cannot reach into the bankroll.
- It is not token issuance. Treasury revenue is independent of VAULT supply. Token allocations are handled by vesting and program contracts, not the Treasury.

24.2 Sources and sinks of Treasury funds

Sources

- Treasury inflows from gameplay: 0.9% of handle, paid continuously by the fee router.
- Mirrored receipts from Starknet cards: table fees accrue on Starknet and are consolidated to the Arbitrum Treasury by a DAO-approved settlement flow. If mirroring is delayed, receipts remain visible on Starknet until settlement resumes.

Sinks

- Staker distributions: at month end, 80% of Treasury inflows during the epoch are paid to stakers by contract.
- Operating streams: the remaining 20% funds audits, engineering, data, compliance, observability, incident response, and a small reserve. All outlays are streamed and cancellable by governance vote.

24.3 Growth with the bankroll is ring-fenced

The 1% Growth slice never touches the Treasury or the LP vault. It funds jackpots, rakeback, creator and KOL seasons, SDK grants, and approved buybacks or liquidity support from separate program contracts. Every outflow emits events with a program id for public reconciliation.

24.4 Streams, not lump sums

- Why streams. Streaming replaces large discretionary withdrawals with steady, reversible payments tied to KPIs. It reduces headline risk and aligns vendors and partners to ongoing performance.
- How streams work. Governance sets a rate per second, a recipient address, a maximum cap, a start time, and explicit stop conditions. Funds accrue linearly and are claimable by the recipient at any time.
- Stop conditions. Streams can be paused or cancelled by governance if KPIs are missed, disclosures lapse, or standards are violated. Unspent funds remain in the program contract.

24.5 Budget classes and what they cover

Security and audits

- External audits, open contests, bug bounty payouts, and formal verification where applicable.
- Deliverables include reports, diffs, remediation notes, and exact version references recorded in the Version Registry.

Core engineering and data

- Protocol development, SDK maintenance, math-note authoring, simulators, indexers, event pipelines, and public dashboards.
- Deliverables include commit hashes, artifact hashes, uptime SLOs, and schema docs.

Compliance and protection

- Eligibility issuers, attestation integrations, Player Protection Registry upkeep, regional copy and resources, and status page operations.

Observability and incident response

- Monitoring, alerting, incident runbooks, public post-mortems with transaction references, and standing incident response retainers.

Ecosystem growth via Growth programs

- Cross-title jackpots and prize pools, rakeback and retention, creator and KOL seasons, SDK grants and studio advances, and limited buybacks or liquidity support when approved.

24.6 Proposal lifecycle and governance gates

- Idea and RFC. Proposals begin with a forum post that states the goal, budget, stream parameters, KPIs, and stop conditions.

- Temperature check. Community feedback refines scope and success metrics.
- On-chain proposal. A payload sets stream parameters or program rules. Quorum and approval thresholds apply.
- Timelock. A minimum delay gives reviewers time to inspect the payload and compute effects.
- Execution. The stream or program contract begins disbursing.
- Reporting. Monthly reports reconcile inflows to outflows and KPI status. Non-compliance pauses the stream.

24.7 KPIs and stop conditions that matter

Every stream defines a small set of measurable outcomes, with examples such as:

- Security. Audit coverage completed, zero critical and high issues outstanding, time to remediate, reproducible test suites.
- Engineering. Milestones shipped, SDK releases, simulator parity to live RTP bands, event schema coverage.
- Growth. Net new verified wallets, returning cohorts, creator royalty increase per quarter, revenue per funded partner within expected bands.
- Compliance. Adoption of limits and exclusions, eligibility attestation success rates, regional release checklists complete.

Stop conditions include KPI misses, missing monthly reports, violations of disclosure standards, or integrity incidents.

24.8 Accountability and public receipts

- Events everywhere. TreasuryFunded, RewardAssigned, RewardClaimed, and program-specific events let any reviewer build a monthly PnL without private dashboards.
- Version Registry. Records the addresses and constructor values for Treasury, router, staking, program vaults, and any settlement bridges.
- Signed reports. Monthly ops reports and incident reviews are signed and archived with links to on-chain references.
- Attribution on chain. Creator and KOL seasons attach cohort codes to fee events so outcomes can be measured without screenshots.

24.9 Financial discipline and risk controls

- Rate limits. Maximum monthly outflow per budget class prevents crowd-out and preserves runway.
- Reserves. A modest operating reserve absorbs timing and FX noise.
- No private withdrawals. There are no discretionary payments from the Treasury. All movements occur via approved streams or staker distributions.

- Separation of pools. Treasury, Growth programs, LP vault, and user wallets are distinct. Contracts enforce that separation.

24.10 What does not require Treasury spending

- Staker rewards. These come mechanically from Treasury inflows at month end. No proposal or discretionary action is required.
- Creator royalties. Paid automatically per wager by the fee router in the same transaction.
- Game settlement. Outcomes and payouts are atomic and do not depend on operating budgets.

24.11 Human-scale examples

Illustrative only. Not forecasts.

Example A. Monthly inflow and staker pay

- Handle equals 1,000,000,000 for the month.
- Treasury net inflow at 0.9% equals 9,000,000.
- Staker distribution at 80% equals 7,200,000.
- Operations budget for that month equals 1,800,000, streamed across Security, Engineering, Compliance, and Observability.

Example B. Security audit stream

- Stream rate equals 100,000 per week for 8 weeks to an audit firm's public address.
- Deliverables are the report, diffs, remediation notes, and artifact hashes.
- Stream pauses automatically if the report is not published on schedule.

Example C. Creator Season program

- Growth program allocates 2,000,000 over 10 weeks across three cohorts.
- Attribution codes are required in fee events.
- KPI: net new handle from creator titles and increase in CreatorRoyaltyPaid.
- Violations of disclosure or age-gating pause the stream.

24.12 How changes happen

- No edits in place. Live routers, Treasury, staking, and program contracts are immutable.
- Migration only. If governance wants to change a split, a rule, or a stream primitive, it ships as a new audited version. The DAO lists it. History remains intact.

24.13 Verification checklist

- Sum monthly TreasuryFunded events and confirm 80% appears as RewardAssigned in the staking module.
- Open the Treasury and program vault addresses in the explorer and verify outflows match approved streams.
- Match Growth program outflows to program ids and KPI reports.
- Inspect the Version Registry to confirm addresses, constructor values, and compiler settings for router, Treasury, staking, and programs.
- Confirm that no program or Treasury contract can write to the LP vault or user wallets.

24.14 Philosophy in one line

A serious protocol pays people by rule and shows its receipts. Vault777 converts handle into staker cash flow and into transparent, cancellable operating streams that fund security, product, and growth. Nothing depends on trust. Everything is visible.

25. Roadmap

A roadmap is only useful if every milestone is tied to receipts. Vault777 ships in phases that are gated by audits, on chain checks, and measurable adoption. Each phase below lists what we deliver, how you can verify it, and what success looks like before we move on.

25.1 How we ship

- Audit first. Zero critical and zero high issues before launch of any core module.
- Immutable in production. No upgrades in place. Change is migration only to a new audited version.
- Proofs before spectacle. The client celebrates what the contract has already settled.
- Public receipts. Every milestone comes with addresses, compiler settings, and events that let anyone verify results.

25.2 What is already complete

Public testnet delivered scale and receipts without paid marketing.

- About 1,900,000 bets, about 450,000,000 in handle, about 3,500 wallets, bankroll TVL peak near 20,000,000.
- Every wager settled after a verified Chainlink VRF proof.
- Fee router emitted CreatorRoyaltyPaid, TreasuryFunded, and GrowthFunded per bet.
- Weekly LP epochs and drawdown guards behaved as designed.
- Staking epoch logic and assignments matched the 80% policy.

See Section 22 for details and how to reproduce the numbers.

25.3 Phase 1: Mainnet launch on Arbitrum

Target window: end of November, subject to final audit clearance and deployment approval.

Deliverables at mainnet launch

- Core games live on Arbitrum with on-chain settlement and proof pages.
- Play-Money Mode globally, real-money activation by region as attestations go live.
- Version Registry, fee router and receipts in place for public verification.

