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Growing Asia's Markets

Tokenised Securities

A Roadmap for Market Participants and Regulators

November 2019

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A. Introduction

According to proponents, tokenised securities (as defined below) are the next big megatrend of the blockchain[1] revolution and will disrupt the financial world completely. A lot has been written and said about tokenised securities, but scepticism abounds and such offerings are yet to be adopted mainstream by issuers. Tokenised securities bring the benefits of blockchain into the securities lifecycle, to create an innovative new financing and capital raising model that can bring efficiencies, is scalable and could provide liquidity and compliance opportunities that are evolutional to traditional finance.

Whilst it is at an early stage and the extent and timing of future adoption is still uncertain, we believe that tokenised securities will impact traditional finance and act as a bridge between legacy finance and the new digital world, taking benefits from each.

In this paper, we explain what tokenised securities are, why market participants will need to be aware of this development and key aspects of the end-to-end tokenised security lifecycle (i.e. structuring, issuance, distribution, primary listing, secondary trading, custody, portfolio management, advisory and market making) and how this compares to traditional securities. We outline how tokenisation could impact market participants (including incumbent financial institutions (**FIs**) and issuers) and present areas they need to consider in the various stages of the securities lifecycle.

To ensure a focused approach, the paper primarily concentrates on tokenised securities that are intended to constitute/represent traditional regulated securities such as shares and bonds, but also considers factors relevant to tokenised securities that constitute / represent other types of securities such as interests in collective investment schemes (funds) and structured products.[2] The paper also focuses on considerations of the securities leg of the tokenised security transaction – understanding that for the full benefits of tokenised securities to be realised, a functional form of blockchain-supported digital cash (e.g. stablecoins[3], Central Bank Digital Currency (**CBDC**) or some other blockchain-based digital asset (**digital asset**) is needed for smart contract-enabled Delivery versus Payment (**DvP**).

Subsequently, we consider what a benign, enabling environment for tokenised securities requires from a regulatory, tax, technology and liquidity perspective.

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[1] We refer to "blockchain" in this paper to include other types of distributed ledger technology.

[2] A number of factors are also likely to be relevant to payment and utility-type tokens with features that may classify them as securities in certain markets, but this is not the focus of this paper.

[3] A 'stablecoin' can be defined as a crypto-asset designed to maintain a stable value relative to another asset (typically a unit of currency or commodity) or a basket of assets. These may be collateralised by fiat currency or commodities, or supported by algorithms. The term is used to describe a particular set of crypto-assets with certain design characteristics or stated objectives, but the use of this term should not be construed as any endorsement or legal guarantee of the value or stability of these tokens. (Source: Financial Stability Board: 'Regulatory issues of stablecoins' 18 October 2019 (https://www.fsb.org/wp-content/uploads/P181019.pdf).

This paper aims to a) act as a roadmap for incumbent FIs who wish to understand how a tokenised offering can be executed b) inform issuers about the key considerations that will be relevant to their stakeholders, including incumbent FIs and buy-side firms with whom they will need to work, and c) articulate what is needed from a regulatory and technology perspective (and otherwise) to build a strong enabling environment.

This paper is jurisdictional-neutral but provides examples of certain issues and pain points that apply in certain jurisdictions.

This paper does not provide and should not be treated as legal advice on regulatory compliance or any other matter. It is up to readers to obtain their own legal, tax and other professional advice.

B. Setting the scene: what are tokenised securities and why are they important

B.1. Defining tokenised securities

A token is a digital representation of rights to any tangible (financial or otherwise) or intangible assets. Tokenised securities and security tokens are two different concepts. Tokenised securities are generally thought of as traditional, regulated securities, but with a digital wrapper. For the purposes of this paper, we are focusing in particular on shares and bonds which are issued, traded and owned with proof of ownership recorded on a distributed ledger.

On the other hand, security tokens can have a broader scope and intrinsic features that are designed to represent assets typically of an underlying financial type, such as participation in companies or earnings streams, or an entitlement to dividends or interest payments, or a combination thereof packaged into one. Depending on their economic function and terms, these tokens may be classified as equities, bonds, collective investment schemes or derivatives. Isolating specific economic functions can lead to new so-called "alternative assets" (e.g. tokenised cash flows from real estate, royalty cashflows from a work of art) which are increasingly being discussed as potential candidates for security tokens due to the increased process efficiency and the ability to access global liquidity pools.[4]

Despite these differences, the two terms are often used interchangeably, and both are used in this paper. Nonetheless, the regulatory and operational differences between tokenised securities and security tokens should be kept in mind throughout. We can also contemplate a future scenario where security tokens (blockchain-native securities) are the norm. The differentiation between the two types might blur and fade over time.

	Tokenised Security	Security Token
Definition	A tokenised security represents a security that exists outside of a blockchain, and can be described as being 'blockchain-embedded'.	A security token represents a security that does not exist outside of a blockchain (DAO[5], collateralised crypto loan, etc.), and can be described as being 'blockchain-native'.

[4] Source: Global Digital Finance Code of Conduct Part VII – Principles for Security Token Offerings & Secondary Market Trading Platforms (https://www.gdf.io/docsconsultations/part-vii-code-of-conduct-principles-for-security-token-offerings-secondary-market-trading-platforms/)

[5] A Decentralised Autonomous Organisation or DAO is an organisation that operates autonomously in accordance with preset rules, utilising a blockchain and coordinated through a distributed consensus model (Source: Latham & Watkins Book of Jargon: Cryptocurrency & Blockchain Technology)

Nature	Tokenised securities represent traditional securities on a blockchain in order to benefit from the potential efficiencies arising from using blockchain to register ownership and transfers. Other features can also be built on top of a tokenised security, but consideration must always be given to underlying security and its terms. Potential for payments automation (in DvP) exists, to the extent that integrations can be built between the blockchain registering the tokenised security, and blockchains / payment networks that represent some form of digital cash.	Security tokens largely imitate the features of traditional securities, although there is potential for disruption when structured products are layered on top. Potential efficiencies are vast. Not only can ownership and transfers be registered automatically on a blockchain, but payments (such as bond coupons) can also be automated.
Similar to	Depository receipts	Bearer assets

Table 1: Tokenised Security versus Security Token

The intent of this paper is to focus on tokenised securities, but not to adopt (nor necessarily advocate for) a technical approach in delineating between these two categories for legal or regulatory purposes. In this respect, much of this paper can apply to both.

B.2. Advantages of tokenised securities

The link between traditional financial products/instruments and blockchain technology offers stakeholders the reliability of a regulated instrument, combined with the benefits afforded by a blockchain. Because they are generally regulated as securities, they have the opportunity to bring more trust and support to the digital asset marketplace.

With the transparency, security and accuracy that blockchain technology can deliver to enhance efficiency throughout the value chain, as well as the opportunity to leverage smart contracts (that can build in compliance), issuers and FIs can also manage a larger number of investors with an expanded geographic reach. There could also be more efficient secondary market operations which helps issuers to access new capital and investors that require liquidity.

As tokenised securities pursue regulated use cases, enabled by blockchain as the foundation, the types of companies / entities that could be interested in issuing tokenised securities will have overlap with the existing issuer landscape (e.g. corporates). To the extent that benefits / efficiencies of tokenised securities can be realised, there is potential for the issuer base to expand further (e.g. into the middle-market, SMEs). FIs should pay attention to developments in the tokenised securities markets, as there is a potential for a change in the operating model that enables new business opportunities and improved ways to service clients. Tokenised securities can help FIs streamline processes, reduce costs and service smaller deal sizes that were previously economically not feasible from a cost/benefit perspective.

More specific examples of tokenised securities' potential advantages include the following (*next page*):

Speed of settlement

- Whilst the settlement process has shortened over the years, it generally takes 2 days for a security to settle. Much of this delay relates to a need for sequential steps to happen in a chronological manner, the purpose of which is to prevent counterparty risk since the buyer of a security does not interact directly with a seller. With smart contracts and information symmetry in real time, much of these processes can be automated and happen in parallel.

Automated compliance

- Because tokens are programmable, compliance with regulations can be programmed into smart contracts, reducing and automating the regulatory compliance burden. The smart contract will be able to execute, regulate and govern the token. For example, during a transfer of asset, tokens can be programmed only to be transferable to certain wallets and therefore restrict transfer of the token to ineligible counterparties.

Globalise markets

- Tokens have no physical form – they exist only in a digital form and can be accessed via the internet. Accordingly, tokens can be issued and traded globally via the internet, subject only to specific restrictions that are programmed into the token's smart contracts (e.g., in order to comply with applicable legal and regulatory requirements) and the availability and restrictions of any relevant intermediaries (e.g. exchanges and custodians).

24/7 trading

- Traditional securities have strict trading hours on business days only, so investors cannot trade on news and developments over the weekend. They also are subject to the operating hours and procedures of clearing and settlement systems. Tokenised securities can trade and settle 24/7 which eliminates these inefficiencies. This needs to be balanced against any operational requirements that 24/7 trading might bring with it.

Transparency

- Provides a single source of information for all market participants, which also facilitates the recording of ownership and makes beneficial ownership transparent throughout the lifecycle to permitted persons.

Programmable features

- e.g. automating dividend payouts, easing voting processes, automating vesting periods etc.

Immutability

- Transactions on the blockchain are immutable and are therefore an excellent infrastructure to record ownership of securities.

Increased efficiencies and cheaper fees

- Blockchain and smart contracts lead to increased internal efficiencies for FIs, some of which will be passed on to end issuer or investors.
- Potentially FIs can now serve smaller size deals which was previously infeasible. i.e. bond origination are traditionally > USD300m.
- Lower trading costs.

Figure 1: Benefits of blockchain in tokenised securities

C. Comparing traditional securities and tokenised securities

In what follows, we compare the lifecycle of a traditional shares/bond offering with the life cycle/value chain of a tokenised share/bond offering to help compare their similarities and differences in a straightforward manner. Adopting blockchain can help reshape the value chain in that it can allow us to move away from the sequential central model, to a distributed ledger model where market participants can access information at the same time. This will impact the roles and responsibilities of existing players and create new roles. Whilst the process of integrating tokenised securities into the value chain will likely be phased, i.e. focusing on a specific instrument or part of the value chain, we envision what the lifecycle might look like from an operational and regulatory perspective for tokenised securities issued and traded in a blockchain ecosystem.

The lifecycle is divided into four main stages:

We have listed the typical activities carried out in a share or Eurobond offering in each stage and have compared it to a tokenised securities offering, indicating the benefits and challenges of the latter as well as the differences in execution. The following sections discuss some of these differences in greater detail – focusing on shares and bonds – and set out some key considerations for market participants in pursuing tokenised securities offerings.

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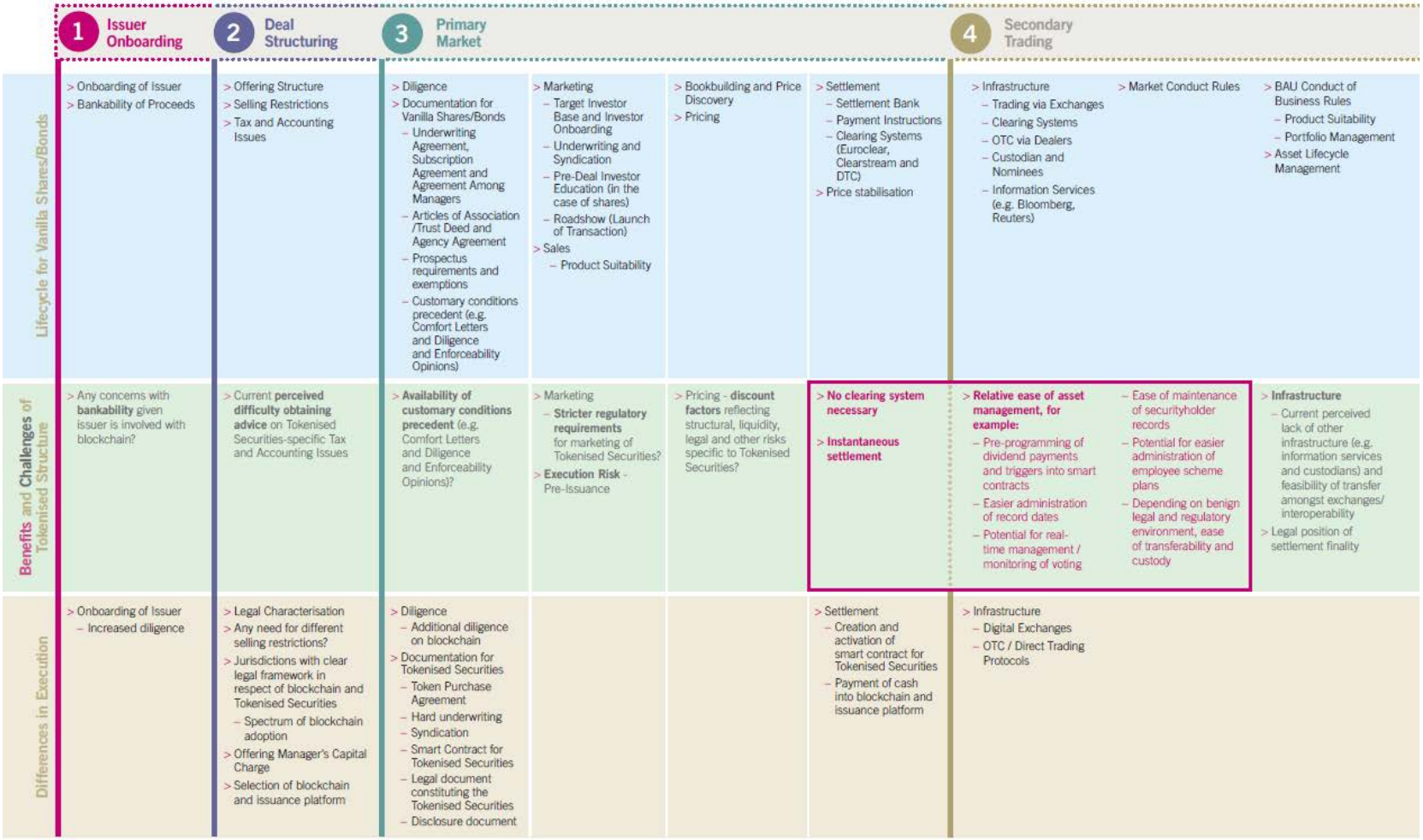
The Impact of Tokenisation on the Securities Lifecycle



C.1. Issuer Onboarding

This section discusses key considerations driving differences in the onboarding of issuers for tokenised versus traditional securities. For FIs, the extent to which issuer onboarding for tokenised securities differs from traditional securities relates to the risk profile of the issuer and the form of the transaction proceeds.

