

ISSA Symposium 10 – 12 May 2022, Madrid

An Account of Proceedings

by Dominic Hobson





ABOUT ISSA

ISSA is a Swiss-domiciled association that supports the securities services industry. ISSA's members include CSDs, custodians, technology companies and other firms who are actively involved in all aspects of the securities services value chain.

ISSA - Shaping the future of Securities Services.

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International Securities Services Association



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1. SPEAKERS

1.1 Stable, Sustainable Markets

The purpose of the global securities services industry is to ensure that capital flows securely and consistently around the world from those who have it to those that can use it. The benefits, in terms of growth driven by investment and innovation, are incontestable. But they are nothing but words unless transactions can be processed and settled.

The global context in which transactions are processed and settled is changing, and the primary and secondary capital markets are changing with it. This has created a risk that the infrastructure of the global capital markets, which is operated by the global securities services industry, will fall out of joint with developments in the primary and secondary markets.

In mitigating this risk, international securities market regulators are focused on three principal issues. The first is the growing pressure on asset managers to allocate capital in line with environmental, social and governance (ESG) mandates. This is now happening at scale, with asset managers re-branding investment products to meet investor demands for ESG-compliant investing.

The rapidity of the transition to ESG mandates has led to concern that issuers are "greenwashing" their activities. But failures by asset managers to monitor investments effectively are driven not by bad intentions but lack of data to execute ESG mandates faultlessly. To help, the International Organization of Securities Commissions (IOSCO) has sponsored work on ESG standards.

In 2021 IOSCO supported the setting up of the International Sustainability Standards Board (ISSB) under the umbrella of the International Financial Reporting Standards (IFRS) Foundation. In March 2022 the ISSB published for consultation a set of climate and general sustainability disclosure requirements which will in their final form serve as the basis for sustainability reporting.

It will take years for the requirements to be agreed and adopted. Which means the global securities services industry faces a transition period, perhaps as long as three years, in which it will lack the standards it needs to check with confidence that clients are complying with ESG mandates. Once the requirements are in place, however, the challenge will be to analyze large amounts of data efficiently.

To help with the transition, IOSCO published two reports in November 2021. The first listed five recommendations for regulators to enhance the ESG practices, policies, procedures and disclosures of the asset management industry.¹ The second published recommendations for regulators that are designed to improve the quality of ESG ratings and data products.²

Both reports emphasize the importance of trust and transparency – in essence, telling clients what is and is not possible – in managing the transition. The industry can play a useful role in securing adoption of the IOSCO recommendations. As the materiality of ESG compliance increases, this will help the industry itself to adapt successfully to ESG compliance demands.

Already the burden of ESG reporting is increasing the appetite of asset managers to outsource the work, so there is a business opportunity for the securities services industry. Once the transition is complete – and it is financial markets, not governments, that are dictating its pace - providers will be judged not by the quantity of ESG data they can process but by the quality of their analysis of it.

The second major preoccupation of international securities market regulators is operational resilience, and in particular the impact on it of technological change. As the keepers of the books and records of financial assets and transactions on behalf of buy-side clients, the members of the global securities services industry are under especially close scrutiny.

In October 2021 IOSCO published an updated version of its principles on outsourcing for market intermediaries (first published in 2005) and for markets (2009) to take account of new developments in technology.³ While financial market infrastructures (FMIs) remain outside the scope of the principles, consideration is being given to extending them to FMIs.

As it happens, the revised principles are not particularly useful in helping the industry manage the consequences of the most significant of the new technological developments – namely, growing use of the Cloud and Cloud service providers. By offering access on demand to a shared pool of computing resources, including networks, servers, storage, applications and services, they alter the nature of risk.

However, the current transition to Cloud services is likely to end in near-universal adoption. Even intelligence agencies now use the Cloud. Many software products are already no longer available off the Cloud. This growing reliance on outsourced Cloud services is likely to reduce the frequency of incidents but, when incidents do occur, they are likely to be more severe.

¹ The Board of the International Organization of Securities Commissions, Recommendations on Sustainability-Related Practices, Policies, Procedures and Disclosure in Asset Management: Final Report, FR08/21, November 2021. It can be found at: <u>https://www.iosco.org/library/pubdocs/pdf/IOSCOPD688.pdf</u>

² The Board of the International Organization of Securities Commissions, Environmental, Social and Governance (ESG) Ratings and Data Products Providers: Final Report, FR09/21, November 2021. It can be found at: <u>https://www.iosco.org/library/pubdocs/pdf/IOSCOPD690.pdf</u>

³ The Board of the International Organization of Securities Commissions, Principles on Outsourcing: Final Report, FRO7/2021, October 2021.It can be found at: <u>https://www.iosco.org/library/pubdocs/pdf/IOSCOPD687.pdf</u>

Specifically, the regulatory concern is this: While Cloud services can reduce instances of operational outages, they are likely to increase the impact of the outages that do occur. As a result, regulators are going to examine Cloud arrangements more rigorously. They will engage more with regulated entities and benchmark them against each other to derive a set of best practices.

Members of the global securities services industry can assist this work by sharing with each other their own assessments of the risks of reliance on Cloud services. This would not erode competitive advantage but it would enable the industry to benchmark itself, and to propose low-cost solutions to regulators rather than wait for regulators to impose solutions.

The third priority for international regulators is the management of cyber-risk. IOSCO has endeavoured since 2010 to promote consistency across jurisdictions in cyber-risk management. Regulators are now concerned that neither Board members nor senior management as a whole have a sufficient understanding of the nature of cyber-risk.

The tendency of large organizations to ration their cyber-risk budgets is a false economy. Testing of cyber-defences is not being done as well as it should, especially when systems are changed or a business process is outsourced. Regulated entities have not agreed policies even for such basic issues as whether or not to pay a ransom if systems are compromised by a ransomware attack.

Among the emerging regulatory issues is digital assets. These have sustained themselves through a sequence of bubbles, so are bound to endure. Familiar features of established financial markets, such as automated close-outs of collateralized transactions, are now being replicated in Decentralized Finance (DeFi) markets.⁴ Accordingly, regulators will apply established principles.

In one sense, this is not difficult because the issues in digital asset markets – such as conflicts of interest or pinpointing the entity responsible - are the same as in the securities markets. In another sense, however, regulation is more challenging because the digital asset markets are primarily retail and the regulatory issues that arise (such as investor protection) are different from wholesale markets.

The investment and leverage techniques pioneered by retail investors and their service providers in DeFi are not yet being widely used in wholesale markets by institutional investors or their intermediaries. Accordingly, the application of wholesale market regulation, which assumes a degree of sophistication on the part of the regulated, would be inappropriate and premature.

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⁴ The Board of the International Organization of Securities Commissions, IOSCO Decentralized Finance Report: Public Report, OR01/2022, March 2022. It can be found at: <u>https://www.iosco.org/library/pubdocs/pdf/IOSCOPD699.pdf</u>

Initially, regulators were distracted by the hype surrounding digital assets instead of focusing on fundamental issues such as brokers mis-labelling their business an "exchange." Regulators want to maintain space for innovation but recognize they have been too hands-off so far. With venture capital and institutional money now entering the sector, regulators will become more forceful.

