Wing

A Credit-based, Cross-chain DeFi Platform

Version 0.1

September 2020

www.wing.finance

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Wing: A Credit-based Cross-chain DeFi Platform

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1. Introduction

The Decentralized Finance (DeFi) industry today consists mainly of the decentralized exchange of digital assets as well as the over-collateralization of digital assets to provide lending services. However, compared to mainstream financial services, it is evident that due to the lack of credit mechanisms, there are still limitations in the allocation of resources to users, and that mainstream financial service mechanisms are difficult to implement.

Credit-based DeFi proposes the concept of integrating credit elements into decentralized finance. These elements can be used for credit-based lending or new asset digitization, further expanding the service model and scope of decentralized finance. It also gives DeFi greater potential to provide mainstream financial services.

Based on this concept, Wing has launched a decentralized autonomous organization (DAO) [8] initiative called the Wing DAO for decentralized financial services that integrates credit elements. Wing can support the construction of decentralized financial products that combine collateral value and credit evaluation, as well as further decentralized social governance and autonomy.

1.1 Collateralized DeFi

Today's DeFi landscape mainly exists on the Ethereum platform [3] and consists of two types of systems: decentralized trading systems like Uniswap [7] and decentralized lending systems like Aave [1]. Additionally, there are stablecoin systems like Maker [4], decentralized insurance systems like Nexus Mutual [5], liquidity aggregators like 1inch [11], and more.

It is clear that collateralized DeFi, in general, consists of anonymized, trustless services that rely on over-collateralization. The core of the risk control method is the automatic execution of collateral liquidation smart contracts, which provides considerable convenience and flexibility, but also puts barriers in DeFi's ability to provide mainstream financial services. One of the necessary components that DeFi needs to integrate in order to move from the blockchain community towards the core mainstream financial services is the element of credit.

Credit brings several core enhancements to DeFi :

- Introduces credit-based lending
- Expands the collateral categories of digitizable assets (used as loan collateral or stable currency collateral)

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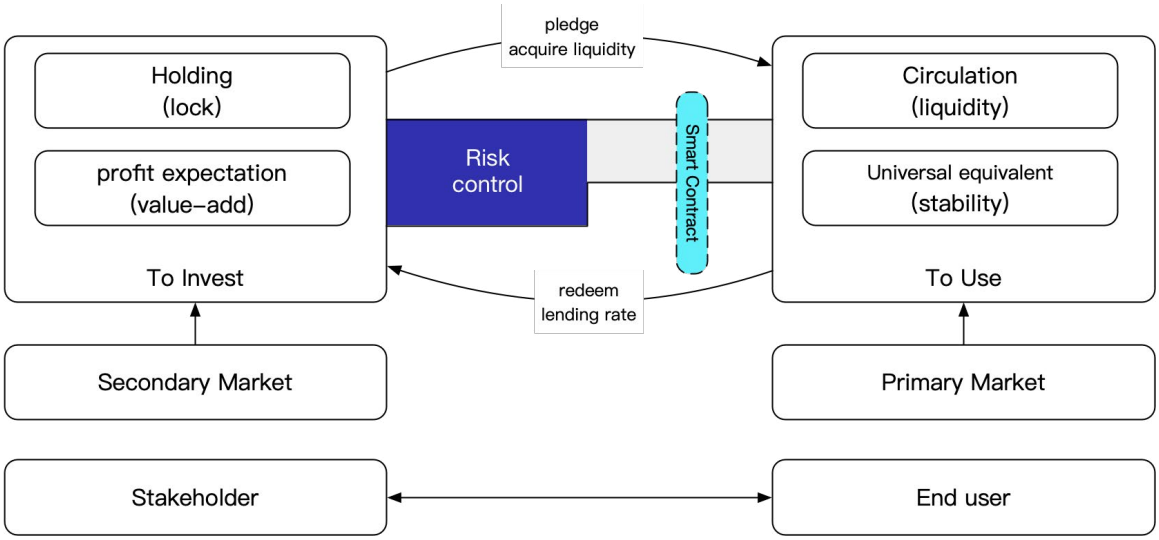


