



# An Introduction to the Onyx Protocol

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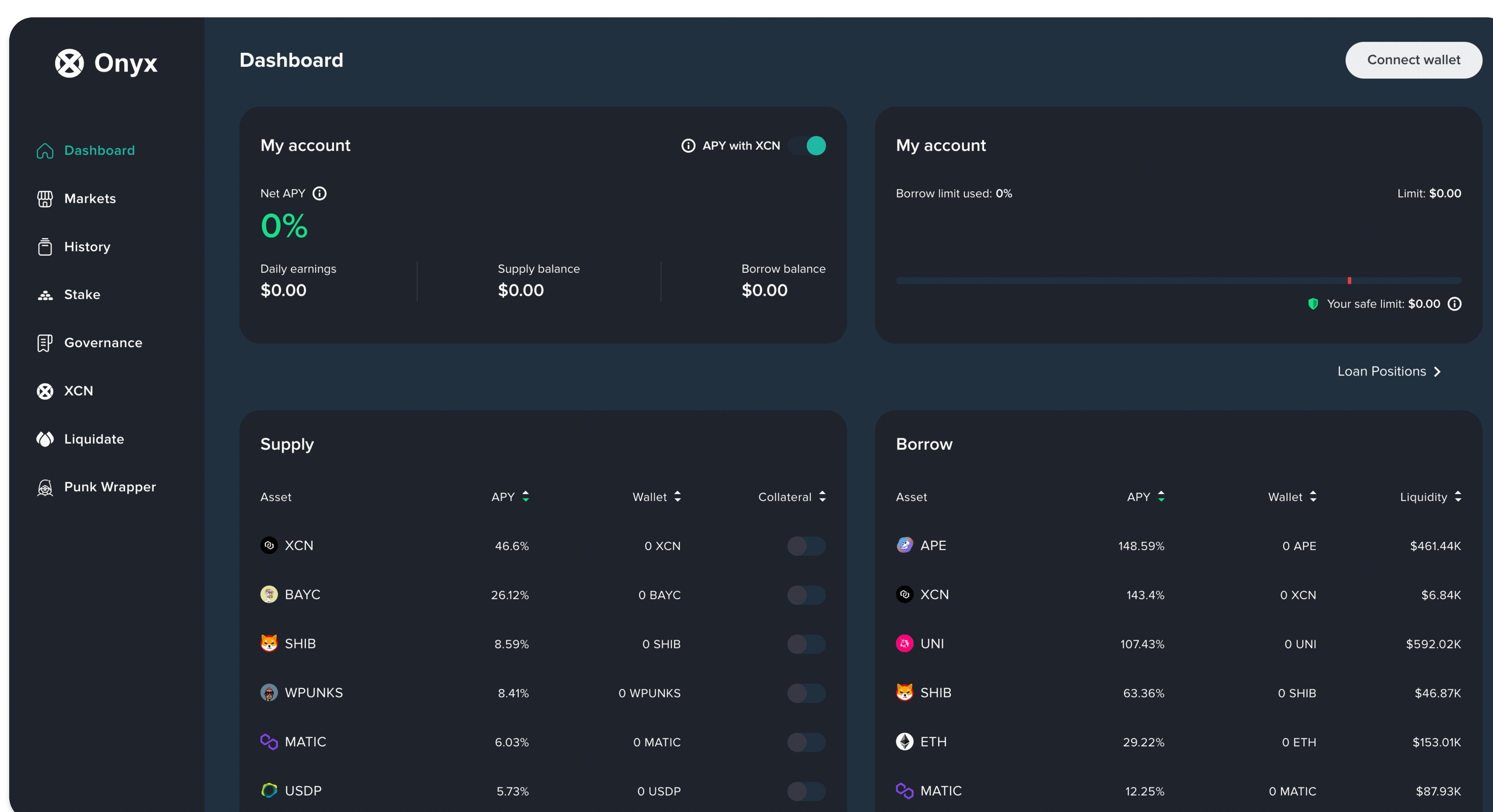
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## Introduction

In this paper, we introduce the Onyx Protocol, a decentralized platform that facilitates a peer-to-peer money market lending protocol, which supports an array of digital asset types on the Ethereum blockchain. The Onyx Protocol represents a significant step towards supporting a broader segment of the digital asset space, including non-fungible tokens (NFTs).

Onyx Protocol supports a variety of digital assets, such as Ether (ETH), ERC-20 tokens, ERC-721 tokens, and ERC-1155 tokens, which can be supplied or borrowed through an aggregated and unified balance, supported by non-custodial custody via decentralized smart contracts. Furthermore, NFTs can be supplied as collateral to enhance the borrowing capacity of the corresponding account.

Onyx Protocol's underlying mechanism is powered by Onyxcoin (XCN), a decentralized digital asset on the Ethereum blockchain that serves as both the protocols governance and utility token. Credit lines accessed and borrowed through the Onyx Protocol do not have monthly payments or expiration dates, and they remain perpetual as long as the collateral is deemed sufficient.



