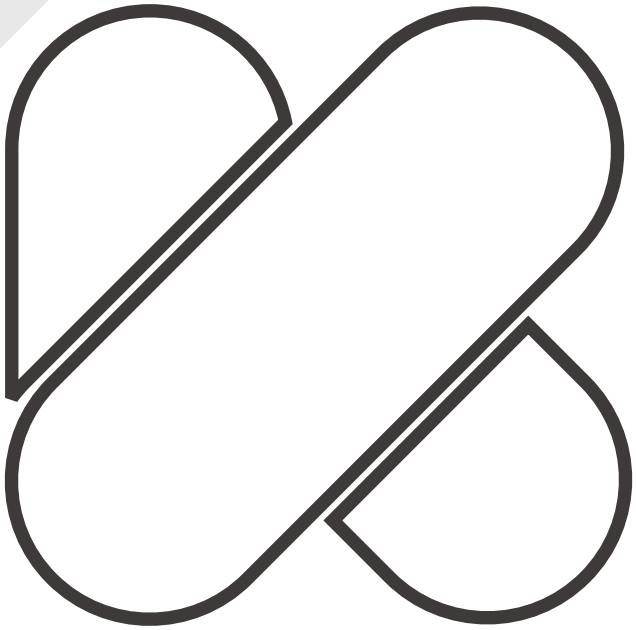
KEPLERSWAP



2021

DEFI 2.0 Explorer

Twitter Telegram GitHub YouTube

KeplerSwap White Paper V2.5.1

IN THE NEAR FUTURE,

Kepler planet is foreseen to be the next most habitable planet in the universe.

Digital currency is projected to be the highest liquidity medium of exchange:

Decentralized Finance will be the most effective framework for digital finance:

KeplerSwap is the most efficient platform for DeFi.

1. INTRODUCTION

Earth is the only irreplaceable planet known for human existence. Throughout civilization, humans have wreaked irreversible damage to planet Earth. Humans have faced environmental disasters produced by themselves. After nine years of collecting deep space data from the Kepler Mission, researchers have discovered many planets outside our solar system that are suitable for human habitation and named it after Kepler.

Similarly, many modern business environments are fully centralized and filled with imbalances. The modern financial system is exemplified by capitalists using their anti-competitive power with centralization. Less competition will disadvantage the mass population. While not being able to fulfill our desire for living in the next planet, we can start building a new structure or system to chase our dreams.

In 2008, Satoshi Nakamoto published a white-paper [1] that created bitcoin cryptocurrency using blockchain technology. His idea of decentralization, based on cryptographic proofs of peer-to-peer electronic cash exchange has created new ways of conducting business and finance. Bitcoin is censorship resistant, unstoppable, and used as an immutable ledger with a consensus mechanism on the blockchain. The rate of adoption of cryptocurrencies has continued to reach a phenomenal rise. Bitcoin has opened a new form and distribution model for the digital currency exchanges. Bitcoin is the iconic digital currency that has inspired many other cryptocurrencies. It has generated tremendous inertia to transform the traditional financial system. In summary, cryptocurrency is the best form of currency for mankind.

[1] "Bitcoin: Peer to Peer Electronic Cash System", Satoshi Nakamoto
https://bitcoin.org/bitcoin.pdf

In 2020, the issuance of sovereign digital currency has created a rapid development of the decentralized financial technology globally. It is expected that traditional finance will evolve alongside in a decentralized model using blockchain technology. Decentralized finance ('DeFi') will increase the immeasurable value that sovereign digital currency has created. Overall, DeFi is the best concept as a financial instrument for mankind.

Kepler technology is rolling out DeFi version 2.0. It will be built to handle large scale and unprecedented decentralized financial system needs. It will be a newly designed DeFi platform that has fairer and more reliable methods of participation. Together, we are building a new decentralized financial world.

This paper is a brief description of DeFi and the value systems of Kepler technology.

2. Decentralized Finance (DeFi)

Our vision

To achieve, build and implement a large-scale DeFi application platform to support economic activities using blockchain technology. Our vision is to continuously innovate and build upon our team's success and achievements from the initial creation of KEPLER.

2.1 DeFi 1.0

DeFi is narrowly defined as the exchange of financial transactions and services by using digital currency (or token) between participants. For example, investment transaction, insurance service, loan and payment service are all using DeFi platform that is based on solid token technology. Among the DeFi suite of products and services, the Ethereum cryptocurrency platform is the major provider.

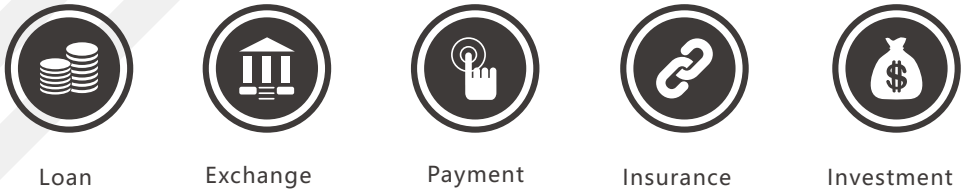
At a higher level, DeFi is a platform where financial products are available to everyone on an open public decentralized blockchain network. It avoids additional fees being charged by a middleman like banks or brokerages. This has implications namely:

- Transactions are made directly between participants by using a set of smart contracts[3].
- DeFi services provided by cryptocurrency exchanges are not decentralized but it uses a digital asset as collateral.

Traditional financial businesses can be upgraded to use blockchain technology to harness decentralized finance concepts. It can also be a brand-new financial business transacting cryptocurrencies that are included with other financial activities.

[2] Concepts on Decentralized Finance
https://en.wikipedia.org/wiki/Decentralized_finance
[3] Smart contracts are programmable logic running on computers
https://en.wikipedia.org/wiki/Smart_contract

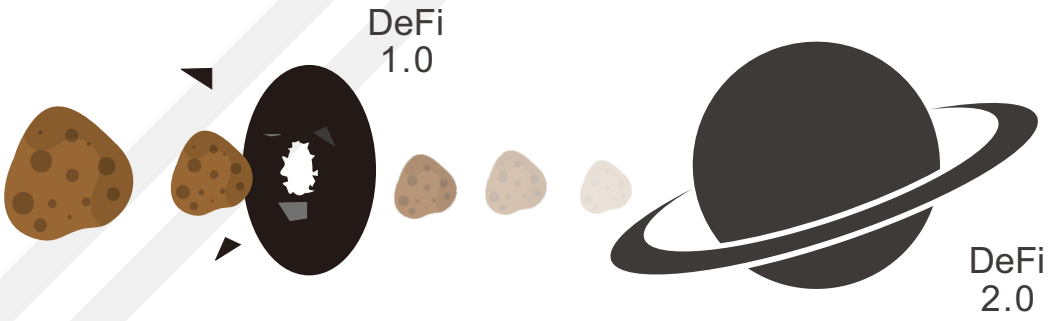
With increasing active global adoption, the use of blockchain technology is becoming common. At the same time, the use of DeFi has gained momentum with the promotion of blockchain technology. DeFi development is currently at version 1.0 and it has limitations. We are now seeing the arrival of version 2.0 of DeFi development.



