Research Office
Legislative Council Secretariat

Information Note

Legal framework for digital development and transformation in selected industries

IN13/2024

1. Introduction

1.1 In recent years, the development and widening application of emerging digital technology – e.g. Web 3.0 technology (including distributed ledger technology ("DLT")), Internet of Things ("IoT"), artificial intelligence ("AI") and automation – have transformed ways through which economic activities are conducted, leading to the emergence of a "digital economy".[1] Specifically, Web 3.0 technology may disrupt the way to conduct business mainly through (a) the power of DLT to store all data on asset ownership and the history of conducted transactions; (b) "smart contracts" that represent application logic and execution of specific tasks independently; and (c) digital assets.[2]

1.2 Such digital transformation has impacted a wide range of sectors. The trading and logistics industry and the financial industry – both being pillars of the Hong Kong economy – are among those sectors undergoing major disruptions. Web 3.0 technology can bring many opportunities and benefits to the **trading and logistics** industry, including enhancing sharing/distributing/verifying information exchanges and driving process automation.[3] Many trading and logistics companies have begun to tap into the potential of digital transformation in improving efficiency, for example by using DLT-based platforms to track goods and leveraging IoT devices for real-time data collection and route optimization. For the **financial industry**, new digital technology has not only enabled new ways to conduct financial services such as decentralized finance ("DeFi") (i.e. using smart contracts to execute lending, trading and insurance in an automated and decentralized way), but has also given rise to new financial infrastructure (e.g. crypto asset exchanges) and even new classes of assets (i.e. crypto currencies and tokenized bonds).

1.3 To realize the potential of digital economy, clarity in the legal framework is vital for instilling trust on technology, ensuring resilience of the

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1 This study will adopt the broad definition of digital economy as put forth by G20, i.e. "a broad range of economic activities that include using digitized information and knowledge as the key factor of production, modern information networks as an important activity space, and the effective use of information and communication technology as an important driver of productivity growth and economic structural optimization".

2 See McKinsey (2022b).

3 See United Nations Economic Commission for Europe (2023).

platforms, and protecting the rights of consumers and businesses. Although transformations are already underway, legal frameworks in Hong Kong are still largely based on the traditional economy and have yet to catch up with the changes. At the request of Hon Carmen KAN Wai-mun, the Research Office has conducted a study to explore the legal frameworks in other jurisdictions in facilitating and regulating digital economy. The study focuses on two industries, namely the **trading and logistics industry** and the **financial industry**, given their importance to Hong Kong's economy and their potential benefit from digital transformation. This ***Information Note*** first gives a brief overview on Hong Kong's broad digital economy development efforts. It then, for each of the two industries, discusses (a) Hong Kong's initiatives and legislative issues/gaps in pursuing digitalization; (b) relevant international guidelines/recommendations on legal frameworks; and (c) global trend in legislative reforms, followed by examples of **Singapore** for the trading and logistics industry, and **United Arab Emirates** ("UAE") for the financial industry. A summary of global developments is provided in **Appendix 1**.

2. Hong Kong's development in relation to digital economy

2.1 The World Bank stated in 2022 that digital economy contributed to over 15% of global gross domestic product ("GDP") and in the past decade, it had been growing at 2.5 times faster than physical world GDP.[4] While the corresponding figure for Hong Kong is unclear, recognizing the significance of digital economy development, the Government set up in 2022 the **Digital Economy Development Committee** ("DEDC"), chaired by the Financial Secretary and comprising industry experts and academics, to advise on the development of digital economy. In February 2024, DEDC put forward 12 core recommendations to the Government on various areas covering data flow, digital infrastructure and talent development. The parts pertaining to strengthening of digital policy include: (a) setting up the **Digital Policy Office** ("DPO") to formulate policies on digital government, data governance and information technology in the next two years; (b) within three to five years, reviewing the existing **legislation and guidelines** to strengthen data governance and enhance security and protection; and (c) setting up a **governance framework** to identify and mitigate risks such as data security, digital inequality, personal data protection, etc.[5] According to the Government, some of the above are already underway. For instance, it is working towards the establishment of DPO and introduction of a new legislation to stipulate the

4 See World Economic Forum (2022).
5 See Digital Economy Development Committee (2024).

cybersecurity obligations of critical infrastructure operators;[6] and has signed the memorandum of understanding with the Cyberspace Administration of China on jointly promoting cross-boundary data flow in the Guangdong-Hong Kong-Macao Greater Bay Area. Industry-specific initiatives are discussed in the next two sections.

3. Trading and logistics industry

Hong Kong's initiatives

3.1 In October 2023, the Government published the *Action Plan on Modern Logistics Development* to put forward strategies and actions conducive to the sustainable development of the logistics industry. Two of the eight strategies set out in the document were of particular relevance to digital economy, namely: (a) to promote **digitalization in the industry and smart logistics development**, through for example making available subsidy schemes and training funds for companies and practitioners to adopt new technologies; and (b) to promote **interconnectivity of logistics data** for enhancing industry competitiveness, starting with a study on the development of a data platform linking the airport, maritime ports and other logistics systems with a goal to achieve inter-operability with platforms on the Mainland in the long run.

3.2 Meanwhile, to facilitate the digitalization of the **maritime industry**, the Shipping Legislation (Electronic Certificates and Electronic Log-books) (Amendment) Ordinance took effect from August 2023, thereby providing backing to the use of electronic certificates and electronic logbooks for Hong Kong-registered ships, and granting them the same legal effect as their paper-based counterparts. Furthermore, in the Government's *Action Plan on Maritime and Port Development Strategy* promulgated in December 2023, one of the strategies put forward was "facilitating **smart port development** and promoting **maritime digitization**", involving promoting interconnectivity of maritime ports, airport and logistics data as mentioned above, and widening the use of the digital Port Community System ("PCS").[7] The shipping industry has also taken the initiative to develop a prototype for tokenized electronic bills of lading ("eBLs") enabled by DLT.[8]

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[6] See Financial Secretary (2024). The proposal to set up DPO was approved by the Legislative Council's Finance Committee on 14 June 2024. Meanwhile, the proposed regime regarding protection of computer system in critical infrastructures will be discussed by the Legislative Council's Panel on Security in July 2024.

[7] PCS has been under trial by phases since 2023, which includes the local and cross-border delivery processes of cold chain goods.

[8] The initiative is led by Global Shipping Business Network, a non-profit industry consortium. See Global Shipping Business Network (2023).

Gaps in Hong Kong's legal framework

3.3 Despite the Government's commitment and the various action plans discussed above, the readiness of **legal framework to back the development was not explicitly discussed** in the documents. In fact, some consider that the current legal framework has yet to catch up with domestic market demand as well as developments overseas. For instance:

(a) **Legal impediments to paperless trade**: Trade and trade finance transactions are effected through the transfer and exchange of various documents. The Electronic Transactions Ordinance (Cap. 553), enacted in 2000 and modelled on United Nations Commission for International Trade Law ("UNCITRAL") Model Law on Electronic Commerce ("MLEC") (1996), gives electronic records and electronic signatures the same legal status as that of their paper-based counterparts. Yet, certain items like **negotiable instruments** (including promissory notes and bills of exchange)[9] and instruments that require stamping under the Stamp Duty Ordinance (Cap. 117) are expressly excluded, which means that these documents must still be handled in paper-based formats.[10] Furthermore, while use of **eBLs** for trade is not restricted by law, adoption by business is considered far from substantial because of certain limitations.[11]

(b) **Legal issues concerning novel technologies**: While the advantages of novel technologies are widely discussed, actual applications remain limited in the absence of a clear legal and regulatory framework. Currently, the Hong Kong Monetary Authority ("HKMA") is exploring the development of the tokenization market, including tokenized items relevant to or applicable in the trading and logistics industry such as **smart**

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9 Cheques that bear the words "not negotiable" can be in electronic form.

10 See Commerce and Economic Development Bureau (2014), Clifford Chance (2021) and Financial Services Development Council (2024).