Post-TGE enhancements (introduced after mainnet)

- Web2-style onboarding. Optional email and password login that deploys a personal smart wallet automatically, scheduled for release after TGE once the module is audited.
- Visa card top-up. Regulated on-ramp integration to allow direct wallet funding.
- Capped gas sponsorship. Early-session gas subsidies with clear limits for new users.

- Creator SDK. Opens after mainnet following its dedicated audit and DAO approval, enabling external studios and creators to publish verifiably fair titles.
- KOL and partnership programs. Begin after SDK launch, providing transparent, performance-based marketing streams.
- Staking & LP Vaults to be introduced once our token is live.

Acceptance gates for Phase 1

- CertiK audit complete with zero critical or high-severity issues.
- Source code verified on the Arbitrum explorer with compiler settings and constructor values recorded in the public Version Registry.
- Status page and monitoring tools active before launch.
- All testnet receipts confirmed reproducible on mainnet simulation.

Phase 1 delivers the foundation of Vault777's verifiable gaming experience: audited contracts, transparent economics, and a working on-chain casino environment that prioritizes fairness, compliance, and user custody from day one.

25.4 Phase 2: First 90 days after launch

Focus: stability, creator lift off, responsible growth.
Deliverables

- Two additional 3D titles, multi-language UI, accessibility presets for low-spec devices.
- Creator Season 1: at least 50 listed SDK titles across tiers, each with math notes and proof pages.
- Jackpots v1 across titles with on chain triggers and public payout events.
- Rakeback v1 with cohort rules and anti-wash.
- LP risk tuning using live variance data, still below full Kelly.
- Play Money tournaments for global audiences.
- Hiring of senior game designers, 3D artists, and sound designers for new titles.

Success criteria

- RTP drift per title inside published bands.
- CreatorRoyaltyPaid rising quarter over quarter.
- Staker distributions stable and fully reconstructible from events.
- No critical incidents; if minor incidents occur, public post-mortems with transaction references.

25.5 Phase 3: SDK growth and partner flywheel

Window: months 4 through 6 after launch.
Deliverables

- SDK v1.5: improved simulators, listing wizards, reference math notes, automated proof-page scaffolding.

- Creator Seasons with on chain attribution; 0.1% of handle per wager paid to the creator address instantly.
- KOL Season 2 with stronger disclosure standards and regional checks.
- Growth with the bankroll programs expanded: larger jackpots, milestone grants, localization funds.

Success criteria

- Catalog exceeds 150 listed SDK titles across tiers.
- Creator income broadens beyond top decile.
- Weekly LP utilization stays within policy bands with fewer guard activations.

25.6 Phase 4: Live cards on Starknet (Hold'em first, then Omaha)

Window: months 6 through 12 after launch.

Deliverables

- Design package for provable poker: deck commitments, shuffle proofs, encrypted deals, timers, showdown proofs, capped rake schedules.
- Closed testnet with invited players, bounty hunters, and formal math notes for review.
- Public testnet with open leaderboards and bad beat or high hand jackpots in separate audited contracts.
- Mainnet for cash tables on Starknet with Treasury mirroring to Arbitrum through a DAO approved settlement flow.
- Tournament series with on chain registration, buy in escrow, table balancing, blind schedules, and automatic payouts.

Success criteria

- Clean proof trails per hand; low dispute rates; transparent resolutions citing transaction ids.

Hands per hour within target; timers respected.

- Staker distributions rising with table handle; receipts visible.

What you can verify

- For any hand: deck commitment, shuffle proof, encryption commitments, mapped showdown, pot settlement, fee events.

25.7 Phase 5: Content scale and creator economy

Window: months 12 through 18.

Deliverables

- Third wave of 3D titles by in-house teams and partner studios.
- Creator studio program: advances and milestone streams for top performers; training, localization, and QA grants.
- Low-code creator tools for reskinning approved templates with safe defaults.
- Cross-title tournaments and seasonal ladders with program funded overlays.

Success criteria

- Catalog exceeds 500 listed creator titles.

- Creator royalty share of total protocol payouts grows quarter over quarter.
- User session length and return rates improve without increasing variance or drift.

25.8 Phase 6: DAO maturity and policy hardening

Window: months 18 through 24.
Deliverables

- Constitution refinements that formalize constitutional protections: immutability, no seizure of user funds, change by migration only.
- Budget discipline with rate limits per class, KPI templates, and stop conditions standardized across streams.
- Voter tools for proposal simulations: projected Treasury flows, vault policy diffs, and program effects.
- Regional program templates with pre-approved disclosures and eligibility issuers.

Success criteria

- Healthy proposer and voter participation.
- Streams paused when KPIs are missed; transparent reports.
- No breaches of constitutional limits.

25.9 Partner expansion and distribution

Continuous through all phases

- Arbitrum co-marketing that highlights verifiable play and Gaming Catalyst integration where applicable.
- Chainlink showcases of VRF fairness, Automation upkeeps for epochs and jackpots, and Price Feeds for displays.
- Exchanges and on-ramps that improve accessibility while keeping non custodial control.
- Creator and KOL recruitment with season-based incentives and clear compliance standards.

25.10 Compliance growth

Continuous

- Additional eligibility issuers through audited deployments and DAO votes.
- Quarterly responsible-gaming reports with adoption metrics, limit usage, and exclusion counts.
- Expanded Play Money events in restricted regions with identical proofs and math.

25.11 Risk and contingency playbooks

- If oracle latency rises, bets either wait within published timeouts or revert; UI communicates state clearly.
- If a title drifts outside bands, discovery pauses; a corrected audited version is listed before relisting.

- If a security issue is found, the UI de-lists affected versions, sponsorship pauses, and a signed incident report cites transaction references.
- If a partner breaches standards, streams pause by vote; unspent funds remain in the program contract.

25.12 What to watch as we progress

- Handle, RTP drift per title, and live variance versus simulator bands.
- CreatorRoyaltyPaid per quarter and distribution across the catalog.
- Weekly LP utilization, guard triggers, and share price stability.
- Monthly staker distributions as a function of handle and Treasury inflows.
- Adoption of limits, timers, cooling off, and exclusions.
- Governance participation, stream KPIs, and pause events.

25.13 How to verify each milestone

- Check the Version Registry for new addresses, compiler settings, and constructor values.
- For new games, follow a bet from VRF request to payout and fee events in one transaction.
- For new vault policy, read constructor values for per bet caps, concurrent exposure caps, and drawdown steps; compare to public math notes.
- For new programs, match GrowthFunded inflows to program outflows and KPI reports.
- For cards on Starknet, verify deck commitments, shuffle proofs, showdown proofs, and pot settlements per hand.

25.14 The long view

Vault777 grows along two lines: content and proof. New games and studios expand the spectacle. Audit trails, receipts, and constitutional limits keep the truth visible as scale arrives. We do not ask you to trust that the next phase is ready. We show you the receipts that say it is.

26. Metrics That Matter

Numbers are only useful when they are measurable by anyone, repeatable from public data, and tied to decisions. Vault777 publishes a small set of metrics that reflect fairness, cash flow, growth, safety, and discipline. Every metric below can be rebuilt from on chain events without relying on private dashboards.

26.1 Purpose of this section

- Define the canonical metrics for the protocol.
- Show how to compute them from events.
- Set healthy ranges and alert thresholds.
- Tie each metric to actions the DAO or teams can take.

26.2 Definitions and time windows

- Handle equals the sum of settled wager amounts over a period.
- Period windows are daily, weekly, monthly, and quarterly.
- Explorer parity means any number stated publicly must reconcile to event sums anyone can fetch.