## Motivation

Lending protocols have long been plagued by capital efficiency issues, which have prevented the full potential of collateral and digital assets from being unlocked, while others are controlled by centralized teams. Current lending protocols either do not support all token types, lack unified and aggregated liquidity collateral access, or are not decentralized. The Onyx Protocol offers a solution to this trilemma by deploying a fully decentralized liquidity protocol, powered by Onyxcoin (XCN), which supports multiple token types with aggregated and unified capital access.

Aave, Compound, and BendDAO are among the most popular lending protocols today, but they only support either Ether and Tokens or NFTs, but not both together. While Aave and Compound have a combined total value locked in billions of dollars, they only support ERC-20 tokens such as WBTC, USDC, USDT, and Ether (ETH). BendDAO only supports NFTs as collateral, such as BAYC and MAYC, and only supports ETH as the credit line asset. As a result, users must use 2-3 different platforms to potentially maximize the use of their digital assets to achieve capital efficiency.

ParaSpace is the largest money market with NFT collateral and aggregated liquidity since it enables multiple token types to be used as collateral and for credit. However, it is controlled by a centralized team and has single points of failure vulnerabilities. Despite its immense success, with over \$100 million in liquidity and over \$20 million in borrowing, its codebase, code changes, and operations are singularly controlled by team members, lacking decentralization or community control.

BlockFi and Genesis are other lending protocols that allow users to earn yield by supplying digital assets that will be made available to lend to other clients of the respective company. However, these companies may tout risk management and security, but the truth of the matter is that there is no transparency or trust-less lending occurring. In fact, users are putting their assets at low yield and high risk, as we have seen with recent bankruptcy cases of these firms. Sometimes, digital assets were lent without proper collateral being posted, leading to under-collateralization and lack of disposal liquidity.

The Onyx Protocol represents a decentralized liquidity protocol that supports multiple token types with aggregated and unified capital access. This protocol solves the capital efficiency trilemma and eliminates the single points of failure inherent in centralized protocols. Unlike other lending protocols, Onyx Protocol offers transparency and trust-less lending, making it a better choice for digital asset holders to access and earn liquidity.

## Solution

Onyx Protocol addresses the issues with current lending and liquidity protocols through its innovative architecture and design. The protocol is forked from Compound Finance, a battle-tested aggregated money market, with modifications added to support vault-based governance and NFT tokens, in addition to all of the other digital assets included.

The Onyx Protocol enables clients to deposit Ether, tokens, and NFTs, either to earn yield from the protocol or to utilize these deposits as collateral to access an aggregated and unified credit line to borrow ETH or ERC-20 tokens, such as USDT and USDC, for example.

Operating through a series of decentralized smart contracts deployed on the Ethereum blockchain, the Onyx Protocol is entirely transparent and immune to centralized attacks and single points of failure. These smart contracts are owned by Onyx Governance and can only be modified through a successful on-chain proposal deployed by Onyxcoin stakers. This ensures that any changes to the protocol are done transparently and with the support of stakers, making the protocol unsusceptible to centralized attacks and single points of failure. By leveraging the power of decentralized smart contracts, Onyx ensures that all transactions are recorded on the Ethereum blockchain, providing full transparency and accountability.

Onyx Protocol ensures that all transactions are transparent and immutable, making it an ideal choice for those seeking a secure and reliable lending and liquidity platform.



## Architecture

The Onyx Protocol is a platform designed with a fully decentralized architecture that operates on transparent, open, and trustless peer-to-peer smart contracts. Unlike traditional protocols that rely on centralized control, the Onyx Protocol leverages the power of decentralized governance to ensure that all transactions are transparent, secure, and immutable.

In order to modify the smart contracts that operate the immutable protocol, the Onyx Protocol requires on-chain governance proposals. This ensures that all changes to the protocol are done transparently, with the support of Onyxcoin stakers, and without the threat of centralized control.

The architecture is described in detail below:

### Collateral

In a decentralized lending protocol such as the Onyx Protocol, collateral plays a crucial role in securing loans and enabling credit lines. Every supported digital asset on Onyx can be enabled to become collateral, which activates an algorithmic credit line based on the aggregate value of the collateral and their respective collateral factors.

When a user deposits digital assets onto Onyx and enables them as collateral, the assets are evaluated based on their aggregate value and collateral factors, which determine the maximum credit line that the user can access. The collateral factors are determined based on the risk profile of the digital asset and the liquidity of the asset in the market.