Figure 1: Collateralized DeFi

- Allows for regulatory compliance when applicable

1.2 Credit-Based DeFi

Credit-Based DeFi refers to DeFi products that integrate credit elements into decentralized financial services and enhance DeFi products in the following ways:

- Credit lending: Introduces credit assessment into lending products, gradually reducing or even cancelling collateralization requirements, and realizing the application of real resource allocation.
- Asset digitization: The digitization of certain types of assets requires on-chain confirmation of a series of credit elements related to those assets, such as ownership/asset attributes/legitimacy, etc.
- Regulatory compliance: If DeFi expands the service scope and category of the service group, compliance will become an important requirement, which will involve considering the needs of relevant assets or the credit element review of relevant users.

In addition to a risk control mechanism, Credit-based DeFi must integrate the verification of credit elements in a decentralized manner. Verification of credit elements can not be carried out using a traditional centralized mechanism with centralized storage and manual review. In the case of Credit-based DeFi, the risk control mechanism and credit elements require the introduction of two important decentralized mechanisms:

- User self-sovereign over their identity and data, with decentralized collaboration

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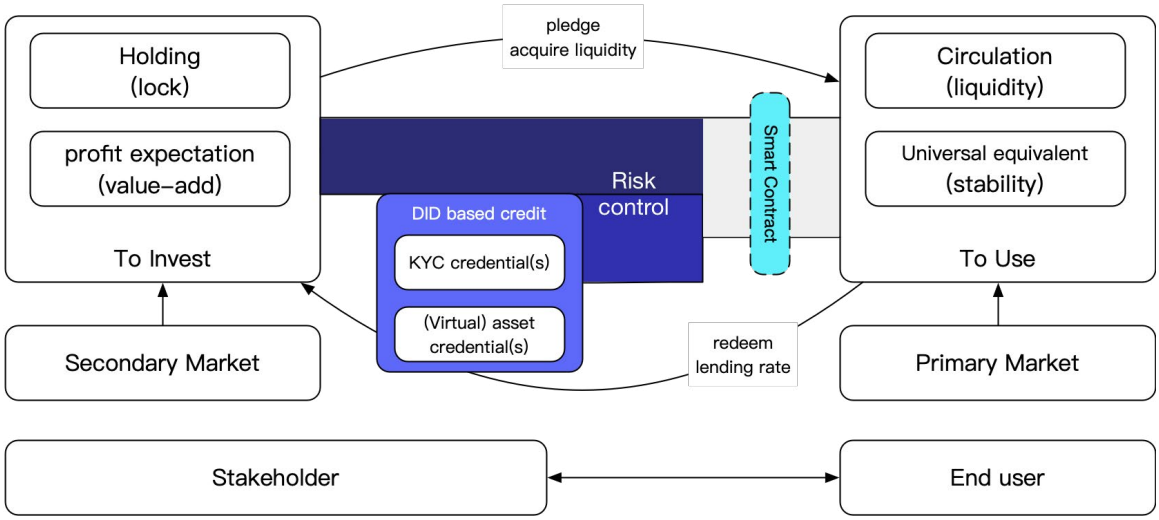


Figure 2: Credit-Based DeFi

Since there is no centralized intermediary or review organization in DeFi, all credit elements require users to self-manage and authorize their actions. From the protocol point of view, decentralized identifiers (DID) [9], verifiable credentials [10] and decentralized data collaboration mechanisms seem to be the appropriate set of protocols to support this.

- Automated auditing combining credit elements and smart contracts

  To achieve an automatic review of credit elements without manual intervention, it is necessary to automatically quantify credit elements through smart contracts. Therefore, various qualitative credit elements must be quantitatively processed, such as integration with a credit score system. In addition, many credit factors also come from centralized data sources. In certain scenarios, Oracles may need to be used as a credible mechanism for the introduction of this external data.

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2. Wing Project

Wing is a credit-based cross-chain DeFi platform that plans to work on the following things.