26.3 North star metrics

- Handle growth
  What it shows: product adoption.
  How to compute: sum wager amounts from game settlement events for the period.
  Use: informs program sizing and catalog allocation.
- Protocol revenue integrity
  What it shows: fee pipeline correctness.
  How to compute: per wager, confirm CreatorRoyaltyPaid, TreasuryFunded, and GrowthFunded exist in the same transaction; monthly, check TreasuryFunded + GrowthFunded + CreatorRoyaltyPaid equals exactly 2% of handle.
  Use: blocks releases if equality fails.
- Staker distributions
  What it shows: cash flow to VAULT stakers.
  How to compute: monthly sum of RewardAssigned; verify equals 80% of monthly TreasuryFunded.
  Use: signals protocol strength to the DAO.
- Creator income
  What it shows: health of the creator economy.
  How to compute: sum CreatorRoyaltyPaid by creator and by title; track median and tail.
  Use: grades SDK and KOL seasons and catalog diversity.

- LP vault outcome
  What it shows: bankroll performance and policy discipline.
  How to compute: weekly change in NAV and price per share from VaultShareMinted and VaultShareBurned plus per bet PnL events.
  Use: tunes exposure caps and listing tiers.

26.4 Title quality and fairness

- RTP drift by title
  Definition: realized RTP minus published target over a rolling window.
  Healthy range: within published bands for each volatility class.
  Alert: drift outside band for 2 consecutive windows prompts discovery pause until math notes or code are corrected.
- Variance realization
  Definition: realized variance compared to simulator forecast.
  Use: adjusts exposure tiering and Kelly fraction bands.
- Outcome mapping integrity
  Definition: rejection sampling applied for finite sets and documented transforms for continuous outcomes.
  How to compute: reproduce outcomes from randomness proofs using published math notes.
- Title concentration
  Definition: Herfindahl index of handle by title.
  Target: diversified catalog; concentration above threshold triggers listing acceleration in underweighted categories.

26.5 Creator and KOL ecosystem

- CreatorRoyaltyPaid distribution
  Definition: median monthly creator income, top decile share, and Gini coefficient.
  Use: prevents overreliance on one franchise; informs grants and discovery.
- Listing tier progression
  Definition: count of titles graduating from Tier 3 to Tier 2 to Tier 1 each quarter.
  Use: measures SDK pipeline health.
- Attribution accuracy
  Definition: share of handle with on chain campaign codes attached.
  Target: near 100% for funded seasons. Alerts prompt stream pauses until disclosure and tagging are fixed.

26.6 LP policy and risk

- Utilization vs policy bands
  Definition: concurrent exposure used as a % of allowed caps.
  Healthy range: mid band most weeks.

Alert: sustained high band usage with guard triggers escalates to policy review.

- Guard triggers per week
  Definition: count and severity of GuardTriggered events.
  Use: indicates volatility pressure; may tighten or relax caps after review.
- PnL decomposition
  Definition: contribution to weekly PnL by title and by variance class.
  Use: rebalances catalog emphasis without changing game math.
- Drawdown depth and recovery time
  Definition: peak to trough and time to recover in weeks.
  Target: within simulator expectations for chosen fractional Kelly.

26.7 Player experience and cadence

- Time to settle
  Definition: median and 95th %ile from bet submit to outcome.
  Healthy range: stable within service level objectives.
  How to compute: client telemetry or inferred from event timestamps.
- Proof liveness
  Definition: VRF proof success rate and median fulfillment latency.
  Target: proof failure below 0.05% of requests; median fulfillment within expected block windows.
- Session quality
  Definition: average confirmed bets per session and repeat session rate.
  Use: product tuning and accessibility presets.

26.8 Compliance and protection adoption

- Eligibility coverage
  Definition: % of real money bets signed by wallets with a current eligibility attestation.
  Target: 100%. Any failure is a defect.
- Limits adoption
  Definition: % of real money wallets with at least one active deposit or loss limit.
  Use: responsible gaming goals and UX prompts.
- Protection outcomes
  Definition: count of cooling off activations, self suspensions, permanent exclusions.
  Use: allocate resources to education and safe design.
- Play Money reach
  Definition: share of sessions in restricted regions using Play Money.
  Use: content strategy for those audiences.

26.9 Program ROI and spend discipline

- Jackpot efficiency
  Definition: incremental handle attributable to jackpot funding divided by jackpot outflow.
  Use: calibrates jackpot size and cadence.
- Rakeback effectiveness
  Definition: net revenue lift per unit of rakeback by cohort.
  Use: budgets and anti wash rules.
- Creator and KOL season ROI
  Definition: incremental handle and new verified wallets per token streamed, with on chain attribution.
  Use: continue, pause, or redirect streams.

26.10 Governance health

- Proposal throughput and turnout
  Definition: proposals per quarter, average voter participation, unique delegates voting.
  Use: voter education and tooling investment.
- Stream compliance
  Definition: streams paused for KPI misses, late reports, or disclosure violations.
  Use: enforcement consistency and partner discipline.

26.11 Security posture

- Audit coverage
  Definition: % of core modules with current external audits and contest results.
  Target: 100% at launch and before major releases.
- Time to remediate
  Definition: days from finding to fix for medium or low issues.
  Use: team velocity and risk culture.
- Bounty signal
  Definition: findings per quarter and payout totals.
  Use: hotspot identification.

26.12 Reliability and dependency health

- Automation run rate
  Definition: executed upkeeps over scheduled upkeeps.
  Target: above 99.5%. Missed runs must be permissionlessly callable.
- Stale feed ratio
  Definition: display feed reads outside freshness bounds.
  Target: below 0.1% and never used in settlement math.

26.13 How to compute core metrics from events

- Handle
  Sum wager amounts from game settlement events for the period.
- Fee pipeline integrity
  For each settled bet, confirm CreatorRoyaltyPaid, TreasuryFunded, and GrowthFunded in the same transaction.
  Monthly, verify sum(TreasuryFunded) = 0.9% of handle, sum(GrowthFunded) = 1.0% of handle, and sum(CreatorRoyaltyPaid) = 0.1% of handle.
- Staker distributions
  Compute sum(TreasuryFunded) per month, multiply by 80%, and match to RewardAssigned. Reconcile RewardClaimed by address.
- LP vault performance
  Rebuild weekly NAV from per bet results and share movements with EpochStarted, EpochClosed, VaultShareMinted, and VaultShareBurned. Derive weekly price per share and drawdown.
- Creator economy
  Group CreatorRoyaltyPaid by creator over the period. Compute median, top decile, and Gini.
- RTP drift
  For each title, recompute RTP from outcomes and compare to published target in math notes.

26.14 Healthy ranges and alert thresholds

- VRF proof failure below 0.05% of requests.
- Median time to settle within service levels for each title class.
- Title RTP drift within published bands for the trailing window.
- Concurrent exposure within middle 60% of policy band most weeks.
- Guard triggers rare and short in duration; investigate if persistent.
- Attribution coverage near 100% for funded programs.
- Eligibility coverage at 100% for real money bets.

26.15 Example scoreboard for a sample month

Illustrative mechanics, not forecasts.

- Handle equals 1,000,000,000.
- CreatorRoyaltyPaid equals 1,000,000.
- TreasuryFunded equals 9,000,000.
- GrowthFunded equals 10,000,000.
- RewardAssigned equals 7,200,000.
- Median VRF fulfillment equals 2 to 3 blocks; proof failure equals 0.02%.
- RTP drift: all live titles inside bands.

- LP vault utilization averaged 54% of policy band; 1 minor guard trigger, cleared in 8 hours.

Attribution coverage equals 98% for funded seasons.

26.16 Reporting rhythm

- Weekly: handle, vault utilization, guard triggers, VRF liveness.
- Monthly: fee reconciliation, staker distributions, creator income, program ROI, compliance adoption.
- Quarterly: audit coverage, contest outcomes, roadmap progress, governance health, regional reports.

26.17 What the DAO does with these metrics

- Raise or lower exposure tiers based on RTP drift and variance.
- Redirect Growth budget to top ROI programs and pause low performers.
- Adjust SDK listing criteria and simulator requirements.
- Commission audits or contests for hotspots.
- Improve onboarding and protection UX where adoption is weak.

26.18 Verifier checklist

- Rebuild handle and fees from settlement events and confirm the fixed 2% split with a 0.1% creator royalty from Treasury.
- Match RewardAssigned to 80% of monthly TreasuryFunded.
- Reconstruct LP price per share and drawdown from weekly events.
- Compute creator income distribution and concentration.
- Verify VRF proof liveness and Automation run rates in logs.
- Confirm title RTP drift sits within published bands.