11 The bill of lading, issued by carriers to acknowledge receipt of cargo from the shipper, is one of the most important trade documents required for shipping, accounting for 10% to 30% of trade documentation costs. Traditionally, the main challenge with using electronic form of such documents has been establishing what constitutes an "original" document and its "possession" in an electronic environment. Companies involved in trade have to rely on contract law when using such electronic records, which means that all parties involved in a transaction enter into agreement and follow the same set of document standards. Although commercially available technology solutions for an eBL based on contractual frameworks had already been in use by shippers, such contractual approach is considered to have limitations, benefitting only the parties included in the contract. See Global Trade Review (2021), McKinsey (2022a) and Digital Container Shipping Association (2023, 2024).

contract/DLT-backed eBLs and small and medium-sized enterprise trade financing.[12] However, according to the Department of Justice, there remain **legal issues** associated with commercial applications, for example, conflicts of laws between jurisdictions, handling of liability and disputes, and/or admissibility of data as evidence in court, in addition to issues on personal data protection. All these necessitate Hong Kong to review its local regime and the international community to develop common standards and/or guidelines to enhance legal certainty and reliability in technology use, and uniformity across jurisdictions.[13]

International guidelines

3.4 As a global organization to promote international trade, the **World Trade Organization** ("WTO") has, in consultation with public and private-sector experts, published recommendations on policy framework for trade digitalization. Among the recommendations, the following elements are of relevance: (a) a legal framework enabling **data transmission across borders** in a trusted manner; and (b) a legal framework supporting the cross-border **legal recognition of electronic trade documents and transactions**. It is also worth noting that WTO emphasized the importance of frameworks of different economies to be **inter-operable** at the international level.

3.5 Some international organizations have published **high-level** and **principle-based** guidelines on legal frameworks for digital economy on trade, especially related to paperless trade and blockchain application. For **paperless trade**, one of the most influential efforts towards creating international compatible legal frameworks is **UNCITRAL**.[14] UNCITRAL has developed model laws relevant to digitalization and automation in trading and logistics industry, such as:[15]

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[12] See Hong Kong Monetary Authority (2024a) and Bank for International Settlements (2023).

[13] See Department of Justice (2019).

[14] UNCITRAL was established by United Nations General Assembly in 1966 to promote the progressive harmonization and modernization of international trade law.

[15] A model law is a suggested pattern for lawmakers to consider adopting as part of their domestic legislation. It aims to provide a framework but without setting out the details of implementation. UNCITRAL's model laws pertaining to digital economy follow several key governance principles, namely: (a) non-discrimination between the use of electronic communications and paper-based format when submitting documents; (b) functional equivalence (paper-based functions may be replicated by electronic communications or procedures); and (c) technological neutrality (legislation does not favour specific technology).

(a) the ***UNCITRAL Model Law on Electronic Transferable Records (2017)*** ("MLETR (2017)"), which provides a framework for electronic transferable records through offering legal recognition to the electronic form of documents that underpin trade logistics and financing, such as bills of lading, bills of exchange, and negotiable instruments. For such documents, recognition of the authenticity is required for them to be used in trade, because transfer of possession of the documents confer **transfer of rights**.[16] MLETR (2017) sets out criteria under which electronic transfers may be considered equivalent to paper-based documents, thus forming the legal basis for allowing **end-to-end digitalization** of documentation in trading and logistics, regardless of which technology is used. As of May 2024, nine jurisdictions globally had adopted MLETR (2017);[17] and

(b) framework for smart contracts: the ***UNCITRAL MLEC (1996)***, which established a standardized approach to the **legal validity and enforceability of contracts** formed by the exchange of data messages or by the interaction of automated systems, provides a starting point for a legal framework for **smart contracts**. Building primarily on MLEC (1996) and the *United Nations Convention on the Use of Electronic Communications in International Contracts*, UNCITRAL has since 2022 been working on addressing legal gaps related to smart contracts, which it refers to as **automated contracting**. Draft provisions on automated contracting was published in 2023 but are still work-in-progress.[18, 19]

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[16] For example, the legal holder of a bill of lading is conferred the right to physical delivery of goods. The parties involved would therefore need certainty that their rights are unique and that there is not a second holder with a competing claim to the same goods. See Baker McKenzie (2021) and World Trade Organization (2022).

[17] The nine jurisdictions include Bahrain, Belize, Kiribati, Papua New Guinea, Paraguay, Singapore, Timor Leste, United Arab Emirates (Abu Dhabi Global Market) and the United Kingdom. In Hong Kong, the Government has not indicated whether it would consider local adoption. See United Nations Commission on International Trade Law (2024) and GovHK (2023).

[18] See United Nations Commission on International Trade Law (2023a).

[19] Another example of UNCITRAL model laws is "UNCITRAL Model Law on the Use and Cross-border Recognition of Identity Management and Trust Services" introduced in 2022. It provides a set of model legislative provisions that legally enable the use of identity management services for online identification of physical and legal persons as well as the use of trust services to provide assurances as to the quality of data in electronic form. See United Nations Commission on International Trade Law (2022).

3.6 On the **application of blockchain technology on trade**, the United Nations published a white paper in 2023 providing broad guidelines on a legal framework to address the issue of legal status and reliability of the new processes, including: (a) recognition of records on blockchain in courts of law; (b) dispute resolution; (c) data capture, storage, ownership, sharing and security provisions regarding blockchains; (d) minimum standards for certification or compliance with regard to digital processes; and (e) registration of blockchains.[20]

3.7 While advocating for international consistency, international organizations also emphasize that there is **no one-size-fits-all approach** to implementation. Various factors including individual jurisdiction's **legal tradition**, **pace of technological development**, and **expected use-cases** of the technology all come into play.[21] Design of a legal framework will therefore necessarily involve stakeholder participation. The implementation experiences of selected economies as highlighted in the ensuing paragraphs may show variations, as they are driven by unique regulatory environments and local market circumstances.

Major developments globally

3.8 Some of the major economies have taken the lead to update the legal frameworks for **electronic trade documents and transfer**, for example: (a) the **United States** ("US") amended the Uniform Commercial Code in 2022 to recognize the functional equivalence of eBLs;[22] (b) in the **United Kingdom** ("UK"), the Electronic Trade Documents Act 2023, which came into effect in 2023, was modelled on the MLETR (2017) framework; (c) the **European Union** ("EU")'s Electronic Freight Transport Information Regulation ("eFTI"), to be fully implemented by end-2024, establishes a legal framework that allows transport and logistics operators to make available to competent authorities regulatory information in an electronic format concerning the transport of goods by road, rail, inland waterways and air. eFTI is a significant stride in the international operability of logistics data (among EU member states and with their major trading partners), as well as among different transport modes;[23] and (d) **France** passed a legislative proposal in June 2024 to enable the full recognition of electronic transferable documents, partly by making reference to MLETR (2017).[24]

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20 See United Nations Economic Commission for Europe (2023).

21 For instance, while blockchain can be a general-purpose technology, the intended commercial use of the technology will determine the laws and regulations required to be put in place. As the precise legal and regulatory prescriptions for specific use-case differ, the legal framework is in part driven by which activities market players desire to undertake. See United Nations Economic and Social Commission for Western Asia (2023).

22 See New York Law Journal (2023).

23 See Escola Europea Intermodal Transport (2024).

24 See Lexology (2024) and Assemblée Nationale (2024).

3.9 On the other hand, given the great possibilities of use cases of novel technologies on trade, regulation of such technology application is not widely seen. There are just few examples and they tend to focus on **data security and protection**. For example: **EU**'s Data Act is a significant step in the regulation of IoT and smart contracts. Broadly speaking, it requires providers of **IoT devices** to make device-collected data to be accessible by device users, and be shared with third parties upon instruction by device users. Where data sharing involves the use of **smart contract**, the party which executes data sharing shall comply with requirements on access control, data archiving, etc.[25, 26] Likewise, **California State** in the US enacted a law on IoT in 2019, requiring manufacturers of IoT device to equip the devices with reasonable security features.[27] A different example is seen in **Arizona State**, also in the US, which has updated its statutes in 2017 to make clear the legality of smart contract application, stipulating that "*[s]mart contracts may exist in commerce. A contract relating to a transaction may not be denied legal effect, validity or enforceability solely because that contract contains a smart contract term*."[28]

3.10 Besides domestic legislation, **trade agreements** can play a key role in driving technological adoption due to the international nature of the trading and logistics industry.[29] In fact, recent trade agreements and plurilateral initiatives have started to address the need of **international policy coordination**, notably through integrating e-commerce and digital trade provisions. Examples include the United States-Mexico-Canada Agreement, which includes a chapter on **e-commerce and digital trade** (see more in Appendix 1). Singapore is also a pioneer to deepen the digital coordination with its trading partners. Its experience from local legislative reform to regional collaboration is illustrated below.

Singapore's experience

3.11 Singapore published the *Digital Economy Framework for Action* in 2018, setting out the nation's goal to be a leading digital economy and the actions

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[25] The Data Act defines smart contract as a "computer program used for the automated execution of an agreement or part thereof, using a sequence of electronic data records and ensuring their integrity and the accuracy of their chronological ordering". See Hogan Lowells (2024). In addition, there are separate laws governing cybersecurity and cyber resilience issues of IoT devices.

