SPHERIUM FINANCE WHITEPAPER

Version 1.0

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A DECENTRALIZED AND BORDERLESS FINANCIAL SYSTEM THAT GIVES USERS COMPLETE CONTROL OF THEIR FINANCES

Mission

Spherium's mission is to provide a transparent, decentralized, non-custodial, and user-friendly one-stop platform for all segments of the Financial system, empowering average users to avail the best products and services in the De-Fi space to maximize their investment/loans returns with minimal efforts. *Spherium* offers a collection of DeFi services including a universally usable wallet, token swap platform, money markets, and inter-Blockchain liquidity transfer, which will further be enriched by integrating new innovative services developed by the *Spherium* team in the near future. From a broader perspective, *Spherium,* can function as a banking and investment solution for the 1.7 billion global unbanked population. Further, through our emphasis on connecting the world through our financial solutions, we are planning to implement other innovative features in the DeFi-Blockchain space, which are not available in legacy financial systems.

Vision

Spherium will play a vital part in changing traditional finance and redistributing the profits and power balance of the shared financial system to the users. We are aiming to create an ecosystem where every individual, irrespective of his/her geographical location, faith, and social standing becomes its own "Wealth Manager" that ensures maximum returns on their investments with relatively low risk.

To realize this vision, *Spherium's* team of global DeFi experts with diverse areas of expertise including fintech, law, smart contract development, business development, AML/KYC, and blockchain research is focusing to develop services that will unleash the potential DeFi revolution.

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INTRODUCTION

The world has come a long way since Satoshi Nakamoto introduced Bitcoin in his whitepaper on Oct. 31st, 2008. Today the ecosystem talks about a lot more possibilities and innovations that can be done with cryptocurrencies and its underlying technology, the blockchain. Since the advent of the smart contract powered ethereum blockchain, the door for decentralised apps or dApps have opened possibilities and ignited the innovative fuels of a socially concerned techie, giving rise to financial solutions that bring the products of the regular banking system on the blockchain ecosystem, and thereby breaking the barriers that kept the unbanked community behind it. The crypto community started getting their hands dirty into the development of various financial applications/solutions and hence the ecosystem started buzzing with the word DeFi (Decentralized Finance).

DeFi is an ecosystem of financial applications built on top of blockchain networks, aiming to create an open-source, permissionless, and transparent financial services that are available to its participants and operates without any central authority. DeFi enables users to interact with this ecosystem and manage their assets on their own through peer-to-peer (P2P) and decentralized applications (dApps). Like the traditional financial system, DeFi constitutes several components/products that include but not limited to the following:

- Lending and borrowing platform
- Trading platform or exchange
- Derivative or synthetic assets
- Insurance platform
- Prediction markets
- Alternative savings/investment platform

In addition to the above components, there are several other DeFi tools, frameworks, and services that aim at facilitating users to build DeFi products, manage their portfolio, and explore investment opportunities in the space. Though DeFi is still in its infancy, there are a plethora of options for each of the DeFi components built on different blockchain networks, some of which are shown in the figure below (taken from [ref1]).

Each option has a unique set of pros and cons, making it attractive for a certain class of investors. However, it is too cumbersome even for savvy investors/users of the DeFi ecosystem to navigate through the different products built on different blockchain networks and find the one that suits them best. At this early stage of DeFi, numerous DeFi shortcomings and immaturity such as congestion of transactions on a Decentralized Exchange (DEX) chain, high (Gas) cost, limited liquidity, security and smart contract risk, bad user experience, etc. can be observed, which revealed opportunities for creative solutions to these issues.

In addition to the above shortcomings, there is no single platform that can simplify an average person's life by providing all these distinct core services/products (e.g. money market, trading, derivative, investment, etc.) built on different blockchain networks, hence, making it difficult for them to become a part of the global financial system. A recent survey by *Cointelegraph* [ref1] reveals that improved user experience is one of the top drivers for DeFi mass adoption, which is also the mission of *Spherium*.

TOP DRIVERS FOR DEFI MASS ADOPTION
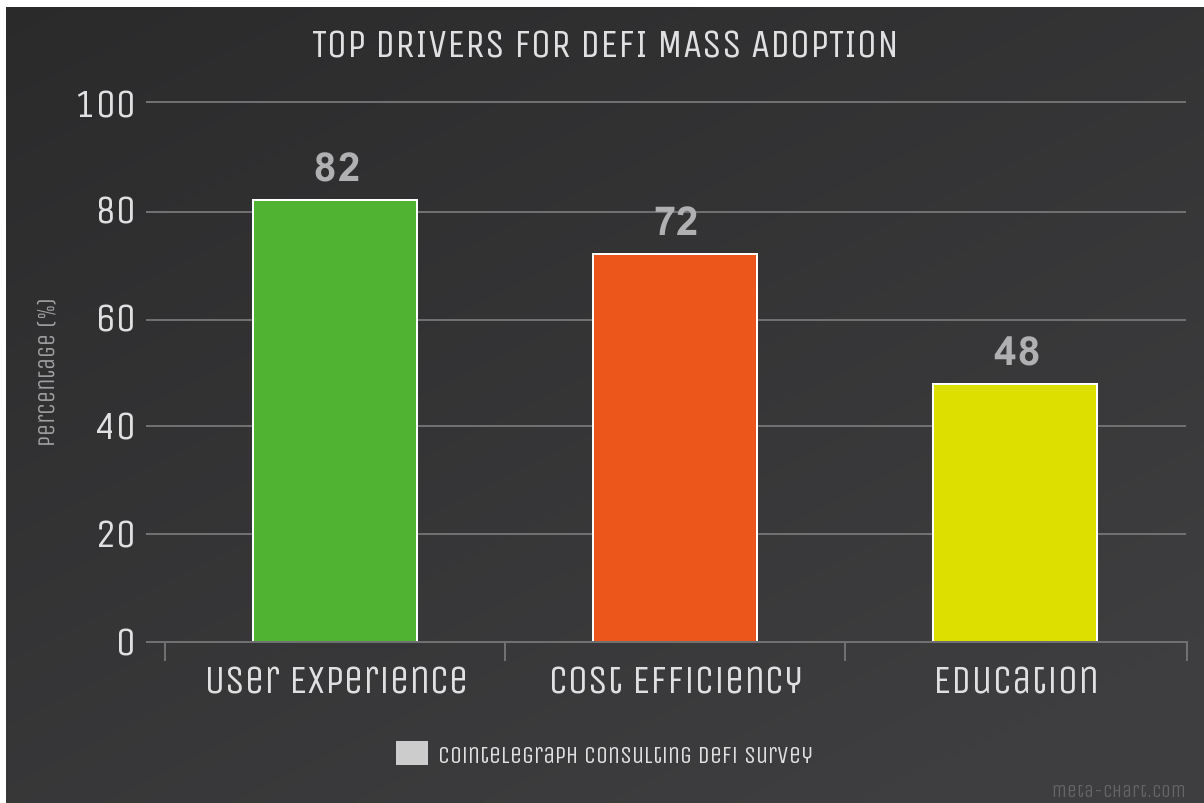
Keeping in mind all the above limitations of the existing DeFi products and services, *Spherium* focuses on building a user-centric, cost-efficient, and easy to understand DeFi ecosystem that we believe will spark the mainstream adoption of DeFi.