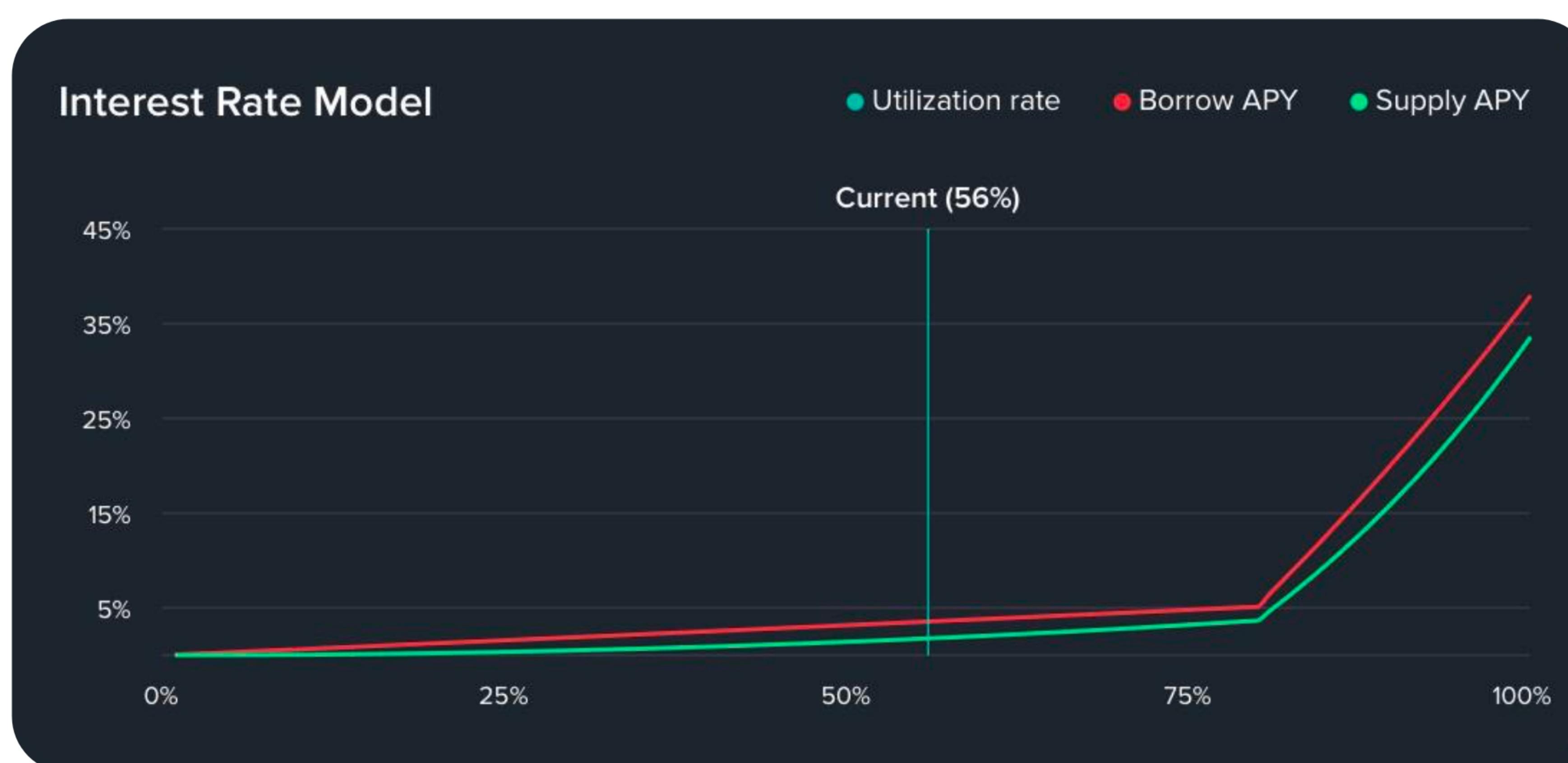
The algorithmic credit line is designed to ensure that users can access credit based on their collateral value, while minimizing the risk of default. This enables users to access credit without the need for traditional credit checks or underwriting processes, making it a more accessible and efficient option for borrowers.

## Deposit Yields

Deposit of supported digital assets onto the Onyx Protocol enables users to receive yield (APY) based on the yield curve deployed for the specific digital asset and additional yield (in APR) of Onyxcoin XCN, depending on the reward speed set for that specific market. The yield that users receive is entirely algorithmic and automated, based on three factors.

Firstly, the yield curve parameter and kink determine the yield that users receive. Secondly, the amount being borrowed and utilized against available liquidity is another crucial factor that influences the yield. Finally, the reward speed set for additional incentives through XCN plays a critical role in determining the yield that users receive.

The Onyx Protocol's algorithmic and automated system ensures that users receive a fair and transparent yield, based on the specific factors mentioned above.



## Borrow Yields

The interest rate for borrowing supported assets is determined through a process that is analogous to the determination of deposit yields. The borrower will primarily be paying interest to the protocol. The interest rates for borrowing non-NFT assets will be computed by reference to the yield curve for that market.

The kink will determine the level of variable interest that the borrower will be required to pay for the specific asset, with this variable being compounded per block. The level of utilization will then determine which part of the yield curve applies, and thereby the final interest rate required for borrowing the cryptocurrency.

