PIKE PROTOCOL WHITE PAPER

V 1.0

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ABSTRACT

This paper describes the definition and theory behind pike protocol, and explains the implementation of different aspects

CONTENTS OF THE WHITE PAPER

1. Introduce

"People's future tax revenue is mortgaged by the government to the private central bank to lend" US dollars ". Because it is" borrowing money "from private banks, the government owes interest. The unfairness is reflected in the following aspects: first, the people's future tax revenue should not be mortgaged, because the money has not been earned, the mortgage will inevitably lead to the devaluation of the purchasing power of the currency; second, the people's future tax revenue should not be mortgaged to the private central bank; third, the government owes interest without any reason, which eventually becomes the burden of the people. This is the biggest injustice in the world. "

——————————James Carritz, "Currency War"

The commercial banking system has become an unearned social parasite, constantly eroding people’ s wealth. The privately-owned commercial bank, the empty glove white wolf, obtains high interest income by continuously lending new money created. Once a commercial bank does not pay attention to controlling risks, it is very likely to produce bad inflation. More importantly, the risks and losses in the banking system will be directly passed on to the people. Since they do not have any hedging tools, they work hard to save The savings will instantly shrink and become the ultimate buyer. After the changes of the times, digital currency came into being. Under this historical opportunity, the PIKE protocol formally built the first decentralized financial ecosystem for digital assets.

Scafell Pike is the highest mountain in northern England, and the air becomes thinner as you climb upward. In the peak of constructing a decentralized financial system, PIKE 1.0 is developing new ways through DAO-based decentralized community autonomy, using native tokens and distributed ledger construction, and through the

potential behind blockchain technology. Digital financial system. Let us start climbing the PIKE mountain together, because it is there.

1.1 Project Concept

PIKE is a protocol on the Ethereum blockchain. It establishes a currency market. It is a token pool with algorithm-derived interest rates based on the supply and demand of tokens. The asset supplier (and borrower) interacts directly with the agreement to earn (and pay) floating interest rates without having to negotiate terms, interest rates, or collateral with peers or rivals. The lender provides liquidity by depositing cryptocurrency in a smart contract. At the same time, in the same contract, the collective funds can be borrowed through collateral. Loans do not need to be matched individually, but rely on pooled funds, as well as loan amounts and collateral. The simplified scheme of the PIKE protocol is shown in Figure 1 below:

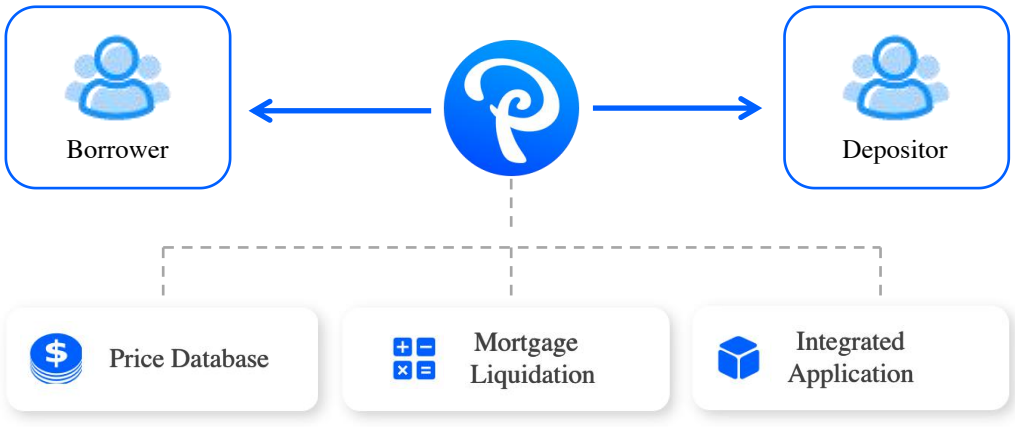

Figure 1： Simplified PIKE Protocol

The interest rate of the borrower and lender is determined by the algorithm:

- For borrowers, this depends on the cost of funds-the amount of funds available in

the fund pool at a specific time, as the funds are borrowed from the pool, the amount of available funds decreases, thereby increasing the interest rate.

- For depositors, this interest rate corresponds to the rate of return, and the algorithm protects the liquidity reserve to ensure withdrawal at any time.

1.2 Our Mission

Using the DAO+DeFi model, through the establishment of common operating standards and management methods by investors from all over the world, to create the future of today's finance, PIKE will build the first digital asset decentralized financial ecosystem.