2.2 DeFi 2.0

Currently most DeFi projects are associated with token issuance and their purpose is to increase the minting of tokens. These projects have not generated new innovation to cryptocurrency, distribution and community management. It began with rolling out mining infrastructure by participants and became unsustainable. Users do not participate in community governance. Due to the lack of governance, most miners are focused on highly reward tokens at the early stage. It has negatively impacted the DeFi development and liquidity of the platform. Kepler Technical Team has a vision to overcome this current dilemma by establishing a sustainable cross-chain decentralized finance system under DeFi 2.0.

DeFi 2.0 is to connect all members who can provide liquidity to the community. It uses liquidity rewards as an access point and binding the rewards with future user's transaction. It aims at providing a standard user interface, sustainable and decentralized financial framework. The ice-breaking journey of DeFi 2.0 is a 'state of the art' financial governance innovation.



Compared to DeFi 1.0, the DeFi 2.0 ecosystem created by KeplerSwap has several distinct advantages:

※ KeplerSwap is dedicated to breaking the old trading model of DeFi 1.0 by creating a strong vertical link between users and a strong horizontal link between all members in the ecosystem, making KeplerSwap the standard dynamic trading platform.

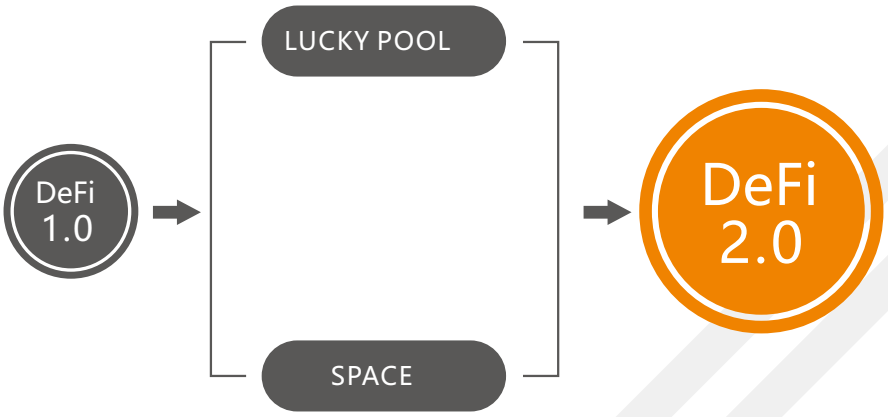
※ KeplerSwap offers a weekly Lucky Pool to incentivize outstanding liquidity pool providers. It helps to maintain an interest in user liquidity contribution.

※ KeplerSwap offers **SPACE Contribution Award** to reward outstanding SPACE owners. A SPACE owner is defined as a market maker that creates an amount of liquidity to the system. Members are polled for outstanding SPACE owners. The prize is accumulated from a 30-days liquidity contribution pool. At the adoption stage, KeplerSwap will grant full governance and decision-making right to the community members. Making poll function universally available to the members is the first step towards decentralized governance.

※ The founding team will delegate the governance right and decision-making power to community members as soon as possible. When all decisions are jointly made by members, a decentralized governance model is formed. Motivated members will have an interest to participate in community activities to achieve a better outcome in the development of the platform. All members are stakeholders of the community.

※ KeplerSwap provides a sophisticated and open cross-chain platform for DeFi services only. By realizing this technology innovation, technologist and influencers can tap into this blossoming greenfield project for countless innovative DeFi project ideas.

DeFi 2.0 will be a major improvement from DeFi 1.0. By encouraging user engagement, it will shift the focus from just reaping mining rewards to building a sustainable platform for long term liquidity contribution. This is the future of DeFi 2.0.



3. KeplerSwap

3.1 Introduction

Announced on 5 December 2011, Kepler-22b[2], is the first planet discovered in the habitable zone where liquid water exists on the planet's surface. Natalie Batalha has speculated,

"If it is mostly ocean with a small rocky core, it's not beyond the realm of possibility that life could exist in such an ocean".

This possibility has spurred the search for extraterrestrial intelligence ('SETI') on top candidates for extraterrestrial life.

Based on Kepler-22b discovery, the Kepler team is inspired by the idea that Kepler can become the next perfect livable planet in the universe. To the team, Kepler represents a new beginning for civilization living without pollution, war, boundary, totalitarianism, and unfairness.

KeplerSwap is a professional decentralized trading platform that is built on blockchain technology. Under a Decentralized Market Agreement [3], it provides participants with a comprehensive solution to identity security, asset security and autonomous trading on a combination of blockchains.

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[4] First planet discovered in the habitable zone by NASA Kepler Mission
https://www.nasa.gov/mission_pages/kepler/news/kepscicon-briefing.html
[5] Natalie Batalha works closely with a research team to identify viable planets from data captured by Kepler Mission
https://en.wikipedia.org/wiki/Natalie_Batalha
[6] SETI - https://en.wikipedia.org/wiki/Search_for_extraterrestrial_intelligence
[7] Decentralize Market Agreement is a contract between market participants and DeFi trading platform provider.

3.2 Kepler Structure

3.2.1 Decentralized Exchange Protocol

At the initiation stage, KeplerSwap provides a decentralized exchange protocol running on BSC public blockchain. Market participants can trade and place BUSD assets on the platform. After a period of successful commissioning, KeplerSwap will introduce more decentralized exchange protocols to interoperate with other public blockchains by using multi-chain and cross-chain aggregation features. At the final stage, KeplerSwap will make further improvements to the technical support for DeFi development on public blockchains and specifying the underlying technical standards for interoperability for public blockchains. The aim is to excel in DeFi technology development and financial innovation for the future of DeFi 2.0.