[26] More recently, EU has enacted the AI Act, which notably bans AI applications and systems that create unacceptable risk (e.g. related to data sensitivity) and regulates those posing high risk (e.g. related to data privacy). See European Parliament (2024).

[27] California Civil Code. Title 1.81.26.a – Security of Connected Devices, §1798.91.04 to §1798.91.06. See Berkeley Center for Law and Technology (2020).

[28] Arizona Revised Statutes Arizona Revised Statutes Title 44 – Trade and Commerce, §44-7061. See Arizona State Legislature (2024).

[29] See World Trade Organization (2022).

to achieve it. The Action Plan identifies "policy, regulations and standards" as key enablers to digital economy development. As the first step, the Singaporean government made updates to its **data governance** framework, such as:

(a) enacted the Cybersecurity Act in 2018 to strengthen the protection of Critical Information Infrastructure and establish a regulatory framework for cybersecurity service providers; and

(b) amended the Personal Data Protection Act in 2020 to strengthen organizational accountability and consumer protection. In particular, the amendments included a new data portability obligation, a change that supports the development of digital economy as it removes hurdles to data sharing.[30]

3.12 To further promote paperless trade and digitalization in logistics industry, Singapore amended its **Electronic Transactions Act** in 2021, making it the second country to adopt MLETR (2017). In deliberating the relevant bill in the Parliament, the Minister for Communications and Information specifically emphasized the benefits of the amendments in enabling eBL and electronic negotiable instruments, which help enhance Singapore's position as a maritime and trade hub.[31]

3.13 That said, the first cross-border trade conducted according to the new legal framework was not completed until the first quarter of 2023,[32] as it took time to set up new platforms or modify existing ones in accordance with the new laws. In addition, the Singaporean government also launched a digital public platform through the Infocomm Media Development Authority ("IMDA"), namely **TradeTrust**, that utilizes **blockchain-powered** technology to enable digitalization of trade documents into electronic transferable records (such as eBLs) that are compliant with MLETR (2017). An illustration of its function is given in **Appendix 2**.

3.14 As regards international cooperation in trade digitalization, Singapore has collaborated with other jurisdictions in several ways:

(a) Signing **Digital Economy Agreements** ("DEAs") with trade partners: DEAs are new form of international agreement to

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[30] Under the data portability obligation, an organization must, upon the request of an individual, transmit his or her personal data that is in the organization's possession or under its control to another organization in a commonly used machine-readable format. See Personal Data Protection Commission Singapore (2023).

[31] See Parliament of Singapore (2021).

[32] See Infocomm Media Development Authority (2023b).

(i) align digital rules and standards, and facilitate inter-operability between digital systems; (ii) support cross-border data flows and safeguard personal data and consumer rights; and (iii) encourage cooperation between Singapore's economic partners in nascent areas such as digital identities, AI and data innovation. Up to May 2024, Singapore has already signed DEAs with Australia, Chile, New Zealand, South Korea and the UK;[33] and

(b) Partnering with other places to conduct **trials on paperless trade**: For example, Singapore collaborated with the Mainland to pilot a cross-border paperless trade in October 2023, and have committed to promote more trade digitization pilots involving a wider range of industry participants and more complex use cases like trade financing.[34]

3.15 To further boost confidence in digital economy, the Singaporean government announced in March 2024 its intention to introduce a Digital Infrastructure Act to contain the risks arising from disruptions of digital infrastructure and services, thereby complementing other laws such as the Cybersecurity Act. A taskforce has been set up to study the digital infrastructure ecosystem in Singapore to identify segments that would have a systemic impact on Singapore's economy and society if disrupted, e.g. data centres and cloud services.[35]

4. Financial industry

4.1 Disruptive technology gives rise to a virtual asset ("VA") ecosystem and the broader concept of **DeFi**. While DeFi generally refers to the use of DLT to offer financial services such as lending, investing and exchanging crypto assets without relying on centralized service providers, according to the International Organization of Securities Commission ("IOSCO"), there is no generally accepted definition of "what makes a product, service, activity, or arrangement decentralized". Many DeFi arrangements are structured in the form of **Decentralized Autonomous Organizations** ("DAOs"), which are "virtual" organizations embodied in code and executed on DLT or blockchain, though

[33] See Ministry of Trade and Industry (2024).

[34] The pilot trade involved the use of an eBL enabled by IMDA's blockchain-based TradeTrust and AEOTradeChain in Beijing. See Infocomm Media Development Authority (2023a).

[35] See Ministry of Communications and Information (2024).

human involvement is embedded in a DAO's founding, ownership and underlying code logic.[36, 37]

Hong Kong's legal framework

4.2 In Hong Kong, the Government issued its *Policy Statement on Development of Virtual Assets in Hong Kong* in 2022, setting out its policy stance and approach towards developing a vibrant sector and ecosystem for VAs in Hong Kong.[38] One initiative already implemented is a **licensing regime for centralized VA Service Providers** introduced in June 2023, with two licences granted thus far for trading of "eligible large-cap virtual assets" including Bitcoin and Ethereum by retail clients.[39] As for others, many are being on pilot or trial, for instance, **stablecoin**, and **tokenization use cases** (e.g. government green bond) backed by DLT.[40] Apart from application trials, the document also stated that the Government is open to future review on **property rights for tokenized assets**, in view of ambiguity over whether tokenized assets constitute "property".[41]

4.3 In practice, banks leveraging the DeFi concept to provide services remain limited.[42] Recently, HKMA has shared its views on the key risk management considerations regarding authorized institutions' use of DLT-based solutions in their business activities. The considerations touched on certain

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36 See International Organization of Securities Commissions (2022, 2023a).

37 To illustrate, a DAO may be a "for-profit DAO entity" where participants send virtual currency to the DAO to purchase DAO-issued tokens. Participants are allowed to vote on project proposals and are entitled to "rewards" through project investment. The DAO is "autonomous" in that project proposals are in the form of smart contracts on the blockchain, and the votes are administered by the code of the DAO. See US Securities and Exchange Commission (2017a).

38 There is no definition of VA in the Policy Statement. Under the licensing regime for VA service providers, which was an initiative highlighted in the Policy Statement, VA is defined as (a) any "virtual asset" as defined in the Anti-Money Laundering and Counter-Terrorist Financing Ordinance (Cap. 615); and (b) any security token. See Securities and Futures Commission (2023b).

39 Eligible large-cap virtual assets are the specific VAs that "should have been included in a minimum of two acceptable indices issued by at least two different index providers." There were opinions from the industry that Hong Kong is taking a cautious stance and prioritizes consumer protection. See 星島頭條 (2024) and Bitcoin (2024).

40 See Hong Kong Monetary Authority (2024b).

41 In a landmark decision in March 2023, the Court of First Instance of the High Court of Hong Kong ruled that crypto currencies satisfy the definition of "property" under Hong Kong law and are capable of being held on trust. See Hong Kong Judiciary (2023).

42 HKMA launched the fintech supervisory sandbox in 2016, allowing banks and their partnering technology firms to conduct pilot trials of their fintech initiatives. As at May 2024, there were 336 fintech initiatives allowed under the sandbox, of which 50% were about regulatory technology trial. Trials regarding DLT and soft tokens accounted for just 5% and 2% respectively. See Hong Kong Monetary Authority (2024a).

issues relevant to legal framework, namely the **legal standing of smart contracts** and **possible legal grey areas when applying existing law to financial market activities where DLT is involved**, e.g. issuing and trading of tokenized products.[43]

4.4 On the other hand, the Securities and Futures Commission ("SFC") has observed a growing interest in **tokenizing traditional financial instruments** in the global financial market, including the issuance and distribution of tokenized funds by fund managers. It has made clear to its licensed intermediaries that tokenized securities are fundamentally traditional securities with a "tokenization wrapper", therefore existing legal and regulatory requirements governing the traditional securities markets continue to apply to tokenized securities.[44] SFC has also openly discussed its stance on regulating the broader **DeFi** market – i.e. "as long as a DeFi activity falls within the scope of the Securities and Futures Ordinance, it would be subject to the same regulatory requirements applicable to a traditional finance activity, under the 'same business, same risk, same rule' approach".[45]

Recommendations of international organizations

4.5 In 2023, following the release of the principle-based policy recommendations to address market integrity and investor protection issues in **crypto and digital asset markets**, IOSCO further published policy recommendations for broader **DeFi**, which specify, among others, that regulation of DeFi should achieve regulatory outcomes for **investor protection and market integrity** that are the same as, or consistent with, those that are required in **traditional financial markets**. One of its key recommendations for DeFi is to identify the **legally responsible person** in a DeFi arrangement (e.g. member(s) of a DAO with significant control/influence).

