Bagels Finance

Cross-Chain Leveraged Yield Farming Protocol

Content

1.0 Introduction

Bagels Finance is the first cross-chain leveraged liquidity mining protocol based on Ethereum Layer2, BSC and HECO. Users can deposit ETH, WBTC, USDT, DAI, BNB, HT and other assets into smart contracts to earn high APY; borrowers can borrow with 2-10 times leverage, thus get up to 2-10 times of the original APY and LP trading fees. It provides better liquidity for LP mining and decentralized trading in the Ethereum, BSC and HECO ecosystems.
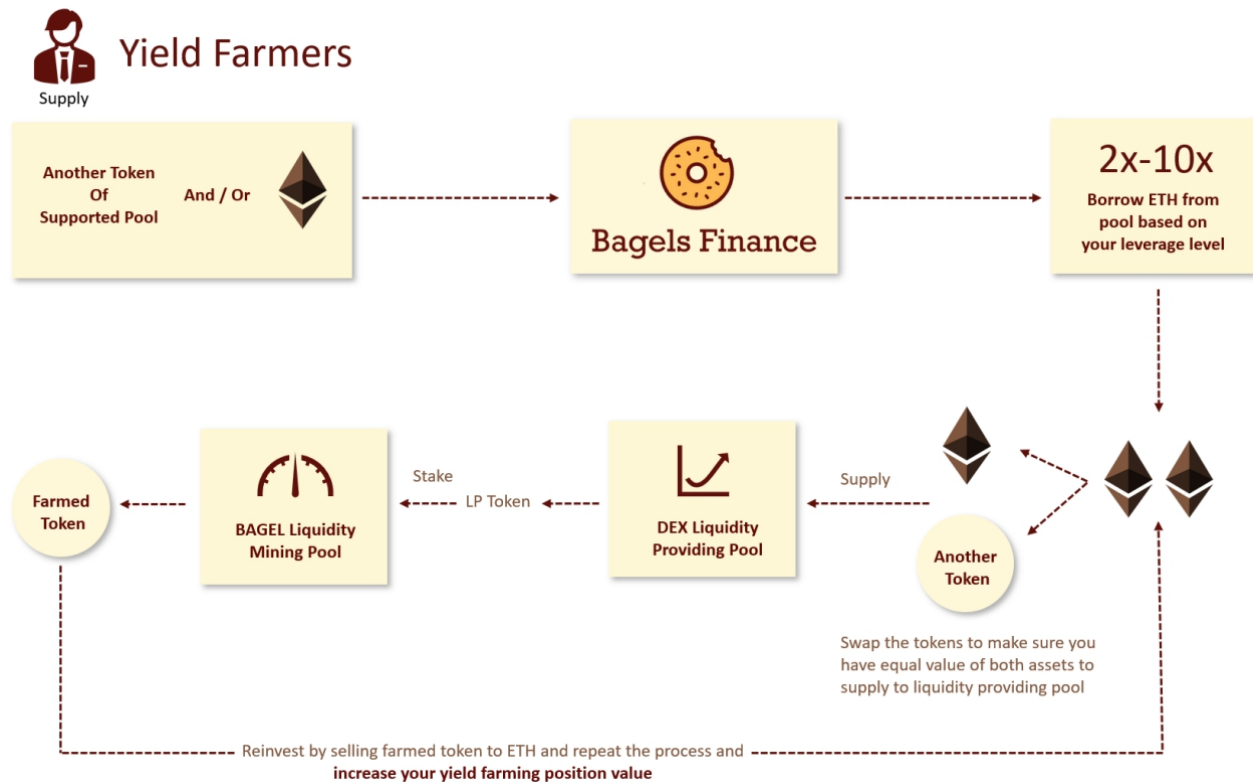
Bagels optimizes the trading process to maximize liquidity mining positions and the APY. In addition to high interest rate, users can also earn deposit mining APY and leveraged mining APY, and receive BAGEL governance token rewards according to deposit/borrow portions. Users can collaterize BAGEL to participate in the DAO decentralized governance and receive a 40% dividend from the Bagels platform. 20% of the proceeds are used to buy-back and burn BAGEL, making BAGEL a more valuable asset in long run.

2.0 Roles in Bagels Finance

The participants of Bagels Finance can be divided into the following three roles, including liquidity providers/yield farmers, depositors (lenders) and liquidators.

2.1 Liquidity Miners (Yield Farmers)

Users do not need to deposit two assets into the LP pool at 1:1 ratio, they only need to deposit one asset to start liquidity mining. For example, if the user chooses the ETH/USDT liquidity pool, the user only needs to provide, for example, ETH to mine. The Bagels system will automatically exchange ETH at the best rate to ensure that users hold equal values of ETH and USDT to supply to the pool on DEX.

Reinvest by selling farmed token to ETH and repeat the process and **increase your yield farming position value**

2.1.1 The mining position can be leveraged 2 to 10 times

Users can borrow ETH, WBTC, USDT, DAI, BNB, HT with up to 2 to 10 times leverage, provide liquidity to trading pools, and earn higher APY from trading fees and liquidity mining .

2.1.2 Automatic LP tokens staking

Bagels automatically stakes users' LP tokens, allowing them to earn additional liquidity mining APY.

2.1.3 Allow high debt ratio positions

As long as the debt ratio is lower than the "KillFactor", the system will not require the user to close the position. However, users should closely monitor the value of their positions, and add assets/ close positions when the debt ratio is close to the "KillFactor".