The basic conversion formula uses a classical constant value model ‘xy = k’. By applying this formula, the product of two currencies transfer (‘x’ and ‘y’) in the liquidity pool is always kept at a constant value ‘k’. When a user exchanges one token for another, one currency in the liquidity pool will increase while other currency decreases. As a result, ‘x’ coin will increase in value with a reduced market supply, and ‘y’ coin will decrease in value with an increased coin market supply, the prices of the coin will be fully regulated by the market.

All exchange rules are implemented using smart contracts. It will guarantee openness and transparency of prices. When the price of a currency changes in other markets, the incentive effect of the market causes users to spontaneously adjust the price of the currency to the real market price through transactions, which fundamentally avoid the possibility of controlling the market.

We define the following variables:

- Reserve 0: currency number 1 in the liquidity pool
- reserve1: currency number 2 in the liquidity pool
- amount 0: the amount of exchange currency paid by the user.
- amount1: the amount of exchange currency that the user gets.

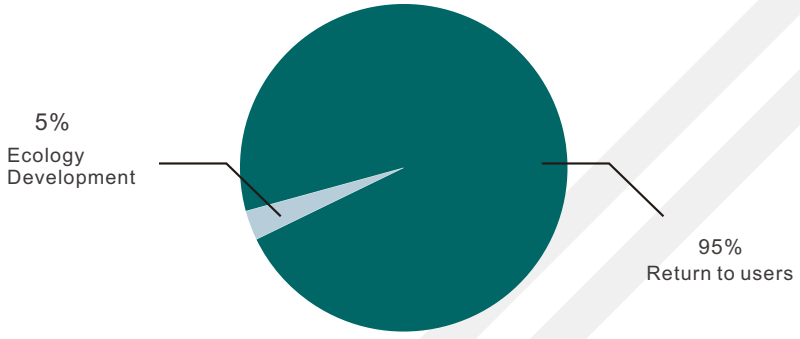
Using the constant value formula:

- Reserve 0 * reserve1 = (reserve 0 + amount 0) * (reserve1 - amount1)
- Then, the amount of exchange currency that the user gets is:
  amount1 = reserve1 * amount 0 / (reserve0 + amount 0)
- The actual price of the user's redemption is:
  price = reserve1 / (reserve 0 + amount 0)
- And the actual price is:
  price'= reserve1 / reserve 0
- The deviation (slippage) of the actual price is:
  slippage = amount 0 / (reserve 0 + amount 0)

The amount 0 is the user's exchange amount and reserve 0 is the total amount of currency in the market. When the amount of exchange is much less than the total amount of the market, the value gets close to 0 infinitely, that is, the price that the user gets is basically equal to the real price in the market.

3.2.2 Transaction Fee

Transaction fee will be charged on cryptocurrency exchange. Unlike many Decentralized Platforms, KeplerSwap returns a large proportion of transaction fee to the users. Using the trading pair BUSD/SDS as an example, 95% fees generated from trading SDS in the BUSD exchange will be returned to users and the remainder 5% will be used for ecological development.



Pie: Total transaction fee from exchange

3.2.3 Liquidity Pools ('LP')

In terms of global financial trading, public interest in DeFi activities have increased. The main driving factor can be attributed to "liquidity withdrawal" which is a mechanism used to initiate liquidity. From a financial transaction perspective, "yield farming" refers to the process in which DeFi users exchange assets with a certain deal and obtain the original deal token as a reward. KeplerSwap will support the on-chain implementation of the DeFi protocol. As more people contribute to the liquidity of the mining pool, it will help the development of the entire ecosystem.

The stability of KeplerSwap platform is measured by the amount of funds available on the platform. When the platform has more funds, it is more reliable and stable. When the market liquidity is sufficiently stable, users can enjoy the convenience of a swap trading platform correspondingly used in a centralized and efficient exchange environment, while benefiting from the openness and transparency of the decentralized platform.

The governance and rules of the market relies on the set of smart contracts. Everyone can increase the liquidity of the market, inject funds into the liquidity pool, and enjoy the high rewards provided by the platform.

When users add funds to the liquidity pool, it is called liquidity market making. Market-making users must provide funds according to a certain proportion to ensure that the product of constant value increases by multiples after making the contribution. However, the proportion of the two currencies in the group will not change. The activities in the market created by the user will only increase the stability of the market. It cannot be changed, and users are unable to make slight adjustments to the price of the currency. The price of the coin is fully adjusted automatically by the market.

Assuming that the amounts of the two currencies in the current liquidity pool are reserve 0 and reserve1 respectively, the amount of the two currencies invested by the user in market making are amount 0 and amount1 respectively, according to the following formula:

Amount 0 / amount1 = reserve 0 / reserve1

If the user provides more quantity 0 or quantity 1, any excess portion will be automatically returned to the user. The rights of users are guaranteed, and the rules of the market are maintained by smart contracts. Once the liquidity market is completed, the user will obtain the LP bonus. With this bonus the user can recover the capital from the liquidity market at any time. The platform will not retain the user's capital, charge handling fees, or use it for other purposes. The number of LPs obtained by users is entirely determined by the ratio of the user's market -making funds to the total market funds.

Assuming that the user's investment is amount 0 and amount1, the total market capital is reserve 0 and reserve1 and the total number of LPs in the current market is total LP, then the number of LPs available to the user is:

LP = min (amount 0 * total LP / reserve 0, amount1 * total LP / reserve1)

Due to the supply and demand, the market currency prices can change. The main value obtained when the user cancels the market making will not change, but the number of coins change will result in the number of high-value coins decreases; and the number of low-value coins increases. This is the free nature of market making.

The amount of capital received by the user through the exchange of LP is:

- Quantity 0 = LP * reserve 0 / total LP
- Quantity 1 = LP * reserve1 / total LP

KeplerSwap is targeting more people to participate in the joint construction of the platform and will achieve greater successes in the case of decentralized finance DeFi 2.0. Liquidity is the key business driver that KeplerSwap can provide to users at the initiation stage. It is also the business function that is the most important to users. KeplerSwap can provide the original design of the decentralized financial model. The platform encourages users to provide transaction depth and liquidity support for token interaction, and to reap the corresponding benefits.

Kepler hopes to achieve the following goals:

※ Distribute transaction fees to users that provide liquidity and market making activities to encourage long-term rigid liquid funds.