4.6 In the wider business world, organizational structures in the form of DAO are also gaining traction. The European Central Bank notes that the number of DAOs is growing rapidly around the globe. It was estimated that there were 12 745 DAOs as at June 2023, tripling the number in end-2021. According to the World Economic Forum, DAOs are the **future way of doing business** and are transforming corporate formation. Thus, for regulators and insufficiently informed consumers alike, the DAO structure comes with

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43 According to Hong Kong Monetary Authority (2024c), for issuing and trading of tokenized products, while "settlement finality" under traditional financial systems is a clear and well defined point in time that is underpinned by a strong legal foundation, the point at which settlement finality is reached under DLT arrangements may be less clear-cut given the use of consensus-based validation mechanisms.

44 See Securities and Futures Commission (2023a).

45 See Securities and Futures Commission (2023b).

challenges – e.g. lack of accountability, liability and legal personality – calling for a **legal framework for DAOs**.[46]

Major developments globally

4.7 In connection with the above, some economies are seen to have not only introduced/enhanced regulations in the sphere of **crypto asset/VA trading**, but also widened the DLT infrastructure **experiment** within the financial industry. Some have established **legal regimes for DAOs** (e.g. putting DAOs in a company registration framework) to address governance concerns, which will have implications not only for the financial industry but also other sectors. The ensuing paragraphs and Appendix 1 briefly cover the relevant developments in major economies, followed by an account of notable examples in UAE:

(a) **EU** is the first major jurisdiction in the world to regulate the crypto sector with its landmark **Markets in Crypto Assets Regulation** ("MiCA"), which establishes a broad regulatory framework providing for, among others, a licensing regime for issuers of crypto assets (including stablecoins) and crypto asset service providers (involving in activities from trading to custody and advice offering) no later than end-2024. With its broad coverage and passport provisions (i.e. providers authorized under MiCA in one EU member state will be able to provide their services in all EU members), MiCA may have significant implications on market opportunities for the industry and future directions for regulation of crypto assets/VAs worldwide.[47] Meanwhile, EU has launched a **pilot regime for market infrastructures based on DLT**, which allows traditional financial services providers to obtain specific permission and exemptions from applicable financial regulations in order to be able to **use DLT for the trading and settlement of securities transactions**. Trial period is granted for up to six years.

(b) The **UK** is at the final stages of establishing a new crypto asset regulatory regime, which will be implemented under a phased approach (focusing initially on stablecoin payment, followed by the wider crypto asset/VA domain).[48] Within the traditional financial market, the UK is preparing for the launch of a **DLT securities sandbox**, to be operated by the Bank of England and the Financial Conduct Authority. Financial instruments that could be issued

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46 See European Central Bank (2023).

47 In EU and other overseas places, the regulatory requirements may vary across different categories of virtual assets. Details are not discussed in this paper.

48 See Financial Conduct Authority (2023).

and traded in the sandbox range from **money market instruments to equities and investment fund units**. The experience gained will help inform the design of future legislative frameworks.[49]

(c) In the **US**, there is no separate regime for crypto asset/VA sector at the national level.[50] In **New York State**, virtual currency regulation was included in the New York Financial Services Law as early as 2015, bringing certain virtual currency business activities under regulation, but only approved ("greenlisted") virtual currencies are covered under the regulation.[51] Beyond the financial industry, some US states (e.g. Wyoming and Tennessee) have introduced laws allowing DAOs to incorporate themselves as **limited liability companies** ("LLC").[52]

(d) Likewise, in **Japan**, in addition to introducing a legal regime on crypto assets covering issuers and intermediaries of stablecoins, security tokens, and other crypto assets/VAs,[53] the government published in February 2024 **proposed amendments** to the Financial Instruments and Exchange Act in a move to provide **clarity** on the legal nature, operational rules, member responsibilities, ownership, and tax relationships of **DAOs**. The proposed amendments would enable the establishment of DAOs in the form of LLC under certain conditions.[54]

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49 See Bank of England (2024).

50 A digital asset is considered a "security" under the Securities Act if they meet certain conditions (i.e. "Howey test"). This includes digital tokens issued by a DAO if it involves a financial arrangement that satisfies the conditions. See US Securities and Exchange Commission (2017b, 2023).

51 Regulated VA business activities include (a) transmitting virtual currency; (b) storing or custodying virtual currency; (c) buying and selling virtual currency, including exchanging virtual currencies for fiat currencies; (d) operating a virtual currency trading exchange; and (e) issuing virtual currency. See Justia (undated).

52 The relevant laws are Wyoming Decentralized Autonomous Organization Supplement Act and Tennessee Code §48-250-101 to §48-250-115 respectively. See European Central Bank (2023), Wyoming Legislature (2021) and Tennessee Bar Association (2022).

53 See Financial Services Agency Japan (2022).

54 Currently, LLCs with tokenized membership rights are subject to strict disclosure and sales regulations, making them functionally impractical. With the proposed revisions, regulation of tokenized LLC membership rights is relaxed under certain conditions, allowing LLCs with tokenized rights to be established and operated like normal LLCs. Public comment period on the proposed regulations closed on 4 March 2024. See Financial Services Agency Japan (2024), Cryptonews (2024) and Gehrke (2024).

UAE's experience

4.8 UAE's Web 3.0 initiatives are largely driven by the **Dubai International Financial Centre ("DIFC")** and the **Abu Dhabi Global Market ("ADGM")**, UAE's two "financial free zones" with their own laws and courts.[55] Both are at the forefront of launching new regulatory frameworks to foster innovation. The former is known for its landmark digital asset regime, whereas the latter has caught global attention to its DLT framework.

(a) **DIFC's digital asset regime**: The legal framework for VAs in DIFC was established in three phases, starting with the launch of a regulatory framework for Investment Tokens (which are either security tokens or derivative tokens) in October 2021, enabling interested parties to legally market, issue, trade or hold these tokens with a licence. This was followed by a broader Crypto Token regime (i.e. crypto currencies, stablecoins and non-fungible tokens) in November 2022, which covers a range of financial services activities on a list of approved tokens.[56] In March 2024, a new **Digital Assets Law** came into force, which sets out the legal characteristics of a digital asset, its proprietary nature, how it may be controlled, transferred, and dealt with by interested parties. The legislation is considered ground-breaking as it comprehensively sets out the legal characteristics of digital assets as a matter of property law, providing legal certainty for digital asset investors and users.[57, 58]

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[55] The Emirate of Dubai excluding DIFC ("Onshore Dubai") has its own competent authority, Dubai Virtual Assets Regulatory Authority, and a separate VA framework.

[56] The Dubai Financial Services Authority ("DFSA") continued to update the list of approved tokens since the initial launch. As of May 2024, the list of DFSA's recognized crypto tokens include Bitcoin, Ethereum, Litecoin, Ripple and Toncoin. In June 2024, DFSA announced amendments to further enhance the Crypto Token regime, addressing issues such as investment in recognized and unrecognized crypto tokens, transaction monitoring, etc. See Dubai Financial Services Authority (2024b).

[57] Digital Assets Law stipulates that the legal characterization of a digital asset is an "intangible property and is neither a thing in possession nor a thing in action". The approach is contrary to other common law jurisdictions, where courts recognized digital assets as property to provide some certainty to the market. The DIFC authority considers that legislation is preferable to having the position develop incrementally through case law. See Dubai International Financial Centre (2023b).

[58] There are a list of consequential changes to other laws, including new enactment of the Law of Security, and amendments to Contracts Law, Law of Obligations, Law of Damages and Remedies, Trust Law, etc.

(b) **ADGM's governance regime on DAOs**: In November 2023, ADGM issued the Distributed Ledger Technology Foundations Regulations 2023, marking the world's **first legal framework for DLT foundations**[59], including **DAOs**. This newly implemented legislative structure is designed to provide a comprehensive framework for blockchain foundations, Web 3.0 entities, DAOs, and traditional foundations seeking to enhance their operations through DLT. According to ADGM, the framework serves as a driving force for the digital asset/VA sector by offering a practical means to organize and promote **governance** whilst recognizing the blockchain industry's need for decentralization. The first DLT foundation registered under the regulation was established in November 2023.[60] Main requirements include:

(i) A DLT foundation is required to have a written **charter** setting out governance related issues, including governing bodies, rules for token issuance, rights of tokenholders, and provisions relating to the DLT foundation's assets. In terms of **governance structure**, DLT foundations are required to have founders and a DLT foundation council (with a minimum of two councillors managing DLT foundations on a day-to-day basis).

(ii) A DLT foundation must **register** with the Registration Authority, the commercial regulator of ADGM.[61] An applicant is required to submit the necessary documents, such as white paper (a document setting forth the details of the DLT purposes and relevant projects) and tokenomics paper (describing the token's function, utility and compliance with applicable laws and regulations), as well as meeting minimum asset requirement of US$50,000 (HK$391,600). Upon successful registration, the DLT foundation shall be a **legal entity** with a separate legal personality and may sue as well as be sued.

