Duet Protocol White Paper

Version: 1.1

Duet Protocol

An on-chain parallel space governed by DAO that allows users to create & allocate capital to ANY assets with only one crypto wallet

♯	♭	♮
↓	↓	↓
SHARP	FLAT	NATURAL

Abstract

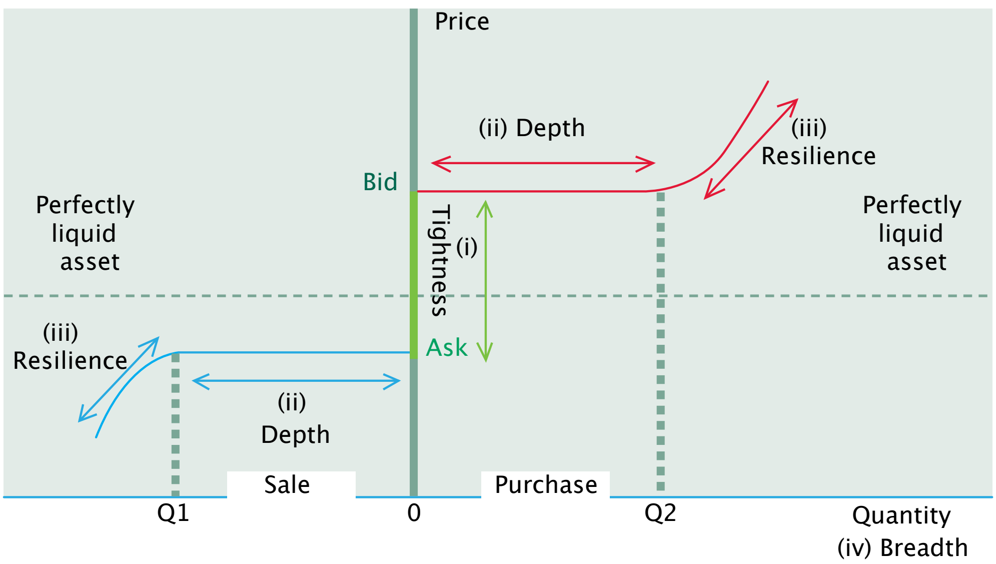
Duet protocol (Duet) is a multi-chain synthetic asset protocol that "**sharpens**" all assets to be traded on the blockchain. A duet in music refers to a piece of music where two people play different parts or melodies. **Similarly, the Duet protocol allows traders to replicate the real-world tradable assets in a decentralized finance ecosystem.**

Traditional assets like real estate, bonds, cash, or stocks are "**Flat Assets**", which have low liquidity and low interoperability. However, the "core assets" of web3.0 need transparency and programmability, identified as cryptocurrencies and tokens; this is what we call "**Sharp Assets**". Some of the "Flat Assets" have already been digitized, via Security Tokens, etc, but digitizing them alone couldn't make them sharp enough because final clearing and custody are in the hands of inefficient, centralized institutions controlled by a large number of conservative stakeholders. The next stage of DeFi is to link "Flat Assets" and "Sharp Assets" to mint not only stable, **natural Assets, such as DuetUSD, DuetEUR** but also "**Sharp**" synthetic financial assets. Powered by Duet DAO, the Duet protocol relies on community governance to set parameters such as adding new collaterals, mintable assets, and electing committees (such as risk control, tech), to jointly vote on proposals.

