EFAMA

European Fund and Asset Management Association

# TOKENISATION, A BUYSIDE PRACTITIONER'S GUIDE

*June 2025*

## About EFAMA

EFAMA is the voice of the European investment management industry, which manages around EUR 33 trillion of assets on behalf of its clients in Europe and around the world. Its membership consists of 29 national associations, 52 global asset managers, and 24 associate members. We advocate for a regulatory environment that supports our industry's crucial role in steering capital towards investments for a sustainable future and providing long-term value for investors.

Besides fostering a Savings & Investments Union, consumer empowerment and sustainable finance in Europe, we also support open and well-functioning global capital markets and engage with international standard setters and relevant third-country authorities. EFAMA is a primary source of industry statistical data and issues regular publications, including Market Insights and the authoritative EFAMA Fact Book.

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# Executive Summary

The interplay of asset management with DLT-enabled technology is showing a certain degree of maturity in 2025, reflected both in financial regulation and in market developments. National and EU regulatory frameworks are well established, and where reform is envisaged, it is to accommodate greater scale and the accompanying financial risks. The European Central Bank is on a clear path to launch a central bank digital currency. Tokenised bond issuances are growing in size, there is healthy competition with market solutions in DLT-enabled fund custody and distribution, and trading and settlement of tokenised assets. Asset managers are entering the fray with offerings in tokenised MMFs. Digital assets are clearly no longer experimental in nature. As the authors of this report have found, there has been a noticeable shift in the asset management community, with digital assets coming to the fore as critical to a relevant value proposition and future growth.

This report offers industry professionals and policymakers a comprehensive look at the developing market for fund and asset tokenisation. It outlines the practical applications of the technology, the benefits for investors and financial institutions, the potential turning point for widespread adoption, and strategies for fund managers to seize emerging opportunities.

Tokenisation, leveraging distributed ledger technology (DLT), is transforming asset management by enabling secure, transparent, and efficient digital transactions. With a projected market growth of 20% annually, reaching €2 trillion by 2030 (potentially €4 trillion in an accelerated scenario), tokenisation offers significant opportunities for cost reduction, enhanced liquidity, and broader access to assets through fractional ownership and 24/7 trading. However, the pace of adoption hinges on regulatory evolution, interoperability, and the development of cash-on-chain solutions, which are critical to scaling DLT-based products.

In Europe, the regulatory framework for tokenisation is evolving, with national initiatives providing a robust legal environment aligned with the Markets in Crypto-Assets (MiCA) framework and DLT Pilot Regime. In this report, we review the robust regulatory approaches to digital registry, custody, and transfer of DLT funds in the key European markets featured in this report: France, Germany, Ireland, Italy, Luxembourg, and the UK.

The six legal frameworks for regulating the custody, registry, and transfer of digital assets share common goals: enabling tokenisation through DLT, ensuring legal certainty, protecting investors, and fostering innovation. They all leverage blockchain or DLT for secure, transparent registries, align with or anticipate EU regulations, like MiCA and the DLT Pilot Regime, and emphasise robust custody arrangements to safeguard assets. They also prioritise operational resilience, requiring compliance with AML/KYC, risk management, and reconciliation processes, often integrating existing financial frameworks (e.g., UCITS, AIFMD).

Differences arise in implementation and flexibility. France's DEEP system allows partial tokenisation with reversibility planning, emphasizing custodian liability for MiCA crypto-assets. Germany's eWpG distinguishes between central and crypto securities registers, requiring BaFin-licensed registrars and shareholder consent for conversions. Ireland relies on existing fund frameworks, fostering innovation via collaboration between industry, the CBI's Innovation Hub and key stakeholders without specific DLT laws. Italy's FinTech Decree introduces the role of "register managers" , included in a dedicated Consob list, responsible for maintaining registers for digital circulation and offers three models (direct, partial, fully intermediated) for subscriptions/ redemptions of digital fund units. Luxembourg's iterative Blockchain Laws introduce a "Control Agent" and includes unlisted equity securities (such as investment funds units) in the scope, under a substance-over-form principle. The UK, outside the EU, uses a Digital Securities Sandbox for experimentation and has its own operational resilience rules, with the FCA integrating crypto into the FSMA framework.

Collaborative efforts between industry and regulators ensure consumer protection and legal certainty, positioning Europe for further digital asset expansion. However, globally, jurisdictions like Singapore and Switzerland are solidifying early-mover advantages with agile, innovation-friendly regulations, while the U.S.

is poised to leverage its deep capital markets. Europe risks losing its early edge unless it accelerates policy alignment and practical initiatives to match these competitors, as scale becomes paramount.

The strategic risks of inaction are significant. Asset managers relying on legacy systems face threats from agile, tech-driven entrants unencumbered by traditional infrastructure. DLT's operational efficiencies, such as real-time settlement and automated compliance, could widen profitability gaps between early adopters and laggards.

Tokenised funds, particularly money market funds (MMFs), are demonstrating strong market demand for use cases like collateral management, offering near-instantaneous settlement and transparency.

To unlock the potential of tokenisation, policymakers must address regulatory fragmentation and support innovation.

1. We welcome the strong focus in the SIU Action Plan and the subsequent consultation on the deployment of DLT technology in trading and post-trading activities.

2. The DLT Pilot Regime should be amended to increase thresholds on eligible instruments. This will have an immediate positive effect on i) market interest in providing DLT-based trading and settlement platforms and ii) available liquidity on such platforms and enhanced trading volumes in the secondary market

3. In the medium to long term, divergent national rules on digital assets will inhibit growth and reduce cost efficiencies, particularly for fund managers looking to issue tokenised funds cross-border. Greater harmonisation across Member States as to the registry, custody and safe-keeping of digital assets would prevent regulatory arbitrage and help promote scale in DLT-based funds. In this regard, we support the alignment of UCITS and AIFMD requirements on the custody and administration of fund digital assets with requirements on the custody and administration of crypto-assets under MiCA.

4. We anticipate a need for convergence over time between the regulatory framework pertaining to traditional assets (MiFID, EMIR, CSDR) and the DLT Pilot Regime. As DeFi grows, there should be no distinction between the traditional ecosystem and the DLT-based ecosystem, but rather a single, integrated financial ecosystem.

5. CSDR requires that all instruments admitted to trading on a regulated exchange should be registered with a CSD. CSDR should be amended in the long run so as not to limit the trading of tokenised assets only to platforms that are compliant with the DLT Pilot Regime.

6. We remain neutral on the preferred choice for a cash-on-chain solution. A competitive landscape comprising a digital euro, MiCA-regulated stablecoins and CBMTs is the optimal outcome, signaling that Europe is open to innovation and market-led forces.

7. Given the expectation for an improved investment experience both from retail and institutional investors, and the need to enable funds to issue, trade and settle on chain, amendments must be made to allow UCITS funds to invest in and hold MiCA-compliant e-money tokens. In particular, EMTs should be considered as liquid and stable payment instruments under Article 50(1)(f) of the UCITS Directive, as they exhibit characteristics consistent with the prudential requirements applicable to instruments eligible for UCITS portfolios. In fact, EMTs aim to maintain a stable value by referencing the value of an official currency that is periodically verifiable. They guarantee the right to redeem on

demand, at any time and at par value, and their issuance is restricted to authorised credit institutions and electronic money institutions, under the supervision of the competent authorities.

8. An industry-agreed taxonomy for digital assets is critical to standardize definitions, reduce confusion, and ensure interoperability across platforms, fostering expansion, growth, and adoption. The lack of consistent terminology creates regulatory uncertainty and market fragmentation, hindering scalable tokenization. A unified taxonomy would align stakeholders, streamline compliance, and boost investor confidence and stability of digital asset markets.

9. There is scope for regulatory clarification to support the uptake of tokenised MMFs as collateral in derivatives margining and repurchase transactions. Industry and regulators should collaborate to identify potential barriers and promote adoption.

# 1. Competitive landscape

Blockchain has been discussed as a disruptive force in financial services for almost two decades. The concept of blockchain first became prominent with the creation of Bitcoin in 2008. It is now considered a standard for modern digital transactions, providing secure, transparent and decentralised transactions. The OECD has documented the benefits of tokenisation, listing efficiency gains driven by automation and disintermediation, with associated cost and speed enhancements; transparency; fractionalisation; improved liquidity potential and tradability of assets; faster and potentially more efficient clearing and settlement; as well as enabling "always on" transactions not bound by business hours.[1]

The last five years have seen the early adopters of this technology experiment and implement DLT technology in issuance, custody, trading and settlement. As the regulatory framework around DLT matures, and more participants, either on the infrastructure or investor side roll out DLT-based products and solutions, we are, most observers agree, moving out of the pure experimentation phase to something closer to at-scale adoption. A number of studies converge on projected growth of 20% annual growth until 2030[2]. McKinsey expects the industry to reach around 2 trillion EUR by 2030, with asset managers accounting for 400 billion of that figure. In an accelerated scenario, that figure could be doubled; a 4 trillion EUR industry by 2030.[3]

## 1.1 Regulatory Framework in Europe

In recent years, several EU Member States have made impressive strides in enacting national laws and regulations to support the ownership, custody, and transfer of digital assets. These initiatives at national level are helping foster a robust and sophisticated legal framework at European level around digital assets. This is largely the result of industry, regulators and governments working collaboratively to develop a framework that maintains the same level of legal and regulatory certainty and consumer protection as in traditional assets.

For many European Member States, this process began a number of years ago. Within this timeframe, we have already seen various iterations of rules and regulations in a single jurisdiction, a testament to the speed of technology but also of the need for industry and regulators to continuously work alongside each other. This commitment and the experience already gained put Europe on a positive trajectory for further expansion and adoption of digital assets.

## 1.2 The global context

At the same time, Europe faces an urgent imperative to accelerate its efforts on tokenised assets as jurisdictions like Singapore and Switzerland continue to solidify their first-mover advantages in the digital asset landscape. Singapore's tailored stablecoin framework and proactive blockchain projects, such as Project Guardian, alongside Switzerland's pioneering Distributed Ledger Technology (DLT) Act and thriving "Crypto Valley" ecosystem, have also positioned them as global leaders in tokenisation. Both have demonstrated agility in developing clear, innovation-friendly regulations not unlike the EU's Markets in Crypto-Assets (MiCA) framework, which, while comprehensive, only began phased implementation in 2024. This lag has allowed Singapore and Switzerland to attract significant capital, talent, and institutional adoption—advantages that can compound over time—meaning that the EU risks falling behind if it does not expedite its

[1] OECD report
[2] Web study
[3] McKinsey



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tokenisation strategy to match other jurisdictions. Similarly, Hong Kong is actively advancing in this sphere with the Hong Kong Monetary Authority's Project Ensemble Sandbox, launched in August 2024 where the focus thus far has been on tokenised funds and seamless interbank settlement using wholesale central bank digital currency.