The Onyx Liquidity Protocol incentive program is designed to provide rebates to users to offset the interest rates that they must pay to the protocol, in the form of liquidity mining. By this mechanism, users are incentivized to participate in the lending protocol and thereby contribute to the utilization of the supply market creating yields.

## Credit Line

The provision of a credit line is an automated process that is triggered once collateral is enabled, and is dependent on the available liquidity on the platform. The credit line is designed to allow users to borrow either Ether or ERC-20 tokens including USDT and/or USDC. Essentially, the borrowing process opens up a perpetual loan that does not require any monthly payment nor has an expiration date. To ensure that the user is aware of the interest payment, it is compounded per block and subsequently added to the required debt repayment.

In terms of interest rates, the specific rates for borrowing different assets are determined by the assets yield curve, base rate, and utilization. As such, the overall borrowing rate is determined by the interplay between these different factors. The credit line is dynamic and changes if the supplied collateral asset price fluctuates.

## Reserve Factors

The reserve factor is essentially a percentage that is determined by the Onyx DAO and is set on each supported market that has borrow capabilities which accumulates a reserve for the protocol to ensure platform security. For instance, the reserve factor is typically set to 20%. This implies that when a user borrows Ethereum at an interest rate of 10%, 2% of the interest is paid to the protocol, while the depositor earns the remaining 8%.

Overall, the reserve factor is designed as protection for the decentralized lending protocol, and its percentage is determined by the Onyx DAO. The feature ensures that the protocol earns a percentage of the interest paid by borrowers using the platform, while depositors receive the remaining interest.

## Supply/Borrow Caps

Each market is protected through the implementation of supply and borrow caps. The supply cap is essentially the maximum limit on the number of units that can be supplied to the protocol. Typically, this cap is added to assets that have high fully diluted valuations or coins that exhibit a lack of liquidity, which in turn require higher risk margins. The supply cap serves to prevent over-supply of assets, which can lead to market instability and other undesirable outcomes.

On the other hand, the borrow cap is set to protect the platform from abusive borrowing activities that have the potential to compromise governance models or other security risk parameters that are decided by the Onyx DAO. Essentially, the borrow cap is designed to limit the amount of assets that can be borrowed from the protocol to ensure that the platform remains stable and secure. By implementing both supply and borrow caps, the decentralized lending protocol can effectively mitigate risks associated with market instability and potential attacks on the platforms governance models.