2. Protocol Architecture

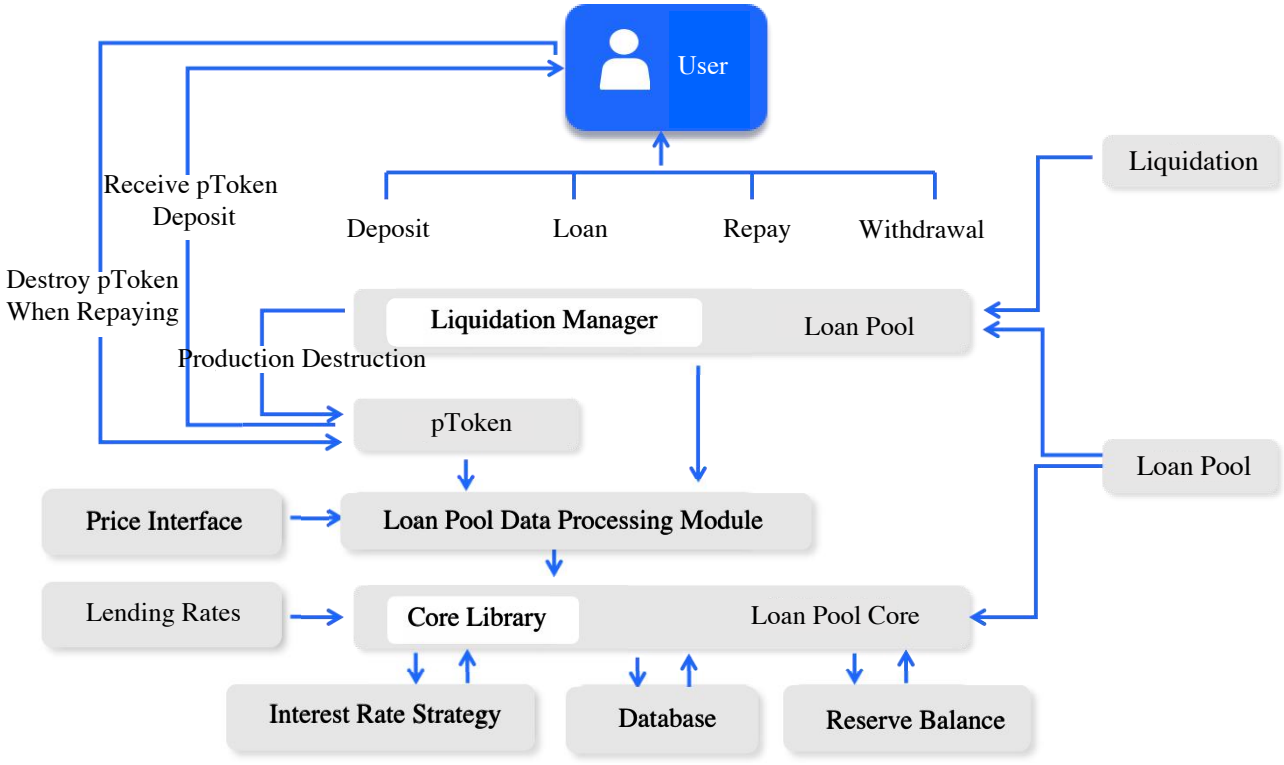

Figure 2： PIKE Protocol Structure

2.1 Loan Pool And Core

The basic content of the loan pool is shown in Figure 3:

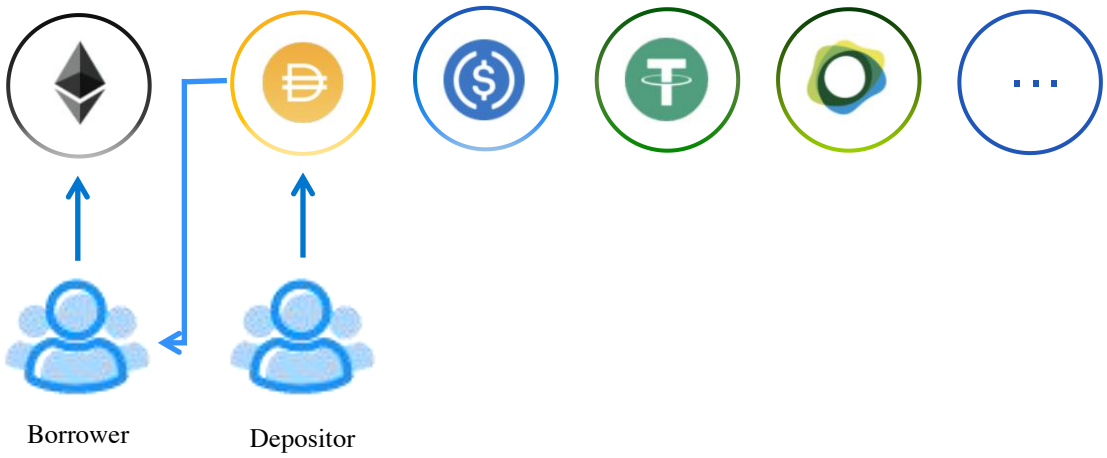

Figure 3: Basic Content Of Loan Pool

The core contract of the loan pool is the core of the agreement. It preserves the state of all reserves and all assets, and handles basic logic, including index accumulation and interest rate calculation. The core concept in the loan pool is the reserve: each pool has reserves in multiple currencies, and the total amount of Ether is defined as the total liquidity. Users can lend these funds, provided they lock in greater value as collateral. The specific currency in the collective reserve can be configured as collateral or not, and only low-risk tokens are considered. The amount a person can borrow depends on the deposit tokens available in the reserve. Each reserve has a specific loan-to-value ratio (LTV). The calculation method is the weighted average of the different long-term value ratios of the currencies that constitute the collateral. The weight of each LTV is the equivalent amount of collateral in ETH.