Looking ahead, the urgency for the EU intensifies with the United States poised to leverage its natural strengths—deep capital markets, technological innovation, and a robust financial sector—to dominate the tokenised asset space. Recent signals coming from the US point to an ambitious programme including a White House working group on digital assets, two bills in Congress aimed at regulating stablecoin issuers, and an SEC that is now adopting a more lenient stance on crypto exchanges and running a Crypto Task Force to craft a comprehensive regulatory framework for crypto assets. This renewed focus from US authorities combined with an integrated market and a culture of rapid adoption raises expectations of what the US will be able to achieve in the asset tokenisation space in the coming years. The EU will need to prioritise streamlined policies and practical initiatives—beyond what MiCA's and DLT Pilot's are delivering—to foster tokenized asset growth in Europe. Failure to keep pace would mean ceding the early advantage Europe had acquired with DLT Pilot and MiCA, in this next phase where scale is everything.

*"In the race to establish dominance in DLT, we don't want Europe to become a flyover zone between the US and, Middle East and Asia."*

- Peter Kerstens , Advisor, European Commission

### 1.3 Strategic Risks of Inaction

Few observers dispute the benefits of DLT assets, though an exact take-off point and pace at which traditional delivery is replaced along the value chain is still up for discussion. However, few dispute the fact that if asset managers want to maintain their market share they will have to meet client demands for increasingly innovative, efficient, and cost-effective investment solutions. The risk of greenfielders entering this space cannot be excluded: that is the threat of new entrants unencumbered by legacy systems.

Agile technology firms could enter the tokenised asset space, leveraging DLT to offer bespoke, scalable solutions. Traditional asset managers operating on legacy infrastructure risk being overtaken by more nimble competitors. Additionally, the operational efficiencies gained through DLT, such as real-time settlement and automated compliance, could widen the profitability gap between early adopters and laggards.

### 1.4 Enhancing accessibility and Democratising Wealth

One major unlocking factor of the DLT revolution is cash-on-chain. Enabled through digital central bank currencies, stablecoins, CBMTs (commercial bank money tokens) or most likely a combination of all, this evolution allows seamless, instantaneous transactions, allowing retail clients to settle transactions from a personal digital wallet. Given the increasingly tech-savvy demographic in Europe, retail digital wallets represent an important gateway to savings and investment for European consumers. With cash-on-chain

and tokenised assets integrated into digital wallets, retail investors can buy, sell or trade instantly, bypassing traditional intermediaries like clearing houses and custodians.

Similarly, for fund managers invested in digital assets—whether tokenised real-world assets (e.g., real estate, bonds) or cryptocurrencies—cash-on-chain enables seamless on-chain settlement directly from digital wallets, bypassing the need to convert traditional fiat currency to tokenized cash and back again, or rely on intermediaries like clearing houses This integration, supported by digital or crypto custodians, streamlines processes like portfolio rebalancing, cross-border payments, and collateral management, reducing costs and enhancing transparency.

Another use-case in development, with strong relevance for retail investors, is the way in which DLT can enable fractional ownership of alternative assets, such as real estate, private equity, and private debt. Fractionalisation enhances portfolio diversification and democratises access to investment options normally inaccessible to retail investors by reducing lot sizes.

### 1.5 24-hour trading

The trend toward 24-hour trading, already in place with some exchanges, will be further enhanced with tokenisation and digital wallets, offering retail investors greater flexibility and access. In their tokenised form, retail investors will be able to trade 24/7 on decentralised platforms without the limitations of conventional market hours. Combined with digital wallets (or cash-on-chain) investors can directly hold and manage these (real-world) tokenised assets, executing instant, intermediary-free transactions anytime, anywhere. One platform provider announced in May its ability to trade tokenised equities (blue-chip stocks) on a blockchain instantaneously, and across borders.[4] This is already the investment experience that the growing segment of retail investors trading crypto assets has become accustomed to (anytime, anywhere, 24/7 access).

### 1.6 Support the European Commission in its broader policy objectives

Tokenisation is not a panacea for the challenges that the EU is facing in terms of investment needs, developing the pensions sector, low productivity and stagnant capital markets, recently articulated in the March 2025 SIU Action Plan.[5] Many of the tokenisation use-cases described in this paper are still some way off, contingent either on the scaling of DLT assets, the availability of payment options, or both. And yet, tokenisation as a technology has the potential to address many of the challenges we face in Europe. From a policy perspective, it is essential to bridge the initial exploratory work that has already been done with a clear roadmap outlining the remaining tasks at policy and regulatory levels. The rest of the efforts should be left to market participants.

The biggest challenge identified in the SIU paper is on finding ways to '*channel savings to productive investment, providing a wider range of efficient investment and financing opportunities for citizens and businesses respectively*"

The SIU action plan further calls for:

*boosting retail participation in capital markets*

*...successful example [of] savings and investments accounts are [those that are] easy to use and designed with digital interfaces that give access to a wide range of appropriate products*

[4] Kraken Partners with Backed to Launch xStocks on Solana, Bringing Tokenized Equities to the Masses
[5] SIU Action plan, 19 March 2025

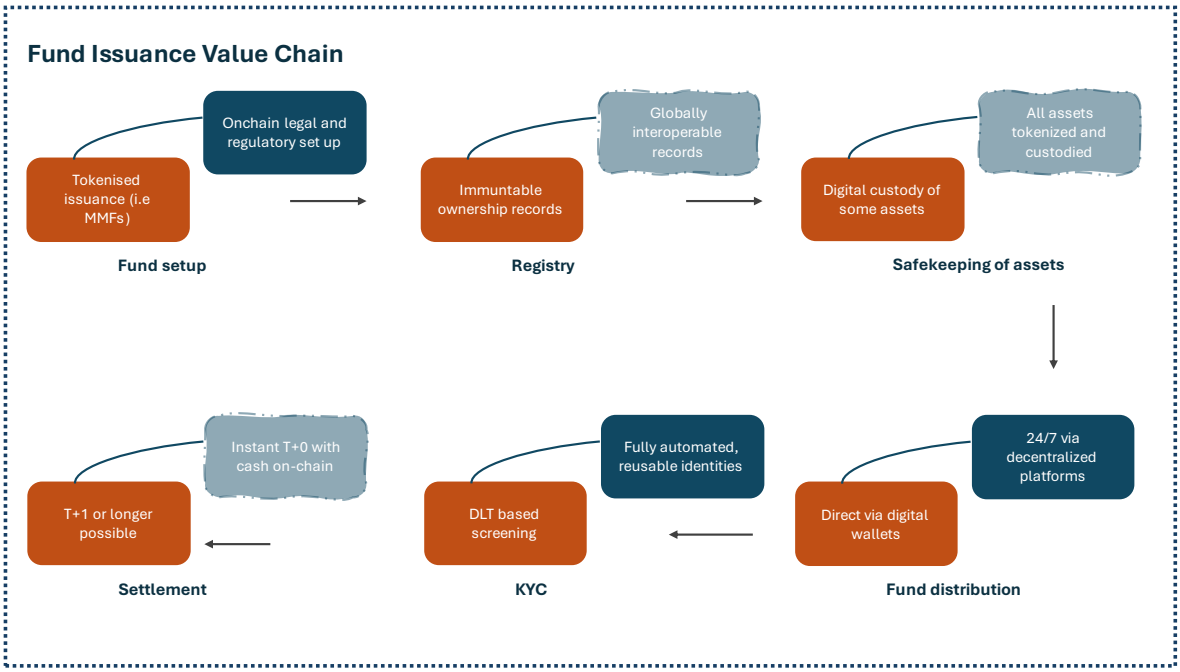
In the context of more integrated trading and post-trading*: modernising the legislative framework to recognise new technologies and financial developments,*

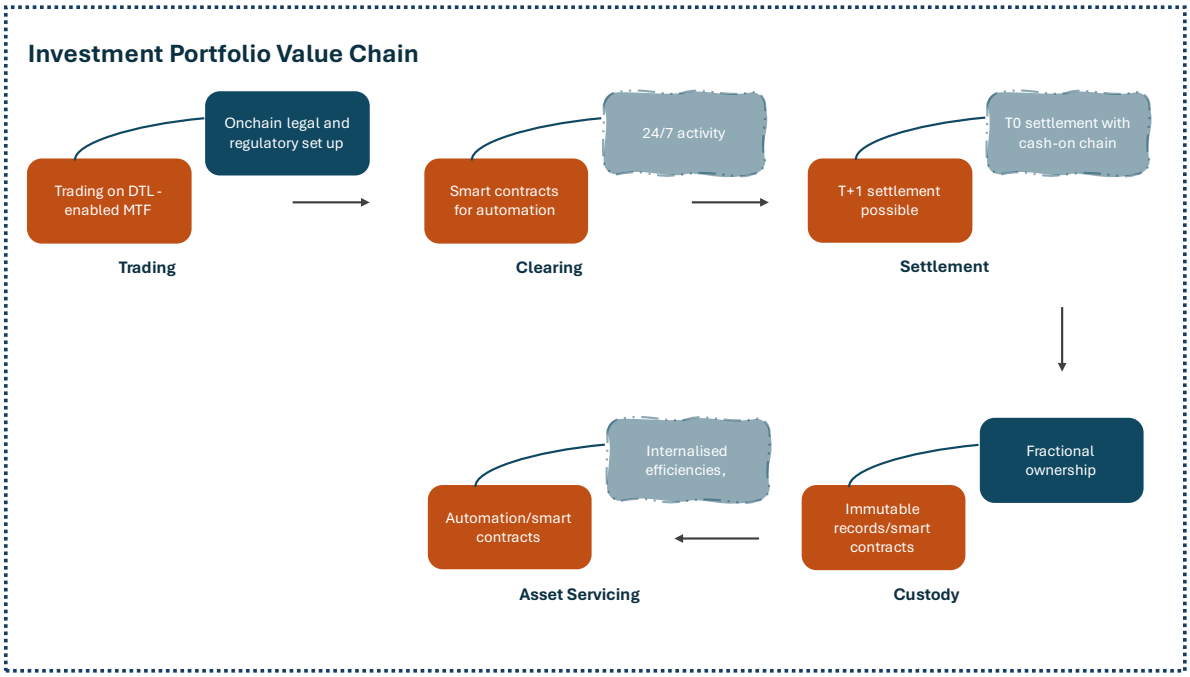
There is broad consensus that DLT technology will deliver:

- Reduced settlement times and operational costs
- Faster access to capital (24-hour trading, round-the-clock access)
- Broader range of assets made available to retail clients, including real estate, private equity and debt, previously out of range of retail.
- Attracting and retaining a new generation of investors who demand transparency, speed and efficiency.

The SIU Action Plan raises the challenge of 'modernising the legislative framework to recognise new technologies'. At the time of writing, the European Commission was considering reviewing the DLT Pilot regime, the applicability of MiCA-regulated assets in the broader financial ecosystem, and determining how, in the longer term, the regulation of traditional finance (MiFID, CSDR) should converge with DLT-specific legislation, such as the DLT Pilot Regime.