※ Encourage users to expand horizontal link voluntarily and protect advantaged assets.

※ Not engage in token distribution in the form of ICOs and achieve decentralized governance of the platform.

KeplerSwap expects that each user will bring a certain amount of liquidity and actively participate in the creation of market liquidity. Based on the principle of equity, KeplerSwap can offer participants in liquidity market making activities with a choice of portfolios from the following options:

※ Option to participate in the creation of liquid market but no collateral assets, the weighted coefficient of liquidity market creation is level 1

※ Option to participate in liquidity market creation and collateral assets locked up for 30 days, the liquidity market creation weighted coefficient is level 2

※ Option to participate in liquidity market creation and collateral assets locked up for 90 days, the liquidity market creation weighted coefficient is level 3

※ Option to participate in liquidity market creation and collateral assets locked up for 360 days, the liquidity market creation weighted coefficient is level 4

Users who participate in the creation of the liquidity market will receive part of the user's transaction fees. The revenue received by each user who creates the marketplace is determined by the user's transaction fees, their blocking share and the total participation. Users can withdraw their profits at any time; or lapses in liquidity market making after lock-up period ends; or, provide funds for market making and lock-up their collateral for any period. Revenue acquisition is done entirely by smart contracts without external human intervention. This ensures the equity of income distribution. Those who contribute the most to market stability will get the most benefits.

The main advantages of trading are as follows:

※ The transaction fee appears in real time, and the distribution of the transaction fee is carried out entirely by the contract fairly.

※ The transaction fee is divided into various types and is directly divided according to the type of coins users trade, guaranteeing the original value.

※ The rate percentage can be adjusted, and the fee percentage can be adjusted according to the market performance.

※ The gas fee has been optimized and will obtain the static data area from graph to reduce the pressure on the contract.

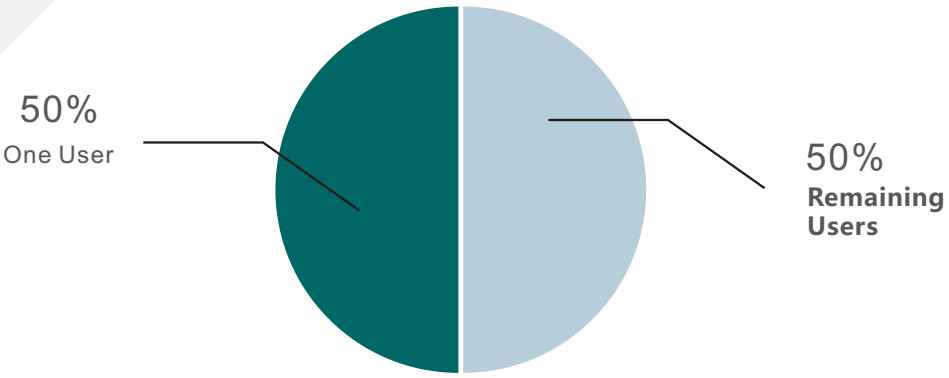
3.2.4 LUCKY POOL

LUCKY POOL is offered to incentivize active liquidity providers. Entry requirements are given as follows:

※ Top X% in liquidity market making contribution from weekly additional referrals Top Y% in liquidity providers.

※ Users who fulfill the entry requirements have one and only chance to redeem the reward during that week.

※ Bonus allotment: Only one lucky qualified user will get the 50% bonus from the pool and the remaining balance of 50% bonus will be allotted to remaining qualified users.



※ Qualified users will be required to redeem the reward within 72 hours. If the reward is not redeemed, it will roll back to the pool for next week.

※ Above processes are generated by smart contract, fully disclosed and efficiently provisioned.

Running formula as below:

A smart contract will select a random number of users. Fifty percent (50%) bonus from the pool is allotted to one user and the remaining 50% is allotted to users equally.

The rule for selecting a person to receive 50% of the reward is: we will get a random number from ChainLink chain. The algorithm is randomized by using a combination of miner information + transaction information + user information.

The LUCKY POOL random number formula is as follows:

- let data1 = hash (block.timestamp, block.difficulty, msg.sender, block.coinbase, block.number)
- let data2 = hash (msg.data, gasleft(), tx.gasprice)
- let data = hash (last_data1, last_data2)
- Let num = uint8(uint256(keccak256(abi.encodePacked(data, data1, data2, userinput)))%10);
- let success = num = 1

3.2.5 Horizontal Ecosystem

In order to maintain a sustainable environment for KeplerSwap, new users are required to obtain a referral relationship with existing users. While all referral relationships are permanently linked, revenues created by the invitee are associated with the inviter.

Based on the relationship, the invitee has to conduct the first trade of assets exchange through the inviter in order to create a horizontal ecosystem. The inviter is then able to gain associated revenue as below:

※ Direct referral trading bonus will be distributed in tokens.

※ When invitee's liquidity market making volume stands in a Top Ranking position, the inviter will be granted entry to the Jumbo LUCKY POOL.

※ Inviter can gain a portion of liquidity market making revenue from his invitees.

The horizontal relationship of the Kepler ecology broadens the development of the KeplerSwap ecology, reshaping the way ecological members trade with each other and their networks, making transactions more convenient, ultimately prompting more people to participate in trading KeplerSwap assets and receive the corresponding rewards, which will greatly affect the existing distributed financial system.

3.2.6 Vertical Ecosystem

Users are able to invite more people to participate in community advocacy in order to provide more support for development collectively. SPACE is a term used in the KeplerSwap environment to improve vertical relationship between users, expand user rights and realize autonomous organization . Through SPACE, all members are dedicated to promoting decentralized autonomy. The following are SPACE features:

※ SPACE Creation. If a user has contributed to liquidity market making efforts; or has referred other users to contribute in liquidity market making while meeting certain requirements, the user is able to submit a SPACE creation application. Once the application is approved, the user is entitled to be the SPACE Owner.

※ SPACE Voting. Each token holder is granted a right to vote in a SPACE election. Every user has to enter a SPACE. Once users have successfully entered into the SPACE, it cannot be changed. Users can vote for SPACE.

※ SPACE Interests. SPACE Owner is granted all rewards related to liquidity market making from their SPACE members. If the SPACE Owner wins in the SPACE Voting, the owner may gain an extra reward from contribution pool.

※ Vote Counting. Voting period consists of 7 days, with the first 5 days being the voting period, and the last 2 days being the counting period.