Regulatory attitudes are changing in another way too. After the financial crisis of 2007-08, and the subsequent re-regulation of the financial services industry, regulators withheld from engagement with the industry. A consequent reliance on formal regulatory reports has denied regulators informal and advance intelligence about events that are likely to disturb the stability of financial markets.

"There is something not good about the way regulators get information from the market and the way the market supplies information to regulators," concluded the speaker. If regulators want regulated firms to invest in practices and procedures that can maintain the stability of markets, it is time for the regulators and the regulated to share data and restore dialogue.

1.2 Impacts of Technology and Changing Investor Behaviours on Capital Markets

A survey of ISSA members in 2021 found participants concerned primarily about finding new sources of growth (46 per cent of respondents), alleviating increased cost pressures (32 per cent) and managing industry disruption (17 per cent). These were predictable findings in an industry which has stable revenues (from rising assets in custody) but declining profit margins (from fee compression).

Opportunities to increase revenue do exist if firms are prepared to invest, but the pressure on profitability makes it more difficult to secure investment budgets. Although geopolitical uncertainty complicates the outlook, the two major disruptive forces that the industry must manage are changes in investor behaviour and the threats and opportunities created by technology.

These two forces are intertwined. The growing interest of investors in privately managed assets and the ESG and digital asset markets, for example, may be driven by investment mandates and the prospect of higher returns but both are enabled by technology. Likewise, the increased influence of retail investors on transaction volumes and market prices is enabled by smartphone applications.

In tandem, these twin forces present the securities services industry with several challenges. They include a shift of assets from public to private markets, a movement of execution and trading away from traditional exchanges to Multilateral Trading Facilities (MTFs) and Systemic Internalizers (SIs), a surge in ESG investing, the displacement of institutional by retail investing and the rise of digital assets.

The growth of private assets is striking. Privately managed assets have grown 9 per cent a year since 2015, to 18 per cent of total assets under management. Globally, the number of listed companies has declined steadily since 2014. The median age of companies at Initial Public Offering (IPO) has increased from six and half to ten years in the last 40 years, leaving less value for public shareholders once a listing finally takes place.

Thanks to off-exchange trading, exchanges in the European Union (EU) and United Kingdom now own just 28 per cent of equity trading and 2 per cent of bond trading. MTFs and SIs own, respectively, 48 per cent and 65 per cent. In the United States, the share of equity execution taken by exchanges fell from 62 per cent to 57 per cent between the end of 2019 and the third quarter of 2021.

Assets invested in mutual funds and exchange traded funds (ETFs) pursuing ESG mandates increased 20 per cent a year to US\$1'854 billion between 2014 and 2020. "Green" and social bond issuance has increased even faster over the same period, by 48 per cent a year to US\$436 billion. US\$61.3 trillion is now managed by 273 asset managers committed to net-zero investing.⁵

The share of securities trading volumes taken by retail investors in the United States has more than doubled since 2010 from 10 per cent to 21 per cent in 2021. Retail ownership of the shares in the S&P 500 and the STOXX Europe 600, measured as a weighted average of market values, currently stands at 24 per cent.

Retail investors have of course driven the cryptocurrency markets, which rose from virtually nothing as recently as 2016 to a peak of US\$3 trillion in late 2021. The most optimistic projection puts the value of cryptocurrencies at 15 per cent of listed equities by 2030. Binance, the largest cryptocurrency exchange, had revenues of US\$20 billion in 2021, Coinbase US\$7 billion and FTX around US\$1 billion.

Businesses in these areas have become major acquisition targets. A study of 43 capital markets acquisitions in 2021 found a third (14) aimed to secure cryptocurrency or digital assets revenues, a seventh (6) represented investments in privately managed assets and a twentieth (2) were designed to garner ESG expertise. In other words, half the acquisitions were in digital assets, private markets or ESG.

If these five trends – a shift to privately managed assets and off-exchange trading, the increased appetite for ESG investing, the rising market share of retail investors and the growth of the cryptocurrency markets – continue without a competitive response from the global securities services industry, there will be substantial erosion of market share and shareholder value.

⁵ See <u>https://www.netzeroassetmanagers.org/</u>

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But the industry can respond, and in obvious ways. Its members can build and operate the infrastructure for privately managed assets, capture a bigger share of trading on MTFs, develop ESG data and reporting services, provide services to retail investors (or at least the intermediaries they use) and offer settlement, custody and financing services to cryptocurrency investors and traders.

Competitive responses of this kind are evident already, though they are both immature and tentative, even in the provision of familiar services to non-retail clients. In cryptocurrency spot and derivative trading, custody, financing and Stablecoin issuance, for example, traditional banks currently own no more than a fiftieth of a corporate and institutional revenue pool estimated at US\$4-5 billion.

This willingness to cede the market to "native" cryptocurrency companies, while explicable on grounds of limited volume and regulatory and reputational risk, might be a strategic mistake. This is because the cryptocurrency markets are developing an infrastructure of exchanges, brokers, market-makers, asset managers and custodians that bears a strong resemblance to the traditional securities markets.

Private investment in cryptocurrency exchanges, custodians, liquidity providers, trading, investment and lending firms and payments providers increased five-fold in 2021 to US\$31 billion, pushing the capitalization of the sector up to US\$400 billion. Total funding of blockchain ventures was up 713 per cent in 2021 to US\$25.2 billion, a fifth of total funding of all FinTechs last year.

In short, start-ups that compete with the securities services industry to provide custody, settlement, collateralized financing and liquidity are well-funded. Many are focused on custody and private key management in particular. They are also seeking and securing (or acquiring) regulated status and pressing regulators to extend their reach to the markets they service.

Regulators in major markets (the United States, the United Kingdom, France, Germany, the European Union and Japan) are responding. They are putting frameworks in place to regulate cryptocurrencies, Stablecoins and the wider class of digital assets. This means regulated entities such as securities services providers will not be able to abstain from the markets on grounds they are not regulated.

If regulation extends to cryptocurrencies, start-ups with regulatory licences will be well-placed to outcompete custodians and CSDs because of their experience. It is therefore essential that members of the securities services industry evaluate their options for participating in the markets and their appetite for its risks and invest in experiments to increase their familiarity with the technologies.

They need to build the necessary operational and compliance capabilities, hire suitable talent and engage directly with regulators to make sure their voice is heard on digital assets. Otherwise, there is a possibility that the global securities services industry will find its presence in fast-growing and newly regulated markets is nugatory by comparison with rivals.

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The challenge is greater than it sounds because digital technology is fundamentally altering the character of the financial services industry. A balance sheet was once the most powerful asset a large bank or insurer (or even asset manager) could possess. In 2010, 48 of the top 50 financial services businesses by market capitalization earned revenues primarily by deploying their balance sheet.

At the start of 2022, by contrast, 13 of the top 50 financial services businesses by market capitalization are infrastructure, information or technology providers. They are growing faster than traditional businesses, increasing their market capitalization eight-fold since 2010, by comparison with the mere doubling of market capitalization by the 37 traditional financial services businesses.

