

# STP 2.0

January 2021

## 1 The Evolution of Tokenization

Throughout the past couple of years, we have seen how the novel idea of tokenization has gone through many different forms from initial coin offerings, security tokens to present day DeFi tokens. The benefits and utilities from tokenizing assets have also changed from a fundraising mechanism (ICO's), to a method of unlocking trapped value from traditional assets (Security Tokens). More recently, this has evolved to a hybrid automated fee/governance model (DeFi tokens). Here at STP we have innovated with different forms of tokenization through Micro Token Offerings (MTO) which distributed tokens based off of various requirements whether it be active participation in the community or protocol, funding, engagement, or stake amount (an evolution to the normal airdrops from other projects). Today, we are announcing our new vision STP 2.0, a new iteration of the Standard Tokenization Protocol that facilitates the issuance and trading of synthetic assets that track assets on other blockchain platforms as well as off-chain. **STP 2.0 will give users access to multi-chain assets and new financial products on different blockchains without heavy overcollateralization or expensive bridge fees.**

## 2 Synthetic Assets Overview

There have been several projects that were started to create synthetic assets of a given kind. We give a brief overview of Synthetix<sup>1</sup> and Mirror Finance<sup>2</sup>, two projects that perform functionality similar to STP.

Mirror Finance is a project built on Terra that allows users to create "mAssets," synthetic assets that are meant to track the price of their real-world counterparts. By tokenizing these assets Mirror allows speculators exposure to an asset's returns regardless of their access to the real asset.

To mint an "mAsset", an issuer must lock up an equivalent of 150% of the current asset value as collateral. Assets whose health factor dips below this ratio are liquidated. Mirror tracks the price of the underlying asset via a price oracle. Arbitrageurs are incentivized to trade, mint, and burn the price of the

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<sup>1</sup><https://www.synthetix.io/>

<sup>2</sup><https://mirror.finance/MirrorWP.pdf>

mAsset back in line with the underlying. Currently, the mAssets are mostly tokenized securities (eg. TWTR, NFLX, etc.) and the price oracle is updated every 30 seconds. This is actually fairly high latency for equities and securities since events can cause very large price changes, especially earnings results. This is one of the reasons why we have chosen to focus on on-chain assets, as it is a self-contained ecosystem.

Synthetic allows users to create arbitrary synthetic assets, known as "Synths". These can represent baskets of assets, short positions on BTC, and real-world assets such as gold, among others.

To mint a Synth, users must put up **750%** of the Synth's position in SNX as collateral into the pool. To recover the collateral Synths must be burned. In Synthetic, SNX stakers are pooled counterparties to all Synths in the pool; that is, they take on a fraction of the overall debt in the system. Therefore, price shocks to a synth  $S_A$  affect the collateralization ratio of all stakers, even if they never minted  $S_A$ .

Currently Synthetic supports five categories of Synths:

- fiat currencies - eg. USD, EUR, JPY
- commodities - eg. XAU, XAG
- inverse cryptocurrencies - eg. iETH, iBTC
- singular cryptocurrency tokens - eg. BTC
- cryptocurrency indexes - eg. iDEFI, iCEX

While Synthetic has received a lot of attention in the DeFi space, it is a practically unusable system for most due to the extremely high collateral ratio. On-chain activity can be used to show that most SNX holders are speculators and very little of SNX-related activity is related to issuing and trading synth-assets. In addition, this has led to a massive centralization of the SNX tokens amongst large holders. We do not want this to be the case with STP, where users actually work with the system directly for tokenizing and trading on-chain assets.

## 3 STP 2.0

In the new version of STP, we introduce synthetics and enhance their capabilities. STP 2.0 will allow users to gain exposure to a multitude of different assets across chains in a principled way.

### 3.1 Cross-Chain Tokenization

The **Standard Tokenization Protocol** facilitates the issuance and trading of synthetic assets (ST-Assets) that track assets on other blockchain platforms. Additionally, users are able to construct and trade indices of tokens from other blockchains through these ST-Assets via the following functionalities:

- **Tokenize:** Anyone can tokenize an asset by locking up collateral in the form of stablecoin. The collateral requirement is a minimum of 200% and varies depending on the underlying asset's volatility. A greater collateral amount is required in order to reduce the risk of liquidation in case of price volatility.
- **Reverse-tokenize:** To reverse-tokenize an ST-Asset, the issuer must burn the amount initially issued to receive the locked collateral amount.
- **Construct:** Anyone can create their own basket of assets by locking up collateral in the form of stablecoin. The construction of an ST-Index is completed in one transaction even for a group of assets on different blockchain platforms (i.e. ERC20, KCT, OEP-4, etc.). The collateral requirement is a minimum of 200% and varies depending on the assets selected for the index which the protocol will automatically calculate.
- **Trade/Transact:** ST-Assets will be integrated with existing DeFi protocols including decentralized exchanges and lending protocols so users will be able to leverage lucrative DeFi strategies and transact across multiple platforms.

