

Posting in my capacity as Business Development Director of Matrixdock. Matrixdock is a digital asset platform that provides access to Real World Assets (RWA) through tokenization. It is a brand fully owned by Matrixport, an all-in-one crypto financial service platform that offers custody, asset management, brokerage and RWA tokenization services.

Sentence Summary

Allocation of RWA exposure to Short-term Treasury Bill Token (STBT)

Paragraph Summary

While timeline and specifics of the Endgame are still in process, it is clear tokenized RWA will play an important role. Especially tokenized T-bills such as STBT, which simply provide the best on-chain solution to getting exposure to the 'risk free rate' of US Government Securities. As such, we would like to propose allocating a portion of Maker's treasury exposure to STBT (to be held at either the Maker Core or SubDAO level)

Steakhouse has recently done a [review of Tokenized T-Bills](#) and identified Matrixdock's STBT as one of the largest and cost efficient solutions.

Additional legal and risk assessment is necessary so this proposal begins by providing a detailed overview of STBT and opens the dialogue with any ecosystem actor willing to do further due diligence

Executive Summary on STBT

- Short-term Treasury Bill Token (STBT) is designed for accredited investors seeking US treasury yields with their stablecoin holdings. It offers exposure to US treasury yields while maintaining the stability of stablecoin holdings.
- Each STBT is pegged to 1 USD and backed by US treasury securities with maturities within 6 months and reverse repurchase agreements collateralized by US treasury securities. STBT currently yields 5% APY on average (as of Aug 2023). The current STBT market capitalization and yield can be found on [Dune Analytics STBT Dashboard](#).
- STBT takes transparency to another level. An integrated Chainlink Proof-of-Reserve (POR) oracle ensures that the total reserve for STBT always exceeds its market cap (visit <https://data.chain.link/ethereum/mainnet/reserves/stbt-por>). The underlying POR report is also published daily on the STBT subscription portal. This provides the utmost transparency and timeliness. The STBT contract has included Chainlink PoR verification logic to ensure STBT underlying reserve is greater than or equal to the total supply at all time. ([Chainlink Onchain Verification](#))
- STBT is issued under an orphan SPV structure commonly adopted in asset-backed securities issuance by traditional financial organizations, which has the highest degree of credit enhancement. In this legal set-up, Matrixdock plays the role of a service provider and Matrixdock counterparty risk is fully removed because both the token issuance/redemption and the underlying asset management are conducted from this Orphan SPV which itself is a bankruptcy-remote trust.
- STBT is a token that complies with the [ERC1400](#) standard and incorporates whitelist permissions and a rebase mechanism. STBT utilizes the whitelist mechanism to determine whether transmission and reception of addresses are authorized. STBT balances are dynamic and represent the holder's share in the total value of underlying assets controlled by the protocol and the STBT balance of each whitelisted address will increase after each interest distribution. More importantly, STBT mitigates contract and operational risks through the implementation of a whitelist mechanism, time-lock contracts, and an independent real-time monitoring system, ensuring the highest level of safety and security.
- The STBT minter contract allows web3 whitelisted wallets to call this contract directly and mint/redeem STBT. This enhances transparency and improves the user experience for DeFi ecosystem partners. In this way, all key actions initiated through the minter contract, such as Mint, Burn, Settle, will be transparently tracked on-chain, ensuring full transparency and allowing for the tracking of all capital flows and information related to the transactions. It's especially suitable for DeFi projects and also facilitates other contracts to create Lego combinations with STBT.
- Liquidity is a very important aspect when it comes to allocation into tokenized RWA, especially for treasury management. STBT not only provides primary market creation (T+4 business day), and redemption (T+5 business day) channels with unlimited capacity, STBT also has the largest RWA on-chain liquidity pool ([STBT-3CRV pool](#)) on Curve where instantaneous liquidity can be obtained with minimal slippage. Investors can either mint or redeem STBT through Matrixdock, or trade STBT directly via STBT/3CRV pool on Curve Finance.
- Compliance is at the heart of the STBT design. In recognition that STBT is likely to be viewed as a security token in many jurisdictions, the analysis of selling restrictions on a jurisdiction-by-jurisdiction basis has been completed. STBT is only issued to, redeemable by, and transferable among white-listed addresses that have successfully passed KYC, AML and accredited investor verification processes.
- STBT offers competitive fee rates - 0.1% APY of service fee and 0.1% of notional value for redemption fee. It has the

most transparent and competitive fee structure among comparable offerings in the market.

Component Summary

Part 1: What is STBT and How does STBT work?

Part 2: Legal Structure of STBT - 100% Bankruptcy Remoteness

Part 3: Technical Description

Part 4: Background of the Team and Other Strengths

Part 5: Conclusion

Specification / Proposal Details

Part 1: What is STBT and How does STBT work?

