TreasuryX

Whitepaper

A Stablecoin Backed by Real World Assets

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Abstract

TreasuryX is a decentralized stablecoin infrastructure platform that enables users to mint asset-backed stablecoins while capturing the yield typically reserved for centralized issuers. By tokenizing real-world assets (RWAs) such as insurance premium financing and other debt instruments, TreasuryX issues stable digital assets (USDX) pegged to the principal of these assets and yield-bearing tokens (YLD) that distribute periodic interest. Using a smart contract protocol, TreasuryX allows users to maintain control over their collateralized assets while participating in yield-layering strategies through the sale and reinvestment of stablecoins, effectively compounding returns in a decentralized finance (DeFi) ecosystem. The platform is founded by industry veterans including Reeve Collins, co-founder of Tether; Bundeep Singh Rangar, a seasoned fintech entrepreneur; and Dr. Avtar Sehra, a pioneer in tokenized securities, bringing extensive expertise in DeFi, fintech, and blockchain technology. TreasuryX drives a scalable, self-sustaining model where minters are incentivized and rewarded for distributing and promoting the stablecoin, creating a unique, distributed yield model that enhances capital efficiency and adoption.

Abstract

A Stablecoin Backed by Real World Assets

1 Introduction

1.1 Problem

Today, billions of dollars in stablecoins sit idle on major global exchanges, offering no yield to their holders despite playing a central role in the decentralised finance (DeFi) ecosystem. The valuations of stablecoin issuers like Tether and Circle have soared, generating substantial revenues that are not shared with the users who contribute to their success. This entrenched model creates a significant value imbalance, with only centralized issuers profiting from stablecoin adoption, while users and the broader community remain passive stakeholders.

Most stablecoins, such as USDT and USDC, are backed by traditional assets held by opaque, centralised custodians. This centralisation introduces significant systemic risks associated with fractional reserve banking and lack of transparency. Users and investors in stablecoins are thus exposed to these inherent risks while receiving little to no share of the profits generated from the capital they provide.

Simultaneously, the tokenisation of real-world assets (RWAs) is becoming a significant trend, with governments, financial institutions, and corporations increasingly moving traditional assets—such as bonds, real estate, and treasury bills—onto the blockchain. However, these tokenised RWAs often remain static, mirroring their traditional financial counterparts without unlocking additional value. The absence of mechanisms to extract liquidity or enhance yield once these RWAs are on-chain limits their utility, leaving extra prospective yield unrealised.

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1.2 Solution

The need is clear for a stablecoin model where users directly share in the value they help create. By allowing the community to participate in and earn from tokenized RWA returns, we shift the benefits of these assets from centralized institutions to individuals. This model encourages users to generate wealth through DeFi by actively utilizing and distributing stablecoins, unlocking the full value of their assets, and reaping rewards traditionally reserved for centralized issuers.

TreasuryX introduces a Mint-to-Earn mechanism that enables users to post RWAs, starting with U.S. Treasury bonds, as collateral to mint two distinct tokens: USDX, a stablecoin pegged to the US dollar, and YLD, which captures the yield generated by the underlying collateral. Through this model, TreasuryX transforms traditionally static RWAs into high-yielding, liquid instruments, unlocking liquidity and value.

By adopting TreasuryX, users can participate directly in the profits generated from their assets. The protocol empowers users to capture the returns that are currently monopolised by centralised stablecoin issuers, thereby democratising access to yield.

A key feature of TreasuryX is its ability to empower major exchanges by allowing them to generate profit from their otherwise idle stablecoin reserves. Exchanges holding large amounts of stablecoins can utilise TreasuryX to earn yield simply by holding or minting tokens. This new revenue stream can incentivise exchanges to offer zero-fee transfers or other benefits to users, enhancing their competitive edge.

Furthermore, the protocol enables innovative financial services, such as using the LAMP as liquidity for collateralised lending services. Third parties can lock their assets and access USDX at a high loan-to-value (LTV) ratio. This facilitates greater capital efficiency and opens new avenues for users to leverage their holdings.

The platform's decentralised nature also mitigates the risks associated with stablecoins backed by centralised collateral, providing a safer more equitable alternative that is fully backed by tokenised RWAs. The transparent governance model, driven by the XYZ token, ensures that users have a direct say in the protocol's decision-making processes and benefit proportionally from its growth, establishing a fairer and more equitable financial infrastructure.

1.3 Overview of the Current Landscape

The proliferation of tokenised real-world assets (RWAs) has brought substantial value to the web3 space, and this trend will accelerate as institutional investors and asset managers seek to capitalise on the liquidity and efficiency benefits of blockchain technology. In 2023, the total value of tokenised RWAs surged significantly, driven by initiatives from entities like BlackRock, Ondo Finance, and Goldman Sachs. However, broader adoption remains limited by challenges such as illiquidity, lack of composability, and minimal integration with existing decentralised finance (DeFi) ecosystems.

The stablecoin market continues to grow rapidly, with expectations to reach a $3 trillion market cap over the next five years. Stablecoins have become the primary medium of exchange within DeFi, settling over $11 trillion in value in 2022. USD stablecoins, in particular, have proven to be immensely profitable, with Tether reporting a $6.2 billion profit in 2023 and $4.5 billion in Q1 2024. The current total stablecoin market cap stands at $159.6 billion, with USDT dominating at 69.08%. The top five stablecoins by market cap are:

- USDT: $110.2 billion
- USDC: $32.7 billion
- DAI: $5.1 billion
- FDUSD: $3.8 billion
- USDe: $2.3 billion

Despite their widespread use, the stablecoin market is dominated by centralized issuers who capture the profits generated by user deposits. These issuers operate similarly to traditional financial institutions, privatizing profits while socializing losses, and leaving users without a share in the wealth they help create. Moreover, the centralization introduces significant systemic risks associated with fractional reserve banking and lack of transparency.

In anticipation of regulatory changes, the Bank for International Settlements (BIS) has announced a 2025 policy allowing banks to hold up to 2% of their reserves in cryptocurrencies, with the majority expected to be stablecoins. This policy could further accelerate the adoption and integration of stablecoins into the traditional financial system.