Ultimately, cross-chain tokenization will facilitate the value transfer between major blockchain platforms providing more liquidity, more products, more strategies and more opportunities in decentralized finance.

### 3.2 Multi-Chain Index

Made possible through cross-chain tokenization, the multi-chain index can be created through the Standard Tokenization Protocol. The protocol allows users to issue an asset representative of an index that tracks the performance of a group of underlying assets across various blockchain platforms (i.e. ERC20, KCT, OEP-4, etc.). These manageable indices rebalance periodically based on smart contract specifications and can be customized based on community's interests. From using leverage, yield farming or any other of the constantly growing number of tools, these indices can employ a wide range of tools for endless strategies that can interact with other decentralized protocols including AMMs and lending protocols. The STP platform will issue the initial multi-chain indices that users can utilize while eventually opening up the issuance process to token holders for high degrees of customization. The ability to access assets on multiple chains greatly increases the number of strategies for trading and yield that users can execute.

## 4 Improving Synthetic Tokenization

Below we enumerate some of the improvements we plan to make to STP 2.0 and to the synthetic tokenization process.

## 4.1 Changes to Current Protocols

**Improved collateralization incentive.** Ensuring that minters have sufficient collateral to hold their positions is important to ensuring the solvency of the system. In current protocols, this is done by using the threat of liquidation of the collateral. This setup has several downsides. First, it causes excessive loss of minter collateral and a reduction of locked value in a system. A position that goes slightly above its collateralization ratio can be completely liquidated. Second, the significant collateral at stake in these liquidations can create perverse incentives for liquidators and miners. We seek to avoid these issues by utilizing a delayed liquidation system, in which unhealthy positions are first brought back to health, and then liquidated on timeout if the borrower fails to recollateralize the loan.

**Adaptive AMM.** The constant-product AMM has seen widespread use in various projects, and is selected as the function of choice for Mirror’s pools. However, as we have seen the constant-product AMM is not necessarily the best choice of function for every pair (e.g. Curve and stablecoins). A suboptimal choice of pricing function can lead to unnecessary slippage and thus losses for traders. We seek to choose the pricing function in a more principled way, allowing pools to offer tighter trades. As an example, Curve’s function performs better for stablecoins, so depending on the historical and targeted volatility of the synth-asset pairs under consideration, we can change the parameters of the AMM pool and make the trading of synthetic assets seamless.

**Correlated multi-asset pools.** Synthetix forces minters to join a single pool of risk. Mirror takes a pairwise approach, where each asset trades against its own pool of risk. The Mirror method leads to a suboptimal experience for speculators, who may wish to quickly swap from one mAsset to another, while the Synthetix method gives minters no choice in what sources of debt they are exposed to.

**Adaptive collateralization ratio.** Synthetix and Mirror both require fixed collateralization ratios across any minted asset. Synthetix’s 750% collateralization ratio seems ridiculously high for many potential synthetics, while Mirror’s 150% collateralization ratio may be low for, for example, synthetic biotechs, which may increase by 5, 10, or even 20 times over the course of a day. A suitable collateralization ratio is key to gaining product adoption and the growth of both the number of assets offered and the activity on each asset.

**Building on Polkadot.** Over the last year, development on polkadot has accelerated, as developers have begun to familiarize themselves with the benefits of using parachains, which can talk seamlessly with other parachains, created under the same overall protocol. We believe parachains will give STP a significant edge in the issuance and trading of synthetic assets as the bridges for polkadot parachains to other chains are under rapid development. This sets STP apart from Mirror and Synthetix.

## 5 The STP token (STPT)

The STP token is a key component to building up an ecosystem of synthesized assets. Users will not only require STPT to generate synthesized asset pools, and it is also key to incentivizing liquidity provision for these asset pools. In addition to collecting trading fees, liquidity providers will be further rewarded in STPT for providing liquidity to these pools.

The STP token also serves a key governance role. Holders of the STPT are allowed to vote on key issues for the protocols. In particular, changes to key parameters of the STP ecosystem may be put up for a governance vote. This includes changes such as:

- Tuning existing **collateralization ratio** functions, such as different weightings on asset properties like volatility.
- **New collateralization ratio functions.** For example, collateralization ratios calculated on a max drawdown over a rolling window instead of on volatility.
- **New pricing curves.** In addition to Uniswap's popular  $xy = k$  curve, Curve has its own modified price curve that is suitable for trading stablecoins. As synthetic assets expand the tradeable universe, the protocol may wish to admit new pricing curves suited for different areas and products.

In addition, STPT based governance can be used to vote on fee distribution to holders, proposing new asset additions and bridges new chains.

