April 2025

Market report



# Fund tokenization

A blueprint for practitioners

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TAURUS

# Foreword by Paul-Adrien Hyppolite, co-founder and CEO of Spiko





### Paul-Adrien Hyppolite, co-founder & CEO of Spiko

As the co-founder of Spiko, my journey began in early 2023 with a simple idea: to build a platform that accelerates the tokenization of funds—starting with money market funds—on public blockchain networks.

We began with three core intuitions. First, that the tokenization of financial instruments would start with funds before expanding to their underlying assets, such as money market instruments, bonds, and corporate equities. Second, that money market funds, in particular, would be the most relevant in the short to medium term, as they address key challenges in the Web3 ecosystem—namely, the lack of yield and the counterparty risk associated with stablecoins. And third, that public blockchain networks would ultimately prevail over private, closed alternatives, and should be embraced now by agile players like us to manage fund records more efficiently.

Focusing on funds made sense. We recognized that asset managers operate with more flexibility and creative latitude than corporate or sovereign issuers, who are typically constrained by slower decision-making processes and rigid issuance frameworks. Equally important, our choice to build on public blockchains was driven by a desire to avoid creating new silos—the very source, in our view, of the inefficiencies plaguing the post-trade and record-keeping infrastructure today.

In mid-2024, we launched the Spiko US T-Bills Money Market Fund (FR001400ODM9) and the Spiko EU T-Bills Money Market Fund (FR001400ODL1)—the first UCITS-compliant money market funds to leverage public blockchain technologies for managing shareholder registers. Spiko provides both the transfer agent software and the distribution platform for these funds.

Nine months later, these funds boast over 1,100 investors, collectively accounting for nearly \$250 million in assets under management. For context, this represents the largest investor base in the universe of tokenized money market funds operating on public blockchains.

Looking ahead over the next 12 to 24 months, we anticipate a significant acceleration in money market fund tokenization, especially as the industry's leading asset managers enter the space. This shift will unlock powerful new use cases enabled by 24/7, cross-border transferability of fund shares—opening up fresh opportunities in collateral management, liquidity optimization, and intra-group cash transfers for companies with multi-jurisdictional corporate structures.

Simultaneously, we expect the tokenization of other fund types—particularly in the fixed income space—to gain momentum. As tokenized longer-duration funds become more prevalent, interactions with DeFi protocols, especially in lending and borrowing, will grow stronger. Investors will increasingly seek seamless ways to collateralize tokenized assets to access liquidity.

This thorough report made by Taurus aims to map out the current landscape of fund tokenization, examine the most promising use cases, identify the challenges and opportunities ahead, and illustrate how Spiko—and others in the ecosystem—are positioned to lead the way in unlocking the full potential of tokenized assets.

Enjoy your reading.

### I. Context of this paper

Tokenization, the process of creating a digital representation of an asset using distributed ledger technology (DLT), is reshaping traditional finance on a global scale. Assets such as equities, bonds, real estate, art, commodities, and funds have been tokenized. This process allows for transparency, automation, fractional ownership, and simpler access to liquidity, making investment in those assets more accessible to a broader range of investors.

One hot topic nowadays is fund tokenization, the process of creating digital tokens representing shares or units in a mutual fund. Fund tokenization has received increasing interest from the finance industry over the last two years and we expect this trend to accelerate. Analysts estimate tokenized funds to reach \$0.5 to \$3 trillion by 2030. Consulting firm BCG calls tokenized funds the "third revolution in asset management," next after the ETF revolution.

Taurus has been at the crossroads of digital asset technology and tokenization since 2018. Our technology is used in production by leading banks and regulated financial institutions to issue and manage tokenized assets. Since 2021, Taurus is regulated by FINMA, the Swiss regulator, as a securities broker/dealer firm operating TDX[1], a regulated facility to trade tokenized assets. Our clients and Taurus have tokenized equity, debt, funds, trade finance, as well as real estate and art.

This paper, focused on fund tokenization, is the continuation of our 2023 report "<u>Tokenization: A practitioner's point of view</u>". We address the following points:

- Market sizing
- Structure of an investment fund
- Benefits of fund tokenization
- Managing funds with distributed ledgers
- Fund tokenization process
- Real examples of tokenized funds
- Conclusion

We hope you enjoy the read.

<sup>1</sup> https://t-dx.com. TDX is an organized trading facility (OTF) operated by Taurus SA in its capacity as securities firm

## II. Market sizing

The consulting firm McKinsey & Company, in its June 20, 2024 paper "From Ripples to Waves: The Transformational Power of Tokenizing Assets", notes that tokenization is "progressing at a gradual pace, with acceleration expected as network effects gain momentum." According to McKinsey, the market capitalization of tokenized assets (excluding cryptocurrencies and stablecoins) could reach \$2 trillion by 2030, with a range spanning from \$1 trillion in a pessimistic scenario to \$4 trillion in an optimistic one.

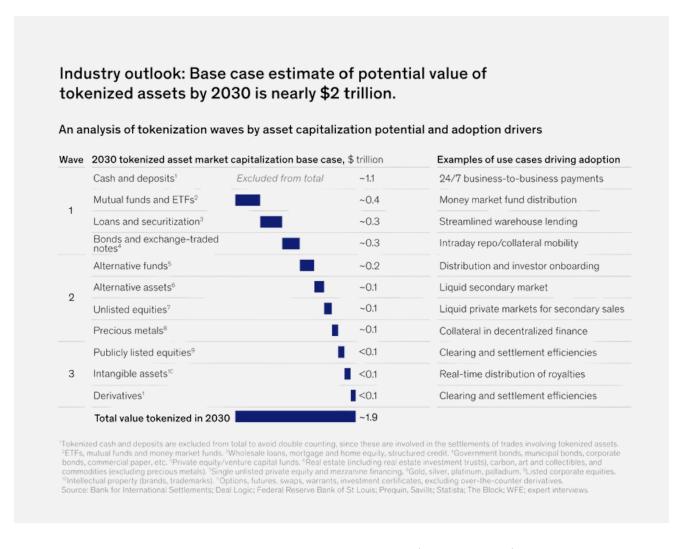


Exhibit 2.1: McKinsey's 2030 tokenization outlook (source: McKinsey).

Fund tokenization is expected to be the first and largest contributor, with an estimate of \$0.4 trillion out of \$2 trillion. McKinsey expects it to be in the first wave of applications.

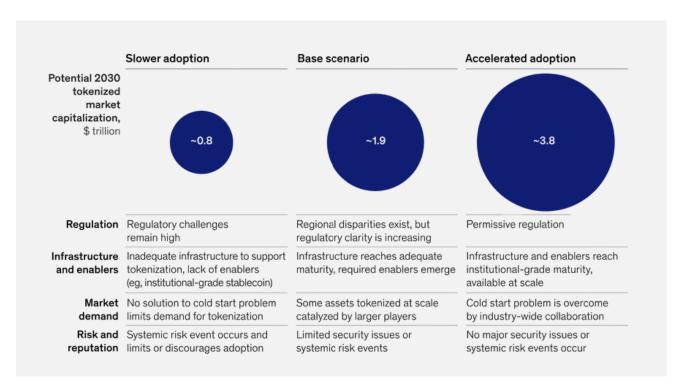


Exhibit 2.2: McKinsey's 2030 tokenization outlook - potential adoption scenarios (source: McKinsey).