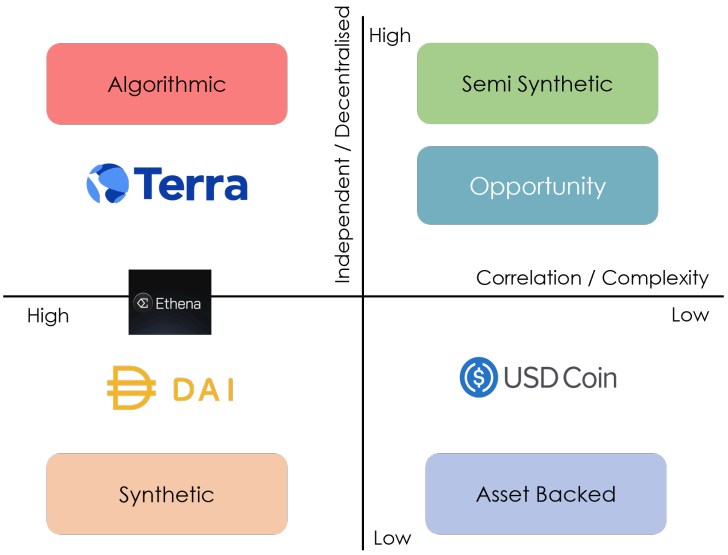

Figure 1: This diagram illustrates the spectrum of stablecoin structures and highlights their complexity and correlation attributes.

TreasuryX represents a departure from this centralized model, offering a more equitable system that redistributes value to users.

2 The TreasuryX Protocol

The TreasuryX Protocol is the core engine of the TreasuryX ecosystem. It enables users to mint two tokens, each serving a distinct purpose: the USDX stablecoin, which is pegged to the US dollar, and the YLD token, which represents the yield generated by the real-world assets (RWAs) posted as collateral. In addition, the protocol features the XYZ token, which grants holders governance rights over the platform and a share of the protocol's value accrual. This section outlines the design, functionality, and interrelations between these three tokens and the technical mechanisms that ensure the stability and growth of the system.

2.1 USDX - Stablecoin

2.1.1 Collateral-Backed Stability

USDX is a stablecoin minted within the TreasuryX Protocol, representing the principal value of the real-world assets posted as collateral. It is designed as a secure and reliable medium of exchange, maintaining a $1.00 peg. Unlike conventional fiat-backed stablecoins such as USDT and USDC, which rely on fractional reserves held by centralised custodians, USDX is fully backed by verifiable, tokenised U.S. Treasury bonds and other RWA's, ensuring complete transparency, decentralisation, and security.

To ensure that USDX can always be exchanged for an equivalent value of bonds, the protocol employs an overcollateralisation model. Users post collateral the value of the USDX minted, accounting for the potential volatility in the underlying U.S. Treasury bonds or other assets. The overcollateralisation ratio is determined based on a volatility model of the RWAs, ensuring that even in adverse market conditions, the collateral maintains sufficient value to cover the USDX in circulation.

If V_C is the value of the collateral and V_U is the value of the USDX minted, the overcollateralisation ratio R is defined as:

$$R = \frac{V_C}{V_U} = 1 + \sigma \qquad \text{(Eq. 1)}$$

where σ represents a safety margin derived from the historical volatility of the underlying asset.

By maintaining this overcollateralisation ratio, the protocol mitigates the risk of the collateral value dropping below the amount of USDX issued, thereby safeguarding the stablecoin's peg.

2.1.2 Liquidity and Minting Pool - (LAMP) and Peg Maintenance

To ensure that USDX maintains its $1.00 peg, the TreasuryX protocol employs a protocol-controlled liquidity and minting pool (LAMP). The LAMP is responsible for the controlled distribution of USDX, ensuring that the stablecoin is initially offered at a fixed price of $1.00. This process mitigates the risk of USDX trading below its intended peg, providing immediate liquidity while maintaining the stability of the token's value.

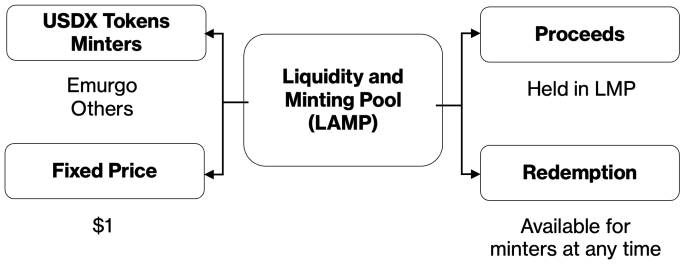

Figure 2: LAMP structure

2.2 YLD - Yield Token

2.2.1 Yield Distribution

The YLD token is the yield-bearing asset minted as an NFT alongside USDX. It represents the ongoing yield generated by the RWAs posted as collateral, allowing users to benefit from the returns associated with the U.S. Treasury bonds they provide. The yield from the bonds is distributed proportionally to YLD holders, ensuring that users receive the full benefits of their collateral.

2.2.2 Separation of Yield and Principal

By separating the yield from the principal value of the collateral, TreasuryX allows users to unlock liquidity while still earning returns. Users can utilise USDX for transactions or other financial activities while retaining YLD tokens to benefit from the yield generated by their collateral. This separation enhances capital efficiency and offers flexibility in managing assets.

2.3 XYZ - Governance Token

The XYZ token serves as the governance and value accrual token within the TreasuryX protocol. Holders of XYZ tokens are granted voting rights within the platform's decentralised autonomous organisation (DAO), enabling them to participate in key governance decisions such as setting risk parameters, adjusting collateral policies, and determining the distribution of protocol revenue.

The XYZ token captures the value generated by the TreasuryX platform through fees accrued from the Mint-to-Earn mechanism, as well as transaction and liquidation fees within the system. Over time, the XYZ token represents an increasing share of the platform's value, rewarding early adopters and long-term holders with governance power and a stake in the system's success.

3 Mint-to-Earn Mechanism

3.1 Collateral Posting and Token Issuance

When a user posts RWAs, specifically tokenised U.S. Treasury bonds, as collateral within the TreasuryX ecosystem, the protocol mints USDX and YLD tokens. The amount of USDX minted is calculated based on the value of the collateral and the required overcollateralisation ratio to account for volatility.

The Mint-to-Earn mechanism involves several steps:

1. Collateral Assessment: The protocol assesses the current market value of the U.S. Treasury bonds posted as collateral.
2. **Overcollateralisation Application**: A haircut is applied based on the overcollateralisation ratio R, ensuring that the value of the collateral exceeds the value of USDX minted.
3. **Token Minting**: USDX and YLD tokens are minted and allocated to the user.
   - **USDX** represents the stablecoin pegged to the US dollar.
   - **YLD** represents the yield-bearing token accruing returns from the collateral.

3.2 Incentives for Users

By participating in the Mint-to-Earn mechanism, users gain immediate liquidity through USDX while retaining the benefits of the yield generated by their collateral via YLD. This dual-token model incentivises users to distribute X, enhancing overall liquidity and yield.

4 How to Mint and Redeem USDX

4.1 Minting USDX

To mint USDX, users follow a systematic process:

1. **Acquire Tokenised RWAs**: Users obtain tokenised U.S. Treasury bonds through approved platforms.
2. **Collateral Posting**: The tokenised bonds are locked into the TreasuryX protocol as collateral.
3. **Collateral Assessment**: Smart contracts evaluate the collateral's value and enforce an overcollateralisation ratio.
4. **Token Minting**: The protocol mints USDX and YLD tokens, allocating them to the user's wallet.

