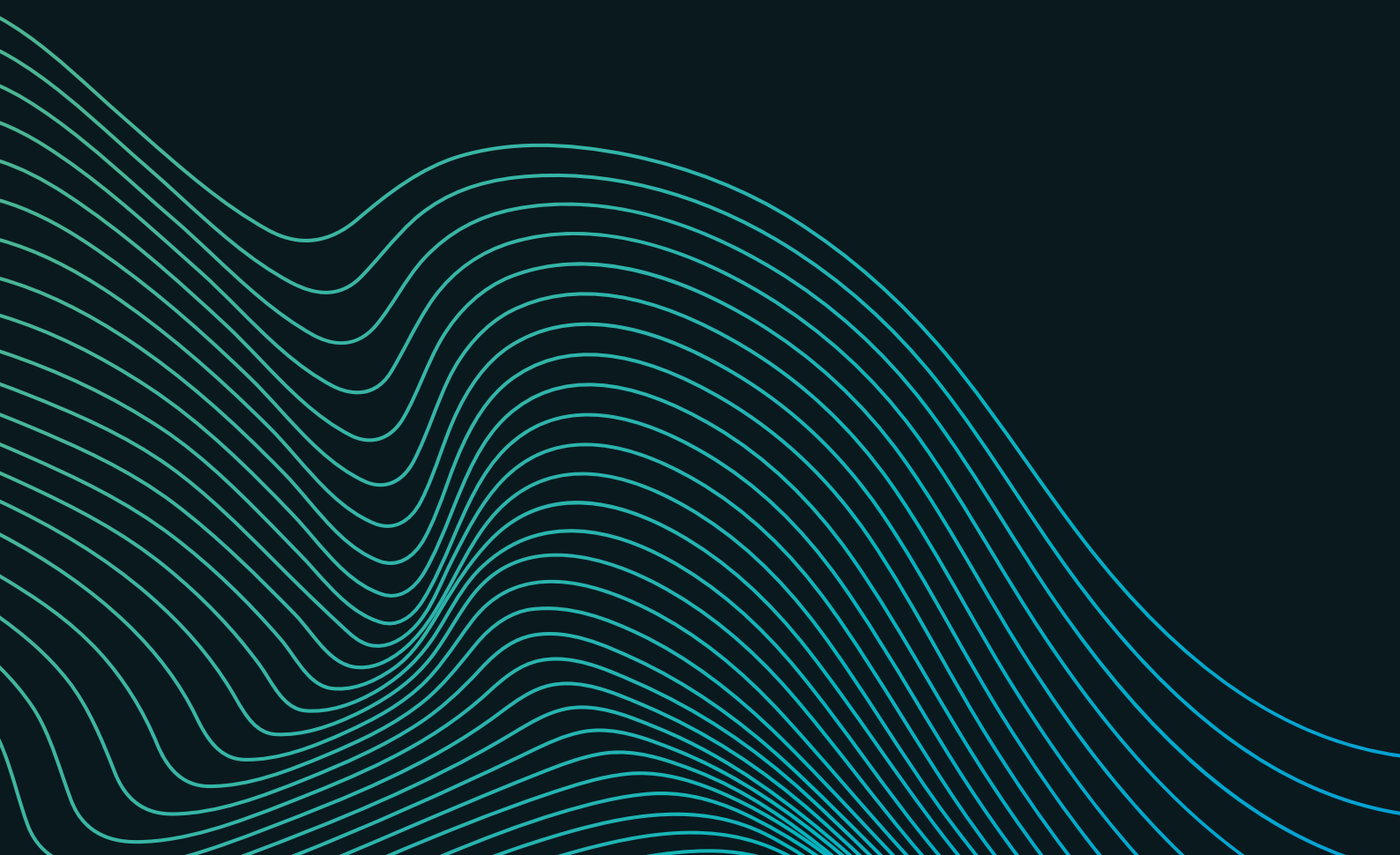
PLENITUDE

Beyond Digital Assets:
Understanding the compliance risks and considerations of Tokenisation



Executive Summary

The financial industry is undergoing a significant transformation, driven by the integration of blockchain technology[1]. Tokenisation, a mechanism enabling Financial Institutions (FIs) to reap the benefits of blockchain technology in their investment products, is at the forefront of this shift, which has the potential, not only for enhancing the operational efficiency of FIs, but also their ability to monitor compliance with applicable AML/CTF, Sanctions or client eligibility rules.