1. STBT (i.e. Short-term Treasury Bill token) is a ERC 1400 standard token which enables holders to get exposure to the U.S. Treasury securities maturing within six (6) months and Repos collateralized by U.S. Treasury securities. STBT is transferable among account-holders that have been pre-approved via a KYC/AML/Accredited Investor-only white-listing mechanism.
2. Minting/Redemption Process:
3. STBT currently offers minting & redemption through Matrixport APP, OTC and official website (<https://graystbt.matrixdock.com/>) through web3 wallet;
4. STBT Minting & Redemption workflow (See flow chart below)
5. Minting:
6. Investor can initiate minting by depositing eligible ERC20 stablecoin on Matrixport APP, calling Minter contract(function:mint) or if through OTC, sending eligible ERC20 stablecoin to the designated official address;
7. STBT issuer converts stablecoin into USD and transfer USD to custodian bank / broker account;
8. T-bill subscription completed / repo order confirmed;
9. STBT minted (up to T+4 New York banking days) and sent to the investor's whitelisted address.
10. STBT issuer converts stablecoin into USD and transfer USD to custodian bank / broker account;
11. T-bill subscription completed / repo order confirmed;
12. STBT minted (up to T+4 New York banking days) and sent to the investor's whitelisted address.
13. Redemption
14. Investor can initiate redemption by sending redemption on the Matrixport APP, calling Minter contract(function:redeem) or if through OTC, sending STBT to the designated official address;
15. Once issuer receives redemption request from investor, the settlement of T-bill / Repos will be initiated;
16. The settled USD will be converted back to ERC20 stablecoin;
17. STBT burned and the stablecoin settled to the investor's whitelisted address.
18. Investor can initiate redemption by sending redemption on the Matrixport APP, calling Minter contract(function:redeem) or if through OTC, sending STBT to the designated official address;
19. Once issuer receives redemption request from investor, the settlement of T-bill / Repos will be initiated;
20. The settled USD will be converted back to ERC20 stablecoin;
21. STBT burned and the stablecoin settled to the investor's whitelisted address.
22. Minting:
23. Investor can initiate minting by depositing eligible ERC20 stablecoin on Matrixport APP, calling Minter contract(function:mint) or if through OTC, sending eligible ERC20 stablecoin to the designated official address;

24. STBT issuer converts stablecoin into USD and transfer USD to custodian bank / broker account;
25. T-bill subscription completed / repo order confirmed;
26. STBT minted (up to T+4 New York banking days) and sent to the investor's whitelisted address.
27. STBT issuer converts stablecoin into USD and transfer USD to custodian bank / broker account;
28. T-bill subscription completed / repo order confirmed;
29. STBT minted (up to T+4 New York banking days) and sent to the investor's whitelisted address.
30. Redemption
31. Investor can initiate redemption by sending redemption on the Matrixport APP, calling Minter contract(function:redeem) or if through OTC, sending STBT to the designated official address;
32. Once issuer receives redemption request from investor, the settlement of T-bill / Repos will be initiated;
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34. STBT burned and the stablecoin settled to the investor's whitelisted address.
35. Investor can initiate redemption by sending redemption on the Matrixport APP, calling Minter contract(function:redeem) or if through OTC, sending STBT to the designated official address;
36. Once issuer receives redemption request from investor, the settlement of T-bill / Repos will be initiated;
37. The settled USD will be converted back to ERC20 stablecoin;
38. STBT burned and the stablecoin settled to the investor's whitelisted address.

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Minter workflow

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1. Liquidity:

The timeline for STBT minting is typically up to T+4 and redemption is up to T+5 (T is New York banking day). STBT holders can easily access instant liquidity with low slippage on [Curve.fi](#) by using the [STBT/3CRV pool](#). This pool is currently the largest liquidity pool for RWA tokens. Additionally, the pool has been included in the Curve gauge controller, which means liquidity providers can earn additional CRV token rewards by providing liquidity to the pool. Next step, trading API is also being built and will be available very soon, which will facilitate a seamless buy/sell functionality and deeper instantaneous liquidity which can be integrated with other partner applications more easily.

1. Rebase mechanism:

Matrixdock will rebase interest on each New York banking day. The total STBT supply is equivalent to the Net Asset Value (NAV) of the underlying asset portfolio, which equates to the sum of the market value of US T-bills and Repos (overnight loans fully-backed by T-bills) at any point in time.

The rebased interest is calculated using Bloomberg's daily closing prices, which can be accessed via its historical prices (HP) function with reference to the Bloomberg Generic (BGN) price source on the Bloomberg Terminal.

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*Expenses include T-bill custodian fee (no spread added by Matrixdock), reverse repo broker fee (no spread added by Matrixdock) and Matrixdock service fee (0.1% APY). The total expenses are estimated to be 0.3% APY, with periodic adjustments.