4.2 Redeeming USDX

USDX holders have two primary options for redemption:

1. **Secondary Market Trading**: Users may trade USDX on exchanges, taking advantage of its liquidity.
2. **Direct Redemption**: Minters can redeem USDX directly through the protocol to unlock their underlying collateral. This involves burning USDX tokens and YLD tokens, after which the protocol releases the RWA that was posted as collateral when the YLD token was minted.

5 Example Future Use Case: Collateralised Lending Service

TreasuryX extends its functionality by allowing the LAMP to be used as liquidity for collateralised lending services. Third parties can lock their crypto assets, such as Ether (ETH), into the protocol and borrow USDX at a 50% loan-to-value (LTV) ratio. This service provides users with access to stablecoin liquidity without liquidating their crypto holdings.

For instance, a user holding ETH worth $10,000 can lock their ETH into the protocol and receive up to $5,000 worth of USDX. The protocol

manages the collateral through smart contracts, ensuring that if the value of ETH drops below a certain threshold, liquidation mechanisms are in place to protect the USDX in circulation.

6 Core Mechanics of TreasuryX

In the following sections, we explore the core mechanics of TreasuryX, designed to bridge the stability of asset-backed stablecoins, like USDC, with the flexibility and composability of synthetic structures such as DAI and Ethena. This unique approach addresses the market gap for a stablecoin that is resilient to both market volatility and centralisation, offering a truly decentralised alternative to existing stable assets.

While protocols like MakerDAO's DAI have laid the groundwork for decentralised stablecoins, they rely heavily on a balance between borrowing and lending rates to maintain their peg. TreasuryX, by contrast, leverages tokenised debt instruments that are already denominated in the currency it aims to peg – namely, the U.S. dollar – streamlining the issuance process. This allows the protocol to mint two distinct tokens: USDX, a stablecoin pegged to the dollar, and YLD, a security token that generates periodic interest from the underlying debt assets.

Initially, TreasuryX focuses on using tokenised U.S. Treasury bonds as collateral, chosen for their liquidity and low risk. Over time, the protocol will expand to include other low-risk, high-yield assets like Insurance Industry Assets (IIAs), known for their reliable returns and low correlation with both crypto and traditional financial markets. This strategic evolution enhances the protocol's robustness, making TreasuryX a secure and scalable option for stablecoin users and yield-seeking investors alike.

The USDX stablecoin can be issued using a variety of underlying debt securities. By isolating the principal and coupon components, the protocol effectively manages key risks while facilitating the issuance of a stable digital asset tied to the denomination of the debt security, as well as an accompanying interest-bearing instrument.

The protocol's initial focus centres on U.S. Treasury bonds and other highly liquid, low-risk money market products for generating USD-pegged stablecoins. Subsequently, the integration of Insurance Industry Assets (IIAs) allows for enhanced yield generation with minimal additional risk. IIAs, for instance, offer returns around 8-10%, with maturities spanning 10 to 12 months and a default risk of approximately 0.2%.

Once these tokenized RWAs are locked, the principal and interest components are separated and allocated to distinct on-chain principal and yield pools, facilitating robust risk management within the ecosystem.

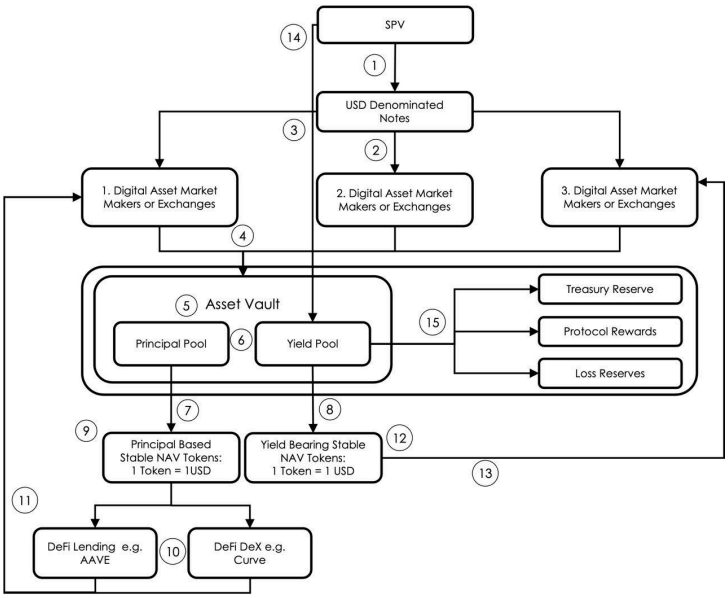

Figure 3: Overview of the Ecosystem Operational Structure: This diagram illustrates the flow and relationships between various components and digital asset service firms within the ecosystem.

6.1 Protocol Economics

A high-level overview of the economic flow shows that an RWA asset locked in the TreasuryX protocol provides exponential returns through the protocol's mechanism on creating the stable asset (USDX) and yield generating asset (YLD) than the same IIA being held on its own. This would require a market to be developed for USDXs, as was done for DAI on MakerDAO.

For example, consider:

1. Investor buys $100 IIAs, which have a maturity of 10 months and a yield of 10%, paying USD10 on maturity.
2. Investor locks the IIA in the TreasuryX protocol to gain the YLD and USDX tokens, paying fees for generation.
3. The YLD token enables the investor to gain a boost of 10% on the YLD token, which after fees provides $10.45 return.
4. Investor is out of pocket $100, sells USDX on the open market, and reinvests but pays $2 fee on each investment.
5. Investor can do this 49 more times until the fees deplete the whole $100 capital for fees.
6. This adds up to $2,550 worth of IIAs being purchased.
7. This amount of IIAs equals 25.5x leverage on the original $100 capital.
8. The return is still $10.45 per $100, but now on $2,550 vs. the original $100.
9. For that same $100, you earn: $166.48 vs. $10.45.
10. The return is 166.48% vs. 10.45%, providing a 16x greater return.

In this example, a USDX generation fee of $2 was used; however, different fee structures could result in different scenarios. As part of the development work, further optimization scenarios will be carried out to identify the optimal fee model for USDX generation, and how this would need to be adjusted to manage steady growth in USDX supply.