These companies now account for more than a fifth of the market value of the financial services industry. They are the future which the securities services industry can join if its members can escape business-as-usual and attract talent, but they may not be able to do it. "Generally," concluded the speaker, "I have been concerned about the ability of very large organisations to think strategically."

1.3 Digitalization: Implications for Trading and Post-trading

In 2018 the Swiss stock exchange (SIX) decided to build a fully integrated trading, settlement and custody infrastructure for the issuance, trading and safekeeping of digital assets, based on blockchain technology. In September 2021 the Swiss Financial Market Supervisory Authority (FINMA) licensed the SIX Digital Exchange (SDX) to operate as a stock exchange and CSD for digital assets in Switzerland.

The licence is the same as the one SIX has for its traditional exchange, clearing, settlement and custody businesses. However, SDX does report to the regulator in a novel way. FINMA operates a node on the SDX blockchain that allows them to see directly the information they are entitled to obtain under the regulations. This will eventually be automated by a smart contract.

The decision to build a licensed digital exchange was driven by concern that cryptocurrency exchanges such as Binance, Coinbase and FTX would obtain regulatory licences and start tokenizing conventional securities. FTX offers tokenized shares already and acquired regulated status through the acquisition of LedgerX. Funding is not an obstacle: at its IPO in 2021, Coinbase was capitalized at US\$55 billion.

US\$55 billon made Coinbase more valuable than LSEG. The size and ambition of the cryptocurrency exchanges threatens disintermediation of traditional exchanges – and brokers. SIX has countered this threat by providing an equivalent service. There are offensive opportunities too, notably the chance to service new asset classes in tokenized form and cut costs in issuance, trading and settlement.

Nor is SIX the only traditional exchange to respond to the threat-cum-opportunities. Deutsche Börse is launching a digital CSD (D7). Euronext is a shareholder in the Tokeny and Inveniam tokenization platforms. The Stock Exchange of Thailand (SET) is building the Thai Digital Exchange. The Hong Kong Exchange (HKEX) is building a blockchain-based settlement platform for mainland China securities.

New digital asset exchanges are being launched within existing regulatory frameworks. Boston-based BSTX, jointly controlled by BOX and tZERO, has secured a national licence from the Securities and Exchange Commission (SEC). Archax in London is regulated by the Financial Conduct Authority (FCA) and is building a regulated CSD. ADDX is regulated by the Monetary Authority of Singapore (MAS).

In the long term, digital securities markets will transform securities markets. The divide between ownership and management will be succeeded by the co-ownership and co-creation model of Decentralized Autonomous Organizations (DAOs). Direct retail investment will be more important than intermediation by asset and wealth managers. Asset servicing will be handled by smart contracts.

Nevertheless, issuance of digital securities (or security tokens) has started slowly. Tokenization platforms have had some success with in-house and private company issues and funds, and flagship issuers such as the World Bank and the European Investment Bank (EIB) have issued tokenized bonds even on to public blockchains. But issuers and investors are proving elusive.

In the absence of a liquid secondary market, investors currently see no material advantage in buying a tokenized security over a conventional share in digital form. The theoretical benefits for issuers, especially in cutting the costs of raising capital, are more obvious. But they cannot be put to the test of practical experiment until a network of institutional investors emerges and engages.

A widely anticipated trigger for growth in tokens is the introduction of a central bank digital currency (CBDC) in a major market. By putting fiat currency on to blockchain networks, CBDCs can facilitate the delivery of security tokens against cash payment without buyers and sellers needing to use payment tokens such as Stablecoins or come off the network to use the conventional banking system.

SIX group has taken part in two wholesale CBDC experiments. Project Jura (December 2021) showed it is possible to settle tokenized securities atomically cross-border and cross-currency (euros and CHF) in central bank money. Jura also showed CBDCs can work within existing regulations, without linking platforms or intermediaries, and without central banks losing control of their national currency.

Project Helvetia (December 2020-January 2022) showed a wholesale CBDC can be used to settle tokenized securities in central bank money in one country (Switzerland) and currency (CHF). A second phase of the project proved that a wholesale CBDC can be integrated with existing bank and central bank systems, so users do not have to invest in interfaces.

However, until CBDCs spark growth, tokens will be dwarfed by cryptocurrencies. Cryptocurrencies are gradually being regulated, starting with investor due diligence and taxation of gains. Exchange-traded funds are proliferating. Institutions are investing. Unicorns are multiplying. Mergers and acquisitions are increasing. Stablecoins are established as the base currency in cryptocurrency trading.

Which is why SDX has reversed its initial decision to abjure cryptocurrencies. With cryptocurrencies still valued at more than US\$2 trillion, being traded in derivative as well as spot markets, and evolving an infrastructure that separates trading and custody, they are an unignorable asset class. SDX has launched a service (Crypto AG) to enable crypto-currency investors to earn income on their holdings.

The service does not involve the various cryptocurrency lending opportunities in the DeFi markets, but the global securities services industry does need to understand developments in DeFi. The DeFi markets are growing fastest in Asia, which is one reason why SDX has established a joint venture in Singapore with SBI Holdings. It will initially support crypto-currency spot trading there.

The Asian digital exchange will be linked to SDX in Switzerland, to foster global liquidity. There are other global opportunities in Non-Fungible Tokens (NFTs) and the Metaverse. The mainly Ethereum-based NFTs proved exceptionally popular in 2021, but almost exclusively with retail investors. As the NFT market institutionalizes, demand for reliable settlement and custody services will increase.

The same is true of the Metaverse, where NFTs will prosper. SDX is preparing by taking stakes in a cryptocurrency orderrouting company and an NFT business. Both will be integrated into its token issuance, trading, settlement and custody services and its new cryptocurrency yield generation service. Over time, linked cryptocurrency and NFT trades are likely to become important for SDX.

Another area in which SDX is investing is fine art tokenization. It is developing a service for high net worth individuals (HNWIs) which receive tax breaks for bringing works of art out of private vaults for public display. Art galleries are also interested in tokenizing increases in the value of the artworks they hold. SDX expects to launch both these services in 2023.

The same opportunities are open to other securities services firms, but there is a risk the industry fails to rise to the scale of a threat that is driven by structural change. There is an underlying shift in market power from intermediaries that aggregate assets and transactions (such as exchanges, brokers and asset and wealth managers) to DeFi or peer-to-peer models driven initially by apps and retail investors.

Intriguingly, the three businesses which generated the largest total shareholder returns between 2006 and 2015 were not investment banks, regional banks or asset and wealth managers but the major exchange groups, payments groups and datacum-index providers. Their position is at risk of being disrupted by well-funded innovators armed with legacy-free technologies.

SDX is how SIX has responded to the threat. It provides a fully integrated digital market infrastructure - listing, trading and atomic settlement, which dispenses with the need for a central counterparty clearing house (CCP), and custody - on a blockchain. However, customers can still choose to trade, clear and settle tokens via the traditional exchange (SSX), CCP (X-clear) and CSD (SIS).

Likewise, securities issued into SIS can be issued, traded and settled on SDX as global depositary receipts (GDRs). The choice reflects the fact that liquidity remains with the traditional exchange. SIX Group demonstrated this in November 2021 when it issued bond of its own. It is both listed and traded on SDX and issued into the SDX CSD and listed and traded on SSX and issued into the SIS CSD.

