Falcon Finance

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Executive Summary

Falcon Finance is a next-generation synthetic dollar protocol that delivers sustainable yields through basis spread, funding rate arbitrage, and advanced risk-adjusted yield generation strategies. Unlike traditional synthetic dollar protocols that rely on positive basis or funding rate arbitrage, Falcon Finance broadens the scope by integrating diversified institutional yield generation strategies. This approach can preserve the initial value of user deposits while delivering consistent, competitive yields even during challenging market conditions.

Based on transparency, security, and institutional-grade yield generation strategies, Falcon Finance sets a new benchmark for synthetic dollar protocols.

1. Introduction

Traditional synthetic dollar protocols rely on limited yield strategies such as delta-neutral positive basis or funding rate arbitrage, which can struggle to maintain competitive yields in adverse crypto market conditions. Falcon Finance proposes a new paradigm: an overcollateralized synthetic dollar designed to deliver sustainable yields through diversified institutional-grade yield generation strategies that are resilient under varying market conditions.

This whitepaper outlines Falcon Finance's yield generation strategies, dual-token system—USDf and sUSDf—the mechanisms for minting and redeeming these tokens, and the comprehensive transparency and risk management framework designed to safeguard user assets.

2. Diversified Institutional Yield Generation Strategies

Falcon Finance employs a comprehensive, scalable, and sustainable approach to yield generation extending beyond delta-neutral basis spreads and funding rate arbitrage.

The first key differentiator in Falcon Finance's yield generation strategy lies in its ability to draw yield from a wide range of collaterals. From inception, the protocol accepts not only a variety of stablecoins (e.g., USDT, USDC, FDUSD) but also non-stablecoin digital assets, such as blue-chip tokens like BTC, ETH, and select altcoins. This breadth of collateral acceptance is a deliberate strategy, designed to capitalize on the distinct yield opportunities offered by assets beyond the blue-chip class. Altcoins can present higher yield potential due to their greater market inefficiencies, native staking farming platforms, and funding rate variations.

To optimize the deployment of diverse collaterals, Falcon Finance employs a dynamic collateral selection framework with real-time asset liquidity and risk evaluations. Falcon Finance enforces strict limits on the acceptance of less liquid digital assets to mitigate potential exposure to liquidity risks, preserving the protocol's robustness and stability.

Falcon Finance expands its synthetic dollar strategy by integrating negative funding rate arbitrage, a method that exploits perpetual futures trading below spot prices. Unlike positive funding rate arbitrage, negative funding rate arbitrage exploits instances where perpetual futures prices are below spot prices. In these conditions, negative funding rates incentivize long perpetual positions,

enabling Falcon Finance to earn funding payments by holding a long perpetual futures position while selling the equivalent spot asset. This approach mirrors positive funding rate arbitrage. By systematically leveraging negative funding rates, Falcon Finance extracts yield in environments where traditional synthetic coins fail to generate competitive returns.

Another institutional yield generation strategy deployed by Falcon Finance is cross-exchange price arbitrage. Makarov and Schoar (2018) demonstrate that cryptocurrency market segmentation creates consistent arbitrage potential which can produce measurable profits. Falcon Finance utilizes this strategy, leveraging on its institutional trading infrastructures. This established infrastructure enables efficient execution of strategies such as CEX-to-CEX and DEX-to-CEX arbitrage, capitalizing not only on funding rate variations but also on price discrepancies.