Currently, the size of the tokenized fund market is approximately \$4 billion [2], with money market funds representing the lion's share (\$3.6 billion). The tokenized fund market has grown 4× since the end of 2023 (at that time, the market size was \$1 billion [3]).

Some of the largest tokenized money market funds include BlackRock USD Institutional Digital Liquidity Fund (BUIDL, \$640 million) and Franklin Templeton OnChain U.S. Government Money Fund (FOBXX, \$580 million).

 $<sup>2\ \ \</sup>text{Situation as of 7.2.2024, source}\ \underline{\text{https://app.rwa.xyz}}\ (\text{Institutional Funds} + \text{Treasury Funds}$ 

<sup>3</sup> Size of Institutional Funds + Treasury Funds on 31.12.2023, source <a href="https://app.rwa.xyz">https://app.rwa.xyz</a>

### III. Reminder about investment funds

Funds are defined as collective investment schemes, i.e., assets raised from investors for the purpose of joint investment and managed by an asset manager according to an investment strategy (see Exhibit 3.1 below).

Funds differ depending on various dimensions, including:

- Fund manager or promoter: BlackRock, Vanguard, Fidelity, Brevan Howard, etc.
- Asset class: equities, bonds, real estate, private equities, etc.
- <u>Investment strategy</u>: long-only (e.g., value, growth) or alternative (e.g., equity long/short, global macro, merger arbitrage), discretionary vs. systematic, etc.
- <u>Investors</u>: qualified/institutional investors only, retail investors.
- Jurisdiction: US, Luxembourg, Ireland, Cayman, Switzerland, Jersey, Liechtenstein, etc.
- <u>Legal structure</u>: investment undertakings (e.g., UCITS SICAV[1] under Luxembourg law), master-feeder funds, contractual funds[2] (e.g., Swiss FCP).
- Legal framework: EU UCITS, EU AIF, EU RAIF, Swiss FCP, Swiss LQIF, etc.
- <u>Liquidity terms and conditions</u>: open-ended with daily, monthly, or quarterly subscriptions/ redemptions, listed closed-ended, exchange-traded funds (ETF), etc.

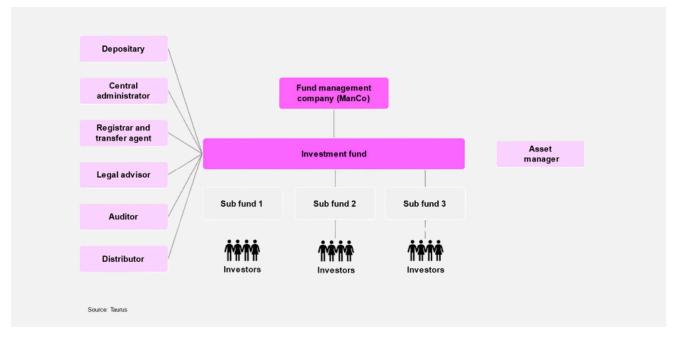


Exhibit 3.1: Overview of a traditional fund structure.

<sup>4</sup> Undertakings for collective investment in transferable securities ("UCITS") investment company with variable capital ("SICAV")

<sup>5</sup> A contractual fund is a fund based on a contract signed by a ManCo, an asset manager and a depositary. The fund does not exist as a standalone investment company

Several players are required to set up, manage, and administer a fund. The main ones are:

# 1. The fund management company (or "ManCo" for a UCITS fund or "AIFM" for an alternative investment fund)

The entity in charge of the supervision, administration, and technical management of the fund;

### 2. The investment manager or asset manager or portfolio manager

The entity in charge of managing the investment portfolio of the fund in accordance with an investment strategy;

### 3. The fund depositary

The entity in charge of safekeeping the assets held by the fund in its portfolio.

The fund management company typically outsources administrative activities (e.g., fund accounting, NAV calculation, tax reporting) to specialized third parties such as a central administrator.

One important task, especially in the context of tokenization, relates to the transfer agent (TA) function. This involves maintaining the fund share register and shareholders' records (including KYC and AML), as well as the reception, processing, and settlement of subscriptions, redemptions, conversions, and transfers. This task can be handled by the ManCo, the central administrator, or a specialized TA.

Small to mid-size fund managers focus on investment research and portfolio management and rely on the fund administration services of specialized third-party ManCos. Larger asset managers handle the entire value chain in-house, acting as portfolio manager, ManCo, and custodian (typically through different legal entities within the same group).

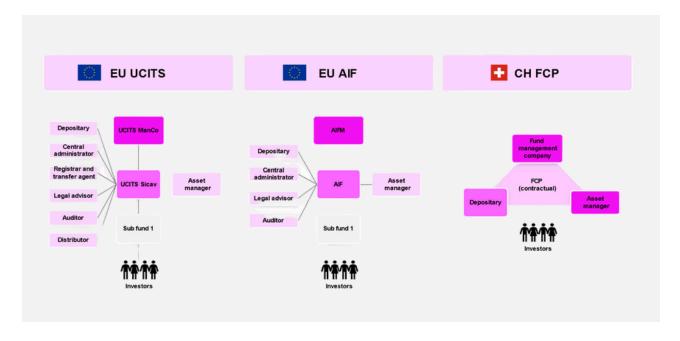


Exhibit 3.2: Illustrative examples of fund structures (simplified).

# IV. Learnings from past projects: Managing funds with distributed ledgers

Over the past few years, the fund industry has explored various ways to leverage distributed ledger technology:

#### 1. Fund administration automation

Automation of the lifecycle and administration of a fund using DLT and smart contracts. This includes the automation of processes such as subscriptions and redemptions, as well as the calculation and distribution of the NAV, which are typically the responsibility of the transfer agent (TA). Automating TA tasks is especially relevant, as standard transfer agent processing involves multiple manual touchpoints and relies on legacy systems, with manual dealing still common through phone or fax orders. One example of such an initiative is the UBS, SBI, and Chainlink tokenized fund pilot conducted under the Monetary Authority of Singapore's (MAS) Project Guardian[1]. This project automated the fund management process through a digital transfer agent (DTA) smart contract, enabled by using a Chainlink oracle and the CMTAT token.

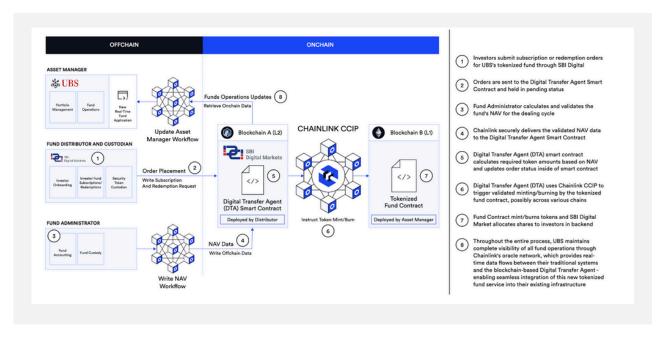


Exhibit 4.1: UBS, SBI and Chainlink's tokenized fund pilot (source: Chainlink).