Importantly, the trading engine (Nasdaq INET) is the same at both SSX and SDX. Trades pass to the blockchain for settlement and custody only. SDX is a hybrid in another way too. Instead of relying on the blockchain ledger of transactions to maintain a register of investors, SDX continues to maintain a central register, and reconcile it against the blockchain ledger.

That said, settlement and custody of tokenized assets is not the same as processing electronic book entries and updating a register. It means monitoring the blockchain. Equally, it makes no sense to simply reproduce existing processes on a blockchain. Rather than automate an existing process, blockchain provides the opportunity to re-design the entire process.

Compromises of this kind between the old ways of doing things and the new are bound to be temporary. SIX fully expects SDX to gradually supplant its traditional infrastructure as the benefits of tokenization in terms of reduced complexity in corporate actions, automation by smart contracts, tokenized funds and links to other networks are better understood and more widely appreciated.

The transition will not be rapid. SIX expects it to last ten years. Once the transition is complete, however, even those tokenization infrastructures that respect the roles of existing intermediaries will erode the roles of custodian banks and CSDs. Asset owners will interact directly with issuers, and asset servicing and regulatory reporting will be handled by smart contracts.

Getting there is not cheap. The investment in SDX is substantial. When the return on the investment lies so far in the future, the Board was not easy to persuade. But its members recognized that existing volumes and profits were declining, and that compliance costs and risks were going up. Other members of the securities services industry should examine SDX closely – and buy the technology.

1.4 Data as a Fundamental Driver of a Firm's Value Proposition

A global custodian accumulates a massive data hoard in the normal course of business. BNY Mellon, with US\$45.5 trillion of assets under custody or administration, for example, looks after a fifth of all assets in custody. Servicing these assets, and settling transactions in them, generates a large volume of data. The data may well contain useful or valuable insights for buy-side and sell-side clients.

Both certainly want help with data. It arrives in semi-automated formats at best and is often processed manually. Data is hard to integrate and process automatically because it is fragmented across internal silos. This also limits its use in artificial intelligence (AI) and machine learning (ML). Unhelpfully, internal and external consumers of the data insist on bespoke formats and channels.

A further difficulty is ageing systems. Firebrand Research estimates that more than half post-trade processing platforms in the securities industry are at least nine years old. Gaps in automation of data processing between internal systems are then bridged by additional headcount, especially in operations but also in finance, compliance and risk management functions.

A survey of 200 asset managers, conducted in late 2020, found 97 per cent seeking a comprehensive data management infrastructure to support investing, and 78 per cent working with third parties to bridge data silos. Importantly for the securities services industry, 90 per cent were focused on the back office, against 61 per cent focused on the middle office and just 41 per cent on the front office.

However, in making data flows more efficient, it makes no sense to treat the back, middle and front office as separate fiefs: they need an integrated data infrastructure. A data model which spans the front, middle and back office with a messaging layer and a single set of data sources (such as reference data or corporate actions notifications) can facilitate integration, reducing reconciliation breaks.

Making data available to different applications within a firm in this way has further benefits in simplifying regulatory reporting and positions management, which yields savings in collateral allocations. Indeed, improved data timeliness and quality allows sell-side firms in particular to economize on cash and collateral, and so manage their balance sheet more efficiently.

Benefits are multiplied if firms agree to share data. Broadridge is supporting a collaborative project between asset managers that have agreed to share their distribution data. In another project, firms are sharing data on holdings of corporate bonds, a notoriously illiquid market in which data on who owns which bonds and in what sizes is improving liquidity and price formation immeasurably.

A third use-case is ESG, where the value of assets under management (AuM) that make use of ESG data is expected to increase from US\$35 trillion in 2020 to US\$50 trillion by 2025. Custodians already alert clients to investments that breach ESG mandates. Tools which can aggregate and compare data from multiple ESG ratings agencies would be valuable to them as well as asset managers and owners.

As service providers, securities services firms can help their buy- and sell-side clients improve their management and use of data by supporting integration of disparate data sets across business functions; ensuring data management systems remain open to changing providers and adding new partners; and emphasising the need for flexibility to satisfy a wide range of consumers of the data.

How to commercialize work of this kind is unclear. In some cases, it makes sense to charge for the data directly. In others, it might be more sensible to give data away and get paid a proportion of the savings it creates. However, whether data belongs to service providers or to their clients is unresolved, and regulators may not be supportive of the commercialization of client data.

1.5 Impacts of AI and DeFi Tokenization on Financial Services and Securities Trading

The application of digital technology to financial markets has so far created three broad patterns. The first is quantitative trading, in which algorithms based on mathematical models seek to find and exploit trading opportunities. The second is DeFi, in which tokenized assets are exchanged peer-to-peer. The third is regulation of the risks that these activities create.

These patterns are the contemporary manifestations of a prolonged, three stage transition in financial services from centralized, intermediated finance (TradFi) to decentralized, peer-to-peer finance (DeFi). The evolution of the constituents of the industry – issuers, financial services, financial assets, money, forms of ownership, ownership of data and technical infrastructure – are depicted in Table 1.

Table 1:	Financial	Services in	Transition
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	Stage 1: TradFi	Current stage	Stage 3: DeFi
Issuers	Corporates	Corporates	Owners
Financial services	Intermediaries	Intermediaries	Peer-to-peer
Assets	Securities	Security tokens, NFTs	Digital assets
Money	Fiat currencies	Cryptocurrencies/ Stablecoins	CBDCs, Stablecoins, Cryptocurrencies
Forms of ownership	Corporations	Corporations	Consumers
Ownership of data	Corporations	Corporations	Citizens
Technical infrastructure	Web 1.0/2.0 + Cloud	Web 2.0 + Cloud	Web 3.0 + Blockchain

Within the first pattern, algorithmic trading is now driving the innovations labelled as AI. In its simplest form, AI is computational statistics, or the application to large quantities of data of algorithms derived from single mathematical techniques (such as Monte Carlo random sampling) or multiple techniques (known as Ensemble) to predict the value of financial instruments.

More advanced systems aim to predict the outcome of interacting variables in financial markets that are complex, evolving and non-linear. The cellular automata (CA) model of computation, for example, seeks to simulate the behaviour of financial markets and the value of financial instruments by setting rules that make the state of one variable dependent on the state of neighbouring variables.

In agent-based models (ABM), financial markets are modelled as collections of autonomous decision-makers. Rules determine how each "agent" assesses its individual situation and bases its likely decisions on that assessment. The interactions of these autonomous agents can then be used to predict the behaviour of markets and the value of financial instruments.

These algorithms find the Cloud congenial as an underlying infrastructure, because they can access large volumes of data from which to improve their performance by ML. ML relies on heuristic algorithms (or rules-based trial and error) to mimic the process by which human beings acquire and process information. ML algorithms can learn without explicit programming.

ML algorithms are well-suited to information-processing industries such as securities services. However, they come in a variety of forms. One is Deep Learning, a type of ML based on artificial neural networks (networks of nodes, inspired by the human brain) in which data is processed in successive layers, with the aim of extracting progressively more valuable information.