2.1 DeFi DAO

A DeFi DAO is an autonomous organization set up to support decentralized finance. Participants in this type of DAO can contribute to DeFi product design and operations through a proposal system. The community will accept new proposals according to the governance rules set. Once approved, they can become new DeFi products and services. A DeFi DAO can also make or modify decisions about platform rules and product rules.

The Wing DAO governance rights are implemented using the WING token. WING tokens can be used for decision-making related to governance votes or delegation. For the economic model of WING token, please refer to the later section.

2.2 Integration of Credit Elements

By introducing credit elements into decentralized financial services, decentralized verification of applicants' relevant qualifications can reduce or eliminate the need for collateralization in different products, and provide digital credit financial services. The Wing team will launch a series of decentralized trusted verification data service products with its underlying blockchain partners, and the Wing community can design new DeFi products based on this credit data.

2.3 New Types of Collateral

The integration of new types of collateral will be divided into two stages. The first stage is to implement cross-chain asset collateralization, and the second stage is to explore the possibility of digitizing and collateralizing more types of assets, such as NFT's and real-world assets. Credit elements may be used to describe and qualify such assets.

2.4 Wing Infrastructure

2.4.1 Selection of Technical Infrastructure

During the research and exploration process, we realized that in order to design a credit-based DeFi product, the underlying platform needs to have the following important features.

- A decentralized smart contract system combined with an automated credit evaluation system.

  Many decentralized projects come from all kinds of users around the world.

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When evaluating data for credit, data richness and data privacy are both an important challenge.

- The underlying platform is required to support various forms of collateral.

  Digital assets are currently the only collateral type on DeFi products. But considering the value of a financial system, using a collateral asset with similar, or higher level of liquidity and value to the loan target type, the value generated by users in case of resource allocation is limited. Being able to support more forms of collateralizable assets in different systems is critical to the next stage of DeFi, and can provide users with higher real financial value.

Considering the above requirements, Wing chose to release the first version of Wing DAO on the Ontology blockchain [6], the main reasoning for the same being that Ontology is a blockchain platform with an infrastructure that satisfies the aforementioned core requirements.

2.4.2 Ontology Blockchain

- Support for Credit Elements

  Ontology's decentralized identity and decentralized data protocols can support identity management and data verification independently controlled by users, and support automated credit data verification and credit evaluation combined with smart contracts. Hence, it can support this first phase of credit-based DeFi exploration.

  Wing will also gradually integrate new types of credit information from the Ontology protocol into the product design, such as a credit score (OScore) generated based on user digital asset information. Users can independently manage and map their various digital assets. The asset account generates its own digital asset credit score under the condition of completely self-controllable protection of privacy and data. Even with a new dimension of credit generated by the blockchain digital asset world, the design exploration of credit-based DeFi products is a very important credit assessment supplement.

- Support For a Variety of Collateral Assets

  Ontology has completed cross-chain integration with other mainstream blockchain networks and can use the digital assets from these networks, as well as from its own network to build collateral pools. Additionally, Ontology's decentralized identity data protocol supports the authentication of various kinds of assets, ranging from simple to complex, to NFT digital

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assets to lay a solid foundation for the addition of new types of collateral.

- Other Evaluation Factors

  Ontology can support a variety of smart contracts. The first batch of Wing products will be developed using Ontology WASM smart contracts. WASM is versatile and convenient for multi-platform migration and is also suitable for community developers. Since Wing's DeFi products integrate credit evaluation, smart contract functionality will be used in certain scenarios and can even utilize the ONT Sign service on the Ontology protocol.

  Regarding performance, it's difficult to accurately predict the number of users or number of transactions Wing DAO will experience in its early days. Taking into consideration other current major DeFi products' performance requirements, Ontology's currently supported TPS rate (3000 – 5000 tps) suffices for the needs for the first phase of Wing DAO. If Wing DAO begins to approach Ontology's data or transaction limit, which is unlikely, then further consideration will be given to introducing a Layer 2 solution.

2.4.3 Wing Logical Architecture

Based on the above basic platform of choice and Wing product features, the logical architecture of the Wing platform (under the guidance and support of the Ontology core team) is depicted in Figure 3.