(iii) **Ongoing requirements** including disclosure, accounting, and auditing shall be satisfied. In addition, any changes made to the DLT foundation, including changes in any smart contracts, are required to be notified to the registrar.

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[59] A DLT foundation is defined under the Regulations as a separate legal person established to use, deploy, develop, facilitate or support DLT or to issue tokens.

[60] See IOTA Foundation (2023).

[61] The DLT foundation must engage an ADGM-licensed company service provider to submit application. There is a list of ADGM-licensed company service providers for selection.

(iv) DLT foundations can participate in a wide array of **permitted activities**, with the overarching objective of using, deploying, facilitating, and supporting DLT or issuing tokens. Under the regulations, however, DLT foundations shall not be entitled to conduct any activities that are regulated by Financial Services Regulatory Authority of ADGM ("FSRA") or that require a financial services permission from FSRA. However, a DLT foundation can establish subsidiaries within ADGM and/or in other jurisdictions, and these subsidiaries may engage in financial activities, provided they obtain the necessary licenses from the relevant regulatory authorities.

4.9 In addition to establishing an extensive regulatory regime enabling many different types of financial services business models, the regulatory authorities of DIFC and ADGM proactively engage with the industry to further **encourage innovation** within their respective legal frameworks. For instance, the Dubai Financial Services Authority ("DFSA") actively assists market participants to understand how DIFC's legal framework applies to their innovative financial products or services.[62] It also actively engages with the industry to discover possible refinement of its regulatory regimes, for example by running a sandbox known as the DFSA Innovation Testing Licence Programme.[63]

5. Observations

5.1 Digitalization, as enabled by novel technologies such as blockchain, AI and IoT, are transforming how businesses operate. In search for efficiency and new business opportunities, many sectors are keen to further digitalize their operations with new technologies. However, legal frameworks are still largely based on the traditional economy and do not provide sufficient **legal certainty** for the new elements of digital economy, such as VAs/digital assets/crypto assets, DLT-based documentation, and DLT-based organizations, hindering trust in and wider adoption of technology. In addition, the risks arising from potential disruptions of digital infrastructure and cybersecurity concerns are areas that needed to be addressed.

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62 See Dubai Financial Services Authority (2024a).

63 Between its launch in 2017 and July 2022, over 130 companies had applied to enter the programme and 67 applicants had been accepted into the programme. See Dubai Financial Services Authority (2022).

5.2 In the **trading and logistics** industry, the Government is forthcoming in promoting digital and smart technology adoption. A range of measures – including training and subsidies for companies, development of logistics data platforms – were put forth in the industry-specific blueprints, namely the *Action Plan on Modern Logistics Development* and *Action Plan on Maritime and Port Development Strategy*. Nevertheless, certain legal barriers and uncertainty are constraining the development, especially in relation to the **legal recognition of electronic trade documents**, such as eBLs. In this regard, UNCITRAL's model laws set out the provisions that are essential for implementing paperless trade. When compared to Hong Kong, some places are more proactive in updating their legal frameworks. Take Singapore as an example, it has amended its domestic law to cater to **paperless trade** by aligning to MLETR (2017), and has taken a step further to ensure **international operability** of trade and logistics data by way of signing DEAs with partnering places. Other major economies that have enabled full recognition of electronic trade documents include the UK and France, while the US has granted legal recognition to eBLs. As for **smart contracts**, the relevant UNICTRAL model law is still being formulated, and some global pioneers such as EU and the Arizona State in the US have enacted provisions on some aspects of smart contracts.

5.3 In the **financial industry**, Web 3.0 technology and the resultant concept of DeFi have opened up many new business possibilities while bringing about new challenges in investor protection, regulation and financial stability. Major economies or financial centres have approached the matter cautiously, with investor protection as a key element. That said, industry players also benefit from new/updated regulations which provide certainty and clarity on the legality of the DLT-enabled activities. When compared to a broader coverage provided by the **crypto asset regime** (e.g. greenlisted coins, utility tokens) in EU, the New York State and Japan, Hong Kong's VA regulatory regime currently limits retail client trading to "eligible large-cap virtual assets" including Bitcoin and Ethereum. Likewise, in UAE, **DIFC's regulatory regime for digital assets** cover both investment token regime and crypto token regime, with the latter entailing a list of recognized digital assets. On the other hand, the broader application of **DLT in traditional financial services** is still emerging, but places like EU and the UK are scaling up the pilot or trial effort to cover a range of financial instruments, which may serve as examples for other economies including Hong Kong. As for **DAO**, it has seen rapid growth in numbers globally but no uniform regulatory approach has thus far emerged among leading economies. ADGM in UAE has taken the lead to set up a framework specifying the legal status and governance requirements of DAOs, which would have implications on the wider economy as DLT-based organizations are increasingly adopted as a means of business operation beyond the financial industry.

5.4 All in all, while international guidelines or recommendations issued by various international organizations provide principles for regulating and facilitating technology adoption in certain sectors, the appropriate legal framework depends on the circumstances of each individual jurisdiction. In particular, the **expected use cases** would affect an economy's priority in regulatory design. Consequently, engaging with the stakeholders from an early stage and discussions with market players currently outside the regulatory perimeter (as in DIFC's experience) are considered important. All these diverse facilitative approaches and experience seen may be of some insight to Hong Kong.

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Global developments relating to digital development and transformation

Table 1A: Examples in the trading and logistics industry

	HK	EU	France	The UK	The US	Singapore
1. Legal framework recognizing electronic bills of lading			✓	✓	✓	✓
2. Digital economy agreements or trade agreements with digital trade provisions		✓	✓	✓	✓	✓
3. Law(s) on novel technology application/regulation		✓			✓ (Selected states, e.g. California and Arizona)	

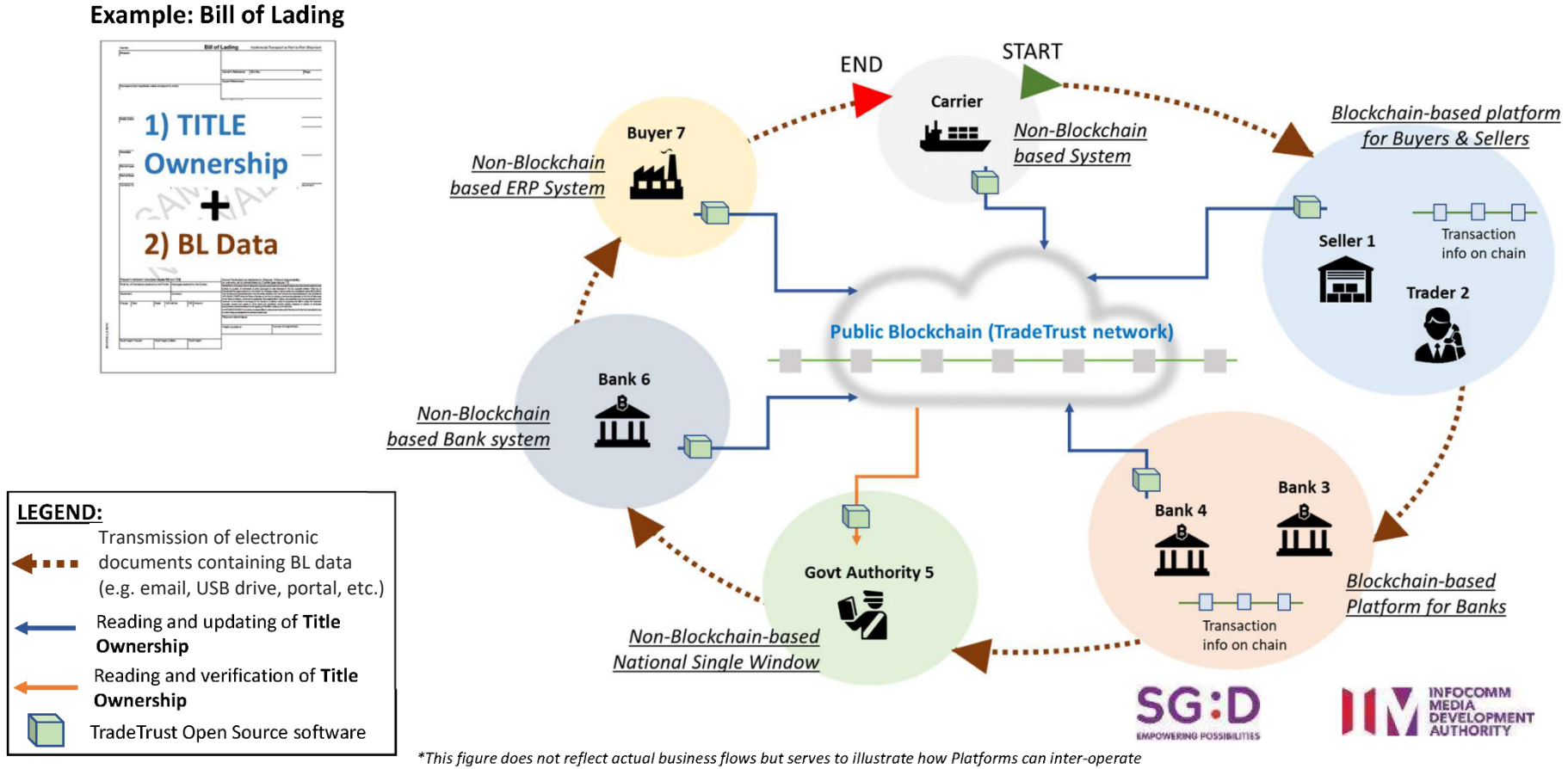
Table 1B: Examples in the financial industry