26.19 Philosophy in one line

If a number cannot be rebuilt from receipts, it does not belong in this paper. Vault777 measures what matters and makes it trivial for anyone to verify.

27. Risk Framework and Mitigations

Risk is not a paragraph at the end. It is a system of limits, receipts, and playbooks that runs every day. This section names the major risks, how they can appear, what we do to prevent or contain them, and what you can verify on chain.

27.1 Safety model in one view

- Self custody. Player funds live in personal smart wallets. The protocol does not hold omnibus balances.
- Immutable production. Live games, router, vaults, staking, and registries are non upgradable and ownerless.
- Proof before payout. No Chainlink VRF proof means no payout.
- Separation of pools. Treasury, Growth programs, LP vault, and user wallets are distinct and enforced by contracts.
- Migration only change. Improvement ships as new audited versions. Users opt in by migrating.

27.2 Smart contract and protocol bugs

What can go wrong
Logic errors in settlement, fee routing, vault math, staking assignments, or registry checks.
Mitigations
Specification first; deep unit tests and property fuzzing; simulator parity for RTP and variance; griefing and gas analysis; differential tests against reference models; verified source on the explorer; Version Registry with constructor values.
External review
Independent CertiK audit is in progress. The public report, responses, and any remediations will be published and this paper updated with links and version references.
Containment
UI de lists the affected version and stops sponsorship. Funds remain in user wallets. A fixed audited version is listed and users migrate voluntarily.
What to verify
Immutability flags on live contracts; audit links; event integrity for settlement and fee splits in any bet.

27.3 Oracle and randomness risk

What can go wrong
Delayed VRF fulfillment; invalid proofs; Automation misses; stale display feeds.
Mitigations
Proof verification on chain; published timeouts that revert safely; no local or fallback RNG in live titles; Automation scoped to narrow functions and callable permissionlessly; price feeds used for displays only with freshness checks.

What to verify
Each settled bet contains the VRF request id, proof verification status, mapped outcome, payout, and fee events in one transaction.

27.4 Layer 2 infrastructure risk

What can go wrong
Sequencer downtime or congestion on Arbitrum; settlement delays to L1; partial network outages.
Mitigations
Self custody by default; atomic settlement that reverts cleanly on timeouts; status page and UI notices; conservative pending and confirming states; no reliance on L1 settlement timing for gameplay or claims.
What to verify
Bets either settle or revert with funds in the user wallet; no partial states.

27.5 Economic and bankroll risk

What can go wrong
High variance runs or correlation between titles produce drawdowns for LPs.
Mitigations
Kelly based policy with per bet caps, concurrent exposure caps, drawdown guards; weekly epochs to prevent mid week dilution; listing tiers sized by simulators; drift alarms that pause discovery when live RTP leaves bands.
What to verify
Constructor values for caps and guard steps; GuardTriggered events; vault PnL rebuilt from events.

27.6 Liquidity and redemption risk for LPs

What can go wrong
Many LPs try to exit at once or during a volatile week.
Mitigations
Seven day epochs; exit notice filed 3 days before close; one day claim window; redemptions at deterministic closing price; no slippage from order books; drawdown guards reduce exposure automatically.
What to verify
EpochStarted, EpochClosed, VaultShareMinted, VaultShareBurned, and closing price math each week.

27.7 Staker cash flow variability

What can go wrong
Handle falls; Treasury inflows decline; monthly distributions vary.

Mitigations
No promised rate; rewards tied to real router inflows; auto compound credit for unclaimed rewards; operational budgets sized from the remaining 20% after distributions.
What to verify
Sum TreasuryFunded per month; confirm RewardAssigned equals 80% of that sum.

27.8 Governance and capture risk

What can go wrong
Low turnout; agenda capture; rushed proposals.
Mitigations
Delegation support; quorum and approval thresholds; timelocks; RFC process before on chain vote; constitutional limits that forbid editing live contracts or seizing user funds; streams with KPIs and pause conditions instead of lump sums.
What to verify
Proposal trail in the forum; on chain vote; timelock; executed payload; stream parameters and events.

27.9 Compliance and regional risk

What can go wrong
Users in restricted regions access real money; rules change quickly; partners miss disclosure standards.
Mitigations
Geoblocking in the interface; on chain eligibility attestations for every real money bet; Play Money Mode everywhere; DAO controlled issuer lists via new audited deployments; strict KOL standards; streams paused on violations.
What to verify
Real money bets revert from wallets without a current eligibility attestation; campaign codes present on fee events for funded seasons.

27.10 Creator and SDK risk

What can go wrong
Unsafe parameters; biased mapping; unreviewed math; malicious code in custom titles.
Mitigations
Audited templates; parameter bounds; simulator outputs submitted at listing; published math notes; conservative exposure tiers; discoverability paused on drift; on chain CreatorRoyaltyPaid equals 0.1% of handle per wager.
What to verify
Listing packet references; template version; simulator results; math notes; royalty events to the registered address.

27.11 Collusion and fair play in card games

What can go wrong
Soft play or coordinated seats; timing abuse; table sniping.
Mitigations
Randomized seat queues; action timers enforced by contract; analytics on timing and sizing; UI removes discovery for flagged tables while funds remain safe; transparent reviews that cite transaction references.
What to verify
Queue and timer events; review logs; unchanged proof trail for hands.

27.12 Third party dependency risk

What can go wrong
On ramp incidents; attestation issuer downtime; front end CDN outages.
Mitigations
Separation of duties; wallet remains usable with public tools; real money reverts gracefully without attestations; status page; multiple endpoints; Play Money Mode unaffected.
What to verify
Wallet can interact with contracts directly; attestation absence causes revert without touching funds.

27.13 Bridge and cross chain settlement risk

What can go wrong
Mirroring delays for Starknet card fees to Arbitrum Treasury; bridge outages.
Mitigations
Fees accrue visibly on Starknet; DAO approved settlement flow batches transfers; Treasury reporting shows mirrored receipts; gameplay and payouts do not depend on cross chain reads.
What to verify
Receipts on Starknet during a delay; later Treasury inflows that reconcile to prior Starknet totals.

27.14 Market, competition, and adoption risk

What can go wrong
Competing platforms, shifting narratives, slower creator uptake.
Mitigations
Focus on proofs and UX; SDK and creator seasons; co marketing with Arbitrum and Chainlink; Play Money reach in restricted regions; responsible growth programs funded from the 1% Growth slice.
What to verify
CreatorRoyaltyPaid growth; catalog size and tier graduation; handle by title class.

27.15 Data and privacy risk

What can go wrong
Leakage of personal data or identity documents.
Mitigations
No identity documents in game systems; eligibility as yes or no flags without PII in state; on ramps handle KYC where required; data minimization across code paths.
What to verify
Contract storage and events contain no PII; attestation structure reveals no personal fields.

27.16 User error and account recovery

What can go wrong
Lost devices; phished credentials; mistaken transfers.
Mitigations
Passkeys; optional guardians with time locked recovery; device management and logout timers; clear address confirmation; education on phishing and impostors; no support for reversing on chain transfers.
What to verify
Guardian and recovery flows in wallet factory; time lock events.

27.17 Program abuse and wash

What can go wrong
Farming rakeback or seasons through circular flows or self dealing.
Mitigations
Anti wash thresholds; cohort checks; velocity limits; streams paused if KPIs or policy are violated; public attribution codes on fee events.
What to verify
Program rules in code; cohort level receipts; stream pause events.

27.18 Known limitations

- Variable staking payouts. Rewards follow handle and can decline in slow periods.
- L2 to L1 withdrawal times. Do not affect gameplay or staking claims.
- No admin pause. Immutability protects users but requires migration to fix defects. The UI and sponsorship controls act as the containment layer.

27.19 Incident response

- Detect. Monitors flag oracle lag, event gaps, drift breaches, or abnormal utilization.
- Communicate. Status page and in app notices explain scope and safe behavior.
- Contain. UI de lists affected versions; sponsorship pauses; high variance titles lose discovery.