※ Vote Withdrawal. During the voting period, the votes token will take effect immediately and no voted token can be withdrawn from the pool.

The number of votes for a user is based on the user's assets, which is equivalent to the balance of the token plus the number of collateral tokens locked in liquidity participation. At the beginning of each voting period, a snapshot of the user's current balance and the number of positions blocked will be taken. Therefore, the amount of assets belonging to the users is equal to the number of votes they own. After the snapshot, the user's available token and locked value will not be affected, and the number of votes owned by users will remain the same. Until the next round of voting begins, the votes of the users are recalculated according to the established rules. Also, users vote using snapshot method. This method ensures that users can vote without affecting the regulation of market-making lock function.

Top 20 SPACE owners who obtain the most votes can proportionally share the rewards fairly. If the number of votes is the same, it will be compared according to the user's locked up collateral value, and if the value is also the same, it will

be compared in chronological order of the user's account statement. The reward gained by the user can be redeemed at any time. This will ensure that the more active the users are in the SPACE, more rewards are given.

The SPACE is the cornerstone of ecological development. Active SPACE users have more decision-making power. They can provide better on construction and market development direction. Consequently, users across the ecosystem will also reap greater benefits. The rules for the entire vertical relationship are fully implemented by smart contracts. The process is open and transparent and there is no risk impacting the ecology of the market.

3.2.7 Mainstream Coins Exchange

KeplerSwap supports many types of cryptocurrencies transactions.

While KeplerSwap can maintain user’s stability in the operating environment, it will offer some popular cryptocurrency pairs by utilizing multi-chain and cross-chain support for multi-currencies assets on mainstream public chain.

Multi-Chain: KeplerSwap will explore multi-chain approach and integration to multiple public blockchains in order to achieve "multi-chain parallelization" with the core of Kepler products. After evaluating and determining the feasibility of the multi-chain solutions, it is possible to have different access protocols to the most suitable smart chain depending on the available technology. Currently, the KeplerSwap platform has been tested on the BSC chain, and through multi-chain work, KeplerSwap can connect to more public blockchains.

Cross-Chain: KeplerSwap will define a set of interface protocols for mainstream public chains to facilitate the interaction of different public chains and establish a cross-chain interoperable asset interactive network.

3.2.8 Platform Governance Token

In future, KeplerSwap will launch a token-based platform on the Kepler ecosystem. The platform currency will be used for governance and complement other rights and interests of users in the KeplerSwap ecosystem. It can also be used to deduct platform fees; as a bond guarantee; or deposit; and, participate in governance. The platform token launch will enhance the KeplerSwap trading platform.

Once the KeplerSwap platform governance token is released, all liquid market-making income will be issued in the form of platform based token. The timing and delivery of the platform token is determined by joint community voting, and will be the first DeFi platform to achieve true decentralized autonomy in community governance.

3.2.9 Decentralized Lending and Flash Swap

Decentralized Lending

Loan is a common product in the financial industry. Usually, users can use a collateral such as cash deposits to borrow money. Home loans have always

been considered relatively safe financial loans. Once the borrower is unable to pay the debt, financial institutions can sell the underlying loan asset and confiscate the deposit to recover the loan.

On KeplerSwap DeFi 2.0, all flash loan services are provided with an efficient, smarter and frictionless user experience. KeplerSwap supports multi-currency smart flash loans. Users can borrow the corresponding currency in proportion based on their needs and amount of available funds used as collateral.

KeplerSwap uses smart contracts as a "guarantor" to evaluate asset prices and borrower risks. The creditor decides whether or not to lend to the borrower based on the credit evaluation provided by the "guarantor". When the borrower cannot repay the loan on time, the "guarantor" can automatically execute the bad loan settlement process. In processing the loan application, the funds of the lender are blocked during the loan period and only after all loan conditions are met by the borrower, does the fund begin to accrue interest.

KeplerSwap will also support services such as futures transactions. The trader can borrow funds using the platform margin loan agreement with the lender to perform margin operations.

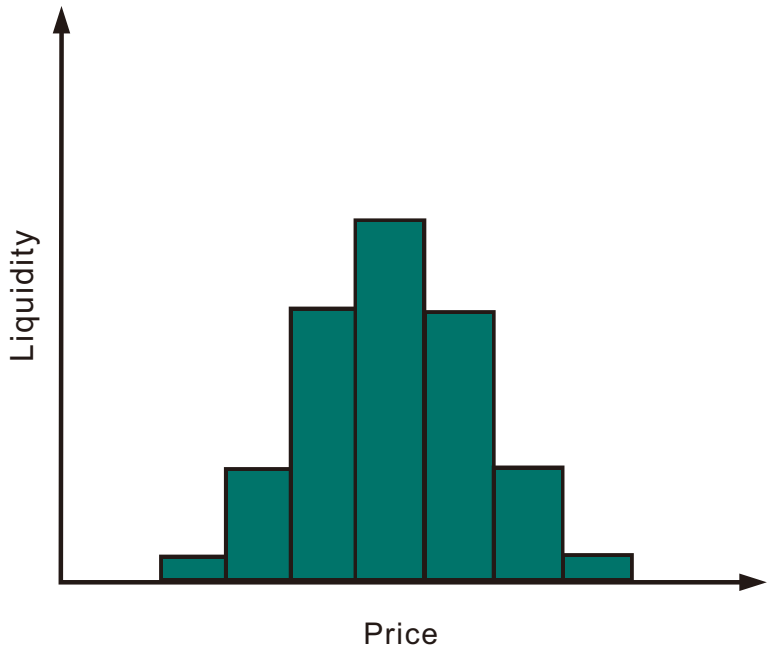
Flash Swap

No collateral is required to lend Tokens from the KeplerSwap supply pool, which are used for "Flash" service, and a Flash Swap can be completed by returning the Token as soon as the process is concluded.

KeplerSwap introduces a Flash Swap that supports two different Tokens from the supply pool when they are returned. Calldatas are implemented in the swap function of the core contract Pair (i.e., the supply pool) that allows the user to cash first and return later. Assuming a BUSD/BNB-backed Pair (supply pool), the BNB will initially lend from the Pair to an external arbitrage contract, and then the Pair will call the KPLCall interface implemented by the arbitrage contract. "After the call is completed, Pair performs a final reconciliation of accounts. If Pair does not receive enough BNB or BUSD, then the entire transaction is rolled back. Therefore, for arbitragers, after lending a BNB, they must return the BNB or BUSD (and pay the 0.3% rate) before the end of the atomic transaction to ensure the success of the entire Flash Swap.