	HK	EU	The UK	The US	Japan	Dubai (DIFC)	Abu Dhabi (ADGM)
1. Crypto-asset framework	✓	✓	Phase 1 to be introduced	✓ (e.g. New York State)	✓	✓	✓
• **Stablecoins**	To be covered	✓	✓	✓	✓	✓	✓
• **Crypto currencies**	✓	✓		✓	✓	✓	✓
• **Investment/security tokens**	✓		✓		✓	✓	✓
• **Others**	Not specified(1)	✓ *(Utility tokens)*		Not specified(1)	Not specified(1)	✓ *(Non-fungible tokens)*	✓ *(Derivatives of virtual assets)*
2. Large scale DLT-based pilot/sandbox for different types investment products		✓	✓				✓
3. DAO regime				✓ (Selected states, e.g. Wyoming and Tennessee)	✓ (Under planning)		✓

Note: (1) Subject to whether the virtual assets fall into the legal definition of virtual/crypto assets under respective laws.

Illustration of TradeTrust

Below is an illustration of the flow of electronic negotiable documents on TradeTrust. By enabling verification and updates on a public blockchain, the platform reduces document processing times and costs, as well as risks of fraud.



Source: TradeTrust (2021).

References^

Global

1. Digital Container Shipping Association. (2023) *DCSA's Member Carriers Commit to A Fully Standardised, Electronic Bill of Lading By 2030*. Available from: https://www.dcsa.org/newsroom/dcsas-member-carriers-commit-to-a-fully-standardised-electronic-bill-of-lading-by-2030

2. Digital Container Shipping Association. (2024) *Overcoming Legal and Regulatory Barriers to eBL Adoption*. Available from: https://dcsa.org/newsroom/overcoming-legal-and-regulatory-barriers-to-ebl-adoption

3. European Central Bank. (2023) *The Future of DAOs In Finance – In Need of Legal Status*. Available from: https://data.europa.eu/doi/10.2866/474878

4. European Securities and Markets Authority. (2023) *Guidelines on Standard Forms, Formats and Templates to Apply for Permission to Operate A DLT Market Infrastructure.* Available from: https://www.esma.europa.eu/sites/default/files/library/ESMA70%2D460%2D213_DLTR_GLs_on_application_standard_forms_formats_templates.pdf

5. Financial Stability Board. (2023) *High-Level Recommendations for the Regulation, Supervision and Oversight of Crypto-Asset Activities and Markets*. Available from: https://www.fsb.org/wp-content/uploads/P170723-2.pdf

6. Ganne, E. (2021) *Blockchain's Practical and Legal Implications for Global Trade and Global Trade Law, In Big Data and Global Trade Law*. Available from: https://doi.org/10.1017/9781108919234.009

7. International Organization of Securities Commissions. (2022) *IOSCO Decentralized Finance Report.* Available from: https://www.iosco.org/library/pubdocs/pdf/IOSCOPD699.pdf

8. International Organization of Securities Commissions. (2023a) *Final Report with Policy Recommendations for Decentralized Finance (Defi).* Available from: https://www.iosco.org/library/pubdocs/pdf/IOSCOPD754.pdf

9. International Organization of Securities Commissions. (2023b) *IOSCO Policy Recommendations for Crypto and Digital Asset Markets (Including Defi): Umbrella Note.* Available from: https://www.iosco.org/library/pubdocs/pdf/IOSCOPD755.pdf

10. International Organization of Securities Commissions. (2023c) *Policy Recommendations for Crypto and Digital Asset Markets: Final Report.* Available from: https://www.iosco.org/library/pubdocs/pdf/IOSCOPD747.pdf

11. Mckinsey. (2022a) *The Multi-Billion-Dollar Paper Jam: Unlocking Trade by Digitalizing Documentation*. Available from: https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/the-multi-billion-dollar-paper-jam-unlocking-trade-by-digitalizing-documentation#/

12. McKinsey. (2022b) *Web3 Beyond the Hype*. Available from: https://www.mckinsey.com/industries/financial-services/our-insights/web3-beyond-the-hype

13. PWC. (2020) *Blockchain in Logistics*. Available from: https://www.pwc.de/de/strategie%2Dorganisation%2Dprozesse%2Dsysteme/blockchain-in-logistics.pdf

14. United Nations Commission on International Trade Law. (2017a) *Modernizing International Trade Law to Support Innovation and Sustainable Development: Proceedings of the Congress of the United Nations Commission on International Trade Law.* Available from: https://iris.unito.it/bitstream/2318/1632525/3/R.%20de%20Caria%2C%20A%20Digital%20Revolution%20%282017%29.pdf

15. United Nations Commission on International Trade Law. (2017b) *UNCITRAL Model Law on Electronic Transferable Records.* Available from: https://uncitral.un.org/sites/uncitral.un.org/files/media%2Ddocuments/uncitral/en/mletr_ebook_e.pdf

16. United Nations Commission on International Trade Law. (2022) *UNCITRAL Model Law on the Use and Cross-border Recognition of Identity Management and Trust Services (2022).* Available from: https://uncitral.un.org/en/mlit

17. United Nations Commission on International Trade Law. (2023a) *Draft Provisions on Automated Contracting: Note by The Secretariat*. Available from: http://undocs.org/en/A/CN.9/WG.IV/WP.182

18. United Nations Commission on International Trade Law. (2023b) *Taxonomy of Legal Issues Related to The Digital Economy*. Available from: https://uncitral.un.org/sites/uncitral.un.org/files/media%2Ddocuments/uncitral/en/digitaleconomytaxonomy.pdf

19. United Nations Commission on International Trade Law. (2024) *Overview of the Status of UNCITRAL Conventions and Model Laws*. Available from: https://uncitral.un.org/sites/uncitral.un.org/files/media%2Ddocuments/uncitral/en/overview-status-table.pdf

20. United Nations Economic Commission for Europe. (2023) *White Paper Overview of Blockchain for Trade, Version 2.* Available from: https://unece.org/sites/default/files/2023-10/WhitePaper_Blockchain.pdf

21. United Nations Economic and Social Commission for Western Asia. (2023) *Blockchain For Trade Facilitation: A User Implementation Guide for Governments.* Available from: https://www.unescwa.org/sites/default/files/pubs/pdf/blockchain-trade-facilitation-guide-english.pdf

22. World Economic Forum. (2022) *Digital Trust: How to Unleash the Trillion-Dollar Opportunity for Our Global Economy.* Available from: https://www.weforum.org/agenda/2022/08/digital-trust-how-to-unleash-the-trillion-dollar-opportunity-for-our-global-economy/

23. World Trade Organization. (2022) *The Promise of Tradetech.* Available from: https://www.wto.org/english/res_e/booksp_e/tradtechpolicyharddigit0422_e.pdf

Hong Kong

24. GovHK. (2023) *Speech by DSJ at 5th UNCITRAL Asia Pacific Judicial Summit - Judicial Conference* (English version only), 6 November. Available from: https://www.info.gov.hk/gia/general/202311/06/P2023110600530.htm

25. Policy Address. (2023) *Policy Measures - 3: Strive to Improve Governance,* The 2023 Policy Address. Available from: https://www.policyaddress.gov.hk/2023/public/pdf/measure/measure-03_en.pdf

26. Commerce and Economic Development Bureau. (2014) *Legislative Council Brief on Electronic Transactions Ordinance (Amendment of Schedule 1) Order 2014.* Available from: https://www.legco.gov.hk/yr14%2D15/english/subleg/brief/141_brf.pdf