Background

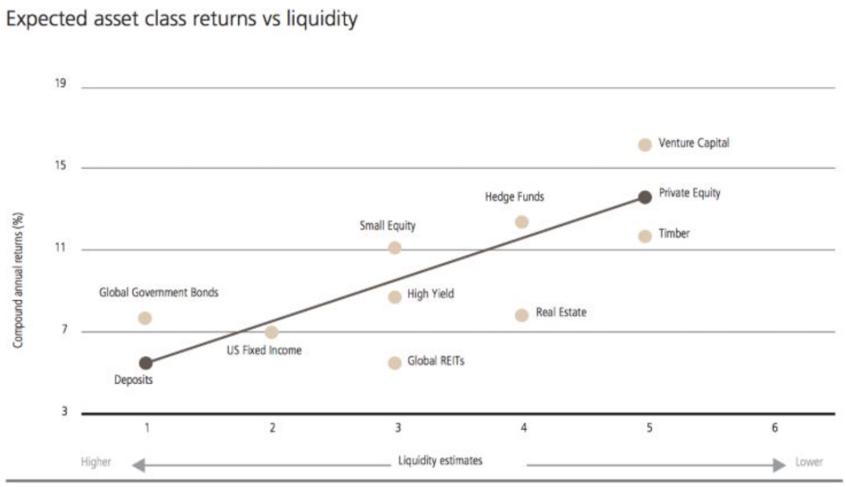
How to onramp traditional assets on-chain in a trustless manner is one of the biggest challenges faced by the DeFi industry. In the past, two pain points include ever-increasing transaction costs and lack of buy-side volume. First, asset veracity and transaction processes cannot avoid taxation and audit costs. Second, digitized traditional assets aren't liquid enough compared to traditional markets.

Dimensions of market liquidity



21 Ipf.org.uk. (2019). Estimating Liquidity in Real Estate Markets (February 2015) Literature Review. [online] Available at: https://www.ipf.org.uk/resourceLibrary/estimating-liquidity-in-real-estate-markets-february-2015-literature-review.html [Accessed 15 May 2019].

High liquidity assets tend to have a low return, and low liquidity assets have a high return. "Cash" is mostly liquid, so the return on holding cash is extremely low or even negative. "Property" is in the middle, with medium returns and risks. "Venture investment fund shares" have a long lock-up period and weak liquidity, but the expected return is correspondingly higher.



28 “Expected Returns”, by Antti Ilmanen, 2011. Scatterplotting average asset returns 1990-2009 on (subjective) illiquidity estimates. Sources: Bloomberg,MSCI Barra, Ken French’s website, Citigroup, Barclays Capital, J.P Morgan, Bank of America Merrill Lynch, S&P GSCI, MIT-CRE, FTSE, Global Property Research, UBS, NCREIF, Hedge Fund Research, Cambridge Associates.

Therefore, relatively low-yielding but stable "assets", such as real estate and bonds, are great fits as underlying collateral for mortgages. For Mirror Protocol and Synthetix, which use their own token as the collateral in their systems, the risk of black swan events is under-recognized.

There were two main reasons for the failed attempts in the past to perform "tokenization" or STO to bring traditional assets on-chain.

One reason was the failure to reduce the costs of traditional finance. Centralized ownership, transaction, clearing, and compliance processes cannot be avoided, as are custody and the costs of the audit & KYC where friction was never really reduced.

A second reason is that, so far, only illiquid traditional assets have been digitized and migrated to the blockchain. Considering there is already a vast number of traditional channels for investors to get exposure to financial assets, it is hardly empowering the illiquid assets by a more complicated STO method. The main examples for this are U.S. stocks and REITs, which can be traded outside the U.S. In Singapore, London and Tokyo and have already been digitized,

In addition, there have been good practices of synthetic traditional assets in the crypto world, such as Mirror Protocol and Synthetix. These two have different operating mechanisms, but a common feature in which they only accept assets from within their own system as collateral, which greatly increases the threshold of usability. ETH and

USDT have a huge user base but they were rejected from those two systems. There is no evidence that only using the system native tokens as collateral can guarantee system obustness; instead, it will increase the risk of the system due to the uncertainty of these new-born native tokens.

The DUET protocol aims to solve this problem.

Key Value Proposition

Open and Multi-chain： Duet Protocol aims to leverage the global cryptocurrencies market potential. In contrast to Terra & Mirror and ETH & Synthetix model, Duet is a multi-chain protocol which is more open, from both technology and ecosystem standpoints.