3.2.10 Oracle

The KeplerSwap Oracle can read historical data multiple times to reduce cost. Through a third-party chain call, the Oracle can easily calculate any price data from the previous 10 days. The Oracle can read the data multiple times, plus time weighting to save accumulated prices and also calculate a price with time weighting. This way, it prevents price imbalances due to artificial trading. It also prevents attackers from obtaining large range arbitrage.



KeplerSwap maintains two price accumulators—one for the price of token0 in terms of token1, and one for the price of token1 in terms of token0. Users can compute the time-weighted arithmetic mean of the prices over any period, by subtracting the accumulator value at the beginning of the period from the accumulator at the end of the period, then dividing the difference by the number of seconds in the period. Note that accumulators for token0 and token1 are tracked separately, since the time-weighted arithmetic mean price of token0 is not equivalent to the reciprocal of the time-weighted arithmetic mean price of token1. Using the time-

weighted geometric mean price, as KeplerSwap does, avoids the need to track separate accumulators for these ratios. The geometric mean of a set of ratios is the reciprocal of the geometric mean of their reciprocals. It is also easy to implement in KeplerSwap because of its implementation of custom liquidity provision. In addition, the accumulator can be stored in a smaller number of bits, since it tracks log P rather than P, and log P can represent a wide range of prices with consistent precision.

Instead of tracking the cumulative sum of the price P , KeplerSwap accumulates the cumulative sum of the current tick index (log1.0001, the logarithm of price for base 1.0001, which is precise up to 1 basis point). The accumulator at any given time is equal to the sum of log1.0001 (P) for every second in the history of the contract:

$$a_t = \sum_{i=1}^{t} p_i$$

Geometric mean time-weighted average price (Pt1,t2) in any period t1 to t2.

$$p_{t_1,t_2} = \frac{\sum_{i=t_1}^{t_2} pi}{t_2 - t_1} = \frac{\sum_{i=t_1}^{t_2} pi \sum_{i=t_1}^{t_2} pi}{t_2 - t_1} = \frac{a_{t_2} - a_{t_1}}{t_2 - t_1}$$

3.2.11 Open Technology & Innovation

KeplerSwap aims to make the DeFi 2.0 explorer platform available to the most open and innovative decentralized environment. KeplerSwap will attract global geeks to jointly start technological innovations and bring greater ideas to decentralized finance.

Based on a decentralized on-chain transaction method, anyone can access KeplerSwap DeFi platform. No one has central control rights thus making decentralized governance a reality. There is no need to trust pseudo-decentralized institutions in future. All trusts are built into machines and smart contract codes. Blockchain protocols are technically open source. Anyone can contribute to the protocol to make new financial products and KeplerSwap usage will gain momentum under the network effect from technology innovation.

In the future, we will invite the community of technology enthusiasts and global geeks to jointly develop an underlying public chain that is more suitable for DeFi's development, promote DeFi's technological innovation, and bring unlimited possibilities for DeFi 2.0 development.

3.2.12 Open Finance & Innovation

KeplerSwap’s vision is to develop a completely open decentralized market making protocol. It is going to be a decentralized multi-chain and cross-chain financial platform based on public chain. It has the following open features:

※ KeplerSwap is completely open to everyone. Based on the referral program, all users can join the DeFi 2.0 platform building and jointly create a true Decentralized Autonomous Organization (DAO). Users can participate freely in transactions without registering.

※ After the listing request is opened on the KeplerSwap platform, the community will complete all qualification checks for the new project. Through voting, community members will decide if the project can be operational on KeplerSwap.

※ In the early stages of KeplerSwap's development, the Kepler Foundation will provide the technical and operational support required, and the founding team will withdraw from the governance of the project once the users can participate in the governance of the platform maturely. The team will leave all technical development, feature development and platform operation decisions to the community and achieve complete decentralization of governance.

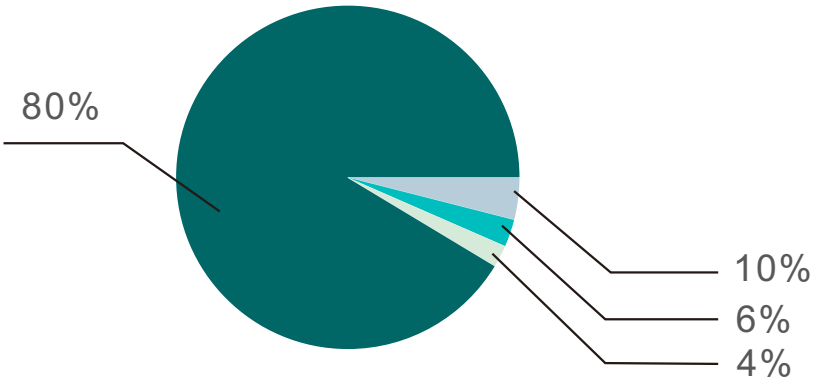
※ KeplerSwap aims to establish a widely opened financial innovation platform. All members have equal opportunity to propose financial planning and directio n for the platform. Through community poll, all members can accomplish financial reform together.

4. Seeds Token (SDS)

4.1 SDS is the native token issued by KeplerSwap. SDS is also key to achieving decentralization and autonomy in KeplerSwap.

4.2 Token Distribution

KeplerSwap has planned to issue a total token supply of 210,000,000 SDS. 80% SDS are generated from mining; 10% SDS are reserved for marketing and business cooperation; 10% for presale(6% for private sale, 4% for public sale). No SDS will be reserved for KeplerSwap.



4.3 SDS Valuation & Application

4.3.1 Governance Token

As the initial token holder on KeplerSwap, each SDS holder owns a voting right in the community governance and decision-making for important events. Every SDS holder can introduce a proposal to change the community policy. Examples include system construction proposal, voting for your community, managing transaction fee, community policy making and more.