SPHERIUM ECOSYSTEM

The *Spherium* ecosystem stands on the shoulders of DeFi's predecessors and provides the best solutions for problems faced by traditional finance by offering a transparent, decentralized, cross-chain, and user-friendly one-stop platform - where users with little to zero exposure to the DeFi ecosystem will find the best available products in the space to maximize returns and minimize the complexity of investing in DeFi. To this end, the *Spherium* ecosystem will launch a whole bunch of products and services in several phases. The first phase, i.e Phase I will focus on foundational services to implement all the key bricks for the ecosystem, while Phase II will enhance the platform by adding extra functionalities to *Spherium*.

SPHERIUM ECOSYSTEM – PHASE I DEPLOYMENT

Spherium offers the following products and services as a part of its **Phase I** deployment:

- ❏ *HyperSwap*:
    - Decentralized Asset Swap based on an automated market-making mechanism.
    - Layer 2 (or Application layer) protocols for mitigating the high transaction cost (Gas fee) while maintaining the security guarantee of layer 1 (or Settlement layer [Ref2]).
    - Cross Chain Swap using platforms such as RENVM.

- ❏ *SPH token*: Utility token that will be used for the governance of the *Spherium* ecosystem, with proposals and voting rights that will together determine its future. Will be used to incentivise early adopters of the *Spherium* ecosystem.

- ❏ *Spherium Wallet*: Decentralised wallet for *Spherium* products and services.

- ❏ *SphereComp*: Decentralized money markets where investors can lend or borrow digital assets with interest rates determined by the law of *supply* and *demand*.
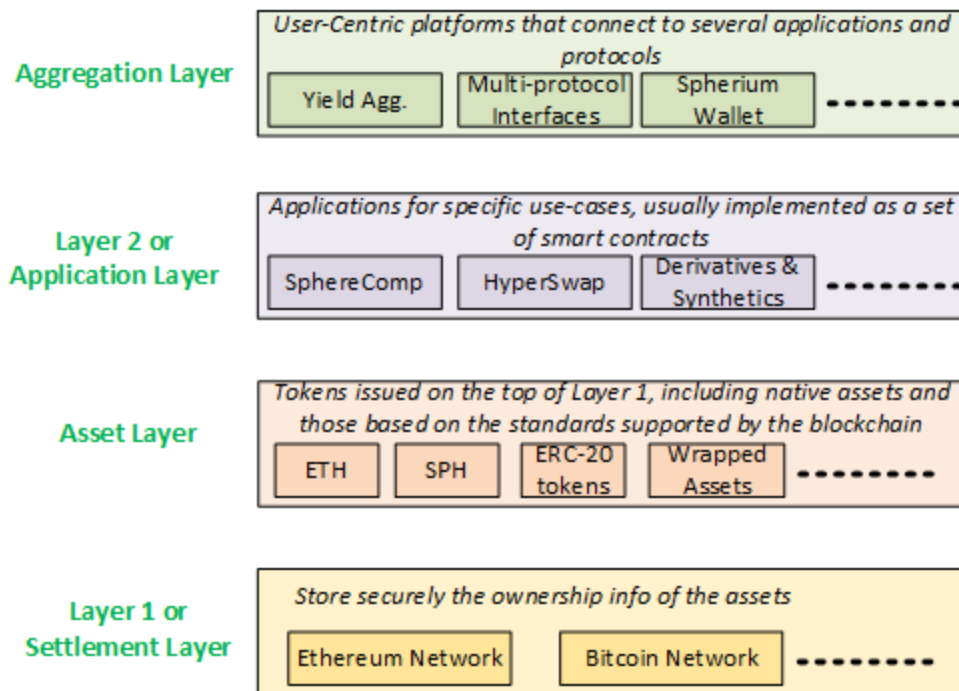
The DeFi Stack

HYPERSWAP

HyperSwap will provide a decentralised platform for swapping ERC20 tokens using a cutting-edge *Automated Market Maker* (AMM) algorithm that enables the liquidity providers, rather than arbitrageurs, to capture profits by reducing the price skew (for an asset in a pool) and bringing the asset price back to the market price. *HyperSwap* will create different liquidity pools, and will incentivise the liquidity providers via the **Liquidity Mining** or **yield farming**. Users can add liquidity for any asset pair on *HyperSwap* liquidity protocols. Additionally, liquidity providers earn SPH tokens for approved asset pairs. At the start, the *Spherium* team will add liquidity pools for assets with a large market cap, however, this list will be updated over time by the community (or trading pairs). Initially, the liquidity pool will be restricted to two ERC20 tokens (e.g., SPH/ETH, SPH/LINK, ETH/REN, etc.) of equal worth. However, with time, multi-token pools with custom distribution will be supported (e.g., like *Balancer* [Ref3]).

Apart from earning SPH tokens via liquidity mining, the liquidity providers will earn the pool's trading fees paid by the *HyperSwap* users for swapping their tokens. Initially, *HyperSwap* protocol will be configured to charge a 0.30% trading fee for a token swap across all the liquidity pools. Out of the 0.30%, 0.27% will be granted to the liquidity providers, while the remaining 0.03% will be paid to the stakers of SPH token as a staking reward. Later, these values can be modified based on the consensus or majority view of the *Spherium* community.

When liquidity is supplied to a pool, the liquidity provider will receive special tokens called **LPtokens** in proportion to how much liquidity they supplied to the pool. When a trade is facilitated by the pool a 0.27% fee will be proportionally distributed amongst all the **LPtoken** holders. Later, if the liquidity

provider wants to get their underlying liquidity back, plus any accrued fees, they must burn their **LPtokens**.

Note that *HyperSwap* itself does not hold user assets for liquidity pools; instead, assets are controlled entirely by smart contracts. These contracts will handle every aspect of trading/swap and *HyperSwap* will create separate contracts to handle each trading pair.

A common problem among AMM based DeFi exchanges is the "Impermanent loss", which occurs when an asset price slips against its market rate on other exchanges due to lower liquidity. Higher slippage opens opportunities for arbitrage traders to make up that difference by conducting the reverse trade. In essence, they extract a value in excess of the desired 50-50 balance, only returning the exchange fee of 0.3% to the liquidity pool. If the slippage amounts to 10%, a total of only 0.3% is returned to the pool as fees, while arbitrageurs pocket the remaining 9.7%.