A Deep Learning variation that is particularly useful in Natural Language Processing (NLP) – for which there is high demand in securities services – is Transformers. By weighting parts of a data set, they can learn the dependence of language on the sequence of words. One version (FinBert) can analyze sentiments expressed by natural language texts and assess their impact on market values.

Another is Federated Learning, an ML technique pioneered by Google, in which the algorithm is trained on decentralized data sets held in local servers or devices. The principal value of this technique is that it makes more data available because it preserves data privacy and security by leaving data in its original location. The algorithm acts on data in the Cloud rather data being sent to the Cloud.

ML is also increasingly used to "augment" human intelligence. The aim is to let algorithms search large quantities of data for patterns and correlations that are either unnoticed by human analysts or would take too long to identify. It is being used already to identify errors and anomalies in Net Asset Value (NAV) calculations and regulatory reports, for example.

So-called augmented intelligence is proving that ML plus human intelligence makes better predictions, because people are better at forecasting the future than machines. Work is now in hand to analyze human beings to find the best forecasters, so the ML algorithms can learn by working with them. These forecasters will be paid to train the algorithms.

Within the second pattern, the financial services industry is currently in transition from DeFi 1.0 (peer-to-peer transactions in cryptocurrencies only) through DeFi 2.0 (tokenizations of securities and other assets on blockchains) to DeFi 3.0 (fully decentralized financial markets in which any asset class can be tokenized and exchanged peer-to-peer across an ecosystem of blockchains).

DeFi is financial services for the Web 3.0 era. Web 3.0 combines the Internet with ML and the blockchain to enable consumers to exchange money and tokenized assets peer-to-peer between digital wallets, using smart contracts to automate execution of agreements without intermediaries, and using protected, privately owned data to make their needs known and to prove their identity.

Tokens are already available in a variety of forms (see Table 2). The last year has seen explosive growth in Non-Fungible Tokens (NFTs) in particular. In 2021 more than US\$44 billion was invested in Ethereum-based NFTs alone.⁶ These are being bought almost entirely by retail investors familiar with computer games, though the profits accrue mainly to professional investors.

NFTs actually originate in video-gaming. In the GameFi industry, less-than-wealthy individuals in countries such as the Philippines and Venezuela are paid to play games in which they earn NFTs, which they sell to holders of cryptocurrency which can be on-sold for fiat currency. It is a potential model for paying people to train ML algorithms, and a precursor of compensation for time spent creating data.

NFTs have also become an investment outlet for holdings of cryptocurrency that cannot be used for many other purposes beyond "staking" to earn fees for authenticating blocks of transactions. A similar phenomenon is evident in the DeFi market, where protocols offer cryptocurrency investors collateralized lending opportunities.

But the most interesting development in DeFi is the emergence of Decentralized Exchanges (DEXes). These spurn the traditional exchange model of centralized limit order books (CLOBs) in favour of direct peer-to-peer transactions which are matched and executed algorithmically. Exchanges are also emerging in the security token markets (SDX is an example).

⁶ Chainalysis, NFT Market Report, January 2022.

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Table 2:The Varieties of Tokens

Payment tokens	Transaction, currency or payment tokens that can be used for payment of purchases on blockchains. Stablecoins are a variety of payment token.
Asset-backed tokens	Tokens backed by physical or digital assets, such as gold, fine art or real estate.
Security tokens	Like traditional securities, security tokens give the holder ownership rights, such as to a stock or share in a company, and the associated entitlements.
Utility tokens	These tokens give the holder beneficial access to a blockchain-based product or service.
Governance tokens	These tokens give holders the right to participate in decision-making and vote on how to manage a blockchain protocol.
Reward tokens	Comparable to airmiles, and similar to utility tokens, these are "rewards" for participation.
Non-Fungible Tokens (NFTs)	A unique digital asset representing ownership of a specific asset in the real world, with no standard value.

The new breed of security token exchange is capable of supporting both native security tokens (tokens which are securities but do not exist outside of the blockchain) and tokenized securities (blockchain-embedded representations of real-world securities). Security token offerings (STOs), the tokenized equivalent of an IPO, remain rare.

However, there will over time be successive explosions in the issuance of tokens on to blockchains because literally any asset or income stream can be tokenized. This process will forge the Web 3.0 financial services industry, which will serve a decentralized economy based on the issuance and exchange of any asset type across an eco-system of blockchains.

It is a possible future which - to allude to the third crucial pattern - already presents a variety of risks that need to be regulated. The cryptocurrency markets remain a byword for hacks, thefts and scams, most of them perpetrated by insiders. There is a growing recognition even within the crypto-currency industry that regulation would be advantageous, particularly in attracting institutional money.

Regulators are already focusing on the cryptocurrency markets for aiding organized financial crime by skimping Know Your Client (KYC), Anti Money Laundering (AML), Countering the Financing of Terrorism and sanctions screening checks, and for abetting tax evasion. The number of frauds and thefts (many by insiders) is raising issues of investor protection, while payments to games players are raising ethical issues about exploitation of labour.

Al creates regulatory challenges too. "Flash crashes" caused by the interaction of multiple algorithms, for example, are not understood. Algorithms that sift personal biographies can develop biases by learning from human beings. Algorithms designed to detect fraud can themselves become fraudulent. Central banks are concerned about the unpredictable impact of ML algorithms on financial stability.

In sum, the emergent Web 3.0 financial services economy faces challenges of governance and regulation. Fortunately, experience shows that there is no need to reinvent existing regulations. Tokens can be regulated as securities. An algorithm that manipulates the market can be regulated like a human that manipulates the market. That said, cryptocurrencies and DeFi may need a new approach.

In developing that new approach, it was suggested that ISSA could develop a "sandbox" to facilitate collaborative experiments between member-firms. These could explore how to adapt DeFi techniques to wholesale markets. Regulators could also be invited to join some projects, with a view to establishing how DeFi entities might best be governed and how DeFi markets can best be regulated.

2. BREAK-OUT GROUPS

2.1 Digital Assets, Cryptocurrencies and CBDCs: Impact on the Securities Services Industry

In cryptocurrencies, a US\$1.6 trillion market has developed largely without the benefit of independent custodians. Initially, in a market driven almost entirely by retail business, investors were content to rely on a digital wallet supplied by the same exchange where they bought and sold the cryptocurrency. Indeed, the biggest cryptocurrency custodian is still an exchange (Coinbase).

However, the persistence of scams, hacks and thefts has strengthened the case for independent custody. According to blockchain analysis firm Chainalysis, thieves scammed or stole a record US\$14 billion from cryptocurrency investors in 2021, up from \$7.8 billion in 2020.⁷ DeFi protocols and NFTs played large parts in the increase.

In tandem with rising institutional interest in the cryptocurrency markets, these scams and thefts have created pressure to separate the custody function from the trading function. This has drawn custodian banks and CSDs, which can draw on long experience of providing independent custody services, into the market.

The 2021 ISSA survey of DLT investments by its members found more than two out of three were developing crypto-currency wallets and payment token safekeeping services in response to customer demand. Indeed, crypto-asset servicing was second only to security token issuance in terms of the number of respondents with live deployments ⁸

This has created an opportunity to agree a set of best practices for digital asset custody – and the first best practice is obvious. The crypto-currency, DeFi and NFT markets have blurred the distinction between the issuance, trading, settlement and custody functions. There is an obvious need to restore a clear demarcation between trading and custody.