Issuers whose business model involves activities that are associated with higher risk business activities, and where proceeds are raised in a non-fiat form of payment, will diverge more from existing onboarding processes. Those simply seeking to use a blockchain/smart contracts to replace the existing infrastructure will face less material differences. In some cases, blockchain-based know-your-customer (KYC) solutions may be utilised to reduce / address issuer onboarding challenges, and also to provide greater efficiency through automation.

Considerations for FIs

For FIs, where the envisaged use of tokenised securities is to replace existing technology platforms and workflows with blockchain and smart contracts, the standards applied to issuer onboarding are largely the same as in traditional processes. Standard KYC and anti-money laundering (**AML**) rules still apply. All else equal, issuers who otherwise would have met risk appetite requirements for the FI, do not necessarily carry higher intrinsic AML/KYC risks just because a different technology is used. Increased risks may still be present, though these generally relate to later stages of the security lifecycle (*see Sections C.3 and C.4 on Primary Market and Secondary Market*).

For FIs looking to use tokenised securities as a way of expanding beyond their conventional client base (e.g. changing their risk appetite) and/or are raising proceeds in non-fiat form of payment (e.g. cryptocurrencies), the divergence in the onboarding process becomes greater. This is especially true, if prospective issuers of the tokenised security are engaging in business activities that touch newer areas of the digital asset ecosystem where regulatory requirements locally and globally are still evolving. In these instances, issuers engaging in these areas may carry elevated risks (e.g. depending on their nature of their activities any other third parties involved), and therefore would require additional steps in the onboarding process that are either self-imposed by the FI to meet internal standards, or prescribed by regulators in their jurisdiction.

To help identify and assess any areas of elevated risk, FIs should approach the onboarding process of issuers with proper due diligence to develop a full understanding of the issuers and the tokenised securities to be offered. Generally, the scope of due diligence should at least cover:

- the background and financial soundness of the issuer and the broader development and management team;

- the source of wealth and funds;
- the reputation of the token and its exchange(s);
- the assets which back the tokenised security;
- the rights attached to the token;
- the involvement of any politically exposed persons;
- the perception of potential risks associated with criminal activities; and
- the existence and effectiveness of AML and other controls put in place by the issuer.

Lastly, FIs need to consider reputational risk i.e. could advising on/selling a particular tokenised security somehow suggest that the FI is endorsing the functionality of the relevant blockchain/smart contract platform and/or service provider involved? Reputational issues could stem from cybersecurity, performance of the product, potential fraud, and failure of the tokenised security.

Managers will need to manage this by focusing on the following areas:

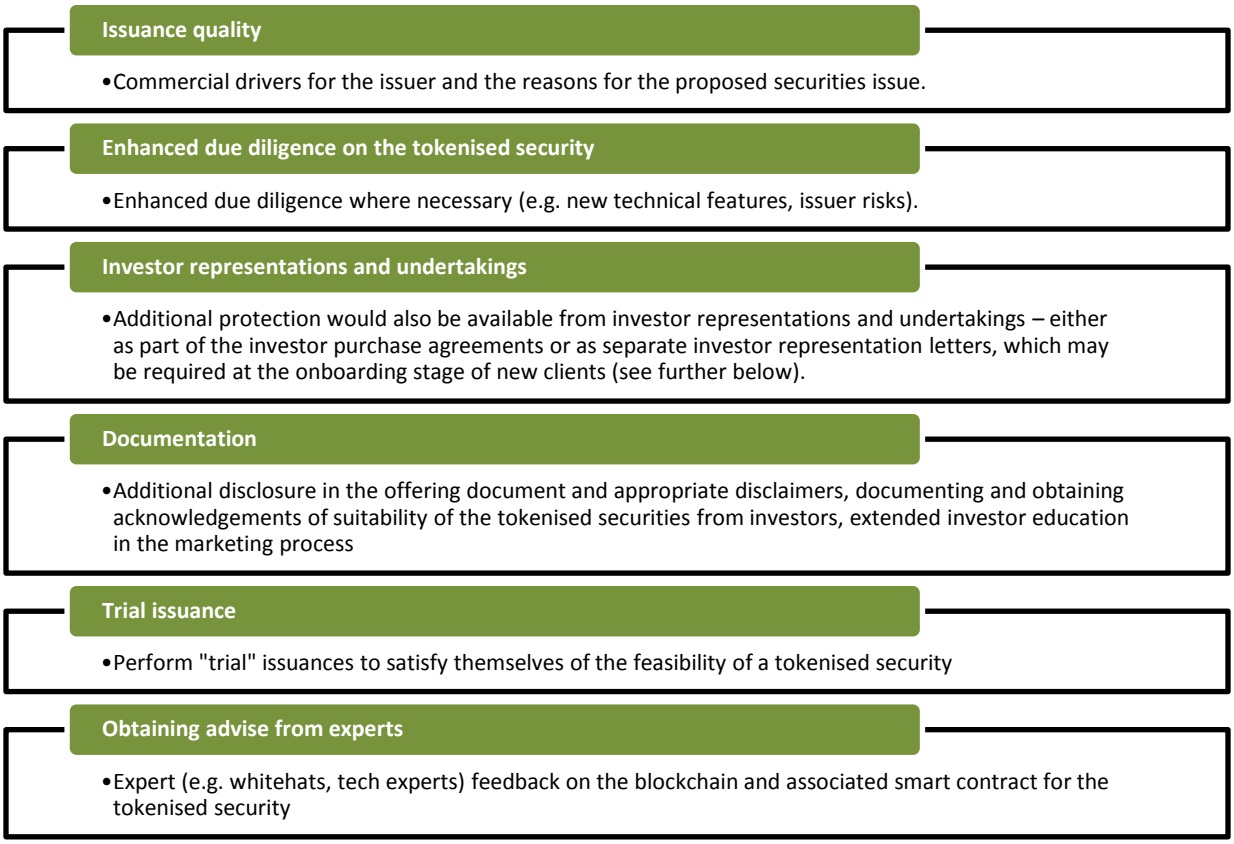


Figure 2: Managing reputational risk

Considerations for issuers

Similar to the considerations for FIs, where the issuer seeking to raise capital sees tokenised securities as a different technology basis for the issuance and lifecycle management of their securities, the degree of additional considerations beyond existing expectations / standards is limited. To the extent that issuers have business activities that touch higher risks areas, and/or are seeking to raise proceeds in non-fiat forms of payment, there will be additional onboarding requirements.

It is recommended that for these issuers, AML/KYC considerations are strongly embedded in their processes. This helps to improve the credibility of the issuer in the eyes of banks, payment gateways and fund managers, which will assist such regulated entities to comply with their own AML/KYC obligations. Furthermore, having strong AML/KYC compliance measures in place can help enhance investors' confidence in the issuer and therefore its tokenised securities while convincing different stakeholders, including FIs, that there are effective controls to safeguard against any relevant AML risks posed by the offering.

Apart from the AML risks to which certain issuers may be exposed, those engaging in higher risk activities often face much difficulty in opening a bank account. In general, the fear of banks dealing with crypto-related businesses remains strong due to their lack of understanding of digital assets and the developing regulatory landscape.

Even where an issuer already has a bank account, issuers may still face similar problems to when they are seeking to open a new bank account. An FI is required under its own AML obligations to monitor its clients on an ongoing basis, so when it is alerted to the fact that a client is issuing tokenised securities in a way, or involving a new business line, that changes its risk profile, the FI will have to reassess the AML risks posed by that client and may require additional information and/or documentation. Some FIs are more prepared to handle more complex scenarios than others, so this may take time and can in some cases challenge the relationship, depending on the precise facts.

Note: *It is important to be clear that issuing tokenised securities may involve no / no material change to the issuer's AML risk profile. For example, a regular corporation in a low risk business that issues bonds recorded on blockchain through a regulated FI that collects fiat proceeds from KYC-cleared purchasers in the usual way for a traditional bond offer, may still be low risk. On the other side of the spectrum, an issuer that plans to issue tokenised securities directly to non-KYC-cleared purchasers from anywhere in the world, in return for digital assets converted through an unregulated exchange, in order to fund a new casino, would likely be high risk.*

Even though the relationship with the bank may not change per se, an issuer whose account is now used for proceeds of issuing of tokenised securities may face other issues when operating its bank account. Firstly, it is not uncommon that the bank may require use of its own custodian to hold the tokenised

securities raised. This is obviously a problem if the bank's preferred custodian does not have the expertise or technical infrastructure to hold tokenised securities. Secondly, issuers may face difficulties in banking fiat currencies converted from digital asset proceeds received from tokenised securities offerings, depending on how the issuance is managed and any third parties are selected. Also, banks generally face difficulty in accepting digital assets themselves on behalf of the issuing clients.

This may change as CBDCs or private commercial bank money on the blockchain become more widely adopted and used. Ultimately, an early discussion and cooperative approach between the FI and the issuer can assist in building an appropriate risk-based approach to the offering and distribution of proceeds.

C.2. Deal Structuring

This section discusses key considerations for the design of tokenised securities and the relevant token economy. As is the case with the traditional securities markets, initial deal structuring for tokenised securities will involve a consideration of the key commercial drivers for the issuer and the reasons for the proposed securities issue.

Digital technologies, including blockchain, provide greater flexibility for issuers including around selecting the underlying technology, the trading platforms and digital exchanges and the ability to build unique terms into their tokenised securities. Issuers should consider these variables carefully with their advisors to ensure they are heading in the right direction from the outset.

With this in mind, some key structuring considerations are set out below. These examples are not intended to be exhaustive and most are covered in more detail in the following sections of this paper.

Issuer purpose

A fundamental initial question is whether blockchain technologies are required, or are beneficial for the particular transaction or, alternatively, if the traditional approach may be adequate for the particular issuer. There will remain many situations where shares or bonds issued in traditional, documented form will be sufficient. Issuers need to carefully consider the pros and cons of adapting digital infrastructure to their capital markets programs. Advantages include a more efficient fundraising process (in terms of speed, reach), lower origination fees, cap table management and real time reporting and ownership structure. Potential disadvantages include potential increases in legal fees, regulatory uncertainty and a smaller pool of more specialist potential advising FIs. Advisors will play an important role in setting out the key considerations and associated risks with adopting a digital fundraising approach.

Issuing entity

Determination of who is best placed as the entity to be the issuer of the tokenised securities will follow similar considerations as in the traditional process – for example:

- Where is the issuers business located?
- Are there tax or other benefits for a particular issuer location?

Additional considerations relevant to the digital economy include:

- ***Issuer business footprint:*** For issuers operating digital businesses that are borderless in nature, they may not be constrained by physical location or a 'home' jurisdiction and so there can be more flexibility to select the issuer entity and jurisdiction to best fit its needs.
- ***Jurisdiction-based regulation:*** Given jurisdictions are taking different approaches to the development and regulation of digital assets, some jurisdictions will provide a more certain and supportive regulatory environment. This will include both licensing requirements, availability of banking services and securities law regulations and controls. For example, Singapore, the Hong Kong Special Administrative Region of the People's Republic of China (**Hong Kong**) and Switzerland are established traditional finance centres that have been open to digital assets innovation.

See 'Section 5 – Regulatory Treatment' below for further discussion on the regulatory considerations.

Target investors

An initial structuring consideration is to consider the target investors for the proposed transaction. This includes the following:

- ***Different pool of investors*****:** One potential aim for issuers would be to access a separate class of digital investors. Those investors able to purchase and trade in tokenised securities potentially include individuals and entities that are different to the typical securities market investors. A relevant consideration in deal structuring and target investors will be the denomination of the security and any amounts payable under a non-fiat form of payment. Whilst most tokenised securities offerings raise funds in fiat currency, it would be possible to structure a tokenised share or bond with payments payable in an established digital asset (i.e. bitcoin or ether) or a digital asset unique to the issuer. Such a payment selection may exclude more established participants who would be interested in holding a tokenised security but are not yet ready or able to accept such assets. Alternatively, this choice would attract digital-savvy investors who already hold or are interested in digital asset-denominated financial instruments. One other consideration to take into account is that many jurisdictions limit tokenised securities to professional/accredited investors only.

