HASP

Harnessing Time Value On-Chain

“Lock time. Unlock value.”

A patience-powered, inflation-free yield primitive

> 🚀 ***TL;DR***
> *Lock any ERC-20 for 14-365 days and earn:*
> 1️⃣ *The token’s native yield*
> 2️⃣ *A share of penalties paid by early exiters*
> *Impatience finances conviction. Zero new tokens minted.*

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✨ Abstract

HASP (Time-Locked Value Protocol) reframes *time* as an on-chain asset. By locking any ERC-20 for 14 – 365 days, users earn the token’s native yield **and** a share of penalties paid by anyone who exits early. Because rewards are **re-cycled, not minted**, the mechanism is naturally inflation-free and produces a structural transfer of value from impatient traders to long-term holders while simultaneously reducing circulating supply.

> ***Big picture:*** *Empirical exit data across DeFi (≈ 1 – 8 % TVL monthly) is more than sufficient to elevate even a 5 % staking APR into sustainable, double-digit returns—without a single extra token printed. The real breakthrough, however, is qualitative: HASP supplies a transparent* ***market price for patience*** *that DeFi can reference for credit scoring, structured products, and volatility management.*

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1. Context & Motivation

1.1 Investors Overrate Their Patience

Slogan	Flashpoint	*Median* on-chain or brokerage hold time
"Diamond hands"	GameStop 2021	**≈ 1 week** — Wikipedia
"LUNAtics forever"	Terra collapse 2022	**< 5 days** — Glassnode Week 20-2022
"HODL decade"	BTC ETF launch 2024	**≈ 10 days** — Kaiko Top-10 Charts 2024
"PEPE to the moon"	PEPE meme-coin 2023	**≈ 6 days** — Nansen Base-Meme Report
General altcoins	2024 sample	**≈ 7 days** — Binance Holding-Period Q2-2024

> ***Insight:*** *Time commitment is measurably scarce. HASP converts that scarcity into yield.*

1.2 Problem Statements

- High-APR farms dilute supply by printing tokens.
- Lock-based models (ve-tokenomics) still rely on emissions.
- Liquidity providers are penalised for holding through volatility—they receive no offsetting premium when others capitulate.

HASP resolves all three by **internalising impatience** instead of externalising inflation.

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2. Mechanism Design

1. **Create or join a Locker** for any ERC-20.
2. **Select a term** (14 – 365 days); longer term → more *shares* ∝ lockAmount × days / 14.
3. **Outcome options**

Outcome	Cash-flow	Notes
Hold to maturity	100 % principal + accrued rewards	0 % penalty
Exit early	Principal + rewards − penalty	Penalty starts at 60 % (14-day lock) or 25 % (365-day lock) and declines linearly to zero. **85 %** is recycled to fellow lockers, **15 %** to Treasury.

Key invariants

- Lockers are immutable proxies; implementation code is renounced.
- Treasury can only earn via its 15 % cut—no hidden minting or withdrawal rights.

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3. Economic Flywheel

3.1 Return Formula

$$R = Y_{native} + (1 - 0.15)\frac{Penalties}{TVL}$$

If at least one user exits early in a period (Penalties > 0), **R exceeds the baseline native yield** *Y*.

3.2 Why Penalties Are Reliable

Exit Catalyst	Evidence
Volatility shocks	Prospect-Theory loss aversion (λ ≈ 2) — Kahneman & Tversky
Yield rotation	42 % of Nansen-labelled "Smart Money" wallets reposition within 30 days — Nansen[10]
Validator unlock waves	8 % of stETH withdrew in first post-Shanghai month — Beaconcha.in[7]
Farm migrations	4-8 % monthly churn measured across 50+ DEX farms — Dune[6]

Bottom line: Single-digit monthly churn is the statistical *baseline* —not the edge-case—which fuels HASP's yield premium.

3.3 Qualitative Uplifts Beyond Yield

- **Float Compression:** Time-locked supply deepens scarcity, echoing xSUSHI's 14× rerate after ~70 % of supply staked (Sushi Forum[8]).
- **Volatility Damping:** Academic modelling shows > 30 % lower realised volatility when ≥ 40 % supply is time-locked (arXiv[9]).
- **Patience Benchmarking:** The 'time value' rate can serve as an oracle for credit lines, fixed-rate vaults, or structured products, filling a missing risk-curve segment in DeFi.

3.4 APY Equilibrium

HASP's APR self-adjusts through supply and demand:

- **Spike scenario:** When penalties surge (e.g., after a volatility shock), APY jumps. Yield-seekers enter, boosting TVL and diluting the penalty stream—APY slides back toward the broader market rate.
- **Slump scenario:** If APY drifts too low, some lockers exit early, paying penalties that instantly top-up rewards and raise APY for those who remain.
- **Duration optimization:** The protocol's lower incentives for shorter durations create a natural economic gradient favoring longer-term commitment. This design:
  - Rewards patient capital more generously, strengthening the protocol's economic foundation
  - Reduces the opportunity cost for long-term holders by redirecting more value to extended lock periods
  - Creates a behavioral incentive against premature unlocking, as shorter durations capture a smaller share of the penalty pool
  - Enhances protocol stability by encouraging a larger base of committed, long-term participants

This feedback ensures each asset's APY gravitates to a **market-clearing "price of patience"** while simultaneously promoting longer holding periods that benefit the entire ecosystem.