6.2 XYZ Savings

As the market for USDX develops and uptake of USDX increases on composable protocols like Aave, Uniswap, Compound, Curve, etc., a separate service will be launched on the TreasuryX protocol to enable USDX tokens to be deposited in a savings pool and the user gets wX (wrapped USDX), and these would gain a share of USDX returns from the TreasuryX protocol

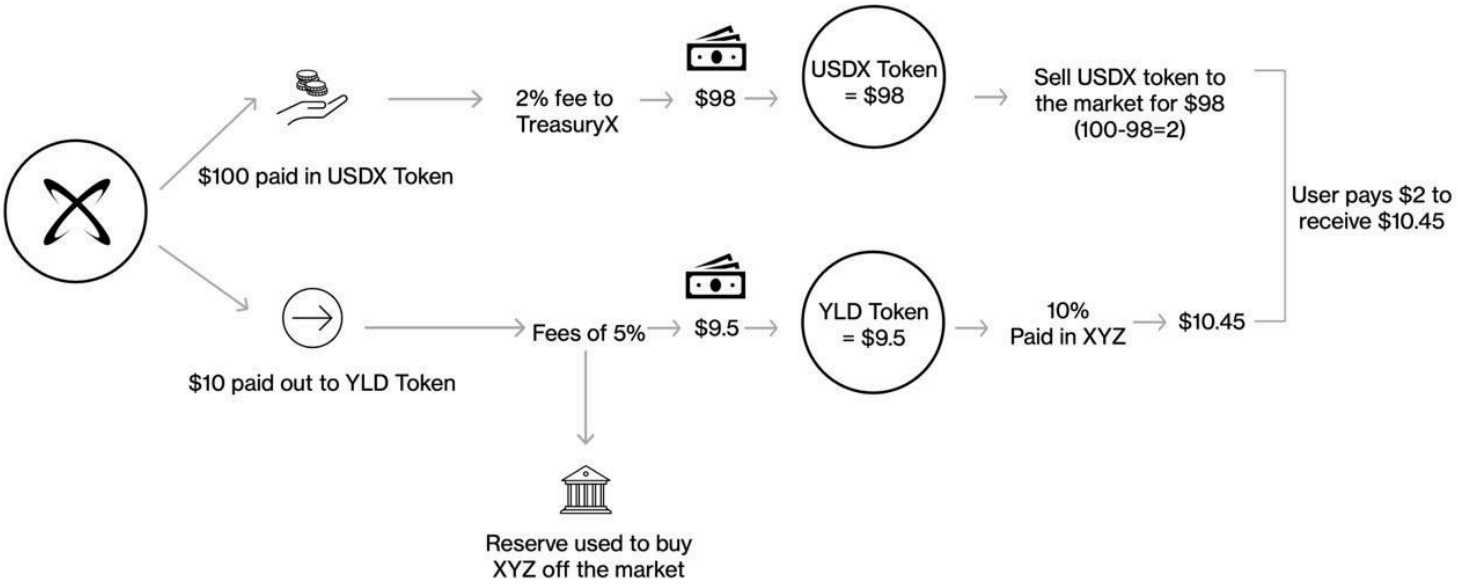

Figure 4: Protocol Economics Overview: This diagram illustrates the flow of value across the TreasuryX protocol and the benefits of leverage that can be realised from the network.

fees, given in wX. The return paid from fees would mostly be a boost; however, the actual savings will be coming from the depositing of USDX onto lending and swap protocols.

6.3 Insurance, Stablecoins, and TreasuryX

The worldwide insurance asset market is estimated to be in the range of $25 trillion to $30 trillion. This estimate includes assets held by insurance companies globally across various asset classes such as bonds, equities, real estate, and alternative investments.

A unique feature of TreasuryX is its leverage of IIA's, providing a unique value proposition. By backing the stablecoin with IIA's, it enhances stability and credibility, potentially attracting investors seeking a diversified and secured stablecoin investment.

A significant portion of insurance assets can be suitable for collateralising stablecoins like TreasuryX. This collateralisation enhances security and scalability by providing a robust asset base backing the stablecoin's value.

6.4 XYZ Network Token

USDX and YLD are the two key outputs of the TreasuryX network, as these are the digital asset stablecoin and the interest-bearing asset. Additionally, the network itself has a third token called XYZ, which enables the network to be governed and other network rights to be managed. This governance token will be the core governance token and be issued through an initial private sale to connected parties and professionals; this will be done to raise initial seed capital to launch the network.

6.5 XYZ Token and Time Locked Staked XYZ Derivative (sX)

XYZ token is issued as a governance token, and users are able to hold the token and leverage rights for governance voting as well as paying for products/services. The XYZ token can also be staked on the network and time locked for amplified rights, to gain access to an XYZ staking derivative, sX.

The time-locked staking derivative, sX, gives amplified voting and service access rights; e.g., if an XYZ token is staked for 1, 2, 3, 4, 5, 6 months, the voting or other rights are multiplied by a time lock factor, e.g., locking for 1 month provides amplification of x1.025.

Users holding sX can gain access to a share of the TreasuryX protocol fees, which again can be amplified with longer time-staked XYZ tokens. Share of protocol fees can be paid through USDX (stablecoin) or with additional XYZ, which are purchased from the market. When the sX staking derivative is used for paying for other products and services, the treasury of that third-party service can sell the tokens or use them to gain access to TreasuryX protocol fees.

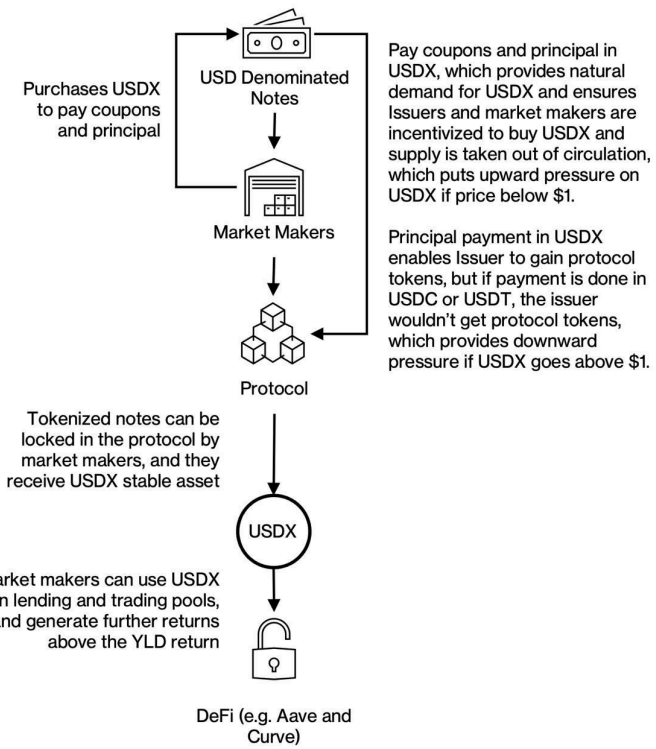

Figure 5: XYZ Network Token Overview: This diagram illustrates the flow of XYZ tokens through staking, governance, and fee distribution processes within the network.

6.6 Minter Incentives

Market makers will be able to invest in the tokenised IIAs and hold for short-term returns, paid monthly, and be able to trade these on-chain through a securities AMM being deployed by other providers in Dubai; on these assets, they could generate.