- ***Location of investors*:** The location of target investors is very important for any issue of tokenised securities. As above in relation to issuer location, the regulatory impact of investor location is essential to understand and deal with from the outset.
- ***Trading/liquidity:*** A further consideration relating to potential investors is the availability of liquidity and access to digital asset exchanges. A key role for advisors will be to identify the available trading venues and advise on appropriate steps to ensure liquidity of the tokenised security, if that is a goal. Fungibility of the tokenised security in case of trading on multiple exchanges is another key consideration.
- ***Different tranches:*** Consideration needs to be given on whether or not the entire tranche of issuance should be conducted in a tokenised way from a risk perspective. In case of multiple tranches (tokenised and traditional) arrangements would need to be made for interactions between the two different tranches. There would be pricing differences due to perceived benefits/costs of the tokenised security.

See Section D.3. 'Driving Liquidity' below for a discussion on liquidity and digital exchanges.

Underlying Platform / Technology

A key early consideration for any issuer of tokenised securities is the selection of the underlying technology – including both the blockchain itself and also the associated issuing platform.

Relevant factors include security, speed of transfer, the ability to adjust and amend the tokenised securities and the access availability (i.e. permissioned or permissionless).

See Section D.2 'Technology Roadmap' for further details on different technology considerations.

Structuring Token Terms

A key issue for deal structuring will be the legal terms of the tokenised securities. These will include the usual variables for a traditional security (for example, currency denomination, ranking on insolvency, rate and nature of dividends or interest payments). For a tokenised security, there is greater opportunity and flexibility to design unique terms. Additional considerations will include the following:

- ***Form of distributions/dividends:*** As mentioned above, it could be possible to denominate the tokenised securities and any distributions/dividends in digital assets instead of traditional currencies.
- ***Voting:*** There is flexibility to determine the voting rights and other controls that may be provided to tokenised security holders. Some considerations for voting control include whether to have different classes of tokenised security identical in economic terms except for number of votes attached to a tokenised security.

- ***Trading restrictions/lock-ups:*** The availability of smart contracts on blockchain further allows for enforcement and facilitation of trading. For example, restrictions such as locking up private securities for one year post-issuance, or preventing a private company from going beyond a fixed number of investors (wallet holders) can all be enforced.
- ***Convertibility:*** convertible debt instruments exist for a variety of traditional capital fund raising needs. With smart contracts, various other use cases could be applied towards areas such as mortgages, shifting away from debt financing towards a hybrid debt-equity based home ownership.

Key Participants

Key participants and their potential roles are set out below. Many of these actors are consistent with a traditional fundraising process. However, for tokenised securities, all parties need to consider how their traditional roles and responsibilities will need to change to match the new technology and market structure.

Participant	Role
Issuer	The entity that issues the tokenised security. *See Section C.5. on Regulatory Treatment below for a discussion on the use of 'issuer' in the digital assets market.*
Digital Advisor / Underwriter / Manager	The professional advisor that assists with the offer structuring and manages the offering for the issuer. The advisor's scope will need to be broader than in a traditional role as they will also need to provide advice in relation to other factors, including technology/blockchain selection and digital asset exchange availability and preferences. The breadth of the role means that there may need to be more than one advisor. Underwriting of tokenised securities is not yet commonly provided. However, as the market develops and more established FIs become involved, it is possible that underwriting will develop in the same way that it is essential to many traditional fundraising options. A manager may be able to assist in ensuring that the tokenised security is issued and administrated on an ongoing basis in a compliant and efficient manner. An increasing number of tokenisation platforms and service providers are acquiring licences themselves to provide regulated functions such as advice, custody, corporate / agency services etc.

Technology Provider	The specialist that provides the blockchain platform technology and creates the token/smart contract on the platform. These may be professional firms that are hired for a particular transaction by the issuer. Other issuers who are more involved in the digital market may prefer to build this capability in-house.
Technology Auditors	The specialist to audit the blockchain platform and any smart contracts and assess cybersecurity risk. We expect that as the market becomes more established, a more formal process of audit and verification of the underlying technology will be expected by investors and regulators.
Accountants	To provide tax and accounting analysis as necessary. This will involve advice and opinions on the classification of the tokenised securities and may also evolve to include support for advisors, such as the provision of comfort letters and opinions (as is the case in the traditional securities market).
Lawyers	Lawyers with the necessary skills to work on the deal structuring, regulatory analysis, documentation and compliance. This may also involve opinions.
Custodian / Trustee	Custodians and Trustees will still be required for certain tokenised security structures. However, their roles may be different to the traditional format. For example: • Tokenised securities may still need custodian and/or trustees to hold underlying physical assets for the benefit of token holders; • It is also possible for tokenised securities to be linked to security of physical assets; • Investors may also require custodians to securely hold their digital assets; • The tokenised securities themselves would be held in digital wallets, which are solutions for private key management in various forms. These may or may not involve a third-party custodian.

Central Securities Depositories (CSDs)	The role of CSDs will be impacted. Tokenised securities with multiple parties recording ownership on a single register will call into question many of the current operational requirements that are driven by regulations (e.g. physical certification of bonds, and the requirement for securities to be recorded on a register by a 3rd party registrar, depending on the market). While the nominee and registrar could be replaced by blockchain and smart contracts, in many cases, law and/or regulation will need to change to allow for that to happen, so the process must be very clearly mapped out to ensure it can work.
Ancillary service providers	As the digital market continues to develop there will be other parties that emerge, including as examples: • Financial auditors/surveyors with blockchain experience to verify the link between the asset and the token; • Sponsors, depending on the requirements of relevant exchanges; • AML/KYC providers who will verify investor identity and source of funds; • Entities that facilitate integration with traditional banks for payments or traditional funds or exchange of cash for digital assets (or vice versa); • Providers that deal with "off-chain" rights associated with tokenised securities such as voting, redemptions and events of default; • Primary market platforms and distributing brokers; • Secondary market venues and brokers.

Table 2: Tokenised security transaction participants

<u>Tokenised Securities – specific tax and accounting considerations</u>

As with any deal structuring, potential tax implications should be carefully considered. This is particularly true for transactions involving tokens, given their relative novelty and variety, the lack of specific tax rules governing these types of new transactions in many countries, and the lack of an abundance of precedents. Besides, international tax rules are evolving in light of actions taken by the Organisation for Economic Co-operation and Development (OECD) in recent years to tackle international tax avoidance, which may give rise to additional considerations in structuring offerings of tokenised securities or security tokens. In this context, we point out the following tax considerations:

Location of entities in the structure:

- ***Issuing entity:*** In determining the locations of the issuing entity of the tokenised security and the operating entities (i.e. entities making use of the proceeds from the issuance), it is important to understand the tax regulations and environment of the relevant jurisdictions. In the past few

years, substance has become a key focus of the OECD and tax authorities in designing and administering tax rules. Most recently, a number of no or only nominal tax jurisdictions, such as the Cayman Islands, the BVI and Bermuda, have enacted economic substance legislation as required by the OECD and European Union. The use of entities in tax neutral jurisdictions as issuers, which has historically been common in traditional securities issuance, will need to be carefully considered in light of the new developments.

- ***Operating entity:*** Likewise, in determining the locations of the operating entities, it is important to appreciate that an entity may not only be taxed in its place of incorporation, but also where it actually operates.

Tax characterisation of the tokenised security / security token:

- ***Accounting characterisation:*** From an accounting perspective, the token may be characterised as either debt or equity, and the regular payments thereon would be either interest or dividends.
- ***Tax law:*** Depending on the tax law in the specific jurisdiction, the tax characterisation may not necessarily be the same as the accounting characterisation. For instance, Hong Kong, the tax authorities would look at the legal form rather than the accounting treatment or substance of an instrument in determining whether it is a debt or equity for tax purposes. The assessment is important as the tax treatment of interest and that of dividend can be very different.

Indirect tax considerations:

- ***Evolving tax rules:*** Traditionally, businesses have placed more focus on direct tax (e.g. corporate income tax), but recently laws on indirect tax (e.g. value-added taxes (**VAT**), Goods and Services Tax (**GST**)) are becoming much more sophisticated, especially in the increasingly digital economy. As far as tokens are concerned, various countries have come up with new rules or proposals on the indirect tax treatment of the exchange or use of tokens. For instance, the Inland Revenue Authority of Singapore (**IRAS**) has recently released a draft guidance on digital payment tokens (as defined by the IRAS) which proposes, inter alia, that the exchange of digital payment tokens with other digital payment tokens or fiat will be exempt from GST from 1 January 2020 – which also means that at the moment they are not exempt.[6] On the flipside, certain jurisdictions such as Hong Kong already do not apply VAT/GST.
- ***Multi-jurisdiction:*** Given that a tokenised security is likely to involve various jurisdictions, it would be important to understand the indirect tax rules in the relevant jurisdictions in order to avoid non-compliance.

The concept of tokenised securities is still relatively new in the accounting and tax world. Current accounting standards have not specifically catered for it. Similarly, traditional tax rules were not designed

[6] Source: *IRAS e-tax Guide (Draft) – GST: Digital Payment Tokens* (https://www.iras.gov.sg/irashome/uploadedFiles/IRASHome/GST/Draft%20e-Tax%20Guide%20_GST_Digital%20Payment%20Tokens.pdf)

with this novel concept in mind. While some jurisdictions have come up with certain specific tax rules in relation to transactions involving tokenised securities / security tokens, the rules are evolving, and there are still jurisdictions (e.g. Hong Kong) that have not developed such specific rules. In certain jurisdictions, tax implications may also depend on the accounting treatment. Therefore, in many situations one would have to consider how current accounting standards and tax laws may apply in token-related transactions. All this requires the accounting / tax professional having in-depth understanding of how the industry and business models work.

Professionals specialised in this space should no doubt be able to provide their professional advice to industry players based on their best judgement. Yet, the lack of clear regulations, precedents and experience of tax authorities in this area sometimes make it challenging for industry players to obtain certainty easily. FIs and issuers should look out for advisors who can demonstrate a strong understanding of this topic area.

C.3. Primary Market

This section discusses key considerations regarding the primary market issuance of tokenised securities. Issuing tokenised securities can provide benefits for issuers and investors alike. It can increase automation as it removes the need for nominees and registrars and the need for reconciliation as all participants share the same record of ownership on a blockchain platform. Given that the ledger is the registrar though, it is crucial that the roles and responsibilities around maintenance, data privacy, proof of records, distribution etc. are clearly defined. Contract terms can also be coded into the smart contract, which drives further automation.
To realise these benefits, corresponding changes in process may be required with regards to documentation, disclosures, marketing, advertising, bookbuilding and settlement.

<u>Documentation</u>

Key documents for the initial primary issue of tokenised securities and their brief description are set out below. Many of these documents have equivalents in the traditional fundraising process. However, the complete list for any issue will be transaction-specific.

Document	Description
Token Purchase / Underwriting Agreement	The purchase agreement or underwriting agreement will largely follow the approach used for traditional securities. However, the forms will differ depending on the particular transaction. It may be a direct subscription with the end purchasers or a subscription/underwriting agreement similar to the traditional capital markets approach:

	• ***Direct purchase agreement*:** Direct purchase agreements entered into with each purchaser of the tokenised securities. This could include different versions for pre-sale purchasers, cornerstone investors and a form that public investors would sign at the time of a public offering. It may also be made available in digital form only and signed electronically through the platform portal/website. • ***Manager subscription agreement*:** Similar to a traditional subscription agreement, it sets out the terms on which the issuer agrees to issue the tokenised securities, for which the managers agree to subscribe (or find subscribers). Managers will need to consider whether the issue of tokenised securities is to be hard underwritten, and whether syndication of the offering is required. In this situation, managers would need to have the ability to hold the tokenised securities in the situation where the underwriting obligation is triggered.
Tokenised Security Creation Deed / Terms of the Token	Similar to a document that creates a traditional security, such as a Memorandum and Articles, Deed of Covenant or Trust Deed, this document would constitute the tokenised securities to be issued. Although digital assets are created through the issue of tokens on the relevant blockchain, a distinct enacting/enabling deed or set of terms can provide greater clarity and legal certainty for the enforceability of the tokenised securities. This document should set out the terms and conditions of the tokenised security, including any rights and/or obligations built into the instrument. It would also need to confirm the link between the token and the asset it represents. A consideration in preparing this document is the extent to which its contents may be expressed or incorporated in the smart contract, as well as the legal relationship between the smart contract of the Tokenised Security and this document. This document can be integrated into the one in the row above as part of issuance, but should be capable of standing alone.
Custody Deed	There may still need to be a separate custody arrangement established if traditional assets back the tokenised security, or if any other assets will be held in custody (such as distributions). This would follow a traditional form custody agreement with adaptations as required.

Technology Implementation / Support Agreement	If a third party is providing the blockchain and platform technology, this agreement will set out the agreed scope of work and split of liability in the case of technology failure. It may also deal with ongoing support and coverage. If third parties, such as arrangers or market participants, need access to a digital platform to assist with market operations, liquidity etc, this agreement may also deal with the technical aspects of integration.
Offering Documents /Information Memorandum	See discussion below.