- Resolve. New audited version deployed and listed by vote; structured post mortem cites transaction references and lessons.
- Restore. Discovery resumes with receipts linked from the incident report.

27.20 Verifier checklist

- Confirm no owner, no proxy, and no mint on token, router, vaults, staking, and registries.
- For any settled bet, confirm the VRF proof, mapped outcome, payout, and CreatorRoyaltyPaid, TreasuryFunded, GrowthFunded in one transaction.
- For a month, sum TreasuryFunded and match 80% to RewardAssigned.
- For a vault week, reconstruct price per share using EpochStarted, EpochClosed, VaultShareMinted, VaultShareBurned, and per bet PnL events.
- For a creator title, confirm CreatorRoyaltyPaid equals 0.1% of handle to the registered address.
- For real money, confirm bets revert from wallets without valid eligibility attestations.
- For cards, confirm deck commitments, shuffle proofs, and showdown proofs per hand.

27.21 Philosophy in one line

A credible casino names its risks and shows its receipts. Vault777 prevents what it can, contains what it cannot prevent, and leaves a public trail for everything else.

28. Responsible Gaming and Compliance Governance

Protection is not a banner. It is a system that stays on even when no one is looking. This section describes how Vault777 governs responsible gaming and regional compliance as a living program with code, policy, reporting, and public receipts.

28.1 Purpose and scope

The goal is simple to state and strict to execute: real-money play only where permitted, only by eligible adults, with tools that help users stay in control. Governance covers four areas:

1. Product controls in contracts and in the interface.
2. Regional access and eligibility attestations.
3. Marketing and creator standards.
4. Public reporting and enforcement.

28.2 First principles

- Self custody always. Player balances live in personal smart wallets.
- Proof before payout. No Chainlink VRF proof means no payout.
- Minimal data. Eligibility is a yes or no attestation without PII in game state.
- Immutable production. Live contracts are non upgradable and ownerless. Change is migration only.
- Transparency. Every meaningful decision emits events that anyone can audit.

28.3 Roles and responsibilities

- The DAO sets policy, funds programs by stream, lists or removes eligibility issuers, and approves new audited versions.
- A small Compliance Stewardship Group can be chartered by the DAO to prepare proposals, review reports, and recommend pauses when rules are broken.
- Program owners run day-to-day streams under KPIs and stop conditions.
- Security and data teams maintain monitors, proofs, and public dashboards.
- None of these roles can edit live contracts or seize user funds.

28.4 What governance can and cannot change

Can set or change:

- Eligibility issuers through a new audited deployment and DAO vote.
- Program budgets and standards, including KOL disclosure rules.
- UI geoblocking bundles and responsible-gaming copy.
- Listing tiers and exposure caps for titles by listing a new audited version.

Cannot change:

- RTP or fees in a live title.

- Settlement paths, fee routing, or staking math in live contracts.
- Any user balance in a personal wallet.

28.5 The policy workflow

1. Author a forum RFC that states the goal, legal basis, risks, and metrics.
2. Collect public comment for a fixed window.
3. Post the on-chain payload with stream parameters or registry updates.
4. Vote with quorum and approval thresholds.
5. Timelock for review.
6. Execute and publish a plain-language summary with links to code, addresses, and events.

28.6 Controls implemented in code

- Eligibility Registry: real-money bets read a non-transferable attestation on chain. Missing or expired attestations cause clean reverts.
- Player Protection Registry: deposit and loss caps, session timers, cooling off, self suspension, and permanent exclusion are stored on chain. Official games and the paymaster consult this registry before accepting a bet or sponsoring gas.
- Paymaster policy: sponsorship is denied for ineligible or protected wallets and follows velocity limits.
- Version Registry: records addresses, compiler settings, and constructor values for all compliance-critical modules.

28.7 Reporting cadence and required metrics

Monthly public reports include:

- Eligibility coverage: share of real-money bets signed by wallets with current attestations. Target equals 100%.
- Limit adoption: share of real-money wallets with at least one active limit.
- Protection outcomes: counts for cooling off, self suspension, and permanent exclusion.
- Regional changes: issuers added or removed, geoblocking updates, disclosure copy updates.
- Program integrity: attribution coverage for funded seasons and KPI status.

Quarterly reports include incident reviews, audit status, and a summary of enforcement events.

28.8 Independent assurance

- External audit: CertiK review in progress. The public report and our response will be linked here.
- Open contests and bounties: targeted at protection registries, paymaster policy, eligibility checks, and table integrity for cards.

- Reproducible analyses: SDK scripts that rebuild protection and eligibility decisions from events.

28.9 KOL and creator compliance

- Standards: age-gating, clear disclosures, no targeting of minors, regional integrity for links.
- On-chain attribution: campaign codes attached to fee events so cohorts are measured without screenshots.
- Enforcement: violations can pause or terminate streams by DAO vote. Unspent tokens remain in the program contract.
- Escalation path: warning, pause, termination, public note with evidence references.

28.10 Design ethics in the client

- Truthful spectacle: no near-miss tricks that imply biased outcomes; the client reveals results only after settlement.
- Pacing aids: reality checks, break prompts, and optional session timers.
- Accessibility: high-contrast and low-stimulus modes; clear state labels for pending and confirmed.
- Family settings: Play-Money profiles in regions where allowed, with strict blocks on real-money access.

28.11 Global adaptation without changing live contracts

- Regional bundles: the UI loads a signed bundle that maps regions to access modes, disclosures, and resource links.
- Speed of change: bundles update quickly to reflect new rules while live contracts remain immutable.
- Provenance: the bundle hash and signer appear in the status page and changelog.

28.12 Incident governance

Trigger conditions include oracle lag beyond thresholds, eligibility issuer outage, protection enforcement gaps, or marketing violations. The playbook:

1. Detect and post a signed status update.
2. Contain by de-listing affected versions in the UI or pausing streams.
3. Migrate to a new audited version if code is involved.
4. Publish a post-mortem with timeline, transaction references, and fixes.
5. Track corrective actions in the public roadmap.

28.13 Appeals and transparency

- Users can request a review of protection decisions through a signed ticket that cites transaction references.
- Creators and KOLs can appeal enforcement outcomes on the forum with on-chain evidence.
- All outcomes are summarized by period with references to the relevant events.

28.14 Verifier checklist

- Confirm Eligibility Registry and Player Protection Registry addresses in the Version Registry.
- Reproduce a real-money bet reverting cleanly from a wallet without an attestation.
- Toggle a deposit or loss limit and confirm the bet path is blocked until the window resets.
- Inspect paymaster sponsorship events that deny gas to protected wallets.
- Match campaign codes in fee events to funded seasons and public KPI reports.
- Confirm streams paused for violations show stop events and return of unspent tokens.

28.15 Legal framing

This section is informational. It describes controls, governance, and public commitments. It is not legal advice. Users are responsible for understanding and following the rules in their jurisdiction.

28.16 The commitment in one line

Fairness and protection are co-equal. Vault777 makes games that people want to play and binds that experience to rules that are public, enforceable by code, and visible in receipts.

29. Closing and Pre-Launch Resources

Vault777 is pre-launch. Mainnet is targeted for the end of November, subject to audit clearance and final readiness checks. A public testnet has been running to validate proofs, fee routing, vault policy, and SDK flows. This section tells you exactly what you can verify today, what will be available at mainnet, and where to find official resources.

29.1 Where we are today

Vault777 is currently in the pre-launch stage. The public testnet is live and has already demonstrated that every core system, from randomness verification to fee routing and vault management, performs as designed. Mainnet deployment is targeted for the end of November, following full audit clearance and final readiness checks.

Audit status

An independent audit by CertiK is in progress. The public report and our official response will be released once the review is complete. This whitepaper will then be updated to include the report link, version references, and any remediation notes. No production deployment will occur until all critical and high-severity findings are resolved.