Tokenisation is the process of creating a digital representation of an underlying asset in the form of a token whose ownership is recorded in a blockchain network. These underlying assets range from traditional classes like bonds and fund shares, to less-liquid instruments like art or carbon credits, but all of them can stand to benefit from potential advantages in terms of liquidity, traceability and programmability of compliance rules, as will be seen later in this article. These potential benefits, in turn, can explain why regulatory bodies across the globe are fostering the adoption of tokenisation, as is evident in the launch of pilot programs and sandbox regimes to facilitate in the experimentation of tokenisation and the development of new financial markets.

Tokenisation, however, introduces new risks inherent to the technology, requiring diligent risk identification and mitigation strategies from the token issuers. Before embarking on tokenisation initiatives, token issuers must understand their regulatory obligations and fulfil the applicable regulatory requirements, especially given how the regulatory landscape is still taking shape and different countries are progressing at different speeds or adopting slightly different stances towards this topic. These requirements encompass the design of the tokens and their ecosystem, the definition and programming of compliance rules, and an in-depth exploration of potential risks associated with the adoption of new technology, coupled with the formulation of robust risk mitigation plans.

As financial markets continue to evolve, tokenisation is emerging as a pivotal tool for FIs to uplift their operational and compliance capabilities, meet investor demands, and proactively shape the unfolding future of digital financial markets. This paper serves as a guide for FIs navigating this dynamic landscape, providing insights and strategies essential for successful tokenisation initiatives from a compliance perspective.

[1]For simplicity, the term will be used interchangeably with distributed ledger technology, or DLT in short, although they are distinct concepts

An introduction to Tokenisation

Blockchain technology presents numerous theoretical use cases for enhancing the operational efficiency of traditional FIs and financial markets, notably through its near-instant settlement and improved recordkeeping features. However, despite its potential, the adoption of this technology has been sluggish in the past few years due to its limited adoption and its association with virtual assets' perceived risks.

Tokenisation has thus emerged as a potential gateway for FIs to embrace blockchain technology, enabling them to exploit the potential benefits referred to above without exposing themselves to some of the risks associated with riskier categories of virtual assets. Tokenisation entails the creation of a digital representation of an underlying asset in the form of a token recorded on a blockchain network, which means the ownership of the asset is reflected by the ownership of the respective token, thereby unlocking potential benefits to the underlying asset in terms of traceability, recordkeeping, programmability, and operational efficiency. As a consequence, several FIs worldwide have been actively exploring and experimenting with tokenisation in various capacities (see a list of notable initiatives on the next page), and regulatory bodies in key financial markets are advocating for the integration of blockchain technology in their financial markets.

According to a forecast by 21.co, a virtual assets management firm, the size of the tokenisation market is estimated to range between $3.5 trillion in the bear-case scenario and $10 trillion in the bull-case scenario by 2030. The year 2023 witnessed a notable surge in the interest and momentum around tokenisation, establishing it as a focal point within the financial services industry.

Tokenisation empowers FIs to strategically position themselves within the evolving landscape of the future digital financial markets. By integrating tokenised assets into their product offerings, FIs can, not only enhance their competitiveness, but also align themselves with the trajectory of future market dynamics. A survey conducted by Calastone, a global fund network, found that over half of the surveyed participants were actively exploring the potential of tokenisation, with one-third already in the process of implementing tokenisation projects. It underpins the growing interest and adoption of tokenisation within the financial services industry.

In this rapidly evolving sector, gaining a first-mover advantage is not merely about setting the stage for the market, but also about familiarising oneself with the technology. This strategic positioning can enable FIs to gain a strategic advantage before the full integration of tokenisation in the future. Embracing tokenisation now can position FIs to meet the demands of investors, stay ahead of industry trends, and proactively shape the future of digital financial markets.