Table 3: Tokenised security short-list of documentation requirements

Investor Disclosure

An important structuring question for any primary issuance will be the requirements around investor disclosure which will depend on various considerations such as (a) jurisdiction-specific rules, (b) the legal classification of the tokenised securities and (c) the target investor base (for instance, sales to retail investors are likely to require more detailed prospectus-style disclosure, which may even require regulatory approval in some cases).

Issuers will need to be clear on the intended use of proceeds, the business description, the token economics design and what the security will provide to both the issuer business and investors.

For any offering of tokenised securities, the following areas should be considered:

- Whether an offering document is necessary is an important first consideration. If the sale of tokenised securities is undertaken on a private basis with selected investors, formal disclosure may not be needed. In such instances, as is the case in the traditional markets, additional issuer protections, such as investor representation letters, may be required.
- The offering document should provide a description of the terms of the tokenised securities and material information on the issuer, including financial information if available.
- Issuers should consider robust risk disclosure, in particular in relation to the new technology and uncertain nature of some of the features of tokenised securities. Even if disclosure is not required under relevant regulations, clear disclosure to investors can help reduce risk for the issuer and managers.
- Multiple documents can be used as the 'disclosure package' as long as they describe the material information correctly and are equally available to all investors. Depending on the transaction, technical papers may also be relevant in combination with disclosure on the issuer and its business.

In a traditional fundraising exercise, managers and/or investors are accustomed to receiving various conditions precedent, including auditor comfort letters, due diligence reports and legal and tax opinions. So far, given the infancy in the digital assets space and the absence of established underwriters/managers, these requirements are not being regularly maintained.

However, as the market develops, managers and other stakeholders may expect to receive similar protections. Some considerations include:

- The form of these documents will have to be adapted and agreed with counsel and advisors given some of the current lack of certainty around the status and classification of tokenised assets.
- Any due diligence and verification exercises will have to also consider the blockchain/technology element of the tokenised securities. For example, reports from third-party technology auditors or consultants or platform live-testing may be needed to test the integrity and security of the system.

Smart contracts for the tokenised securities

This is the relevant code that governs the technical aspects of the tokenised securities and comprises certain essential functions to enable their trading and transfer, as well as additional functions relating to the token economics, where supported by the chosen blockchain and issuance platforms. In some cases, this may be developed by someone for the issuer in a completely bespoke manner, whilst in other cases, an established third party "tokenisation platform" (or similar) may be used with minimal tailoring.

Marketing and advertising

Please also refer to Section D.1. (*Regulatory framework and legal considerations*) for further discussion on the proposed regulatory framework for sales and marketing of tokenised securities.

The requirements around marketing and advertising will depend on the same factors set out above in relation to investor disclosure. Issuers will need a structured and legally compliant marketing process and should explore whether there are any stricter regulatory requirements for marketing of tokenised securities.

Any marketing of tokenised securities will need to be conducted in a legally compliant manner and it is likely that the existing process of marketing conventional shares and bonds will often be applied. Protections applied should include the following:

- At the initial stages of the transaction, confidentiality and insider trading concerns will be paramount and care will have to be taken to ensure that access to material non-public information (**MNPI**) is restricted.

- In the lead-up to the official launch of the transaction, the issuer and deal team should adhere to strict processes in the conduct of pre-deal investor education and wall-crossing to ensure minimise the risk of any leaks of MNPI.
- As part of transaction launch, the issuer and deal team should ensure that all MNPI is disclosed in the offering document(s) to ensure information symmetry amongst investors, followed by a roadshow to market the tokenised securities.
- Bookbuilding, pricing and settlement then follow. See also "Bookbuilding below".

If a retail offering of tokenised securities is contemplated in any jurisdiction, the marketing and advertising requirements will be more expansive and will need to take into account local regulatory requirements and the likely needs of the investor base to make an informed investment decision. Disclaimers and risk disclosure will need to be more detailed and care will need to be taken that all material information on the platform and the tokenised securities will need to be clearly described. Education may also need to be considered.

Bookbuilding

Blockchain has the opportunity to simplify the bookbuilding process as it could be almost real-time and transparent if offered on public infrastructure. There could be one master book i.e. the ledger for all participants including the bank and syndicate members. Reconciliation would not be required which would reduce manual efforts speed up the bookbuilding process. The extent of information dissemination will need to be considered (i.e. permissioned versus permissionless).

However, bookbuilding may not need to happen on-chain. This could remain an off-chain process, with only the final sale of digital assets being recorded on-chain. The precise approach depends on the need and appetite of relevant parties to adopt blockchain technology into multiple aspects of the issuance process.

Settlement

Traditional securities settlement is complicated and involves many intermediaries, leading to long clearing and settlement cycles (generally T+2). Substantial manual intervention is currently also needed, which makes the traditional securities settlement cycle prone to errors. The various intermediaries (banks, custodians, clearing houses etc.) work on various systems, increasing complexity and reducing transparency.

Token settlement on the blockchain can bring various benefits including efficiencies, reduction of counterparty risk and decreased settlement risk, leading to shorter settlement cycles. Clearing and settlement are in fact merged. Some regulators too are convinced of the value blockchain can bring to post-trade processes. For example, the European Securities and Markets Authority in its February 2018

report on "The Distributed Ledger Technology Applied to Securities Markets" states that clearing and settlement could theoretically become almost instantaneous with blockchain, as trade confirmation, affirmation, allocation, and settlement could be combined into a single step and reconciliations would become virtually superfluous. Certain major exchanges are integrating blockchain technology into their own processes.

However, rules regarding settlement finality and other matters must be addressed. It is important to financial markets that transactions be considered "final" to ensure they cannot be unwound. The operational finality of transactions on the blockchain needs to align with the applicable legal finality requirements of the applicable legislation.[7] To the extent that existing legislation is irrelevant, this should be addressed in contract.

Token platforms will need to provide similar levels of safety, soundness and risk mitigation as found in the traditional post-trade processing system in order to attract institutional investors. We recommend that the platforms use the Principles for Financial Market Infrastructure issued by the Bank of International Settlement as guidance. Relevant transaction documentation should also be very clear about settlement finality – for example, the number of confirmations required for the parties to agree that a digital asset has been transacted.

Technically irrevocable DvP can be achieved on blockchain networks or tokenisation platforms but only if both the securities and payment tokens are available for immediate delivery, which necessitates pre-funding of accounts. Pre-funding increases the costs of cash, credit, capital and collateral. It also makes it difficult to accommodate techniques, such as market-making, short-selling, securities financing and netting of transactions between the same counterparties, that enhance liquidity in the securities markets, and the implication of their absence requires further research. Whilst technically DvP can be done on T+2 (as with traditional securities), this would decrease the advantage of near real-time settlement. A balance needs to be struck between lowering counterparty and settlement risk on the one hand, and liquidity preferences on the other hand. There have also been preliminary conversations around the usage of credit/margin lending as an alternative to pre-funding which would allow for a new revenue stream for FIs, especially for market makers.

Atomic settlement implies near real-time settlement of trades, in lieu of the industry standard of multilateral netting and settlement of trades, which are often on a T+2 or T+1 basis. This is because it can enable the simultaneous peer-to-peer exchange of one digital asset for another. For atomic settlement, trades may still have to be pre-funded, in the sense that they may need to be pre-positioned by the investor to be transacted. However, the pre-funding process and settlement process itself could be significant swifter – for example, a smart contract could enable the tokenised security to be issued to the

[7] Source: DTCC, Guiding Principles for the Post-Trade Processing of Tokenised Securities, March 2019 (file:///C:/Users/lvanderloo/AppData/Local/Packages/Microsoft.MicrosoftEdge_8wekyb3d8bbwe/TempState/Downloads/Crypto-Asset-Whitepaper-2019%20(1).pdf)

investor automatically upon the receipt of a digital asset (say, bitcoin or a central bank digital currency) to a pre-approved address of the investor.
It is true that atomic settlement models could add to operational complexity and overheads to custodians, CSDs and any prime brokers of buy-side clients, who would have to gear themselves up to handling a completely different end-to-end workflow even for fungible securities. However, once established, this model could drive significant efficiencies and could even allow certain disintermediation to occur.

In a cross-border context, atomic settlement will require pre-funding of the FX transaction before having the guarantee of execution. Currently, it is possible for market participants to execute FX after knowing their net exposures. Further, in order to minimise credit risk, updates to country-level Real-Time Gross Settlement systems and cross-country integrations may be required to instantly fund cash legs of a transaction. Another possibility to fund the cash leg is to make use of CBDCs or stablecoins to settle the transaction.

Tax considerations for investors

Investors may be concerned about the tax implications to them as holders of the tokenised security. These may include the following:

Tax characterisation of the token

- ***Regular income:*** As in the case of the token issuer, investors need to understand the tax characterisation of the tokenised security, and accordingly the regular income, if any, to be derived therefrom (interest or dividend), in order to understand the potential tax liability that they may be facing.
- ***Fair value changes:*** In addition to regular income, institutional investors may need to understand the tax treatment of any fair value changes of the tokenised security held by them.

Indirect tax considerations

- ***Issuer versus investor:*** As noted above, the issuance of tokens may give rise to indirect tax implications depending on the tax laws in the relevant jurisdictions. While indirect taxes, if any, would generally be collected by the token issuer, normally the liability is passed on to and therefore borne by investors.

Common Reporting Standard (**CRS**) / Foreign Account Tax Compliance Act (**FATCA**)

- ***Automatic exchange of financial information:*** Under the CRS, a global reporting standard for the automatic exchange of financial account information (**AEOI**), financial institutions (as defined) are required to collect and report certain financial account information to their tax authorities for automatic exchange with other jurisdictions. The US has similar rules under FATCA.

- ***Additional compliance burden:*** Whether the tokenised security being issued falls within the scope of CRS / FATCA will require a detailed analysis based on the specific facts of the situation. If it is in scope, the issuer, if considered a "financial institution" as defined, may have the additional administrative burden to ensure compliance.

It is worthwhile noting that in many jurisdictions the tax treatment may depend on the accounting treatment. Therefore, it is key that the accounting treatment of tokens is established first.

C.4. Secondary Trading

This section considers key considerations regarding the secondary market trading of tokenised securities. Secondary trading is essential to ensure a secondary market that allows investors to enter into and exit investments 24/7, if that is relevant to the success of the particular tokenised security in question. Digital asset exchanges listing tokenised securities will form an essential part of the ecosystem by providing access to tokens and liquidity. To date, there are very few live regulated security token or tokenised security exchanges though there is growing interest in the setup of these capabilities from both incumbents and start-ups.

Existing regulated securities exchanges and automated trading platforms are well placed to support the trading of tokenised securities given their regulatory status and operational infrastructure covering securities trading and many of them have started digital transformation projects to embrace blockchain. However, such regulated exchanges and trading platforms still face various regulatory and operational issues such as investor restrictions, technological standards, and balancing the interests of existing stakeholders. New market entrants are also facing various regulatory and operational challenges looking to operate a regulated tokenised security exchange.

It is also important to identify which are the operational processes that need to be migrated onto the blockchain. For instance, pre-trade processes such as trade matching and confirmation are already efficient as they are on centralised matching systems. Furthermore, there are often many cancellations in pre trade matching as member firms consolidate orders to find the best pricing. Hence, these processes are not suitable for migration onto the blockchain. Instead, it is likely that an API feed post trade confirmation will be sent to the blockchain, such that the clearing and settlement post-trade processes will be done on-chain.

To support the ecosystem, ASIFMA in 2018 issued Best Practices for Digital Asset Exchanges. The goal of these best practices is to guide the digital asset exchanges towards international best practices and highlight points for consideration in several key areas including listing process, AML/CTF, custody, cybersecurity and market manipulation. Global bodies including the International Organisation of Securities Commissions (IOSCO) and jurisdictions in the region, including Hong Kong, are now considering regulating digital asset exchanges.

Market conduct considerations

Tokenised securities are considered "securities" and may be traded over-the-counter (**OTC**) or over digital asset exchanges or brokerages and potentially vulnerable to market misconduct which could adversely affect the integrity of the market.

In general, existing securities market misconduct laws and regulations are more focused on securities listed on recognised stock exchanges and/or licensed trading platforms. Accordingly, existing laws and regulations may not necessarily extend to securities traded OTC or unlicensed trading platforms leading to a potential gap under existing regulatory frameworks, incumbent FIs' internal compliance policies and procedures and/or issuers' expected practices and conduct. However, a range of general market integrity principles apply to FIs, which would extend to appropriate market conduct controls for tokenised securities.

In light of the above, the following key principles would be essential to further enhance the development of the overall tokenised securities ecosystem:

- Secondary market trading platforms should be subject to regulatory authorisation and oversight that could preserve the integrity of the market; and
- Regulations and practices should be put in place that are (i) designed to detect and avoid market misconduct and other unfair trading practices and (ii) promote transparency of trading.

We have set out below the considerations and practices for FIs and issuers to implement the above key principles.