1. Transparency:

STBT is the first RWA tokenization project integrated with Chainlink's PoR service, with Chainlink's best in class real-time oracle feed, the integration ensures that STBT is sufficiently backed by US Treasury securities and verifiable 24/7. The STBT contract even included Chainlink PoR verification logic to ensure STBT underlying reserve is greater than or equal to the total supply at all time. ([Chainlink Onchain Verification](#))

[STBT PoR Feed](#) (deployed and live on Mainnet).

Proof-of-Reserve Reports of the underlying assets are also made available on a daily basis on the [Matrixdock STBT website](#).

1. Fee Structure:

STBT offers competitive fee rates - 0.1% APY of service fee and 0.1% of notional value for redemption fee.

Part 2: Legal Structure of STBT - 100% Bankruptcy Remoteness

As illustrated in the structure chart below, Matrix Finance and Technologies Holdings Company (the holding company of Matrixdock), in its capacity as settlor, has irrevocably placed the STBT token issuing entity, Prometheus Solutions Ltd., and the underlying asset holding entity, Epimetheus Technologies SPC, into a special purpose trust. The trust is legally owned and managed by its trustee, Appleby Global Services, an internationally renowned legal and corporate service provider ([Appleby: Intelligent And Insightful Offshore Legal Advice And Services \(applebyglobal.com\)](#)). To insert an extra layer of checks and balances, another third-party service provider, Hamilton Services, is retained to ensure that the trustee operates in accordance with the trust deed, which explicitly sets forth the purpose of the trust to be maintaining the STBT program in a passive manner in accordance with the terms and conditions.

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This orphan trust structure effectively removed the STBT entities (token issuer and asset holder) from the balance sheet of Matrixdock, and the STBT entities would not be subject to any claims from Matrixdock creditors even in the unlikely event that Matrixdock is insolvent. Given that the STBT entities are special purpose vehicles that only conduct the STBT program, these entities incur no liabilities other than those obligations toward the STBT token holders, which are the only obligations of the STBT entities. As described above, the number of STBT tokens issued will always be less than the dollar value of the underlying reserves held by the STBT entities. With these factors combined, the STBT entities are bankruptcy remote and have a very high level of creditworthiness.

The structure adopted here is inspired by the orphan SPV structure typically used by traditional financial institutions in the issuance of asset-backed and mortgage-backed securities. Like here, the securitization process transfers ownership of assets such as loans or receivables from the original owners (such as banks) into a special legal entity. The special legal entity then issues the debt securities, using the cash flows generated by the transferred assets to pay principal and interest to investors. This is a tested structure used by over \$1 trillion of real world securities outstanding. With tranching and repackaging, these securities can receive AAA credit rating; in the case of STBT, such financial engineering would not even be required, since the underlying assets are already of the highest creditworthiness, backed by the full faith and credit of the US government.

Part 3: Technical Description

1. STBT Contract Key Functions

STBT is an interest-bearing token contract that is compatible with the ERC20 specs and implements part standards of ERC1400.

STBT balances are dynamic and represent the holder's share in the total value of underlying assets controlled by the protocol and the STBT balance of each whitelisted address will increase after each interest distribution at the end of each treasury trading day. The concept of 'user share' is introduced into the contract, so the contract also stores the sum of all shares to calculate each account's token balance which equals to: $\text{sharesOf}(\text{user}) * \text{totalPooledSTBT} / \text{totalShares}$.

There are 3 key functions: Token Issue, Distribute Interests, Token Redemption

We have also launched STBT mint contract, clients can use their web3 whitelisted wallets to call this contract and mint/redeem STBT. This proposal aims to enhance transparency and improve the user experience for DeFi ecosystem

partners. In this way, all key actions initiated through the minter contract, such as Mint, Burn, Settle, will be transparently tracked on-chain, ensuring full transparency and allowing for the tracking of all capital flows and information related to the transactions. It's especially suitable for DeFi projects and also facilitates other contracts to create Lego combinations with STBT. ([Minter.sol](#))

1. ERC1400 Security Token Standards

ERC1400 standard is split into several modular sub-standards :

- ERC1410 defines partially fungible tokens where balances of tokens can have an associated metadata
- ERC1594 defines transfer restrictions and core security token functionality
- ERC1643 defines document management functionality.
- ERC1644 defines controller operation functionality

In particular, the STBT token contract implements the ERC1594 transfer restrictions specs, and the ERC1644 controller operations specs. STBT utilizes the whitelist mechanism to determine whether transmission and reception of addresses are authorized.