# 2. The vision: Buy-side value chain



**Key enablers to accelerate DLT adoption:**

1. Regulatory harmonisation.

a. Across European jurisdictions, different DLT frameworks apply within the broader European financial framework (reflecting national interpretations of DLT-enabled activities under MiFID or MiCA, for instance). A more harmonised approach would prevent regulatory arbitrage, and allow for seamless compliance and market expansion for firms present in multiple EU markets.

b. Global harmonisation encompassing similar approaches to risk management, financial stability and legal requirements is the ultimate goal. Such a harmonised global framework would enable a consistent and predictable framework, which in turn supports innovation and cross-border transactions.

2. Interoperability and standard development.

a. Interoperability allows different DLT systems to communicate and work together seamlessly. This reduces the need for manual reconciliation and the involvement of multiple intermediaries, leading to faster and more cost-effective processes. It also removes technical market access barriers, leading to broader market access and the integration of various digital ecosystems, resulting in deeper liquidity.

3. Cash-on-chain.

a. Tokenised money enables seamless, instantaneous, and fully on-chain settlement of transactions, eliminating the inefficiencies and risks of off-chain payment systems. Without tokenised money, settling trades involving DLT assets often requires bridging to traditional financial systems (i.e via SWIFT or bank transfers). This introduces delays, counterparty risks and additional costs due to intermediaries as the above graphics also show.

4. Secondary markets for trading.

a. A number of firms in Europe are now licensed under the DLT Pilot Regime and able to support secondary trading and settlement of real-world DLT assets. The pace at which these platforms can attract liquidity will be a key determinant in accelerating at-scale DLT adoption in Europe. The availability of standardised protocols for cross-chain compatibility (across different platforms) and access to cash-on-chain will drive investor demand, highlighting the highly interdependent nature of these unlocking factors. Current thresholds on the size of instruments that can be traded on DLT platforms urgently need to be amended also.

*"A switch to digital assets could fundamentally rewire the industry."*

- Meagen Burnett , CFO Schroders

# 3. Tokenised Funds

## 3.1 Business rationale

### The Case for Tokenisation of Fund Shares – Strategic Implications for Asset Managers, Retail Investors, and Market Infrastructure

The tokenisation of fund shares as one key element of the token economy represents a significant evolution in fund distribution and administration. This process involves representing fund shares as digital tokens on a DLT infrastructure, unlocking transformative potential for issuers, investors (institutional and retail alike), and the broader financial market ecosystem.

While the opportunities are numerous - from efficiency gains to broader access - tokenisation also introduces new risks and operational considerations that must be thoughtfully addressed.

### 3.1.1 Business Rationale and Strategic Benefits

#### For Asset Managers (Issuers)

Asset managers stand to gain significantly from tokenisation through:

- Operational efficiency and automation: Smart contracts and distributed ledger technologies reduce manual processes, lower reconciliation errors, and drive down back-office costs.
- Distribution expansion: Digital-native formats enable access to new investor groups - from digital natives to a broader group of retail investors - via direct-to-wallet models or DeFi integration.
- Speed and product agility: Tokenisation enables faster structuring and launch of fund products, including in niche or difficult-to-access products.
- Brand positioning: Being early adopters of tokenised funds signals innovation, enhancing brand value in an increasingly digital financial environment.

Issuers also benefit from digital streamlining of processes like share certification, register management, and subscription handling, significantly lowering operational costs and complexity.

However, these benefits come with non-trivial risks:

- Technology risk: Potential smart contract bugs, cybersecurity vulnerabilities, and dependency on DLT infrastructure require new technical competencies and robust risk frameworks.
- Emerging counterparties: New crypto-native service providers could lack traditional financial credentials, posing compliance and reputational concerns.
- Pressure on incumbents: Existing relationships with traditional custodians and banks - some of whom are slowly entering the digital asset space - may be strained by more agile fintech competitors.

#### For End-Investors

Tokenised fund shares, including tMMFs (tokenized money market funds), offer compelling advantages for both institutional and retail investors:

- Accessibility: Tokenisation enables fractional ownership, reducing entry barriers and opening professionally managed funds to a broader investor base.

- Liquidity and flexibility: Unlike traditional funds bound by cut-off times or banking hours, tokenised shares can be traded 24/7 on digital secondary markets.
- Real-time transparency: DLT ensures tamper-proof, traceable transactions and near real-time portfolio visibility, boosting investor trust.
- Simplification and cost-efficiency: The tokenised model reduces intermediaries, onboarding friction, and administrative costs - particularly relevant for corporate treasuries and digitally native firms.

"Digital natives" - such as Web3 companies or fintechs with regular cash management needs and digital-first preferences - represent a key early adopter group. Many of these firms are cash-rich, yet underserved by traditional financial channels.

### 3.1.2 Market Demand and Infrastructure Readiness

The market is increasingly signalling demand for tokenised fund shares and here specifically tMMFs, not just as investment instruments, but also as collateral assets in a digital-first capital markets environment:

- Collateralisation: Exchanges and lending platforms are exploring the use of tMMFs as eligible collateral. This could unlock new liquidity mechanisms but requires both regulatory clarity and exchange infrastructure readiness.
- Documentation and regulatory fit: Fund documentation and regulatory permissions must evolve to enable collateral usage and digital trading. Regulatory engagement will be critical, especially given the jurisdictional variability in fund regulation.
- Bridging infrastructure: Fiat-to-token conversion, custody frameworks, and identity verification processes must mature further to enable seamless integration with existing investment workflows.

### 3.1.3 Broader Market Impact and Functional Advantages

Tokenised funds enhance overall market functionality in multiple ways:

- Improved access and comparability: More investors can participate with smaller amounts, and real-time data fosters better product benchmarking and selection.
- Instantaneous settlement (T+0): Enables use cases such as intraday liquidity provision and automated cash sweeps.
- Transparency and trust: Immutable transaction records and on-chain auditability align with evolving regulatory and investor expectations.

### Conclusion

Tokenisation of fund shares and MMFs presents a convergence of innovation, efficiency, and market democratisation. It promises:

- For issuers: Lower costs, faster product development, and access to a more diverse investor base.
- For investors: Greater accessibility, transparency, flexibility, and cost savings.
- For markets: Enhanced collateral options, better liquidity, and operational resilience.

Yet, these benefits must be pursued with awareness of technology risks, the need to vet new digital service providers, and the pace at which incumbent financial infrastructure can adapt. As tokenised funds move from proof-of-concept to production, close coordination between asset managers, regulators, exchanges,

and fintech innovators will be essential. Collaboration among the relevant stakeholders of the ecosystem is key.

Tokenisation is not just a technological upgrade - it is a strategic lever that could redefine the structure and accessibility of fund investing for decades to come. It is not about technology for the sake of technology. The key goal is to deliver best-in-class services to end-investors also in the future.

*"Every stock, every bond, every fund, every asset can be tokenised."*

- Larry Fink, Blackrock CEO

## 3.2 In the spotlight: Legal framework for primary market issuance

### FRANCE

France has established a progressive regulatory framework to support the tokenisation of investment fund shares/units and the management of portfolios with tokenised assets, aligning with its ambition to be a leader in digital finance within Europe. Governed by the Monetary and Financial Code (CMF) and overseen by the Autorité des Marchés Financiers (AMF), the framework leverages shared electronic recording systems (DEEP), typically blockchain-based, to issue and manage tokenised financial securities. Below we outline the key legal and operational aspects of fund tokenisation in France, highlighting its flexibility, custodian responsibilities, and operational challenges.

#### Issuance of Tokenised Fund Shares/Units

Under Article L. 211-7 of the CMF, financial securities, including fund shares/units, can be registered in a DEEP for issuance in registered form. Management companies have the autonomy to decide whether to tokenise all or part of a fund's shares/units, with no impact on the fund's activity program. The prospectus must specify the account keeper for DEEP-registered shares, which may be the issuer or a delegated agent. When delegating to a regulated service provider operating a DEEP, management companies must comply with existing regulations on outsourcing essential services. This flexibility allows seamless integration of tokenisation into existing fund structures, such as UCITS or alternative investment funds.

For funds with partial tokenisation (i.e alongside bearer shares in Euroclear), management companies must aggregate data on total shares in circulation or mandate the fund's custodian to track DEEP-issued shares. This ensures accurate reconciliation across multiple distribution channels, a critical operational requirement for hybrid funds.

#### Reversibility and Operational Continuity

A key consideration in France's framework is reversibility, addressing scenarios where a management company switches service providers, resumes direct management, or reverts to traditional bearer share systems ("detokenisation"). Management companies must analyse data recovery from DEEP transactions at the fund's inception, ideally formalising reversibility in a tripartite Service Level Agreement (SLA) with the custodian and DEEP provider. This proactive approach mitigates operational risks and ensures continuity, distinguishing France's framework for its emphasis on robust exit strategies.

### Management of Portfolios with Tokenised Assets

Managing portfolios partially or wholly invested in tokenised assets, including financial instruments or crypto-assets under the Markets in Crypto-Assets (MiCA) regulation, requires an AMF approval extension. This is particularly stringent for MiCA-defined crypto-assets (e.g., e-money tokens, utility tokens, asset-referenced tokens) due to their novel ecosystem. Management companies must demonstrate compliance with updated risk and operational frameworks.

### Custodian Responsibilities

The fund custodian plays a pivotal role, safeguarding tokenised financial instruments and MiCA crypto-assets. For assets recorded externally (e.g., on a blockchain), custodians reconcile positions with ownership data provided by the management company, without an obligation to return such assets. However, only MiCA-licensed custodians can provide custody for crypto-assets, bearing liability for losses due to their actions. Custodians typically require a specific agreement for tokenised asset custody, ensuring blockchain compatibility and secure wallet management (one wallet per portfolio per blockchain).

### Operational Challenges

1. Due Diligence: Investments in tokenised assets necessitate thorough due diligence on the token's smart contract (e.g., security risks, transfer restrictions), the counterparty (issuer or OTC investor), and trading platforms. The absence of standardised messaging for trading and settlement complicates operations.
2. Cash Settlement: Most tokenised asset transactions settle off-chain, requiring reconciliation of disconnected securities and cash movements. On-chain settlements using MiCA-regulated electronic money tokens (EMTs) are possible but face restrictions, as UCITS funds in France cannot yet hold EMTs.
3. Gas Fees: Interacting with blockchain-based tokens incurs gas fees (paid in native tokens like Ethereum). Management companies may use fiat-billing payment providers and set gas fee caps to manage costs, which can vary significantly.

France's regulatory framework for fund tokenisation is comprehensive, balancing innovation with operational rigor. The use of DEEP for share issuance, coupled with clear custodian responsibilities and reversibility planning, fosters flexibility and resilience. However, challenges like non-standardised messaging, off-chain settlement complexities, and gas fee management highlight areas for further development. As France aligns with MiCA and refines its operational standards, it positions itself as a forward-thinking jurisdiction for tokenised fund innovation in Europe.