To fix this problem, HyperSwap will adopt a similar approach to MooniSwap [Ref4], where HyperSwap will try to return more of the profit to liquidity providers instead of arbitrage traders. HyperSwap will adopt the concept of virtual balances. More specifically, when a high-slippage trade occurs, the internal balance of HyperSwap will not immediately reflect this change. At first, any new trade will still be executed at the old price. However, after five minutes, the price will gradually be updated to its true value based on the pool balances. This will open a small window of arbitrage opportunities, which we expect will be taken as soon as possible.

The main benefit of this new approach is that HyperSwap will take a much higher percentage of the trader's profit. Thus, the arbitrageurs return a much higher proportion of the price slippage to the pool. Also, any normal trader who is placing orders at the old price will be effectively returning a portion of that slippage difference to the pool, as they are technically overpaying for the trade.

The *HyperSwap* will consider the use of Layer 2 technology for dramatic improvement in Gas fees and the number of transactions per second. For this purpose, *HyperSwap* will combine Automated Market Maker (AMM) with off-chain scaling solutions such as ZK-rollup [Ref5] and optimistic rollup [Ref6] solutions for swapping/exchange of digital assets to minimize transaction fees for users.

Currently, many non-ERC20 assets cannot be mapped on dApps (such as Uniswap [Ref7], Compound [Ref8], etc.) built on Ethereum blockchain due to the lack of cross-chain communication protocols. In other words, existing blockchains (such as BTC, Ethereum, etc.) work and exist in silos. Hence, there is a need for the formation of unified, interoperable, and broad supported DeFi markets and dApps. In the DeFi space, interoperability implies a situation where two or more blockchains can communicate with each other and exchange value or assets.

To promote interoperability, Spherium team will extend *HyperSwap* to a cross-chain asset exchange, i.e., a one-step exchange of multiple assets from different chains, such as BTC, Binance Smart Chain, etc. For this, *Spherium* will create alliances with other projects in the crypto space that aim to bring interoperability to DeFi while focusing on niche use cases, technologies, or markets. *HyperSwap* will integrate novel interoperability products/solutions in the space (such as REN multi-chain bridge [Ref9]), making it effortless for an average user to move its assets across different chains.

HyperSwap will implement ZK Rollups for the on-chain verification of transactions using the ZK Sync reference implementation architecture followed by *Matterlabs* [Ref10]. *Spherium* team has

considered the reference implementations of *Iden3* [Ref11] and *Matterlab*s and decided to take the ZK Sync as it is already in Ethereum MainNet. ZK-Rollups is a Layer 2 construction that increases scalability through mass transfer processing rolled into a single transaction. The transaction is written as a verifier smart contract corresponding to a proof construction following the zero-knowledge proof paradigm. Essentially, Zero Knowledge Proof reduces computing and storage resources for validating the block by reducing the amount of data held in a transaction.
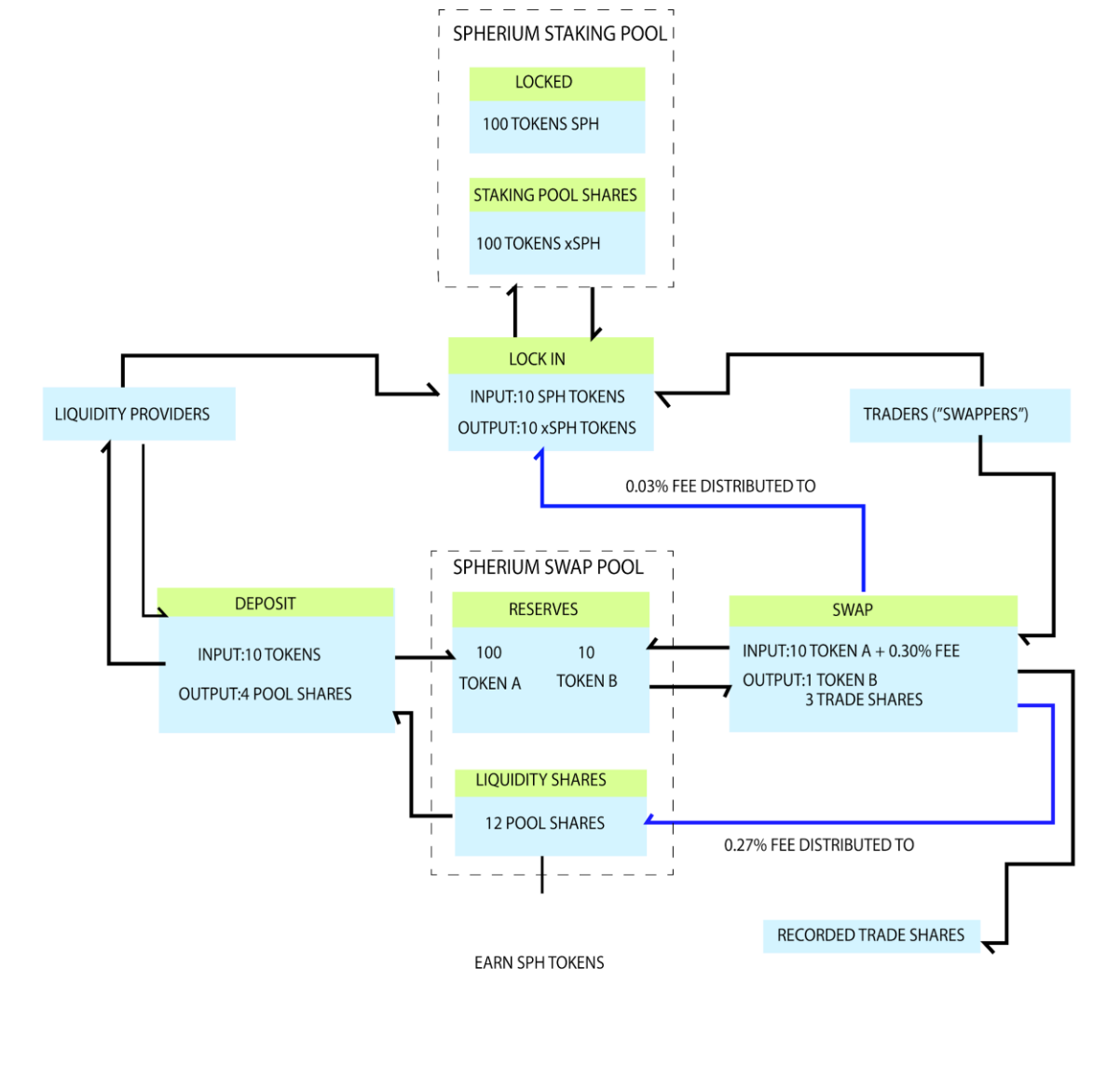
HyperSwap - Flow diagram of the Swap Pool and the Staking Pool

SPHERIUM WALLET

Spherium Wallet is a non-custodial and secure mobile wallet for ERC20 tokens, which will facilitate our customers to use all the services provided by the *Spherium* ecosystem anytime and anywhere from their mobile device. The wallet can be connected to any DeFi platform via the *WalletConnect* protocol [Ref12], however, the *Spherium* team will ensure the safety and security of the user assets by adopting best practice in the cybersecurity space. Initially, the wallet will be launched on Android devices and will later be available on IOS devices. The wallet will also have integrations with payment gateways and crypto-to-fiat payment offboarding facilities.