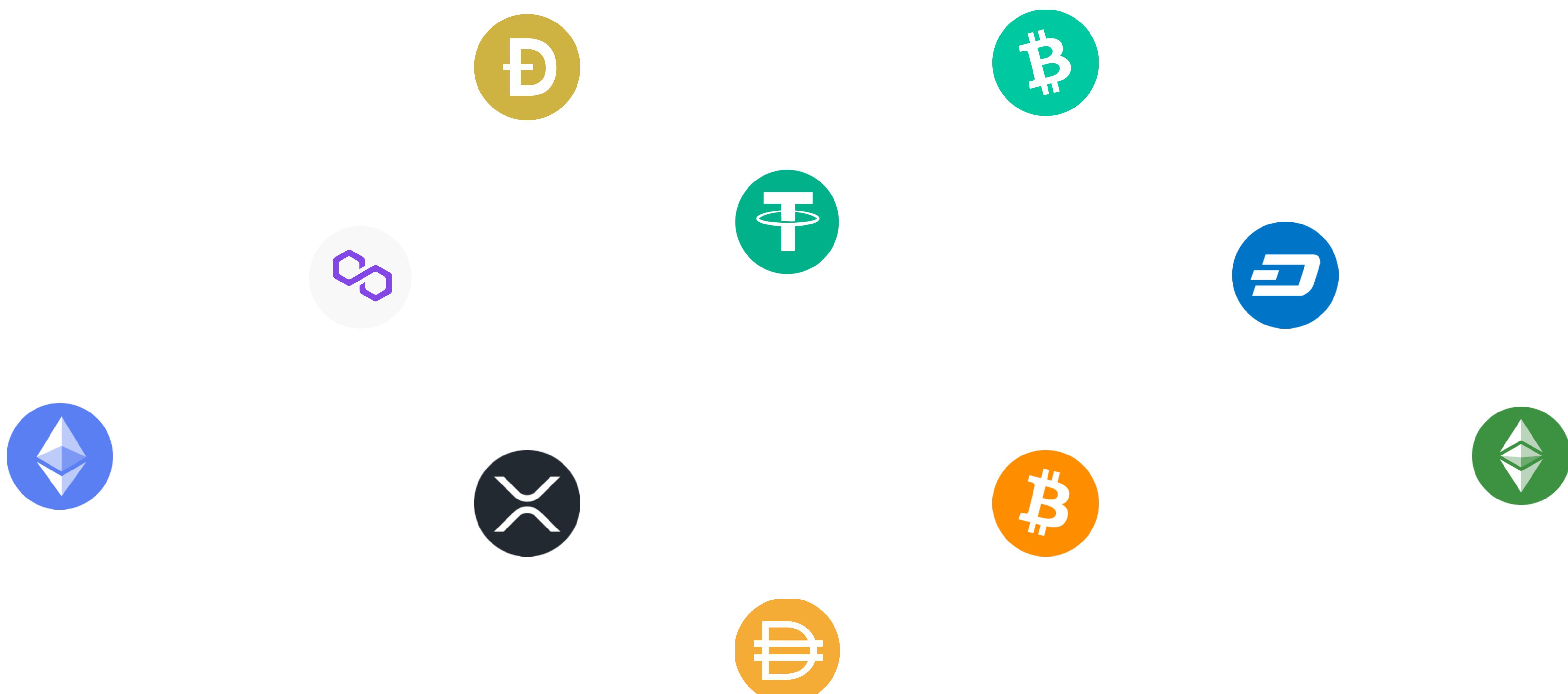
## Consensus

Consensus in Proof of Stake (PoS) decentralized protocols is achieved through on-chain voting. In PoS protocols, validators, or nodes, are selected to create new blocks based on the amount of cryptocurrency they hold and have “staked” in the network. These validators are then incentivized to maintain the security and reliability of the blockchain. In Onyx Protocol, every staker represents a synthetic node who is responsible for protocol security and is validating governance proposals to ensure safekeeping.

On-chain voting is a mechanism that allows stakeholders to vote on decisions related to the protocol, such as changes to the block reward or the addition of new features and markets. The Onyx Protocol relies on on-chain voting through smart contracts to reach consensus on proposed changes to the system. Only those who have staked Onyxcoin can participate in this mechanism.

The voting process is initiated through the use of a smart contract, which outlines the specific proposal and the rules for voting. The stakeholder can then cast their vote by sending a transaction to the smart contract. The vote is tallied automatically by the smart contract, and the result is recorded on the blockchain.

In this way, on-chain voting provides a transparent and decentralized method for achieving consensus in Onyx Protocol. It allows stakeholders to have a direct say in the decisions that affect the network and ensures that the protocol remains secure and reliable over time.



## Governance

Onyx Protocol utilizes on-chain governance to facilitate protocol improvements without resorting to hard forks. Onyx, for example, is controlled by the Onyx Governance module, which allows the protocol to be modified through a self-amending feature enabled by proxy upgradeable smart contracts. Onyxcoin holders who stake their XCN into the protocol participate in on-chain governance by exercising their voting rights.

The Onyx Governance module is designed to be exclusively controlled by Onyxcoin vote weight, which is calculated based on the number of XCN a user is staking at the time a proposal is deployed. This approach ensures that the voting power of each user is proportional to their stake in the protocol, thus enhancing the security and integrity of the governance process.

Through on-chain governance, users are empowered to vote on decisions that affect the protocol, such as changes to the interest rate model or other key parameters. This approach enables Onyx Protocol to evolve over time in response to changing market conditions and user needs, while maintaining the trust and transparency that is essential for the protocol.

## Proposals

In order to deploy a proposal to the Onyx Governance module, the proposer must satisfy the XCN staking requirement as specified by the protocol. Currently, the minimum stake required to propose changes is set at 100,000,000 units of XCN tokens.

The Onyx Governance module is designed to facilitate a range of proposals, including but not limited to the following:

- Adding or removing assets from the protocol.
- Updating collateral and reserve factors.
- Deploying funds from the DAO/Treasury for various purposes such as grants, operations, and burns.
- Adjusting reward speeds for specific markets in the protocol.

Through the deployment of proposals, users are empowered to participate in the governance process and shape the future direction of the protocol. The Onyx Governance module is designed to be a transparent and decentralized mechanism for decision-making, ensuring that all stakeholders have a fair and equal say in the governance of the protocol.

## Voting

The voting process for token stakers is initiated once a proposal is deployed on-chain. The voting period typically lasts for approximately 48 hours, based on the current Ethereum block times. During this period, a snapshot is taken to calculate the amount of XCN that each account has staked, which will determine the vote weight of that Ethereum account. These parameters for the voting period can be changed through the governance module.

For each XCN staked, the user will have one vote weight, which they can use to vote in support or against the proposal. The majority of the votes collected on either side of the proposal will determine the outcome at the end of the voting period.

It is important to note that if a user removes their XCN stake after voting, their vote weight will be automatically adjusted proportionally to the amount of XCN that they withdrew from the protocol. This ensures that the voting process remains secure and that users cannot manipulate the results by withdrawing their stake after voting.

## Quorum

Proposals must meet a quorum requirement in order to be passed. The quorum is determined by the total number of votes required to support a proposal, which is currently set at 200,000,000 XCN.

Once a proposal has garnered over 200 million XCN votes in favor, the vote weight of each XCN staker becomes relevant. At this point, the majority of votes in favor of either passing or rejecting the proposal will determine the outcome. It is noteworthy that there is no quorum requirement for rejecting a proposal, as the quorum is exclusively set for the pass side.