4.3.2 Trading Fees Rewards

SDS token is the first underlying asset on KeplerSwap, 80% mining output will be reallocated to Kepler members as follows:

1. Exchange between BUSD and SDS:

When user purchases SDS with BUSD, 2% of BUSD is charged as transaction fee. The 2% of BUSD will be reallocated under the following terms:

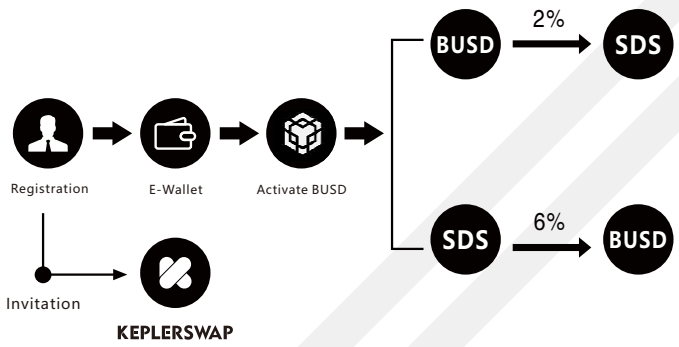
- Liquidity market making 65%
- LUCKY POOL 20%
- Referral reward 10%
- Kepler Foundation 5%

2. Exchange between SDS and BUSD:

When user sells SDS for BUSD, 6% of SDS is charged as transaction fee. Then, 6% of SDS will be reallocated under the following items:

- SPACE voting reward pool 15%
- Liquidity market making revenue 55%
- LUCKY POOL 20%
- Referral reward 5%
- Kepler Foundation 5%

Referrer can claim 10% of liquidity market making revenue from referee. SPACE owner can claim 1% of liquidity market making revenue from every SPACE members.



4.3.3 Yield Farming

SDS is the major output token for liquidity market making on KeplerSwap platform. Every member is encouraged to contribute to liquidity market making by incentivization. Based on fairness principle, KeplerSwap proposes different liquidity market making plans to users. They have the flexibility to set up a self-service market making contribution as follows:

- User participate in yield farming but does not lock position , the account will have a weighted coefficient of yield farming of 1
- User participates in yield farming and tries to lock position for 30 days, the order will have a weighted coefficient of yield farming of 1.5
- User participates in yield farming and tries to lock position for 90 days, the order will have a weighted coefficient of yield farming of 2
- User participates in yield farming and tries to lock position for 360 days, the order will have a weighted coefficient of yield farming of 3

LOCK-UP PERIOD	WEIGHTED COEFFICIENT	LEVEL
Not locked	1	1
Locked for 30 days	1.5	2
Locked for 90 days	2	3
Locked for 360 days	3	4

4.3.4 LUCKY POOL

KeplerSwap will reserve SDS and BUSD as reward tokens for LUCKY POOL. It may encourage users to provide more liquidity. Entry requirements for LUCKY POOL are as follows:

※ Weekly Top 30% Referrals / Weekly Top 30% Liquidity Provider

※ Reward Allotment: Only 1 achiever gets 50% from the Pool, and the rest 50% is allotted to 10 achievers equally.

Logic of lucky draw:

A smart contract is used to select eleven (11) users randomly who satisfies the entry requirements. 50% of tokens from LUCKY POOL is allotted to one user; and the remaining 50% share of the draw are equally allotted to ten users.

The rule for selecting a person to receive 50% of the reward is: we will get a random number from ChainLink chain. The algorithm is randomized by using a combination of miner information + transaction information + user information.

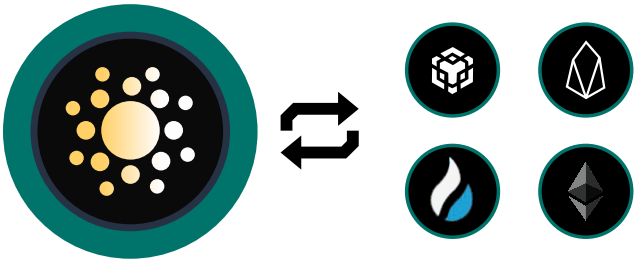
The LUCKY POOL random number formula is as follows:

- let data1 = hash (block.timestamp, block.difficulty, msg.sender, block.coinbase, block.number)
- let data2 = hash (msg.data, gasleft(), tx.gasprice)
- let data = hash (last_data1, last_data2)
- Let num = uint8(uint256(keccak256(abi.encodePacked(data, data1, data2, userinput)))%10);
- let success = num = 1

LUCKY POOL Users

4.3.5 Ecological Medium Token

SDS token is the exchange medium on KeplerSwap. It has high liquidity and is able to be exchanged on cross-chains with other tokens on KeplerSwap.



4.3.6 Smart Aggregator

User has the flexibility to choose a list of cryptocurrency pairs in liquidity market making. By using a smart aggregating system on the liquidity pool, it will select the subject pair automatically in order to achieve the maximum return.

4.3.7 SPACE Creation & Voting

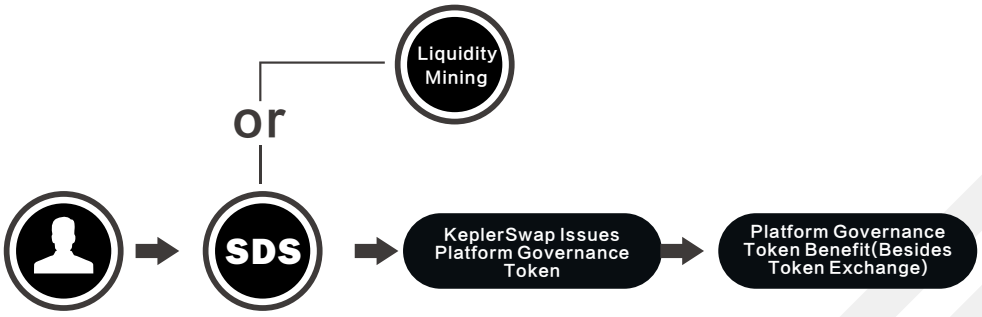
Under the following conditions the user, who is a) SDS holder; b) a liquidity provider (value locked for 12 months) on KeplerSwap; and c) who has successfully invited a required amount of new users, will be available to create SPACE and become a SPACE Owner. A SDS holder who joins the SPACE is granted the rights to vote in the SPACE.