2.1.4 Allow change of positions

Users can choose to add more ETH, USDT or other assets at any time. However, users must close the position before withdrawing part of the collateralized assets.

For example:

Alice has 100 ETH and wants to mine SUSHI in SushiSwap's ETH/USDT pool. Usually, Alice will swap 50 ETH into USDT, and then deposit ETH and USDT at 1:1 ratio into the

pool. SushiSwap provides liquidity reward SUSHI, assuming that SUSHI's mining APY is 50%.

However, in order to increase Alice's mining APY, Alice first collateralizes 100 ETH in Bagels and borrows 200 ETH, which is equal to 3 times leverage. Alice collateralizes the 300 ETH into the liquid mining pool, and the mining yield will be three times the original, and the APY for mining SUSHI will be as high as 150%. Liquidity miners borrow from the Bagels pool for mining, and pay interest to the depositors. At the same time, liquidity miners can obtain leveraged mining rewards, BAGEL. Of course, high returns are accompanied by high risks. As long as the net value of ETH is not lower than the liquidation line, Alice can continue to mine with 3 times leverage and obtain high APY; however, once the net asset value reaches the liquidation line, liquidation will be triggered by the liquidator.

2.2 Depositors (Lenders)

2.2.1 Interest bearing gTokens

Users who deposit assets on the Bagels platform will receive a certain percentage of the interest-bearing token gToken, a token that can be traded and acted as a certificate for obtaining interest, representing the user's share of the Bagels pool.

The following are the gTokens generated by various digital assets: gETH, gWBTC, gUSDT, gDAI, gBNB, gHT.
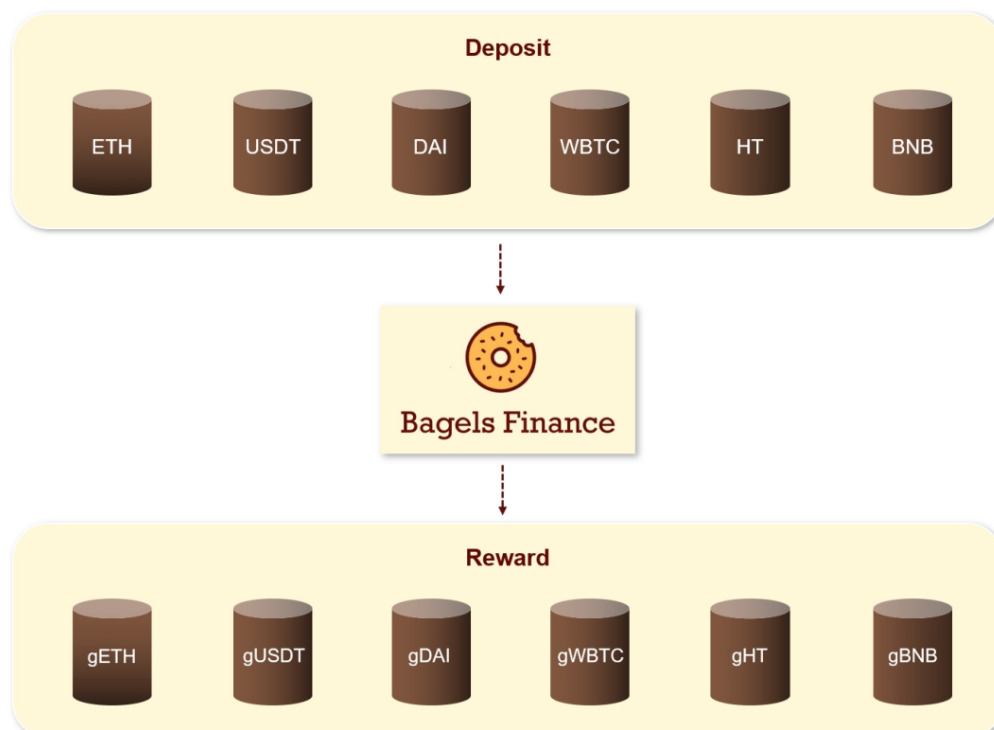
2.2.2 Earn Interest

In addition to earning deposit interest, depositors can also earn BAGEL as a bonus. Taking ETH deposit as an example, the interest paid by borrowers will be distributed to ETH depositors according to the Triple-Slope interest rate curve.

The Triple-Slope interest rate curve is as follows:

- When the lending rate is 0-50%, the loan interest rate is fixed at 10%
- When the lending rate is 50%-90%, the loan interest rate rises to 30%
- When the lending rate is 50%-90%, the loan interest rate rises to 30%