Multiple CDP： Accept more high-quality assets such as BTC, ETH,USDT, including assets unique to the DeFi world (cToken, LP token, NFT), as collateral, and reach a broader scale of underlying assets. Duet accepts competitors' token as collateral for dAsset minting, optimizing defi composability.

Yield Enhancement： Accept interest-bearing assets such as yToken or wrapped POS Token, which offer a basic return. User's collateral will be sent to the corresponding governance/yield staking contract to earn interest.

dAssets： Compared to MakerDAO's model, which could only mint DAI (USD stablecoin), Duet protocol could mint dAssets, including fiat money pegged stablecoins(EURO, JPY,USD), stocks, index and financial derivatives with leverage (2x, 5x). dAsset flexibility and diversity facilitates hedging in the foreign exchange market and supports spread trading.

Duet Utility： DUET can be deposited as collateral to mint dAsset and as conditioner of liquidation limit for users' CDP. In the Duet dAsset mining module, users can deposit dual assets (any acceptable collateral token and DUET). DUET value could decrease CDP liquidation limit (approaching 100% with infinity DUET staking) to raise capital efficiency.

DAO Governance： Duet is governed by DAO, the Duet token holders will be able to vote using Duet Protocol's on-chain governance system. There are two major types of votes: Collateral Polls and dAssets Votes. We will improve the DAO governance through schemes such as quadratic voting and grants.

The Duet Protocol

To onramp the **"Flat assets" onto the blockchain,** the Duet method is to directly use the existing digital assets on the blockchain to synthesize through over-collateralization:

1. DuetUSD, DuetEUR, DuetJPY, etc., as a standardized investment vehicle. In the initial stage, USDT will also be acceptable as a stable currency in the system;

2. BTC, stocks, ETFs, commodity futures, NFT, and other assets that have high liquidity or acceptance would also be eligible as collateral.

Compared with **Mirror** which only accepts UST and **Synthetix** accepting only SNX & ETH as collateral, Duet Protocol accepts a wide array of high-quality assets as underlying assets that cover over $1.3 trillion in market value. Duet also accepts unique collateral, including LP tokens and lending certificate tokens (aTokens in AAVE, cTokens in Compound) to improve the capital efficiency of users' funds and improve the composability of the system.

In Duet, oracle-generated prices can be used in place of depositing underlying real assets, lowering friction for creating financial derivatives. To help DeFi mature, it is crucial to include asset classes that are less correlated with digital assets. From Tesla stock to gold, deploying high-quality synthetics on-chain is about to be realized through Duet.

The Duet protocol has five main components:

1. dAsset Minter

The protocol custody assets are deposited by users, and the protocol scans the quotation of the decentralized oracle and mints the corresponding Duet stablecoin or dAsset (synthetic asset) according to the collateral rate (loan-to-value ratio) of different assets.

For example, if you want to mint Tesla's stock token:

1. Deposit 1 ETH worth $1,500 (or any supported asset) and $150 worth DUET, lock it into a smart contract (Collateralized Debt Position, CDP) as collateral.

2. According to collateral parameters (LTV of 1/3), a Tesla stock token dTSLA worth $550 can be generated (~0.85 shares at the current price of 650 USD per share).

3. To reclaim collateral, repay 0.85 shares of dTSLA and get back the locked 1 ETH and the same amount of DUET token as when you deposited it.

2. Interest Yield Module

To increase capital efficiency, part of the user's collateral will be injected into credible third-party interest-bearing protocols such as Curve, AAVE, and PancakeSwap. Initially, 50% will be deployed and 50% will be reserved. This proportion may be adjusted via governance in the future. Accrued interest will be used to purchase DUET from the open market and sent to the foundation for future distribution and allocation.