27. Department of Justice. (2019) *Legal Issues on the Use of Artificial Intelligence and Other Modern Technology in Cross Border Cases* (English version only). Available from: https://www.doj.gov.hk/en/community_engagement/speeches/pdf/lo20190828e1.pdf

28. Digital Economy Development Committee. (2024) *Core Recommendations of The Digital Economy Development Committee*. Available from: https://www.itib.gov.hk/assets/files/DEDC_Core_Recommendations_Eng_issued.pdf

29. Financial Secretary. (2024) *Expediting the Development of Digital Economy,* 14 April. Available from: https://www.fso.gov.hk/eng/blog/blog20240414.htm

30. Financial Services and the Treasury Bureau. (2022) *Policy Statement on Development of Virtual Assets in Hong Kong* (English version only). Available from: https://gia.info.gov.hk/general/202210/31/P2022103000454_404805_1_1667173469522.pdf

31. Financial Services Development Council. (2024) *Realising the Potential of Blockchain in Advancing Hong Kong's Financial Services Industry*. Available from: https://www.fsdc.org.hk/en/insights/realising-the-potential-of-blockchain-in-advancing-hong-kong-s-financial-services-industry

32. Hong Kong Judiciary. (2023) *Re Gatecoin Limited (In Liquidation)* (31/03/2023, HCCW18/2019) [2023] HKCFI 914 (English version only). Available from: https://legalref.judiciary.hk/lrs/common/ju/ju_frame.jsp?DIS=151622

33. Hong Kong Monetary Authority. (2022) *Discussion Paper on Crypto-assets and Stablecoins* (English version only). Available from: https://www.hkma.gov.hk/media/eng/doc/key-information/press-release/2022/20220112e3a1.pdf

34. Hong Kong Monetary Authority. (2024a) *Fintech Supervisory Sandbox (FSS)*. Available from: https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/fintech/fintech-supervisory-sandbox-fss/

35. Hong Kong Monetary Authority. (2024b) *HKMA Unveils Project Ensemble to Support the Development of The Hong Kong Tokenisation Market,* 7 March. Available from: https://www.hkma.gov.hk/eng/news-and-media/press-releases/2024/03/20240307-5/

36. Hong Kong Monetary Authority. (2024c) *Risk Management Considerations Related to the Use of Distributed Ledger Technology* (English version only). Available from: https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2024/20240416e1.pdf

37. Innovation, Technology and Industry Bureau. (2023) *Policy Statement on Facilitating Data Flow and Safeguarding Data Security in Hong Kong*. Available from: https://www.itib.gov.hk/assets/files/Policy_Statement_Eng.pdf

38. Securities and Futures Commission. (2023a) *Circular on Intermediaries Engaging in Tokenised Securities-Related Activities.* Available from: https://apps.sfc.hk/edistributionWeb/gateway/EN/circular/doc?refNo=23EC52

39. Securities and Futures Commission. (2023b) *Securities Regulation in the Web3 Era Keynote Speech at Hong Kong Web3 Festival 2023* (English version only). Available from: https://www.sfc.hk/%2D/media/EN/files/COM/Speech/Web3%2DFestival_Eng_20230412.pdf

40. Transport and Logistics Bureau. (2023a) *Action Plan on Maritime and Port Development Strategy.* Available from: https://www.tlb.gov.hk/eng/publications/transport/publications/Action_Plan_on_Maritime_and_Port_Development_Strategy_web.pdf

41. Transport and Logistics Bureau. (2023b) *Action Plan on Modern Logistics Development.* Available from: https://www.tlb.gov.hk/doc/Action%20Plan%20on%20Modern%20Logistics%20Development_e.pdf

42. Bank for International Settlements. (2023) *Project Dynamo: Catalysing Innovation for SME Growth.* Available from: https://www.bis.org/publ/othp68.pdf

43. Bitcoin. (2024) *Hong Kong Reveals 17 Crypto Trading Platform Applicants as New Regulations Take Effect*. Available from: https://news.bitcoin.com/hong-kong-reveals-17-crypto-trading-platform-applicants-as-new-regulations-take-effect/

44. Clifford Chance. (2021) *Paperless International Trade: Achieving Harmony Between the Law and Technological Potential.* Available from: https://www.cliffordchance.com/content/dam/cliffordchance/briefings/2021/12/paperless-international-trade-achieving-harmony-between-the-law-and-technological-potential.pdf

45. Global Shipping Business Network. (2023) *GSBN Partners with ZAN to Harness Web3 to Tokenise eBLs and Unlock New Economic Opportunities*. Available from: https://www.gsbn.trade/post/gsbn-partners-with-zan-to-harness-web3-to-tokenise-ebls-and-unlock-new-economic-opportunities

46. Ng, K.C. (2024) *Law Reform Needed to Boost the Development of DAOs*, China Daily, 27 May. Available from: https://www.chinadailyhk.com/hk/article/584221

47. 大公網(2024)：《港擬發表金融市場應用AI政策宣言》，5月24日，網址：http://www.takungpao.com.hk/231106/2024/0524/974405.html

48. 星島頭條(2024)：《虛產平台先後撤回牌照申請 專家：香港更重視投資者保護》，6月3日，網址：https://www.stheadline.com/blockchain/3350491/虛產平台先後撤回牌照申請-專家香港更重視投資者保護

Singapore

49. Baker McKenzie. (2021) *Singapore: Electronic Transactions Act Adopts UN Model Law on Electronic Transferable Records*. Available from: https://insightplus.bakermckenzie.com/bm/data%2Dtechnology/singapore%2Delectronic-transactions-act-adopts-un-model-law-on%2Delectronic-transferable-records

50. Global Trade Review. (2021) *Singapore Amends Law to Give eBLs and Other Electronic Trade Instruments Legal Footing*. Available from: https://www.gtreview.com/news/fintech/singapore-amends-law-to-give-ebls-and-other-electronic-trade-instruments-legal-footing/

51. Infocomm Media Development Authority. (2018) *Digital Economy Framework for Action*. Available from: https://www.imda.gov.sg/-/media/imda/files/sg-digital/sgd-framework-for-action.pdf

52. Infocomm Media Development Authority. (2023a) *First Cross-Border Paperless Trade Between China and Singapore Powered by IMDA's Tradetrust and Beijing's Aeotradechain has been Successfully Piloted*. Available from: https://www.imda.gov.sg/resources/press-releases-factsheets-and-speeches/press-releases/2023/china-sg-paperless-trade-successfully-piloted

53. Infocomm Media Development Authority. (2023b) *IMDA Partners Industry to Conduct World's First Live Electronic Transferable Record (ETR) Cross-Border Trade, Supported by Statutory Law Framework*. Available from: https://www.imda.gov.sg/resources/press-releases-factsheets-and-speeches/press-releases/2023/imda-partners-industry-to-conduct-worlds-first-live-electronic-transferable-record-cross-border-trade

54. Ministry of Communications and Information. (2024) *New Digital Infrastructure Act to Enhance Resilience & Security of Digital Infrastructure & Services.* Available from: https://www.mci.gov.sg/media-centre/press-releases/new-digital-infrastructure-act/

55. Ministry of Trade and Industry. (2024) *Digital Economy Agreements.* Available from: https://www.mti.gov.sg/Trade/Digital-Economy-Agreements

56. Parliament of Singapore. (2021) *Electronic Transactions (Amendment) Bill*. Available from: https://sprs.parl.gov.sg/search/#/sprs3topic?reportid=bill-494

57. Personal Data Protection Commission Singapore. (2023) *Advisory Guidelines on Key Concepts in the Personal Data Protection Act.* Available from: https://www.pdpc.gov.sg/guidelines-and-consultation/2020/03/advisory-guidelines-on-key-concepts-in-the-personal-data-protection-act

58. Trade Finance Global. (2023) *Singapore Completes First Cross-border Electronic Transferable Record Trade.* Available from: https://www.tradefinanceglobal.com/posts/first-cross-border-electronic-transferable-record-trade-completed-singapore/

59. TradeTrust. (2021) *Trade - Adapting to Present and Future Challenges.* Available from: https://www.tradetrust.io/static/images/webinar/tradetrust-tech-webinar-1-overview.pdf

United Arab Emirates

60. Abu Dhabi Global Market. (2023a) *Distributed Ledger Technology Foundations Regulations 2023.* Available from: https://en.adgm.thomsonreuters.com/sites/default/files/net_file_store/ADGM1547_26199_VER94959.pdf

61. Abu Dhabi Global Market. (2023b) *Proposal for a Legislative Framework for Distributed Ledger Technology Foundations.* Available from: https://www.adgm.com/documents/legal%2Dframework/public%2Dconsultations/2023/consultation-paper-no-3/consultation-paper-no-3-of-2023.pdf