## GERMANY

The Electronic Securities Act (*Gesetz über elektronische Wertpapiere* - eWpG), which came into force in 2021, is a central component of the legal framework for the issuance of tokenised assets in Germany. It was introduced to promote the digitisation of the securities market and establish the legal foundations for electronic securities. Key aspects of the eWpG are:

- Digitisation of the Securities Market: The eWpG enables the issuance of securities in electronic form by registration in a securities register, eliminating the need for physical paper certificates.
- Legal certainty with regard to property law: The eWpg stipulates that electronic securities are treated as tangible assets, allowing investors to enjoy the same property protection as with security certificates.

- Electronic securities registers: The eWpG distinguishes between two forms of electronic securities registers: central registers managed by a central securities depository (CSD) and decentralised so-called crypto securities registers. Investor protection, market integrity, transparency, and the functional protection of capital markets for securities issued via blockchain are specifically addressed by requiring that the registrar of a crypto securities register is subject to financial market supervision, meaning that the registrar must apply for a BaFin license.
- Bonds, fund shares and equity: Initially, the eWpG enabled the electronic issuance of bonds and central registered fund shares, while the electronic issuance of fund shares via crypto securities registers was only opened through the accompanying Ordinance on Crypto Fund Shares (*Kryptofondsanteileverordnung)* in 2022. Since the end of 2023, equities can also be issued as electronic shares.

The Ordinance on Crypto Fund Shares specifie13s the requirements of the eWpG to the effect that a crypto securities register for fund shares may only be maintained by the depositary or a company commissioned by it and approved by BaFin. There is considerable flexibility in the issuance of crypto fund shares, as either all shares of a fund, only shares of certain share classes, or even individual shares can be issued as crypto fund shares. The replacement of traditional paper-based global certificates at the CSD with electronic shares registered in a central register is possible if this is already provided for in the terms of issue. Conversion into crypto fund shares, on the other hand, is operationally and legally more complex, as this requires the consent of all shareholders, which represents a considerable hurdle for retails funds with a large number of investors.

German asset managers participated in a number of projects, where they issued crypto fund shares of both a special fund (Spezialfonds - designated for institutional investors) and a UCITS. The latter shares were then acquired by another UCITS as target fund shares in order to assess not only the issuance but also the depositary side.

## IRELAND

With an extensive and strong track record as a domicile for regulated investment products, provision of fund services and administration, Ireland is well positioned for providing regulated access to digital assets and facilitating a form of fund tokenisation. This is made possible by a number of factors including (a) an established legal framework in respect of Irish regulated funds developed pursuant to the UCITS Directive and AIFMD, (b) positive engagement by the Central Bank of Ireland (the "CBI") with industry, particularly in the areas of innovation, including fund tokenisation and (c) Irish Funds, Ireland's investment funds industry representative body, providing a forum for industry collaboration with both the CBI and government departments, and provision of educational information to industry, on the topic of tokenisation, among others.

Since 2018, the CBI has established the Innovation Hub which has been open to all firms innovating in financial services, enabling them to engage with the CBI on an informal basis. The Innovation Hub supports responsible innovation by engaging with eligible innovators and providing informal assistance on matters such as:

- Requirements under the financial services regulatory frameworks (if applicable);
- How the CBI authorises and supervises under these frameworks (e.g. how to obtain a licence);
- Potential regulatory issues that should be considered; and
- Referrals to other business teams within the CBI where appropriate.

As outlined above, the Innovation Hub helps those firms engaging with the CBI to get a better understanding of the financial regulatory framework and its demands. These engagements come from a wide range of firms in the innovation ecosystem, from firms – large and small - that are already within the regulator perimeter to firms innovating outside the regulatory perimeter. Thus, the CBI's approach to innovation demonstrates a welcoming environment for firms interested in using new technologies such as distributed ledger technology ("DLT") for fund tokenisation.

Further, the CBI has over the course of the last year communicated publicly via speeches at industry events the benefits that it considers tokenisation can offer to the regulated investment fund infrastructure and investors. More recently, the CBI highlighted in its Regulatory & Supervisory Outlook Report for 2025 that fund tokenisation is one of the CBI's key regulatory initiatives. As part of this, the CBI has confirmed that it intends to publish a Discussion Paper on the potential application of tokenisation within investment funds.

Furthermore, the CBI in 2021 published a Q&A for both the UCITS and AIFMD frameworks regarding digital assets. As part of this, the CBI clarified the scope of investment for both UCITS and AIFs in digital assets. In particular, the Q&As did not appear to prohibit the holding by a UCITS or an AIF of tokenised traditional assets (whose value is linked to an underlying traditional asset or a pool of traditional assets (such as financial instruments or commodities). As a result, this has provided the possibility for the holding of shares in tokenised funds by Irish UCITS and AIFs. Similarly, on 23 March 2023 an amendment to the Irish MiFID Regulations became effective which revised the definition of a "financial instrument" to include any "financial instrument" listed in Schedule 1 to the Irish MiFID Regulations which is issued by means of DLT. This also helped pave the way for Irish funds to potentially invest in tokenised financial instruments subject to applicable product rules.

In light of the above, asset managers have been able to implement a form of fund tokenisation within their Irish funds under the existing legal landscape.

On a wider scale, the Funds Sector 2030 Report (the "FSR") issued by the Department of Finance in October 2024 highlighted that technologies have the potential to transform the funds and asset management sector in Ireland in the next few years. In particular it was noted in the FSR that tokenisation could enable significant benefits in money market funds and related activities. In light of this, the Department of Finance in the FSR encouraged continued engagement between themselves, the CBI and industry in Ireland. The FSR also acknowledged the pioneering efforts of BlackRock and Fidelity in the tokenisation of their Irish domiciled money market funds for the use of collateral. The report highlights these initiatives as significant advancements in integrating blockchain technology with traditional financial services. BlackRock and Fidelity's tokenisation projects are seen as pivotal in enhancing efficiency, transparency, and accessibility in the financial sector, aligning with Ireland's broader strategy to lead in financial innovation and digital asset management.

The Ireland for Finance Action Plan published by the Department of Finance in 2025 highlighted that DLT adoption is expected to impact multiple areas of financial services from market infrastructure to fund management, through to service delivery. Tokenisation is recognised as an important step at the forefront of this evolution. The Department of Finance reiterated that the increasing use of technology for service delivery is a trend that is likely to continue, and DLT forms an important part of this cornerstone transformation. The Department of Finance acknowledged that Ireland wants to be a leader in this technology which can help support global investing leveraging its established reputation for trust, capability and openness to innovation.

Markets in Crypto-Assets Regulation ("MiCA") primarily applies to crypto-assets not covered by existing financial services legislation. Therefore, although not directly impacting the topic of fund tokenisation, it is worth noting that significant developments have occurred in the regulatory landscape for digital assets in Ireland with the implementation of MiCA. MiCA, which became applicable to issuers of Asset-Referenced

Tokens (“ARTs”) and E-Money Tokens (“EMTs”) on 30 June 2024, and to Crypto-Asset Service Providers (“CASPs”) on 30 December 2024, introduces a comprehensive regulatory framework for crypto-assets. The CBI has been designated as the national competent authority for overseeing the authorisation and supervision of CASPs. This new framework aims to protect consumers and investors while mitigating risks to financial stability. The Department of Finance has also been actively involved in supporting the integration of this framework, highlighting the importance of continued collaboration between the CBI, industry, and government to foster innovation and maintain Ireland's position as a leader in financial services.

These publications from the Department of Finance demonstrate support on a national level for the use of technologies such as DLT and fund tokenisation, which together with the CBI and Irish Funds, helps foster the continued development of a legal environment supportive of DLT and fund tokenisation.

## ITALY

In May 2023, Italy adopted the "FinTech Decree" (Legislative Decree No. 25/2023), which introduces a new regime for the form and circulation of certain financial instruments in digital form.

The FinTech Decree constitutes, on the one hand, the national implementation of Regulation (EU) 858/2022, which established a pilot regime for DLT market infrastructures ("DLT Pilot Regime"), and, on the other hand, also applies to situations not included in the scope of the DLT Pilot Regime.

In particular, the FinTech Decree allows the issuance and circulation in digital form of shares and units of any investment fund not admitted to trading on a stock exchange. In this case, national legislation has introduced the requirement to use a register for digital circulation, maintained by a "register manager" entered on a special list maintained by Consob.

In December 2023, Consob adopted the Implementing Regulation on the issue and circulation of financial instruments in digital form, as required by the FinTech Decree (Resolution no. 22923/2023). The Regulation: (i) defines the principles and criteria for the establishment and maintenance of the list of persons responsible for the register and the related forms of publicity; (ii) regulates the submission of the application for registration as a person responsible for the register and the procedure for inclusion in the list, specifying possible grounds for suspension and requiring an illustrative technical report including a risk analysis; and (iii) regulates the activity of the person responsible for the register by defining the minimum content of information on the operating methods of the register.

The FinTech Decree and Consob Regulation have played a significant role, particularly in identifying operational models for digital register-keeping as well as for the subscription and redemption processes of tokenized funds:

1. Digital register keeping

(i) the asset manager, after registration in section 2 of the Consob list, may issue units or shares of its own UCITS or AIF funds on a register maintained by the asset manager itself, also by using third parties (outsourcers) to perform services or activities;

(ii) the asset manager may issue units or shares of a fund on a register maintained by a third-party intermediary registered in section 1 of the Consob List (for example: the depositary or the distributor) or by a specialized entity registered in section 4 of the Consob List (a non-broker entity, however authorized).

2. Subscriptions and Redemptions of tokenised funds

(i) entries in the register will be made in favor of the investor of the Italian DLT Fund Shares; the investor will be the holder of the wallet and will directly control the means of access to the digital Shares, also in the form of private cryptographic keys (the so-called direct or disintermediated model);

(ii) entries in the register are made in favor of the investor of the units of the Italian DLT Fund; the investor is the holder of the wallet, but the means of access to the digital units, also in the form of private cryptographic keys, are entrusted by the investor to the Distributor acting on behalf of the investor (the so-called partial intermediated model);

(iii) entries in the register are made in favor of the bank or investment firm that, in its own name and on behalf of the investor, manages the units of the Italian DLT Fund; the latter (bank or investment firm) is the holder of the wallet on behalf of the investor and controls the means of access to the digital units, also in the form of private cryptographic keys. In this case, the full and exclusive legitimation for the exercise of rights follows the registration on the account opened by the investor at the bank or investment firm (so-called fully intermediated model).

In May 2024, based on this national framework, Assogestioni published the "Guidelines for Italian Digital Funds", which aim to provide a reference point for the establishment of common standards in the digitalisation process of the asset management industry, with reference to: tokenisation of fund shares through digital native issuance and investment in digital assets by funds.[6] The guidelines have been defined through a continuous dialogue and exchange with the Milan Hub, the innovation Centre created by the Bank of Italy, and represent an important pillar in the digital transformation path of asset management industry operators in Italy.

In September 2024, the Italian government adopted Legislative Decree No. 129/2024, which aims to adapt the national framework to the MiCA regulation. This decree could be relevant for Italian asset managers providing the "equivalent" services to MiFID investment services for which they are authorised (receiving and transmitting orders for crypto-asset on behalf of clients, providing advice on crypto-asset and managing crypto-asset portfolios). 1.The Legislative Decree No. 129/2024 designates Consob and the Bank of Italy as the competent national authorities to carry out the functions set out in the MiCA Regulation; 2. It exercises the legislative options granted by MiCA with regard to (i) the public disclosure of privileged information; (ii) the introduction of administrative and criminal sanctions; (iii) transitional measures; 3. and it sets out provisions aimed at modifying, integrating and coordinating certain national regulations.