Borrower's Interest Rate Model
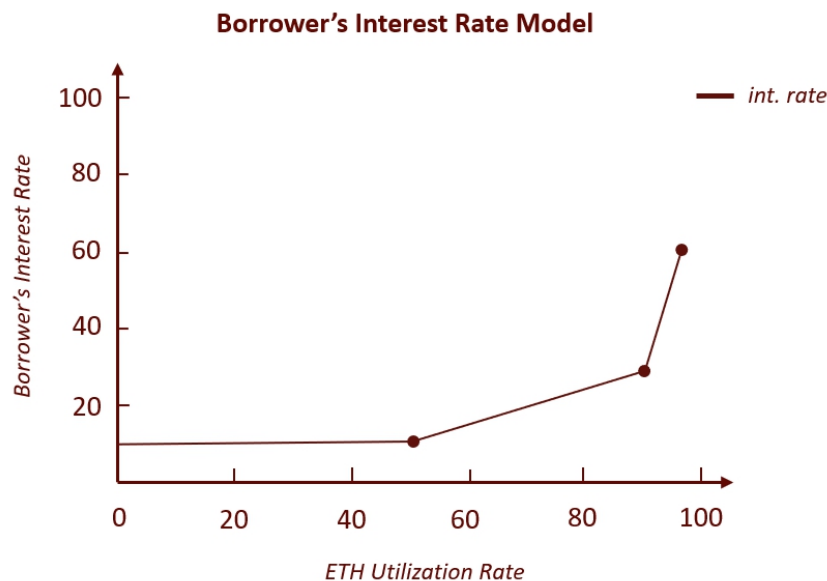
2.2.3 Lending Rate

The interest rate of the depositor is determined based on the lending rate of the USDT pool; the higher the lending rate, the higher the interest rate.

***Please note: 10% interest of the borrowers will go to the Bagels Reserves insurance pool, which will be used as an insurance fund for the depositors.

2.3 Liquidators

For user positions where debt ratio is higher than the "KillFactor", the liquidator can liquidate these positions, and the liquidator can get 5% of the position value as a return.

For example:

- Liquidity miner deposits 100 ETH into the Bagels pool, borrows 150 ETH, i.e. 2.5 times leverage for liquidity mining, then provides ETH/USDT liquidity to mine SUSHI on SushiSwap. At this time, the total position is 250 ETH.
- When the price of ETH increases, the position value of ETH drops from 250 ETH to 175 ETH. At this time, the debt ratio is 85% (150ETH/175ETH), which is higher than the "KillFactor" of the pool. In this case, the liquidator can enter the market for liquidation.
- During the liquidation process, the position value will first be used to repay the debt (in this case 150 ETH). Then 5% of the value of the 175 ETH position, i.e. 8.75 ETH is paid to the liquidator.
- Finally, the remaining 16.25 ETH (175ETH-150ETH-8.75ETH) will be returned to the liquidity miners.

3.0 Why do you need Bagels?

3.1 Miners Pursue Higher APY

Most assets locked in DeFi ecosystem is for liquidity mining, following by decentralized lending. Most of the assets borrowed on lending platforms are used to participate in liquidity mining, which can increase the positions' value and thus yield higher returns. Most of the lending platforms are over-collateralized (borrow without leverage), and thus yield farmers cannot get higher returns.

3.2 Depositors Pursue High Interest Rates

For over-collateralized lending platforms like Compound, AAVE, and Maker, the ETH deposit interest rate is annualized at 0.3% ~ 0.8%, but on Bagels Finance, the ETH deposit interest rate can reach more than 20%.

Bagels platform allows liquidity miners to complete the entire lending process within just one click, comparing to using multiple platforms to borrow assets then to mine. Bagels provides seamless users experience with selected DeFi farms on Ethereum, BSC and HECO all in one place.

Liquidity miners can obtain higher APY through leveraged mining on Bagels. Depositors can earn a higher interest rate, as it's based on the lending interest rate and asset usage rate.

4.0 What do Users Get?

- Provide liquidity and earn BAGEL
- Deposit and earn a higher interest rate and BAGEL
- Participate in leveraged yield farming and earn trading fees and BAGEL
- Liquidity mining with leverage (e.g. MDX or CAKE)

5.0 What are the Risks?

Bagels Finance can bring users higher liquidity mining APY, but the protocol involves the use of leverage, and users should participate with caution. Users should only deposit funds when they fully understand the risk of assets liquidation. In addition, even if the Bagels Finance protocol has been fully audited, there are still hacking risks.

***Please note: Users must "Do Your Own Research (DYOR)" before using the Bagels Finance protocol.

Higher returns come with risks. For either leveraged yield farmers or leveraged liquidity providers, there will be risks, including:

- Impermanent loss: As you're providing liquidity on a decentralized exchange, such as Mdex, Uniswap, SushiSwap or Pancakeswap, you will face the risk of impermanent loss;
- Risk from Short positions: Assuming that the price of ETH increases, it will cause the value of your position to decrease. When leverage is used to establish a position, you borrowed ETH, i.e. shorting ETH. Therefore, when the price of ETH increases against USDT, the value of your position may decrease, which may trigger the liquidation; and vice versa.
- The potential risk of contract vulnerabilities may also lead to hacker attacks;

6.0 Dokodoa: Cross-chain Aggregation Protocol

The cross-chain aggregation protocol, Dokodoa, is translated from "anywhere door" in Japanese, which implicates that various assets can use Dokodoa to achieve not only cross-chain interoperable asset interaction, but also smart contracts interaction. This allows for cross-chain liquidity mining, as well as cross-chain vault. Dokodoa is a secure and decentralized cross-chain solution based on State oracle and cross-chain bridge smart contracts. It can support any chain that includes signature algorithms using ECDSA and EDDSA, such as Ethereum, HECO, BSC, Okex Chain, Polkadot, etc. Users are able to complete the deposit and cross-chain transactions in one-click. It eliminates the need to switch between different public chain network settings. The user

would interact with Dokodoa contract on Ethereum, for example, to initiate a token deposit to the custodial account. The cross-chain bridge will automatically detect the user's transaction and trigger the cross-chain mapping process to generate 1:1 wrapped assets on the corresponding chain.

