Freed Finance Whitepaper

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Contents

Executive Summary

Freed Finance, developed by Freedom Labs Limited, is a transformative all-in-one SuperApp designed to simplify banking in Web3. Built and Ethereum and integrated with EVM-compatible protocols like Aave, it serves as a unified platform for decentralized finance (DeFi), offering a customizable UI, robust security via Take Profit & Stop Loss, DeFi banking allows accounts to overleverage their positions up to 300% collateral, out of which 200% is debt, vaults with autocompounding, and multichain aggregators with intents to eliminate segregated liquidity. Users can choose Chainlink CCIP for cost-effective cross-chain swaps or DeFi Smart Accounts for expedited transactions using pre-aggregated liquidity. Looking ahead, Freed Finance will lead the industry by introducing decentralized exchange (DEX) trading, fast on-chain derivatives, margin trading, a personal AI assistant powered by cutting-edge machine learning to deliver real-time portfolio management, predictive insights, and automated strategy optimization—redefining efficiency in Web3 banking—and Delta Neutral Strategies, enabling users to launch risk-mitigated, stable-return strategies directly from their phones for unmatched simplicity. Governed by the FREED token, it aims to revolutionize Web3 banking while maximizing user value and efficiency.

1 Introduction

Decentralized finance (DeFi) offers unparalleled financial autonomy by removing traditional intermediaries, but its complexity, fragmented liquidity, and limited personal management tools hinder widespread adoption. Freed Finance pioneers a solution with AI-driven innovations that simplify Web3 banking, making it seamless and intuitive for every user. Freed Finance, headquartered in the British Virgin Islands, addresses these challenges with an all-in-one SuperApp that simplifies Web3 banking. By integrating multichain aggregators with intents to unify liquidity, advanced financial tools, and a future personal AI assistant, Freed Finance aims to redefine the DeFi landscape, making it accessible, secure, and intelligent for all users. This whitepaper details the platform's current capabilities, strategic roadmap, and technical framework.

2 Market Analysis

2.1 DeFi Growth and Adoption Challenges

In 2024, the DeFi sector achieved a total value locked (TVL) of approximately $150 billion, reflecting a 50% increase from 2023, with projections estimating $250 billion by 2026 (DeFi Pulse, 2024). However, several challenges persist:

- Technical Complexity: Over 50% of potential users find DeFi interfaces difficult to navigate (Chainalysis, 2024).

- Security Vulnerabilities: Losses from exploits totaled $1.5 billion in 2024 (CipherTrace, 2024).

- Liquidity Fragmentation: Segregated liquidity across blockchains increases costs and reduces efficiency.

- Limited Personalization: Users lack AI-powered tools to manage portfolios effectively, missing out on automation and tailored insights that Freed Finance uniquely delivers.

2.2 Freed Finance's Market Positioning

Freed Finance is strategically positioned to address these issues by offering:

- An all-in-one SuperApp for simplified Web3 banking.

- Multichain aggregators with intents to unify liquidity.

- Robust security, leverage, vaults, and cross-chain solutions.

- A future personal AI assistant for portfolio management.

This aligns with a DeFi market projected to reach $500 billion by 2030 (BCG, 2024).

3 Solution

3.1 All-in-One SuperApp for Web3 Banking

Freed Finance serves as a comprehensive SuperApp, unifying Web3 banking with:

- Centralized access to DeFi banking functions (lending, borrowing, trading, saving).

- Seamless integration of Aave instances across multiple chains.

- A user-friendly interface reducing complexity for all users.

3.2 Customizable User Interface (UI)

The platform offers an accessible interface:

- Customization Options: Users can select themes, layouts, and color schemes.

- Simplicity: Designed to mirror traditional banking apps, minimizing barriers for entry.

- Multi-Chain Support: Unifies Aave instances across Ethereum and EVM-compatible chains.

3.3 Automation via Account Abstraction

Utilizing Ethereum's ERC-4337, the platform enables:

- Programmable Wallets: Automates actions like leverage or vault deposits.

- Gas Cost Reduction: Sponsored transactions lower expenses.

- Enhanced Security: Social recovery protects accounts.

3.4 Take Profit & Stop Loss: Security and Risk Mitigation

Take Profit & Stop Loss ensures safety with:

- Continuous Monitoring: Real-time analysis of transactions and risks.

- Health Factor Assurance: Targets HF $\geq$ 1.5 for position stability.

- Insurance Integration: Optional coverage for additional protection.

3.5 Overcollateralization: Leverage and Deleveraging Mechanics

Freed Finance facilitates leverage and deleveraging:

- Leverage Process: DeFi banking allows accounts to overleverage their positions up to 300% collateral, out of which 200% is debt, using flash loans, with the Health Factor (HF) pre-calculated:

$$\text{HF} = \frac{\text{Collateral Value} \times \text{Collateral Factor}}{\text{Debt Value}}$$

  Ensures stability (HF $\geq$ 1.5).