Asset Class	Select Examples
Equity (e.g. Stocks, Funds)	• Money Market Funds (e.g. FOBXX issued by Franklin Templeton, VCC fund issued by UBS Asset Management, BlackRock USD Institutional Digital Liquidity Fund (BUIDL)) • Enegra Group (EGX)
Debt (e.g. Bonds, CD)	• HKSAR Government Green Bond • EIB Digital Bonds • Green bond issued by Société Générale
Commodities (e.g. Bullion, agricultural)	• Tokenised gold (PAXG, XAUt) • Tokenised grain (Agrotoken)
Deposits	• HSBC and Ant Group in Hong Kong • JPM Coin
Real-Estate	• The St. Regis Aspen Resort (Aspen Coin) • Ichigo Residence Token: Shibakoen, Higashi Shinjuku, Toritsu Daigaku, Monzen Nakacho, Takaido, & Shinkoiwa
Other (e.g. Art, Wine, Energy, Copyright, NFT, Collateral	• Four Marilyns by Andy Warhol (WHL1) • Fillette au Béret by Pablo Picasso (PIC1) • BlockBar tokenised Wine (BTL)

Unlocking Potential Benefits through Tokenisation

Tokenisation can unlock various potential benefits from the token issuer's perspective, depending on the design of the tokenisation model. These potential benefits range from improved operational efficiency through the elimination of redundant processes, to improved compliance monitoring capabilities to the reaping of market efficiencies.

Enhanced Operational Efficiency

Transitioning the transaction process onto a blockchain allows for a streamlined framework for post-trade activities. Processes such as trade clearing and settlement, often involving intermediaries such as clearing houses and transfer agents, can be seamlessly executed solely by the blockchain. This not only reduces administrative and operating costs for the issuer, but also leverages the efficiency of blockchain technology to significantly shorten trade clearing and settlement times.

Near real-time trade clearing and settlement can be achieved through blockchain technology, in contrast to the conventional T+2 settlement cycle in traditional financial markets.

The combination of reduced costs and expedited processing times by using blockchain technology represents a substantial leap forward in the efficiency of overall financial transactions and operations.

Corporate actions can also be executed smoothly and efficiently on-chain with smart contracts. Since the blockchain contains all the transaction and token ownership records, corporate actions such as interest payments, dividend distribution, and token holder voting can be conducted precisely and efficiently, further contributing to the operational efficiency gains evoked in the previous section.

Programmability and Automation of Compliance Rules

One of the key features of leveraging blockchain technology is the utilisation of smart contracts. In short, smart contracts are programs and logic stored on the blockchain that execute automatically when predetermined conditions are met.

Notably, smart contracts are used to create and deploy the token and provide token issuers with the flexibility to mint (i.e. create new tokens), burn (i.e. remove tokens from circulation) and whitelist/ blacklist wallet addresses at any time based on pre-programmed rules that can be tailored to meet the regulatory requirements applicable to the issuer and the tokenised instrument.

With blockchain explorers, which are tools that enable users to view the real-time and historical transaction information and data on the blockchain, token ownership and token transfer records stored on the blockchain can be monitored in real-time. This real-time tracking capability enables the creation of automated and dynamic cap tables, greatly enhancing transparency and control for the token issuer.

Enhanced Liquidity and Market Efficiency

Given its inherently cross-border nature, blockchain technology can serve as a universal infrastructure for transactions on a global scale, providing a common platform for tokenised assets accessible to investors worldwide.

Furthermore, the capability to fractionalise tokenised assets (For example, the smallest unit of ERC20 token is usually 10^{-18}) allows effective reductions in the entry ticket size, making these assets more affordable and accessible to retail investors, broadening investment opportunities.

By broadening the geographic reach and expanding the investor base, tokenisation has the potential to unlock the liquidity of assets, especially for those traditionally considered illiquid. Enhancing asset liquidity can improve the price discovery process and thus enhance the overall market efficiency. The ability to fractionalise and democratise access to assets not only broadens investment opportunities but also contributes to a more liquid and efficient marketplace.