A second area in need of best practice is custody of private keys. In a public blockchain network, for example, ownership of the private key to a public network is tantamount to full ownership of the asset, and loss of the private key means loss of the asset. This risk can be managed by procedural controls only, such as a "four eyes" check. These measures can be written into best practices.

Holders of tokens on private or permissioned blockchain networks, by contrast, do not face the risk of catastrophic loss due to access to the master keys (or "seeds"), which can be used to regenerate lost private keys. However, "seeds" still need to be stored safely, using physical as well as cryptographic security techniques. These too can be founded in best practices.

⁷ Chainalysis, The 2022 Crypto Crime Report, February 2022, page 3.

⁸ ISSA, Accenture and Asifma, DLT in the Real World 2021: Key Survey Findings, pages 7 and 10.

A comprehensive set of best practices would specify contractual models, standards and the fiduciary responsibilities of the various parties. Likewise, the relative risks of settling transactions by delivery versus payment (DvP), or by "atomic" settlement (whereby a transaction ceases to exist if either the cash or the asset is absent), and the risk mitigation role of net settlement via CCPs compared to gross settlement could be assessed against a set of agreed criteria.

The same technique of managing risk by best practice could be applied to assessing the settlement of the cash leg of a transaction by Stablecoin or CBDC. So could the relative risks represented by digital assets issued and settled on or between different blockchain protocols (such as Ethereum, Cardano and Solana). Other considerations include the implications of having to operate treasury functions around the clock and reporting activities to regulators.

The composition of a set of best practices could draw on the work of the Global Blockchain Business Council in monitoring the development of the laws governing digital assets around the world. By developing best practices, the members of the global securities services industry could present a common front on the same issues to regulators in different jurisdictions.

2.2 Long Live the New Cash: Enabling More Efficient Securities Markets

Stablecoins provide a potential alternative to using the SWIFT network to make cross-currency payments. Because they are issued on to blockchain networks, Stablecoins can be transferred directly between the digital wallets of members of the network. In theory, these blockchain-based payments would be quicker, cheaper and more transparent. In practice, they present challenges.

Raiffeisen Bank International (RBI) introduced a euro version of a Stablecoin (the RBI Coin) in May 2020 with the aim of using it to internalize client payments in the same way as J.P. Morgan uses the JPM Coin. Although the RBI Coin was technically straightforward, it proved difficult to secure adoption both within the bank and by members of its correspondent and sub-custody banking networks.

Internally, the view was that the RBI Coin added nothing. Externally, banks wanted to know which other banks were participating, and therefore which entities they could transact with using the RBI Coin. These commercial challenges proved insuperable. The RBI Coin also solved only one half of a securities transactions – the cash leg - without countervailing tokenized securities for delivery.

If securities were tokenized, a Stablecoin such as the RBI Coin could in theory facilitate a shorter settlement cycle for securities transactions, and that would yield savings in the capital costs associated with cash and collateral buffers. However, instant cross-currency settlement would be obstructed by a current FX settlement timetable of trade date plus two days (T+2).

The chief lesson of the RBI Coin is that the success of digital forms of cash depends not on a technology that can offer peerto-peer money transfers in near real-time but on a sizeable and growing community of users. Those users have multiple needs, of which tokenized cash solves only a part. They also need to be confident that customer due diligence on counterparties is thorough and complete.

A sensible next step is to identify an asset class (such as agricultural commodities) where buyers and sellers can benefit from faster payment. The service would need to be supported by KYC, AML, CFT and sanctions screening checks. These could be used as the foundation of self-sovereign digital identities (SSIDs) owned and updated by companies and individuals.

But the principal challenge is to build the community of users. To some extent, this is a matter of educating custodian banks and CSDs about the benefits of instant settlement of tokenized securities beyond the advertised cost savings, which are unlikely to prove sufficient to change behaviour. Other steps will be required.

There is scope, for example, for the securities services industry to agree on a set of standards to which a community of users could subscribe. These standards should as a minimum address the following issues: trust, consumer protection, financial stability, asset class selection and the management of innovations introduced by members of the eco-system.

2.3 The Securities Landscape: Focusing on Retail Investor Behaviour

The surplus time and money created by the global Pandemic has accelerated the already growing retail interest in investing and trading securities. In the United States, the collective value of low-ticket retail transaction volumes now rivals the high value volumes of the funds industry. In Korea, retail investors have channelled US\$100 billion into foreign markets via the CSD sub-custody network.

The proportion of business attracted off-exchange, and not through regulated brokers, is increasing too. Modern retail investors attach limited value to regulated infrastructures such as stock exchanges and CSDs, and to independent custody. Instead, they value speed, convenience and price competitiveness above all and pay limited attention to risk.

The new breed of retail investors tend to be younger, less affluent, more sensitive to brands and ESG, reliant for investment advice on peers and social media instead of formal research, content to trade on margin and in fractionalized shares, to find frontier market opportunities enticing and to approach the markets through on-line and smartphone apps, many of which increase transactional activity through gameification.

These developments present a number of challenges to the global securities services industry. Traditional clients are shedding business, as new investors trade elsewhere via new technologies. The new investors are also trading and investing in asset classes that are either altered by fractionalization or tokenization or which are entirely new (such as cryptocurrencies and NFTs) to incumbents.

New asset classes, like out-of-network assets in the past, change the risk profile of the custodian banks and CSDs that safekeep them. It is hard for established service providers to remain relevant to the new types of investor and asset class, because they cannot - unlike lightly regulated providers of smartphone apps - compromise on existing standards of business and compliance.

Indeed, in servicing the new class of investor, regulated banks and CSDs must be mindful of the growing interest of regulators in protecting investors from misinformation, mis-selling, mislabelling of services and the churning of portfolios. The IOSCO Retail Market Conduct Task Force, set up in 2020 to address these issues, has already published a "toolkit" for regulators to apply in their markets.

Although the focus of regulators is primarily on their domestic markets, retail trading platforms do operate across national borders. This provides an opportunity for the securities services industry to service clients internationally, but it also creates a risk of regulatory arbitrage. ISSA is well-placed to promote a cross-border regulatory framework that gives everyone a fair and equal chance of succeeding.

In addition, the periodic surges in the volume of low value transactions are likely to test the operational resilience of an industry designed to handle a lower volume of high value transactions. For example, many CSDs do not offer end-investor accounts and, even where they do, they tend to rely on intermediary banks to assume the counterparty risks.

If retail investors start to take a closer interest in corporate actions or proxy voting, the pressure on operational capacity will intensify. As the Gamestop short squeeze of January 2021 showed, retail investors can act collectively, and by criteria that are unfamiliar, such as the authenticity of computer games or brands. They could well apply similar pressures at annual general meetings (AGMs).

Increased volume and greater price volatility are reinforcing the case for shorter settlement timetables to relieve the cash pressure on brokerage firms, particularly in the United States. Tighter settlement deadlines will put further pressure on custodian banks and CSDs to adapt systems and operational procedures in some but not all markets, potentially obstructing capital flows.