- Liquidation Risk:

$$P(\text{liquidation}) = \Phi\left(\frac{\ln(P_{\text{current}}/P_{\text{liquidation}})}{\sigma \times \sqrt{t}}\right)$$

  Where Φ is the cumulative normal distribution, P_{current} is the asset price, $P_{\text{liquidation}}$ is the threshold, σ is volatility, and t is time.

- Autocompounding Yield:

$$\text{Effective Yield} = \left(1 + \frac{\text{APR}}{m}\right)^m - 1$$

  For 12% APR compounded daily ($m = 365$):

$$\text{Effective Yield} = \left(1 + \frac{0.12}{365}\right)^{365} - 1 \approx 0.1275 \text{ (12.75\%)}$$

- Cross-Chain Efficiency:

$$\text{Cross-Chain Yield} = \text{Base Yield} + \Delta(\text{Cross-Chain Efficiency})$$

  Reflects yield gains from unified liquidity.

- Delta Neutral Strategy Optimization:

$$\text{Delta Neutral Value} = \text{Long Position Delta} + \text{Short Position Delta}$$
$$\text{Long Position Delta} = \left(\frac{\partial \text{Asset Price}}{\partial \text{Underlying Price}}\right) \times \text{Position Size}$$
$$\text{Short Position Delta} = -\left(\frac{\partial \text{Asset Price}}{\partial \text{Underlying Price}}\right) \times \text{Position Size}$$
$$\text{Net Delta} = \text{Long Position Delta} + \text{Short Position Delta} = 0$$

  The goal is to achieve a net delta of zero ($\Delta = 0$) to mitigate price volatility.

- Deleveraging Process: Flash loans repay debt and restore the original position in one transaction, minimizing risk.

3.6 Portfolio Manager and Quick Edit

- Portfolio Manager: Provides real-time tracking of assets, debt, and HF across integrated protocols, including Aave instances.

- Quick Edit: Enables users to adjust positions across chains with a single action.

3.7 Vaults and Autocompounding Strategies

Vaults optimize yield generation:

- Vault Structure: Users deposit assets into secure pools for automated yield farming across Aave instances.

- Autocompounding Mechanism: Profits are periodically reinvested to compound returns, modeled as:
$$\text{Future Value} = P \times (1 + r)^n$$
Where P is the principal, r is the periodic yield rate, and n is the number of compounding periods. For a 10% annual yield compounded monthly ($r = 0.10/12$, $n = 12$):
$$\text{Future Value} = P \times (1 + 0.00833)^{12} \approx P \times 1.1047 \quad (10.47\% \text{ effective yield})$$

- Optimization: Vaults dynamically select high-yield strategies across protocols.

3.8 Multichain Aggregators and Intents for Unified Liquidity

Freed Finance eliminates segregated liquidity with:

- Multichain Aggregators: Consolidate liquidity across Ethereum, Arbitrum, and other EVM chains into a unified pool, reducing slippage and enhancing capital efficiency.

- Intents: Enable users to specify cross-chain objectives (e.g., highest yield, lowest cost), executed automatically using aggregated liquidity.

- Yield Enhancement: Unifies liquidity to achieve returns exceeding fragmented strategies, modeled as:
$$\text{Cross-Chain Yield} = \text{Base Yield} + \Delta(\text{Cross-Chain Efficiency})$$

3.9 Cross-Chain Transactions: Chainlink CCIP and DeFi Smart Accounts

Freed Finance offers flexible cross-chain options:

- Chainlink CCIP: Provides cost-effective swaps with standard execution times, ideal for economical bridging.

- DeFi Smart Accounts: Enables expedited transactions using pre-aggregated liquidity, with transaction time modeled as:
$$\text{Transaction Time} \propto \frac{1}{\text{Liquidity Depth}}$$

Doubling liquidity depth halves transaction time, benefiting users prioritizing speed.

3.10 Future Enhancements: DEX Trading, Derivatives, Margin Trading, and Personal AI Assistant

Freed Finance plans to expand its SuperApp with:

- Decentralized Exchange (DEX) Trading: Seamless on-chain trading integrated with Aave liquidity and multichain aggregators.

- Fast On-Chain Derivatives Trading: Options and futures executed rapidly, leveraging unified liquidity.

- Margin Trading: Advanced leverage options integrated with Aave across chains.

- Personal AI Assistant: A revolutionary tool driven by advanced machine learning, designed to analyze portfolios in real time, provide predictive market insights, recommend tailored strategies, and automate adjustments—elevating Web3 banking to a new standard of simplicity and precision.