### LUXEMBOURG

The Luxembourg legislator has been keen to encourage the development of projects under the DLT Pilot Regime locally. For this, they have transposed the EU text into Luxembourg bills of law starting in 2019.

- The Blockchain Law I of 1 March 2019 introduced the possibility to hold securities accounts and transfer securities using DLT.
- The Blockchain II Law of 22 January 2021 recognised the ability to use new securitised electronic systems, like the DLT, in the context of the issuance of listed and unlisted dematerialised securities. This Law also extended the scope of entities able to act as central account keepers by defining the set of technical and operational requirements to operate such activities.
- The Blockchain III Law of 15 March 2023 introduced ad hoc changes, clarifying the definition of financial instruments, under the preponderance of substance over form. It also amended the Financial Collateral Law, allowing financial instruments registered in securities accounts held through distributed ledger technology (DLT) to fall within this scope. In short, through the Blockchain Law III, the Luxembourg legislator allowed relevant financial players to use the DLT on the financial market and as collateral.

[6] assogestioni_italiandigitalfunds_guidelines_may2024_eng_0.pdf

- On December 19, 2024, Luxembourg Parliament adopted Blockchain IV Law, expanding the country's pioneering legal framework to support the development of digital securities and tokenisation. This new legislation confirms Luxembourg's intention to facilitate the use of DLT technology, particularly in the domain of dematerialised securities issuance, while ensuring legal certainty, flexibility and transparency for issuers and investors. The scope of Blockchain Law IV includes unlisted equity securities, including investment funds units, to use the DLT for the issuance, holding and transfer of those shares. It also introduces a new actor, the "Control Agent", to serve as an alternative to the role of Central Account Keeper.

The Luxembourg Regulator, the Commission de Surveillance du Secteur Financier (the CSSF), is well equipped in terms of skills and profiles, to review the financial market participant applications for tokenised funds initiatives. The CSSF published a guide, *the* DLT Whitepaper, considered by the market a very practical and useful starting point for any tokenisation initiative.[7] This practical guide outlines all the risks that need to be considered and the specific governance measures to be implemented.

In term of practical guidance, and with regards to tokenised fund shares, the Luxembourg CSSF, in their various discussion with the Association of the Luxembourg Fund Industry (ALFI), reminds the industry that, in consideration with tokenised units of UCITS funds, funds' initiators should design their prospectus in light of the *substance over form* principle: the investment product remains the same, only the technology for distribution is changing. Therefore, most of the risks remain similar to those of a UCITS fund distributed through traditional channels. In particular, the rights associated with the fund shares to investors remain unchanged, and the market risk associated with the investment in the fund remains the same. The CSSF reiterates that the writing of the prospectus should focus on using clear, concise and unambiguous language. Under section 4.4 below, we examine some of the specific risks and operational considerations associated with distribution over the DLT.

### UNITED KINGDOM

The UK has been proactive in establishing a legal and regulatory framework for the issuance of tokenised funds and assets, leveraging DLT to enhance efficiency and transparency in financial markets. The framework encompasses various aspects, including DLT functions, registry and custody, crypto-asset activities, and operational resilience.

The Financial Conduct Authority (FCA) has recently published a five-year strategy to 2030, setting out key priorities including an intention to support growth and innovation, specifically calling out tokenisation in asset management as a key area. The Investment Association has been instrumental in supporting firms through this innovative area, via its IF3 Lab, a facilitation environment for firms to experiment in the concept of the third iteration of the investment fund fit for the Web 3.0 world.

DLT custody functions in the UK are regulated under national law, ensuring that digital assets are securely managed and administered. The FCA is midway through its crypto roadmap, seeking to incorporate it within the existing financial services activities regime.

The Property (Digital Assets etc) Bill, which is expected to be enacted soon, will further clarify the legal status of digital assets and the responsibilities of custodians by providing certainty on the ownership and transfer of digital assets, including tokenised fund units/shares/tokens, recognising them as personal property under English & Welsh law. The Scottish government is running a separate initiative which will help those funds operating under Scots law.

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[7] DLT_WP.pdf

The Digital Securities Sandbox (DSS) is another key component of the UK's regulatory framework. The DSS, which opened for applications in late 2024, allows firms to test innovative financial products and services, including tokenised securities and funds, in a controlled environment. This sandbox provides regulatory flexibility and support for firms experimenting with DLT-based solutions, fostering innovation while ensuring compliance with existing regulations. HM government also intends to progress the DIGIT pilot, a UK sovereign debt instrument that will run via the DSS and experiment with the use of digital ledger technology (DLT) in the government debt issuance process.

The FCA has been supporting the industry on tokenised funds for a number of years and confirmed a model for utilising DLT in fund registries in 2023. It is expected to build on this with a consultation on guidance later this year. Baillie Gifford received FCA authorisation for and launched the first tokenised UK OEIC earlier this year. A number of other UK managers now offered tokenised versions of money market funds or other liquidity products domiciled across the EU with UK distribution permissions.

As a non-EU country, the UK is not subject to the EU's Digital Operational Resilience Act (DORA). However, the UK has established its own operational resilience framework through the FCA. The FCA's operational resilience rules, published in March 2021 and coming into effect in a staged process since then, apply to various types of financial institutions, including investment firms but also banks and insurers. These rules require firms to identify and manage risks to their operational resilience, ensuring they can continue to provide critical services during disruptions.

The UK has recently introduced a regime for critical third parties (CTPs) to the financial sector. The FCA, in collaboration with the Prudential Regulation Authority (PRA) and the Bank of England, has outlined requirements for CTPs, including cloud service providers, to ensure their services are resilient and do not pose systemic risks to the financial sector. The confirmation of the first designated CTPs is expected to be announced later in 2025.. This regime includes measures for incident management, communication with regulators, and oversight of third-party providers.

## 3.3 Risk factors

### Risk Framework for Tokenised Fund Shares

This risk overview unifies regulatory taxonomy with operational and technological dimensions relevant to tokenized fund issuance, custody, and disclosure. It could serve both as a guide for prospectus drafting and risk governance for fund managers, custodians, and investors.

### 1. Issuer-Specific Risks

Inexperienced issuers may lack resilience or operational capacity in digital asset markets. Failures in governance or internal controls, particularly in areas such as technology partnerships or token issuance, may result in investor losses or reputational damage. It is essential to align DLT governance with traditional asset management practices and prevent reputational damage from smart contract or custody failures.

### 2. Market-Related Risks

Tokenised fund shares may face thin tradable liquidity in secondary markets. Underlying crypto-assets introduce volatility, and concentrated investor bases may heighten redemption risk. This could result in trading halts or illiquidity, especially during periods of stress. Valuation discrepancies may arise from market fragmentation or oracle issues. (Oracles in DLT trading are third-party services or mechanisms that provide external data, such as price feeds or market information, to smart contracts on a blockchain. They bridge the gap between off-chain data and on-chain systems but introduce risks like inaccuracy, centralization, and security vulnerabilities).

### 3. Technological Risks

Smart contract vulnerabilities: flaws in logic or permission structures can be exploited. Protocol-layer risk like forks, validator attacks, or 51% attacks could affect token integrity. Scalability issues on public chains can delay or inflate transaction costs. Risks could arise from unaudited contracts, oracles manipulated off-chain, and reliance on semi-public DLT infrastructure. Advances in quantum computing technology could undermine the viability of cryptography and compromise the security of DLT networks and wallets holding digital and crypto assets. Token functions must align with fund rules and legal structures, especially where redemptions are automated.

### 4. Operational Risks

Key custody (e.g., private key loss, improper wallet configuration) is mission-critical. Integration failures with fund administrators, CSDs, or custodians may disrupt operations. Therefore robust systems, segregated custody, and internal procedures for private key governance (multi-signature, cold storage, recovery paths) are required.

### 5. Legal and Regulatory Risks

An unclear legal enforceability of token-holder rights across jurisdictions and the unresolved classification of tokens as securities or collective investment units must be addressed. The complexity resulting from regulatory fragmentation (e.g., MiFID II, MiCA, CSDR, UCITS, and various national laws) necessitates that prospectuses clearly outline all applicable regulatory frameworks. Additionally, rights under smart contracts must align with civil law obligations, making fallback clauses essential.

### 6. Counterparty Risks

Risk exposure to custodians, DLT validators, oracles, and infrastructure providers in the tokenised universe could be a concern. Weak due diligence or contractual protections in the DLT value chain could create vulnerabilities. Therefore, asset managers should thoroughly document risk controls and implement stringent provider vetting, particularly for crypto custody and blockchain delegation.

### 7. Compliance Risks

AML/ KYC enforcement is challenged by pseudonymous wallets on public blockchains. On-chain identity frameworks and travel rule implementations remain incomplete or jurisdictionally inconsistent. General Data Protection Regulation (GDPR) conflicts could arise from immutable data (e.g., wallet addresses or transaction metadata). Therefore, funds must implement whitelisting or permissioned layers on-chain for compliant transfers. Token transfers must not enable the bypassing of investor eligibility or risk screening.

### 8. ESG / Environmental Risks

Use of energy-intensive blockchains (e.g.,Proof of Work, PoW like Bitcoin and Ethereum pre-shift to Proof of Stake, PoS) may conflict with ESG mandates. A lack of sustainability disclosures on DLT infrastructure may raise concerns for investors. As a best practice, PoS-based or low-carbon chains could be selected where possible. An alignment with the fund's ESG policies by incorporating assessments of the impact of blockchain technology must be ensured.

### Final Assessment

Issuing tokenised fund shares requires a multidimensional risk management framework. This includes:

- Thorough vetting of smart contracts and custody architecture.
- Full alignment with regulatory expectations on preserving financial market stability and investors' protection.

- Clear prospectus disclosures, ensuring investor protection across all categories.

### 3.4 Operations & Compliance Best Practice:

Under the principle of substance over form, the fund would be available to retail clients as long as it is established under a fund structure that is open to retail investors (e.g. UCITS Funds).

Fund tokenisation is a way to offer investors who are keen to invest via blockchain, a means to diversify their investments from pure crypto and get access, through the same investment channels and via their wallet, to other less volatile investment products such as money market funds.