1. Authority Management

The permission framework of the STBT contract is broadly classified into three distinct roles: ControllerRole, IssuerRole, ModeratorRole. The proposal is to designate a single smart contract with a timelock function as the controller contract for all three roles. All STBT administrator activities are carried out via this controller contract, with each operation subject to two stages of proposing and executing, and the execution must conform to the delay specified by the timelock. The overall structure is as follows:

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More importantly, STBT mitigates contract and operational risks through the implementation of a whitelist mechanism, time-lock contracts, and an independent real-time monitoring system, ensuring the highest level of safety and security:

- Whitelist mechanism: The STBT Token is transferable solely to account-holders that have been pre-approved by Matrixdock to transact in STBT tokens, which greatly reduces the risk of being hacked.
- Timelock contract: There is a single external control smart contract with a timelock function as the controller contract, through which all STBT administrator activities are carried out. Each operation must go through two stages of proposing and executing, with execution conforming to the 4-hour delay specified by the timelock.

The timelock contract is the only admin, and the security of the STBT contract is normalized to the security of each role involved in the timelock controller: proposer, executor, and canceller. The canceller is one self-hosted hardware wallet that is authorized to cancel an operation scheduled during the timelock period by calling the timelock controller.

- Monitor: In order to further prevent operational and hacking risks, Matrixdock has implemented two separated sets of monitoring systems:
- The first system monitors the difference between the business order data and the contract activity data to detect any unauthorized minting of STBT tokens. Any suspicious activity can be immediately canceled, and emergency plans activated.
- The second system monitors the difference between the confirmation fiat wiring amount and the contract activity data. This monitoring service is independently maintained and monitored to identify any anomaly.
- The first system monitors the difference between the business order data and the contract activity data to detect any unauthorized minting of STBT tokens. Any suspicious activity can be immediately canceled, and emergency plans activated.
- The second system monitors the difference between the confirmation fiat wiring amount and the contract activity data. This monitoring service is independently maintained and monitored to identify any anomaly.
- Transparency

STBT holders can easily access and view all historical transaction records related to the minting, burning, and rebase of STBT on <https://etherscan.io> at any time. Additionally, reporting documents for the underlying assets are uploaded on the Matrixdock Platform and can be verified through their hash.

Matrixdock team strictly adheres to standard operating procedures (SOPs) for daily operations and ensures that the net asset value (NAV) of underlying assets is always no less than the total supply of STBT. These reports are uploaded on-chain daily, which allows for complete transparency and minimizes operational risks. The STBT contract has included Chainlink PoR verification logic to ensure STBT underlying reserve is greater than or equal to the total supply at all time. ([Chainlink Onchain Verification](#))

STBT's smart contract has been audited by BlockSec and [Zellic.io](#), see: [Audit Report](#)

(For more details: [Github](#), [Factsheet](#))

Part 4: Background of the Team and Other Strength

The issuer: Matrixdock is a digital asset platform that provides access to Real World Assets (RWA) through tokenization. It is a brand fully owned by Matrixport, an all-in-one crypto financial service platform that offers custody, asset management, brokerage and RWA tokenization services. Matrixport currently custodies and manages approximately USD 6 billion of crypto assets. Its client base includes more than 5000+ miners, high-networth individuals, family offices, hedge funds, ventures, protocols and foundations across Asia, Europe, Australia and offshore countries. With its vast product portfolio and geographic reach, Matrixport can help bootstrap the adoption of STBT by providing support including custody, DeFi asset management products with respect to STBT, trading liquidity and lending etc.

Current use cases: We have seen STBT being adopted as a popular on-chain treasury tool by many clients, especially DeFi projects, protocol treasury, foundation treasury, crypto VCs, and crypto high networth individuals. Yield that comes from providing liquidity to STBT related on-chain pools also becomes popular among DeFi yield farming funds. Moreover, STBT is gradually becoming a composable yield lego that gets integrated into various DeFi protocols to further build earn products, yield enhancement for DeFi option vaults, on-chain money market funds, and stablecoins, just to name a few .

Fiat On/Off-ramp: Fiat onramp and offramp are often critical for STBT when it comes to minting and redemption and Matrixdock has direct mining and redemption portals with both Tether and Circle to provide the smooth and cost-effective USDT and USDC on/off-ramp operational experience.

Part 5: Conclusion

In conclusion, STBT offers -

1. Short dated T-bill and repo exposure in flexi term on-chain, currently yields at 4.5%- 5% APY;
2. Seamless minting and redemption experience through STBT issuer, Curve STBT/3CRV pool and trading API;
3. Daily yield distribution and competitive fee terms (0.1% APY service & 0.1% redemption fee);
4. Real-time underlying asset transparency with Chainlink Proof of Reserve integration;
5. Zero counterparty risk & bankruptcy remoteness through orphan trust setup;
6. Secure smart contract design with key restrictive transfer and time lock functions;

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