#### 2. Fund distribution

Streamlining of fund distribution activities by using distributed ledger technology to automate and mutualize processes within a cooperative ecosystem involving all actors in the fund distribution chain. This allows for real-time data exchange and the elimination of redundant activities. One example is the FundsDLT[1] initiative, launched as early as 2016 in Luxembourg.

<sup>6</sup> https://blog.chain.link/chainlink-project-guardian

<sup>7</sup> https://www.fundsdlt.net

### 3. Digital asset funds

Creation of traditional investment funds, venture capital funds, hedge funds, or ETFs that invest in cryptocurrencies, tokens, or distributed ledger projects as part of their investment strategy. Recent examples include the 2024 launches of Bitcoin and Ethereum ETFs by Invesco, VanEck, and Vanguard, as well as the Fidelity Ethereum Fund (FETH). In this case, the assets on the fund's balance sheet are invested in digital assets.

### 4. Fund tokenization

Issuance of fund shares in the form of digital tokens. In this case, the shares of ownership in the fund held by investors (an equity item on the balance sheet) are issued and allocated in the form of digital assets. This does not preclude such funds from also investing in digital assets, as described in use case #3, and/or from using smart contracts to automate fund administration (use case #1).

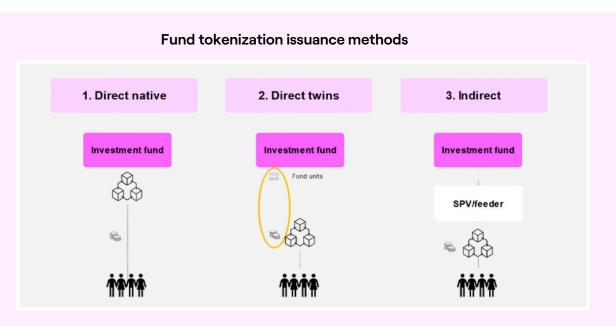


Exhibit 4.2: Digital token issuance methods.

Fund tokenization is the process of creating digital tokens on a distributed ledger that represent fund shares. The fund generally retains its traditional legal structure and service providers, but the innovation lies in the representation of the shares as "tokens":

• In the case of a traditional fund, shares are represented by a simple book entry in the share register (or, in some cases, by a certificate). The share register is administered centrally by the TA. Subscriptions, redemptions, conversions, or transfers are instructed directly by banks and/or investors to the TA via fax or email. In the last 20 years, the transfer of funds has been partly digitalized, for example, via Clearstream or FundSettle. However, tokenization is now opening a new era of digitalization without relying on such centralized intermediaries.

• In the case of a tokenized fund, the TA is still required and keeps the same responsibilities. The main difference is that it issues shares in the form of digital tokens and records ownership on a distributed ledger such as Ethereum, Polygon, or Avalanche. Only the quantity owned by a given distributed ledger address is published on a public distributed ledger. The TA keeps the shareholders' records confidential, usually on their legacy systems. The tokens can be transferred to a personal wallet or to custodians appointed by the investors.

Technically, there are 3 main methods applied in the industry to create such digital tokens:

- 1. (Direct) native tokens: the tokens represent the shares.
- 2. (<u>Direct</u>) twin tokens: the shares are associated with digital twin tokens, ensuring that legal title in the shares can be transferred only via a transfer of the digital tokens.
- 3. <u>Indirect tokens</u>: the shares of a fund are not tokenized. Instead, a Special Purpose Vehicle ("SPV") or a feeder fund invests into the fund, and the shares of the SPV/feeder are tokenized.

The choice of method depends mainly on applicable laws and regulations.

Finally, it is not necessary to tokenize all the shares of a fund. It is possible to tokenize (i) part or some shares only, or (ii) add digital share classes to an existing fund without restructuring. It is also possible to de-tokenize, i.e., convert back tokenized shares into traditional shares.

One of the main challenges to date for fund tokenization has been to ensure that applicable law(s) recognize(s) that fund shares can be effectively represented in the form of digital tokens. With the entry into force of new laws in large financial centers, there is no more regulatory uncertainty in the relevant countries.

For example, in Europe, the EU DLT Pilot Regime recognizes and defines "DLT financial instruments" as "financial instruments issued, recorded, transferred and stored using distributed ledger technology," while MiFID defines "units in collective investment undertakings" as one type of "financial instruments." This means that, in the EU, tokenized units in UCITS funds and/or AIF are considered as financial instruments under MiFID (and not as crypto assets under MiCAR).

### V. Fund tokenization process

### 5.1. Initial setup

Exhibit 5.1. shows the process of tokenizing the shares of a fund, with the main steps described below.

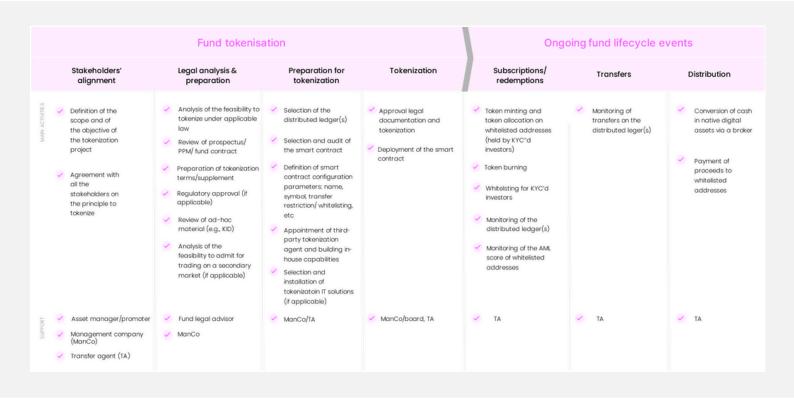


Exhibit 5.1: Fund tokenization process.

#### 1. Stakeholders' alignment

The first step is to agree with all stakeholders on the principle of tokenizing the fund or part of it. The main stakeholders are the asset manager/fund promoter, the ManCo, and the TA (see Section 2 for definitions). Usually, the idea of tokenizing a fund comes from the asset manager/fund promoter. However, the latter is not involved in the tokenization process per se, as it remains focused on portfolio management only. Hence, the asset manager/fund promoter must ensure that the ManCo and the TA also agree to proceed and are properly equipped (see Section 5.3 below).

The need to align several parties explains why it has historically been more difficult to tokenize funds than a simple private corporation or an SPV[1] with fewer stakeholders. In fact, the situation is even more complex in the case of regulated funds because the regulator also needs to be included in the process. Finally, it is easier for large asset management players controlling the full value chain (e.g., BlackRock, Franklin Templeton) to launch such fund tokenization projects.

<sup>8</sup> Regulation is obviously the second very important factor explaining that

#### 2. Legal analysis and preparation

This step is both mandatory and critical

The legal advisor of the fund must analyze and confirm that the fund can be tokenized in accordance with its articles of association and applicable laws and regulations in the country of its incorporation. The legal advisor must also prepare the necessary amendments to the prospectus/fund contract to allow for the issuance of fund shares in the form of digital tokens[9], including "tokenization terms/supplements" if applicable[10].