They can also lock the IIA into the TreasuryX protocol and gain the YLD and USDX tokens, and they can hold the YLD tokens for returns and/or trade this through another pool.

Furthermore, they can take the USDX tokens and use these on DeFi protocols and provide services on AMMs or lending pools. While these markets need to be bootstrapped, there would be organic demand for USDX for paying coupons by the SPV; however, as markets for borrowing are kickstarted, the returns could tend to the normal lending rates of $\approx 6\%$.

This means for a market maker, the return on holding the IIA (9%) would be potentially less than locking the IIA and generating returns through lending and LAMP (10%).

Market makers will also be rewarded with new XYZ tokens for locking IIAs, which provides them upside on growth in the protocol; in addition, if they pre-lock the IIAs for 1, 2, or 3 cycles, then they would be rewarded with additional XYZ token boosts. By staking the XYZ tokens, the market maker gains access to additional share of protocol fees.

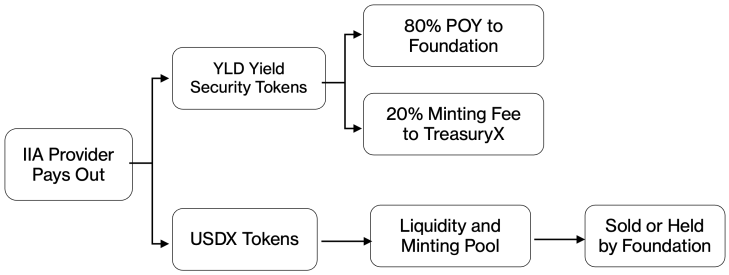

Figure 6: LAMP structure

6.6.1 Protocol Development

TreasuryX will enable IIA tokens to be minted on the blockchain and for development of the protocol for locking the debt instruments and being able to manage the principal and interest components in order to mint the USDX and YLD. It willl also enable composability of the tokens with Curve and Aave.

6.6.2 Governance Token Issuance

Governance services will be added on day one in order to manage use of treasury funds and other changes. A governance token will have staking functionality to enable voting and gaining access to new supply release. This token will also be used to provide network incentives and ensure multiple scenarios are executed and tested, even in extreme market conditions. Initially, the governance token will be issued to accredited/qualified professionals, and the funds raised will be used for two aspects: (1) development of the protocol

7 USDX Protocol Details

There are a number of stablecoins in the market, which range in differing levels of operational complexity in maintaining the peg to fiat and managing various risks e.g. regulator, liquidity, correlation to crypto markets and exposure to counterparty risks when managing underlying assets, or credit risks when using non-risk-free assets.

Creating a new USD stablecoin offers the chance to combine the security of asset-backed models with the adaptability of synthetic structures. The aim is to keep the system straightforward while effectively managing risks like counterparty, credit, liquidity, and market volatility.

7.1 Asset Backed Structures

The simplest stablecoins are asset backed using fiat as the underlying asset, which have a dollar in a bank account for every dollar issued. This includes bank deposit coins like JPMcoin, or non-banking coins like USDC or USDT.

In these cases there is little correlation to crypto markets, so such market risks are lower, but there is significant exposure to counterparty risk in terms of where the fiat is held and how it is managed. Furthermore, growth of these markets is dependent on how such fiat backed assets are regulated, which would add further operating costs for issuers and thus increase fees for issuance and use of assets.

Insurance-related RWAs are carefully selected for their low correlation with traditional markets, providing a hedge against broader financial risks. These assets are tokenized and acquired by Digital Asset Services (DAS) firms, which can lock them into the TreasuryX protocol. Once locked, the tokens are allocated into Principal (USDX) and Yield (YLD) pools. This structure allows for efficient risk management and yield generation while maintaining a stable net asset value (NAV) for the USDX stablecoin.

7.2 Synthetic Structures

As we increase operational complexity we move to general asset backed structures, where the underlying could be a a blockchain based currency. But as the underlying assets are not necessarily stable at $1, the peg is maintained through some form of market mechanism.

One of the best examples of synthetic coins is DAI, where the USD peg is maintained through the lending and borrowing rates of DAI. While DAI is synthetic it still has a large collateral backing in fiat asset backed coins like USDC, which ensures the price is easier to maintain even in turbulent crypto market conditions.

As we go further into more complex synthetic structures, we see the likes of the novel Ethena stablecoin, which has an underlying ether asset and a continuously delta hedged position using a perpetual futures derivative to establish and maintain the USD peg.

Such synthetics, which do not rely on fiat backing are important to create a truly fiat independent stablecoin. However, establishing this independence adds a large amount of complexity, and as there is increasing reliance on crypto markets this adds risks such as correlation/counterparty etc. Therefore, in times of turbulence these forms of stablecoins can become something that is far from a safe haven.

7.3 Algorithmic Structure

Following synthetic assets, and on the extreme end of the spectrum we have algorithmic stablecoins, which maintain the USD peg due to novel on-chain algorithmic approaches; and there may or may not be a liquid collateral asset underpinning the stable asset. The most famous was Terra, which collapsed.

Algorithmic structures are the most risky as there is complete reliance on complex market mechanisms and there may be deep correlations and credit risks associated with the overall crypto markets.

TreasuryX employs a semi-synthetic approach similar to DAI but sets itself apart by using private tokenized real-world assets (RWAs) such as Insurance Industry Assets (IIAs) as collateral. These high-quality debt instruments have a low default risk (about 0.2%) and offer yields around 10%. By leveraging these assets, TreasuryX issues USDX, a USD-pegged stablecoin, and YLD, a yield-bearing token.

This model reduces reliance on complex derivatives or algorithmic mechanisms, minimizing correlation with the crypto market and enhancing stability during volatile periods. The decentralized nature of the protocol, governed by the XYZ utility token, ensures that users have a direct stake in governance and fee distribution, fostering a resilient and equitable ecosystem.

7.4 Principal Pool

Notes position locked in the principal pool will have a haircut. While this can depend on the type of underlying security and its maturity, the main aim for the haircut is to ensure there is some level of over collateralisation based on the general risk profile of the type of instruments e.g. for IIAs the maximum haircut could be 5% -this will be in addition to the reserves built-up through the Yield Pool

Note positions, for each DAS whitelisted address, of different maturities are aggregated in the Principal pool, as positions are locked and unlocked in the vault. Over time there will be a continuous variation of maturities of note positions in the pool, but the maximum will be 12 months.

If any position in the Principal pool suffers a default the losses are spread equally across all the different positions. The total value locked (TVL) in the pool will be given by the aggregated principal in the Principal pool, and each unit of USD in the pool will be represented by an issued USDX LP token. At any moment in time the value of the principal pool is given by a stable NAV i.e. each USDX token has value of $1 at all times, where the time value discount of the principal is offset by the Yield pool and the underlying note default risk is offset through the loss reserves, which will be built up over time.