There is no repayment schedule for the loan, and partial or full repayment can be made at any time. In the event of price fluctuations, borrowings may be liquidated.

When the price of the collateral falls below the liquidation threshold, a liquidation event occurs. Reach this The ratio will bring liquidation dividends, which will reward the liquidator to purchase collateral at a discounted price. Each reserve has a specific liquidation threshold. Using the same method as LTV, the calculation of the average liquidation threshold is dynamic, using the weighted average of the collateral-based asset liquidation threshold.

2.2 Loan Pool Data

The loan pool data provider performs calculations at a higher abstraction layer than the core of the loan pool and provides data for the loan pool, as follows:

- Calculate the ETH corresponding to the user's balance (borrowing balance, collateral balance, liquidity balance) to evaluate the amount and health factors that the user is allowed to borrow.
- Aggregate data from the core of the loan pool to provide more advanced information data to the loan pool.
- Calculate average loan value and average liquidation ratio.

2.3 Interest Rate echanism

The interest rate mechanism contract saves the information needed to update the interest rate of a specific reserve and realizes the update of the interest rate. Each reserve fund has a specific interest rate mechanism contract. The PIKE agreement does not need to negotiate terms and interest rates. Instead, it uses an interest rate model to achieve an effective interest rate equilibrium based on the supply and demand of a single asset in each currency market. The utilization rate Ua of each currency market unifies supply and demand into a single variable:

$$U_a = Borrows_a / (Cash_a + Borrows_a)$$

According to economic theory, interest rates (the "price" of currency) should increase with demand; when demand is low, interest rates should be lower, and vice versa. The demand curve is compiled through governance (and can be updated by the chief economist), And expressed as a function of utilization. For example, the borrowing rate may be similar to the following:

$$Borrowing\ Interest\ Rate_a = 10\% + U_a * 30\%$$

In order for the agreement to be sustainable and to withstand economic attacks (by supplying and borrowing in the same currency market), the total amount of interest earned by the supplier must be less than the total amount of interest products of the borrower. The supply interest rate is a function of the borrowing interest rate, including the spread S (such as 0.10), which represents the economic profit of the agreement:

$$Supply\ Interest\ Rate_a = Borrowing\ Interest\ Rate_a * U_a * (1 - S)$$

2.4 Governance

PIKE will start with the centralized control of the agreement (for example, selecting the interest rate model for each asset), and will transition to the control of the community and stakeholders over time. The following rights in the agreement are controlled by the management or governance committee. The authority of the protocol is controlled by tokens. Governance is initiated on the DAOStack framework. It will eventually develop into a fully autonomous protocol, which means that all votes are binding, and actions after voting are coded and must be executed to achieve completeness. The height of autonomy.

In the PIKE protocol, governance will be carried out at two levels:

- For decisions related to protocol parameters and smart contract upgrades, the governance votes of the protocol are weighted by PIKE.

- The governance of the fund pool, your vote is weighted based on your share of the liquidity of the fund pool, and the vote covers the parameters of a specific pool, such as assets used as collateral or borrowed.

Under the protection of protocol governance, each pool has its own governance.

3. Loan Pool Contract

To implement operations in the loan pool, all operations follow this flowchart 4:

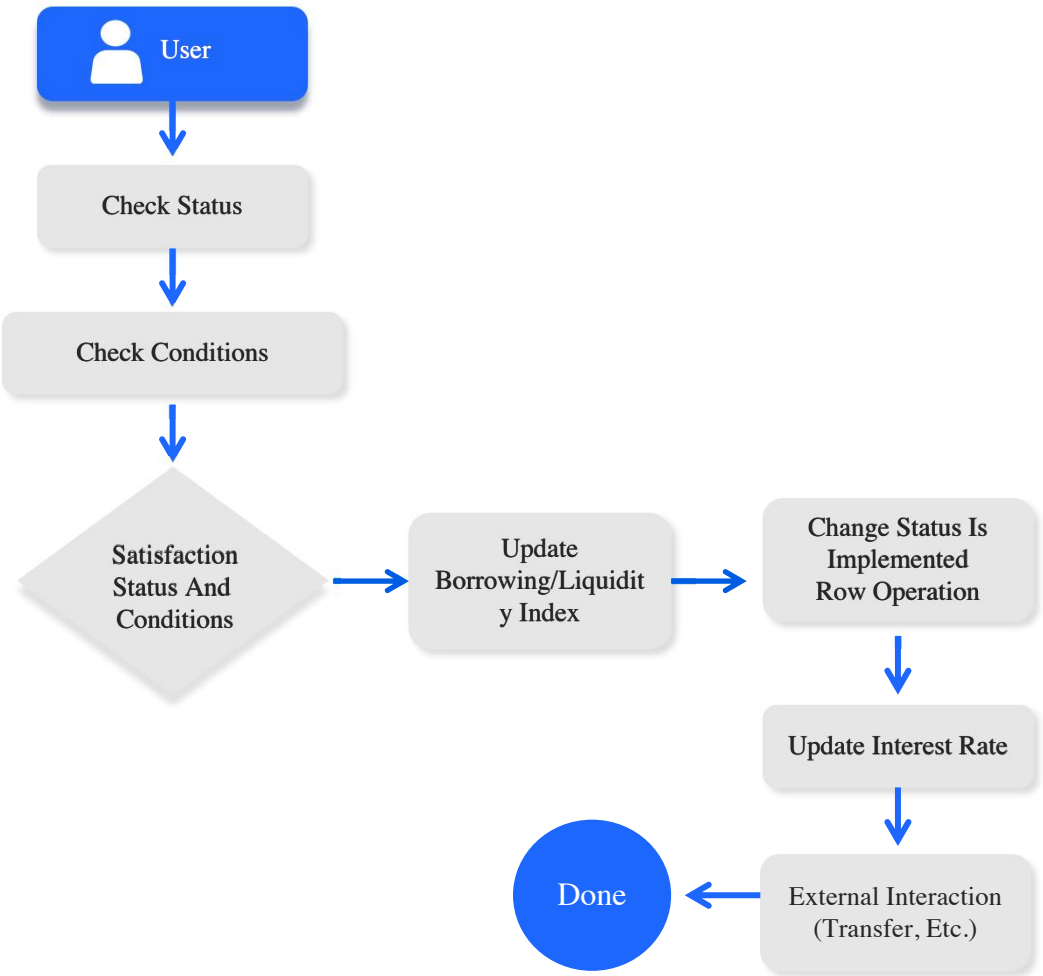

Figure 4: Loan Pool Contract

3.1 Deposit

Members deposit their assets in the liquid asset pool. The interest rate algorithm of the smart contract calculates the member's deposit interest in real time. This operation is the simplest and does not have any specific status checks.

- Annual deposit interest rate ≈ annual borrowing interest rate x utilization rate x (1-reserved interest rate)
- Unique daily spend
- Add funds anytime
- Pass the safety audit of the international authority
- No minimum contribution required

The deposit operation process is shown in Figure 5 below:

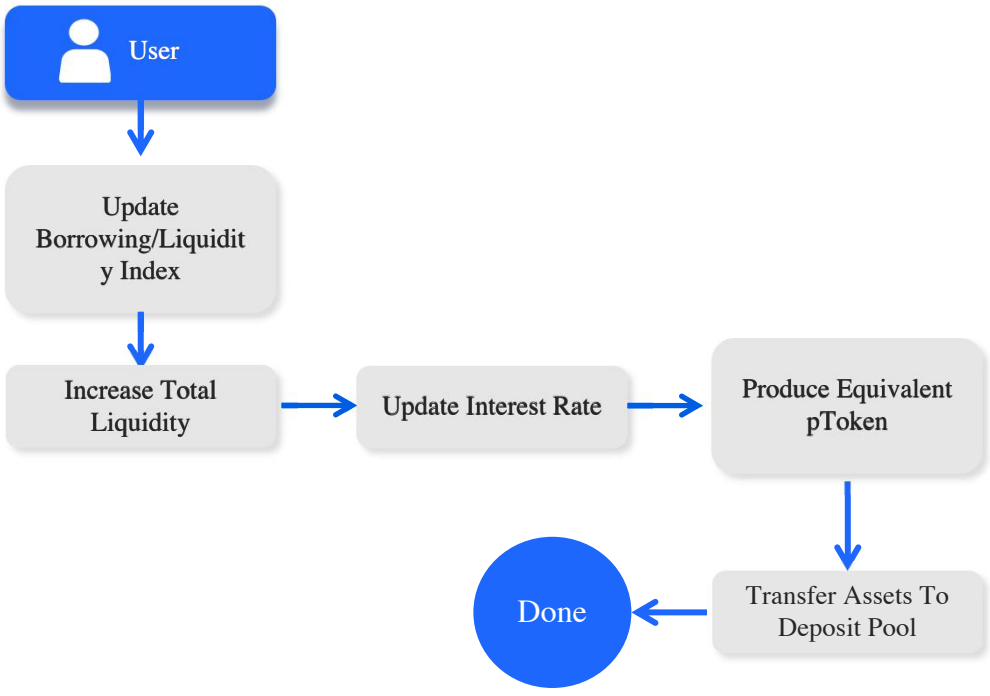

Figure 5: Deposit Operation Process

3.2 Loan

The loan function supports members to borrow assets from the liquid asset pool to their own wallets, transfer a certain amount of basic assets to users in exchange for the collateral that remains locked, and then begin to accrue interest based on the asset's interest rate. The total amount of borrowing must be less than The total assets of the liquidity pool.