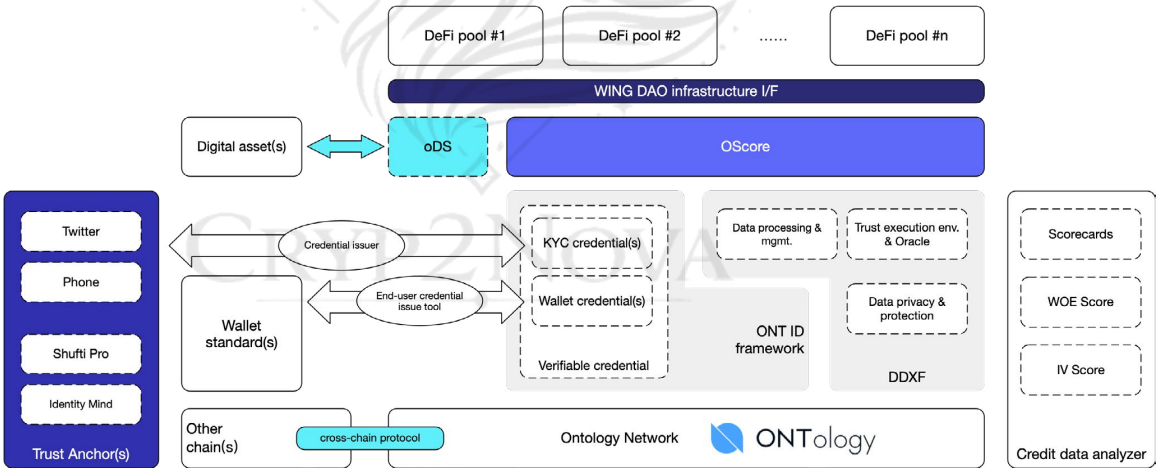


Figure 3: Wing Logical Architecture

Where a blockchain system is necessary, Wing uses Ontology's decentralized identity and data protocols ONT ID and DDXF to support users' self-management and authorization of credit elements. In addition, some Wing products will use the digital asset credit score OScore as one of the evaluation elements. For specific details with respect to the product design, please refer to Section 4.

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3. Wing DAO

3.1 Basic Structure of Product Pools

Wing DAO can support community proposals to establish new asset market product pools. Each product pool has three components: a lending pool, a borrowed pool, and a risk control margin pool (optional). 5% of the interest revenue from each loan will be deposited back into the margin pool. If there is no margin pool, it will be deposited into the Wing DAO community fund pool.