Current scope

- Public testnet operational with all core systems, randomness proofs, fee routing, and staking logic functioning in simulation.
- On-chain events already confirm full settlement integrity through verifiable receipts.
- Treasury and Growth fee routing have been validated, along with the fixed 2% fee model and the 1% plus 1% split.
- Real-money play is disabled until the mainnet launch and the activation of regional eligibility attestations.
- SDK and creator publishing will begin after mainnet, once the dedicated SDK audit and DAO approval are complete.

Status of new features

- Email and password onboarding, Visa card top-up, and capped gas sponsorship will be introduced after TGE as part of the Web2-style accessibility update.
- Creator SDK and KOL programs are in development and will go live post-launch following additional auditing and DAO approval.

At this stage, Vault777 is focused on completing audits, publishing the final report, and preparing the mainnet deployment that will bring provable fairness, on-chain transparency, and non-custodial gameplay to Arbitrum.

29.2 What you can do today on testnet

- Play with practice chips in Play-Money Mode using the same proofs and mapping logic.
- Open any testnet transaction and verify the Chainlink VRF request id, proof verification status, mapped outcome, payout, and fee events in one transaction.
- Review SDK sample titles, creator royalty events at 0.1% of handle, and proof pages.
- Rebuild fee splits from events to confirm the fixed 2% model with 1% to Treasury, 1% to Growth with the bankroll, 0.1% creator royalty funded from Treasury, and 0.9% net to Treasury.
- Dry run staking math on test data by matching monthly TreasuryFunded sums to RewardAssigned at 80%.

No real-money play, staking, or LP deposits are available before mainnet.

29.3 What becomes available at mainnet

At mainnet release, Vault777 launches with a limited selection of verifiable games. Players will be able to connect a supported Web3 wallet and play the first live titles on Arbitrum. Each wager will settle only after a verified Chainlink VRF proof is confirmed on chain, and all payouts and fee events will be visible through public receipts.

Available at mainnet

- Dice – instant on-chain results using Chainlink VRF with transparent payout math.
- Coin Flip – a two-outcome game built entirely on verifiable randomness.
- Rock Paper Scissors (RPS) – head-to-head format using on-chain proofs for each hand.
- Plinko – a fully on-chain physics-style drop game with provable randomness.
- Video Poker – five-card draw using on-chain deck generation and verification.
- Slots – Original slot with clear RTP shown to players for transparency.
- Play-Money Mode available globally with identical proofs and math so players can test gameplay without using real funds.
- Gradual rollout of real-money play region by region as on-chain eligibility attestations become available and verified.

Available after TGE

- Additional 3D titles including roulette, blackjack crash, and additional slot releases.
- Staking with monthly epochs that distribute 80 % of Treasury inflows to stakers by contract.
- LP vaults with weekly epochs, per-bet and concurrent exposure caps, drawdown guards, and fractional-Kelly policy.

- Growth programs for jackpots, rakeback, creator and KOL seasons, and approved buybacks or liquidity support.
- Web2-style onboarding with optional email and password login, Visa card top-up, and capped gas sponsorship for early sessions, activated only after its audit.
- Creator SDK and KOL programs launched post-mainnet following their dedicated audits and DAO approval.
- Governance handover after TGE, when the DAO lists new versions, sets exposure policy, and streams budgets. All live contracts remain immutable and can change only through migration to new audited versions.

29.4 Design commitments that carry into launch

- Fairness. No proof means no payout.
- Self custody. Player balances live in personal smart wallets.
- Immutability. Live games, router, vaults, staking, and registries are non-upgradable and ownerless.
- Separation of pools. Users, LP vault, Treasury, and programs are distinct. Programs cannot touch player balances or the bankroll.
- Receipts. Outcomes, fees, royalties, distributions, program spends, and policy gates emit events that anyone can audit.

29.5 How to verify readiness

- Review the CertiK report once published. This paper will link to it and document any changes.
- Check the Version Registry for addresses, compiler settings, and constructor values for every listed module.
- On testnet, follow a wager from VRF request through payout and fee events.
- Recompute fee splits and confirm the 2% model with 0.1% creator royalty and 0.9% net to Treasury.
- Rebuild a staking month from TreasuryFunded and match 80% to RewardAssigned when mainnet is live.

29.6 Versioning and change log

Every update to this paper includes a date, a summary of the change, and links to the proposal or audit that motivated it. New contract versions are listed only after audit and DAO approval. Old versions remain visible on chain for historical receipts.

29.7 Final word before launch

Vault777 pairs a premium 3D casino with proofs you can verify. The testnet has shown the system works as designed. Mainnet brings the economics and programs to life. When the audit

is public, this paper will link directly to it and to the exact versions deploying. Until then, use the testnet to verify the loop, read the receipts, and get ready to participate as a player, creator, LP, staker, or reviewer on day one.

30. Conclusion: Proof Over Promise

Vault777 is pre-launch. The design is simple to state and strict to execute: outcomes are proved before they are revealed, funds stay in personal smart wallets, fees and royalties are routed by code, production contracts are immutable and ownerless, and every material action leaves a receipt.

30.1 What we have proved on testnet

- Fairness before spectacle. Each wager settled only after a Chainlink VRF proof was verified on chain. The client revealed results after settlement.
- Public accounting. Every settled bet emitted outcome, payout, CreatorRoyaltyPaid, TreasuryFunded, and GrowthFunded in a single transaction. Splits were fully reconstructible from events.
- Disciplined bankroll. Weekly LP epochs, per-bet caps, concurrent exposure caps, and drawdown guards behaved as designed.
- Staker math dry run. Monthly RewardAssigned matched 80% of TreasuryFunded for the period, exactly as specified.

30.2 What will ship at mainnet

Subject to audit clearance and final readiness:

- Immutable core. Live games, router, LP vaults, staking, registries, and programs will be non-upgradable and ownerless. Change will be by migration to new audited versions listed by DAO vote.
- Fixed economics in code. Each wager will pay a 2% protocol fee. The split will be 1% to Treasury and 1% to Growth with the bankroll. From the Treasury share, 0.1% of handle will be routed to the registered title-owner address in the same transaction. For official titles at launch this address will be a protocol holder. Treasury will net 0.9% of handle, and 80% of monthly Treasury inflows will be distributed to stakers by contract.
- Responsible access. Real-money play will require an on-chain eligibility attestation and will be geoblocked in restricted regions. Play-Money Mode will be available globally with identical proofs and mapping.

30.3 What comes after mainnet

- SDK and creator publishing. The SDK will open after shortly after mainnet. When listed SDK titles go live, creators will receive 0.1% of handle on every wager in their titles, paid automatically in the same transaction. Until then, royalties for launch titles route to the protocol address designated for house IP.
- Cards on Starknet. Hold’em first, then Omaha, with deck commitments, shuffle proofs, encrypted deals, action timers, and showdown proofs.
- Program scale. Growth with the bankroll will fund jackpots, rakeback, creator and KOL seasons, grants, and approved buybacks or liquidity support through ring-fenced contracts.

30.4 Responsibilities we accept

- Audit first. A CertiK audit is in progress. The public report and our response will be published. This paper will update with links, version references, and any remediations.
- Status transparency. If an issue occurs, a signed status post will describe scope, containment, and next steps. If code is involved, a new audited version will be listed and the UI will steer discovery to it.
- Program discipline. Treasury and Growth outlays will run as streams with KPIs and pause conditions. Misses will pause streams by vote.
- Compliance by architecture. Eligibility attestations, geoblocking, and the Player Protection Registry will be enforced in the interface, the paymaster, and contracts, with events for verification.

30.5 Invitation by role

- Players. Use the testnet to experience the loop and proof pages. At mainnet you will play from your own wallet with verifiable outcomes.
- Liquidity providers. Review policy and receipts now. At mainnet you can supply the bankroll through weekly epochs with Kelly-based caps and drawdown guards.
- Stakers and delegates. Prepare governance and staking participation. At mainnet, staking will distribute 80% of monthly Treasury inflows by contract and voting will steer listings, exposure policy, and streams.
- Creators and KOLs. Join the SDK waitlist. Publishing will open post-launch. When listed, your titles will earn 0.1% of handle per wager automatically.
- Auditors and reviewers. Rebuild testnet accounting today. At mainnet, match addresses and constructor values to the Version Registry and audit artifacts.