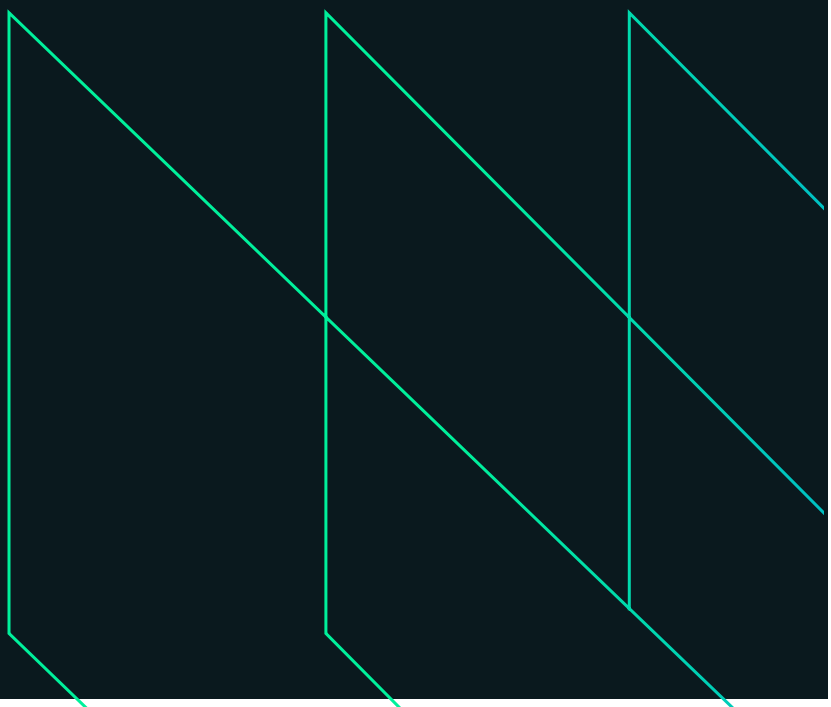
Enhanced Capital Efficiency

Transitioning underlying assets to a blockchain offers a dynamic and responsive approach to portfolio management, as tokenisation has the potential to significantly improve capital efficiency for investment managers.

The fractionalisation feature empowers investment managers to rebalance their portfolios to the target allocation more precisely. Besides, portfolio rebalancing can be done at any time, given the 24/7 availability of the secondary market.

The near-real-time clearing and settlement processes eliminate the waiting period associated with the traditional T+2 settlement cycle in traditional finance, allowing for swift capital redeployment. On top of that, the need for collateral to guarantee settlement could potentially be eliminated as clearing and settlement can be carried out almost instantly on-chain, without the reliance on a centralised clearing house, freeing up capital that would otherwise be tied up.

Furthermore, the token can extend beyond being a mere representation of the underlying asset. Leveraging the openness and decentralised nature of blockchains opens the door to Decentralised Finance (DeFi), where financial services are facilitated by smart contracts rather than centralised entities. It could create open markets to further utilise the token to serve various purposes, such as acting as collateral to secure capital or contributing to liquidity pools on decentralised exchanges (DEXs) to generate additional yield. The decentralised architecture of blockchain technology empowers the creation of a comprehensive open market, providing investors with diverse options and flexibility in managing their positions.



Current Regulatory Status in Key Markets

While most jurisdictions have implemented regulations targeting Virtual Asset Service Providers (VASPs), most of these regulations primarily focus on Anti-Money Laundering and Counter-Terrorist Financing (AML/CTF) requirements and are not specifically designed to regulate tokenised assets. However, a few jurisdictions have demonstrated progressiveness in establishing regulatory frameworks specifically tailored for tokenisation.

United Kingdom

The Technology Working Group of the government's Asset Management Taskforce, with support from the UK Treasury (HMT) and the Financial Conduct Authority (FCA), published a blueprint for tokenised funds in November 2023. A staged approach is outlined to implement fund tokenisation, beginning with a baseline model, and progressively incorporating more complex features in the future. The baseline requirements for tokenised funds include FCA authorisation, off-chain settlement, and issuance on permissioned blockchains.

Additionally, the Financial Services and Markets Act 2023 (Digital Securities Sandbox) Regulations 2023 entered into force in January 2024. It introduced the Digital Securities Sandbox (DSS), which facilitates the testing and adoption of digital representations of certain financial instruments within a sandbox environment. According to the consultation paper issued by the Bank of England, applicants can apply for the authorisation to operate a trading venue, to be a Digital Security Depository, or both. The establishment of the DSS provides a structured framework for FIs and other stakeholders to explore and innovate with digital securities in a controlled setting, fostering experimentation and development in this emerging field.

Crucially, both initiatives were referred to in the FCA's Business Plan for 2024/25, which referred to continued work with the Bank of England in the establishment of the DSS and support to asset management industry groups on tokenisation.