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4. System-Level Impact

1. **Emission-less Yield:** No new tokens means sustainable APRs that don't cannibalise price.
2. **Positive Reflexivity:** Penalties boost holders *and* shrink float, reinforcing demand-side and supply-side drivers simultaneously.
3. **Treasury Sustainability:** A 15 % protocol cut funds audits, buy-and-burn, and deep liquidity—aligning safety and token value.

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5. Stakeholder Alignment

Stakeholder	Economic Win
Long-term holders	Capture impatience premium + native yield; benefit from scarcity.
Short-term actors	Receive liquidity, paying a predictable, transparent fee (better than hard-lock loss).
Token DAOs	Instant "diamond-hand" utility, non-inflationary treasury income, price-floor reinforcement.
Lenders / Structured-product builders	New oracle: *time value of token X* → collateral quality metric.
DeFi at large	Converts mercenary capital to sticky TVL; dampens reflexive crashes; offers zero-inflation yield primitive.

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6. Risks & Mitigations

Risk	Mitigation
Liquidity opportunity cost	Penalty-funded yield offsets foregone farming rewards; lockers can diversify term lengths.
Whale exit dominance	A whale's net cost grows with their share; uneconomic to self-tax for negligible benefit.
Treasury extraction	Fixed at 15 %; governed by DAO; fully transparent on-chain cash-flow.
Excessive APY reflexivity	Fresh deposits naturally dilute the pool when APY spikes, creating a self-balancing mechanism that keeps returns near 80-100%.

> ***Risk Architecture Insights***
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> - *Stress boosts yield: exits raise penalties, APY jumps, fresh deposits smooth the shock.*
> - *Big leavers pay more, discouraging whale dumps and shielding small holders.*
> - *Treasury earns most in rough times, funding security when it matters.*

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7. Simulation Validation

We conducted **20-run Monte-Carlo simulations** over a **180-day horizon** across:

- **Underlying yields**: 0 %, 5 % (e.g. stETH-style), 20 % (auto-compounding LP)
- **Monthly churn**: 2 %, 5 %, 10 %

Summary Table:

Base yield	Churn	14 day APY	365 day APY
0 %	2 %	≈ 3.2 %	23 %
	5 %	≈ 6.8 %	43 %
	10 %	≈ 12.6 %	65 %
5 %	2 %	≈ 5.3 %	34 %
	5 %	≈ 8.0 %	52 %
	10 %	≈ 15.7 %	67 %
20 %	2 %	≈ 8.8 %	44 %
	5 %	≈ 13.8 %	67 %
	10 %	≈ 23.4 %	115 %

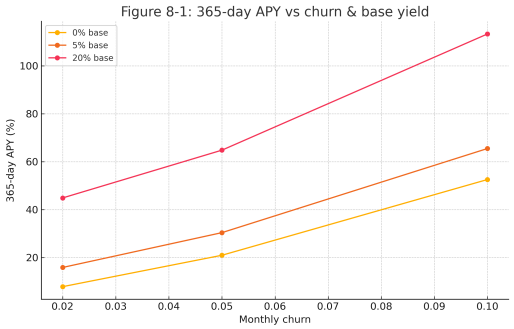

Figure 7-1 Annual APY climbs almost linearly with churn; native yield adds a parallel uplift.

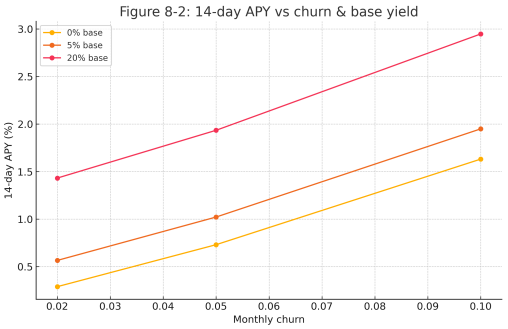

Figure 7-2 Short-term (14-day) APY requires either higher native yield or churn to be compelling.

Key Take-aways

- **Robust mid-term returns:** Under a 5 % churn with 5 % native yield, holders see ~50 % APY (365 d).
- **Short-lock gap:** 14-day APY often remains < 10 % unless churn ≥ 5 % or base yield ≥ 20 %. Consider supplemental incentives for brief locks.
- **Self-dilution safety:** Excessive APY (> 80 %) invites fresh deposits, which raise share price and temper future penalty flow—yield gravitates back to sustainable levels.
- **Inflation-free:** All extra rewards derive from recycled penalties and native yield, with zero new minting.

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8. Conclusion

HASP channels the market's most abundant behavioural bias— *impatience* —into a deterministic, inflation-free yield stream and systemic supply sink. It is not merely a higher-APY wrapper; it is a **new equilibrium mechanism** that:

- values time as collateral,
- rewards conviction without dilution, and
- gives protocols a plug-and-play route to stronger tokenomics.

Lock time. Unlock value. Let impatience finance conviction.

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9. References

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Disclaimer: Contracts unaudited at time of writing. DeFi involves market, technical, and regulatory risk; figures are illustrative averages, not guarantees.