If a proposal does not meet the quorum requirement, it will automatically fail. This approach ensures that proposals that do not have sufficient support from voters are not approved, and that the on-chain governance process remains robust and effective.

Through the use of quorum requirements, on-chain governance protocols ensure that proposals are approved only when they have sufficient support from XCN stakers. This approach enhances the transparency, integrity, and security of the governance process, ensuring that all users have a fair and equal say in the decision-making process.

## Onyxcoin

Onyxcoin, a decentralized digital asset, has been deployed as an ERC-20 token on the Ethereum blockchain. As the protocol's exclusive utility and governance token, Onyxcoin (XCN) plays a pivotal role in facilitating transactions and enabling the governance of the Onyx ecosystem.

With a fixed supply of 48,470,523,779 units, Onyxcoin's current circulating supply is approximately 23 billion. The Onyx DAO, through Onyx Governance, has been bestowed with the crucial responsibility of overseeing the maintenance and operations of the Onyx ecosystem. In this regard, the DAO manages and controls the Onyx Treasury, which consists of approximately 25 billion XCN tokens.

The decentralized nature of Onyxcoin ensures that its governance structure is transparent and democratic with transactions fully visible on-chain. The Onyx DAO operates on a principle of community-driven decision-making, enabling stakeholders to participate in the decision-making process for the Onyx ecosystem. All XCN holders are automatically a part of the DAO and can participate in Onyx Governance through the protocol.