The KID/KIID of the fund may also need to be amended. Then, if the fund is subject to the supervision of a local regulatory authority (e.g., CSSF, FCA, FINMA), it will be required to obtain the necessary regulatory visas and approvals. Finally, if it is planned to have the digital tokens admitted for trading on a secondary market (e.g., TDX, the Swiss organized trading facility operated by Taurus), the legal advisor will also need to confirm feasibility from the point of view of the fund and, if feasible, identify any potential restrictions and/or special requirements.

### 3. Preparation for tokenization

To issue digital tokens, the fund will need to select a distributed ledger (e.g., Ethereum, Polygon, Tezos, Avalanche) and deploy a-ideally standardized-smart contract representing the digital tokens. To create and operate the tokens, the ManCo/TA[11] can either do the work itself (if it has the necessary competence and tools) or appoint a so-called third-party Tokenization Agent.

The Tokenization Agent is typically in charge of the following tasks: (1) deploying the selected smart contract with the right configuration on the selected distributed ledger, (2) minting/burning the right number of tokens during subscription/redemption events, (3) allocating the tokens to the distributed ledger addresses, (4) monitoring the distributed ledger, and (5) potentially acting as a whitelisting agent (see below). When deploying the smart contract, the Tokenization Agent will configure multiple parameters, such as the name of the fund, the ticker symbol, the token ID (ISIN), and a reference to the prospectus and/or "tokenization terms" if applicable.

A key design point is to decide whether the tokens should be subject to transfer restrictions or not. Although both options technically exist, all fund managers to date have restricted themselves to the issuance of digital tokens with "restricted transferability enforced via whitelisting[12]".

#### 4. Tokenization

The final step is (a) the approval and entry into force of the revised legal documents (including the possibility to tokenize), and (b) the deployment of the smart contract representing the tokens by the ManCo, the TA, or the appointed Tokenization Agent.

<sup>9</sup> e.g., ledger-based securities/Wertrechte/droit-valeurs inscrits within the meaning of Art. 973d of the Swiss code of obligations

<sup>10</sup> For example in Switzerland, this could be implemented via an amendment to the prospectus/fund contract or via an "Addendum for Swiss law securities issued in the form of ledger-based securities". It requires the publication of tokenization terms/registration agreement (Registrierungsvereinbarung / convention d'inscription) within the meaning of Art. 973d and 973f CO. This document includes several important points, in particular (a) information about tokenized shares, distributed ledger and smart contract, (b) process for the recognition of the acquirers of Tokenized Shares as shareholder (registration) and (c) risk disclosure. More information is available at www.cmta.ch.

<sup>11</sup> If the ManCo has not delegated the transfer agent function to a third-party, it is its own responsibility, otherwise it is the responsibility of the TA

<sup>12</sup> Also known as "allowlisting"

The interesting point is that the above process remains conceptually the same regardless of the type of fund: EU UCITS, EU AIF, EU RAIF, or Swiss LQIF, for example.

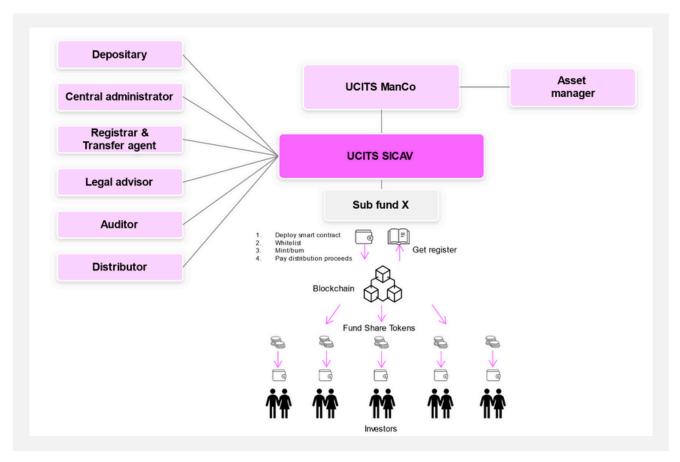


Exhibit 5.2: Fund tokenization scheme for a UCITS fund.

At this stage, the fund has been tokenized and is ready to operate according to its traditional lifecycle, provided that the following processes have been properly defined and adapted to account for the specificities of tokenization.

### 5.2. Ongoing lifecycle management

The tokenization of a fund mainly impacts TA activities. For the sake of simplicity, we will set aside other processes such as reconciliations. Hence, in this section, we highlight the main specific aspects applicable to the TA when managing ongoing processes during the lifecycle of a tokenized fund:

### 1. When receiving a subscription order:

The TA will perform its traditional tasks, in particular collecting the KYC file of investors and performing its own due diligence. The specificity of the process in the case of tokenized fund shares is that the TA also needs to collect the external distributed ledger addresses controlled by the investor, check them (typically score them using an appropriate tool and perform a proof of control if applicable), and whitelist them according to applicable standards[13].

<sup>13</sup> Which can include in some case a Satoshi test, proof of control or equivalent in compliance with applicable anti-money laundering laws and regulation

### 2. At each subscription/redemption/NAV date:

The TA will continue to perform its traditional tasks, such as calculating the net asset value (NAV). The specific aspect for tokenized funds is that the TA will also need to (1) "burn" the redeemed tokens, (2) "mint" the newly subscribed tokens, and allocate them to the whitelisted distributed ledger addresses of the subscribers (assuming that they were previously fully KYC'd and approved). The processing of redemption orders assumes the prior receipt of tokens from the investor. The cash proceeds from redemption orders are wired to the investors identified as the beneficial owners of the source distributed ledger address. The TA can leverage DLT to automate this activity through the deployment of a Digital TA smart contract that will automate the minting/burning process based on the NAV calculated and typically communicated to the smart contract via an "oracle". The TA can also publish and distribute the calculated NAV on a distributed ledger.

#### 3. At each transfer date:

In this case, the TA does not need to do anything. Assuming that transfers are authorized by the fund and restricted to whitelisted addresses only, it means that the register will be automatically updated and that the instructions for the transfers will be collected and enforced via the signature of the transaction by the sending investor using their private key.

### 4. At each distribution date:

The TA will perform its traditional tasks. The payment of dividends or coupons can be done either in cash or, in some cases, in crypto assets (e.g., Ether or stablecoins, if permitted) to the whitelisted addresses identified, KYC'd, and verified by the TA and registered in the share registry. Here again, a TA leveraging DLT can use "distribution smart contracts" to automate the payment of distribution proceeds.

### 5.3. Technology and solutions

To tokenize and administer fund shares, the ManCo, TA, or the Tokenization Agent must be properly equipped with the right technology solutions to issue, custody, and manage the lifecycle of smart contracts and digital tokens.

This tool must have, at a minimum, the following characteristics:



### Check 1 SECURITY

Select a top-quality custody solution to protect private keys, typically meeting banking-grade standards such as the security standards set in the CMTA Digital Asset Custody standard[14] published by the Capital Market and Technology Association ("CMTA"). Security is of paramount importance because this solution will safeguard the private key controlling the smart contract(s) used for the issuance and administration of the digital tokens.