France

The Blockchain Order (Order n° 2017-1674) published in December 2017 and the Blockchain Decree (Decree No. 2018-1226) published in December 2018 set the foundation for securities to be issued, transferred and delivered on a shared electronic recording system (known as DEEP in French) such as a blockchain.

More recently, in December 2023, the French Asset Management Association (AFG) issued a fund tokenisation guide to address the regulatory and operational aspects involved in tokenising funds and financial instruments, and of funds investing in tokenised instruments.

European Union

The EU pilot regime for market infrastructures based on Distributed Ledger Technology ("the EU Pilot Regime") was launched in March 2023, allowing the utilisation of DLT in the issuance, trading and settlement of tokenised financial instruments.

Authorised firms participating in this pilot regime benefit from a time-limited exemption from certain requirements under current regulations to allow for experimentation in the operation of DLT market infrastructures.

Switzerland

The Swiss DLT Act entered into force in August 2021. It introduced the notion of DLT securities that are represented on a blockchain. These ledger-based securities can be transferred on a blockchain without the necessity for physical transfer of the security certification nor the need for a central securities depository.

As part of the legislation, a new licence called the "DLT Trading Facility" was introduced. These platforms are designed to facilitate multilateral trading, clearing, settlement and custody of ledger-based securities.

Singapore

In October 2022, the Monetary Authority of Singapore (MAS) launched Project Guardian, a strategic initiative aimed at exploring the use cases of asset tokenisation. This collaborative project currently involves the participation of 17 FIs, including prominent names such as BNY Mellow, Citi, HSBC, and UBS, alongside regulators from the UK, Japan, and Switzerland.

Under Project Guardian, various pilot projects are underway, showcasing a diverse range of innovative applications, including real-time multi-currency clearing and settlement, the issuance of tokenised money market funds through a Variable Capital Company structure, and the execution of repo transactions with natively issued digital bonds.

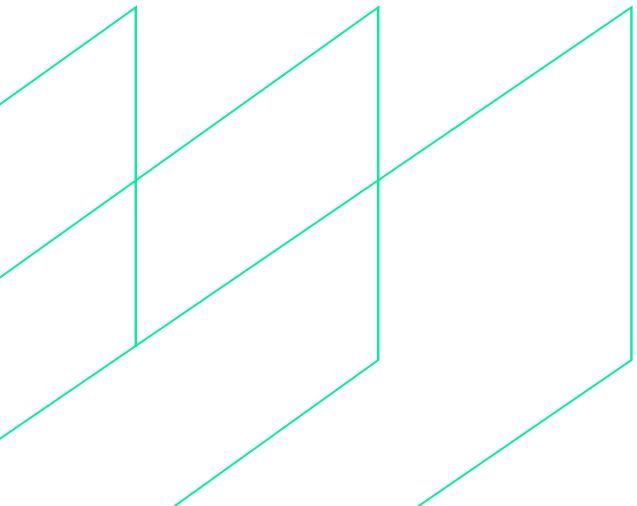
Hong Kong

In February 2024, the Hong Kong Monetary Authority (HKMA) issued a circular allowing authorised institutions such as banks to sell and distribute tokenised products which are not authorised by the Securities and Futures Commission (SFC). Similarly, in November 2023, the SFC issued a circular allowing SFC-authorised products to be tokenised and offered to retail investors

provided that additional risks are adequately addressed and consultation with the SFC is engaged beforehand.

Furthermore, the Fintech Supervisory Sandbox, launched by the HKMA in September 2016, allows FIs and technology firms to conduct pilot trials of their fintech initiatives. HSBC and Ant Group tested tokenised deposits under the Sandbox arrangement in November 2023.

The examples above show how the movement towards increased regulatory clarity on tokenisation has accelerated in the past year and shows no signs of slowing down, as regulators across the world move to the phase of implementing initiatives to support the industry as the movement towards tokenisation accelerates.



Compliance Considerations

While tokenisation can offer numerous benefits, it is essential to recognise and address the additional legal and compliance risks associated with this approach, as well as the available mechanisms to mitigate these risks. To understand its regulatory obligations, it is important for the issuer to consider the following factors.