Each locked position in the pool is represented by an index i, and the principal value of the i'th locked note position is X_i; therefore the total principal at any moment locked in the vault is $\sum X_i$ where i is from 0 to n, where n is the total number of note positions locked in the vault.

The fraction of the TVL owned by the i'th locked position is then given by $w_i = \frac{X_i}{\sum_j X_j}$ i.e. w_i is the fraction of TVL owned by the i'th position, and this is updated as notes are locked and unlocked from the vault in real-time - this fractional vault ownership is also used to build the Yield Pool shared return calculation.

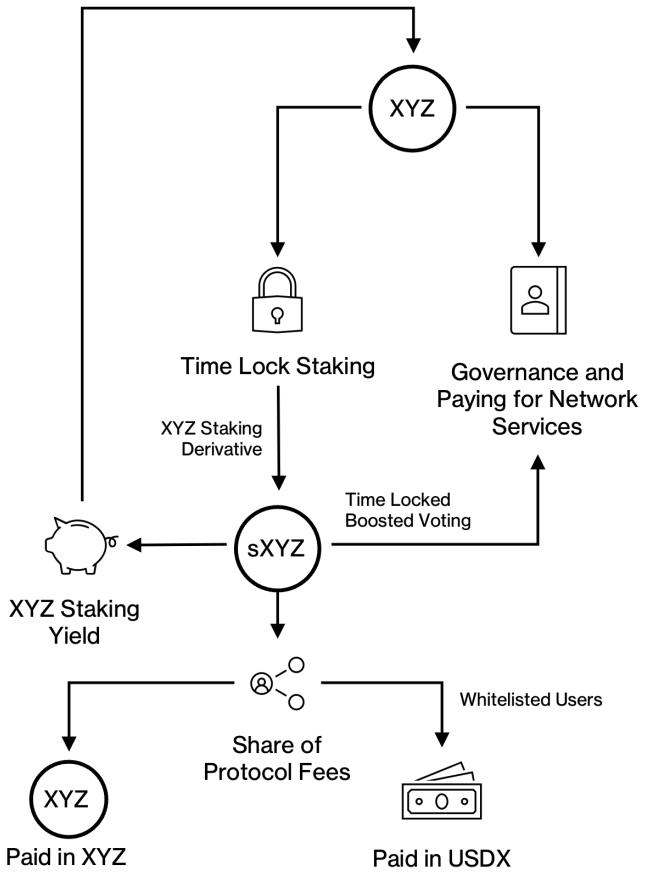

Figure 7: XYZ Network Token Overview: This diagram illustrates the flow of XYZ tokens through staking, governance, and fee distribution processes within the network.

8 Risk-Weighted Principal Pool and Haircut Application

In the TreasuryX protocol, the principal amounts from various debt instruments are aggregated into a principal pool. To ensure the pool is adequately collateralized and to account for the risk associated with each instrument, a haircut is applied to the principal amounts based on their individual credit spreads. This mechanism is especially significant when coupons are managed separately or when different vaults are used for coupons, as the principal pool must independently maintain its risk-adjusted value.

The adjusted principal for each instrument is calculated using a haircut factor (α) proportional to its spread (x_i):

$$P_i^{\text{adjusted}} = P_i \cdot (1 - \alpha \cdot x_i) \quad \text{(Eq. 2)}$$

Where:

- P_i: Principal amount of bond i
- x_i: Credit spread of bond i
- α: Haircut factor (e.g., 100% or 1.0)

The total risk-weighted principal pool is then the sum of all adjusted principals:

$$P_{\text{pool}} = \sum_{\{i=1\}}^{\{n\}} P_i^{\{\text{adjusted}\}} \quad \text{(Eq. 3)}$$

8.1 Worked Example

Consider three bonds with varying principals and spreads:

- **Bond 1**: Principal $P_1 = \$1.00$, Spread $x_1 = 2\%$ (0.02)
- **Bond 2**: Principal $P_2 = \$2.00$, Spread $x_2 = 3\%$ (0.03)
- **Bond 3**: Principal $P_3 = \$3.00$, Spread $x_3 = 4\%$ (0.04)
- **Haircut Factor (α)**: 100% (1.0)

Applying the haircut to each principal:

- P_1^{adjusted} =1.00 x (1 - 1.0 x 0.02) = 0.98
- P_2^{adjusted} =2.00 x (1 - 1.0 x 0.03) = 1.94
- P_3^{adjusted} =3.00 x (1 - 1.0 x 0.04) = 2.88

The total risk-weighted principal pool is:

$$P_{\text{pool}} = \$0.98 + \$1.94 + \$2.88 = \$5.80 \qquad \text{(Eq. 4)}$$

This adjusted principal pool reflects the risk-weighted aggregation of the principals, ensuring that the pool's value accurately represents the underlying risk of its components. The application of the haircut factor is crucial for maintaining the stability and integrity of the USDX stablecoin, as it provides an additional buffer against potential defaults.

8.2 Significance of the Haircut Factor

The haircut factor (α) is a key parameter in the principal pooling mechanism. It dictates the degree of over-collateralization required based on the credit risk associated with the underlying assets. A higher haircut factor leads to a greater reduction in the adjusted principal, enhancing the pool's resilience to defaults.

In scenarios where the coupons are not pooled or are managed in separate vaults, the importance of the haircut factor becomes even more pronounced. By independently adjusting the principal amounts for risk, the protocol ensures that the USDX stablecoin remains fully collateralized and stable, regardless of how the coupons are handled.

8.3 Integration with the Yield Pool

While the principal pool focuses on maintaining a stable net asset value (NAV) for the USDX token through risk-weighted adjustments, the Yield Pool manages the time value discount of the principals and the accumulation of returns. The combined operation of the principal and yield pools allows TreasuryX to effectively manage the risks associated with the underlying assets while providing stable and predictable returns to investors.

9 Yield Pool

The Yield pool components of a locked note position are structured to act as a floating NAV fixed income fund, where the calculated return for the i'th locked position is provided by the weighted sum, based on w_i, across all the Yield pool positions i.e. an aggregated diversified return is allocated for each locked note position.

Therefore, the Yield for the i'th note position due to the yield component of the k'th note position is given by

$$Y_i^k = C^k \times X^k \times w_i \qquad \text{(Eq. 5)}$$

Total weighted Yield for the i'th note position, due to all Yield components, is given by

$$Y_I = \sum_k Y_i^k = w_i \sum_k C^k \qquad \text{(Eq. 6)}$$

,

which can be updated in real-time as coupons are paid and note positions change.