FIs and issuers – due diligence on trading platforms

FIs and issuers should implement procedures to assess the reliability and integrity of the trading platforms before trading the tokenised security on such platforms, for example, taking into account the following:

Considerations	Examples
Experience and capabilities of the trading platform	• Geographic coverage • Operational history • Technology capabilities • Reporting capabilities • Team size and experience • Market makers
Regulatory status of the trading platform	• Whether it is regulated in a reputable and established jurisdiction

Compliance and surveillance systems for the continuous monitoring of trading to preserve market integrity	• Rules and compliance programs to prohibit, detect, prevent and deter market misconduct and other unfair trading practices
Cybersecurity risk management measures	• Any previous hacking incident or cybersecurity breach and, if so, how such incident was addressed • Cybersecurity audit
Credit assessment	• Whether the trading platform has sufficient financial resources and insurance covering credit and operational risks
Market transparency	• Pre-trade transparency – such as order book • Post-trade real-time / close to real-time transparency – such as order timing, trade size, trade reporting

Table 4: Considerations for incumbent FIs and tokenised security issuers during implementation

FIs – treatment of tokenised securities under internal compliance policies and procedures

FIs have existing compliance measures to address the risk of market misconduct and other unfair trading practices; for example information barriers, restricted lists, personal dealing policies and conflicts of interest policies. Depending on the nature of a particular FI's business and/or local requirements, the instrument coverage of the measure above may be different. For example, private shares (as opposed to shares in a listed company) may be carved out from restricted list / personal dealing policy of such FI and instead covered under a general conflicts of interest policy. By analogy, if a tokenised security is issued by an unlisted company and such token is traded on an OTC basis it could be subject to the same carve-out from such compliance measures.

In this respect FIs will need to determine how tokenised securities fit into their established policies, controls and measures. The more robust approach will be to treat such tokenised securities in the same manner as "listed securities" for the purposes of interpreting existing internal compliance measures to prevent the misuse of material non-public price sensitive information when dealing with such tokenised securities.

FIs dealing with tokenised securities will also need to follow general business conduct principles applicable to regulated FIs with the common principles including the duty to act in the best interest of clients, acting with due skill, care and diligence and to avoid conflicts of interest.

Issuers – listing conduct and market transparency

Issuers of tokenised securities should model their conduct in the market on how listed companies are required to act, in particular when structuring the issuance of tokenised securities and to assist in providing ongoing market transparency for investors. Issuers should clearly outline to potential investors the risks of investing in the tokenised security, as well as clearly outline who can invest in them (e.g. in terms of location, professional investor versus retail investor).

In this respect potential issuers should:

- ensure fair treatment to investors – for example, unless otherwise duly justified, there should be no preferential allocation or price offering to any particular class of investors; the same level of information disclosure should be provided to all investors for such investors to make an informed investment decision;
- on an ongoing basis, disclose material non-public price sensitive information to the market as soon as reasonably practicable to avoid unfair market practices;
- if possible, suspend trading of its tokenised securities in order to protect investor interests, for example, pending further announcement of material non-public price sensitive information; and
- implement appropriate internal controls relating to conflicts of interest, staff dealing and other market integrity standards.

Tax considerations

In the secondary market, the following tax considerations may be relevant to the various stakeholders:

Tax considerations to exchanges:

- ***Tax structure and transfer pricing***: Exchanges may need to appropriately structure their business models taking into account the regulations in the relevant jurisdictions. Oftentimes this would involve cross-border related party transactions, in which case transfer pricing would be relevant. Transfer pricing rules set by jurisdictions seek to ensure that transactions between related parties are conducted on an "arm's length basis", i.e. as if they were conducted between independent third parties.
- ***Other direct tax issues:*** Other potential direct tax issues that may be faced by exchanges include the source (and hence taxability) of profits, withholding tax on cross-border transactions and double tax relief.
- ***CRS / FATCA:*** Besides, exchanges may also need to observe CRS / FATCA requirements if they fall within the definition of financial institution.

Tax considerations to investors:

- ***Capital gains:*** Investors (both institutional and individual) would most likely be concerned about the taxability of transfer of the tokenised securities. In jurisdictions where taxability depends on the source of the profits, or where capital gains are subject to a different tax treatment (e.g. different tax rate or exemption), investors would wish to understand how the source rules apply to tokenised security transactions and/or how to qualify as capital gains.

Indirect tax considerations:

- ***Exchange of tokens:*** The exchange of tokenised securities to another token or to fiat may give rise to indirect tax such as value-added tax and/or transfer taxes such as stamp duty, depending on the tax laws of the relevant jurisdictions. Both the seller and buyer as well as the exchange platform need to observe their obligations.

C.5. Regulatory treatment

This section considers key considerations regarding the role of regulation throughout the lifecycle of tokenised securities. Regulatory acceptance and approaches to tokenised securities vary across jurisdictions, therefore making it an important dimension. From a regulatory perspective, the general view is that the status of an asset should arguably not be affected by the mere fact that it is tokenised, save that it may add complexity that is relevant to things like disclosure and investor eligibility. If the underlying asset is regulated, the tokenised representation of that asset should be regulated as well. However, the nature and structure of the blockchain ecosystem may impact the extent to which regulations are applicable.

Regulatory liaison

For FIs that want to venture into the space of tokenised securities, it is important to understand the regulatory framework that will apply. Liaison with the relevant regulators is likely to be key in many markets. Generally, regulators would expect the FI to engage in preliminary consultation to discuss the proposed new business before submitting a formal application (if required) for approval.

The extent of communications with the regulator for obtaining an approval (if required) would also depend on the regulatory acceptance in respect of marketing or offering securities tokens in the relevant jurisdiction.

Anti-commingling rules

Banks are generally prohibited/ discouraged from engaging in any business other than the "business of banking", unless authorised by the relevant regulator.

For example, Singapore has in place an anti-commingling policy to segregate financial and non-financial businesses of banks i.e. banks are restricted to conducting banking and financial businesses and businesses incidental thereto, unless otherwise exempted or authorised by the Monetary Authority of Singapore (**MAS**).

In September 2017, MAS published a consultation paper proposing to refine the anti-commingling policy, which, amongst other things, aims to provide greater flexibility for banks to conduct certain non-financial businesses that are related to their core business and to allow banks to operate digital platforms. The initiative by MAS to refine the anti-commingling policy shows that MAS recognises the evolving landscape in the banking sector due to the rapid technological advancement, and the need for regulatory changes to accommodate such development. Changes to the anti-commingling policy would allow greater flexibility for banks to compete in payments more effectively against other non-financial players, e.g. by permitting banks to operate as funds service transfer or token platforms.

Other regulatory considerations for market participants

Unlike traditional securities offerings, tokenised securities could potentially raise novel issues in respect of determining who the issuer is. The UK's Financial Conduct Authority's (**FCA**) published in January 2019 a Consultation Paper on Cryptoassets[8] in which the FCA notes specifically that the term "issuers of tokens" covers a number of entities "including developers, designers, firms who issue tokens and certain intermediaries, since determining precisely who the issuer(s) are is not always easy or possible". Referencing the FCA's paper, below is a table setting out examples of potential tokenised security issuers and the possible regulatory requirements applicable to them.

[8] Source: *FCA Guidance on Cryptoassets, Consultation Paper, CP19/3*, January 2019 (https://www.fca.org.uk/publication/consultation/cp19-03.pdf)

Issuers	Activities	General Regulatory Requirements/Obligations
Legal issuer of the securities (Entrepreneurs / Start-ups / SMES)	Raise capital from investors via issuing tokens	Capital raising activities by offering securities of a company are normally subject to local rules and regulations, or require a regulatory license/ approval, unless exempted. Generally speaking, if a token falls within the meaning of "financial instrument" or "securities" under local law and regulation, it is likely that issuance and offer of such tokenised securities would be subject to the common law and regulations governing the issuance, offering to public and/or any selling restrictions, such as: • the requirements for regulatory approval and registration for prospectuses; • legal and regulatory requirements relating to money laundering or terrorist financing; • if the offer is made available internationally, local laws in each jurisdiction where the offer is available; and • rules of the relevant trading exchange or platform. Exemptions • Issuers of tokens should consider whether any exemptions from the prospectus requirement are relevant. For example, ▪ the offer is small (personal) offer that does not exceed a certain amount within a certain period, (note: different jurisdictions may have different exemption thresholds); or ▪ the offer is a private placement offer that made no more than a certain number of persons within a certain period (note: different jurisdictions may have different exemption thresholds); or ▪ the offer is made to institutional investors; or the offer is made to accredited investors.[9]

[9] Source: MAS, *A guide to digital token offerings*, April 2019 (https://www.mas.gov.sg/-/media/MAS/Regulations-and-Financial-Stability/Regulations-Guidance-and-Licensing/Guide-to-Digital-Tokens-Offering-last-updated-on-5-April-2019.pdf)

Issuers	Activities	General Regulatory Requirements/Obligations
Developers / Designers	Build tokenised security according to the specific needs, client type and investment requirements	The developers/ designers are less likely to be subject to any licensing requirement. It is more likely that the onus is on the legal issuer or the intermediary to ensure that the developer/designer is competent and the tokenised security they built (which is then issued/marketed/offered) complies with the relevant regulatory standard.
	Develop smart contracts	
Exchanges and trading platforms	Facilitate the buying, selling and transferring of tokenised securities	Depending on the operation/scope of the exchange, permissions may include, but are not limited to: • operating a multilateral, or, organised trading facility; • dealing in investments as principal; • dealing in investments as agent; • arranging deals in investments; • safeguarding and administering investments; and • making arrangements with a view to investments.
	May also provide custody service as wallet providers	
Regulated Intermediaries	Provide advice to customers regarding different tokens and / or facilitate the purchasing of tokens	The roles of intermediaries would normally include: • advising on investments; • dealing in investments (whether as principal or agent); • arranging or facilitating deals in investments; and • making arrangements with a view to investments

Issuers	Activities	General Regulatory Requirements/Obligations
		In most jurisdictions, intermediaries carrying out the above activities would have an existing licence and registration with the local regulator. The main regulatory requirements and obligations would therefore mainly be conduct requirements as a licensed and registered intermediary under local law and regulation.
	Conduct requirements	Tokenised security suitability for intermediaries' customers: • Ensure that customer recommendations and solicitations with respect to tokenised securities are reasonably suitable for the particular customer, given the information about the particular customer of which the intermediary is or should be aware through the conduct of due diligence; • Conduct customer due diligence and anti-money laundering checks on their customers; • Ensure the client is provided with sufficient information on the key nature, features and risks of the tokenised security to understand it before making an investment decision; and • Ensure the client is provided with risk disclosures and clear warning statements about the purchase of the tokenised security. Due diligence on the offering, which should cover: • The background and financial soundness of the management, development team and the issuer of the tokenised security; and • The existence of rights attached to the tokenised security and any assets which back the tokenised security. Licensed/ registered intermediaries should also study all relevant marketing materials and other published information, to ensure that information provided to their customers in respect of a tokenised security offering is accurate and not misleading.

Table 5: Regulatory considerations for market participants

D. Building a benign, enabling environment for tokenised securities

As mentioned above, tokenising securities has the potential to increase efficiencies and drive down costs substantially. The industry is still nascent and there are some uncertainties. In what follows, we lay out the regulatory, technology and liquidity considerations that will need to be addressed for tokenised securities to reach their full potential.

D.1. Regulatory framework and legal considerations

Tokenising securities will require innovative solutions that go beyond technology. In some cases, legal reform will be required. In the table below, we outline the key legal and regulatory considerations for market participants as well as the regulatory success factors, issues and risks that regulators should consider for a robust enabling environment across the value chain, from token creation to token transfer and sales as well as custody. As mentioned previously, the mere fact that the asset has a tokenised representation should arguably not impact the regulated status. However, there are gaps and issues that are raised by the blockchain model which should be considered by regulators in the future. Addressing these gaps and creating clarity will be key to attract institutional players and helping the ecosystem evolve. Areas suggested for focus by regulators are provided in grey colour.

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
Token Creation	
Nature of rights created	
• Tokenised securities represent traditional securities on a blockchain e.g. shares in a company which are issued and traded on a distributed ledger. In addition, tokenised securities and their associated smart contracts can offer certain rights, such as voting rights or revenue distribution. • These rights are defined by the terms of the tokenised security, which may be express or implied. • It is important to remember that although security tokens purport to confer rights, and these rights may be enforceable by way of the specific blockchain applications, there are still unresolved legal issues regarding what these rights represent and whether any rights can be transferred along with the token [*see transfer considerations below].* • In some markets, it may not be clear whether tokenised securities are a form of property (or what precise type of property they are). Much depends on this categorisation, including the ability to assert proprietary claims when tokens are misappropriated, and the ability for the tokens to be the subject of a trust or a proprietary security interest.	• Periodic guidance from regulators that provides examples of emerging token structures should be provided, particularly for more complex tokens such as stablecoins, which may be securities, structured products/derivatives, trust instruments or stored value facilities. • Providing clarity on the regulatory environment for tokenised securities by, for example: ▪ Clear guidance as to how tokenised securities fall within the jurisdiction's existing legal as well as regulatory/securities framework. This includes providing clear statutory definitions for classes of regulated products. These definitions should be technology-neutral and capable of being interpreted when blockchain is used. ▪ Periodic guidance on the regulator's stance should be issued to provide clarity on the regulatory position of emerging token structures and more complex token products. ▪ Issuing best practice guidelines to assist market participants. • From a policy perspective, striking a careful balance between the appropriate regulatory scrutiny is in place to protect the

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
• Depending on the nature of rights created, the tokenised security may fall within the definition of "securities" or other regulated financial instruments and may be governed by the relevant jurisdiction's securities laws. For example, it may be treated as a regulated product in the jurisdiction in which it is issued, marketed, held, listed, sold or exchanged. As the relevant laws (and any exemptions) in each jurisdiction can vary significantly, it will have a bearing on where the issuer decides to launch, market, list or sell the tokenised security. • The FI / issuer should ensure that the tokenised security remains compliant with the laws/ regulations of all applicable jurisdictions including: o Domicile of the issuer – i.e. place where the token issuer is incorporated; o Marketing/ sale of the tokenised security – jurisdictions in which the tokenised security is marketed or sold. Care should be taken to understand what constitutes "marketing" in the relevant jurisdiction as the threshold may be low; o Platform – location of the exchange/platform where the tokenised security is traded; o Exchange location – any jurisdiction in which the tokenised security is exchanged (if different from above); and o Location of any custody providers.	investing public whilst ensuring the legal framework is conducive to token creation. • Internationally, working towards regulatory alignment across jurisdictions. This will ease compliance burden and encourage token economy. • Opportunities for token creators, exchanges and other infrastructure providers to work with regulators to test solutions should be provided, akin to sandboxes that allow participants to join on an unregulated basis for a defined period of time in a controlled environment.