30.6 Quick verification checklist

1. On testnet, open any settled wager and confirm VRF request id, proof verification status, mapped outcome, payout, and fee events in one transaction.
2. Sum a month of TreasuryFunded and match 80% to RewardAssigned in the staking module when mainnet is live.
3. Rebuild a vault week from per-bet results and share events; confirm the closing price per share.
4. After SDK launch, verify that listed creator titles emit CreatorRoyaltyPaid equal to 0.1% of handle to the registered creator address.

30.7 Success indicators after launch

- Scale without drift. Handle grows while RTP and variance remain inside published bands.

- Predictable distributions. Monthly staker payouts scale with Treasury inflows and match router receipts.
- Bankroll discipline. LP utilization stays within policy bands with few guard triggers.
- Creator economy activation. After SDK launch, CreatorRoyaltyPaid grows quarter over quarter and broadens beyond the top decile.
- Responsible adoption. Eligibility coverage at 100% for real-money bets; limits and exclusions used and respected.
- DAO participation. Well-formed proposals, healthy turnout, streams paused when KPIs are missed.

30.8 What we will not do

We will not custody user funds in omnibus wallets.
We will not ship upgradeable production contracts.
We will not change RTP or fees in a live title.
We will not use hidden fallback randomness in live versions.
We will not promise fixed yields or price outcomes.
We will not bypass self-exclusion or regional rules.

30.9 Final words

Vault777 pairs a premium casino experience with receipts that do not blink. The testnet has shown the loop works as designed. Mainnet brings the full economics and governance to life. SDK publishing will open after launch so creators can build on the same provable foundation. If you are here to play, enjoy the experience. If you are here to audit, the proofs are ready. If you are here to build, the SDK is next.

Welcome to Vault777.
A casino that cannot lie.
A community that grows by proof.

31. Endgame and Permanence

A credible protocol does not depend on a single company staying active. Vault777 is designed so that the best ending is no ending at all. Contracts keep working, users keep custody, revenues route by code, and the DAO can become almost silent while the system runs. This section explains the protocol endgame, how titles are retired, how users exit, and what happens under success or stagnation.

31.1 What “endgame” means here

- Immutability is the guarantee. Production games, routers, LP vaults, staking, registries, and programs are non upgradable and ownerless. No admin keys exist.
- Self custody is the fallback. Player balances live in personal smart wallets. Even if all interfaces vanish, users retain funds and can interact with contracts through public tools.
- Receipts are the record. Outcomes, fees, royalties, program spends, and distributions remain on chain and auditable forever.

31.2 If adoption grows for years

- Content expands. More audited titles, more creator catalogs after SDK launch, more jackpots and seasons, more languages and accessibility presets.
- Cash flows scale linearly with handle. The fixed 2% fee continues to split 1% to Treasury and 1% to Growth with the bankroll. From the Treasury share, 0.1% of handle pays the title owner address automatically and 0.9% nets to Treasury. Each month, 80% of Treasury inflows assign to stakers by contract.
- Governance becomes minimal. The DAO focuses on listing new audited versions, refining exposure policy, and maintaining standards. Most budgets run as streams with KPIs and pause conditions.

31.3 If growth slows or stops

- Safety first. Nothing breaks. Funds remain in user wallets. LP vaults complete their current epoch and keep weekly cadence. Staking runs monthly snapshots.
- Programs downshift. The DAO can pause Growth and operating streams. Treasury distributions to stakers continue to follow actual inflows.
- Open exit paths. LPs redeem at the epoch close they elected. Stakers withdraw during their exit window. Players simply hold their wallet balances. Titles remain playable until the DAO de-lists discovery in the interface.

31.4 How a title is sunset

- Trigger conditions. Low usage, math superseded by a new version, or compliance reasons.
- Process. The DAO votes to de-list discovery in the official UI. The old contract remains on chain and verifiable; the new audited version is listed in the Version Registry.
- Creator and user outcomes. Royalties and payouts continue to function on the old title for anyone who still calls it. Discovery in the UI points to the new version once listed.

31.5 If the official interface goes offline

- Users retain control. Wallets are personal and non custodial. Players can use public explorers or community front ends to read, claim, or withdraw.
- Contract addresses remain canonical. The Version Registry on Arbitrum keeps the authoritative list of game, router, vault, staking, and program addresses with compiler settings and constructor values.
- Community resilience. Any third party can serve new interfaces that read the same contracts and events.

31.6 DAO endgame posture

- Constitutional constraints remain. The DAO cannot edit live contracts, seize user funds, or change fees or RTP in a live title. Change is migration only.
- Minimal overhead. When things are stable, governance does very little beyond stream renewals, listings, and compliance upkeep.
- Archive policy. Proposals, streams, and audits are archived with links to events. The Version Registry serves as the permanent index.

31.7 End of program or end of season

- Streams stop cleanly. When a program ends or is paused, unspent tokens remain in the program contract.
- Receipts remain. Cohort codes, payouts, and KPI results stay on chain and in the report archive for later analysis.

31.8 End of epoch procedures that never change

- LP vaults. Seven day epochs. Exit requests filed 3 days before close. Claims for 1 day after close. Redemptions settle at the deterministically computed closing price.
- Staking. Monthly snapshots. 3 day claim window. Exit requires notice filed 14 days before the next epoch opens. Rewards pay in the settlement asset.

31.9 What happens to royalties in the endgame

- Launch titles. Until SDK publishing begins, royalties route to the protocol's IP address as recorded in events.
- After SDK launch. Listed creator titles receive 0.1% of handle per wager automatically. If a creator leaves, their existing titles continue to pay their registered address until the DAO de-lists the title from discovery or a new audited version is listed.

31.10 Data persistence and external services

- Everything that matters is on chain. Settlement, payouts, fee splits, royalties, vault PnL, staking assignments, and program spends are events.
- If dependencies degrade. Bets either wait within published timeouts or revert cleanly. No local randomness or hidden feeds are substituted.
- Status and artifacts. Audit reports, math notes, and release artifacts are mirrored in multiple locations and referenced by hash.

31.11 If regulation changes suddenly

- Interface adapts. Geoblocking and disclosure bundles update. Real-money access by attestation remains required.
- Contracts remain predictable. Live contracts do not change. If new rules require different gates, a new audited version is deployed and listed. Users migrate voluntarily.

31.12 If the DAO wanted to wind the protocol down

- What can be turned off. The official UI, gas sponsorship, Growth streams, and operating streams.
- What cannot be turned off. Live contracts. Players retain wallets. Titles remain callable. Any remaining handle still routes fees, royalties, and staker assignments by code.
- How users exit. LPs run out their epoch and redeem. Stakers exit at their window. Players withdraw at will. The historical receipts remain on chain.

31.13 Five permanent guarantees

1. Your funds stay yours. Balances live in your smart wallet.
2. No hot edits. Live games, vaults, routers, staking, and registries are immutable.
3. Proof before payout. No VRF proof means no payout.
4. Separation of pools. Programs cannot touch the LP vault or user balances.
5. Receipts forever. Outcomes, fees, distributions, and programs are reconstructible from events.

31.14 The practical ending

Protocols do not retire the way companies do. In the true endgame, Vault777 becomes mostly maintenance, with new content and governance changes shipping only as needed. If activity persists, cash flows continue by rule. If activity fades, no one loses custody and everyone can exit on schedules set in code. The record remains public either way.

31.15 The invitation that remains

Use the testnet to verify the loop. At mainnet, verify the receipts. Participate where you prefer: as a player, an LP, a staker, an auditor, and later as a creator when SDK publishing opens. The ending is not a shutdown. The ending is permanence with proofs that outlast any single team.