4.3.8 Airdrop

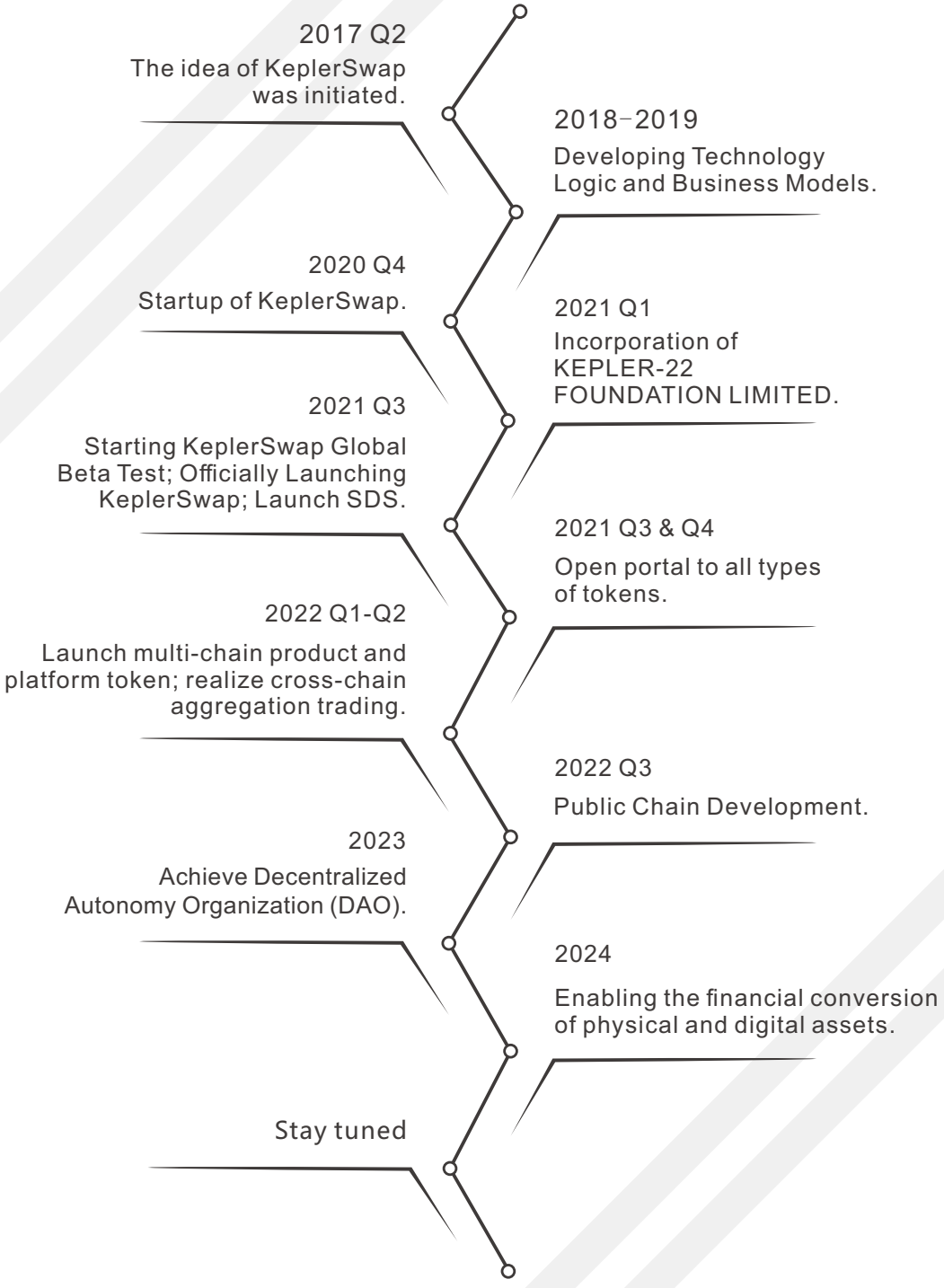
Interest offerings of new project tokens are granted to users who holds SDS in stock; or has provided liquidity contribution on KeplerSwap.

4.3.9 Interests Conversion

After the issuance of platform token, a SDS holder and liquidity provider is able to gain the interests of platform token by 1:100 (Note: This is not a Token Exchange).



5. KeplerSwap's Roadmap



*The above estimated timeline will be adjusted and conform to SPACE voting results.

6.Kepler Foundation

6.1 Kepler-22 Foundation Limited

KEPLER-22 FOUNDATION LIMITED (aka Kepler Foundation) is a Not-for-profit Company incorporated and domiciled in the State of Colorado, USA. The address of its registered office is 1630 Welton Street, Suite 201, Denver, CO 80202, United States. Kepler Foundation as the angel investor of KeplerSwap, provides early stage start-up capital and technical support.

6.2 Registration Of Kepler Foundation

Certificate of Registration **Membership Certificate**

Twitter
https://twitter.com/keplerswap

Telegram
https://t.me/KeplerSwap

Medium
https://medium.com/@keplerswap_dex

YouTube
https://www.youtube.com/channel/UCKLhng7agUQ4AYIvS4cZopg

GitHub
https://github.com/keplerswap

Kepler Foundation
https://keplerswap.io/

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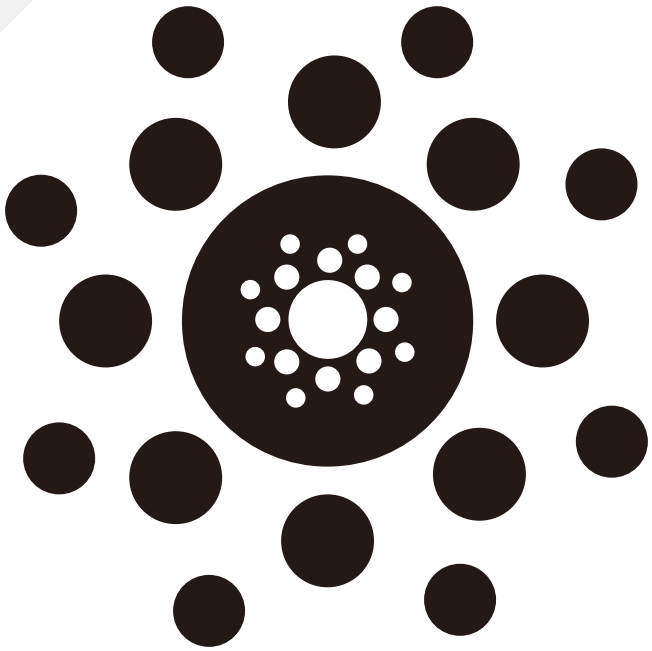
8. Conclusion



As the inevitable growth for the future finance,
DeFi2.0 has unprecedented and powerful vitality. KeplerSwap,
as the pioneer of DeFi2.0, will build a new financial
eco-system with all mankind.