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
• Persons carrying on a regulated activity will usually need to be licensed. Consider the scope of any such rules and potential exemptions prior to/ during token creation.	
Register formalities	
• Certain types of securities require a formal register to be maintained of rights holders (e.g. a register of shareholders, which is evidence of title). In a permissioned blockchain world, the ledger is the register and responsibilities around maintenance, data privacy, proof of records, distribution etc. need to be clearly defined. There are still legal question marks on whether a blockchain asset registry can validly establish legal ownership beyond proving that the correct private key was used to initiate a transfer. In particular, question marks arise over whether a distributed network with multiple participants providing consensus over a registry, constitutes a single third party maintaining the ledger. • Register requirements may be prescriptive and should be checked for any rules that suggest that a physical register is required as the primary or secondary register.	• The legal framework should provide for the recognition of blockchain-based electronic registers in a technologically agnostic manner. • Continually monitor the sufficiency of the legal and regulatory framework to support secure electronic transactions.
Documentary formalities	
• The issuer should have in place all documents required to support its legal structure, for example, articles of association, shareholders' agreement, director agreements and the applicable	• Establishing clear disclosure standards for fundraising/ offering documents and any additional disclosure

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
registry filings. In addition, issuers may also need the following documents in place: ▪ Token purchase agreement which outlines the rights of investors and the tokenised security offering details; ▪ Tokenised security creation deed/terms of the token; ▪ Smart contract (code); ▪ Custody deed (if applicable); ▪ Disclosure document(s) including technical papers (if applicable); ▪ Underwriting agreement; and ▪ Third party agreements with advisors, developers etc. • Each jurisdiction will usually have specific rules concerning offering/ fundraising documents. For example, an issuer may be required to make certain disclosures in the offering/ fundraising documents and seek the relevant regulatory approvals before any such documents can be issued to the public. Exemptions may be available. • For execution of documents and provision of information electronically, it would be important to check the extent to which the law permits this in the relevant jurisdictions and whether any specific formalities need to be complied with.	requirements which may apply to virtual assets classes such as tokenised securities. • Clarifying conduct requirements in relation to tokenised securities, including suitability, cooling off periods etc. • Legal framework providing for recognition of decentralised identities and electronic records and signatures, and ensure that they have the same legal status as their paper counterparts. • Continuing to monitor the sufficiency of the existing legal framework to ensure that it continues to facilitate a digital economy and that laws are adapted to respond to evolving technology.
Token Transfer Fundamentals	
Transferability and formalities for assignments	

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
• Consider what exactly is being transferred when a tokenised security is transferred. For example, a token may carry with it legal rights and obligations, or it may represent a beneficial interest. The relevant documentation should clarify this point, as well as any relevant notice procedures / processes, deemed assignments and other transfer mechanics. This can also be automated when the token is generated through an issuance platform.	• Digitise paper-based systems. • Encouraging the adoption of interoperable standards for tokenised security transfers. • Consider issuing (or supporting industry-generated) standard form provisions that address assignment.
Stamp duty / taxation	
• In some jurisdictions, tokenised security transfers can attract stamp duty. • In some jurisdictions, tokenised security transfers may also attract value-added taxes.	• A completely electronic and automated stamping facility, with API access and 24/7 availability. • Clarification by the tax authorities of how any value-added taxes are supposed to be applied to tokenised securities (and virtual assets more generally).
Electronic contracts	
• Electronic contracts are typically the subject of specific legislation. But much of it was drafted in the "pre-blockchain" era. It may not be suitably broad to apply to all blockchain transactions and may have certain carve-outs and exclusions.	• Electronic transaction legislation should be reviewed, and if necessary, revised, in light of new technology. Further, carve-outs and exclusions should be assessed to determine whether they are still necessary. • Relevant certification schemes should be expanded, and consideration given to providing regulatory guidance or

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
	assurance regimes with respect to the validity of digital signature technologies (e.g. DocuSign).
Selling / Exchanging Tokens	
Licensing	
• The marketing and sale of traditional securities, like shares and bonds, is typically a regulated activity that requires a licensed financial intermediary to facilitate this process. The reason for this is that one of a securities regulator's key objectives is to protect investors in its local market. One of the ways in which a regulator seeks to achieve this objective is by implementing a licensing regime for entities and individuals that interface with local investors. Licensing requirements are aimed at ensuring that the licensees are financially sound, competent and otherwise 'fit and proper' to effectively perform their functions. • The legal consequences for conducting a licensable regulated activity without holding the correct license can be severe, even attracting criminal liability in some jurisdictions. Accordingly, ambiguity in licensing requirements is an area of legal/regulatory risk for regulated financial institutions. • With traditional securities products, it is relatively straightforward to determine, firstly, the category of the relevant product and, secondly, whether/what kind of regulatory license/authorisation is required to market/sell the product in that jurisdiction.	• Clear statutory definitions for classes of regulated products. These should be technology-neutral / sensitive and capable of being interpreted in light of the use of blockchain. • Regulatory feedback on proposed transaction and compliance structuring (either through existing Fintech 'contact points' or through new channels established for this purpose). • Publication of FAQs, 'best practices' and other regulatory guidance to keep market participants updated regarding compliance developments and appropriate transaction structures (e.g., publication of 'case studies' or worked examples of certain transaction structures and a description of their treatment for regulatory purposes). • Furtherance of regional cooperation and / or standardisation or equivalence would be desirable, in particular around taxonomy. • Implementing standards for tokenised securities is already being considered by several jurisdictions to facilitate the

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
• There are established procedures for marketing and selling traditional securities across multiple Asian jurisdictions, typically using an international investment bank or syndicate of banks to run the process through its/their network of locally licensed group companies/branches/affiliates (or by engaging appropriately licensed third parties to act as agents in certain jurisdictions). • However, the characterisation of tokenised securities can be less straightforward in some jurisdictions. A tokenised security that represents a share could also be characterised as another type of regulated financial product, like a collective investment scheme or derivative. Moreover, for regulatory purposes a tokenised security may be characterised in different ways across a number of jurisdictions, making a multi-jurisdictional marketing and sales process a regulatory minefield. The characterization of the tokenised security determines the licensing requirements for the FIs involved in its marketing/sale, and also the category of investor to whom the tokenised security can be sold (and dictates the necessary risk disclosures, etc, that are required).	incorporation of such digital assets into the regulatory framework. For example, a guidance paper from the German Bundesbank written in July 2019 recommends the adoption of common standards for Tokenized securities across European markets, in view of the Capital Markets Union.
Offering requirements	
• Where tokenised securities are being publicly offered, the offering document will typically be vetted by a regulatory authority. While there may be established rules and guidance in relation to the offering documents of traditional financial products, there may be	• As tokenised securities have certain different characteristics to traditional securities, guidance from regulators on the level of disclosure expected of public offering documents for tokenised securities.

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
some ambiguity in relation to the disclosures that are applicable to tokenised securities (for example, in relation to the underlying technology involved) additional to those of traditional securities. Issuers and FIs acting as arrangers would therefore need to carefully consider the disclosures and contents of a tokenised security offering document. • Where the tokenised securities are offered in reliance of a public offer exemption (e.g. the offer is only to accredited/professional investors only), a public offer document is typically not required. However, typically speaking, offering documents would still be prepared for such privately offered financial products (e.g. private placement memorandum for privately offered funds). Issuers and arrangers would need to consider the disclosure required for such offering documents. • Where the tokenised securities are offered in a number of jurisdictions, there could be some ambiguity as to how the tokens should be described in the offering document. For example, the tokens could be viewed as securities in one jurisdiction but could be treated as an additional type of financial product in another jurisdiction. In such case, labelling the tokens as "tokenised securities" in the offering document could result in confusion for some investors.	• As market practice has not yet developed in respect of the contents of public or private tokenised securities offering documents, industry groups could provide guidance/best practices on matters such as risk factors and selling restrictions (to be endorsed by regulators). *Please see Section C.3 "Primary Market"* • Where there are known areas of law/regulation with commonly identified ambiguities, these ambiguities should be clarified to establish greater regulatory certainty.
Purchaser limitations	

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
• In certain jurisdictions, the acquisition of voting control in an entity that is listed or admitted to trading on an exchange or a regulated entity may trigger regulatory approval or other requirements if certain thresholds are met. Purchasers should be mindful that the acquisition of certain types of tokenised securities (e.g. those that may be converted into voting shares of a company) could trigger such regulatory requirements. • Please also see the discussion in "offering requirements" above and "suitability and other pre-sale procedures" below which examine other limitations on the types of purchasers that may acquire tokenised securities.	• Please see the discussion in "suitability and other pre-sale procedures" below.
Suitability and other pre-sale procedures	
• Since the distributors of tokenised securities will typically be regulated/licensed persons, they will likely need to ensure that the security tokens are suitable for the target group of investors. For example: ▪ Are the tokenised securities, in general, too complicated to be suitable for retail investors? ▪ Are they classed in a certain way by the relevant regulator(s) – for example, as "complex products"? ▪ How to ascertain the various risks when assessing the suitability of a tokenised security vis-a-vis a client (e.g. product risk, concentration risk)?	• To promote and facilitate the sale of tokenised securities, specific guidance outlining distributors' obligations and factors to be considered when ascertaining the suitability of the tokenised securities to clients would give market participants a better indication on how to fulfil their obligations. • Instead of a blanket ban on distribution to retail investors, a tiered approach could be adopted to distinguish between investors with different risk characteristics. For instance, if a tokenised product was considered too complex for mass market retail, could it be sold to ultra-high net-worth clients

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
▪ How to identify whether an investor has sufficient experience in dealing in tokenised securities (or analogous products)?	on an advised basis or to high net-worth clients provided that specific risk warnings are included during the sales process.
AML / CTF considerations	
• In 2019, the Financial Action Task Force (**FATF**) provided useful guidance on the AML/CTF standards that jurisdictions should adhere to in relation to virtual asset service providers (**VASP**s) ("**FATF Guidance**"). As this is a recent development, jurisdictions may not have implemented the FATF Guidance yet under their local laws and regulations. Market participants that are VASPs should consider whether they should start complying with the principles set out in the FATF Guidance, notwithstanding that such guidance have yet to be implemented. • Under the FATF Guidance, VASPs are required to be licensed or registered in the jurisdiction where they are established. While the FATF has clarified that a VASP does not need to be so licensed or registered if the VASP is already licensed or registered as an FI (see the section on "licensing" above) to avoid overlapping regulation, market participants that are VASPs may find it difficult to identify which regulatory framework it is subject to. • FATF has also provided useful guidance on risks that are relevant to the sector that can be taken into account by FIs, issuers and advisors alike.	• In light of the potential overlapping regulatory frameworks and potential ambiguities with existing regulatory guidance, consulting with market participants on how the FATF Guidance will apply before implementing such guidance. • Unlike regulated FIs, VASPs often operate at a smaller scale and are more reliant on outsourcing than traditional financial market participants. Additional guidance from regulatory authorities on the outsourcing of AML/CTF functions may be helpful.

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
Consumer protection and market integrity standards	
• Market participants would need to consider whether general civil or criminal laws (such as fraud, misrepresentation and other consumer protection rules) could apply in respect of tokenised security transactions on exchanges, and such considerations are not necessarily apparent nor straightforward. • Tokenised securities may fall within the scope of traditional market misconduct rules and this would depend on the precise scope of the market misconduct rules in a particular jurisdiction. For example, in Hong Kong, the insider dealing rules capture securities that are listed on a recognised stock market and tokenised securities may not be listed on traditional exchanges. The regulatory status of the venues through which the tokenised securities are issued and traded therefore becomes an important consideration. • Market participants that are regulated intermediaries may also need to consider how tokenised securities fit into the existing regulatory framework they are subject to, and this assessment may not always be straightforward. For example: If a tokenised security is characterised as an OTC derivative contract, there is a question as to whether the OTC regulatory framework (e.g. the OTC derivative reporting rules) could apply.	• As discussed above, the introduction of a specific regulatory framework for tokenised securities may provide market participants with greater certainty as to the requirements (e.g. market misconduct rules) that may apply. • In relation to ambiguities as to how the existing regulatory framework applies to tokenised securities, periodic guidance from regulators (e.g. in the form of frequently asked questions).