9.1 LP Tokens

The Principal Liquidity Provider (LP) token, USDX, is designed as a standard ERC20 token with integrated blacklisting capabilities. This feature ensures that USDX can function similarly to Circle's USDC by enabling sanctioned addresses to be frozen or by preventing USDX transfers to such addresses upon approval through a governance process. USDX is positioned as a synthetic stable value asset, maintaining its peg to the US dollar through the denomination of the underlying Real-World Assets (RWAs).

As a non-yield-bearing and non-redeemable synthetic asset, analogous to DAI, USDX will be listed on multiple digital asset exchanges to facilitate the creation of liquidity markets for USD/USDX and USDC/USDX trading pairs. Strategic targets include establishing decentralised exchange (DEX) pools for USDC/USDX on platforms such as Curve and Uniswap, thereby enhancing liquidity and market accessibility.

Yield LP tokens, designated as YLD, are also structured as standard ERC20 tokens, each valued at $1. The value of YLD tokens appreciates over time as returns are generated and reinvested into the Yield Pool. Positioned as a synthetic yield-generating asset within the Yield Pool, YLD tokens are restricted to transfer exclusively through over-the-counter (OTC) markets between market makers and exchanges. This restriction ensures that YLD tokens are managed by authorized entities, maintaining the integrity and stability of the yield generation mechanism.

9.2 Redemptions and Coupon Payments

Coupon payments issued by the Special Purpose Vehicle (SPV) are managed through the acquisition of USDX from the market, either via OTC transactions with market makers or through exchanges where USDX is listed. These acquired USDX tokens are then utilized to disburse coupons to tokenised Note holders. Specifically, the SPV transfers USDX to the tokenised Note holders' addresses through the Vault. If the Note is locked within the Vault, the USDX is redirected to the Yield Pool, where it accumulates against each note position, subsequently minting the corresponding YLD tokens for the account holder.

During redemptions, the SPV similarly procures USDX from the open market to close Vault positions upon maturity. Following the closure of a Vault position, yield allocation ceases for that particular position, and the associated YLD tokens become available for withdrawal of accrued returns at any time. Additionally, Digital Asset Services (DAS) entities have the capability to repay USDX and close principal note positions at their discretion, enabling the redemption of accrued returns.

In scenarios where a DAS has activated a roll-over flag for a matured position, the protocol automatically closes the existing position and establishes a new locked note position. This process involves using the redeemed principal to purchase USDX, which is then used to acquire new tokenised notes that are subsequently locked within the Vault. This automated roll-over mechanism ensures continuous participation and capital efficiency within the protocol.

9.3 Fees and Governance

The Yield Pool within the TreasuryX protocol incorporates a fee extraction mechanism that deducts fees from each coupon payment. These fees are subsequently transferred to the protocol treasury and allocated across several key areas:

- Treasury Reserve: Allocated through a governance process to support new developments, including the addition of new asset vaults and the development of new services.
- Loss Reserve Pool: Reserved to cover the approximately 0.2% default risk associated with the underlying notes.

- Protocol Rewards: A small allocation is designated for rewarding participants who stake and time-lock the XYZ network token.

The XYZ network token plays a pivotal role in the governance framework. Token holders can stake and time-lock their XYZ tokens to remove supply from circulation, thereby increasing their allocation of newly issued tokens. The duration of the lock-up period directly correlates with the amplification of token allocation, incentivizing longer-term commitments. When governance tokens are staked, holders receive staking derivative tokens, which grant access to a share of the vault fees. These fees primarily originate from premium finance vaults and are distributed to participants as part of the protocol rewards.

The governance process is designed to ensure that decisions reflect the collective interests of the community. By staking their XYZ tokens, users not only contribute to the security and governance of the protocol but also receive a portion of the fees collected, fostering a sustainable and participatory ecosystem.

9.4 USDX Token Market Dynamics

The market for USDX tokens will be organically bootstrapped through the demand for USDX by the SPVs that are issuing the notes, as this will be the primary mode for coupon and principal repayment.In the cases where USDX token price falls below $1 the market makers will be incentivised to purchase these and drive the price up, as they can inherently take advantage of arbitrage opportunities due to the value of the USDX token in the market and the number of USDX tokens needed to unlock the notes in the protocol and redeem the note at par.

SPVs will also be incentivized to purchase USDX < $1 as they can then repay coupons at a lower cost and profit from the arbitrage opportunity. Furthermore the SPVs will be incentivized to repay coupons in USDX, rather than USDC or USDT, as this will enable SPVs to gain access to the governance token, which will have value and in turn provide access to staking fees on the protocol.

In the situation where USDX token price increases above $1, meaning the demand is high, the SPV will be further incentivized to issue more tokenised IIAs and the DASs will be incentivized to increase supply of USDX tokens through purchase of IIAs and depositing these into the protocol.

Therefore, when USDX > $1 the SPVs will be incentivized to not pay coupons in USDX as they will be paying above the market rate and making a loss, and in this case they can pay in USDC or USDT, which will reduce the demand for USDX. However, this mechanism will not be favorable over the long term due to vision of protocol aiming to gain complete independence from fiat.

9.5 YLD Token Market Dynamics

Each unit of YLD token will be linked with a unit of principal locked in the Principal Pool. Therefore, to redeem the principal component the user must also hold the interest component, YLD, which will then enable the full tokenised IIA to be unlocked from the protocol. In this way the YLD token will act like a fixed NAV fund that pays an annual coupon, X% on a monthly basis.

YLD will be freely transferable between parties whitelisted by the SPV, and thus while the price of the asset will be predictable based on the coupon payments remaining, it will also be driven based on market rates and other factors related to possible treasury fee and default rates.

The protocol will not be focused on controlling the price of the YLD token, which will be left to the self-interests of the market makers as they will use these cash generating assets for monthly returns in USDX, which they can then sell in return and or use these to unlock the IIA (alongside the YLD token).

9.6 Unwinding Scenarios

The whitelisted users, e.g. market makers, that own a specific YLD token will be able to redeem a note from the protocol. When a user comes to redeem the II, they submit the YLD, then the SPV can purchase the relevant amount of USDX tokens to be burnt. If the user submits the USDX tokens along with the YLD, the USDX is burnt and the user will be paid in fiat by the SPV. On completion of this USDX and YLD burning the IIA will be unlocked and marked as redeemed.

In the case USDX < $1, the scenario will be favorable for the SPV as they will purchase lower value USDX to enable an unlock and redemption.

In the case USDX > $1, the SPV will be able to use either USDC or USDT to enable an unlock and redemption, at which point the USDC/USDT will be held by the protocol to manage the price of USDX on the DEX e.g. Curve Pool.

In the situation that no more notes are being issued by the SPV, then during the unwind phase that would be a maximum period of 12 months, all IIAs in the protocol can be unlocked and redeemed in an orderly manner. This could be useful for upgrades and transition from one version to another if required.