Figure 1. Performance of ETH Positive Funding Rate Arbitrage vs. Other Yield Generation Strategies
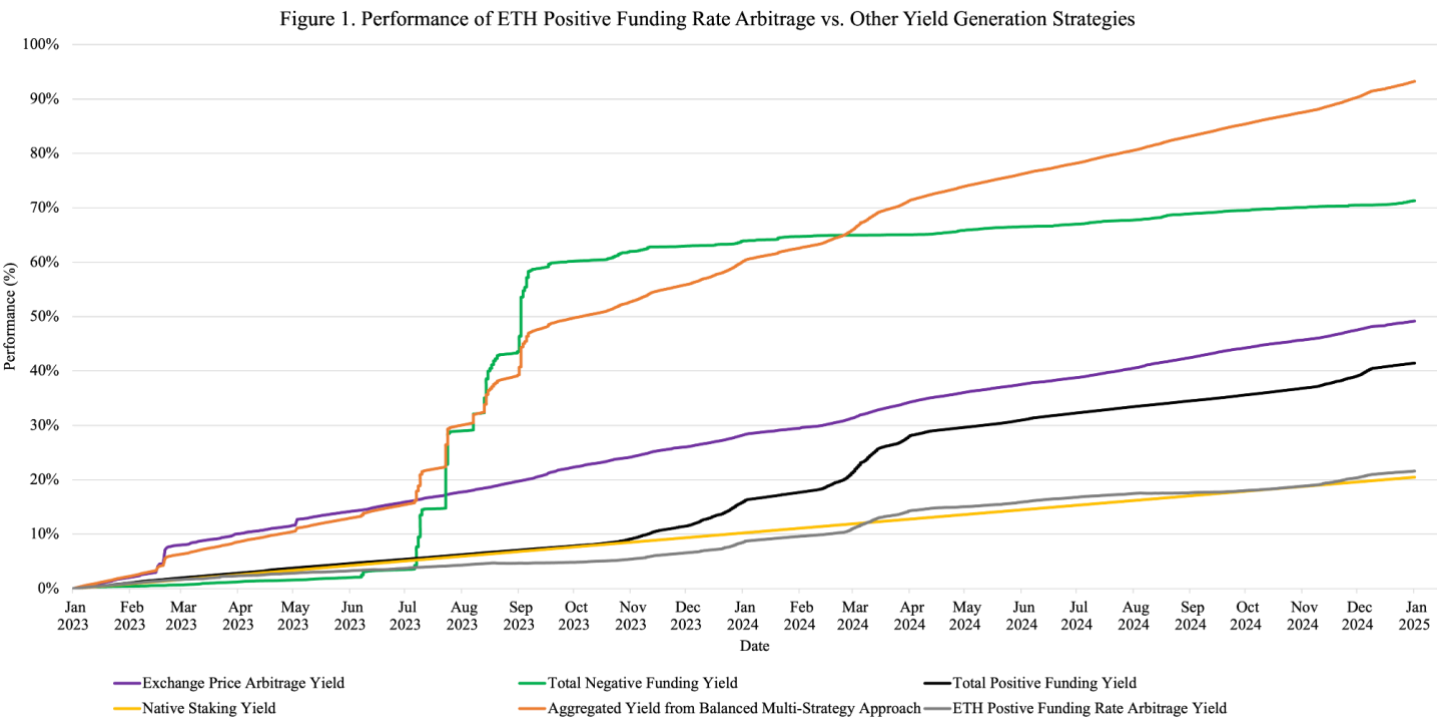
Source: Binance Perpetual and Spot Pairs (2023–2025), Falcon Finance

The graph above demonstrates the comparative performance of strategies proposed by Falcon Finance, including exchange price arbitrage, funding rate arbitrage of a wide range of collaterals, and native staking-based returns. Notably, the aggregated yield from the balanced multi-strategy

approach (dark orange line) outperforms ETH-positive funding rate arbitrage (grey line), showcasing the potential of Falcon Finance's diversified strategy.

The aggregated yield from the multi-strategy approach illustrates the potential performance of a balanced portfolio allocation, where 50% of capital is allocated to altcoins and 50% to stablecoins. The altcoin allocation primarily applies negative funding rate arbitrage, cross-exchange price arbitrage, and short-term staking, leveraging persistent inefficiencies driven by higher volatility and liquidity constraints. Conversely, the stablecoin allocation is structured around positive funding rate arbitrage and staking, ensuring stability in yield generation across different market regimes.

By moving beyond single-strategy methods like ETH-positive funding rate arbitrage, Falcon Finance demonstrates a strategic advantage in yield generation through expanded collateral use and other institutional-grade trading strategies. While historical performance trends may not guarantee future results, the data demonstrates the potential to systematically generate yield across changing market conditions.

3. Dual-Token System with Overcollateralized USDf and Yield-Bearing sUSDf

Falcon Finance operates a dual-token system revolving around USDf and sUSDf.

3.1. The Overcollateralized Synthetic Dollars – USDf

USDf is an overcollateralized synthetic dollar minted when users deposit eligible assets, such as stablecoins or non-stablecoins, into the protocol. For all eligible stablecoin deposits[1], USDf will be minted at a 1:1 USD value ratio. For non-stablecoin deposits, including blue-chip assets such as BTC and ETH, an overcollateralized ratio[2] (OCR) is applied.