### Utility

Staking

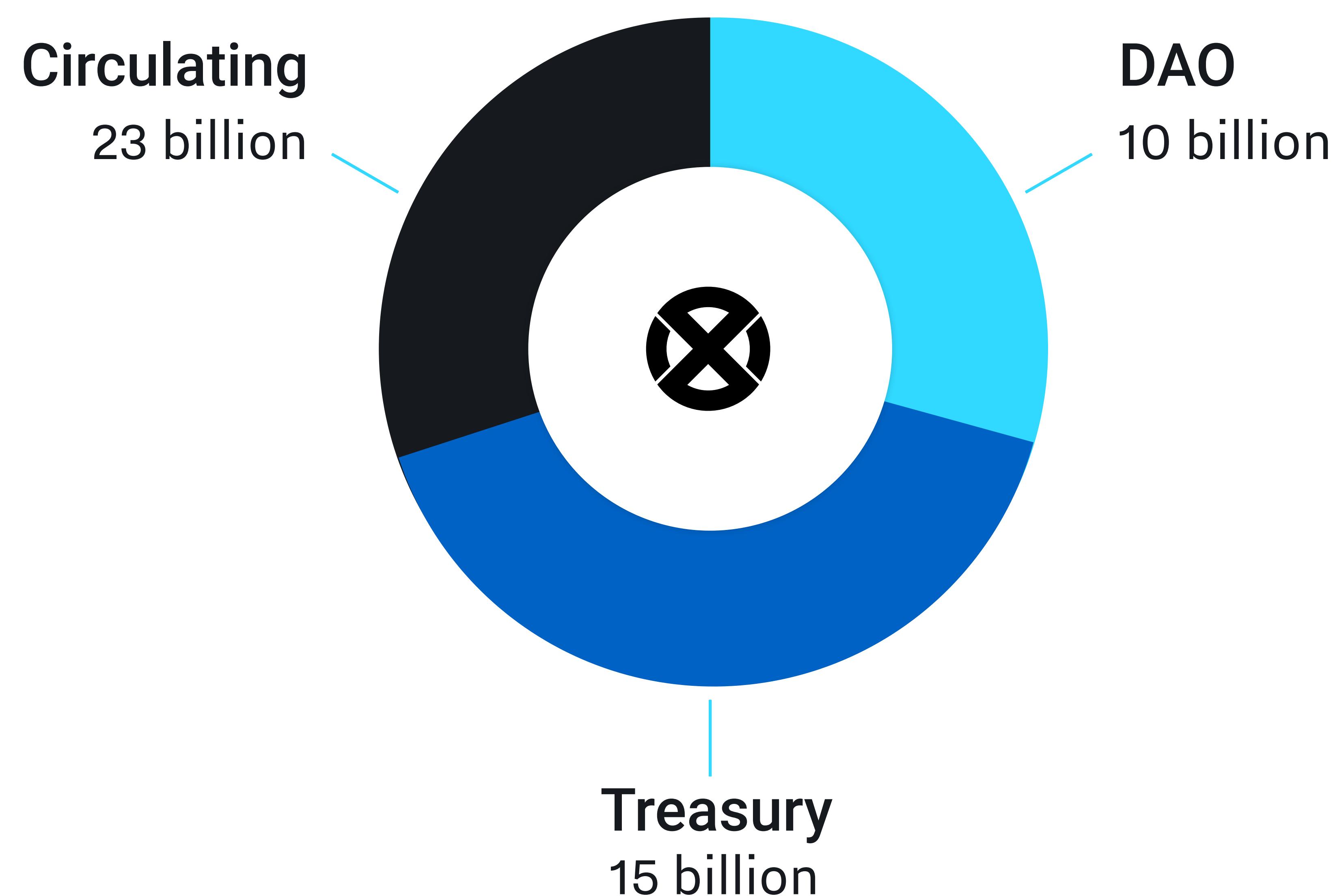
Governance

Payments



## Tokenomics

Onyxcoin (XCN) was initially distributed to non-US and non-sanctioned users of various protocol products via verified airdrops. The token's initial supply was equivalent to 100 billion units and has since undergone a reduction to 48,470,523,779 units through the burns of unclaimed distributions and team and founder locked allocations. Approximately 23 billion is circulating as of publishing.



Approximately 25 billion XCN are available to the Onyx DAO, which exercises control through the Onyx Governance mechanism. Specifically, 10 billion units have been allocated to the DAO Treasury, which is utilized towards grants, incentives, distributions and other DAO operations. The remaining 15 billion units have been allocated to a timelocked smart contract that enables the gradual unlocking of 200 million XCN tokens on a monthly basis over the course of 75 months beginning April of 2024 which includes all prior accumulated unlocks from the original 2023 unlock date.

This strategic allocation of XCN to the Onyx DAO ensures that the governance structure remains decentralized and democratic, promoting transparency and community-driven decision-making. Moreover, the utilization of a timelocked smart contract for the allocation of 15 billion XCN tokens ensures that the unlocking of tokens is gradual, thereby creating a trustless inflation of the Treasury over a specific course of time.

## Security

The security of Onyx Protocol's peer-to-peer markets is of paramount importance to ensure a safe and trustworthy environment for its users. To achieve this objective, Onyx Protocol has implemented a series of robust safety mechanisms to ensure the security of its lending application.

These safety mechanisms include but are not limited to staking, liquidation modules and smart contract audits.

For example, smart contract audits are conducted regularly when there are changes to the core codebase to identify and fix any potential vulnerabilities that may exist within the lending application. The audits are performed by independent third-party security firms with a proven track record of expertise in smart contract security.

Overall, these safety mechanisms work cohesively to ensure the security of Onyx Protocol's lending application, thereby promoting a safe and reliable environment for users to utilize its decentralized application.

## Staking

The native token of Onyx Protocol, XCN, plays a pivotal role in securing and promoting the protocol's governance. To receive a vote weight, XCN must be staked in the contract, thereby ensuring the security of the protocol. Stakers are paid in XCN, which is determined by Onyx Governance and can be modified through on-chain voting.

As Onyx Protocol's governance and payment token, XCN is used exclusively to vote for protocol improvements and changes through staking. To obtain proper vote weight, users must deposit XCN into a non-custodial smart contract. The payment token feature of XCN is utilized in the protocol to remunerate users based on reward speeds set by the protocols on-chain governance.

In this way, the staking of XCN in Onyx Protocol serves a dual purpose of promoting protocol security and enabling democratic decision-making. The security of the protocol is maintained through the staking of XCN, while its use as a governance and payment token promotes a transparent governance structure.

## Liquidations

Liquidations occur when the value of a borrower's collateral falls below a certain threshold, known as the collateral factor. The collateral factor is set by Onyx Governance and varies depending on the asset being used as collateral.

When a borrower's collateral value falls below the collateral factor, their loan becomes undercollateralized and is at risk of being liquidated. At this point, the system automatically triggers a liquidation process to recover the borrowed asset and protect the lenders.

When a liquidation is triggered, the protocol uses an algorithm to determine the most efficient way to sell the collateral to recover the amount owed. The protocol first attempts to sell the collateral on a decentralized exchange to repay the loan. If the market liquidity is not sufficient to cover the loan, then the protocol auctions the borrower's collateral to the highest bidder. For initial parameters, all liquidations will default to auction methods first.