Appendix A. Glossary and Notation

Handle: total settled wager amount over a period.
Protocol fee: fixed 2% of handle deducted per wager.
Creator royalty: 0.1% of handle paid per wager to the title owner address in the same transaction. At launch this address belongs to the protocol for house IP. After SDK go live it is the listed creator address.
Treasury net: 0.9% of handle received by Treasury after creator royalty is paid from the Treasury share.
Growth with the bankroll: 1.0% of handle routed to ring-fenced program contracts.
Staker pool: 80% of monthly Treasury inflows distributed to VAULT stakers.
Epoch: fixed accounting window. LP vaults use weekly epochs. Staking uses monthly epochs.
Per-bet cap: maximum worst-case loss the vault accepts from a single wager expressed as a % of vault value.
Concurrent exposure cap: maximum sum of worst-case losses across unsettled wagers.
Drawdown guard: automatic scaling down of exposure after defined equity drops.
Kelly fraction: fraction of full Kelly used for portfolio sizing.
RTP: long-term return to player.
Version Registry: canonical on-chain list of official contracts with compiler settings and constructor values.
Eligibility attestation: non-transferable on-chain credential required for real-money access.
Player Protection Registry: on-chain limits, timers, cooling off, self suspension, and permanent exclusion.
Play-Money Mode: identical proofs and math without real funds.

Appendix B. Event Recipes for Verifiers

One settled wager

- Confirm outcome and payout events from the game.
- Confirm CreatorRoyaltyPaid equal to 0.1% of handle to the registered title owner.
- Confirm TreasuryFunded equal to 0.9% of handle.
- Confirm GrowthFunded equal to 1.0% of handle.

All appear in the same transaction.

Monthly staker assignment

- Sum TreasuryFunded for the calendar month.
- Multiply by 80%.
- Match the result to RewardAssigned in the staking module.
- Trace RewardClaimed entries by address.

LP vault week

- Read EpochStarted, EpochClosed, VaultShareMinted, VaultShareBurned.

- Rebuild price per share as vault net asset value divided by total shares.
- Reconcile per-bet PnL from settlement events.

Compliance gates

- Attempt a real-money bet from a wallet without an eligibility attestation. Expect a clean revert.
- Set a loss limit in the Player Protection Registry. Confirm that real-money wagers are blocked until the window resets.

Appendix C. Version Registry Fields and Release Checklist

Per contract fields

- Network and address.
- Compiler version and settings.
- Constructor values.
- Bytecode and ABI hashes.
- Linked libraries and oracle endpoints where applicable.
- Deployer address and timestamp.
- Commit hash and artifact hash.

Release checklist before mainnet

- CertiK report public, zero critical and zero high issues open.
- Source verified with exact compiler settings.
- Version Registry populated for games, router, vaults, staking, programs, registries, and paymaster.
- Status page live with signed incident posts and runbooks.
- Reference verification scripts published.

Appendix D. Game Math Reference

Finite sets such as roulette

- Use rejection sampling to map the verified random value to the outcome set.
- Publish the mapping function and RTP target.

Continuous outcomes such as dice or crash

- Use documented transforms from uniform to target distributions.
- Publish hit rates, volatility class, and exposure caps.

Fairness rule

- No Chainlink VRF proof means no payout.

- Client reveals outcomes only after settlement.

Appendix E. Security Test Plan Summary

Tests required to pass

- Deep unit tests and invariant checks.
- Property-based fuzzing with seeded runs.
- Differential tests against a reference model for settlement and fee routing.
- Simulator parity for RTP and variance bands.
- Griefing and gas analysis on hot paths.
- Storage layout checks and event coverage thresholds.

External assurance

- CertiK audit in progress. Report link, responses, and version references will be attached in Section 21 and mirrored in the Registry.

Post-launch

- Public bounty scope for settlement paths, fee router, vault policy, registries, paymaster, and cards once live.

Appendix F. Eligibility and Attestation Profile

Attestation contents

- Issuer address, subject wallet, validity window, rule id.
- No personal data in contract state.

Revocation

- Issuers publish revocation events per rule id.
- Contracts check revocation before accepting bets.

Governance of issuers

- Adding or removing issuers requires a new audited deployment and a DAO vote.
- The Registry records current issuers and versions.

Appendix G. SDK and Listing Policy Preview

Status

- SDK publishing opens after mainnet.

Submission packet

- Bytecode and ABI, math notes, simulator outputs, parameter bounds, creator royalty address, asset rights statement, audit references if any.

Listing tiers

- New titles start with conservative exposure and graduate only after live RTP and variance remain inside published bands for a minimum sample.

Royalty

- 0.1% of handle per wager paid automatically to the registered creator address once SDK titles are live.

Appendix H. KOL Standards and Attribution

Standards

- Age-gating, accurate disclosures, responsible gaming resources, regional integrity for links.
- No targeting of minors.

Attribution

- Campaign codes attached to fee events for on-chain cohort measurement.

Enforcement

- Streams are paused or terminated by DAO vote for violations.
- Unspent tokens remain in the program contract.

Appendix I. Accessibility and Performance

Accessibility

- Language packs, text scaling, color-blind palettes, high-contrast mode, low-stimulus mode.

Performance budgets

- Animation frame budgets per title class.
- Asset size caps and fallbacks for low-spec devices.

Truthful choreography

- Visuals and audio fire only after settlement events land.

Appendix J. Data Handling and Privacy

Data minimization

- Game contracts do not store identity documents, card data, or analytics.

Separation of duties

- On-ramps handle KYC where required and chargebacks.
- Protocol handles wallets, games, receipts, and registries.

Transparency

- Compliance bundles, issuer lists, and status posts are signed and archived with hashes referenced in the Registry.

Appendix K. Legal and Risk Notices

No promises of yield or price

- Rewards vary with handle and are paid from Treasury inflows only.

Regional rules

- Users are responsible for understanding and following local laws. Real-money play requires an eligibility attestation and is unavailable in restricted regions.

Immutability

- Live contracts are not upgradeable or pausable. Improvements ship as new audited versions that users can adopt voluntarily.

Appendix L. Incident Response Playbook

- Trigger examples
- Oracle latency beyond thresholds.
- Event gaps on settlement paths.
- RTP drift outside bands.
- Eligibility issuer or on-ramp outage.

Steps

- Detect and publish a signed status update.
- Contain by de-listing affected versions in the UI and pausing sponsorship.
- Remediate with a new audited version if code is involved.
- Publish a post-mortem with timeline and transaction references.

- Track corrective actions in the public roadmap.

Appendix M. Document Control and Change Log

Every update includes
- Date, author, summary of change.
- Links to forum RFC, on-chain proposal, and audit references.
- Version Registry entries for any new addresses.
-

Appendix N. Verification Walkthrough

Five-minute audit on testnet
- Pick a settled bet.
- Confirm VRF request id and proof status.
- Reproduce the outcome using published mapping notes.
- Confirm payout and fee events in the same transaction.
- Sum TreasuryFunded for a month and compare to a dry run of RewardAssigned at 80%.

At mainnet
- Repeat the steps and match all addresses to the Version Registry and audit artifacts.

Appendix O. Risk Policy Parameter Reference

- Illustrative values only, not promises
- Per-bet cap examples as a % of vault value by title class.
- Concurrent exposure cap example with correlation penalty.
- Drawdown guard steps with example throttles.
- Fractional Kelly range and reasons for staying below full Kelly.
- Actual values appear as constructor inputs on deployed vaults and titles and are mirrored in math notes.

Appendix P. Regional Access Principles

Principles
- Real-money features available only where permitted.
- Eligibility attestation required for every real-money bet.

- Play-Money Mode offered globally with identical proofs and math.
- UI copies, disclosures, and resource links shipped in signed regional bundles.

Appendix Q. Responsible Gaming UX Checklist

- Controls surfaced to the user
- Deposit and loss limits with clear progress bars.
- Session timers and reality checks with configurable prompts.
- Cooling off, self suspension, and permanent exclusion with clear, irreversible confirmations.
- Device trust management and logout timers.
- Visibility of the Player Protection Registry state before real-money play.

Appendix R. Contact and Reporting Channels

General
• team@vault777.com

Legal
• legal@vault777.com

Website
• vault777.com

Testnet app
• testnet.vault777.com

Medium
medium.com/@vault777

Telegram
t.me/Vault777Casino

X
x.com/Vault777Casino

Status and audits
• to be linked at mainnet

All links will be mirrored in the Version Registry and on the status page.