6.1 Dokodoa Architecture

Dokodoa is a decentralized oracle network that's based on State oracle. It detects the state and data on different chains, and achieves cross-chain mapping. It supports both isomorphic and heterogeneous cross-chain.

Assuming Dokodoa network supports data feed oracle services to the Ethereum, HECO and BSC, theoretically, smart contract on Ethereum is able to trigger cross-chain state changes, flowing through Dokodoa client nodes, calling into smart contract on HECO and BSC. Dokoda network thus is acting as a connector or bridge between the supported isomorphic or heterogeneous chains. For example, looking at the liquidity mining pools on Ethereum, the assets on Ethereum can only be used to mine the mines on Ethereum, and the same is true for BSC and HECO.

With Dokodoa, the assets on HECO or BSC can be used to mine the mines on Ethereum, or the assets on Ethereum can mine the mines on BSC or HECO. It thus improves the liquidity of the three chains as well as increase the share of TVL for cross-chain liquidity mining. By deploying Dokodoa oracles and cross-chain bridge smart contracts on Ethereum, BSC, and HECO, it defines the collaboration functions on those chains, so that the Dokodoa smart contract functions on Ethereum can call the smart contract functions on HECO or BSC from the Dokodoa cross-chain bridge oracles, and make atomic updates to the status changes of cross-chain orders and account balances. The following shows the application potential of Dokodoa cross-chain bridge in cross-chain interoperability.
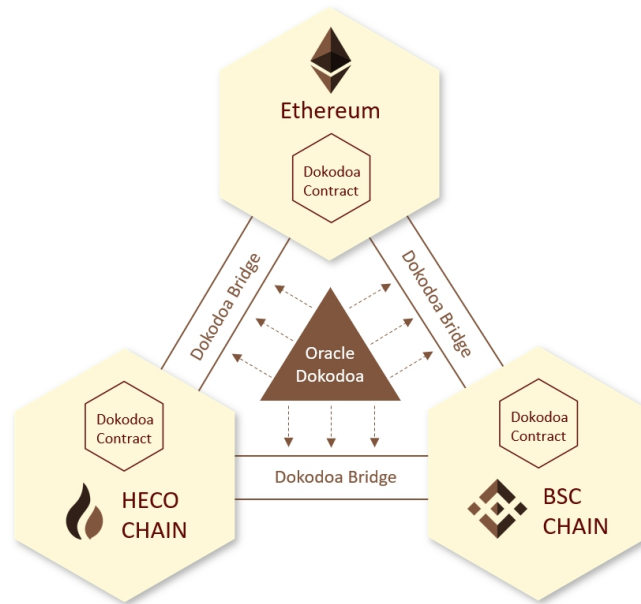
Dokodoa network is chain-agnostic and a scalable layer2 protocol, meaning that it could serve all existing smart contract platforms; it is decentralized, meaning that it has no single point of failure, no centralized trust points are needed, the trust lives in math and code. It is horizontally scalable, meaning that with more nodes running Dokodoa client software the whole network offers more capability and computation power to supported blockchains; it is designed with crypto economic models, meaning that the protocol is resistant to sybil attacks and the network effect is expanded with provable credibility.

Dokodoa network is partitioned into two layers with several key components:

● **On-chain part** : A set of Dokodoa system contracts deployed on supported blockchains, mainly including functionalities such as request handling and response/computation result verification, node registration and staking, stats monitoring, payment processing, etc. Smart contract developers on different chains can request cross-chain services through the unified interface provided by system contracts on the chain.

● **Off-chain part**: A peer-to-peer network running core client protocols. Client protocals includes several important modules: event monitoring and chain adaptor module, distributed randomness engine module, off-chain group consensus module, and request processing/computation task processing module depending on the type of oracle service the user node provides.

We will discuss components of Dokodoa in details in the following parts, analyzing Dokodoa on-chain architecture and off-chain core protocols. For data feed oracles we will demonstrate how the off-chain Dokodoa clients reach consensus in the open and POS environment by means of unbiased verifiable randomness generation and non-interactive, deterministic threshold signatures. For computation oracles we will elaborate how we achieve the same verifiable computation architecture similar to that of Truebit but in a non-interactive way, powered by zkSNARK and the state-of-art technique to generate zkSNARK public parameters (called the "setup phase") in a scalable and trustless way using the randomness engine we build for the data feed oracle.
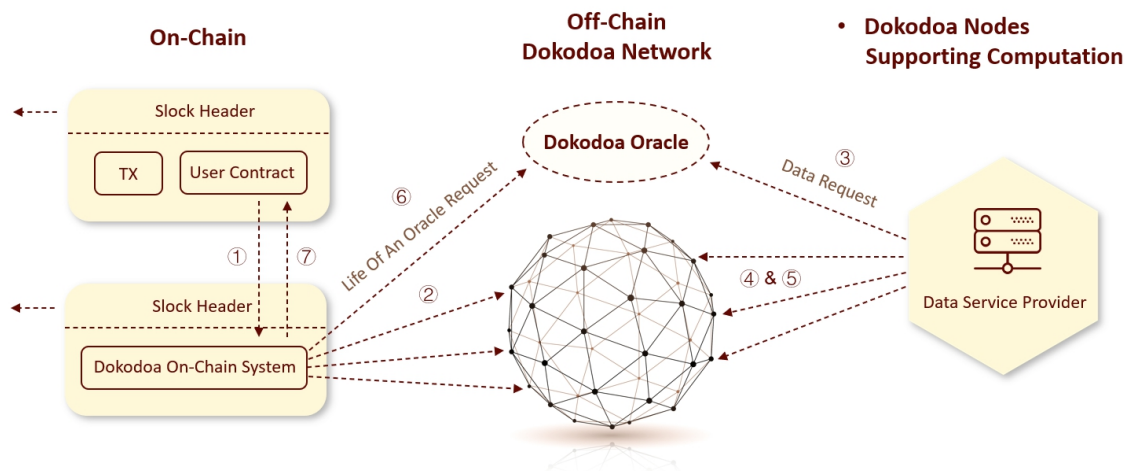
We take Ethereum blockchain as an example to discuss the overall process of an on-demand data query initiated by a user contract. It looks similar to the request & response mode, however, it is an asynchronous process from user contract's point of view:

①: User contract makes a data query request through a message call to Dokodoa on-chain system (a bunch of smart contracts open sourced and published with well documentation provided to developers), specifically the Dokoda Proxy Contract;

②: Dokodoa Proxy Contract triggers an event along with query parameters;

③: Dokodoa clients (off-chain part of Dokoda Network run by users), which keep monitoring the blockchain for the defined event, are notified. Ideally there would be thousands of Dokoda nodes running, out of which a registered group will be randomly selected, by means of the distributed randomness engine built with verifiable random function (VRF).

④ & ⑤: Members in the selected group do the due diligence, calling a Web Api, performing a computation, or executing a configured script concurrently;

⑥: They will reach "in-group" consensus by the t-out-of-n threshold signature algorithm and report back the agreed result to Dokoda on-chain system, as long as more than t members in the randomly selected group are honest. The selected group members' identity and QoS (responsiveness/correctness, etc.) performance will be recorded on-chain, for monitoring and data analysis purposes.

⑦: Dokoda Proxy Contract notifies the user contract that the result is ready, by calling a callback function provided by user contract.

6.2 Cross-chain Asset Mapping

The Dokodoa cross-chain bridge will be deployed on Ethereum, BSC and HECO at first. When the user sends the ERC-20 asset to the BSC or HECO chain, the user only needs to deposit the token on the Ethereum Dokodoa smart contract, and then redeem the asset on the Dokodoa smart contract on HECO or BSC. To implemente this logic, Dokodoa needs to interact with Curve, Alchemix, Orbits protocols and only supports mainstream assets such as ETH, WBTC, USDT, DAI, USDC, etc in the beginning.

For example: Alice deposits 100 USDT in Dokodoa on Ethereum, Dokodoa's oracle detects the account status on HECO or BSC, and the Dokodoa smart contract on HECO or BSC immediately maps 100 dUSDT (1 USDT = 1dUSDT) for Alice, which is not the same as the token deposited by Alice on Ethereum, but it can be considered as an equivalent token. When Alice redeems 100 USDT on Dokodoa on HECO or BSC, the 100 dUSDT will be destroyed simultaneously. The liquidity of dUSDT is provided by: Curve (3pool: USDT+USDC+DAI), Alchemix (alUSD3CRV) and Orbits (Metapool=USDT+HUSD+DAI).
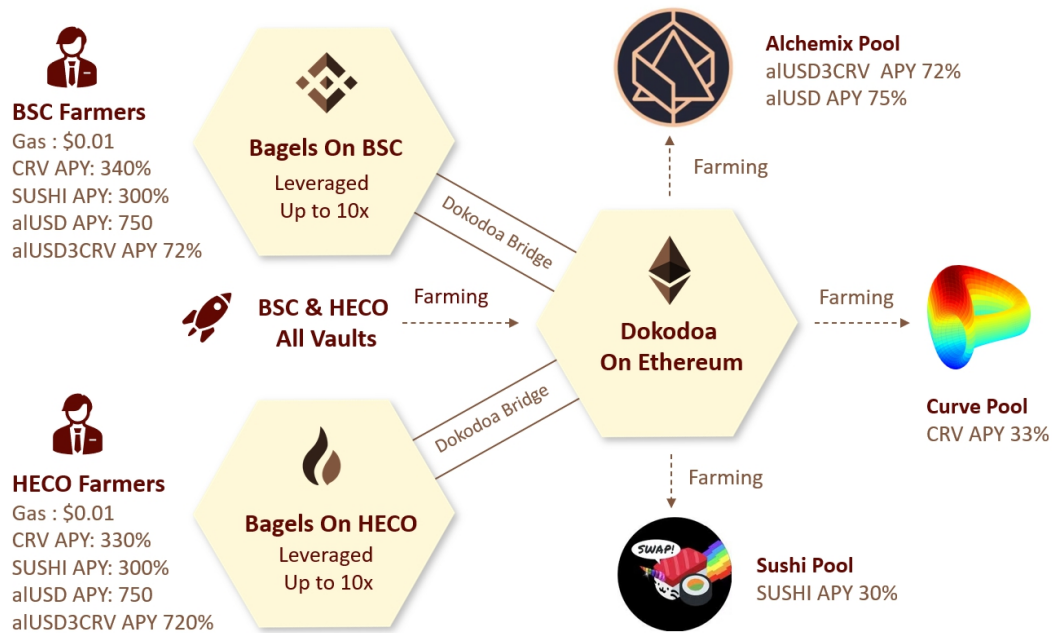
Cross-Chain Multi-Assets Mapping
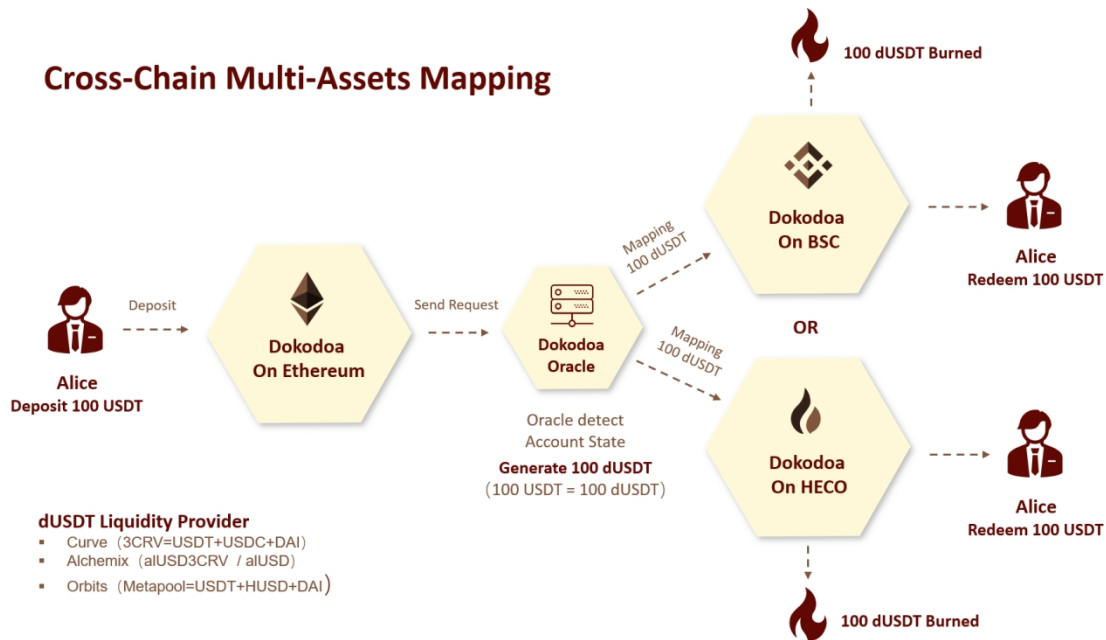
6.3 Cross-chain Liquidity Mining