3. Collateral liquidation module

The clearing agreement will obtain a quotation from the oracle every 5 seconds/time. When the position is underfunded beyond the first liquidation level, the user will have a buffer period of 30 minutes to replenish the collateral, before the assets in the user's CDP will be auctioned off via an open market. When the collateral rate is lower than the hard liquidation line, assets will be seized and sent directly for liquidation, a liquidator may obtain collateral of the CDP by paying off the CDP's debt to the system.

4. AMM

We will first establish pools on popular AMMs such as Uniswap, Sushiswap, and Pancake Swap. However, in the future, an in-house AMM may also be built.

5. Staking and governance voting pool

Anyone can initiate a proposal discussed in the forum or community, but a minimum of 10,000 DUET tokens need to be staked to initiate a governance vote. When a proposal is made, the community can vote by DUET within a pre-designated voting period. If the proposal receives a majority vote, the proposal will be sealed for development.

The DUET Token

Name (SYMBOL): Duet Governance Token (DUET)
Ethereum (ERC-20) contract address:
https://etherscan.io/token/0xd69ae79b01c4af7f19b9a824e5643363b202b3a1

Duet Token (DUET), the governance token of Duet, undertakes the following functions:

1. Used as collateral to mint "Natural Asset" (stablecoins) and "Sharp Assets" (traditional financial assets)

2. Boost capital utilization while enhancing system robustness following our unique algorithm

3. Provide liquidity mining rewards for dAssets in swaps or lending

4. Voting governance, including list new assets or adjust system parameters, etc.

5. Fee payments in the entire DUET ecosystem

The rewards for holding DUET include:

1. Asset reverse minting fee(returning collateral from dAssets)

2. Yield Sharing from re-staking of user's collateral

3. Staking and participation in governance incentives

4. Handling fees incurred in financial activities such as Swap and lending

5. Part of the return on the spread of asset liquidation

Token distribution plan

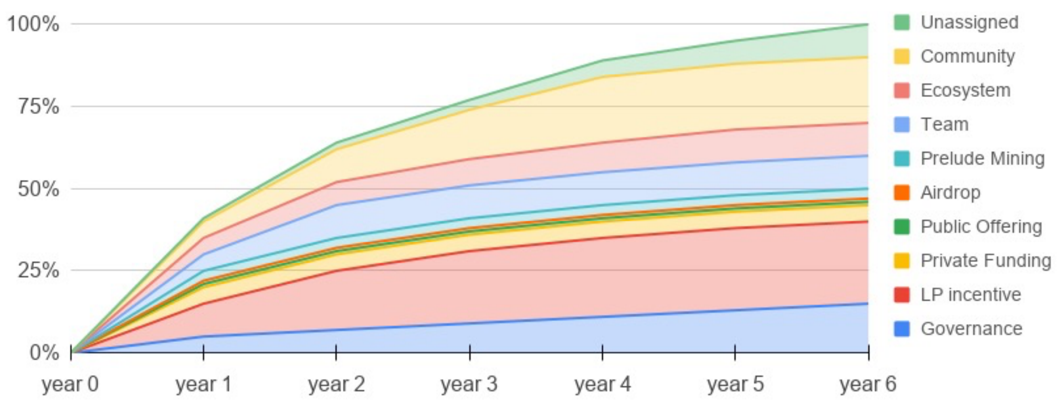
The total supply of Duet tokens is capped at 420 million (the answer to everything is "42"), of which the team and early investors only retain 15% of the share, 80% of the tokens will be released to ecological participants through Prelude mining, LP mining, airdrops, etc. The distribution is as follows:

- Governance incentive 15%
- LP incentives 25%
- Private round 5%
- Public sale 1%
- Airdrop 1%
- Prelude mining 3%
- Team 10% vesting over 2 years
- Ecosystem 10%
- Unassigned part 10%
- Community reserve pool 20%

Token Distribution Schedule:

Breakdown	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Governance Incentive	15%	5%	2%	2%	2%	2%	2%
LP incentive	25%	10%	8%	4%	2%	1%	-
Private Funding	5%-vesting 1yr-6 month cliff	5%	-	-	-	-	-
Public Offering	1%	1%	-	-	-	-	-
Airdrop	1%	1%	-	-	-	-	-
Prelude mining	3%	3%	-	-	-	-	-
Team	10%-2 year linear unlock	5%	5%	-	-	-	-
Eco Contributor	10%	5%	2%	1%	1%	1%	-
Community Reserve	20%	5%	TBD	TBD	-	-	-
Unassigned	10%	TBD	TBD	TBD	-	-	-

Estimated token release stacked chart:



Duet Stablecoin

The Duet Stablecoin aka Neutral Assets' launch will be divided into two phases:

Polyphony phase: In the Polyphony stage, the Duet system will incorporate ETH, BTC, BNB, and other assets into the collateral. The protocol will maintain a fairly high over-collateralization ratio while minting stablecoins pegged to fiat currencies such as USD, EUR, JPY, and CNH.

Chord phase: Multiple chord progressions makes music more dynamic. Likewise, in the second stage, we will support high-quality real-world assets such as stocks, gold, and real estate.

Example:

1. After reaching the 2% total DUET token staked threshold, Redblock, an asset issuer joins the Duet DAO Management Committee, and the committee voted that Redblock has the right to initiate a public vote on the pledge of physical assets;

2. The community voted to allow Redblock to put a total of 100 million US dollars of real estate into the Duet vault in the form of a Security Token (ST), and mint 40 million dUSD stable coins with a 40% LTV and an interest rate as 8% for 1 year;

3. If the price of dUSD is lower than 1 U.S. dollar, Redblock can choose to repurchase dUSD from the market in advance to redeem the pledged ST;

4. At maturity, Redblock needs to repay 40 million dUSD principal plus 3.2 million dUSD interest. If they default, the community will initiate the liquidation process and entrust a third-party institution to sell the collateral ST to redeem 43.2 million dUSD for the market, and a 20% fine is charged and injected into the community reserve. If the amount of disposal proceeds is insufficient, the community reserve will fill the gap.

Stability of dAssets

At times, the price of synthetic assets may deviate from market prices, reflecting market sentiment. If most traders are bullish on an asset, synthetics may trade at a premium due to its minting cost. There are three mechanisms that can promote synthetic asset price pegging:

Liquidation

Over-collateralization mechanism guarantees dAsset price will be higher than its deposit liquidation limits value. A CDP can be margin called when it falls below the liquidation limit. At this stage, if the CDP owner does not quickly act and deposit more collateral (OR DUET) or burn dAssets to deleverage their position, liquidators may purchase their CDP's collateral at a discount.

Arbitrage

If dAssets deviate significantly from the spot price, arbitrageurs will be able to arbitrage in two ways:

1. When there is a premium on dAsset, the arbitrager can buy the corresponding physical one in the spot market, mint dAsset in DUET and sell it. When the price gap converges, the arbitrager can sell it in the spot market and buy back dAsset in the on-chain market to redeem the collateral for profit.

2. When there is a discount of dAsset, the arbitrager can buy the synthetic asset in the DUET and short the corresponding physical asset in the spot market. When the price converges, the arbitrager can buy back the position in the spot market and sell the dAsset in the on-chain market to complete the arbitrage.

Example: Assuming TSLA spot price is $1,000:

1. dAsset > real Asset

When dTSLA is quoted at 1200 UST, which is higher than TSLA: buy 1 share of TSLA in the spot market, deposit 2000 UST into Duet, mint 1 dTSLA, then sell for 1200 UST to hedge the position. Assuming it takes 1 month to return to parity, then the annualized rate of return of this arbitrage behavior is (1200-1000)/(1000+2000)*12=80%.