Although the new retail business is currently intermediated mainly by relatively small FinTechs, this may not remain the case. It is possible that new types of competitors capable of adapting to regulations and better adjusted to handling large volumes of retail business, such as large technology or telecommunications businesses, might displace custodian banks and CSDs as well as the FinTechs.

The impact of displacement or disintermediation will not fall evenly on CSDs and custodian banks. For CSDs, loss of settlement revenues might be existential. Those owned by exchanges might find their parents lose issuance revenues too.

Banks, on the other hand, have other sources of revenue, and are likely to find it easier to adapt to the opportunities created by rising levels of retail investment.

To cope with these many and varied pressures, the global securities services industry needs its members to experiment with services (such as digital wallets) and partnerships (with FinTechs), and to share experiences. The industry would also benefit from a collectively produced five-to-seven year rolling vision of how its business can adapt to a mutating range of threats and opportunities.

2.4 The ambition for Digitization and Digitalization

Another effect of the Pandemic was to catalyze digitization (the conversion of information from analogue to digital formats) and digitalization (the digitization of a process). For the global securities services industry, in which manual processes, paper documentation and complex data reconciliations persist, notably in corporate actions and client on-boarding, this was a useful wake-up call.

The industry is under cost pressure. To remain a sustainable, scalable business capable of growth, the industry needs to raise its efficiency by higher levels of automation throughout the value chain. Automation depends on the ability to digitize a process, and that in turn depends on the information that is being processed being available in digital form.

But digitalization and digitization are not solely about operational efficiency. Properly conceived, they can open new business opportunities. A clear instance is privately managed assets, where operational processes are not just manual but unstructured. As the DTCC Digital Securities Management (DSM) Platform promises, the securities services industry can bring order to them.

Digitization and digitalization can also enhance the client experience. An obvious instance is tax documentation, where claims continue to rely on wet signatures. Another is account-opening and KYC, AML, CFT and sanctions screening processes, where duplication of identity checks is commonplace, even within the same firm, let alone across different firms.

The conspicuous answer to duplication is to share customer due diligence information. But data-sharing tends to founder on risk (was this check as thorough as ours?) and accountability (who is to blame if a bad actor is missed?). A federated model, in which the identity of a user is shared across multiple separate identity management systems, is potentially a more viable solution.

Service providers can do a lot to improve in these areas incrementally. But service enhancements cannot be accomplished without the engagement of clients as well. To digitalize their interactions with custodian banks and CSDs, clients need to digitize and digitalize information and processes on their side too, not least to avoid a Kodak-style existential negligence of strategically important technological developments.

Many processes confer no competitive advantage. Accordingly, members of the global securities services industry can safely collaborate on engineering improvements and share the results of successful internal experiments with competitors as well as clients. The principal obstacle to collaboration of this kind is access to the budgets to invest in change.

A reluctance to adopt standards is unhelpful. The securities industry has postponed adoption of the ISO 20022 standard except in those areas where regulations (such as the second iteration of the Shareholder Rights Directive, or SRD2) insist on change. APIs, which play a crucial role in digitalization, badly need standardization to maximize the size of networks as well as facilitate efficient data flows.

Yet there are low levels of engagement by the industry with groups working even on standardization of the longstanding problem of corporate actions, despite the availability of templates (first advocated in Europe by the Giovannini Group more than 20 years ago). It is not surprising that agreement on standardizing the common data elements of APIs on the ISO 20022 data dictionary is proving elusive.

However, low levels of digitalization and digitization are rarely a matter of lack of interest or enthusiasm or legacy technologies, attitudes or procedures alone. Often, regulations insist a process is completed a certain way, or a regulatory report is delivered in a particular format. Some regulatory obligations are so complicated that they simply cannot be fulfilled without manual processing.

One way to clear the regulatory barriers is to engage in dialogue with regulators. Members of the global securities services industry can become trusted advisers to regulators, especially as regulation expands into new areas, such as the cryptocurrency markets. However, the industry is likely to be taken more seriously if it speaks to regulators with one voice across multiple jurisdictions.

The most important steps the industry could take to advance digitalization are to reimagine current processes and generate an internal momentum for change. Automation is often reduced to the automation of processes that were overly complex and inefficient to start with. Truly effective digitalization entails re-designing processes to deliver an enhanced client experience and increased operational efficiency, especially in non-competing areas.

Such a re-design must encompass all areas within the securities value chain, starting with the issuers and their agents, which are the source of many operational challenges downstream. Issuers and their agents need to be educated on the operational effects of their product design work. Corporate actions are an obvious and longstanding instance of this problem.

Experience suggests that, once a process is re-designed, combinations of technologies can be used successfully to automate it, including APIs as well as an AI and ML. DLT can be an effective solution for particular pain points too. Sharing experiences, and collaborative pilot schemes and sandboxes, will enable the industry to progress more quickly.

2.5 Is Technology Reducing Unit Costs and Improving Profitability?

For a long period after the financial crisis of 2007-08, technology budgets were devoted almost exclusively to compliance projects. This reduced investment in new products and services. That said, one reason why the securities services industry was able to adapt its operations so effectively to working from home during the global Pandemic was the investments made in previous years.

In other words, business continuity planning and the associated technology investments proved their worth. Yet in normal times technology investment is overly focused on cost reduction when there are many other reasons to upgrade technology. An investment likely to increase sales or market share ought to be considered as readily as one that bolsters operational resilience or boosts cyber-security.

Unfortunately, the internal organization of firms is rarely conducive to a systematic approach to technology investment. The career prospects of chief technology officers are often determined by the number of people that ultimately report to them, imparting a bias against cost-cutting. And business heads are too ready to delegate the execution of technology investment decisions to specialists.

Technology budgets can also be mercurial. A new compliance obligation, or an increase in cyber-crime, for example, is likely to lead to a large but unexpected budget allocation to compliance or cyber-security. These sums, which are often designed to satisfy regulators, add a random element to technology expenditure decisions that distorts strategy over time.

As a result, the global securities services industry is not adept at structuring projects to meet defined objectives and measuring whether the investments achieve the objectives set. A reduction in headcount might be the principal objective of a project, for example, but the contract with a third-party vendor is unlikely to state that explicitly as a measure of success. Staff are simply redeployed.

Attitudes towards technology research and development are relatively immature. This is most evident in a low tolerance of failure. While pharmaceutical companies and private equity firms expect a minority of investments to succeed, the global securities services industry proceeds on the basis that every project must succeed and that failure is a catastrophe.

Collaboration could reduce the risk of more speculative investments. AI and ML are a case in point. ML algorithms learn from data, and the more data they consume the quicker they learn. A collaborative venture in which a group of firms shared their data would lead to quicker and more powerful results in, say, NLP.

The obstacles to collaboration of this kind are nevertheless real. Firms which own a lot of data can argue that their return on the investment is lower than that of firms which contribute a relatively small amount of data. The answer to this objection is to distinguish between technology investments that confer a competitive advantage and those that do not.

Functions that are a *sine qua non* of being in the business, but confer no competitive advantage, can safely be entrusted to a technology vendor that can use the knowledge gained to build a product for sale to the competitors of the original client. This creates a spontaneous utility model, which facilitates interaction between industry participants without damaging competitive advantage.