- Borrowing interest rate = base interest rate + (utilization rate x added interest rate)
- Automatic approval, no credit check, zero fees and flexible repayment
- Pass the safety audit of the international authority

The operation process of borrowing is shown in Figure 6 below:

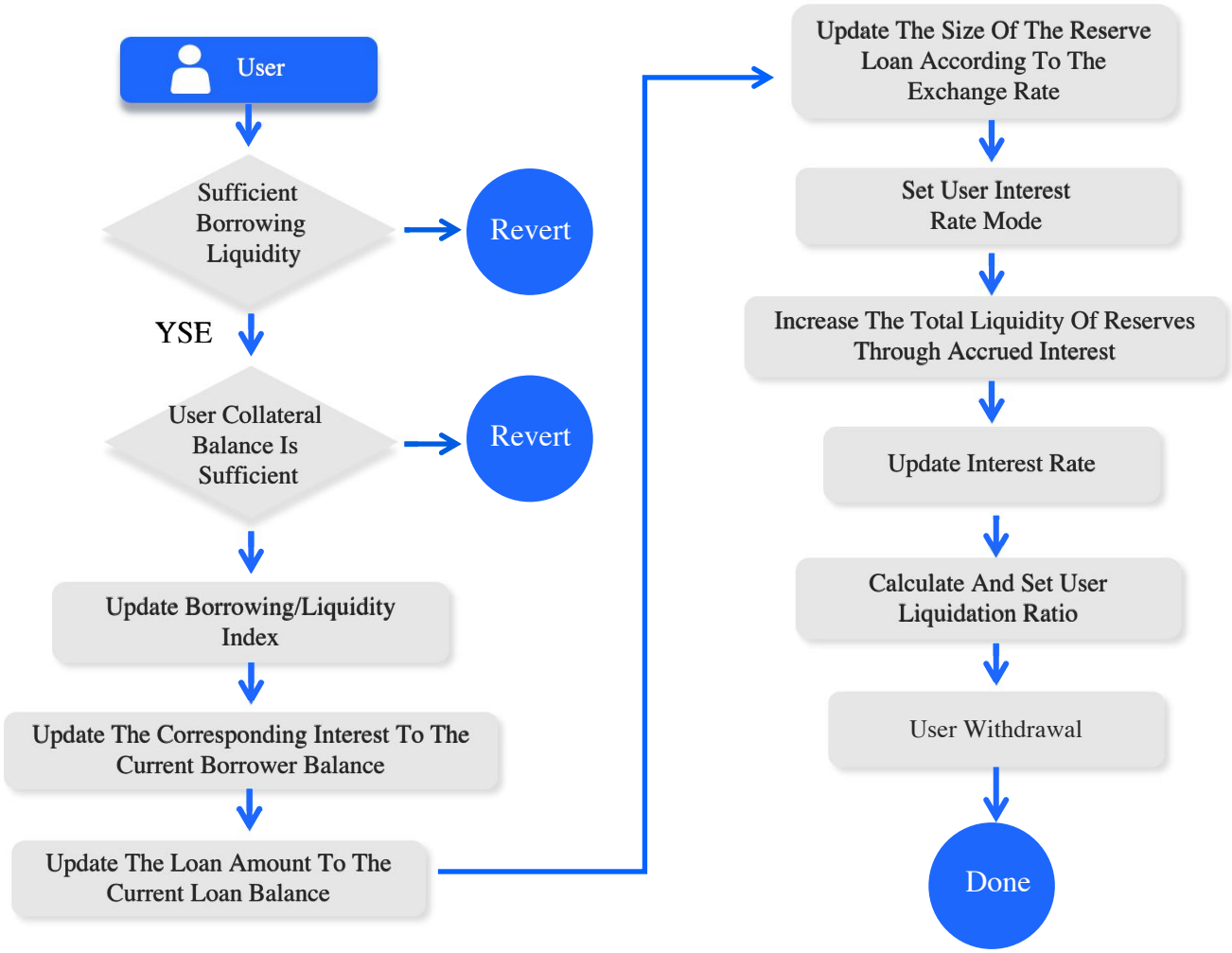

Figure 6: Loan Operation Process

3.3 Repay

Allow users to repay all or part of the loan amount plus interest for repayment.

- Repay the arrears at any time
- Flexible repayment method
- Pass the safety audit of the international authority

The repayment process is shown in Figure 7 below:

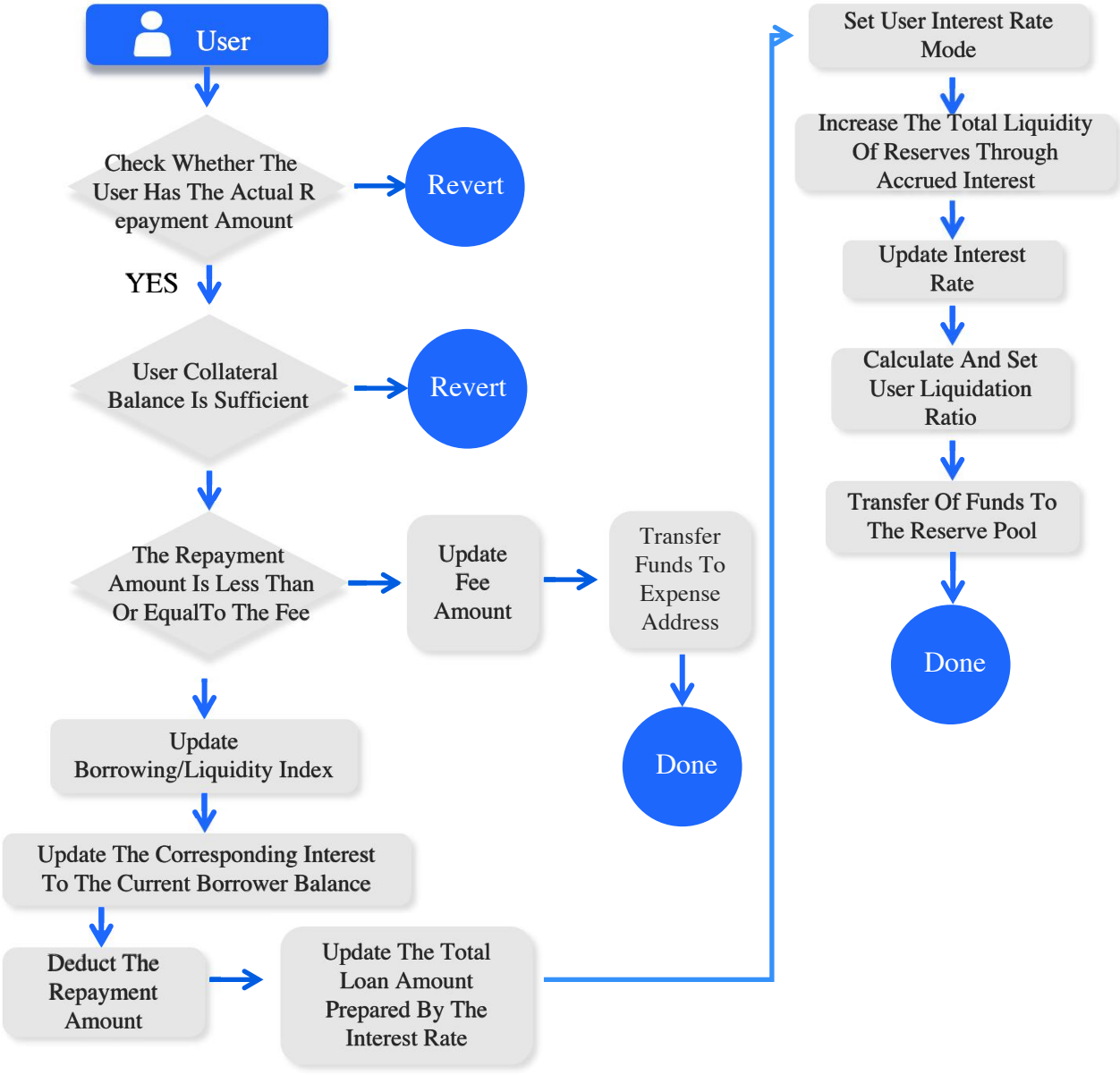

Figure 7： Repayment Process

3.4 Liquidation

As a loan agreement, the health of the system itself largely depends on the health of various loans made using the agreement. When all borrowers have sufficient collateral, the entire system has sufficient repayment capacity and the system is healthy; and once a borrower has insufficient collateral, the entire system will increase risks, and once such borrowers pass More, the risk of the entire system will further expand. Therefore, the role of liquidator is needed in the system. Liquidators liquidate unhealthy borrowings and receive collateral rewards for this. This incentive measure can encourage liquidators to clear unhealthy loans in a timely manner, thereby ensuring the financial security of the entire system.

The operation flow of liquidation is shown in Figure 8 below:

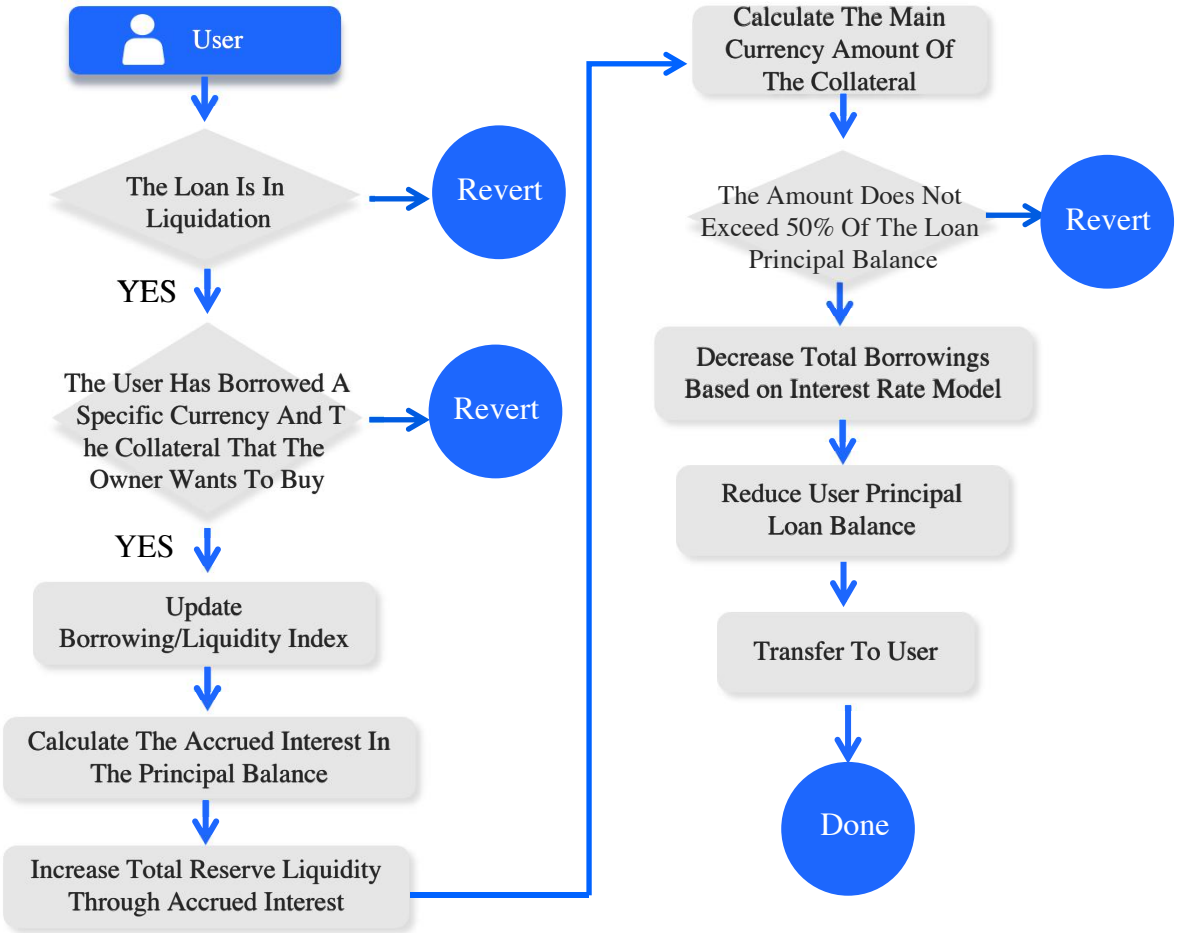

Figure 8: Liquidation Process

3.5 Token

PIKE token is a unique investment in the field of encryption and other fields, combining the best of traditional finance and blockchain technology. The value of PIKE tokens is linked to the consensus of the token holders, and can be safely stored, transferred or traded. PIKE tokens are directly distributed to PIKE token holders through the distribution mechanism. Users can decide to redirect their interest stream to any Ethereum public address.

PIKE tokens have the advantages of traditional asset classes and the innovative utility of digital tokens. The rational distribution of rights and interests to all participants in the community to achieve value interconnection and achieve true mutual benefit and win-win is also the basis for the diversified development of the The PIKE ecosystem in the future.

The circulation of PIKE tokens is 30 million, and the distribution of PIKE tokens is as follows:

- Airdrop: 10%, 3 million;
- Liquidity mining: 87%, 26.1 million;
- Super mining pool: 3%, 900,000;

Liquidity mining on PIKE is mainly to deposit tokens or lend tokens on it, so as to obtain rewards for PIKE governance tokens, which are deeply bound with their own business logic, allowing token holders to interact with The binding of the entire ecological interest is conducive to the development and continuous evolution of the entire PIKE protocol financial ecology.

4. Interest Rate Model

The money market is defined by a pair of universal interest rates (supply and borrowing rates), which are uniformly applicable to all users, and these interest rates adjust over time as the relationship between supply and demand changes.

The history of each interest rate in each currency market is recorded by the interest rate index. The interest rate index is calculated every time the interest rate changes. These interest rate changes are caused by users providing, withdrawing, borrowing, repaying or liquidating assets. The user’s balance, including accrued interest, is just the ratio of the current index divided by the index when the user’s balance is finally selected.

The balance of each account address in the money market is stored as an account checkpoint. The account checkpoint is a Solidity tuple <uint256 balance, uint256 interest index>. This tuple describes the balance of the last interest applied to the account. The current interest rate index is also stored globally.

Each time a transaction occurs, the asset's supply and borrowing interest rate index is updated to PIKE's interest since the previous index, using the interest during the period, denominated in r*t, and calculated using the interest rate per block.

$$Index_{a,n} = Index_{a,(n-1)} * (1 + r * t)$$

5. Rebalancing Process

The loan pool contract discloses a function "rebalance stable interest rate", which allows the stable interest rate of a specific user to be rebalanced, and anyone can call this function. However, the caller does not have any direct motivation to rebalance the interest rate of a particular user. To this end, the PIKE protocol will regularly monitor all stable interest rates and rebalance those deemed necessary. The rebalancing strategy will be determined by the agent offline, which means that users who meet the balancing conditions may not rebalance immediately. Since these conditions depend on the available liquidity and market conditions, there may be some temporary situations that do not immediately rebalance.