Check 2

### SMART CONTRACT LIFECYCLE MANAGEMENT

Select a solution supporting not only the deployment of smart contracts but also the management of the full lifecycle of smart contracts. In other words, the solution must support calling any smart contract functions (e.g., freeze), with various smart contract formats/templates to be able to properly manage edge cases and special events during the life of the fund.



Check 3

### **ADVANCED FEATURES**

As we have seen before, most tokenized funds have implemented advanced mechanisms such as restricted transfers enforced on-chain via whitelisting smart contracts. Hence, you must make sure that the solution supports not only the management of simple digital "token smart contracts" but also the management of more advanced smart contracts, such as whitelisting/blacklisting smart contracts, proxy smart contracts, digital transfer agent smart contracts, etc.



Check 4

#### **MULTI-BLOCKCHAIN**

As we will see below, the recent trend is to issue fund digital tokens on different blockchains (e.g., Ethereum, Polygon, Avalanche). Consequently, players must make sure to select a solution that can support the issuance and the management of tokens for all the main blockchains (EVM and non-EVM, public and permissioned), as well as any type of smart contract, to avoid installing a complex patchwork of suboptimal solutions that are not scalable.



Check 5

### **API CONNECTIVITY**

To automate as much as possible the interaction with smart contracts and your clients, you need a fully API-based solution to connect your different systems seamlessly.

One solution meeting all the above criteria is Taurus-PROTECT and Taurus-CAPITAL[15]. Taurus-PROTECT is a leading solution currently in production with numerous regulated financial institutions for this purpose.

Moreover, Taurus-PROTECT gives you access to Taurus-NETWORK, an innovative solution offering the possibility to post, manage, and monitor collateral in a tokenized format.

<sup>14</sup> https://cmta.ch/standards/digital-assets-custody-standard

<sup>15</sup> For more information, please consult <a href="https://taurushq.com">https://taurushq.com</a>

### VI. Benefits of fund tokenization

Fund tokenization means that fund shares are represented in electronic format and recorded on a distributed ledger system running 24/7. As a result, transfers, settlement, and clearing can occur at any time, worldwide, with lower costs, higher speed, and greater transparency.

In addition, smart contracts enable the automation of many administrative tasks, in particular transfer agency tasks (e.g., via a Digital Transfer Agent smart contract). Streamlining fund operations through smart contract-based automation reduces operational costs and errors in fund management and enhances transparency and real-time processing.



Exhibit 6.1: Benefits of fund tokenization.

On top of the above, fund tokenization also brings the following benefits:

#### 1. Liquidity: tokenization can improve the liquidity of funds in two respects:

<u>a. Secondary market:</u> traditional (non-listed) funds with low liquidity (e.g., real estate funds with semi-annual redemptions, closed-ended private equity vehicles) are difficult to exchange and transfer. Tokenized fund shares are instantly transferable on a distributed ledger. This means that they can be admitted to trading on one or several electronic trading platforms/exchanges. However, tokenized fund shares cannot be traded on cryptocurrency exchanges. They must be traded on regulated trading venues[16] due to the legal qualification of such tokens as a security/financial instrument.

One example is TDX, the regulated digital asset trading facility operated by Taurus[17]. With TDX, investors can participate in monthly auctions, matching demand and supply to buy or sell tokenized fund shares. TDX includes a transparent price discovery process and fully automated delivery-versus-payment (DvP) settlement, operating 24/7. Moreover, the TA can monitor the share register live. The listing of tokenized funds on secondary markets is less relevant in the case of UCITS openended funds with daily liquidity, because those funds are already very liquid, allowing investors to subscribe and redeem them daily. The main advantage is that you can offer an alternative similar to an ETF for funds that are traditionally not eligible to be packaged and offered in the ETF format.

16 In this paper, we do not cover the case of decentralized exchanges (DEX), because it is often not considered as an adequate option for institutional investors and asset managers 17 TDX is a Swiss organized trading facility (OTF) operated by Taurus SA, in its capacity as FINMA-regulated securities firm. For more information, please consult www.t-dx.com

<u>b. Fractionalization:</u> secondly, participating in a private equity or venture fund requires investing a considerable amount. Such large investments can be daunting and require a substantial commitment, especially considering that the investment is usually subject to a lock-up period. Tokenization provides a solution, as a large investment can be tokenized and divided into several smaller tickets. The potential use cases are numerous and mostly depend on the fund structure (contractual vs. corporate fund structure or open vs. closed fund structure), as well as on the respective governing documents, such as a (limited) partnership agreement or the fund agreement. These documents are ultimately also decisive for the question of who will tokenize the investment fund units or who will divide a large ticket into smaller ones. Theoretically, and as an example, the fund management may only issue tokenized fund units, or a large investor may tokenize and divide larger tickets into smaller ones.

### 2. Collateral mobility: posting tokenized MMF as collateral for derivative transactions

Historically, fund shares have been difficult to transfer to third parties, since the register is maintained centrally by the TA, who does not process such transfers fast enough. However, in the case of tokenized fund shares, you can transfer them electronically and instantly anywhere in the world. This feature is particularly interesting in the case of Money Market Funds ("MMF"). MMF are typically held by private or institutional investors looking for an alternative to holding cash in bank deposit accounts.

Tokenization opens the possibility to use tokenized MMF units to post collateral as margin for derivative transactions. MMF units are typically recognized as eligible collateral (highly liquid assets) in various jurisdictions. However, they are often not used to meet margin calls. This is mainly due to the time required to transfer fund units between parties. Recent market stresses saw market actors needing to sell their MMF units to meet dynamic derivatives positions, for non-centrally cleared derivatives.

The tokenization of MMF units for use as collateral accelerates the relevant settlement process, increasing the opportunities for this use case. Tokenized MMF units are settled faster on DLT networks, which may become particularly useful in the context of an uncleared derivatives arrangement where the exposure between the parties can change frequently, requiring variation margins to be exchanged daily or even more frequently. As of today, the main parties interested in posting MMF as collateral for derivative transactions are institutional investors, which explains why the first tokenized MMF are mainly institutional funds with high minimum subscription amounts.

### 3. Financial inclusion: increased access to tokenized financial instruments

Many people in developing countries do not have a bank account, let alone a trading account. However, almost everyone has a smartphone – including people in developing countries, provided there is stable and affordable internet connection. By tokenizing financial instruments, especially by fractionalizing ticket sizes (see point 1 above), such instruments can also be made accessible in developing countries. All that is needed to trade tokenized assets is a registered wallet on a smartphone, provided this is permissible by the applicable legal framework. This might also be appealing to a generation of technology-savvy investors who manage their banking and investments via smartphone and expect 24/7 service. We still have a long way to go, as financial education and the existence of basic financial markets are required. However, we have been in touch with governments that have the political will and resources to implement these types of financial innovations.

### 4. High returns and reduced costs

Mutual funds manage about \$58 trillion in assets, but today's settlement process is inefficient, with a T+2/3 settlement period locking up funds. BCG estimates that by solving these problems, fund tokenization could produce approximately +17 basis points in annual returns for investors, representing a gain of \$100 billion, plus an additional \$80-400 billion in value if investors can capture extra return from intraday NAV fluctuation.