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
• In most jurisdictions, there are public disclosure of interests requirements for listed securities, in order to identify substantial shareholders and directors who transact in securities of the companies of which they are directors. If a tokenised security represents an underlying security in a listed corporation, there is a question as to whether such token would need to take into account for the purposes of a person's holdings in the listed corporation.	
Custody of Tokens	
Licensing considerations	
• Custody licensing often depends on the nature of the arrangements between the custody provider and the client, as well as the nature of the asset. • Securities are often subject to a specific licensing regime, with other custody services being regulated as trust providers. • Distinction between custodial and non-custodial arrangements, pay attention to multi-signature rights (for example, if custodian has signing rights).	• Tokenised security custody providers should generally be regulated and insured. • But there should be recognition that custody providers for tokenised securities will not necessarily "look" like other security custody providers – rather than being large FIs, they may be technical businesses with a strong focus on cybersecurity. • Consider how deep insurance and reinsurance markets can be fostered for custody providers. • Other considerations include loss coverage, custodian liabilities, and resolution of a defaulting counterparty.

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
Indirect obligations	
• Some business (such as fund managers) are required to custody assets under management with qualified custodians and in accordance with certain prescribed standards.	• Clear guidance on whether requirements for separate custodians apply equally to tokenised security custody and/or additional standards should apply.
AML / CTF considerations	
• Custody providers will need to perform their own AML/CTF checks on both the entities they are providing custody for, and the asset that they are holding. • Tokenised securities can include, in their underlying smart contract, dedicated AML/CTF controls, including whitelisting and asset control mechanisms. Custody providers will need to ensure that they can interface with these systems.	• Clear technology-neutral AML/CTF guidelines and best practice.
Legal considerations	
• Legal clarification on who owns the tokenised security and how that is ensured.	• Consideration needs to be given to whether smart contracts or regulations can clarify this.
Tax	
General tax considerations	
• Choice of location of issuer and operations. • Tax characterisation of tokenised security being issued.	• Clear tax laws or guidance in this regard. • Availability of a system or mechanism to allow taxpayers to seek clarification / advance ruling from tax authorities.

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
• Direct tax considerations to exchanges including transfer pricing, withholding tax and double tax relief. • Direct tax considerations to investors on the holding / transfer of tokenised securities. • Indirect tax considerations. • CRS / FATCA considerations.	• A platform that allows taxpayers, professionals and tax authorities to exchange views on these new commercial developments and the related tax impact.
Other Key Items	
Privacy and data protection	
• Nature of the data: A token generally comprises three key types of data: first, the identity of the token itself (usually a number or code); second, the information that is needed to describe the underlying asset or security that the token represents (which may or may not be stored as part of the token); and third, any registration data held as part of the token (usually comprising the owner name and some form of evidence of chain of title). If the data relates to an institutional or incorporated entity, it will not typically be considered "personal" data and will not be subject to general privacy regulation in many jurisdictions. If it however related to an individual, including if it contains information that identifies the individual representative of an institution, then it will be personal data. It is important therefore to understand if	• Building the platform with "privacy by design" integrated at the beginning: ▪ building in administrative controls and structuring the technical platform to ensure that data subject rights can be managed; ▪ contractually framing the relationship to ensure it is clear who is responsible for controlling the use of personal data; and ▪ implementing best-in-class compliance procedures and training and encouraging the same on an ongoing basis throughout the securities lifecycle, including privacy

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
any of the aforementioned categories contain personal data and, if so, identifying what specific information that is. • Consent: If personal information is contained within one of the categories associated with the token described above, then appropriate consent will usually (though not always) need to be obtained from the affected individual in order to validly process the personal data. This will usually be an obligation placed on the entity responsible for issuing the token (although it may be the entity that interfaces with the individual, if that entity is different to the issuer). • Territoriality: Individuals may be located in a variety of different countries. Privacy laws vary across jurisdictions, and therefore understanding which specific laws apply will be critical to understanding what rights certain individuals may have and the contracts that need to be put in place between various entities throughout the securities lifecycle. • Understanding the controller: In some (but not all) data privacy regimes, the law distinguishes between a controller of personal data and a processor. Controllership may be standalone or in partnership with other entities. The controller is typically the entity responsible for making decisions about how the data is used. Throughout the securities lifecycle, the controller may change as ownership of the token, and management of the platform, changes. Understanding which entity at any given time	impact assessments, incident response planning and data subject rights procedures.

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
is the controller will be essential to determining which institution or entity is responsible for complying with privacy laws. • Dealing with data subjects: In many jurisdictions, individuals have the right to access their data, change it (if there is an error), obtain a copy of it, delete or restrict the way it is used. The issuer will need to enable these rights to be complied with – for example, the ability to delete or change personal data that is embedded as part of a token or associated with that token. In persistent blockchain technologies it can be difficult to delete or remedy errors in information once they are coded, meaning the platform needs to be developed from the ground-up with these administrative privileges embedded. • Transferring data across borders: It is unusual for nodes to be located in a single jurisdiction. If personal data is stored in multiple jurisdictions, and is intended to flow freely across borders, then the law usually imposes that certain contractual controls and enforcement guarantees be put in place to ensure personal data is not stored where data subjects are unable to enforce their rights. • Understanding the processors: Some entities will only be processing personal data on the instruction of the controller (who may be the issuer, the agent responsible for platform management, or another entity that is directing the operation of the platform). Contractual controls will need to be in place to	

Key legal and regulatory considerations for market participants	Regulatory considerations and success factors for a robust enabling environment
ensure that privacy regulation can be enforced against these entities.	
Evidence of ownership (vs control) in proceedings	
• Proving control of an address can be both a technical and legal issue, and opinions should be sought from professional advisors for new models and large transactions. • Technology can also affect disputes over ownership. For example, if tokenised securities are deployed on a private network with known entities controlling each address, then disputes over ownership are likely to be easier to resolve than if a public network with pseudonymous addresses is used. In addition, the number of confirmations that will be required for tokenised securities transfer to be final will need to be established in the token's documentation.	• Ensuring that there is formal recognition under the law of the legal nature of tokenised securities, and virtual assets more generally. • Clear regulatory guidance on what will be considered to constitute ownership of a virtual asset by, for example, a jurisdiction's tax and financial authorities, would provide a reference point for assessing ownership. • Training for government officials and regulators so that they can understand and appreciate the technical differences between various blockchain platforms, and how this may affect ownership.

Table 6: Key legal and regulatory considerations and recommendations for regulators

D.2. Technology roadmap

Blockchain technology decisions for tokenised securities are an important consideration for FIs and issuers. Important considerations include the choice of protocol, interoperability of protocols and blockchain versus legacy systems. At the protocol-level, each blockchain implementation offers trade-offs that need to be considered based on the product/use case, required liquidity, regulatory constraints, and finality requirements. As a result, even in a benign environment, there is unlikely to be a 'one size fits all' answer to the question of which blockchain to use.

As firms experiment more with tokenisation, the proliferation of different protocols and use cases suggest that the roadmap needs to be flexible around future developments. Technical solutions that bridges different blockchain protocols (interoperability) and along with the evolution of standards (around smart contracts) anticipate an end-state with more flexibility.

Finally, at the industry level, as tokenisation moves towards productions, technology teams for market participants may need to tweak operating models and consider regulatory requirements that cater to a market infrastructure setup that is distributed (vs centralised).

Technical Roadmap - Key dimensions		
Protocol Specific	**Cross-Protocol**	**Industry**
• Permissioned versus Permissionless • Ecosystem development • Technical capabilities	• Interoperability • Standardisation	• Blockchain versus legacy systems • Compliance with regulation

Table 7: Technology roadmap

<u>Permissioned versus Permissionless blockchains</u>

At the foundation of any firm's technology roadmap, there is a need to understand the trade-offs between using permissioned versus permissionless blockchain protocol implementations:

Permissioned blockchain implementation	Permissionless blockchain implementation
A select group manages the governance of network transactions. The consensus mechanism requires the identification and pre-determined access rights for network participants. There is an	An open network manages the governance of transactions. In theory, anyone can participate in a permissionless network, as long as they meet the minimum requirements (e.g. running a node, participating in the mining or staking process, etc).

assumption that some level of trust exists between participants.	The need for trust is replaced by a reliance on economic incentives to drive emergent behaviours.

Table 8: Key differences between permissioned and permissionless blockchain implementations

When it comes to tokenised securities, the implications around a firm's technology decisions, may influence the degree to which perceived benefits (as described in earlier sections) are realised.

- ***Permissioned blockchain implementations*** have historically been preferred for use in enterprise settings, given the greater degree of control and customisation. To meet the standards of regulated tokenised securities offerings, permissioned models tend to allow for tighter control of the participant set, reduced anonymity (aiding in AML/KYC), and is architected in a way that provides clear on-chain settlement finality. However, trade-offs may also exist regarding the costs to maintain the infrastructure, speed of technology innovation, and ability to grow network effects/access to liquidity.
- ***Permissionless blockchain implementations*** offer an architecture that is built for different trade-offs. By starting with an open-source infrastructure, the ability to scale technologically across borders, onboard users globally, and access existing and future network effect benefits / liquidity pools, is technologically available on Day 1. However, as permissionless models offer less individual control over network governance, and can employ transaction mechanisms that challenge conventional notions of settlement finality (e.g. probabilistic finality), firms may need to carefully consider their usage for regulated activities. Also, depending on the consensus mechanism utilised, transaction speeds / throughput may also be lower than permissioned blockchain implementations.

The operational challenges of public blockchain networks are well documented and firms are well advised to evaluate the features of permissioned and permissionless blockchains before deciding on the ideal option. Additionally, the level of market participant support for the selected technology will have profound liquidity and market reach implications.

Ecosystem Development

Each blockchain protocol has its own ecosystem that consists of developers, applications, core infrastructure / hardware providers, and network validators. In the context of tokenised securities, firms may consider studying the health and size of the ecosystems around different blockchain protocols, to understand how to best position their technology decisions. Some key considerations for the technology ecosystem around tokenised securities include:

Developer tools

- Quality of developer tools, open-source developer communities, technical documentation available for smart contracts.
- Number of upgrades and date of the last update.

Application and services

- Number of start-ups or incumbents building applications and services (e.g. issuer platforms, exchange platforms, wallets) that utilise the blockchain protocol.

Cash-leg optionality

- Availability of a viable digital cash / stablecoin implementation to facilitate the cash-leg of an on-chain securities transactions (e.g. interest / dividend payments, buying / selling transactions etc.).

Stability, security, and resilience

- Ability and reliability of the ecosystem to maintain and update the transaction ledgers in a safe, secure and predictable way.

Market participant support for the selected technology

- Number of applications built, usage by FIs / Fintehs

Figure 3: Key ecosystem considerations

Normally the securities leg and the payment leg of a DvP transaction settle simultaneously. In order to achieve this the securities platform and the payment network must interact. The means of payment (payment/exchange tokens/fiat currency) and its underlying blockchain or non-blockchain network is an important consideration. Firms must carefully consider the legal and regulatory aspects of participating in any non-traditional payment network in the jurisdictions in which they are planning to roll-out their tokenisation platform. Some countries have banned cryptocurrencies and hence this is an important consideration. On the other hand, central banks including the Bank of Canada, MAS and Sweden's central bank have undertaken initiatives to explore the feasibility of digitising central bank money on a distributed ledger, which would make it possible for tokenised security platforms to interface directly with payment systems. However, such networks of CBDCs are not yet operational and are not expected to be launched (particularly on a cross-border basis) in the near future. Meanwhile, private stablecoin initiatives are being closely scrutinised by the Financial Stability Board and the G7 Working Group on Stablecoins, which issued a report in October 2019 identifying global stablecoins as having the potential to raise serious financial stability issues and calling upon public authorities to review laws and regulations relating to stablecoins.[10]

New Technical Capabilities

[10] Sources: *FSB, Regulatory issues of* stablecoins, 18 October 2019 (https://www.fsb.org/wp-content/uploads/P181019.pdf) and *BIS, G7 Working Group on Stablecoins, Investigating the impact of global stablecoins*, October 2019 (https://www.bis.org/cpmi/publ/d187.pdf)

Firms considering tokenised securities issuances, enabled through blockchains, may also need to consider new technology capabilities required and the new features available through the use of blockchain. Each layer of the blockchain technology stack brings about new areas that firms will need to incorporate into existing processes and workflows. Some of the novel technical considerations include:

Capabilities	Key considerations
Node management	• As the blockchain infrastructure extends from the concept of one single centralised database / datastore, towards a distributed data storage model, whereby many nodes store / listen / share data traffic, firms will need to consider how to set up their node infrastructure. • This includes things like: how many nodes to run, where the nodes should be located physically, if nodes should be on premise or in the cloud, etc.
Asset management	• If the decision is made to use permissionless blockchains, there may be additional requirements for network participants to purchase blockchain-specific utility tokens for voting, staking, and/or transaction fee payment.
Key management	• Key management standards for most blockchain platforms do not align with traditional Public Key Cryptographic Standards (**PKCS**)/Hardware Security Modules (**HSM**) key management requirements and need to be standardised in order to make it amenable to FIs. • The effective management of private-public key infrastructure is critical to the custody and trade of tokenised securities. New safekeeping models and enterprise grade key wallets will be required to mitigate this risk.
Smart contacts	• Increased usage of smart contracts to express transactions will introduce new programming languages and security / threat models which firms will need to upskill on. • Smart contract programming languages usually differ by protocol and are not always extendable / exportable.