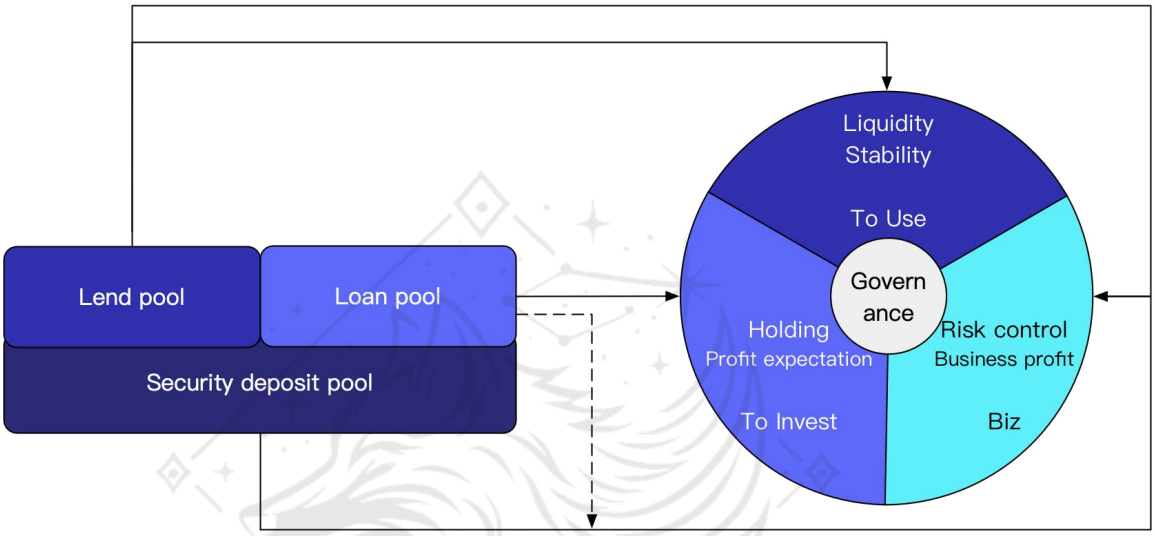


Figure 4: Basic structure of the product pools

The design proposal of the product pool can set the following parameters:

- Type of loaned assets
- Types of borrowed assets
- The minimum and maximum amount of individual borrowing
- The minimum and maximum amount of individual lending
- Whether a risk margin pool exists
- Risk control margin pool asset types and public quota
- Risk control mechanism requirements (optional):
  - Collateral requirements
  - KYC requirements
  - Credit Audit Requirements

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– Breach of Contract Agreement

3.2 Governance Model

The basic governance rights in Wing DAO include:

- Voting for the approval of a new product pool
- Voting on the application of WING token in product pool rules (for example, set WING as one of the default asset types in the margin pool)
- Voting on the allocation of Wing DAO community fund Token (see the Token Model chapter for details)
- Initiation of voting on other new governance mechanisms

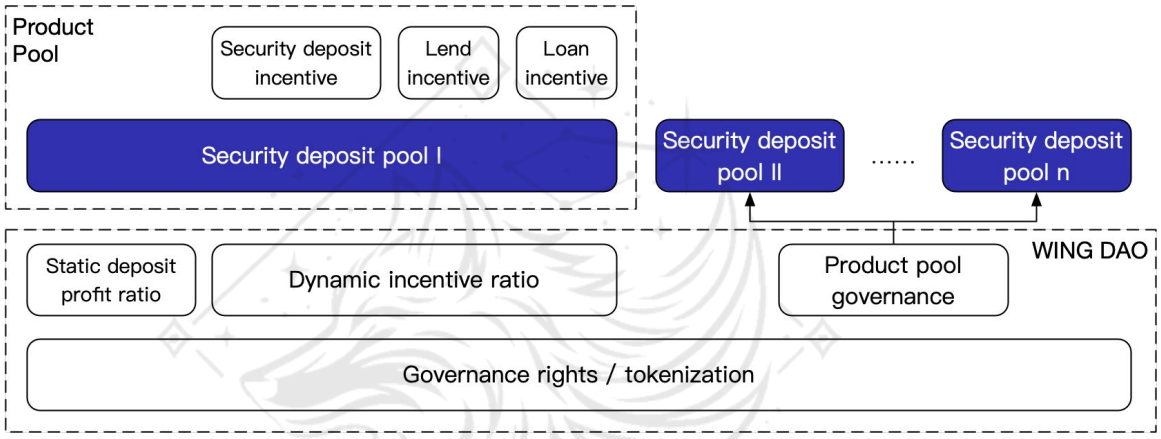


Figure 5: Wing DAO Governance Model

3.3 Risk Control

A part of the Wing DAO framework defines the risk control mechanism. The initiator and policy maker of each product pool can design their own final risk control model in conjunction with the risk control framework of Wing DAO. The basic risk control framework of Wing DAO is as follows:

- Provide external user loan amount type or history (one time user authorization required)
- Make the breach records of the breaching user available publicly (authorized by the user in advance before participating in the service)
- The risk control measures required by other product pool proposals (such as KYC, credit review, default handling, etc.) are determined by the loan user through the product pool and the borrower user to determine terms or electronic contracts. In principle, such agreements need to comply with relevant laws according to the product situation, Wing DAO does not support any violation of laws or contract rules.

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3.4 WING Token

The WING token is the governance token of Wing DAO and possesses a series of governance rights. The rights of the WING token are wholly owned by Wing DAO, and there will be no pre–allocation to specific individuals or teams in any form, nor will it be used for any financing.