62. Abu Dhabi Global Market. (2024) *DLT Foundations Framework.* Available from: https://www.adgm.com/dlt-foundations

63. Baker McKenzie. (2023) *UAE: Securities and Commodities Authority Issues New Regulations Relevant to Virtual Assets - Paving the Way for the UAE's New Onshore Federal VA Framework.* Available from: https://insightplus.bakermckenzie.com/bm/attachment_dw.action?attkey=FRbANEucS95NMLRN47z%2BeeOgEFCt8EGQJsWJiCH2WAXENnrNzNVLuvt5eK180Onb&nav=FRbANEucS95NMLRN47z%2BeeOgEFCt8EGQbuwypnpZjc4%3D&attdocparam=pB7HEsg%2FZ312Bk8OIuOIH1c%2BY4beLEAeoIRHvxyDMQM%3D&fromContentView=1

64. Dubai Financial Services Authority. (2022) *DFSA Moves to an Open Window Format for Accepting ITL Applications.* Available from: https://www.dfsa.ae/news/dfsa-moves-open-window-format-accepting-itl-applications#:~:text=The%20ITL%20programme%20reflects%20the,been%20accepted%20into%20the%20programme

65. Dubai Financial Services Authority. (2023) *The DFSA's Crypto Regime: One Year On.* Available from: https://www.dfsa.ae/news/dfsas-crypto-regime-one-year

66. Dubai Financial Services Authority. (2024a) *DFSA Innovation and Crypto.* Available from: https://www.dfsa.ae/innovation

67. Dubai Financial Services Authority. (2024b) *The DFSA Enhances Its Crypto Token Framework, Fostering Innovation.* Available from: https://www.dfsa.ae/news/dfsa-enhances-its-crypto-token-framework-fostering-innovation

68. Dubai International Financial Centre. (2023a) *DIFC Announces Consultation on New Digital Assets Law, New Law of Security and Related Amendments to Select Legislation.* Available from: https://www.difc.ae/whats-on/news/difc-announces-consultation-new-digital-assets-law-new-law-security

69. Dubai International Financial Centre. (2023b) *Digital Assets Law – Consultation Paper No. 4 of 2023.* Available from: https://edge.sitecorecloud.io/dubaiintern0078%2Ddifcexperie96c5%2Dproduction%2D3253/media/project/difcexperiences/difc/difcwebsite/documents/difc_docs/consultation_paper_difc-digital-assets-law.pdf

70. IOTA Foundation. (2023) *First Registered DLT Foundation Under ADGM in Abu Dhabi, UAE*. Available from: https://blog.iota.org/iota-first-dlt-registered-adgm-in-uae/?ref=internetnative.org

71. Virtual Assets Regulatory Authority. (2023) *Regulatory Framework.* Available from: https://rulebooks.vara.ae/

Others

72. Arizona State Legislature. (2024) *Arizona Revised Statutes Arizona Revised Statutes Title 44. Trade and Commerce § 44-7061. Signatures And Records Secured Through Blockchain Technology; Smart Contracts; Ownership of Information; Definitions*. Available from: https://www.azleg.gov/viewdocument/?docName=https://www.azleg.gov/ars/44/07061.htm

73. Assemblée Nationale. (2024) *Accroître le Financement des Entreprises et l'Attractivité de la France.* Available from: https://www.assemblee-nationale.fr/dyn/16/dossiers/financement_entreprises_attractivite_France

74. Bank of England. (2024) *Digital Securities Sandbox Joint Bank of England and FCA Consultation Paper.* Available from: https://www.bankofengland.co.uk/paper/2024/cp/digital-securities-sandbox-joint%2Dbank%2Dof%2Dengland%2Dand%2Dfca%2Dconsultation%2Dpaper#:~:text=The%20Bank%20of%20England%20(the,Protecting%20financial%20stability

75. Berkeley Center for Law and Technology. (2020) *California's IoT Law on the Security of Connected Devices*. Available from: https://www.law.berkeley.edu/wp-content/uploads/2020/09/2020-10-09-BCLT-9thAnnPrivLawForum-CAIoTLaw.pdf

76. Cryptonews. (2024) *Japan's Financial Services Agency Grants Limited Rights to DAO Member Tokens, Easing Regulations.* Available from: https://cryptonews.com/news/japans-financial-services-agency-grants-limited-rights-to-dao-member-tokens-easing-regulations.htm

77. Escola Europea Intermodal Transport. (2024) *eFTI: One Step Closer Towards the Digitization of European Transport.* Available from: https://escolaeuropea.eu/blue-innovation/efti-one-step-closer-towards-the-digitization-of-european-transport/

78. European Commission. (2023) *Electronic Freight Transport Information (eFTI) Regulation (EU 2020/1056): Presentation to the UNECE ITC Working Party on Land Transport, Workshop on eCMR Operationalization.* Available from: https://unece.org/sites/default/files/2023-10/ECE-TRANS-SC.1-Presentation-Oct%202023-11e.pdf

79. European Parliament. (2024) *Artificial Intelligence Act: MEPs Adopt Landmark Law.* Available from: https://www.europarl.europa.eu/news/en/press-room/20240308IPR19015/artificial-intelligence-act-meps-adopt-landmark-law

80. Gehrke, N. (2024) *LLC-Type DAOs are Coming to Japan.* Available from: https://medium.com/tokyo-fintech/llc-type-daos-are-coming-to-japan-d6b3ccb85957

81. Financial Conduct Authority. (2023) *Discussion Paper DP23/4, Regulating Cryptoassets Phase 1: Stablecoins*. Available from: https://www.fca.org.uk/publication/discussion/dp23-4.pdf

82. Financial Services Agency Japan. (2022) *Regulating the Crypto Assets Landscape in Japan.* Available from: https://www.fsa.go.jp/en/news/2022/20221207/01.pdf

83. Financial Services Agency Japan. (2024) *"金融商品取引法第二条に規定する定義に関する内閣府令の一部を改正する内閣府令(案)"等の公表について.* Available from: https://www.fsa.go.jp/news/r5/shouken/20240201/20240201.html

84. Hogan Lowells. (2024) *EU Data Act (Part 8): Smart Contracts*. Available from: https://www.engage.hoganlovells.com/knowledgeservices/news/eu%2Ddata%2Dact%2Dpart%2D8%2Dsmart%2Dcontracts#:~:text=The%20Data%20Act%20defines%20smart,accuracy%20of%20their%20chronological%20ordering%E2%80%9D

85. Justia. (undated) *New York Codes, Rules and Regulations Title 23 - Financial Services Chapter I - Regulations of the Superintendent of Financial Services Part 200 - Virtual Currencies*. Available from: https://regulations.justia.com/states/new-york/title-23/chapter-i/part-200/

86. Ledger Insights. (2024) *ESMA Explains Why DLT Pilot Regime Hasn't Taken Off.* Available from: https://www.ledgerinsights.com/esma-explains-why-dlt-pilot-regime-hasnt-taken-off/

87. Lexology. (2024) *Electronic Trade Documents: New French Legislation Proposed for 2024*. Available from: https://www.lexology.com/library/detail.aspx?g=f5aece31-f6e1-4563-ac51-a74f8d8d701e

88. New York Law Journal. (2023) *The Imperative for New York to Adopt the 2022 Amendments to the UCC*, 6 December. Available from: https://www.law.com/newyorklawjournal/2023/12/06/the-imperative-for-new%2Dyork%2Dto%2Dadopt%2Dthe%2D2022%2Damendments%2Dto%2Dthe%2Ducc/?slreturn=20240416034248

89. Tennessee Bar Association. (2022) *Tennessee Permits Decentralized Autonomous Organization to Organize as LLCs.* Available from: https://www.tba.org/?pg=Articles&blAction=showEntry&blogEntry=73474

90. US Securities and Exchange Commission. (2017a) *Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO*. Available from: https://www.sec.gov/files/litigation/investreport/34-81207.pdf

91. US Securities and Exchange Commission. (2017b) *SEC Issues Investigative Report Concluding DAO Tokens, a Digital Asset, were Securities,* 25 July. Available from: https://www.sec.gov/news/press-release/2017-131

92. US Securities and Exchange Commission. (2023) *Framework for "Investment Contract" Analysis of Digital Assets*. https://www.sec.gov/corpfin/framework%2Dinvestment%2Dcontract%2Danalysis%2Ddigital-assets

93. Wyoming Legislature. (2021) *SF0038 - Decentralized Autonomous Organizations.* Available from: https://www.wyoleg.gov/Legislation/2021/SF0038

Note: ^ Internet resources listed in this section were accessed in June 2024.