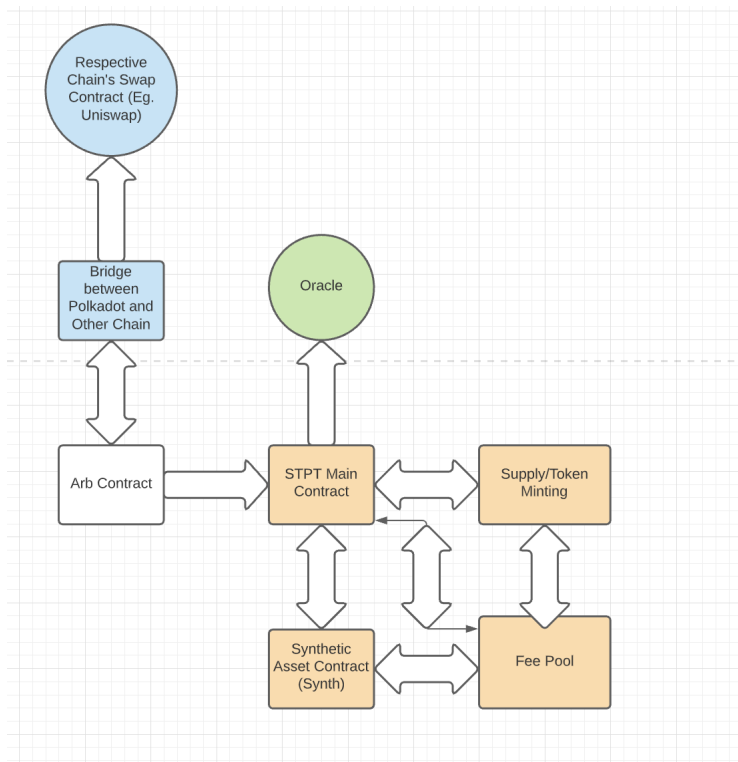
## 6 High Level Architecture on Moonbeam

STP will be built on a parachain of Polkadot<sup>3</sup> - Moonbeam<sup>4</sup> - that supports smart contract functionality with a full EVM implementation, a Web3-compatible API, and bridges that connect Moonbeam to existing Ethereum networks. This allows STP to offer synthetic assets found on Synthetix and Mirror off the bat, as it is just a matter of plugging into the same oracle feed. As of December 2020, Moonbeam's testnet has Chainlink integration, so the price feeds have consistency across Polkadot and Ethereum (and most other protocols which use Chainlink price oracles for asset issuance). The high level STP architecture is given below. The minting functionality is executed by the Synth.

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<sup>3</sup><https://polkadot.network/>

<sup>4</sup><https://moonbeam.network/>



We choose to build on Polkadot as it enables cross-chain capability, and the parachain infrastructure should allow for faster, cheaper transactions than the increasingly crowded Ethereum ecosystem. By using Moonbeam, contracts can be written in Solidity and deployed to the Moonbeam parachain, allowing STP to integrate with the Polkadot ecosystem while leveraging the work done in Solidity. Several bridges are being built to enable transition of ETH and ERC-20 tokens onto Moonbeam’s parachain, which will allow STPT to seamlessly move between these chains.

To create a pool, creators will stake STPT as collateral to mint assets for a given pool. The assets minted will be calculated as a function of their volatilities, in line with the adaptive collateralization ratio. These volatilities will be updated using price feeds via Chainlink price oracles. Initialization of the pool will be done via the factory contract, which will be deployed to Moonbeam via e.g. a Web3 script. Should the asset pool fall below its collateralization ratio, liquidators may begin a liquidation call on the pool, first bringing the loan to a healthy state and liquidating it if the creators fail to provide their own collateral upon timeout. If a trader owns an asset  $A$  that is in the pool, he can swap it for an asset  $B$  that is also in the pool in accordance for the pool’s pricing function.

The collateralization ratio will adaptively change as the price volatilities of the assets change. Creators are rewarded with trading fees from the pool. Traders buy and sell the assets in the pool.

## 6.1 Differences and Design Choice

At STP we want to focus on user experience and usability. As a result, we find it important to stress our design choice. Highlighting the key differences between Moonbeam and Ethereum based architectures is important to understand the overall structure. First, Moonbeam uses a Proof of Stake-based consensus mechanism, which means that Proof of Work concepts such as difficulty, uncles, hashrate, etc generally don't have meaning within Moonbeam. A Proof of Stake system is expected to be more seamless and predictable from a security and user experience standpoint. Slashing penalties and easily executable governance at the chain level make the chain more robust to attacks from parties with a large amount of stake. Another significant difference between Moonbeam and Ethereum is that Moonbeam itself includes an extensive set of on-chain governance features based on Substrate functionality. These onchain governance modules include functionality to power upgrades to the blockchain itself based on token weighted voting. This will allow STP itself to evolve rapidly and not involve flaws of the underlying system forever.

## 7 Conclusion

Synthetic tokenization of assets allows users to freely gain exposure to assets regardless of their local geographical and financial constraints. Doing so for cryptocurrencies allows users to gain exposure without the need to seek e.g. a centralized exchange, which could be censured. Therefore, it is important to enable the tokenization of these assets in a flexible and efficient manner. We hope that our improvements to synthetic tokenization in STP will be the first step to a truly permissionless financial ecosystem.