Design of the tokens and programming of compliance rules

The design of the tokens is contingent upon applicable regulatory requirements, particularly concerning the identification and verification of their beneficial owners to mitigate financial crime risks. On top of that, there may be additional requirements regarding investor eligibility, including but not limited to, accreditation and/or geographic restrictions. Token issuers must ensure the token is only accessible to known, qualified, and eligible investors. To comply with this requirement, different approaches can be used.

The first approach is to issue tokens on a permissioned blockchain, like a private blockchain or a permissioned subnet on a public chain (e.g. Avalanche). In this setup, token issuers can establish their own rules for network accessibility, usually involving Know Your Customer (KYC) verifications and Sanctions checks, not only during wallet registration but also on an ongoing basis. This ensures that all participants on the network are verified and eligible to own the token at all times.

Alternatively, tokens can be issued on a permissionless blockchain in the form of a permissioned token. Permissionless blockchains, like Bitcoin and Ethereum, are open to anyone, necessitating the use of permissioned token forms such as ERC1404 and ERC3643 on Ethereum, or token extensions on Solana. These token formats leverage smart contract programmability to impose conditions and restrictions at the token level. For example, token issuers can permit only whitelisted wallet addresses that have completed KYC and certain eligibility checks to transfer or receive the token. Other rules such as limitations on transfers and number of investors can also be programmed into the smart contract. The rules act as automated gatekeepers to ensure tokens are only accessible to appropriately identified and eligible investors. Smart contracts also facilitate auditing for regulators and token issuers.

The primary distinction between these methods lies in the integration of compliance rulesets. The first approach integrates rules at the network level, granting token issuers comprehensive control over the network infrastructure, while the latter embeds rules at the token level, allowing issuers to leverage the existing infrastructure of open networks.

Extent of reliance on Blockchain technology

Blockchain technology offers several benefits to enhance the efficiency of capital markets, with token issuers standing to gain more as the adoption of the technology increases. Token issuers have the possibility to position their tokens along a wide spectrum involving different combinations of on-chain and off-chain activity.

However, the extent of reliance on a blockchain may be subject to regulatory requirements. For instance, the absence of government-issued Central Bank Digital Currencies (CBDCs) or recognised privately issued alternatives (e.g. stablecoins or tokenised deposits) may pose obstacles to full on-chain settlement and clearance (the “cash leg” of the transaction). Conversely, engaging in certain activities off-chain can help mitigate risks and uncertainties associated with blockchain technology by reducing reliance and dependency on it.

In navigating these considerations, issuers and relevant stakeholders may opt for a hybrid model.

This approach involves conducting certain activities off-chain to fulfil specific regulatory requirements while leveraging blockchain technology for other operations. For example, records can be maintained both off- and on-chain, with regular reconciliation between them, to meet local requirements while also exploring the potential of blockchain technology.

Issuers and the relevant stakeholders should understand the regulatory expectations and decide where they position themselves in the spectrum.

Openness of the token ecosystem

The openness of the token ecosystem may be subject to both regulatory requirements and issuers' capabilities and risk appetite. The openness of the token ecosystem is gauged by the range of actions that investors can take post-subscription. This includes considerations such as whether investors can withdraw their tokens to their own self-hosted wallets and whether the tokens can be traded on third-party trading platforms, like decentralised exchanges.

In a closed-end ecosystem where investors cannot withdraw their tokens, issuers should consider maintaining a secondary market with sufficient liquidity for investors to manage their positions. Conversely, in an open-end ecosystem, issuers should be aware of the risks of investors losing their private keys and the compliance requirements related to the eligibility of token owners. In such scenarios, token issuers might be required to have blockchain analytics tools to conduct wallet screening and verify wallet ownership on an ongoing basis.

Additional activities undertaken

Issuers must also decide on the scope of activities involved beyond the primary offering of tokens. Undertaking additional regulated activities such as facilitating secondary trading, acting as custodian for the underlying or tokenised assets (or both), engaging in market making, or serving as a transfer agent, necessitate adherence to distinct sets of requirements and, in many cases, these activities may require additional licenses or authorisations.

For example, serving as the custodian of the tokenised assets would be subject to licensing requirements that involve the need to adopt procedures for the segregation of client assets, or Travel Rule compliance. On top of that, the token issuer would have to build up infrastructure such as Hardware Security Modules (HSM) and Multi-Party Computation (MPC) for robust private key management.