#### Prospectus update

Prospectus updates for a tokenised funds must, in addition to the standard risk descriptions, include some elements of risk descriptions and mitigation measures, specific to distribution over the DLT, including (but not limited to):

- Blockchain Technology Risk: risks associated with the issuance, redemption, transfer, custody and record keeping of shares maintained and recorded on a blockchain. The interoperability (or lack thereof) of different blockchains can also be a factor in this regard.
- Cybersecurity risk: Cybersecurity incidents, whether intentional or unintentional, can allow unauthorized parties to access Fund assets, Fund or customer data (including private shareholder information), or proprietary information. This may result in data breaches, data corruption, or loss of operational functionality for the Fund, the investment manager, authorized participants, index providers, and listing exchanges, as well as their service providers (which include Fund accountants, custodians, sub-custodians, transfer agents, and financial intermediaries). Additionally, such incidents may hinder Fund investors from purchasing or redeeming shares or receiving distributions. Funds distribution over the distributed ledger technology being highly reliant on technology, could be subject to higher risks of cyber-attacks as compared to funds distributed through traditional channels of distribution.
- Repo-ing (repurchase) tokenised MMF Funds: Some prospectuses may need changing to explicitly allow transfer of shares issued, specifically in the context of repo-ing tokenised MMF units.
    - Prospectus update (repo-ing of tokenised MMFs)
        - Shares in each Sub-Fund will be transferable by instrument in writing in common form or in any other form approved by the Directors and signed by (or, in the case of a transfer by a body corporate, signed on behalf of or sealed by) the transferor. Transferees will be required to complete an Application Form and provide any other documentation reasonably required by the Fund or the Administrator.
        - Key points: transfer requires “in writing” or “form approved by Directors” i.e. language not optimized for a digital environment.
        - Further language requires application form completed by transferee – links to KYC points later in report.
        - Need for addition of language to recognise fiat book of record vs digital (unchain) book of record. In other words, formal recognition that the DLT record can potentially differ from the “fiat” record and that intraday the DLT takes precedence. Also needed are requirements for and details of how the fiat vs. digital books of record are reconciled at end of day (or at specified timepoints during the day).

- Private/public blockchain and digital operational resilience: The asset manager's decision on whether to use a private or public blockchain is fundamental in the design of the operational model for tokenised funds distributions. In short, the following considerations emerge:
- Quantum Computing Risk: On the more speculative end of the scale, some issuers highlight that advances in quantum computing could undermine a tokenised fund's cryptographic security, potentially rendering its source code "flawed or ineffective." There could be risks to transaction security and wallet integrity.

| Risk element | Private blockchain | Public blockchain |
|---|---|---|
| Scalability / performance | Scalability and performance are limited to the level offered by the technology provider | Enhanced scalability and performance because they are more easily accessed. |
| Contractual conditions under DORA | Single and well identified ICT third party provider. Contractual conditions negotiations and third party risk management include DORA compliance | No single identified third party ICT provider, hence no contract.<br><br>ICT operational resilience and respective responsibility needs to be fully supported by the fund manager (in case the fund manager / the custodian be providing the individual wallets to investors). A split of responsibility may be considered, should the (institutional) investor provide their own *wallet* as part of the investment process. |
| Concentration risk monitoring | Monitoring of the nodes should be performed by the private blockchain provider | Needs to be monitored as there may be enhanced concentration on some nodes on instances |
| Business continuity management | BCM and BCP fully designed in collaboration with private blockchain technology provider | BCM may require selecting an alternative blockchain (public or private) and designing a full redundancy of processes. Requires thorough due diligence on back-up blockchain as well as primary blockchain. |

- AML / KYC

  Investment funds distributed over the blockchain are under the same requirements with regard to AML / KYC checks as the investment funds distributed through traditional channels.

Specific service providers emerge and offer AML services, screening and scoring on the blockchain. Such services and functions include, but are not limited to, the audit of smart contracts and the whitelisting of counterparties.

Specific jurisdictions in Europe have implemented different models of funds distribution, hence concentrating the responsibility of AML and KYC controls over specific actors.

For instance, in a "Transfer agent" model, the TA is traditionally responsible for performing AML and KYC checks on investors and KYT checks on transactions. In a sub-distributor model, some of the first levels of controls can be performed by the distributors / sub-distributors, while the TA would be performing a second-level control along with periodic due diligence on the processes of the distributors.

Specific models may emerge from distributing funds over the DLT.

In Luxembourg, for instance, the model under the Blockchain Law, and the Blockchain IV Law in particular, allows for the first-level AML/KYC checks to be performed by the "Central Account Keeper" or the "Control Agent" under the Blockchain IV Law.

- Reconciliations and interoperability

  In a hybrid model (i.e. when the same fund is distributed both via the DLT and via the traditional distribution channels), all outstanding shares and positions need to be maintained in a unique register and reconciled daily. Robust reconciliation mechanisms need to be implemented. To achieve this, either interoperability of legacy systems with the blockchain is required, or at the very least, accessibility/exportability of data to enable reconciliation. Furthermore, the "paper" or traditional shareholder register would need to be recognised as subordinate to the blockchain record of ownership, given that the blockchain will update faster than the "paper" record, especially in the collateral case where ownership can change rapidly.

- Settlement

  Even though fund distribution over the blockchain may allow for immediate and immutable recording of the transactions, investors need to bear in mind that part of the fund value chain processes remain operated in legacy systems and subject to cut-offs. Hence, immediate T+0 settlement is not yet achievable. This is not only a function of the technology in use, but also the fact that the standard settlement cycles for trading securities on venue, in many markets, is no faster than T+1. Settlement T+1 may be achieved for funds distributed over the blockchain, in particular in the case of native tokenised funds, where part of the processes traditionally operated via SWIFT messages are performed automatically on the blockchain. The cash settlement mode, using on-chain cash or FIAT currency, also needs to be considered. The introduction of a digital Euro should facilitate settlements, at least for in-scope investors, going forward.

## 3.5 Products in scope (MMFs, and other examples)

### Tokenisation of Money Market Funds: An Emerging and Transformative Use-Case

The tokenisation of Money Market Funds (MMFs) stands out as a pioneering and rapidly maturing application of distributed ledger technology (DLT) in the financial sector, offering significant benefits to investors, asset managers, and the broader financial ecosystem. By representing MMF units as digital tokens on a blockchain, tokenisation transforms these traditionally stable, short-term investment vehicles into highly liquid, transferable assets that enhance operational efficiency and utility. This section explores the use-cases and benefits, regulatory framework and obstacles, and market developments surrounding tokenised MMFs, underscoring their growing importance and the momentum driving their adoption.

### Use-Case and Benefits

Tokenised MMFs leverage DLT to enable near-instantaneous settlement and transferability, unlocking a range of compelling use-cases and benefits. A primary use case is collateral management, where tokenised MMFs can be swiftly deployed in repo transactions or to meet margin calls in derivatives trades, reducing the need for cash redemptions and mitigating liquidity pressures during market stress. For instance, in a repo transaction, tokenised MMFs can be transferred as collateral against cash within minutes, compared to hours in traditional systems, enhancing efficiency and flexibility. Similarly, in derivatives markets, investors can post tokenised MMFs directly as margin collateral, avoiding the procyclical selling of assets observed during the 2020 "dash for cash" or the 2022 UK gilt market crisis. Additional benefits include operational efficiency through automation and reduced intermediation, fractional ownership that broadens access to smaller investors, and transparency provided by DLT's immutable ledger. According to the Institutional Money Market Funds Association (IMMFA), 50% of surveyed members view collateral management as the primary use case, reflecting its immediate relevance.[8] These advantages position tokenised MMFs for certain growth, benefiting all participants by enhancing liquidity, reducing costs, and improving market resilience.

### Regulatory Framework and Obstacles

The adoption of tokenised MMFs operates within a complex and evolving regulatory landscape that presents both opportunities and challenges. Compliance with existing frameworks, such as the EU's Money Market Fund Regulation (MMFR) or the US's Rule 2a-7, is essential, alongside adherence to securities laws and robust investor protection measures, including clarity on the legal status of tokens as representations of MMF units. Anti-money laundering (AML) and know-your-customer (KYC) requirements must also be integrated, particularly on public DLT platforms, to ensure regulatory compliance. However, significant obstacles remain, including regulatory uncertainty on the EU's Money Market Fund Regulation (MMFR), and the need for CCPs to adjust to accept tokenised units as eligible collateral under EMIR. Our current interpretation is that regulation in theory allows for the use of tokenised MMFs (it does not disallow it); however, MMFs are not widely recognised by exchanges as valid units. There is therefore a need for industry (buyside, sell side, CCPs) to work with governments to address non-regulatory barriers to adoption.

Despite these hurdles, regulators are engaging actively—initiatives like the UK's Digital Securities Sandbox and the FCA's consultation on MMF reforms signal a willingness to adapt frameworks to support tokenisation, particularly for collateral use, supporting a positive outlook for this asset class.

### Market Developments

Tokenised MMFs are transitioning from an early-stage concept to an established use case, driven by growing market acceptance and tangible progress. The IMMFA survey revealed that one-third of members already offer tokenised MMFs, with another third planning to do so within six to twelve months, and an additional 17% within two years—indicating that within two years, 75% of respondents expect to engage with tokenised MMFs. This rapid uptake is mirrored by institutional interest, with asset managers and investors exploring tokenised MMFs to optimise liquidity and collateral efficiency, often within private DLT ecosystems, though some are venturing onto public blockchains. The Investment Association has outlined a blueprint for tokenised funds, including MMFs, while firms like LiCuido are developing interoperable solutions to enhance utility and liquidity. Collaborative efforts like these, between regulators, industry bodies, and technology providers are addressing challenges like standardisation and regulatory recognition, with pilot projects and live implementations proving the concept's viability. This explains why the market for tokenised MMFs is expected to grow rapidly.

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[8] IMFA report

*"Tokenisation of assets and cash empowers the asset management industry to provide best-in-class services to its clients within a DLT-driven financial ecosystem."*

- Christoph Hock, Chair EFAMA Tokenisation Task Force and Head of Tokenisation & Digital Assets Union Investment

### 3.6 Real use-cases

Franklin Templeton, a pioneer in digital assets technology, launched the Luxembourg-domiciled Franklin OnChain U.S. Government Money Fund, a new UCITS SICAV, in March 2025 following receipt of CSSF approval in October 2024. The fund represents the first fully tokenised on-chain fund on a public blockchain using proprietary in-house technology in Europe.

It is currently available to institutional investors via an institutional web portal, enabling institutional investors to access their account 24/7 and view their transaction records in real time.

Shares in the fund are issued exclusively on public blockchains, using Franklin's proprietary blockchain-enabled transfer agency platform, providing investors with the benefits of transparency, security, accuracy, and immediacy made possible by blockchain technology. The fund closely mirrors the approach taken by Franklin Templeton in their groundbreaking U.S. mutual fund – the first fund in the world to be offered to retail investors using a public blockchain as the official record of share ownership.

*Franklin's model for tokenisation*

Franklin's model for tokenisation is a "native" issuance model, meaning that the tokens are issued directly onto the blockchain, and all records relating to the tokens and their issuance, redemption, disposal, and transfer, are recorded solely on the blockchain and are visible to the public 24/7/365 using a blockchain explorer interface. The firm uses an off-chain database to hold sensitive information relating to clients, including KYC/AML information, maintaining client confidentiality whilst supporting transparency of transaction information to investors as well as other market participants, including custodians, intermediaries and regulators. The two sources of information – transaction records and personal identifying information are linked by Franklin's platform to form one complete blockchain-integrated register. This means that the blockchain-integrated register is the sole source of truth of legal ownership – there is no underlying traditional book-entry register used.