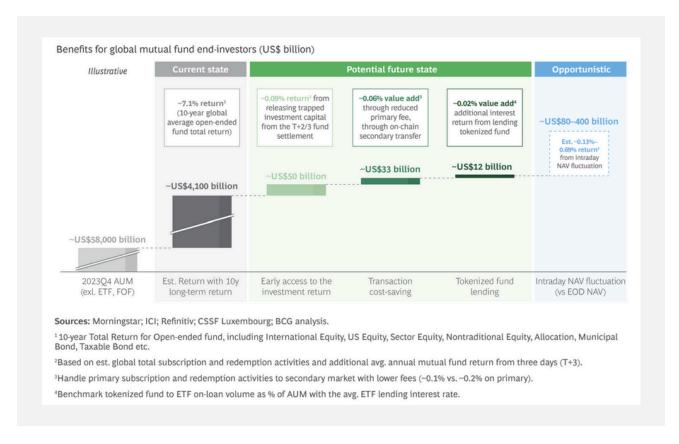


Exhibit 5.2: BCG's estimate of fund tokenization benefits for global mutual fund end-investors (source: BCG).

### VII. Real example of tokenized funds

This section presents some real-case examples of tokenized funds based on the review of public information. The following description focuses on the specifics of tokenization, in particular: the objectives targeted by the fund promoter, the legal structure, the distribution of roles and responsibilities to support tokenization, the IT platform, the distributed ledger(s) used, and the mechanisms used to process subscriptions, redemptions, transfers, or to maintain the share register.

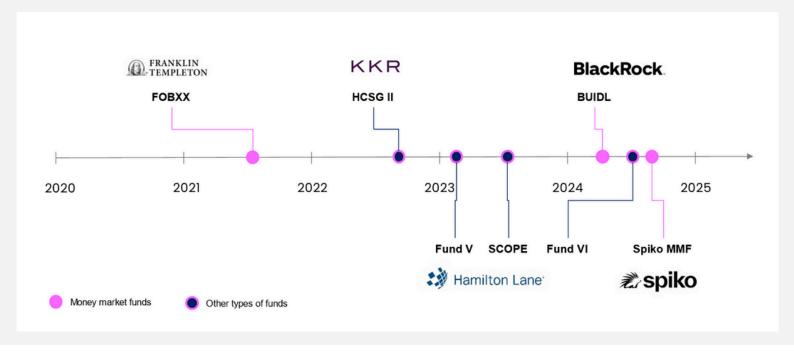


Exhibit 7.1: Timeline of notable tokenized fund launches (source: Internet).

### 7.1 Money market funds

### 7.1.1 BlackRock USD Institutional Digital Liquidity Fund

### **BlackRock**

• In March 2024, Blackrock (<a href="www.blackrock.com">www.blackrock.com</a>) entered fund tokenization with the launch of the BlackRock USD Institutional Digital Liquidity Fund (BUIDL), a limited company incorporated under the laws of the British Virgin Islands. This fund quickly became one of the world's largest tokenized funds. Its assets under management (AUM) reached approximately \$500 million in summer 2024. As of today, access to the shares is limited to "accredited investors" only, with a minimum initial subscription of \$5 million and \$250,000 for additional subscriptions.

<sup>18 &</sup>lt;u>https://etherscan.io/token/0x7712c34205737192402172409a8f7ccef8aa2aec#code</u>

- BUIDL offers investors shares issued in the form of digital securities, tracked and transferred
  using ERC-20 tokens on Ethereum[1]. Securitize Markets LLC ("Securitize") serves as the TA in
  creating and disbursing digital asset securities on the blockchain. Securitize is responsible for
  investor onboarding, processing subscriptions, redemptions and transfers, and maintaining
  the register of members. Securitize keeps a "whitelist" of investors or prospective investors
  who have successfully passed suitability and AML/KYC checks.
- Generally, transfers between whitelisted accounts are allowed at any time, even when the
  fund is not open for new subscriptions or redemptions. Once payment is received, investors
  receive their ERC-20 tokens at their distributed ledger address of choice. Investors can
  redeem their shares for USD by transferring their tokens to the TA's wallet. If shareholders
  transfer their shares to the TA's wallet without explicitly submitting a redemption request
  online, it is considered as if they have submitted a redemption request.
- Currently, the shares are not listed or exchanged on any digital asset exchanges.
- On top of the above classical subscription/redemption mechanism, BlackRock, in connection
  with Circle, has established a smart contract-controlled pool of USDC that is exchangeable
  for BUIDL tokens 24/7, creating liquidity for the fund. Users may access this USDC pool via the
  Securitize user interface or directly through the smart contract.

### 7.1.2 Franklin OnChain U.S. Government Money Fund [19]



- The Franklin OnChain U.S. Government Money Fund ("FOBXX") is a >USD 400 million money market fund launched by Franklin Templeton (<u>www.franklintempleton.com</u>) back in 2021. FOBXX is currently mainly intended for sale to residents of the United States, although Franklin Templeton has mentioned they are working on a Luxembourg-based equivalent tokenized fund.
- The fund is available to individual or institutional investors that purchase shares directly from the fund through Franklin Templeton's Benji Investments App[20], where one token represents one share. All fund transactions must be conducted via either the Benji App or Franklin Templeton's Institutional Web Portal, access to which is provided to investors during initial onboarding. Shares are credited to investors' fund accounts by the TA, and no share certificates are issued. According to Franklin Templeton, this eliminates the costly problem of replacing lost, stolen, or destroyed certificates.
- The TA is Franklin Templeton Investor Services, LLC. It maintains the official record of share ownership via a so-called "proprietary blockchain-integrated system that utilizes features of traditional book-entry form and one or more public blockchain networks, in particular Stellar." The fund's blockchain-integrated record-keeping system is a permissioned system created by the TA on a public blockchain network using smart contract technology to incorporate a whitelist of permissioned wallets into the relevant smart contract (or token configuration in the case of Stellar), alongside various administrative control functions.

<sup>19</sup> www.franklintempleton.com/FOBXX

<sup>20 &</sup>lt;a href="https://benjiinvestments.com">https://benjiinvestments.com</a>. Benji is a retail mobile app and institutional web app that allows investors to browse tokenized securities and cryptocurrencies and invest in the fund. Benji makes it easy to securely buy, sell, and view account activities through the apps. Benji is offered and operated by Franklin Distributors, LLC

- The TA creates a blockchain wallet for each investor on the Stellar blockchain network upon the creation of an account through the App or Institutional Web Portal, unless an investor contacts the fund's TA prior to opening an account to obtain authorization to use a blockchain network other than Stellar. Only wallets that are created by the TA, or approved by the TA in the case of investor-provided wallets, are authorized to purchase, redeem, receive, and hold shares of the fund.
- FOBXX currently uses the Stellar network as the primary public blockchain, and investors, in most cases, hold their wallets on the Stellar network. However, the fund also authorizes the use of the Polygon, Aptos, Avalanche, Arbitrum, Ethereum, Solana, and Base networks for certain accounts upon request and subject to eligibility. In the event of an authorized transfer from one approved network to another approved network, the transfer is accomplished through the "burning" of shares recorded on one network and the "minting" of shares on the other network.
- Fund shares may be transferred in peer-to-peer transactions from one shareholder wallet to another shareholder wallet within any approved blockchain network or between any two approved blockchain networks. Before transferring shares, both the transferor and the potential transferee must each have an active "whitelisted" wallet registered with the TA. An investor can use the App or the Institutional Web Portal to authorize the TA to transfer their shares to a transferee they identify using the public address for the transferee's wallet. Transfers are processed at the fund's next NAV calculation time. Notwithstanding that the fund processes peer-to-peer transfers after the next calculated NAV following the receipt of a transfer request in proper form, the fund does not require that peer-to-peer transfers occur at NAV.
- Franklin Templeton explains that, in the future, shares may be available for purchase or sale
  from one shareholder to another shareholder (or potential shareholder) in a secondary trading
  market. The fund has no current agreement to make its shares available for trading in a
  secondary market, but it does not exclude entering into such an agreement in the future.