Regardless of the specific additional activities undertaken, issuers are obligated to enhance their policies, procedures, and operational processes to align with regulatory expectations and ensure compliance with applicable laws and standards.

Due Diligence on the third-party vendors and service providers

As token issuers typically do not handle the end-to-end tokenisation process themselves, they will usually rely on third-party vendors and service providers for various activities. Apart from the regulated activities mentioned above, smart contracts management could also be outsourced as issuers might lack the necessary in-house expertise. A thorough due diligence should be conducted before engaging with third parties and on an ongoing basis, given how ultimate responsibility remains with the issuer of the token.

In addition to standard third-party due diligence, token issuers should prioritise certain considerations specific to blockchain technology. These may include assessing the third party's Business Continuity Plan for blockchain network outages, evaluating their cybersecurity measures, and ensuring they possess adequate knowledge and experience in virtual assets.

Information and Risk Disclosures

Token issuers bear the responsibility of transparently disclosing information related to tokenisation to ensure potential investors are well-informed. Depending on applicable regulations, the disclosure document may take the form of a prospectus or a whitepaper. Regardless of the format, three main items must be disclosed to the potential investors.

The first is the details specific to blockchain technology and the token. This notably includes information related to the blockchain network utilised, the rationale behind tokenisation, and arrangements for the secondary market.

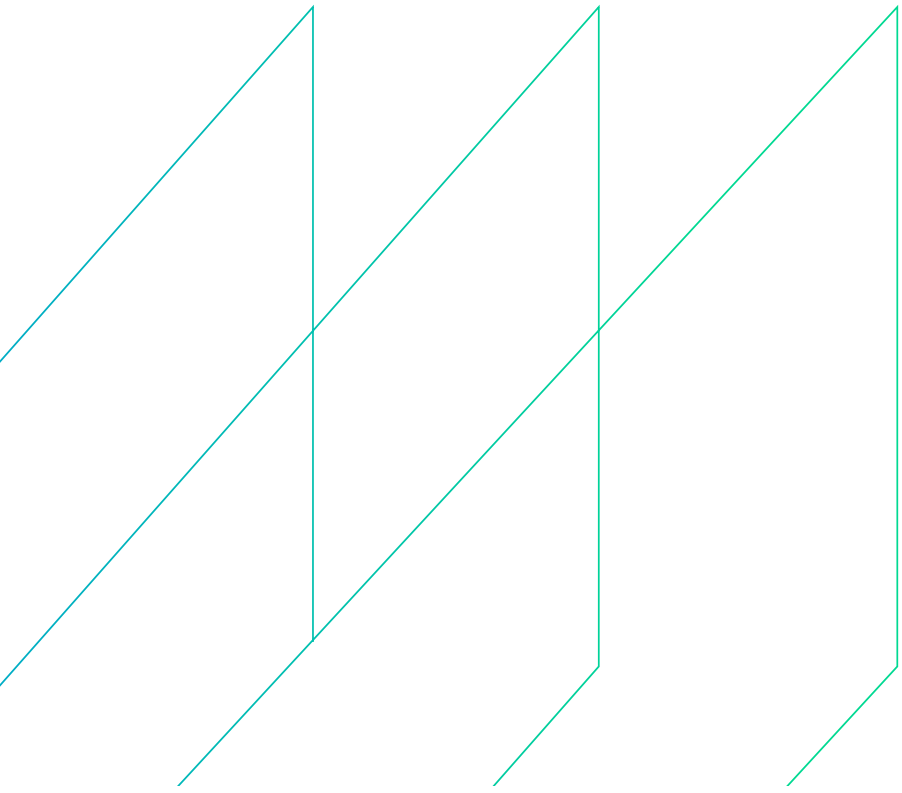
As new technology is adopted, it is also essential to disclose the risks associated with blockchain technology comprehensively.

For example, as an immutable ledger, transactions recorded on the blockchain are irreversible, potentially resulting in permanent loss of funds if tokens are sent to the wrong address. Other risks, such as potential network downtime, private key management and hard forks, must also be clearly communicated to investors. Token issuers should demonstrate their understanding of these risks and articulate how they are addressing them.