The Dokodoa cross-chain bridge allows cross-chain liquidity mining. Dokodoa is a fully open sourced network that is open to all vaults in the Ethereum, BSC, and Heco ecosystems. It embeds protocol to achieve cross-chain vaults. Assets on Heco and BSC can use Dokodoa to mine the liquidity pools on Ethereum, such as SUSHI, CRV, ALCX, and Badger. Users of BSC or HECO can pay lower gas fee to mine the pools on Ethereum. The gas fee generated by smart contract interaction on Ethereum will be paid by triggers on Ethereum, similar to transaction trigger platforms like KP3R. The trigger pays the gas fee of the liquidity mining pool that has been called on the Ethereum on the KP3R platform and receives a 5% mining tax reward from the Dokodoa cross-chain bridge.

For example: Mining APY of Alchemix (ALCX) single-asset alUSD Pool is 75% and mining APY of alUSDT3CRV Pool is 72%. Users can mine ALCX on the Bagels platform on HECO or BSC, and can increase the position up to 10 times to mine ALCX. Users only need to stake DAI to mine ALCX without the risk of impermanent loss, and get 750% APY from alUSD Pool and 720% APY from alUSD3CRV Pool respectively.

Cross-Chain Yield Farming

BSC Farmers
Gas : $0.01
CRV APY: 340%
SUSHI APY: 300%
alUSD APY: 750
alUSD3CRV APY 72%

Bagels On BSC
Leveraged
Up to 10x

**BSC & HECO
All Vaults**

Farming

Dokodoa Bridge

HECO Farmers
Gas : $0.01
CRV APY: 330%
SUSHI APY: 300%
alUSD APY: 750
alUSD3CRV APY 720%