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[1] Valuation of collateral will be directly tied to the market price and prevailing conditions of deposit time of processing. Users acknowledge that Falcon Finance does not guarantee the stability or value of any assets and accepts no liability for any discrepancies or losses arising from market volatility or external factors influencing asset prices.

[2] The overcollateralization ratios are dynamically calibrated based on the asset's inherent market volatility, liquidity profile, market slippage and historical price behavior. This risk-adjusted approach ensures the protocol's resilience against adverse price movements while optimizing capital efficiency for users.

Formula for Overcollateralization Ratio:

$$Overcollateralization\ Ratio\ (OCR) = \frac{Initial\ Mark\ Price\ of\ Collateral}{Amount\ of\ USDf\ minted}\ , where\ OCR > 1$$

The implementation of OCR helps to mitigate the impact of market slippage and inefficiencies, ensuring that each USDf minted by all non-stablecoin deposits is fully backed by collateral of equal or greater value.

Users can reclaim the overcollateralization buffer based on the prevailing market conditions. If at the point of redemption, the market price is lower than or equal to the initial mark price of collateral, users can redeem the initial collateral deposited as the buffer. However, suppose the redemption market price of the collateral is greater than the initial mark price. Users will only be able to redeem an amount of the collateral equivalent to the value at the initial mark price.

Formula for Redeeming Collateral Buffer:

If Current Price ≥ Initial Mark Price,

$$Overcollateralized\ Buffer\ Redeemed = \frac{Initial\ Collateral\ Value}{Current\ Market\ Price}$$

If Current Price < Initial Mark Price,

$$Overcollateralized\ Buffer\ Redeemed = Initial\ Collateral\ in\ units$$

Example[3]:

A user deposits 1,000 Coin A at a mark price of $1 with an overcollateralization ratio of 1:1.25. The protocol mints 800 USDf, while 200 Coin A is retained as the overcollateralization buffer to safeguard the protocol against market fluctuations.

If the Current Price ≤ Initial Mark Price ($1) = $0.90 ≤ $1,

$$Overcollateralized\ Buffer\ Redeemed = \mathbf{200\ Coin\ A}$$

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[3] Figures presented in examples are illustrative - as all prices are subjected to prevailing market conditions. Deposit and redemption calculations may differ marginally from the examples presented in this paper.

The user redeems 800 USDf at a 1:1 ratio for eligible stablecoins. In addition, the user reclaims the entire 200 Coin A overcollateralization buffer, as the prevailing market price is equal to or lower than the initial mark price.

If the Current Price > Initial Mark Price ($1) = $1.20 > $1

$$\boldsymbol{Collateral\ Redeemed} = \frac{Initial\ Collateral\ Value}{Current\ Market\ Price} = \frac{200\ Coin\ A}{\$1.20} = \boldsymbol{166.67\ Coin\ A}$$

The user redeems 800 USDf at a 1:1 ratio for eligible stablecoins. However, instead of reclaiming the full 200 Coin A, the user receives an amount equivalent to $200 worth of Coin A which is 166.67 of Coin A, calculated based on its prevailing market price at the time of redemption.