2. Real Asset < dAsset

When the quoted price of dTSLA is 800 UST, which is lower than TSLA: buy 1 share of dTSLA in Duet, short 1 share of TSLA in the spot market with 2000 USD as a guarantee of financial bonds, and complete the construction of a Delta neutral position. Then just wait until the price difference between the two returns, sell 1 share of dTSLA, buy 1 share of TSLA in the spot market and return it to the broker to complete the arbitrage. Assuming that it takes 1 month and the securities lending interest rate is 8%, theannualized rate of return for this arbitrage is (1000-800-1000*8%/12)/(800+2000)*12=82%. Of course, if you use 800 UST market-making funds to flush dTSLA into the LP pool for market-making, the annualized rate of return may rise to more than 200%.

Liquidity Providing Incentive

Duet Protocol distributes 25% of total DUET allocation to incentive dAsset liquidity providers to collectively create the larger liquidity pool on AMMs (at time of writing), allowing investors to purchase dAsset to start trading with low slippage or simply hold a sufficient amount of these assets.

Oracle

The Oracle mechanism is the Achilles heel of almost all DeFi protocols, as most smart contracts rely on oracles for quotations or liquidations. To reduce oracle risk, the Duet protocol obtains prices and other off-chain data from multiple providers (Chainlink, MakerDAO, Band, Nest, Coinbase, Binance), and takes the median value as a trusted quotation. Outliers are discarded and will not affect our agreement to adopt the correct quotation, which can prevent potential Oracle single points of failure. The Duet protocol also supports time-weighted average TWAP or transaction volume-weighted average VWAP to mitigate potential Flash Loan attack risks.

Roadmap

Most of the upgrades in 2021 are planned by the Duet founding team. After the system matures in 2022, important functional upgrades will be decided by the community. Therefore, the roadmap may be flexibly upgraded, and all future enhancements will be voted on before being implemented.

- **Apr 2021**
  - Prelude-mining launch and get the code audited
- **Q2 2021**
  - Launch Ethereum and BSC, start airdrop and mint rush activities
  - Asset minting and community voting module go live
- **Q3 2021**
  - Launch on a new permissionless chain; Support 50+ synthetic assets, including inverse assets, VIX, interest rates, etc.
- **Q4 2021**
  - Launch DUET's own swap and lending modules
- **Q1 2022**
  - Atomic cross-chain zk dAssets transactions & community-based dAsset management platform
- **Q2 2022**
  - Covering more than 500 core assets achieving the goal of global coverage
- **Q3 2022**
  - First "Chord Chapter"-accept off-chain assets as collateral. Migrate data server from traditional IDC to IPFS network to realize fully decentralization.

Conclusion

Duet Protocol is aiming to support any asset generation on the blockchain, with no need for complex and costly compliance procedures as is the case for STO. DUET is using an over-collateralization model and broader collateral acceptance including yield-bearing assets (yToken, cToken, LPToken, etc.) to bring a larger number of more valuable investment vehicles to the crypto world. By our algorithm-based hybrid-collateral synthetic model and yield enhancement module, the DUET token can capture more values in the overall system.

Appendix:

Special Events

It should be noted that if the underlying assets are traditional assets such as stocks and bonds, dAsset cannot reflect its true dividends or votes, enjoy shareholder preferential treatment, and can only track its price trends.

If a stock-split event occurs, the dAsset in the corresponding address will be injected with the same proportion of additional tokens, so that the total asset value of the holder remains unchanged.

In case of mergers and acquisitions/backdoors, the stock name or Ticker may change, and the corresponding name of dAsset will also change accordingly.

Delisting/canceling asset tokens

Although this situation does not happen frequently, if it does, dAsset holders may encounter the risk of losing all their funds, so the solution will be decided by voting at that time, which may include the following options:

1. The asset continues to be traded, but it may seriously deviate from the actual market value, and the risk is borne by the minter and the holder;

2. The asset minter receives and pays equivalent collateral to dAsset holders at the spot closing price of the underlying asset at the time of delisting;

3. The minter and dAsset holder share the loss equally at the spot closing price at the time of delisting;

By DUET team with love

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