10 Roadmap

Q4 2024

- Begin development of protocol, execute protocol token investment for AI/QP investors, begin purchase of first IIA assets, and establish initial market maker (MM) relationships.

Q1 2025

- Launch SPV and issue the tokenised IIA instruments, and execute full audit of the protocol, as well as enable market makers to hold IIA and start receiving returns and prepare for lock in protocol.

Q2 2025

- Launch TreasuryX protocol with initial kill switch, for halting protocol, and enable issuance of USDX YLD tokens, and establish markets on Curve, and begin listing USDX on crypto exchanges.

Q3 2025

- Drive monthly organized sales of underlying RWAs with MM/Exchanges and begin supply of USDX and YLD tokens, having achieved target supply of $100 million by end of H1 2025.

Q4 2025

- Create a user token sale with ecosystem of users, and enable them to stake their assets and participate in protocol governance.

10.1 Execution

10.1.1 Current Status

- Protocol and technical design in place along with economic dynamics and policies for the token.
- Project team have proven expertise in designing and developing web3 products and services.
- In house engineering team ready and supported by external Nethermind team (that work with Ethereum Foundation).
- Institutional client in place to supply first $50 million of insurance receivables, and option to receive $50 million/month.
- SPV for IIA issuance setup through project team, and have internal industry leading expertise on securities tokenization.

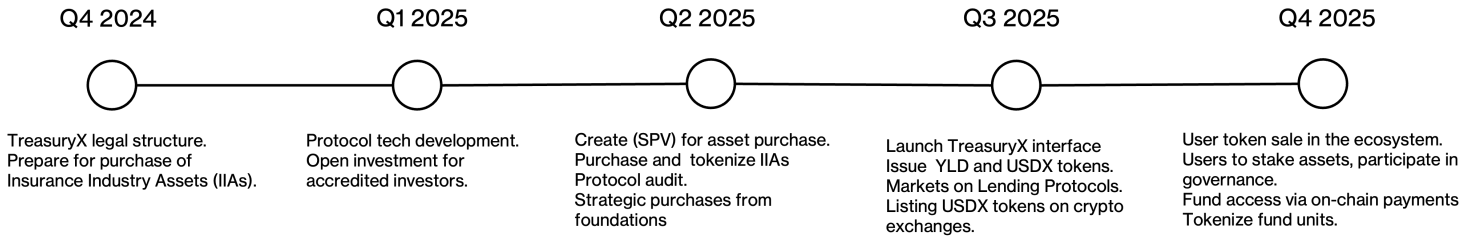

Figure 8: XYZ Network Token Overview: This diagram illustrates the flow of XYZ tokens through staking, governance, and fee distribution processes within the network.

- Institutional partner pipeline being developed for first purchase of tokenised IIAs and provisioning tokens in TreasuryX protocol to generate USDX/YLD supply.

10.2 Funding Model

- The use of capital will be for network development, bootstrapping and ongoing ecosystem growth.
- On a conservative basis the $5 million expected to last us between 12-15 months, depending on the pace of legal, technical development, marketing, business development and staffing costs.
- It is anticipated that soon after protocol is live and there is a growing supply of USDX, the protocol will also start generating fees for sustaining the foundation.
- Furthermore, in Q4 2025 there will be an ecosystem token sale.

10.3 Token Economics

Outlined below are the key XYZ token allocation distributions designed to optimize network performance and participant engagement:

- 10% for private sale at a token price of $0.005, raising $5,000,000.
- 5% for public sale at a token price of $0.010, raising $5,000,000.
- 20% for the founding team
- 5% for advisors
- 5% for airdrops
- 20% for ecosystem
- 10% or liquidity and MM
- 15% treasury
- 10% staking

11 Team

11.1 Reeve Collins: Strategy

Reeve Collins brings extensive experience in the web3 space as the co-founder and CEO of Tether. He has also co-founded Smart Media Technologies and served as the co-founder and CEO of BLOCKv, which raised $22 million in an ICO to deliver the first platform for the creation of NFTs. Reeve founded Traffic Marketplace, one of the first online ad networks, which was acquired by Vivendi Universal. Additionally, he created RedLever, a branded entertainment studio acquired by Adconion Media Group, and raised $70 million to launch Pala Interactive, a legal, real-money gambling site based in the US. Early in his career, Reeve was among the initial employees of Avenue A/Razorfish, the first-ever Internet advertising agency.

11.2 Bundeep Singh Rangar: CEO

Bundeep Singh Rangar, serving as CEO, is the founder of PremFina, an InsurTech company backed by prominent investors such as Rakuten Inc., Tim Draper's UK VC firm, and Canada's Thomson family of the Thomson Reuters company. He has worked with asset-backed companies like The Car Finance Co and The Finance Store (TFS) Loans. Bundeep is an investor in companies like Wave Digital Assets and IDEO CoLab and serves as the CEO of Fineqia, a Canadian FinTech company. He co-founded Glass Ventures, a venture capital firm targeting early-stage Web 4.0 and Web 3.0 companies. Bundeep holds an MSc from Columbia University and an MA from McGill University.

11.3 Dr. Avtar Sehra: Product

Dr. Avtar Sehra, responsible for product development, is the founder and CEO of Libre Capital, a tokenised fund issuance and distribution FinTech backed by Nomura's Laser Digital and Brevan Howard's WebN Group. He founded Nivaura, a pioneer in tokenised securities, creating the first tokenised securities and cash on Bitcoin. Dr Sehra established a capital markets legal standard with partners such as A&O, Linklaters, and the London Stock Exchange Group. He has led regulatory processes and held investment and custody roles under FCA/MSA rules. Dr Sehra holds a PhD in Theoretical Particle Physics and an MRes in Computational Engineering from Imperial College London.

11.4 Gourish Singla: Ecosystem

Gourish Singla, overseeing ecosystem development, is a serial entrepreneur and investor. He has founded several biotech companies focused on disease prevention and longevity and has been featured in the Forbes 30 under 30 lists for both Asia and India. Gourish is a limited partner in several tier-1 digital asset-focused funds and an investor in startups that are enabling and accelerating the Web3 revolution. He is an alumnus of Singularity University.

12 Summary

This paper introduces the TreasuryX protocol, a novel stablecoin mechanism that uses debt products generally, and Insurance Industry Assets (IIAs) initially, to issue stable digital assets alongside a yield generating asset. Unlike traditional protocols that rely on complex interest rate adjustments, TreasuryX takes in tokenised notes and strips these into principal and interest yielding assets, creating USDX, a USD-pegged digital asset, and YLD, an interest-bearing security token. This approach provides a censorship-resistant, stablecoin that is uncorrelated with the crypto market. In this way, TreasuryX is able to enhance stability and predictability in financial ecosystems that are built on public chains using real world debt products such as IIAs.