Finally, ownership rights must be clarified within the disclosure document. As token holders do not directly own the underlying assets, it is necessary to explicitly state the rights attached to the token, such as rights of recourse, voting rights, profit-sharing rights (e.g., interest or dividend), or redemption rights. Providing clarity on these rights contributes to a more transparent understanding for token holders.

Other types of risks to be considered

In addition to the legal and compliance risks mentioned above, token issuers must also consider other types of risks associated with tokenisation. These include ESG risks driven by the consensus mechanism used by the blockchain network, cybersecurity risks like theft of private keys and exploitation of smart contract vulnerabilities, and risks associated with the novelty and immaturity of infrastructure.



Conclusion

While the adoption of tokenisation is still in its early stages, tokenisation is one of the most potentially transformative breakthroughs for financial markets in recent years. The journey towards full integration into financial markets is well underway, supported by positive signs of encouragement from regulatory bodies and the active engagement of several FIs. The recent launch of BlackRock's first tokenised fund and the tokenisation of Fidelity International's Institutional Liquidity Fund by Sygnum Bank mark significant advancements in the tokenisation landscape.

Currently, however, tokenisation projects predominantly exist in a closed environment and lean towards the off-chain spectrum. This inclination is primarily driven by the necessity to align with existing traditional securities law. However, there is an expectation that increased regulatory clarity will facilitate predominantly or fully on-chain execution in tokenisation projects, and for regulations to permit tokenised assets to be issued in a more open environment. This shift is crucial for fully realising the potential of tokenisation and broadening its application across various financial use cases.

Likewise, the immaturity of the infrastructure and the value chain pose another risk to token issuers. However, technology is evolving fast, and market participants are developing various approaches to ensure compliance with diverse regulatory requirements, with actors in ecosystems like Solana, Ethereum and Avalanche responding to this demand with solutions to facilitate the automation of compliance rules. More mature and standardised tokenisation approaches are expected to be developed in the future to enhance the overall maturity of the infrastructure.

With various design choices available, token issuers have the flexibility to tailor the token issuance and its ecosystem to comply with the applicable requirements, and in line with their risk appetite. However, irrespective of their design choices, token issuers should have an excellent understanding of their regulatory obligations and assess and mitigate the risks associated with blockchain technology before launching tokenisation initiatives, and bringing compliance considerations early into the process of designing and executing tokenisation projects is central to their successful implementation.

ABOUT PLENITUDE

Plenitude is a niche consultancy, specialising in Financial Crime Risk and Compliance, and are appointed to the Financial Conduct Authority's Skilled Persons panel for Financial Crime. Our focus is firmly on addressing the legal, regulatory, reputational and social imperative for financial institutions to take diligent and rigorous steps to mitigate financial crime risks.

Plenitude's Digital Assets Practice assembles a team that brings a deep knowledge of regulatory expectations, crypto business models and the associated risks, to help crypto firms navigate the regulatory landscape, the road to registration, and build and implement an effective risk management framework. We also work with traditional finance firms to develop their knowledge of digital assets to make informed decisions about their crypto and risk management strategy and seize the emerging opportunities of this nascent industry.

About the authors

Gary Yeung is a Consultant at Plenitude Consulting in the Digital Assets Practice with 4 years industry experience. He comes from a crypto-native background working in one of the largest digital asset trading platforms, specialised in corporate strategy, market research and compliance within the digital asset industry. He has an in-depth knowledge of digital asset-related concepts and regulatory frameworks in the key market regions such as the UK, EU, Hong Kong, Singapore and the US.

Gary is a CFA Charter holder and holds MSc in Finance and Financial Technology (FinTech) at Henley Business School, University of Reading.

Manuel Fajardo, our Digital Assets Practice Lead, brings over 17 years of global asset management experience, focusing on compliance, internal control, and audit functions across Paris, London, and Los Angeles. Before joining Plenitude, he established compliance frameworks for a major investment management group, emphasizing AML, International Sanctions, and Financial Promotions/Distribution.

With over six years in the cryptoassets industry, Manuel educates traditional finance companies on crypto's significance and the evolving regulatory landscape, advises crypto firms on compliance, and actively contributes to regulatory discussions through industry bodies.

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PLENITUDECONSULTING.COM

FOR MORE INFORMATION EMAIL US AT
MANUEL.FAJARDO@PLENITUDECONSULTING.COM