The other current mainstream model for tokenisation is a "digital twin" model, where a traditional, off-chain register of shareholders is maintained, and tokens are created in addition to that. In this model, typically, the disposition of the tokens does not represent the legal source of truth for the purposes of the fund register and there is typically a daily reconciliation between the tokens and the underlying register of shareholders, requiring additional layers in the settlement process.

*The choice of public blockchains over private blockchains*

Franklin chose the use of public blockchains for fund tokenisation use cases, subject to a rigorous due diligence process being applied to the chosen blockchains, as well as appropriate controls being built into the tokens themselves to enable a firm to achieve a good control location. Part of Franklin's blockchain assessment process can involve operating validator nodes on a blockchain, enabling Franklin to understand in depth how the chain operates as well as giving Franklin 24/7/365 real time access to the data stored on that blockchain, an important safeguard.

The default blockchain for the Fund is the Stellar public blockchain, although additional blockchains may be made available on a case by case basis, subject to Franklin's prior agreement, and all necessary due diligence and digital resilience requirements being met. Although public blockchains are by nature decentralised, Franklin maintains the necessary degree of control over the tokens via the smart contracts and other technical controls built into the token itself. That degree of control is exercised subject to the regulatory and contractual obligations applicable to a regulated operator of a UCITS fund structure. The controls mirror those available to a traditional registrar and transfer agent, namely, the ability to correct the Fund's register (by clawing back, minting, burning, freezing etc tokens) in the event that correction is warranted; for example, should a court order require register correction, or should an investor lose access to their authentication details, or make an error in a token transfer request. In addition, the tokens can only be held and transferred to investors who have previously passed Franklin's robust onboarding process, ensuring compliance with applicable AML/KYC standards.

Next steps

Franklin is actively working on expanding the functionality of the tokens for clients, including:

• Instant peer-to-peer transfers;

• Intraday yield calculations, a patent-pending method developed by Franklin Templeton enabling the Fund to distribute yield accurately pro rata based on the length of time a token which has been subject to an intraday peer-to-peer transfer has been held by an investor;

• The ability to permit customers to use USDC as an eligible on-and off-ramp asset, meaning that investors can subscribe using USDC and redemptions can be facilitated using USDC, if an investor so wishes; and

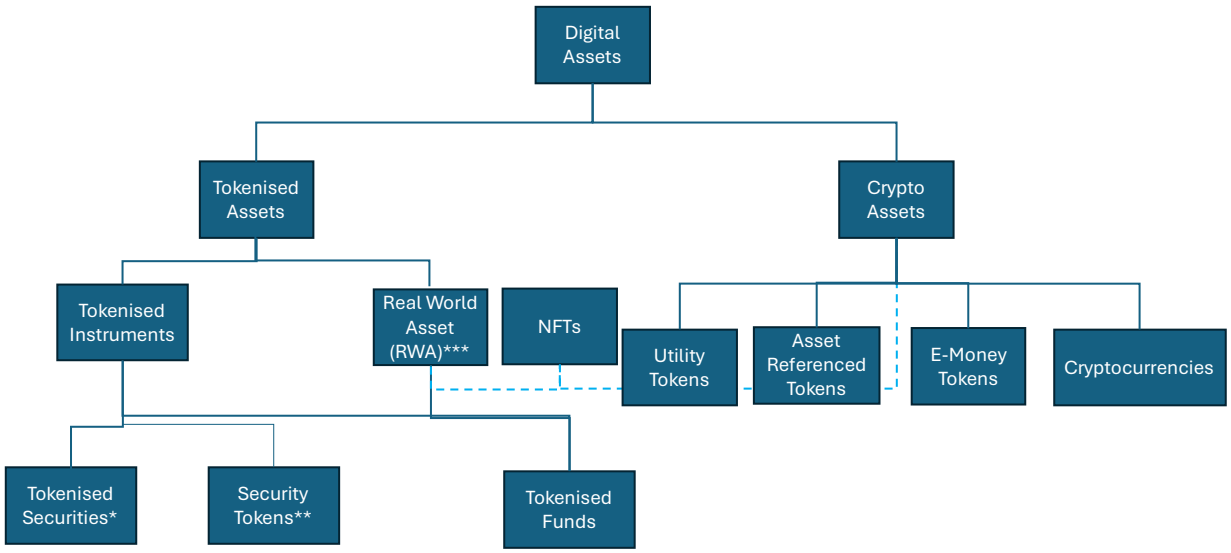
• The ability to permit an investor to 'bring their own' wallet infrastructure to integrate with Franklin's transfer agency platform.

# 4. A Growing Investible Universe

As the range and number of assets available for investment that are either, traditional and brought on-chain, or digital native to the chain continue to expand, we need to establish a basic shared understanding of what we are referring to. The ability to complete investments, enter agreements and establish positions in portfolios will depend on assets being available either through primary issuance or in the secondary market *and* the ability of the buyer to securely trade, hold, value and price such assets through their life cycle events. Hence, categorising the different asset types is beneficial to ensure that all parties refer to the same instrument. Although the difference between tokenized traditional equity and equity issued on a distributed ledger technology (DLT) may be minor, an on-chain native issuance of a utility token has the potential to evolve in functionality and utility over time due to its digital nature. This characteristic is not necessarily fixed (aside from legal definitions), making it a relatively new development in the industry. Hence, to approach this task, it can be helpful to think of this as a "*scale of newness*" starting with traditional asset types which can be brought or launched on-chain and more newly emergent asset types, which have been introduced by the growth of distributed ledger technology. That said, we can attempt to categorize broadly into different groups, recognizing that this does not cover the functionality of tokens that can represent various elements. It is important to try and establish a basic terminology all parties can agree on to help shape a shared understanding as the use of digital assets proliferates. The below represents a non-exhaustive framework of how firms can begin to think about digital asset categorization.

## 4.1 Asset types

### 4.1.a Digital Assets - all tokenised or digitally native assets




**Securities held at a Custodian that have been tokenised (Equities, Bonds, CDs, Fund Wrappers etc.)*
***Securities that have been natively issued on a DLT (incl Bond issuance, equities etc.)*
****Direct Real Estate/Infrastructure/commodities*

## 4.2 Ability of funds to invest in digital assets: Restrictions by fund type

In Europe, the regulatory landscape for digital assets is still evolving, both at the national and EU levels. Whether an investment fund is permitted to invest in a digital asset will depend on the legal framework (UCITS or AIFMD and national rules) and the digital asset in question.

### UCITS Funds

UCITS funds are subject to prescriptive rules on asset eligibility. They may invest only in (i) UCITS-eligible assets under Article 50(1) of UCITSD (being transferable securities and related financial derivatives), and (ii) up to 10% in assets under Article 50(2) of UCITSD (for which the asset must still qualify as a transferable security or money market instrument).

#### (i) Article 50(1) – UCITS eligible assets

UCITS eligible assets include transferable securities, undertakings in collective investments, short-term deposits with regulated credit institutions, money market instruments and derivatives whose underlying is an eligible asset. Article 4(1)(15) of MiFID (as inserted by Article 18 of Regulation (EU) 2022/858) makes it clear that a digital asset can qualify as a financial instrument:

*"financial instrument' means those instruments specified in Section C of Annex I, including such instruments issued by means of distributed ledger technology."*

As such, digital assets that are financial instruments could, if they meet the additional UCITS eligibility criteria, including satisfying liquidity, valuation, risk, and diversification requirements, be eligible investments for UCITS funds. In other words, the form of the asset (digital or otherwise) will not impact its eligibility.

In addition to directly investible digital assets, it may be possible for UCITS funds to gain indirect exposure to digital assets, for example, through an underlying Alternative Investment Fund (AIF) that invests in digital assets or by using derivatives such as exchange-traded products or notes. On the latter, a derivative invested in indices tracking digital assets could conceivably be an eligible asset, provided it also satisfies the requirements of liquidity (Article 50(1)(g) of the UCITS Directive). However, ESMA is still evaluating whether crypto-based derivatives and indices can be deemed UCITS-eligible. Delta-one products may provide indirect exposure, but not all regulators allow this.

Moreover, in order to fall under one of the categories in Article 50(1), the inclusion of the digital asset must comply with the UCITS rules regarding risk and liquidity. Many MiCA crypto-assets exhibit extreme price volatility and liquidity issues, making them ineligible for inclusion in a UCITS on that basis.

#### (ii) Article 50(2) – the 10% ratio

If an asset does not qualify as a financial instrument under MiFID, a UCITS could potentially invest in it provided that it still fulfils the criteria to be a transferable security (ESMA Opinion on Article 50(2)(a) of the UCITS Directive clarifying that assets in the 10% bucket must still qualify as transferable securities). However, many crypto-assets will still not qualify for inclusion due to extreme volatility, liquidity constraints and valuation uncertainty.

### AIFs

AIFs are subject to less stringent rules than UCITS funds, providing them with a greater ability to gain direct and indirect exposure to crypto assets, as long as they comply with the overall risk management requirements set forth by the AIFMD. ESMA in its Q&A number 1027 indicated that:

*"As the AIFMD does not provide for a list of eligible or non-eligible assets, AIFs may in principle invest in any traditional or alternative assets as long as the AIFM can ensure compliance with the AIFMD. However, more specific investment and risk diversification requirements for AIFs investing in crypto-assets as well as limitations regarding the target investors of such AIFs may exist at national level."*

As such, an AIF would in principle not be restricted to investing only in digital assets that qualify as financial instruments under MiFID II, but also digital assets that fall outside the scope of MiFID. However, while AIFs are given more leeway in their investment strategy, they still face challenges bespoke to crypto-assets in terms of liquidity, transparency, diversification and custodianship of crypto-assets.

### European Guidance

At EU level, ESMA has issued guidance to clarify instances where a digital asset can be considered a financial instrument (within the scope of MiFID).[9] ESMA has also been mandated by the European Commission to assess the eligibility of crypto-assets for UCITS funds within its review of the UCITS Eligible Assets Directive (EAD).

The European Banking Authority (EBA) and the European Securities and Markets Authority (ESMA) issued a joint report on recent developments in crypto-assets in January 2025. They indicated that limited data is available to assess fund exposure to crypto-assets, however as of February 2024 it was believed that *"a tiny portion of the EU fund universe (0.02%) with a combined net asset value of a few billion euros only (between EUR 2bn and EUR 4bn dependent on the source)".*

### National Regulations on Investment Requirements and Diversification

National regulators in Europe have started to shape their own regulations around crypto and tokenized assets.