Bagels On HECO
Leveraged
Up to 10x

Dokodoa Bridge

**Dokodoa
On Ethereum**

Farming

Alchemix Pool
alUSD3CRV APY 72%
alUSD APY 75%

Farming

Curve Pool
CRV APY 33%

Farming

Sushi Pool
SUSHI APY 30%

6.4 Cross-chain Vault

Dokodoa also implements a build-in vault. Vault on BSC or HECO can use Dokodoa's contract to achieve cross-chain vault. This provides more mining strategies for vaults on BSC and HECO. Dokodoa will also be deployed on OKex Chain, Tron Chain, Ethereum Layer 2 and Polkadot in the future.
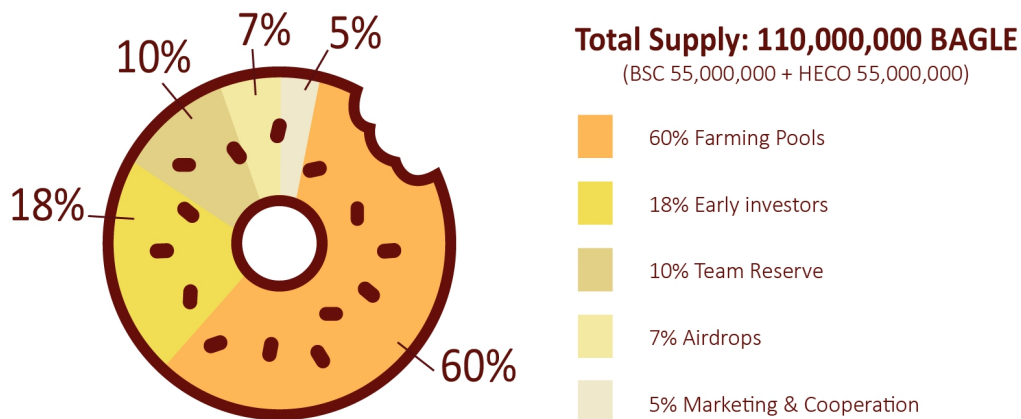
Bagels also identify itself as a strategy aggregation platform, which aims to provide higher APY in the DeFi ecosystem. Bagels and Dokodoa make a perfect combination. Bagels is a leveraged liquidity mining platform. Dokodoa solves the cross-chain asset liquidity problem, thus provides better liquidity and more mining strategies for assets on Bagels. In addition to providing better mining strategies on BSC and HECO, Bagels also allows users to mine on Ethereum while spending extremely low gas fees from BSC and HECO.

7.0 Token Distribution

Total supply of BAGEL: 110,000,000 (BSC 55,000,000 + HECO 55,000,000))

- **60%:** Mining rewards.

- **18%**: Early institutional investors: 10% will be unlocked upon mainnet launch, and 22.5% will be unlocked every quarter with a total lock-up period of 12 months.

- **10%:** Team, 5% of which is linearly unlocked within 12 months, and the other 5% is locked in the DAO smart contract for 360 days.

- **7%:** Community incentives and airdrops.

- **5%:** Strategic partners

Total Supply: 110,000,000 BAGLE
(BSC 55,000,000 + HECO 55,000,000)

- 60% Farming Pools
- 18% Early investors
- 10% Team Reserve
- 7% Airdrops
- 5% Marketing & Cooperation

8.0 Mining Distribution

60% of BAGEL tokens are generated from mining: leveraged yield farming rewards, vault mining rewards, and LP liquidity mining. Among them, 32% of BAGEL is used for usage rewards, and 28% is used for LP liquidity mining.

1. 132% leveraged trading mining and deposit mining: users deposit assets and leveraged trading mining, and get BAGEL rewards. Deposit mining accounts for 15% of the total supply, and leveraged trading mining accounts for 17% of the total supply. Five-year mining pools are divided into 20 quarters, and the number of BAGEL in mining pools decreases each quarter.

2. 28% LP liquidity mining: two digital assets deposited into BAGEL's pool at 1:1, after obtaining the LP tokens, stake them on the BAGEL liquidity mining pool to mine BAGEL. It should be noted that when the price of BAGEL fluctuates sharply while mining, this could cause impermanence loss, but the profit from mining BAGEL may be enough to make up the loss. LP liquidity mining accounts for 28% of the total supply. Five-year mining pools are divided into 20 quarters, and the number of BAGEL in mining pools decreases each quarter.

***Reminder: The available assets and their ratios of the liquidity LP pool will be adjusted from time to time.

9.0 Income Distribution

- **Bagels' platform profit model:**

1. Interest rate difference;

2. Trading fee 0.1%;

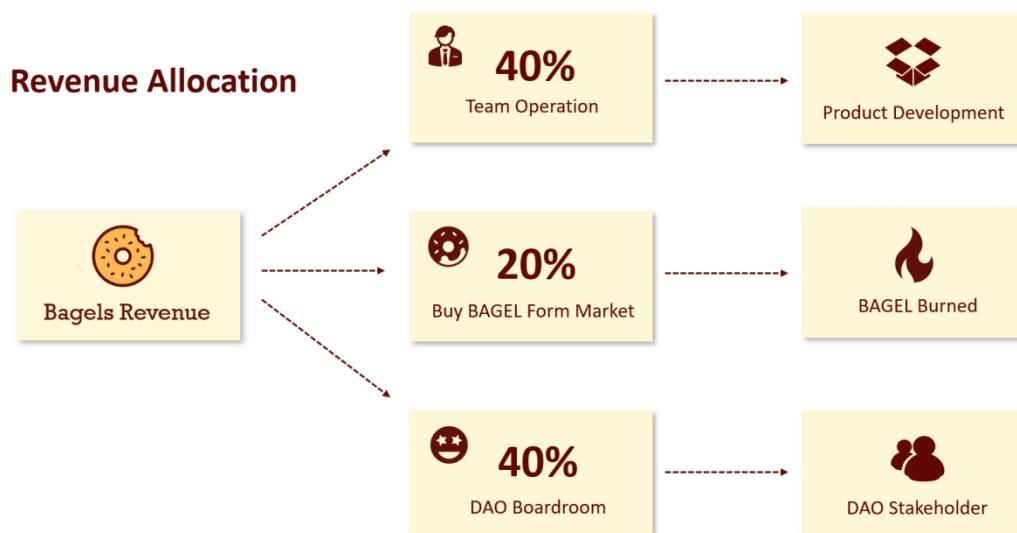3. Liquidation fee 5%

- **Dokodoa cross-chain bridge profit model:**

1. Cross-chain asset transfer handling fee 0.05%

2. Cross-chain liquidity mining tax 5%

The Bagels token economy adopts the "buy-back and burn" and "dividends" mechanism, which gives the tokens greater market value in the long run.