Table 9: Key technical capability considerations

<u>Standardisation of protocols</u>

Given the profusion of blockchain protocols available, standardising key protocol elements – endorsement/consensus models, interoperability approaches, on-chain data storage, smart contract frameworks etc. is critical.

Standardisation of protocols would depend on the use-case / product offering and the existing eco-system into which it would need to connect. For example, there may not be a need to connect to any other nodes if the blockchain architecture would be accessed only by the issuer and a single customer. Such a model is not scalable and would limit the issuer from onboarding clients or connecting with a payment platform or with other participants (who may be using other protocols).

As tokenised securities move towards becoming 'smarter' (for e.g. automated dividends, splits), standardisation of smart contract protocols will become essential. Existing smart contract deployments are largely custom, which limits testing, security and scalable deployment. Standards need to be established around testing norms, design of trusted oracles, regulatory compliance mechanisms, recourse for operational failures and governance. International digital standards around digital token identifiers should also be considered. The objective would be to develop an international standard to address the demands of exchanges, custodians, FIs, and regulatory authorities for a registry and identifier assignment process. A positive development is that, Anna, the securities numbering agency behind the International Securities Identification Numbers (ISIN), has in October 2019 set up a technology taskforce to explore ways of extending its standards to digital asset trading. The taskforce will assess the role and scope of ISINs in respect to digital asset identification.

Interoperability

Tokenised securities deployed in a blockchain network will need to be made interoperable with other networks. This will help enhance liquidity for token investors and ensure faster deployment within custodians and CSDs. Even as token standardisation efforts (e.g. the token taxonomy initiative[11]) are emerging, standardising token representations for various securities is necessary to ensure cross-market liquidity, and to ensure consistent data management and sharing across the lifecycle of the security. This requirement has been recognised by platform developers as some of them are working on an industry-wide common taxonomy and ledger-to-ledger communication which will allow tokens to be listed on multiple ledgers, allowing more participants to be involved in a seamless, cohesive ecosystem resulting in improved efficiencies, larger markets and improved liquidity.

Multi-ledger settlement and ledger-to-ledger communication will need to be developed as many tokens are listed on multiple, incompatible ledgers, creating portability issues.

Blockchain infrastructure versus legacy systems

In comparison to traditional systems, blockchain environments offer a distinct operating model allowing greater straight through processing, real time controls, new security processes, agile architectures and unique expertise. For all of their advantages, the risks posed by blockchain infrastructure are also unique

[11] Source: Enterprise Ethereum Alliance (https://entethalliance.org/participate/token-taxonomy-initiative/)

in comparison to traditional systems, including transaction security failures, data spoofing issues, smart contract code vulnerabilities and scalability challenges. These emerging issues are being addressed steadily, but solutions will benefit from time to mature.

Segregation of blockchain infrastructure from legacy systems in the short to medium term can help accelerate deployment of new technology. Segregated environments serve to protect traditional infrastructure from emerging risks enabling focus on 'gatekeeping' roles and integrations. They also enable greater agility for the new blockchain infrastructure, unencumbered by the pace and capabilities (or lack thereof) of traditional infrastructure. This being said, while parallel tracks can exist in the near term, it is not practical and cost inefficient to maintain two sets of systems. Market participants should work in integrating blockchain infrastructure into legacy systems over time to prevent a fragmentation of market liquidity.

Regulatory consideration: Compliance with financial markets and other regulations

Regulations currently applicable to financial market firms are also applicable for the tokenised security offerings. Token trades need consistent mechanisms to ensure settlement finality across blockchain ecosystems, in alignment with regulatory requirements. The IOSCO Committee on Payment and Market Infrastructures requirements for settlement finality[12] require clarity around moment of trade entry, moment of irrevocability and enforceability. In networks with varying levels of decentralised operation, these moments need to be clearly defined in rulebooks and agreed with all parties. Similarly, the regulatory requirements for storage and sharing of personal data needs to be taken into account while designing the architecture and agreeing on the protocols among the various participants.
Several other technical and operational aspects including the protocols for onboarding and off-boarding parties to the ledger, data stored and retained on the blockchain, how does the chain handle and treat transactions previously ratified by those onboarded/offboarded actors, etc. would have to be decided based on the regulatory requirements in the jurisdiction.

D.3. Driving liquidity

Whilst tokenisation offers many benefits that are likely to drive liquidity in illiquid asset classes, the mere act of token generation to represent ownership claims on a traditional asset does not impact liquidity in and of itself. If a token is thinly traded it is still relatively illiquid. A benign environment that creates additional liquidity depends on the tokenised security's design (tokenisation vs fractionalisation) and the maturity of the market players.

Drivers of liquidity based on tokenised security design

[12] Source: BIS Committee on Payment and Settlement Systems, Technical Committee of the International Organization of Securities Commissions, *Principles for financial market infrastructures*, April 2012 (https://www.bis.org/cpmi/publ/d101a.pdf)

From a digital asset point of view, liquidity is affected by various properties delivered from the tokenisation and fractionalisation of the asset. Tokenisation is essentially the digital representation of an asset on a blockchain. Fractionalisation is the ability to break down the asset tokens into smaller chunks. The two are interdependent but provide different value from a liquidity point of view:

Tokenisation	Fractionalisation
• Enables participation in electronic markets – some of which are public • Dynamic customisation of portfolios increases utility • Flexible formulation of smart contracts provides exposure to specific attributes of an asset (e.g. dividend only, rental yield for real estate, profitability of a specific product) • Cost efficiency by disintermediation improves return	• Reduced barrier to entry opens up the primary market to smaller investors and increases liquidity • Direct-to-consumer distribution (when allowed) is easier when units are smaller, providing for more democratic secondary market (only valid for certain assets and likely to be subject to enhanced regulatory scrutiny)

Table 10: Difference implementations of tokenised securities - tokenisation versus fractionalisation

Drivers of liquidity based on maturity of supporting market players

In what follows, we list some considerations that will play a role in driving liquidity for tokenised securities:

- ***Infrastructure****:* all the (regulated) infrastructure that is required for an investor to access a specific token need to exist and be sufficiently developed e.g. regulated markets where dealers/counterparties have been AML/KYC'd, regulated exchange/trading venues that are reliable and integrated into existing portfolio management tools, risk systems, etc.
- ***Trust in blockchain/Smart Contracts:*** Public perception of tokens and blockchain is that this approach offers a superior security solution compared to existing alternatives. This will remain positive from a liquidity perspective so long as issuers actively monitor risks and are quick to remedy any potential losses from hacks, etc. by cancelling lost tokens and reissuing new tokens to the rightful owners.
- ***Trustworthy ecosystem****:* The formation of a trustworthy ecosystem of issuers, advisors, custodians, exchanges who are capable of eliciting trust in tokenised securities is still in the nascent stage.
- ***Custody:***
    - As will traditional assets, many professional investors participating in tokenised securities will prefer a third-party custodian for the secure storage, administration and reporting associated with their holdings. The presence of independent institutional custodians to

securely store private keys, and administer/ report on token holdings, will be crucial to attracting professional investors (and their liquidity) to the space. Traditional custodians and CSDs will be welcome additions to the ecosystem and are sure to emerge when the market reaches significant size.

- For tokenised securities, custody standards are evolving to provide a flexible range of product offerings / functionality (e.g. balancing ease of trading/transfer with security, via pre-agreed whitelists, time locks and the possibility of roll-back of fraudulent transactions for certain protocols, integration with trading environments / exchanges).
- Unlike assets on public blockchains (e.g. Bitcoin, Ethereum, etc…), in the event of theft, a stolen tokenised security would often be able to be cancelled and new tokens could be issued in its place. As such, the risk of loss from theft of tokens is less than for digital currencies but this eventuality should be properly planned for by issuers and issuance documents should outline the circumstances and mechanism by which cancellation/reissuance of tokens will take place. An investor will often be able to specify to their custodian the security measures they require, balancing ease of trading/transfer with security, via pre-agreed whitelists, time locks and the possibility of roll-back of fraudulent transactions.
- Value chain aggregation – in the digital asset space, it is increasingly common for custody to be offered as part of another service on the value chain. For example, in Switzerland, the SIX Digital Exchange also offers custody solutions and can expect that synergies in reporting, settlement and security will exist for clients wishing to trade and store assets under the same roof e.g. a single player can be issuance advisor, bookrunner, exchange, custodian and administrator all in one.

- ***Standardisation of protocols and interoperability:*** liquidity of tokens can be enhanced via listings on multiple venues around the world, enabling easy access to the token. For this reason, as mentioned above, it is crucial that the underlying technology allows interoperability across multiple platforms.
- ***Balancing liquidity with investor protection****:* increasing the size of the liquidity pools (both onshore and offshore), depends in part on balancing investor access restrictions and investor protection. To the extent that implementation of a tokenised security provides greater transparency and reduces risks, there may be scope for re-visiting thresholds around client onboarding / suitability and professional/accredited investor regimes.
- **Considerations for exchanges:** token platforms will have to establish incentive models to encourage market makers to provide liquidity on the platform. This may include waiving off or providing discounts to exchange charges, using maker/taker fees, rebates, tiering of exchange charges, etc.

D.4. Educating investors

Educating investors and potential investors and create awareness around tokenised securities around the advantages but also around the level of due diligence on the offering will be key to drive trust in the ecosystem. To that end, we have developed in Annex a checklist of questions that an investor should consider asking before in investing tokenised securities or security tokens.

Annex: Buy-side Checklist of Key Issues in Tokenised Securities Offerings

1. Assess security risks of blockchain protocol underlying the tokenised securities.
2. Understand inherent price volatility of tokenised securities.
3. Assess any vulnerabilities of open-source software that underlies the issuer's technology, including risks of data breaches and theft of assets.
4. Keep abreast of ongoing regulatory developments concerning tokenised securities, which may vary significantly among jurisdictions.
5. Understand the issuer's business model and growth strategy, and assess whether such strategy would be compatible with existing and/or upcoming regulatory requirements.
6. Assess whether tokens traded on a platform need to be held by a custodian or digital wallet held by a custodian during the trading process. If so, assess approval requirements for issuer's broker-dealer or equivalent license due to the issuer's custodial relationship.
7. Assess the issuer's ability to develop competitive advantages with respect to its products and services, and whether the issuer has sufficient resources to develop its products and services and succeed in developing and maintaining market share.
8. Assess regulatory exposure of the issuer, and whether regulatory changes will adversely impact the issuer's compliance, business and technology resources and give rise to additional operational costs.
9. Assess risks of illegal activity occurring with the issuer's products/services or over the issuer's platforms and understand the effect on the issuer's business if the issuer's non-compliance with applicable AML/KYC requirements were to result in regulatory penalties.
10. Assess whether the issuer has sufficient cash flow from operating activities and whether it will be able to maintain adequate capital to meet regulatory capital requirements and meet the needs of its business.
11. Understand regulatory capital requirements with respect to the exchange authorities in jurisdictions in which the issuer operates, and assess whether such regulations would require maintenance of capital reserves in the issuer's subsidiaries.
12. Assess how IT systems and capacity constraints would affect business operations and growth of the issuer.
13. Assess cybersecurity risks applicable to business operations of the issuer, and the extent to which ongoing compliance with cybersecurity requirements may result in additional costs.
14. Assess the risks that misuse or misappropriation of encrypted personal data may give rise to breaches of privacy laws, fines and sanctions, and risks of security breaches with respect to the token holders' personal identity information base.
15. Assess vulnerability of the issuer's operational infrastructure or security system to security breaches or malfeasance of employees.
16. Assess compliance, risk management and operational risks applicable to the issuer, including the issuer's ability to attract and retain qualified compliance and other risk management personnel.

Assess the risk of intervention by regulatory authorities, including examination and surveillance activity.

17. Confirm that the relevant token purchase agreement addresses the economic entitlement of token holders, default risks and exculpatory standard with respect to the token purchase.
18. Assess factors driving valuation of tokens, which may include potential market perception of the token's value and potential liquidity for tokens on a secondary market.
19. Assess risks of investor dilution caused by potential issuance of additional tokens in future offerings, or issuance of options, warrants or convertible securities with options to purchase tokens.
20. Assess bankruptcy, restructuring and insolvency risk in the event that the issuer incurs debt with priority equal or senior to the rights of token holders.
21. Assess the relevant tax implications and tax reporting considerations applicable to token holders.
22. Understand the voting rights that attach to a token and the extent to which such rights would allow token holders to influence the issuer's corporate governance and participation in significant corporate transactions.
23. Assess conflicts of interests between shareholders of the issuers and the token holders.
24. Assess the risks of regulatory actions by jurisdictions that may restrict the right to acquire, own, hold, sell or use blockchain assets or to exchange blockchain assets for fiat currency.
25. Assess the extent to which the issuer will rely on third party contractors for key elements of its technology infrastructure, and the issuer's ability to protect its own proprietary technology.
26. Assess the ability of token holders to enforce judgements against the issuer and its responsible officers and to serve process on these parties in the relevant jurisdictions.