- In Ireland, the Central Bank of Ireland, in its November 2024 Q&A for UCITS funds, has recognised a distinction between digital assets that are tokenised traditional assets (whose value is linked to an underlying traditional asset or a pool of traditional assets, such as financial instruments or commodities) and digital assets which are based on an intangible or non-traditional underlying. Regarding the latter, the CBI states it is highly unlikely to approve direct or indirect exposure by a UCITS in light of their potential for significant risk (liquidity, credit, market, operational, etc.).
- In Luxembourg, the CSSF, in its 2024 FAQ on Virtual Assets, states that UCITS are not allowed to invest directly or indirectly in virtual assets, though this prohibition does not apply to digital assets fulfilling the definition of financial instruments and such digital assets could potentially fall within the scope of eligible assets for UCITS. The CSSF notes that it permits AIFs to invest directly or indirectly in virtual assets, provided they are marketed exclusively to well-informed investors.
- In Germany, BaFin's FAQ notes that UCITS are not permitted to invest directly in crypto-assets, such as Bitcoin, but may participate in the price development of crypto-assets indirectly through delta-one certificates.
- In Italy, while the national competent authority has not explicitly set out its approach to funds investing in digital assets, there exist industry-defined standards developed within the context of Milano Hub of the Banca d'Italia, which provides a platform for developing industry standards and best practices related

[9] ESMA75453128700-1323 Final Report on the Guidelines on the conditions and criteria for the qualification of crypto-assets as financial instruments

to digital assets, and which is building upon the national framework governing investments by closed-ended AIFs and reserved AIFs in 'other assets'. The industry standard interpretation, based on the existing national legal framework, is that for digital assets falling within the scope of MiCA (this interpretation does not relate to digital assets within the scope of MiFID), only AIFs may invest in such assets. Where the AIF is open to retail investors, that AIF must be closed-ended. This is because such assets fall within the category of 'other assets' referred to in Article 4(1)(f) of Ministerial Decree No. 30/2015 (subject to the conditions that a market exists for such assets and that their value can be determined with certainty at least every six months). As such, it is unclear whether UCITS funds would be permitted to hold EMTs (e-money tokens) under MiCAR for settlement and liquidity management purposes. This industry position is detailed in the Assogestioni Guidelines on Italian Digital Funds.

### 4.3 Access and Personalisation

Taking a longer-term view, tokenisation could offer options for greater customisation of individual investors' portfolios than conventional investment fund structures are able to provide.

The tailoring of investor choice for investors of all scales and segments could involve creating a unified portal where investors can view their net worth or financial position, allowing for greater customisation and control over their investments. With the help of smart contracts and tokenised funds, personalisation can be made available to all investors rather than just the very affluent. For instance, investors could track their tokenised fund's disclosed holdings in real time and leverage a rebalancing smart contract to take regular long or short positions to achieve their optimal exposure.

The future "Web3 Wallet" concept is another exciting development. This wallet would execute investment smart contracts that carry investment strategies designed by professionals and can be adjusted based on investor preferences. This would enable investors to customise their portfolios using auto-rebalancing smart contracts, such as excluding certain stocks based on fund holdings.

DLT enables the creation of bespoke, segregated mandates, which have been commonplace for large investors for many years. In this respect, tokenisation could democratise access to these services, making them available to investors of more limited means as well. However, the transition to tokenisation and the potential move away from traditional investment fund structures is not without challenges. Depending on domestic arrangements and access to international treaties, funds are generally tax-efficient vehicles that shield investors from multiple tax events across the life of their investment. Many investors do not necessarily need mass personalisation capabilities and choose to delegate these to professional and experienced investment managers.

In conclusion, the future of tokenisation in asset management holds great promise for transforming the industry. The extent to which this can be realised depends on the scale of ambition within the industry, and policymakers' comfort with rethinking the way in which consumers interact with the wider capital markets industries. As technology continues to advance, the asset management industry must adapt to meet the changing needs of investors and leverage the benefits of tokenisation to create a more inclusive and innovative financial landscape.

# 5. Policy recommendations to unlock the potential of DLT

1. We welcome the strong focus in the SIU Action Plan and the subsequent consultation on the deployment of DLT technology in trading and post-trading activities.
2. The DLT Pilot Regime should be amended to increase thresholds on eligible instruments. This will have an immediate positive effect on i) market interest in providing DLT-based trading and settlement platforms and ii) available liquidity on such platforms and enhanced trading volumes in the secondary market.
3. In the medium to long term, divergent national rules on digital assets will inhibit growth and reduce cost efficiencies, particularly for fund managers looking to issue tokenised funds cross-border. Greater harmonisation across Member States as to the registry, custody and safe-keeping of digital assets would prevent regulatory arbitrage and help promote scale in DLT-based funds. In this regard, we support the alignment of UCITS and AIFMD requirements on the custody and administration of fund digital assets with requirements on the custody and administration of crypto-assets under MiCA.
4. We anticipate a need for convergence over time between the regulatory framework pertaining to traditional assets (MiFID, EMIR, CSDR) and the DLT Pilot Regime. As DeFi grows, there should be no distinction between the traditional ecosystem and the DLT-based ecosystem, but rather a single, integrated financial ecosystem.
5. CSDR requires that all instrument admitted to trading on a regulated exchange should be registered with a CSD. CSDR should be amended in the long run so as not to limit the trading of tokenised assets only to platforms that are compliant with the DLT Pilot Regime.
6. We remain neutral on the preferred choice for a cash-on-chain solution. A competitive landscape comprising a digital euro, MiCA-regulated stablecoins and CBMTs is the optimal outcome, signaling that Europe is open to innovation and market-led forces.
7. Given the expectation for an improved investment experience both from retail and institutional investors, and the need to enable funds to issue, trade and settle on chain, amendments must be made to allow UCITS funds to invest in and hold MiCA-compliant e-money tokens. In particular, EMTs should be considered as liquid and stable payment instruments under Article 50(1)(f) of the UCITS Directive, as they exhibit characteristics consistent with the prudential requirements applicable to instruments eligible for UCITS portfolios. In fact, EMTs aim to maintain a stable value by referencing the value of an official currency that is periodically verifiable. They guarantee the right to redeem on demand, at any time and at par value, and their issuance is restricted to authorised credit institutions and electronic money institutions, under the supervision of the competent authorities.
8. An industry-agreed taxonomy for digital assets is critical to standardize definitions, reduce confusion, and ensure interoperability across platforms, fostering expansion, growth, and adoption. The lack of consistent terminology creates regulatory uncertainty and market fragmentation, hindering scalable tokenization. A unified taxonomy would align stakeholders, streamline compliance, and boost investor confidence and stability of digital asset markets.
9. There is scope for regulatory clarification to support the uptake of tokenised MMFs as collateral in derivatives margining and repurchase transactions. Industry and regulators should collaborate to identify potential barriers and promote adoption.

# 6. Glossary

### 1. Tokenisation

The process of converting rights to an asset (physical or intangible) into a digital token on a blockchain, or replacing sensitive data with a non-sensitive substitute (token) to enhance security and accessibility while preserving utility. Tokenisation can apply to real-world assets (e.g., real estate) or data security. It leverages blockchain to create digital representations that can be traded or managed more efficiently, reducing intermediaries and enhancing operational efficiency.

### 2. Token

A digital unit representing ownership, value, or access rights to an underlying asset or system, recorded on a blockchain, or a randomized identifier substituting sensitive data in security contexts. Tokens are the building blocks of tokenisation. They can represent shares in a fund, ownership of art, or even a placeholder for confidential information, with their properties defined by the blockchain on which they reside.

### 3. Tokenised fund

A fund whose shares or units are issued on a distributed ledger for digital circulation.

### 4. Crypto Fund

A fund that invests in digital assets.

### 5. Blockchain

A decentralised, distributed ledger technology that securely records transactions and token data across a network of computers, ensuring transparency and immutability. Blockchain underpins tokenisation by providing a tamper-proof record. It can be public (e.g., Ethereum) or private, with features such as permissioned or permissionless access influencing its use in financial applications.

### 6. Asset Tokenisation

The digitisation of real-world assets (e.g., real estate, art, or securities) into fractionalised digital tokens on a blockchain, enabling easier trading, fractional ownership, and increased liquidity. This process makes high-value assets more accessible by dividing them into smaller, tradable units, often enhancing market efficiency and investor participation.

### 7. Non-Fungible Token (NFT)

A unique, indivisible digital token on a blockchain that represents ownership of a specific asset (e.g., artwork or collectibles), distinguishable from other tokens and not interchangeable. NFTs are ideal for unique assets, ensuring provenance and ownership authenticity.

### 8. Fungible Token

A digital token that is interchangeable with others of the same type (e.g., cryptocurrencies like Bitcoin), representing equal value or rights within a system. Unlike NFTs, fungible tokens are identical and divisible, making them suitable for currency-like uses or standardised financial instruments.

### 9. Smart Contract

A self-executing program on a blockchain that automates and enforces the terms of an agreement, facilitating token creation, transfer, and management without intermediaries. Smart contracts enhance efficiency by automating processes such as dividend payments and ownership transfers, thereby reducing reliance on traditional intermediaries.

### 10. Liquidity

The ease with which a tokenised asset can be bought, sold, or traded in a market, often enhanced by tokenisation through fractionalisation and broader access. Tokenisation can improve liquidity in illiquid markets (e.g., private equity), though it does not inherently create it; market conditions still apply.

### 11. Fractional Ownership

The division of an asset's ownership into smaller, tokenised portions, allowing multiple investors to hold stakes in high-value assets like property or art. This democratises investment by lowering entry barriers.

### 12. Token Vault

A secure, centralised repository where original sensitive data is stored and mapped to its corresponding tokens, used primarily in data security tokenisation. In data tokenisation, the vault ensures sensitive information remains protected, accessible only to authorized parties during de-tokenisation.

### 13. Programmability

The ability of tokens, enabled by smart contracts, to embed rules or conditions (e.g., automatic payments or restrictions), enhancing functionality in financial applications.

Programmability allows tokens to execute complex financial logic, improving automation and flexibility, as seen in WisdomTree's digital funds.

### 14. Real-World Asset (RWA)

A tangible or intangible asset (e.g., real estate, commodities, or intellectual property) digitised through tokenisation to improve accessibility and tradability. RWAs connect physical assets to digital markets.

### 15. Web 3.0

Web 3.0 is the decentralized, blockchain-based evolution of the internet, enabling peer-to-peer interactions, user-owned data, and trustless systems. It integrates technologies like smart contracts, NFTs, and tokenized assets to create secure, transparent digital economies. This framework underpins tokenization, allowing real-world assets to be represented and traded as digital tokens on blockchain networks.

### 16. Proof of Work

Proof of Work (PoW) is a consensus mechanism used in blockchain networks, where miners solve complex mathematical puzzles to validate transactions and secure the network. It requires significant computational power, ensuring trust and immutability by making attacks costly and resource-intensive. PoW underpins tokenization by providing a secure foundation for issuing and trading digital tokens on blockchains like Bitcoin and Ethereum.

### 17. Proof of Stake

Proof of Stake (PoS) is a blockchain consensus mechanism where validators are chosen to create new blocks and secure the network based on the amount of cryptocurrency they hold and "stake." It is energy-efficient compared to Proof of Work, as it eliminates intensive computations, relying instead on economic incentives. PoS supports tokenization by enabling secure, scalable networks for issuing and trading digital tokens, as seen in Ethereum's post-merge architecture.