3.4.1 WING Token Distribution

A total supply of $10,000,000$ WING tokens will be minted and distributed according to the following distribution model:

- $8,000,000$ (80%) : Liquidity and margin incentives

  80% of the total supply will be allocated to the product pools based on the transaction volume of each product pool (calculated in USD), and each product pool will set a weight value according to the collateral ratio of the product pool. The lower the collateral ratio, the higher the weight, higher the WING incentives offered. Distribution can be automated for each product pool according to the incentive distribution ratio of the product pool. For example, say the distribution ratio of a certain product pool is– lending pool: 50% , borrowing pool: 30% , margin pool: 20%. The incentive is automatically allocated to the addresses in each pool based on the respective asset weights.

Table 1: Release Mode of WING Token

Years	Released per second	Released that year	Total released WINGs
1	0.06	1,892,160	1,892,160
2	0.05	1,567,800	3,468,960
3	0.04	1,261,440	4,730,400
4	0.03	946,080	5,676,480
5	0.02	630,720	6,307,200
6	0.02	630,720	6,937,920
7	0.01	315,360	7,253,280
8	0.01	315,360	7,568,640
9	0.01	315,360	7,884,000
10	0.01	315,360	8,000,000

A daily decreasing release model is adopted, and the total release is completed in ten years. The release model is shown in Table 1.

- $2,000,000$ (20%) : Wing DAO Community Fund

  20% of the supply will go to a public custodian account with only gover–

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nance rights and cannot be transferred out. After the Wing DAO launch, $500,000$ (5% of the total supply) will be transferred to Wing DAO community fund pool every six months. The usage of the community fund pool is determined by WING token holders through a proposal system. In principle, Wing DAO community funds will be used for development, marketing, audits, risk control, or emergency handling as needed.

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4. Product Proposals

In the early stages of the Wing DAO launch, the Wing team will propose two initial product pools.

NOTE: The specifics regarding these two product pools described below may undergo changes at the time of release. This may include certain parameters being adjusted, etc. Please refer to the product pool details at the time of release for the most accurate description.

4.1 Wing DAO Inclusive Pool v1

Wing DAO Inclusive Pool v1 (Inclusive v1) is an asset pool that integrates credit elements. It is designed based on the Wing DAO framework.

4.1.1 Basic Rules

The basic rules of Inclusive v1 are as follows:

- Inclusive v1 includes a loan pool, a lending pool, and a margin pool
- The loan product is USDT
- The collateral types accepted are wBTC, ETH, and ONT. The collateral rate is 80% (the collateral is valued at its USDT valuation at the time of collateralization)
- The loan amount for a single user is 20 USDT – 500 USDT, and one can borrow again after repayment
- Users with OScore higher than 500 may borrow up to $1,000$ USDT
- The interest rate is 0.03% per day, the term is 14 days, and the loan can be repaid in advance
- The total limit of the loan pool is $500,000$ USDT
- Margin pool acceptance: USDT/BTC/ ETH /ONT (estimated based on USDT when joining the margin pool)
- The default settlement ratio of the margin pool is: 60% (of the default exposure)
- The distribution ratio of WING tokens available daily to Inclusive v1 :
  - Lending pool: 40%
  - Borrowing pool: 30%

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- Margin pool: 30%

- User compliance requirements: Users of Inclusive Pool v1 must comply with local laws and regulations to participate.

4.1.2 Credit Elements

The credit element mechanism of Inclusive v1 will be based on a decentralized personal self-sovereign OScore credit protocol. Inclusive v1 will not retain personal information, only two simple authentications:

- Personal real-name authentication
- Effective Twitter accounts certified (by the OScore provided Twitter Score audit)
- OScore score certification (optional, used to increase quota)

4.1.3 Breach of contract

The smart contract will be liquidated after the expiry date. The allocation and payment of the margin pool are conducted according to the default exposure after liquidation (USDT Accounting). The defaulted user will be added to the OScore default list with certain privacy protections:

- defaulter list is the user's self-sovereign data, only a third party authorized by the user can fetch this data
- can be removed from the default list by returning the default amount and penalty interest to the Wing DAO community fund pool after defaulting
- defaulter list will be automatically cleared after three years

4.2 Wing DAO Flash Pool v1

The Wing DAO Flash Pool, inspired by Compound [2], is a collateral based fund pool on the Wing DAO platform. It brings down collateral rates by introducing an insurance pool mechanism.