Buy-back and burn: 40% of Bagels Finance's platform revenue goes to the core team, which is used for long-term product development and project operation. 20% is used to buy back BAGEL and burn it daily, which deflates BAGEL's circulation and increase BAGEL's market value.

Dividends: 40% of the platform income of Bagels Finance goes to the DAO members, and is distributed according to their share.

Buy-back and burn can increase the value of BAGEL; dividends can attract more holders to lock BAGEL into the DAO boardroom, reduce market circulation, and also enable token holders to become ambassador of Bagels Finance.

Revenue Allocation

- **40%** Team Operation → Product Development
- **20%** Buy BAGEL Form Market → BAGEL Burned
- **40%** DAO Boardroom → DAO Stakeholder

Bagels Revenue

10.0 DAO Governance

BAGEL is the native governance token of Bagels Finance. Token holders can deposit their BAGEL into Boardroom smart contract and join Bagels DAO governance. In the Boardroom, when making key decisions regarding the future roadmap, product and operations of Bagels, like interest rate, crypto value ratio, liquidation penalty rates, etc, BAGEL holders can vote for their preferable proposals. Joining the DAO governance is a proof that one has become the boardroom member of Bagels Finance, entitling to 40% platform revenue dividend. The dividends generated are in the form of interest bearing gTokens such as gHT, gUSDT, gHUSD, gHBTC, gETH, gHPT.

When user deposits BAGEL into Boardroom, the user will receive dBAGEL, a dividend token to receive payouts. dBAGEL will be used to calculate the share of dividend that will be paid out daily or weekly. Dokodoa cross-chain bridge and Bagels are the perfect combination, in addition to the dividends from the Bagels platform, the user can also receive the Dokodoa cross-chain bridge dividends.

When depositing BAGEL to the Boardroom, the lockup period options are 30 days, 60 days, 120 days, 180 days, 270 days, and 360 days. The longer the period is, the greater the voting weights and dividend paid.

11.0 Team

Bagels Finance is incubated by Merkle Labs with technical support and strategic direction. Merkle Labs focuses on the development of DeFi products. Since the beginning of 2020, it has developed more than 40 DeFi products. The R&D team consists of technical teams from US, Canada and China. There are more than 30 technical R&D and developer talents with the team. The team's academic background combines technical and financial backgrounds from the University of San Francisco, UC Berkeley, University of Waterloo and other North American universities, holds a bachelor's, master's and doctorate academic background; working background comes from Google, Huawei, Intel and well-known investment banks in North America. The team has a very deep understanding and rich practical experience in finance, mathematics and smart contract development.

Fox Lee (Project Lead & Product Architect)

Fox has obtained his Computer Science master's degree from University of San Francisco and he is an expert with C/C++, Java, and Solidity. He has 5 years of blockchain development experience. Fox was the CTO at Umining, a cryptocurrency mining service provider in Silicon Valley. He was also the co-founder and CTO of hardware wallet HooFoo. Fox is a senior software engineer and an UE/UX engineer, he has developed software that reached over 10 million users. Fox has worked in US tech giants such as Google and Intel.

Alex Xin (Engineer & Operation)

Alex has obtained his bachelor's degree majoring in both Computer Science and Math from University of California, Berkeley. He is proficient in programming languages like C, Java, Python, and Solidity and specializes in mathematical modeling and statistics. Since entering the blockchain industry in 2017, Alex has worked for various blockchain companies and cryptofunds in Silicon Valley, gaining practical development experience as well as building a solid network in crypto space. Alex has been a long-time believer of blockchain and DeFi.

Eric Wang PhD (Financial Advisor)

Eric holds his PhD degree in Computer Science from University of Waterloo, Canada, and is proficient at C/C++, Java, Python, Matlab. Eric has worked in the financial sector for 11 years, gaining solid experience in investment, financial modeling, quantitative trading, risk management and large financial risk system development. He has worked in several major financial institutions such as Royal Bank of Canada, Bank of Montreal and Canada Pension Plan Investment Board. Eric is an enthusiast of cryptocurrencies and DeFi. Since the purchase of the first Bitcoin in 2015, he has been investing and researching blockchain technologies.

Emily Sit (Marketing &BD)

Emily holds a bachelor degree from City University of Hong Kong and won full scholarship while completing her master's degree in Economics at University of Saskatchewan. Emily has worked in American, Canadian, and Chinese companies. She has also traveled to more than 30 countries and has an excellent international perspective. After diving deeply into the concepts behind Bitcoin in 2016, Emily has built a firm belief in that decentralization business model is the future. She spent more than a

year to study all blockchain and crypto currency related materials available at the time then began working full-time in blockchain area. She has managed a 10,000 ETH fund for a leading cryptofund and reviewed more than 50 whitepapers. She also helped global brand operation for Polymath, the STO (Security Tokens Offering) platform and helped to hunt high-quality projects to list for CBX.one, a certified digital currency exchange based in Dubai.

11.1 Team Academic Background and Work Experiences