3.11 Delta Neutral Strategies

Freed Finance introduces Delta Neutral Strategies, empowering users to launch sophisticated, risk-mitigated financial strategies directly from their phones within the SuperApp. These strategies balance long and short positions (e.g., pairing leveraged assets with stablecoin hedges) to neutralize price volatility, ensuring stable returns regardless of market movements. Integrated with the platform's multichain aggregators, vaults, and AI assistant, users can set up these strategies with a few taps, leveraging real-time data and automated adjustments for simplicity and precision. Delta Neutral Strategies enhance portfolio stability, complementing leverage, yield farming, and cross-chain operations, and are designed for accessibility, making advanced DeFi risk management intuitive for all users.

3.12 On-chain Limit Orders

Freed Finance enhances trading capabilities with advanced on-chain limit orders, integrated into the SuperApp for seamless execution:

- On-chain Iceberg Orders: Allows large orders to be split into smaller, hidden portions to minimize market impact.

- On-chain Stop Loss: Automatically executes sell orders when asset prices fall below a specified threshold, protecting users from significant losses.

- On-chain Spread in Multiple Blocks: Breaks big orders into smaller transactions across multiple blocks to minimize price impact and optimize execution.

- DeFi Aggregator UI: Provides a user-friendly interface within the SuperApp to aggregate and manage on-chain limit orders across DeFi protocols, enhancing efficiency and accessibility.

4 Technology

4.1 Blockchain Infrastructure and Smart Contracts

Freed Finance operates on Ethereum and EVM-compatible chains (e.g., Arbitrum), with audited smart contracts managing:

- Leverage, vaults, and multichain operations.

- Aave instance integration across chains.

- Future trading and AI functionalities.

4.2 Account Abstraction Implementation

The ERC-4337 standard supports:

- Transaction Bundling: Combines actions into one step.

- Gas Sponsorship: Reduces costs.

- DeFi Smart Accounts: Enhances transaction speed using aggregated liquidity.

4.3 Mathematical Models for Leverage, Risk, and Yield Optimization

$$\text{HF} = \frac{\text{Collateral Value} \times \text{Collateral Factor}}{\text{Debt Value}}$$

Ensures stability (HF $\geq$ 1.5).

$$P(\text{liquidation}) = \Phi\left(\frac{\ln(P_{\text{current}}/P_{\text{liquidation}})}{\sigma \times \sqrt{t}}\right)$$

Where Φ is the cumulative normal distribution, P_{current} is the asset price, $P_{\text{liquidation}}$ is the threshold, σ is volatility, and t is time.

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Reflects yield gains from unified liquidity.

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The goal is to achieve a net delta of zero ($\Delta = 0$) to mitigate price volatility.

4.4 AI Infrastructure

Freed Finance leverages a state-of-the-art AI infrastructure integrated with its Ethereum-based ecosystem. The personal AI assistant employs machine learning models trained on real-time DeFi data, enabling predictive analytics and adaptive portfolio management while ensuring scalability and user privacy through Layer 2 optimizations.

4.5 ZK Circom Payments

Freed Finance introduces ZK Circom Payments, a privacy feature enabling users to send funds to a vault and make private payments to someone else from the vault using zero-knowledge proofs implemented via the Circom framework. This ensures the originator's identity remains hidden on the Ethereum blockchain while maintaining transaction validity and security. Key aspects include:

- Vault-Based Privacy: Users deposit funds into secure vaults, from which private payments are executed anonymously using ZK Circom.

- Ethereum Compatibility: Leverages Circom's zero-knowledge proof system, optimized for EVM compatibility and minimal gas costs.

- User Simplicity: Integrated into the SuperApp for seamless, private payments with a user-friendly interface.

5 Governance and Tokenomics

5.1 FREED Token: Utility and Distribution

- Total Supply: 100,000,000 FREED (fixed).

- Distribution: 40% to beta contributors, 30% to team (3-year vesting), 20% to community initiatives, 10% to treasury.

- Utility: Voting rights, staking rewards, and transaction fee discounts.

5.2 Community Governance Model

$$\text{Voting Power} = \sqrt{\text{FREED held}}$$

Requires a 51% supermajority for proposals to pass.

6 Roadmap and Milestones

- Stage 1: Beta launch with Aave integration.

- Stage 2: Take Profit & Stop Loss and vault deployment.

- Stage 3: Multichain aggregators and cross-chain intents introduced.

- Stage 4: DeFi Smart Accounts, Chainlink CCIP, the deployment of the personal AI assistant featuring real-time analytics, predictive optimization, and automated portfolio management, ZK Circom Payments for private vault transactions, and the launch of Delta Neutral Strategies and On-chain Limit Orders for phone-based execution.

7 Conclusion

Freed Finance redefines Web3 banking as an all-in-one SuperApp, unifying DeFi operations with multichain aggregators, vaults, and advanced trading tools, including On-chain Limit Orders. Its personal AI assistant, robust security, intent-driven liquidity management, and ZK Circom Payments for private vault transactions position it as a leader in simplifying and enhancing decentralized finance.