4.2.1 Overview

A user can collateralize their digital assets and borrow another asset. The smart contract that supports this application constantly checks the market price of the collateralized product in the market using an oracle. When the collateralized assets decline, the smart contract will automatically send a notification to notify the user to make a replenishment. If a user is unable to complete the replenishment in time as per the predetermined rules, the smart contract will automatically clear the position and sell the collateralized assets to ensure the

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income of the asset lender. For the risk exposure that the lender fails to liquidate, the insurance pool will pay 70% of the compensation, but it will not exceed the total limit of the insurance pool.

The Flash Pool uses the traditional DeFi fund pool method to provide liquidity. The supply assets are aggregated into the fund pool to provide liquidity. Borrowers use smart contracts to collateralize digital assets to borrow digital assets equivalent to the collateralization coefficient $\times$ collateral assets. At the same time, a cross-chain protocol is introduced, and the interest rate of the fund pool is calculated by algorithm. The suppliers and borrowers of assets interact directly with the protocol to earn or pay floating interest rates. The Flash Pool will integrate the OScore credit scoring mechanism and the WING token incentive mechanism after the loan flow is stable. Borrowers who have activated OScore will earn additional WING token rewards.

Supply and borrow assets. Aggregates the supply of each user to provide more liquidity and maintain the balance of the capital system. This will initiallly consist of wBTC, ETH, ONT and USDT. In the future, WING token holders will vote to add new types of supply assets.

Users are able to use the aforementioned digital assets as collateral to borrow other digital assets from the fund pool for use anywhere in the cross-chain ecosystem. Every currency market has a floating interest rate set by market forces, which determines the borrowing cost of each asset.

The assets held by the protocol have a collateralization coefficient ranging from 0 to 1. The liquidity and value of the underlying assets determine the size of the collateralization coefficient. The collateral sum multiplied by the collateralization coefficient equals the user's loanable amount.

Establishing the risk, if the value of the outstanding loan of an account exceeds its repayment capacity, a portion of the loan can be repaid at the current market price minus the liquidation discount to eliminate the risk. If the lender has a repayment crisis, the liquidation process may continue.

Any Ontology address that has borrowed assets can call the clearing function to exchange their assets for the token collateral of the borrower. Liquidation is performed automatically by the contract.

Interest rate model. Borrowing in the Flash Pool does not involve negotiating with suppliers, borrowers, terms, or interest rates. Instead, it uses an interest rate model that achieves interest rate equilibrium based on supply and demand. According to economic theory, interest rates should increase with demand; when

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demand is low, interest rates should be low, and vice versa. The utilization rate U of market a can be defined as:

$$U_a = \frac{Borrows_a}{TotalAssets_a}$$

The demand curve is coded by governance and expressed as a function of utilization.

The interest rate earned by the supplier is implicit, equal to the borrowing rate multiplied by the utilization rate.

It relies on the interest rate model to stimulate and increase liquidity. During periods of extreme demand for assets, the liquidity (tokens that can be used to withdraw or lend) will decline. When this happens, interest rates will rise, stimulating supply and inhibiting borrowing.

4.2.2 Implementational Architecture

The core of the Flash Pool lending market is the settlement of a smart contract in cross-chain assets, allowing the ONT ID account to automatically calculate interest when providing or borrowing assets.

Smart contracts. Every digital asset market is structured in accordance with smart contracts that implement OEP-4 specifications. The user's balance is expressed as the Token balance. The user can mint Tokens by supplying assets to the market or redeem tokens for basic assets. The exchange rate between the Token and the underlying asset increases over time.

As the total market lending increases (as a function of interest accrued by borrowers), the exchange rate between the Token and the underlying asset also increases.

Interest rate mechanism. The interest rate of each asset market of the Flash Pool is defined by the market, and the interest rate is uniformly applicable to all borrowers. As the relationship between supply and demand changes, the interest rate will adjust over time.