Additional cutting edge features, such as post-quantum cryptography powered security and multi-signature aggregation capabilities will be part of the wallet in the roadmap ahead. Furthermore, *Spherium* wallet will evolve to include staking opportunities for other ERC20 tokens and services such as virtual debit cards so that users can buy and pay with their cryptocurrencies. Subscription fees and gas for the *Spherium* Wallet will be defined at a later stage.

SPHERECOMP

SphereComp is a decentralised pool-based lending protocol built on the Ethereum ecosystem, where different Ethereum-asset-based money markets can be created. *SphereComp* money market is a pool of particular assets that algorithmically derive interest-rates based on the supply and demand for the asset. Lenders and Borrowers of the asset will interact with the protocol directly in order to earn and pay, respectively, a floating interest rate, without having to negotiate any kind of terms such as maturity, interest rate, or collateral.

When a lender supplies an asset to *SphereComp* lending protocol, the lender will be issued with an ERC20 token called '*sToken*'. Based on demand and supply of a particular asset type in the market, functions of the *SphereComp* will calculate the interest accrued for all those issued *sTokens*. The incentivization process is done by converting *sTokens* into an increasing amount of its holder's underlying asset. Furthermore, the *sTokens* issued to a lender for supplying liquidity to one pool of assets can be used as collateral for the other pools of assets.

Each money market will have a collateral factor (or *Asset Maximum Loan-to-value (LTV)*), ranging from 0 to 1 that represents a portion of the underlying asset value that can be borrowed. Naturally, illiquid, small-cap assets will have low collateral factors as they do not make good collateral, while liquid high-cap assets will have high collateral factors. The borrowing capacity of a user will be determined by the value of the user underlying token balances multiplied by the collateral factors. Users can borrow up to but not exceeding their borrowing capacity.

The *SphereComp* will take no action as long the total value of the borrowed assets is above the borrowing capacity. However, to protect *SphereComp* from default risk, a threshold will be triggered when the value of a user borrowing outstanding exceeds the borrowing capacity (either due to price appreciation of the borrowed asset or price depreciation of the underlying collateral asset). The user can avoid triggering this threshold (i.e., raising the borrowing capacity value above the borrowed asset value) by adding more underlying assets to its account. In case of not doing so, the *SphereComp* will

close the position, meaning the borrower will keep the borrowed assets but lose the collateral asset - a process known as *liquidation*.

For the entire process described above, the accurate price data of the underlying asset plays a very critical role, which is off-chain information and can be acquired by the smart contract via the oracle. In general, oracle is a mechanism used to acquire/report off-chain information to a smart contract. Considering the importance of oracle for DeFi realization and growth, there are several projects [Ref13-Ref16] working on solving the oracle problem for DeFi using different approaches.

SphereComp will ensure that its smart contracts acquire swift but accurate price data to facilitate instant transactions and eliminate the chances of fraud transactions during periods of price volatility. For this purpose, *SphereComp* will adopt different models depending on the volume of a transaction - for small value transactions, a swift but partially verified (i.e., verified by a majority but not all agents) oracle model will be followed, while for large value transactions, a fully verified but slow oracle model will be utilized.

How SphereComp works

SphereComp provides money markets to users, where lenders can earn interest on their digital assets by supplying supported (or whitelisted) assets into the protocol. Assets deposited by lenders will be transferred into a smart contract that aggregates the total liquidity of each asset into a pooled fund, which is available for borrowers to borrow. Loans are not matched individually between lenders and borrowers, but are taken from the pooled fund. Interest lenders' earning comes from the interest that borrowers pay, which is distributed proportionately to the liquidity they provide. Once lenders supply assets into the protocol, these assets act as collateral, enabling lenders to also borrow any asset up to a certain limit, as explained in the figure shown below. This means that any borrower must first supply assets into the protocol as collateral before taking out any loan.

The key concepts of *SphereComp* protocol are outlined below:

Depositing an Asset

Suppose Alice deposits one of the supported (whitelisted) assets, such as ETH (Ethereum), into the protocol. Once deposited, the deposited ETH is added into a pooled fund, which is referred to as the **Total Liquidity**. This *Total Liquidity* is calculated as follows:

Total Liquidity = Total Available Liquidity + Total Borrows

Total Available Liquidity is the liquidity available of that asset for borrowers to borrow or lenders to withdraw. The **Total Borrows** of an asset is the sum of the total borrowed amount and the accumulated borrowed interest from all borrowers. *Total Borrows* is calculated as follows:

*Total Borrows = Borrow Amount + Cumulative Borrow Interest*

This means that *Total Liquidity* will continue to grow as *Cumulative Borrow Interest* grows over-time. Alice will receive *sTokens*, such as sETH, that represent her share of ETH deposited to *Total Liquidity* of ETH. *sToken* is a tokenized representation of the user's lending position and is an interest-bearing ERC20 token, which means an *sToken* can claim more of the underlying asset over-time as *Total*

Liquidity grows from the interest collected from the borrowers. The number of *sTokens* each user receives is calculated as follows:

Number of sTokens = Deposit Amount * Total sToken / Total Liquidity

Total *sTokens* are based on the first user who deposits this asset. For example, if Bob is the first user who deposits 1,000 ETH, then Total sETH starts with 1,000 sETH. If Alice then adds 100 ETH when the *Total Liquidity* is 1,100 ETH, then Alice gets 90.90 sETH (100 * 1,000 / 1,100).
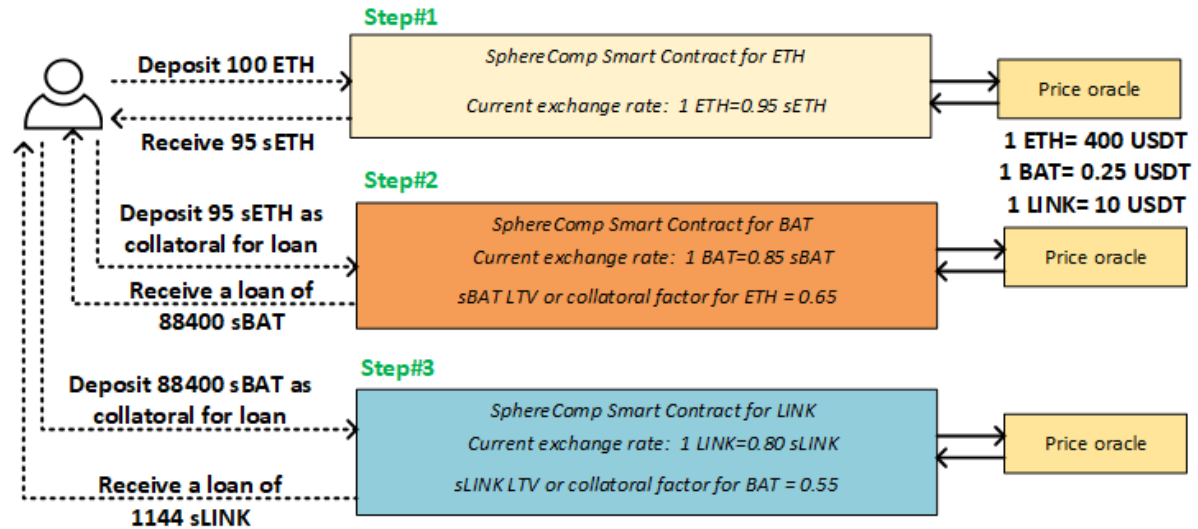
Example of how a lender can use its sTokens of one pool as collatoral for another pool

Borrowing an Asset

Before a user can borrow, the user has to first deposit some of their digital assets that can be used as collateral on the protocol. Note that *SphereComp* will initially support only digital assets (e.g., ETH, BAT, etc.) but will be enhanced to support tokenization of physical assets. Upon depositing such assets, the user receives *sTokens*, representing the user's shares in the asset pools. To protect the protocol security, only the whitelisted assets will be accepted as collateral. Even though these *sTokens* are used as collateral, the user will still earn deposit interest on them since other users are borrowing the underlying asset from the asset pool and paying borrow interest to the pool, or *Total Liquidity*.

For instance, Alice can deposit LINK - one of the available collateral assets into the protocol and receives a balance of sLINK that represents her share in the total LINK pool. Alice can then use this sLINK as collateral, enabling her to borrow other assets such as ETH. In this case, Alice is earning a deposit interest on LINK and paying borrow interest on ETH. Each asset that can be used as collateral has an assigned ***Asset Maximum Loan-to-value (LTV)***. For instance, if Alice deposits $100 worth of LINK, which has an *Asset Maximum LTV* of 75%, then Alice can borrow any asset with the ***Borrow Limit*** of $75. *Borrow Limit* is calculated based on the total value of deposited assets that can be used as collateral and *Asset Maximum LTV* of each deposited asset. Specifically, the *Borrow Limit* for an asset can be calculated as follows:

Borrow Limit = (Deposit Value in USD of Asset1*Asset Maximum LTV1 + Deposit Value in USD for Asset2*Asset Maximum LTV2 + …)

A user can only borrow if the **Account Status** remains healthy after considering the new borrowed amount. *Account Status* can be calculated as follows:

Account Status = Healthy (borrow value ≤ Borrow Limit)

Account Status = Unhealthy (borrow value > Borrow Limit)

When a user borrows and receives the borrowed amount, *SphereComp* protocol calculates how many **Borrow Shares** the borrowed amount equals to. *Borrow Shares* represent the share of the user's borrowed amount to the *Total Borrows* of that asset. *Borrow Shares* is calculated as follows:

Borrow Shares = (Borrow Amount * Total Borrow Shares) / Total Borrows

The number of **Total Borrow Shares** is set based on the first user who borrows this asset. For example, if Bob is the first user who borrows 1,000 ETH, then the number of *Total Borrow Shares* starts with 1,000. If Alice then borrows 100 ETH when the *Total Borrow* is 1,000 ETH, then Alice gets 100 *Borrow Shares* (100 * 1,000 / 1,000).

Withdrawal Procedure

A user can only withdraw the amount, if there is enough *Total Available Liquidity* to do so and if the *Account Status* remains healthy after the transaction. To withdraw a part or all the deposited amount, the protocol calculates from the *withdraw amount*, burns *sTokens* equal to the number of *Withdraw Shares*, before transferring the withdraw amount to the user. *Withdraw Shares* is calculated as follows:

Withdraw Shares = Withdraw Amount * Total sToken / Total Liquidity

Because *Total Liquidity* increases over-time from accruing borrowed interest, the same withdrawal amount will equal smaller *Withdraw Shares* over-time, and thus burns fewer *sTokens* to claim the same *withdrawal amount*. If the user withdraws all the deposited amounts, the user will receive a withdrawal amount that is more than the originally deposited amount from accruing deposit interest.

Repaying loan process

To repay a part or all of the borrowed amount, the protocol calculates **Repay Shares** from the repay amount, transfers the repay amount to the pool, and reduces *Borrow Shares* by *Repay Shares*. *Repay Shares* is calculated as follows:

Repay Shares = Repay Amount * Total Borrow Shares / Total Borrows

Since *Total Borrow* increases over-time from accrued borrowed interest, the same repay amount will equal smaller *Repay Shares* over-time, reducing *Borrow Shares* by a smaller *Repay Shares*. If the user repays all of the borrowed amount, the user will pay more than the original amount because of accrued borrower interest.

Floating interest rate

Interest rates for borrowers and lenders are determined by **Utilization Rate**. The *Utilization Rate* is calculated as follows:

$$Utilization\ Rate = Total\ Borrows\ /\ Total\ Liquidity$$

The *Utilization Rate* reflects the demand to borrow an asset, a higher *Utilization Rate* corresponds to a higher cost of borrowing or borrow interest rate. Each asset has its own Base Borrow Rate and *Slope* value that depends on the asset market cap, price volatility, etc. The **Borrow Interest Rate** for any asset can be calculated as:

$$Borrow\ Interest\ Rate = Base\ Borrow\ Rate + (Utilization\ Rate * Slope)$$

Since the *accumulated borrowed interest* is added to *Total Liquidity* and the *sTokens* that lenders receive, they can claim the share of *Total Liquidity*. The higher borrow interest rate corresponds to the higher **Deposit Interest Rate**, which can be calculated as:

$$Deposit\ Interest\ Rate = Borrow\ Interest\ Rate * Utilization\ Rate$$

SphereComp Architecture
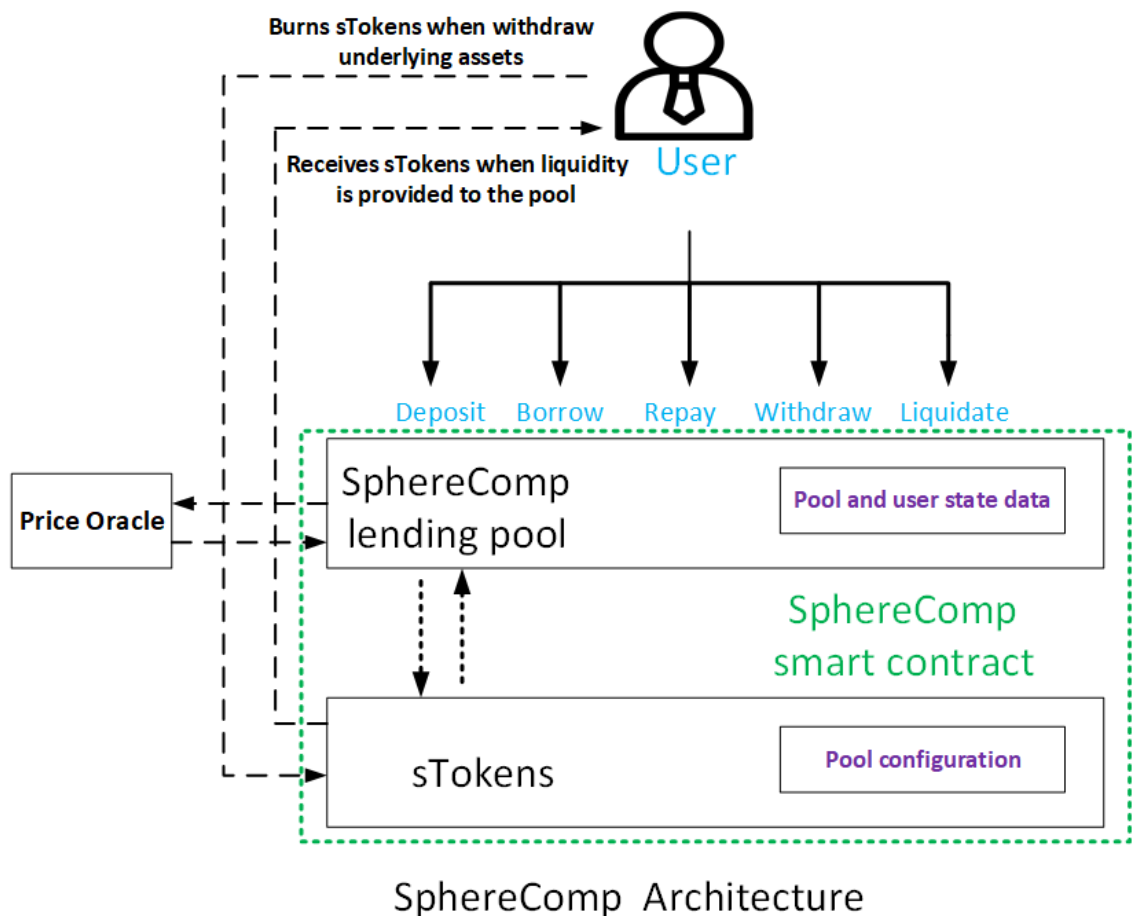
Risk and Liquidation

A borrower bears the risk of having an unhealthy *Account Status* when the user's total value of borrowed assets exceeds the *Borrow Limit*. Volatility in collateral assets and borrowed assets can cause *Account Status* to be unhealthy.

For instance, Alice deposits $100 worth of LINK, which for instance has an *Asset Maximum LTV* of 75% - enabling Alice to borrow any asset up to the *Borrow Limit* of $75, and borrows $75 of ETH (e.g., 0.18 ETH) when ETH price is $400. If ETH price increases afterward, Alice's total value of borrowed assets increases since 0.18 ETH now equals to more than $75, resulting in her total value of borrowed assets being higher than her *Borrow Limit*. *Account Status* can also become unhealthy when the price of the collateral asset, or in this case LINK, decreases (e.g., drops from $100 to $80) such that *Borrow Limit* becomes less than the total value of *borrowed assets*.

- When *Account Status* becomes unhealthy, any external actor called a liquidator can repay up to the **Close Factor** of the user's borrowed amount. This *Close Factor* is the portion of the borrowed asset that can be repaid by a liquidator in one transaction. The liquidation process may continue until the user's *Account Status* becomes healthy, or when the total value of borrowed assets is below *Borrow Limit*. The *Close Factor* ensures that the user's account will not be fully liquidated if not necessary.

- When a liquidator repays the user's borrowed amount, liquidator inputs **Liquidate Shares** and the protocol reduces the user's *Borrow Shares* by *Liquidate Shares.* To reward the liquidator for liquidating an unhealthy account, the liquidator can purchase **Collateral Amount**, or the value of the user's collateral asset equivalent to the liquidate value at a discounted price. The difference between *Collateral Amount* that the liquidator receives and the **Liquidate Amount** the liquidator pays is captured by **Liquidation Bonus**. *Collateral Amount* is calculated as follows:

Collateral Amount = (Liquidate Amount * Price of Liquidated Asset / Price of Collateral Asset) * (Liquidation Bonus)

- Liquidate Amount is calculated as follows:

Liquidate Amount = (Liquidate Share * Total Borrows) / Total Borrow Shares

Integrating SphereComp with HyperSwap

In order to maximize the returns on investment, lenders of the *SphereComp* can even add their *sTokens* to the *HyperSwap* liquidity pool for *sTokens*. The figure below shows an example of how an investor can maximize its returns by exploiting the different investment and earning SPH tokens opportunities offered by the *Spherium* ecosystem.
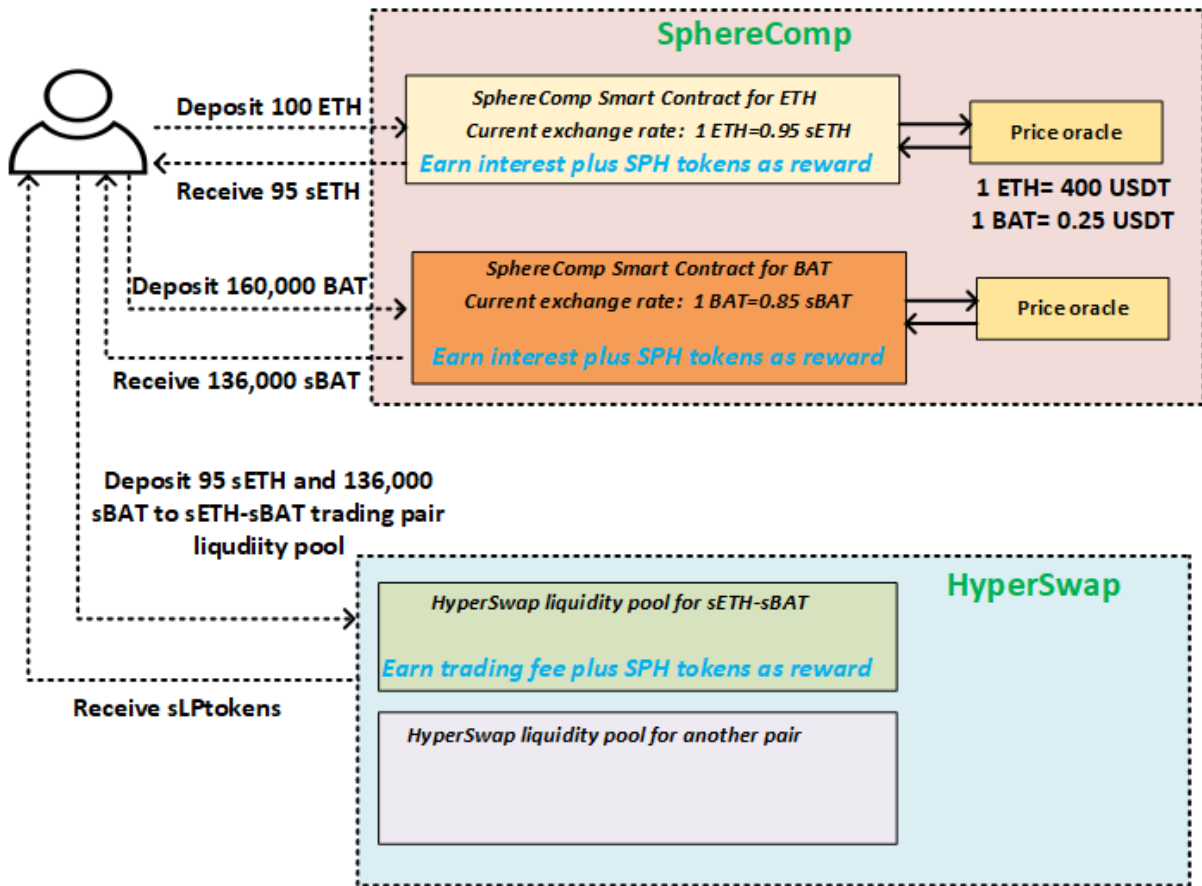
How a user can maximize its returns by smart investment in SphereComp and HyperSwap

SPH TOKEN: USES AND ACQUISITION

SPH will be the keystone of the *Spherium* ecosystem, which will be used not only for all the *Spherium* services but will also be earned in several ways. More specifically, SPH will be the governance token of *Spherium,* which will be used to build the *Spherium* community. The community provides proposals and will have voting rights to collectively determine the future of *Spherium*. Users can earn SPH rewards by building the *Spherium* ecosystem. For example, *SphereComp* will provide the following incentives to the early adopters of the platform:

Incentive for SpheriComp Lenders

- Floating interest rate based on the *utilization rate* of the underlying asset
- Daily SPH tokens under the liquidity mining for *SphereComp*

Similarly, early adopters or users of HyperSwap will be incentivised in the following ways:

Incentive for liquidity providers to HyperSwap

- 0.27% out of the 0.30% of the trading fee paid by the users of the *HyperSwap*
- Daily *SPH token under liquidity mining* for *HyperSwap*

Incentive for HyperSwap traders/users

- Daily SPH tokens under liquidity mining from the pool allocation for *HyperSwap* traders

Incentive for SPH Token Stakers

- 0.03% of the trading fee paid by the users of the *HyperSwap*

SPHERIUM TOKEN DISTRIBUTION

Token name: SPHERIUM

Symbol ticker: SPH

Token type: ERC20

The process of the *Spherium* token allocation will be based on a community-type distribution, whereby each of these stakeholders will play an important part in the ecosystem.

The Spherium Labs will release version 1.0 of the token paper as the project approaches its launch.

SPHERIUM SMART CONTRACTS SECURITY AUDIT

Security is very critical for DeFi and hence *Spherium* Labs will thoroughly test their smart contracts on testnets before launching them on the Mainnet. In addition, *Spherium* smart contracts will be reviewed by renowned firms in the field of smart contract auditing.

Furthermore, Spherium Labs aims to invite well-known smart contract auditors, and other independent teams to audit the smart contracts at different stages of development. The smart contracts will be audited as they are made available by the development team.

PHASE I ROADMAP

Spherium Product Roadmap

2021
HyperSwap Layer-1 solution platform

2021
HyperSwap Layer 2 solution

2021
Spherium Layer 2 solution for Lending and Borrowing

SPHERIUM WEBSITE

SPH-SWAP-L1 STAKE & REWARDS

SPHERECOMP L1
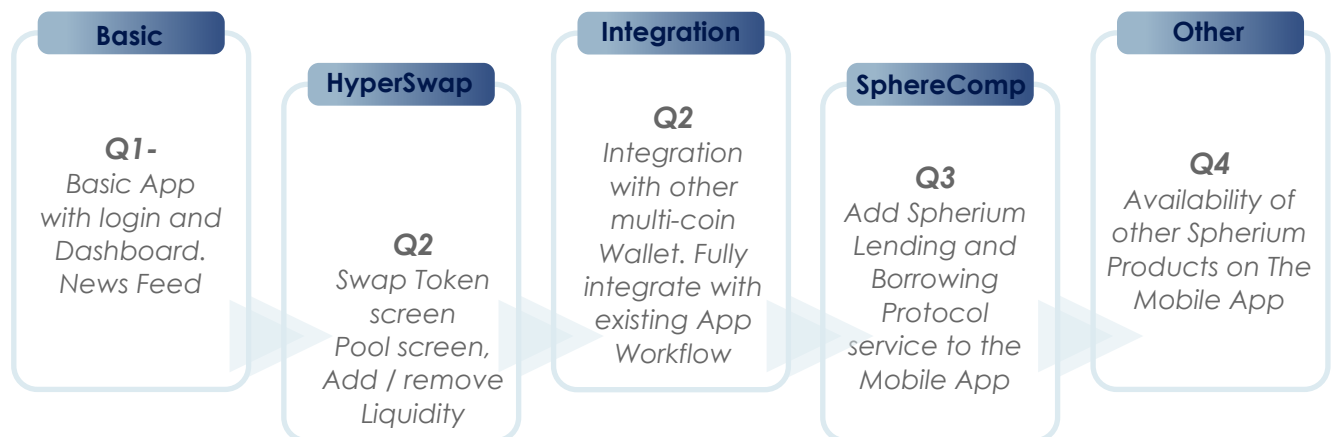
2021
Complete Website with Products and Features details

SPHERESWAP L1

2021
Spherium HyperSwap Layer 1 Staking Pool and

SPHERESWAP L2

2021
Spherium Lending and Borrowing

SPHERECOMP L2

Mobile Wallet Roadmap

Basic

Q1-
Basic App with login and Dashboard. News Feed

HyperSwap

Q2
Swap Token screen Pool screen, Add / remove Liquidity

Integration

Q2
Integration with other multi-coin Wallet. Fully integrate with existing App Workflow

SphereComp

Q3
Add Spherium Lending and Borrowing Protocol service to the Mobile App

Other

Q4
Availability of other Spherium Products on The Mobile App

SPHERIUM FUTURE PRODUCTS – PHASE II

Spherium will constantly evolve by providing novel and valuable services to its customers. Some of the future services that are part of phase two deployment are outlined below however with fast innovation and changes in DeFi space, Spherium technical team and the community will constantly evaluate the market conditions and viability of new product development.