3.2. The Yield-Bearing Asset – sUSDf

Minted USDf can subsequently be staked to mint sUSDf, a yield-bearing asset. As the protocol generates yield through various institutional-grade strategies, the value of sUSDf increases relative to USDf over time. This growth reflects the accrued yield, which users can realize upon redemption.
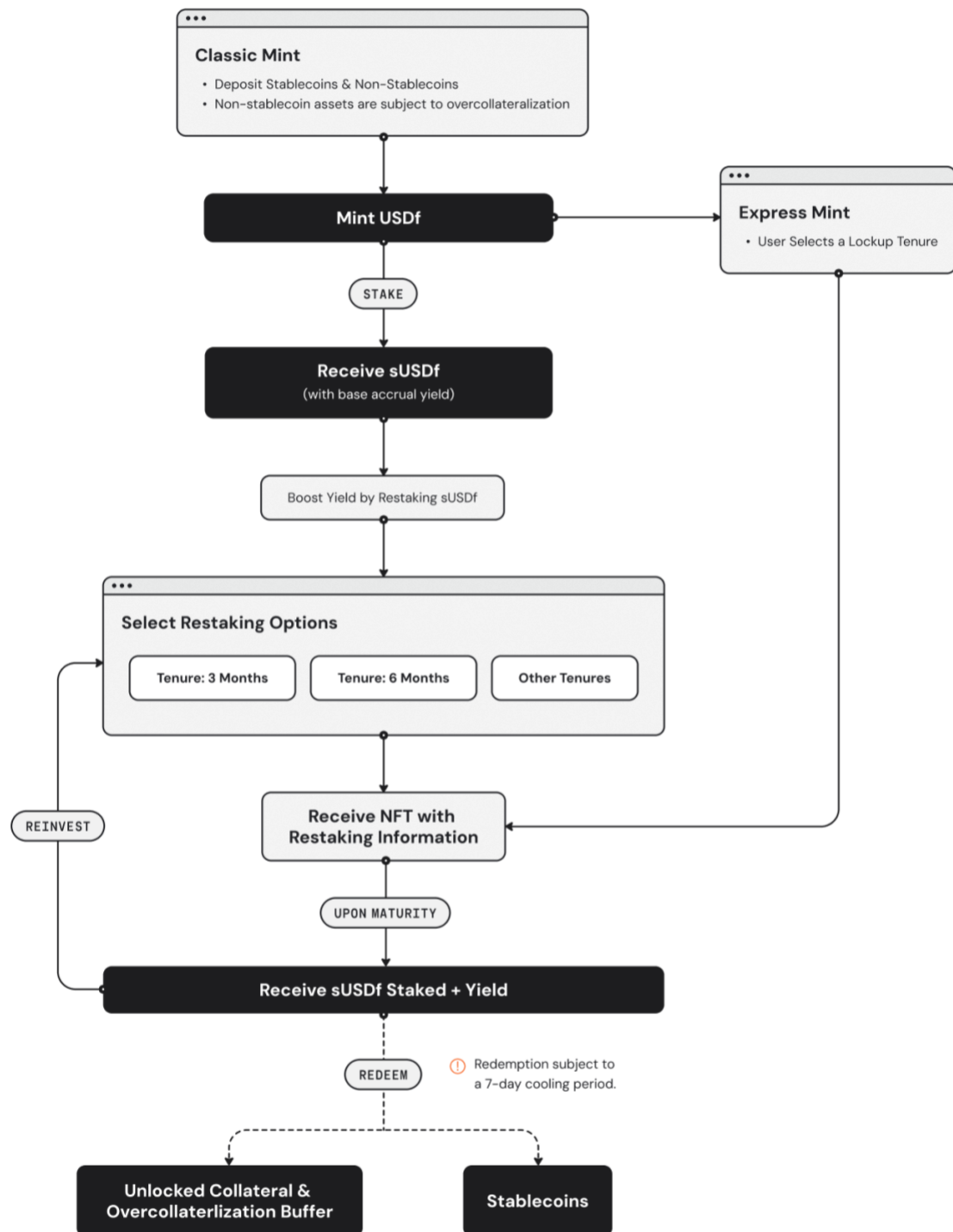
4. Minting and Redemption Mechanism

Figure 1: Falcon Finance Mint & Redemption Flowchart. *This flowchart offers a visual overview of the Classic & Express Mint process. Refer to Sections 4.1 through 4.5 for comprehensive details.*

4.1. Minting of USDf with Any Collateral

The minting process begins with users depositing eligible collateral into the Falcon Finance protocol. Accepted collaterals include BTC, WBTC, ETH, USDT, USDC, FDUSD, and more. All non-stablecoin collaterals are subjected to overcollateralization upon deposit.

Upon successful deposit, users can mint USDf. USDf acts as an overcollateralized synthetic dollar token that can be used as a store of value, a medium of exchange, and a unit of account.

4.2. Staking USDf to Mint sUSDf

Once USDf has been minted, users can stake it to receive sUSDf, the yield-bearing asset. Falcon Finance employs the ERC-4626 vault standard for yield distribution, which ensures a transparent and efficient mechanism. The amount of sUSDf received is calculated based on the current sUSDf-to-USDf value, which reflects the total supply of sUSDf relative to the total USDf staked and accumulated protocol yield in USDf.