The interest rate index keeps the historical record of each interest rate in each currency market. The interest rate index is calculated every time the interest rate changes by the user casting, redeeming, borrowing, repaying or liquidating assets.

Starting from the initial interest rate, each time a transaction occurs, the asset's interest rate index will be updated. With compound interest, the interest rate during a certain period is calculated using block-by-block interest rate.

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The total outstanding borrowings in the market will be updated to include the accrued interest since the previous index. A portion of the accrued interest is retained in part (as reserve).

Borrowing In the Flash Pool, users can invoke the `Borrow(uint amount)` method of the respective Token contract. This method call will check the user's asset value and provide sufficient collateral, map cross-chain assets to the same chain and transfer the synchronized equivalent tokens to the user's Ontology wallet address, and update the currency market floating interest rate.

Accrued interest and borrowing before balance interest calculation is exactly the same; Borrowers have the right to repay at any time by calling the `RepayBorrow(uint amount)` method. This operation will repay the outstanding loan.

Liquidation. If the user's loan balance exceeds the total value of the collateral (borrowing capacity) due to the decline in the value of the collateral or the increase in the value of the borrowed assets, the public method `liquidate(address target, address collateralAsset, address borrowAsset, uint closeAmount)` can be called at a slightly higher price than the market price to exchange the invoker's assets for the borrower's collateral.

Feed Price. A price Oracle maintains the current exchange rate of assets; Flash Pool delegates the ability to set asset values to a committee that aggregates prices from the top ten exchanges. These exchange rates are used to determine borrowing capacity and collateral requirements, as well as for all functions that need to calculate account values.

Margin Payment. Each time the liquidation is completed, if the lender still has outstanding exposure, the margin pool will transfer the margin pool assets at the USDT equivalent of 70% of the outstanding exposure.

Lending Ratio. The lender pledges 1.2 times the assets to borrow 1 times the corresponding tokens. The interest is calculated according to the exchange rate at the time of repayment, and 5% of the interest of each loan will be sent to the Wing DAO community fund pool. Flash Pool does not limit the amount of deposits or users. Flash Pool uses smart contracts to determine the collateral assets and can calculate the number of tokens that can be borrowed at multiple exchange rates and collateralizable assets.

4.2.3 Integrating OScore

Flash Pool follows the token incentive mechanism of the Wing DAO platform. The distribution ratio of WING tokens obtained according to the proportion of

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transaction volume every day is: 50% of the loan pool, 40% of the lending pool, and 10% of the margin pool.

After Flash Pool loan flow stabilizes (approx. within three months), the OScore credit scoring mechanism and the WING token credit incentive mechanism will be introduced. Users register on the OScore website to activate OScore features. Daily trading accounting for a certain ratio of the WING token receives 5% as additional incentive. Flash Pool, based on OScores calculated according to the gradient of each transaction paid, will calculate extra WING tokens that will be awarded to users who carry out lending activities based on the OScore of participants. Those who participate in Flash Pool's lending activities without overdue behavior will receive a bonus according to their OScore. OScore can be used for other DeFi or product credit approval requirements.

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5. Vision and Roadmap

5.1 Our Vision

To let decentralized finance reach and benefit everyone.

5.2 Roadmap

Phase 1 – 2020 Q3 : Complete the first batch of exploration products to go online (DeFi 2.0 products that integrate basic credit elements)

Phase 2 – 2020 Q3: The distribution model of WING and the autonomous governance based on WING start simultaneously

Phase 3 – 2020 Q4 – 2021 Q1 : WING token gradually forms a market value, which can be used in non-governance scenarios such as lending and margin

Phase 4 – 2020 Q4 – 2021 Q4: Wing DAO expands to other blockchain platforms, cross-platform DeFi DAO

Acknowledgment

Thanks to all the financial product and technical experts for their feedback.

Thanks to the Ontology core tech team for providing the technical architecture along with advice and guidance.

Thanks to the Ethereum community for creating innovation and inspiration through exploration of DeFi projects.

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