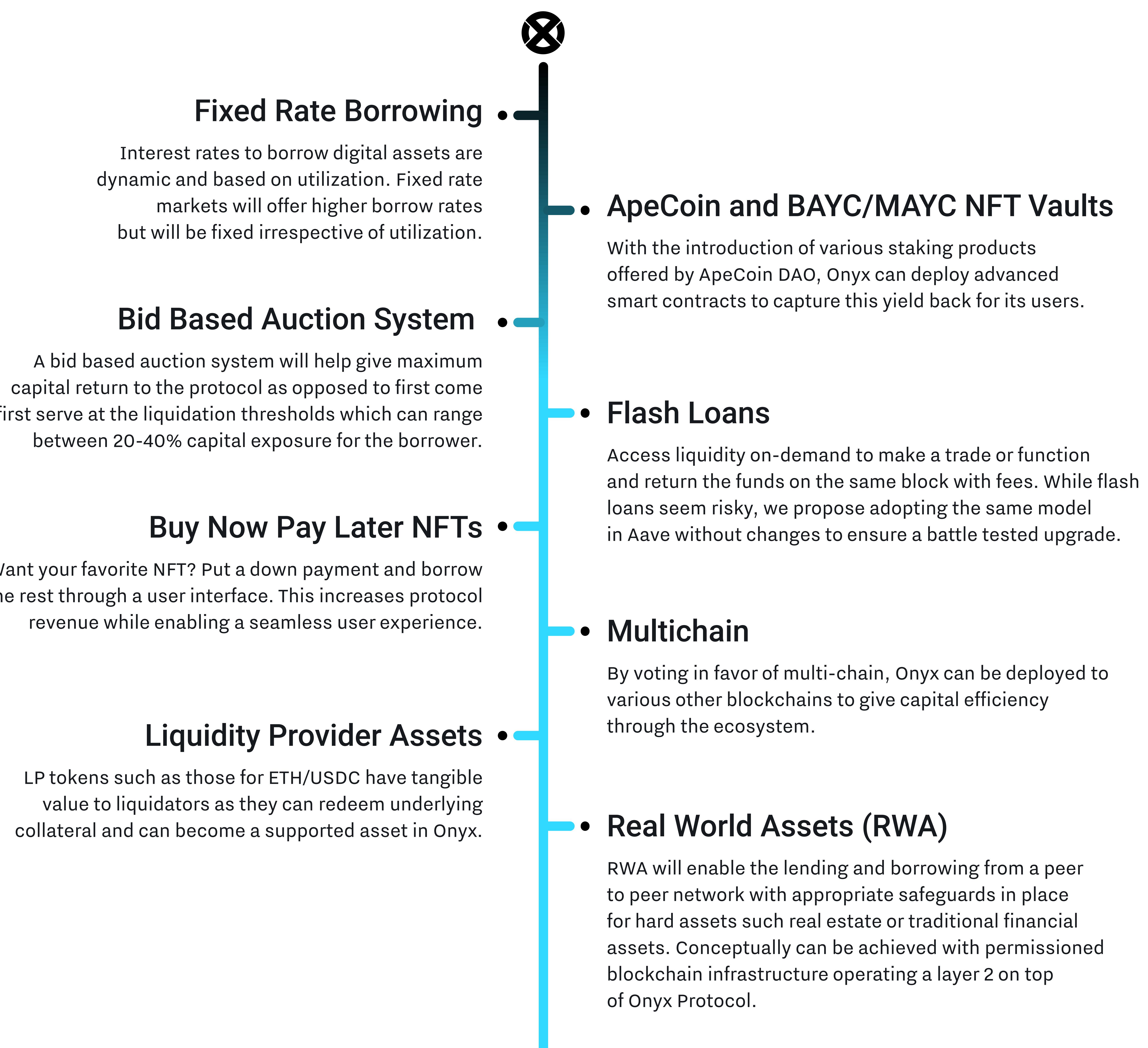
The auction process is conducted on-chain, and anyone can participate. The auction process lasts for as long as necessary to bring the loan back into good standing. The first bidder to access the auction system and call the liquidation functionality will have the claim to liquidate. The proceeds from the auction are used to repay the loan, with any remaining proceeds being returned to the borrower.

To incentivize users to participate in the liquidation process, the protocol rewards liquidators with a percentage of the collateral sold as part of the liquidation penalty fee. This mechanism encourages market participants to help keep the system solvent and helps to ensure that the liquidation process is efficient and fair.



## Roadmap

The Onyx DAO and its community have released a unified roadmap, which is subject to change and not controlled by any centralized group or individual. The Onyx roadmap will be formulated through open-source contributions from anyone who desires to participate globally.



## Conclusion

Onyx Protocol provides a decentralized liquidity solution that supports multiple token types with aggregated and unified capital access. By addressing the capital efficiency trilemma and eliminating the single points of failure inherent in centralized protocols, Onyx Protocol offers a secure and reliable lending platform that is transparent and trust-less.

Users can access a decentralized lending protocol that enables them to earn yield and access credit through a peer-to-peer network of immutable Ethereum smart contracts. With Onyx, users can access capital with their NFTs and tokens without having to use multiple liquidity protocols and money markets.

Unlike other lending protocols, Onyx Protocol is fully controlled by XCN token holders, giving users the ability to point the direction of the protocol through on-chain governance with a wide range of token type support. This democratic governance structure ensures that the protocol remains transparent and responsive to the needs of its users.

Onyx is an open source project that invites community members and developers worldwide to participate in its code base on GitHub. All front ends are deployed via community based IPFS hosting , and the protocol uses auto deployable scripts to directly pull source codes from GitHub. This approach ensures that the protocol is open, transparent, trust-less, and most importantly, decentralized.

The protocol's open source code base and deployment via IPFS ensure that it remains transparent and decentralized, providing an innovative solution to the challenges of the digital asset lending space.

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Complete technical specifications and additional materials are available at [www.onyx.org](http://www.onyx.org)



Onyx.org