#### 7.1.3 Spiko T-Bills MMF

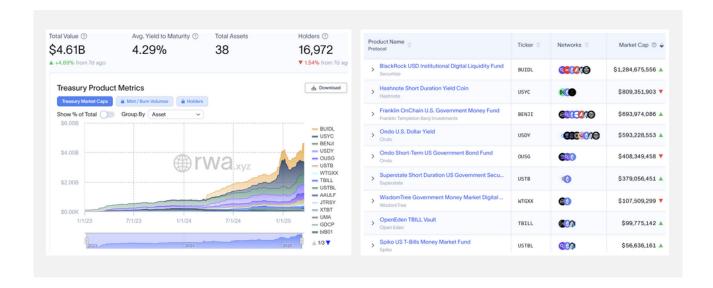


- Spiko Finance ("Spiko", <u>www.spiko.io</u>) is a French company that launched two tokenized money market funds: the Spiko EU T-Bills MMF and the Spiko US T-Bills MMF. The two funds are under the Spiko French SICAV umbrella created in 2024. They are open to all investors, except in some jurisdictions, with a minimum investment amount of USD/EUR 1,000.
- Twenty First Capital (<u>www.twentyfirstcapital.com</u>) is the management company, while CACEIS
  Bank is the depositary and CACEIS Fund Administration the central administrator. Spiko acts
  as distributor of the funds. It is registered as a financial investment advisor in France and listed
  in the register of French financial intermediaries.
- The ManCo also acts as the investment manager of the funds. Moreover, the ManCo has not delegated the registrar and TA responsibilities to a third party. Consequently, the TA duties remain the responsibility of the ManCo, in particular the maintenance of the share register and the clearing of subscription and redemption orders.

- The shares are represented as tokens registered on designated public distributed ledgers, namely Ethereum, Polygon, Arbitrum, and Starknet. Each share class has its own smart contract address. Holders' rights are represented by an entry in a distributed ledger in their name with the ManCo, and if they so wish, with the intermediary of their choice for registered shares. By default, the tokens are kept on behalf of clients on the Spiko platform (so-called "Standard mode"). For clients with expertise in blockchain, Spiko also offers the possibility to hold tokens directly in their digital wallet operated under their own control. Before the investor can use a wallet, it must be validated by the ManCo prior to the investor's subscription ("allowlisting"). Shares of the SICAV can only be held by and transferred between investors with an allowlisted address.
- Redemption orders or secondary transfers of the fund shares involve the transfer of the corresponding tokens on the distributed ledger. The prospectus specifically allows for the transfer of shares by investors in over-the-counter ("OTC") transactions, with terms mutually agreed upon by the seller and the purchaser, provided that the purchaser has an address that has previously undergone allowlisting. Secondary transfers require wallet signatures and are legally binding. When an investor signs a transfer using their private key to transfer shares to another person's wallet, they permanently transfer ownership of those fund shares.
- The NAV are published on Bloomberg, CoinGecko, and via on-chain oracles.
- For more information, see <a href="https://docs.spiko.io/documentation/intro/welcome">https://docs.spiko.io/documentation/intro/welcome</a>.

#### 7.1.4 Others money market funds

You can find additional information about treasury and money market funds on <a href="https://app.rwa.xyz/treasuries">https://app.rwa.xyz/treasuries</a>.



### 7.2 Private equity and alternative funds

### 7.2.1 KKR Health Care Strategic Growth Fund II



- Securitize tokenized an interest in KKR Health Care Strategic Growth Fund II ("HCSG II") on the Avalanche public blockchain with the objective of making institutional private market strategies more accessible to individual investors.
- The new Securitize tokenized fund marks the first time exposure to one of KKR's alternative investment strategies is available in a digital format in the U.S. The fund is managed by Securitize's digital asset management arm, Securitize Capital, and provides exposure to KKR's health care growth private equity investing strategy. KKR's HCSG II Fund, to which the fund provides exposure, invests in innovative health care companies in North America and Europe with proven products and services that are seeking a partner to commercialize and scale.
- Historically, investments in private market funds have been primarily available to large institutional investors and HNWI individuals. Unlocking broader access to private market investing has been a long-standing challenge for the industry.

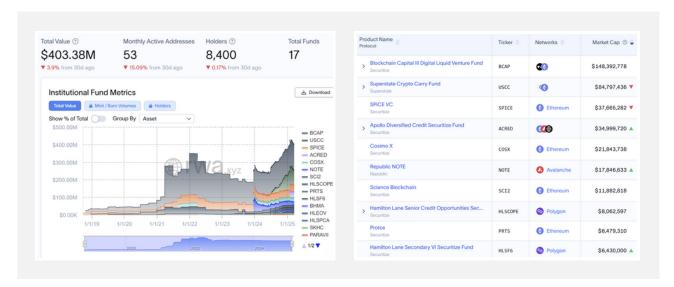
#### 7.2.2 RealUnit



- Founded in 2017, RealUnit Schweiz AG (<a href="www.realunit.ch">www.realunit.ch</a>) is not technically a fund but a listed investment company that invests in a broadly diversified range of returns-oriented and tangible real assets. The central investment principles are capital protection and the long-term preservation of the real purchasing power of its shareholders.
- A stake in the company can be acquired through (a) traditional shares listed on the BX Swiss stock exchange ("A" bearer shares) and held in a traditional bank custody account, or (b) digital fund share tokens. The share tokens are so-called "ledger-based securities" as defined in Article 973d of the Swiss Code of Obligations. They represent "B" shares with the same rights as traditional "A" shares.
- The tokens are ERC-20 tokens issued on the Ethereum blockchain under the smart contract 0x553C7f9C780316FC1D34b8e14ac2465Ab22a090B[1], named "RealUnit Shares." The share tokens can be acquired via the Aktionariat Brokerbot service or on the TDX organized trading facility operated by Taurus. The tokens are freely transferable, but a purchaser must identify themselves with the issuer to benefit from the economic and social rights attached to those tokens.

#### 7.2.3 Others private equity and alternative funds

You can find more statistics and information about such funds at https://app.rwa.xyz/institutional\_funds.