Even if work stops, anyone can call the rebalancing function of the loan pool contract, and depositors may still want to start the rebalancing of the minimum borrowing rate to increase the liquidity rate/force the borrower to liquidate, thereby increasing the available liquidity. The rebalancing process is shown in Figure 9 below:

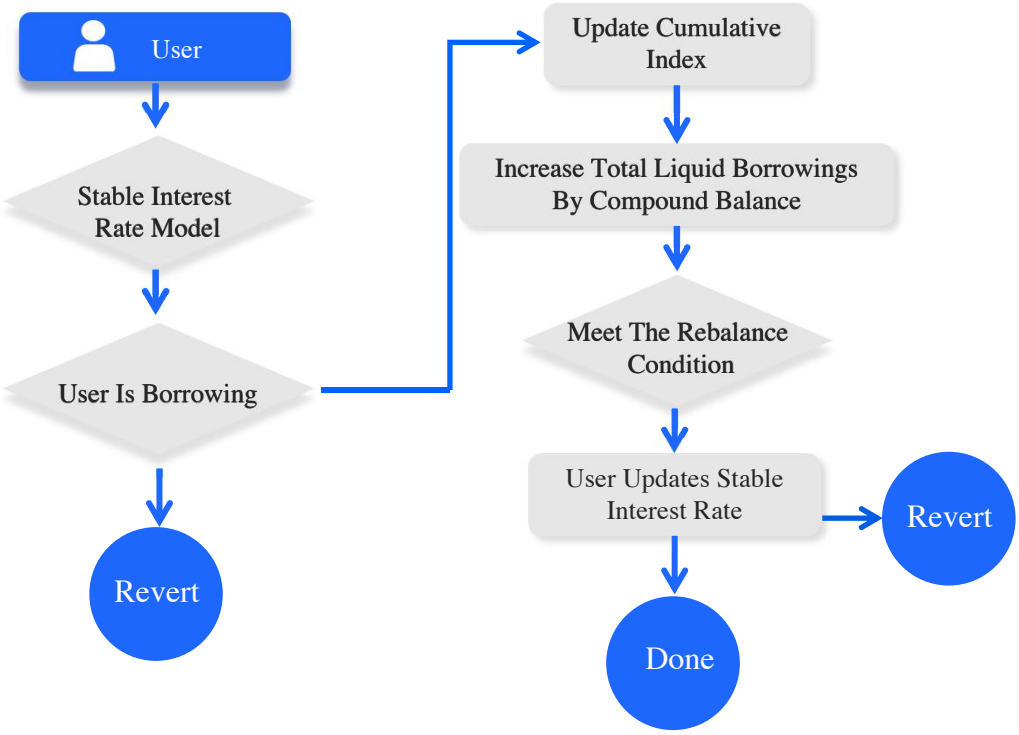

Figure 9: Rebalancing Process

6. Contract Interface

Table 1 ABI and summary of selecting currency market functions on BlockChain

Functional ABI	Action
Supply (address assets, uint256 amount)	Transfer ERC-20 tokens to the currency market and mark the sender's latest balance. Update interest rate model.
Withdraw (address assets, uint256 amount)	If there are funds, transfer ERC-20 to the sender. Update the interest rate model.
Repayment of loans (address assets, amount)	Transfer ERC-20 tokens to the currency market and reduce the sender’s loan balance. Update the interest rate model.
Borrowing (address assets, amount)	Check the value of msg.sender collateral, if sufficient, update the loan balance and transfer ERC-20 to msg.sender. Update the interest rate model.
Liquidation (address customers, address collateral assets, address borrowing assets, uint borrowing amount)	Raise the borrower's interest and then transfer the ERC-20 token to the money market to repay the borrowing position. msg.sender obtains collateral from the borrower at a discounted price. This function can be called to update the interest rate model only when the borrower violates the collateral ratio.
Set asset price (address asset, uint256 value)	Set the price of a given asset oracle price. Called by the specified Oracle address.

7. Disclaimer

The PIKE agreement strives to ensure the security of the credit financial system through liquidity mining, smart contracts, etc., and the team does its best to consolidate, improve and develop an innovative financial system. In addition, the PIKE protocol

continues to strengthen the security performance of the contract, and we are confident to declare that the security performance of the PIKE protocol is at the forefront of the industry. Nevertheless, PIKE can still face the corresponding risks of all cryptocurrencies in the stages of borrowing, depositing, repayment and withdrawal. We cannot guarantee that in many processes, 100% will not be interfered with, errors will occur, and we cannot guarantee that the platform will be 100% free from defects. , Weaknesses, loopholes, viruses and other inherent risks. This document provides a concise and concise description of the technical route, technical advantages and mode of the PIKE protocol. The PIKE protocol team will follow the project extension and technical progress. For the long-term development of the PIKE protocol, continuous improvement and innovation may be made to the original technology. If adjustments are made, we will update the latest adjustments to the latest version of the white paper. Please pay attention to it in time without prior notice. For more information about using the PIKE protocol, pay more attention to the official website.