SphereLock

SphereLock will facilitate a range of time-based and event-based functionalities to enable safe and secure P2P transfers and payments. For example, a small to medium-size business/company can avail *SphereLock* to make time-based (weekly/monthly, etc.) salary payments to their employees. Similarly, the company can use the event-based service for giving bonuses to its employees after achieving a milestone. We will be leveraging the innovative Randomness Beacon Contracts from Starkware Veedo Verifiable Delay Functions (VDF) [Ref17] for the implementation of *SphereLock*.

SphereEx

The *SphereEx* will facilitate strangers to perform reliable escrow-based transactions. For example, a seller wants to sell some tokens into a stablecoin over the counter to avoid slippage and find a buyer on Spherium forum (or other platforms) where both (the seller and buyer) agree on the price. The seller will create a *SphereEx* and activate it by sending its tokens to the specified contract. The buyer will send the agreed amount of stablecoins to the same contract, and once both funds arrive the stablecoins will be automatically transferred to the seller's wallet while the tokens will be automatically sent to the buyer's wallet. *SphereEx* will be implemented in the most secure and gas efficient way leveraging the reference implementation models of *StarkEx* [Ref18] and *Loopring* [Ref19].

SpherePortfolio

The *SpherePortfolio* service of *Spherium* platform will automatically rebalance an investor portfolio by availing the arbitrage opportunities. For example, an investor builds a portfolio with X%, Y%, and Z% (X+Y+Z=100%) of the investor's total capital allocated/invested in assets A, B, and C, respectively. Suppose at some point the price of asset A appreciates while that of asset B depreciates. This imbalances the portfolio since the portion of asset A is now greater than X% while that of asset B is less than Z%. *SpherePortfolio* will automatically rebalance the portfolio by trading the extra asset A for the needed asset C.

SphereVault

SphereVault will provide savings account opportunities, where users can deposit their crypt assets for different *Rate of Returns* (RoR) and under different terms and conditions. For example, a flexible saving account will allow users to withdraw their assets any time but will offer relatively low RoR. On the other hand, depositing assets for a fixed period will offer better RoR and users will have a choice to select a period. Naturally, the longer the deposit period the better the RoR on the deposited assets. The users will have the option to further enhance the RoR on their assets by depositing a certain amount of *Spherium* native token along with other crypto assets.

Spherium Synthetic Tokens Factory

Spherium synthetic tokens factory will enable investors to create/mint new tokens (collateralized by crypto assets) for real-world assets, stocks, and fiat currencies, which will track the price of these underlying assets and can be traded on DEX. Note that the smart contracts (for synthetic tokens) will tokenize the price rather than the actual assets, hence, investors creating these synthetic tokens do not have to own the financial assets (e.g., precious metals, stocks, etc.) but crypto assets as collateral.

Cross Chain Interoperability

The RenVM is a custodian that holds digital assets as they move between different blockchains, such as BTC and Ethereum [Ref9]. An asset holder gives BTC to RenVM, where RenVM holds the BTC and mints that BTC as an ERC20 (a.k.a RenBTC) on Ethereum with a 1:1 ratio. This RenBTC can then be used for yield farming on the Ethereum ecosystem. Spherium will make use of the RenBridge to seamlessly integrate non-ERC20 tokens with our existing products.

SPHERIUM GOVERNANCE

The *Spherium* governance model inspired by Uniswap will be put in place. The full control of the Governance model will be handed over to SPH token holders by March 31, 2022, at approximately 12:00 GMT. In the meantime, *the Spherium* core team will make decisions whenever needed for the wider interest of the Spherium ecosystem but will provide a 30-day period between decision and implementation.

Once the 20% total supply of SPH is released, Spherium token holders will be able to initiate *Spherium Improvement Proposal* (SIP) on the *Spherium* community forum and vote in favour of or against the SIP. Some examples for the SIP could be:

- Increase or decrease the *HyperSwap* liquidity pool fee depending on the volatility of the trade.
- Adding new liquidity pools for *HyperSwap*.
- Adding new money markets to *SphereComp*.
- Adjusting the SPH allocation weights between different liquidity pools.

Apart from the SIP, the community forum will be used for general discussion on issues related to the Spherium ecosystem, and Request for Comment (RFC). The general principles of *Spherium* governance are:

- 2.14% of the total supply (delegated) to submit a governance proposal
- 5% of SPH supply required to vote **'YES'** to reach quorum
- 7-day voting period
- At least 1 SPH token holding is required to vote
- 2-day time lock delay on execution of the proposal

More details about *Spherium* governance will be provided on our website, as the ecosystem evolves with time.

AML AND KYC

AML (Anti-Money Laundering) and KYC (Know Your Customer) are critical components for any company that works within the financial sector. When it comes to DeFi, since the vast majority of DeFi protocols are built in a permissionless fashion and all smart contracts live on-chain, the platforms are by design not dependent on KYC analysis to function. Anybody with an internet connection can use DeFi service.

However, the *Spherium* team recognizes the importance of protection against illegal access/use of financial services and aims to be an absolutely responsible DeFi company in this respect. Several steps will be taken for providing a more transparent and secure space in this respect. *Spherium's* first strategy is to ask for KYC information from all of the potential investors who want to use the *Spherium* platform. This is a new approach, currently taken by few DeFi platforms for customers/users that make larger transactions.

Furthermore, since *Spherium* services will be built on the Ethereum network (and later extended to other networks), the Ethereum block data and transactions history will be utilized by *Spherium* Artificial Intelligent (AI) algorithms to acquire useful insights and information about the nature and purpose of transactions made by *Spherium* users. In this context, *Spherium* plans to deploy bots within our system, which will help our team to track any illegal transactions and blacklist/block those addresses from using *Spherium* services. As a general course, the *Spherium* team plans to cooperate with all government regulators that seek our advice and knowhow, to prevent illegal activities within the DeFi space.

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