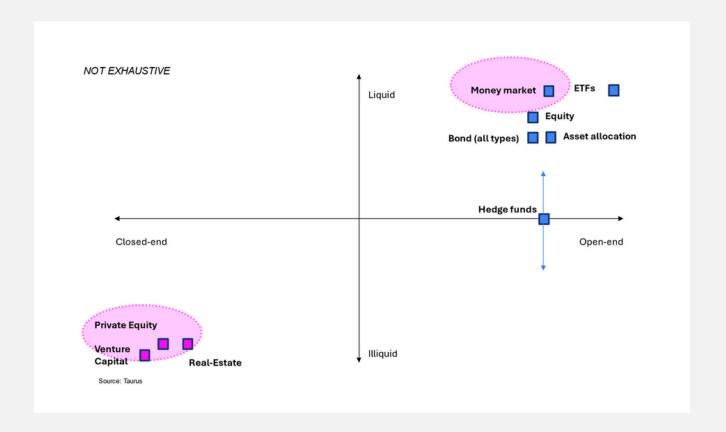


### VIII. Conclusion

Fund tokenization is a high-potential area of application for tokenization that could represent up to a \$1 trillion market opportunity by 2030.

In the case of fund tokenization, shares/units of a mutual fund are represented by native or twin digital tokens, the former being the most efficient as it avoids maintaining two clones. The fund management company (ManCo), the transfer agent (TA), and/or a third-party tokenization agent oversee the subscriptions/redemptions and administration of the lifecycle of such tokens. The tokenization process is clear and has been tested numerous times in various jurisdictions. Key steps are: (1) stakeholders' alignment, (2) legal analysis and preparation, (3) preparation, and (4) tokenization.

- Fund tokenization means that fund shares are represented in electronic format and recorded on a distributed ledger system running 24/7. As a result, transfers, settlement, and clearing can occur at any time, worldwide, with lower costs, higher speed, and greater transparency. In addition, smart contracts enable the automation of many administrative tasks, particularly transfer agency tasks (e.g., via a Digital Transfer Agent smart contract). Streamlining fund operations through smart contract-based automation reduces operational costs and errors in fund management and enhances transparency and real-time processing. Other important benefits are: (1) liquidity (secondary market and fractionalization), (2) collateral mobility, (3) financial inclusion, and (4) higher returns and reduced costs.
- Taurus believes that, at the time of writing, the most relevant fund structures to tokenize are on opposite ends of the liquidity spectrum, for different reasons.
  - On the liquid side, money market funds could unlock new use cases in collateral management (same-day repo) and serve as a credible alternative to cash by allowing transfers between counterparties within minutes instead of days.
  - On the illiquid side, tokenization could introduce digital secondary markets and trading capabilities for private asset-type funds—features that do not exist today. Currently, if an investor needs to sell their stake in a private equity fund with a lock-up period of several years, their bank or asset manager must find a matching buyer through a manual process that can take weeks and relies primarily on emails and paper-based transactions.



In conclusion, the asset management industry now has the necessary building blocks to launch solid, professional, and compliant fund tokenization projects: (1) institutional-grade technology solutions, (2) a clear regulatory framework in most important jurisdictions, (3) regulated trading venues such as TDX, and (4) mega custodians entering the space.

The speed of future growth will mainly be driven by standardization, collaboration, and the willingness of asset managers and their custodians/fund admins to enter the industry and create a true "network effect." Critical to this is the availability of tokenized cash in all major currencies (see our paper <u>Tokenization: practitioner point of view</u>).

### Annex 1: Checklist for fund tokenization

### **TAURUS**

### **SIGN OFF**

- Alignment among all stakeholders: Management Company (ManCo), Transfer agent (TA), and/or asset manager/fund promoter to tokenize the fund
- ✓ Visa/approval from the regulator (if applicable)
- ✓ Formal sign-off from the Board+ManCo of the fund

### **LEGAL DOCUMENTATION**

To be discussed with the fund legal advisor/ManCo

- Confirmation of the possibility to tokenize fund shares/units according to local law
- Articles of association allowing for tokenized shares/units (if applicable)
- Revised prospectus/PPM/fund contract reflecting tokenized shares/units
- Revised KID/KIID or equivalent (if applicable)
- Legal advice confirming the possibility to admit for trading the fund shares/units on a trading facility (if secondary listing)

### **TOKENIZATION**

- ✓ Is the ManCo or TA adequately equipped to act as Tokenization Agent or do you need to appoint a third-party specialized tokenization agent?
- Parameters for the configuration of the smart contract representing the digital token
  - Distributed ledger
  - Audited smart contract
  - Technology solution to deploy the smart contract and keep safe the private key controlling the administration of the smart contract (Taurus-PROTECT+Taurus-CAPITAL)
  - On-chain restricted transfers via whitelisting
- Selection and deployment of ad-hoc smart contracts (e.g., whitelisting smart contract, digital transfer agent smart contract)

### KEY CONSIDERATIONS FOR DISTRIBUTION VIA A THIRD-PARTY FINANCIAL INSTITUTION [22]

- Regulatory status and authorization to distribute tokenized fund shares
- Status of the third-party financial institution: agent or principal
- Subscription: document to be collected and signed on the platform from subscribers
- Subscription: signature mechanism (qualified signature, DocuSign or equivalent)
- Subscription: subscription process (quantity, price, cut-offs)

Subscription: settlement currencies Subscription: client segment restrictions-is the classification by the platform equivalent to the classification required by the fund? Subscription: country of residency, nationalities restrictions? ✓ Subscription: minting process-delivery of the token Redemption: redemption process (quantity, price, cut-offs) Redemption: delivery of the tokens for the burning Share register: equivalence of the KYC process applied by the platform ☑ Share register: sanction programs applied by the platform Share register: access to the share register Share register: whitelisting mechanism to add a new address Custody model: tokenized fund shares custody setup (pooled vs. segregated) Restrictions: deposits and withdrawals Reporting: documents to be published on the platform Reporting: NAV publication mechanism Operations: process for the distribution of dividends or the repayment of coupons

### KEY CONSIDERATIONS FOR THE ADMISSION TO TRADING ON A SECONDARY MARKET [23]

Regulatory status and authorization to admit for trading tokenized fund shares ✓ Market schedule: continuous trading vs. auctions Market schedule: floating price different from the NAV (agio/disagio) ✓ Market schedule: supported fiat currencies Documents: document to be collected and signed on the platform by investors Documents: signature mechanism (qualified signature, DocuSign or equivalent) Share register: equivalence of the KYC process applied by the platform Share register: sanction programs applied by the platform Share register: access to the share register Share register: whitelisting mechanism to add a new address Custody model: tokenized fund shares custody setup (pooled vs. segregated) Legal documentation to be signed by the fund with the platform Restrictions: deposits and withdrawals Restrictions: segments-is the classification by the platform equivalent to the classification required by the fund? Restrictions: country of residency, nationalities Reporting: documents to be published on the platform Reporting: NAV publication mechanism

Operations: process for the distribution of dividends or the repayment of coupons

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The above points are indicative and non-exhaustive.

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### CONTACT

contact@taurushq.com https://www.taurushq.com

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