Formulas for Minting sUSDf

$$Current\ sUSDf\ to\ USDf\ Value = \frac{Total\ USDf\ Staked\ +\ Total\ Rewards}{Total\ sUSDf\ Supply}$$

$$sUSDf\ Minted = \frac{USDf\ Staked}{Current\ sUSDf\ to\ USDf\ Value}$$

Example[4]:

Suppose the total sUSDf supply is 100,000 sUSDf, initially minted by users staking 100,000 USDf. Falcon Finance has then generated and distributed 25,000 USDf in rewards. The current sUSDf-to-USDf value is calculated as follows:

sUSDf-to-USDf Value = (100,000 + 25,000) / 100,000 = 1.25 USDf for each sUSDf

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[4] Figures presented in examples are illustrative - Falcon's on-chain contracts implement protections against share inflation attacks, loss-vs-investment attacks, and other industry-standard ERC-4626 improvements to protect user deposits. As a result, deposit and redemption calculations may differ marginally from the examples presented in this paper.

i.e., for each unit of sUSDf unstaked, 1.25 USDf will be received. If a user stakes 200 USDf now, the amount of sUSDf minted would be calculated as:

sUSDf Minted = 200 / 1.25 = 160 sUSDf

The final amount of sUSDf minted based on 200 USDf would be 160 sUSDf.

4.3. Yield Accrues to sUSDf Over Time

As sUSDf is held, the protocol distributes yield to the staking pool through institutional-grade yield strategies, including exchange arbitrage, funding rate spreads, and advanced machine learning-driven strategies. These yields are transparently allocated, and their accrual increases the value of sUSDf relative to USDf.

Yield Distribution Formula on sUSDf:

$$Yield\ per\ User\ = \frac{USDf\ staked\ by\ User}{Total\ USDf\ Staked} \times Yield\ distributed$$

4.4. Boost sUSDf yields by Restaking back into Falcon Finance

Users can restake sUSDf for a fixed lock-up period to earn boosted yields. Upon restaking the sUSDf with Falcon Finance, the system mints a unique ERC-721 NFT based on the amount of sUSDf and the lock-up period.

The available lock-up options include a 3-month lock-up, a 6-month lock-up, and other durations, with longer lock-up periods providing higher yields. The fixed period for redemption allows Falcon Finance to optimize for time-sensitive yield strategies, ensuring greater yields for users. Users who select Express mint will immediately mint an NFT of a fixed tenor after depositing eligible assets.

4.5. Redemption of User's Deposit as Initial Collateral or USDf

Upon maturity, users can redeem their NFT for sUSDf. All sUSDf can then be exchanged for its equivalent value in USDf. Non-stablecoin depositors are also entitled to reclaim their overcollateralization buffer, as Section 3.1 of this paper outlines.

Formula for USDf Redemption:

$$USDf\ Redeemed = sUSDf\ Burned \times Current\ sUSDf\ to\ USDf\ Value$$

$$\boldsymbol{Non-stablecoin\ Collateral\ Redeemed\ against\ sUSDf}$$

$$= \frac{Value\ of\ USDf\ to\ be\ redeemed\ from\ sUSDf}{Current\ Market\ Price}$$

Stablecoin Depositors Redemption Example[5]:

If the sUSDf-to-USDf value is 1: 1.25 (1.25 USDf for each sUSDf) and a user burns 100 sUSDf, they would receive :

USDf Redeemed = 100 × 1.25 = 125 USDf

After obtaining USDf, users can redeem it for any other stablecoins (e.g., USDT, USDC, FDUSD) at a 1:1 ratio[6].

Non-stablecoin Depositors Redemption Example[7]:

Suppose the user wishes to redeem their sUSDf to their initial collateral of Coin A, at a time when the sUSDf-to-USDf value is 1.25 (i.e., 1.25 USDf per sUSDf). If the user burns 100 sUSDf, they would receive:

USDf Value from Redemption:

Non-stablecoin Collateral Value available for Redeemption = 100 × 1.25 = 125 USDf

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[6] Ratio of stablecoin will be directly tied to the market price and prevailing conditions of deposit time of processing. Users acknowledge that Falcon Finance does not guarantee the stability or value of any assets and accepts no liability for any discrepancies or losses arising from market volatility or external factors influencing asset prices.

[7] Figures presented in examples are illustrative - Falcon's on-chain contracts implement protections against share inflation attacks, loss-vs-investment attacks, and other industry-standard ERC-4626 improvements to protect user deposits. As a result, deposit and redemption calculations may differ marginally from the examples presented in this paper.

Non-Stablecoin Collateral Redemption[8]:

Assuming the current market price of Coin A is $1.25,

Non-stablecoin Collateral Redeemed against sUSDf $= \frac{\$125}{\$1.25} = 100$ of Coin A

The user is eligible to redeem 100 Coin A from their sUSDf.

5. Risk Management and Transparency on Collaterals

Risk management is a cornerstone of Falcon Finance's commitment to users' asset protection. Falcon Finance employs a dual-layered approach combining automated systems and manual oversight to monitor and manage positions actively. The double monitoring layer ensures positions are carefully evaluated and adjusted in real-time to mitigate risk. During periods of heightened market volatility, Falcon Finance leverages the expertise of its advanced trading infrastructure to unwind risk strategically. This capability ensures the preservation of the user's assets while maintaining the stability and integrity of the collateral pool.

All users' collaterals are safeguarded through a combination of off-exchange solutions with qualified custodians, Multi-Party Computation (MPC) and multi-signature schemes, and hardware-managed keys, ensuring that user assets always remain secure and accessible. By limiting on-exchange storage, the protocol ensures that user funds remain insulated from risks such as counterparty defaults or exchange failures.

To uphold transparency, Falcon Finance provides users with access to comprehensive real-time information on the status of their assets and the overall health of the system. The dashboard includes Total Value Locked (TVL), the volume of sUSDf issued and staked, and the amount of USDf issued and staked.

In addition to real-time updates, the protocol offers daily transparency into reserves, segmented by asset classes such as stablecoins, blue-chip tokens, altcoins, and other collateral types. Dashboards will provide detailed information on Annual Percentage Yield (APY) and yields distributed in sUSDf and USDf, giving users a clear understanding of the protocol's performance.

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[8] Non-stablecoin collateral redemption will be directly tied to the market price and prevailing conditions of deposit time of processing. Users acknowledge that Falcon Finance does not guarantee the stability or value of any assets and accepts no liability for any discrepancies or losses arising from market volatility or external factors influencing asset prices.

To further bolster transparency and trust, Falcon Finance undertakes rigorous quarterly and annual audits conducted by independent third-party firms. The quarterly audits cover a detailed Proof of Reserve (POR) that consolidates on-chain and off-chain data, including aggregated metrics from decentralized exchanges (DEXs), centralized exchanges (CEXs), and wallets. Additionally, Falcon Finance commissions ISAE3000 assurance reports every quarter to verify compliance with industry standards. These reports focus on key aspects such as security, availability, processing integrity, confidentiality, and privacy, ensuring that the protocol operates at the highest standards of reliability and accountability.

Falcon Finance conducts annual external audits on its issuing entities. These audits, covering jurisdictions such as BVI and Panama, provide further assurance of the protocol's adherence to global best practices in financial management and regulatory compliance.

All reports are published on Falcon Finance's website, enabling users to verify the integrity of the collateral backing their assets at any time.

6. Insurance Fund

Falcon Finance will maintain an on-chain, verifiable insurance fund to act as a safeguard for all protocol users. A portion of Falcon Finance's monthly profits will be allocated to the insurance fund, reinforcing its commitment to users' asset protection. This ensures the insurance fund grows in tandem with the protocol's adoption and Total Value Locked (TVL).

The insurance fund operates as a financial buffer, designed to mitigate rare periods of zero or negative yields and function as the last resort bidder for USDf in open markets. In an unlikely scenario, Falcon Finance may augment reserves during periods of exceptional market stress to ensure the protocol's stability. This fund, consisting of reserves in stablecoins, serves multiple purposes, compensation for unforeseen risks, and mitigation of potential losses.

The insurance fund is held in a multi-signature address comprising of internal Falcon Finance members and external contributors.

7. Conclusion

In conclusion, Falcon Finance redefines synthetic dollar protocols by integrating an overcollateralized synthetic dollar, diversified institutional yield strategies, and rigorous risk management. The overcollateralized framework enables the protocol to accept a wider range of non-stablecoin collateral while safeguarding the protocol's stability. This expanded collateral acceptance facilitates the deployment of advanced yield generation methodologies, including funding rate arbitrage, exchange arbitrage, and statistical arbitrage, ensuring consistent, competitive, and sustainable yields across changing market conditions.

With a foundation of transparency, security, and institutional-grade yields, Falcon Finance is the next-generation synthetic dollar for crypto.

References

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