Investments which genuinely differentiate a firm in the marketplace can still be built in-house. However, the number of projects that are bespoke to individual firms are likely to diminish over time because a growing proportion of internal activities are common to all service providers. This makes it cheaper to subscribe to the technology via the Cloud than to build it in-house.

The narrowing of the field in which technology can genuinely differentiate a service provider argues for collaboration on a wider scale. Members of the global securities services industry should share technology investment experiences with each other more readily, so new developments can be spread more quickly. This is especially true of compliance projects, which tax the entire industry.

3. THE WORK OF ISSA

Several of the speakers and all the break-out groups emphasized the value of collaboration, not only with each other but with regulators and other industry experts and groups. Collaboration is of course one of the three core objectives of ISSA, and the principal means by which it helps its members to reduce risk and increase efficiency.

3.1 **Priorities for the Future**

Effective collaboration hinges in large part on the participation of members in Working Groups which tackle topical issues to provide best practice guidance and recommendations. The choice of Working Groups is ultimately decided by members, who also choose the priorities that set the future direction of ISSA. The priorities they chose at the 2022 Symposium were:

- A rolling five-to-ten-year view of the future of securities services. The global securities services industry is changing and will continue to change. ISSA should build on the work it has done with Oliver Wyman to provide its members with a continuously updated, forward-looking map to help navigate future disruption and make the most of the opportunities that will arise.
- Collaboration with regulators. This was proposed by one of the speakers and by both one of the break-out groups and one of the Working Groups. Areas where regulators would appreciate input from practitioners include cryptocurrencies and DeFi, where they are struggling to keep abreast of developments, let alone discern the issues they need to address. One advantage that regulated institutions can bring to collaboration with regulators is practical knowledge. Issues that appear to be novel - even in a potentially dystopian future of the industry described by one speaker as "the Mad Max world of custody"- turn out in most cases to be familiar, and the need is merely to apply well-established principles to new manifestations of age-old problems. In this context, an updated version of the ISSA paper on Inherent Risks within the Global Custody Chain, first published in 1992 and most recently updated in 2017, would be a helpful contribution. However, it will be difficult for ISSA to develop direct relationships with regulators because the organization cannot speak on behalf of its members and nor can it act as a lobbyist. What ISSA could do is collect and collate information from its members, use it to create benchmarks, and share the findings with national regulators through its members. That ISSA work on compliance is valuable is not in doubt. Since ISSA published its Financial Crime Compliance Principles for Securities Custody and Settlement in 2015, no member has had a serious breach of their compliance obligation to identify beneficial owners. In other words, the Principles have proved effective. One useful extension of the Principles model might be the creation of consistent standards for measuring ESG compliance, based on the work already being done by regulators such as IOSCO.⁹
- Widen the membership. The case for broadening the membership of ISSA beyond CSDs, custodian banks, technology vendors and other firms involved in the securities services industry rests on the supposition that non-

⁹ See page 3 above.

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members inadvertently create problems for members. Issuers are a case in point, particularly on corporate actions notifications but also in the complexity of equity and bond issues. Since they do not see themselves as part of the securities industry, issuers are indifferent to the operational problems that they create, even though these can raise their cost of capital. Likewise, the investment banks that advise issuers on the design of their equity and bond issues also create operational problems downstream. Engaging both issuers and investment banks in the ISSA Working Groups would help to mitigate and might even solve some of the problems.

- Talent and federated learning. The global securities services industry is not attracting the talent it needs to thrive in the age of digitization and digitalization, and in particular to transition successfully to tokenized markets. The lack is not of custody expertise or technologists but in people that can straddle both the industry and digital technology. "Knowing what customers want is more important than understanding the technology," as one attendee put it. "Innovators need to be experienced people not teenage programmers." Another said that "we all need to become technologists, not to be able to code, but to speak the language." Accordingly, ISSA should adopt a more systematic approach to talent development and retention in the industry. The means of achieving this include formal partnerships with universities to pursue experiments that combine the experience of industry insiders with the technical knowledge of academics and their masters' and post-doctoral students. The experiments would enable firms to identify suitable talent for permanent positions. A second idea is for ISSA to issue certificates of competence to individuals that take part in the experiments or participate in Working Groups. Certification would strengthen the ISSA brand but also entail additional costs and potentially change the character of the organization from a membership association to a trade body or industry training institution. However, membership of ISSA Working Groups is seen by members as a useful method of developing talent and could warrant formal recognition of the role Working Groups play in upgrading the skills of the people who serve on them.
- Customer due diligence. Running KYC, AML, CFT and sanctions screening checks to comply with the Financial Action Task Force (FATF) Recommendations on customer due diligence imposes massive costs on the securities services industry and its clients. Worse, much of the work is duplicated, even within the same financial institutions. Compliance with the obligations is an ever-evolving task. The differential application of sanctions against Russia by various countries in the aftermath of the Russian invasion of Ukraine, for example, created considerable complexities. Collective solutions to the burden (such as the SWIFT KYC Registry) could cut the costs of duplication and adaptation to new requirements but they suffer from a lack of engagement. This is partly because banks are reluctant to share their data for reasons of client confidentiality but mainly because they insist on fairness: big banks believe they will contribute more and receive less. Banks are also convinced that they cannot rely on the work of another bank, since its customer due diligence procedures might be less thorough than their own. A further obstacle is the accountability of data sources. Is a bank that shared erroneous data liable for the regulatory fine if another bank committed a breach because it relied on the data? Customer due diligence is an area where ISSA could stimulate fresh thinking about the solutions to the problems, including digital identities.

3.2 Current Working Group Activities

At least one of these five priorities could be advanced by the formation of a Working Group. Working Groups undertake tasks that individual member-firms would otherwise have to complete themselves or commission expensive consultants to undertake. Topicality is essential to their value, so Working Groups are not immortal. There were six in existence at the time of the Symposium, and two more started in June 2022. The six existing Working Groups are:

- ISO 20022. This group was founded to establish why the adoption of the ISO 20022 data standard by the securities industry is so limited, particularly outside Europe, when its benefits are widely agreed. The principal finding of the investigation is that, in the absence of a regulatory obligation to use ISO 20022, the securities industry is satisfied with the efficiency gains derived from the ISO 15022 messaging standard adopted in 2004. The Group is now pursuing two other investigations. The first is partly observational and partly educational. The Group monitors whether attitudes are changing and take-up of ISO 20022 is accelerating, and helps firms establish a business case for adoption, especially in areas where automation is limited, such as account opening and corporate actions processing. The second investigation is exploring the application of the ISO 20022 standard to APIs, which are essential to facilitate the data flows on which many products and services now rely. The Group is also collaborating with the DLT Working Group on the use of ISO 20022 in the issuance, settlement and servicing of digital assets issued on to blockchains. FinTech innovators in the blockchain industry find the idea of a standard attractive, but the adoption process too slow. They would also prefer it if the standard adopted was their own proprietary version.
- Distributed Ledger Technology (DLT). One of the outputs of this group is the annual DLT in the Real World Survey, which is now in its third iteration. The survey tracks the direction and status of blockchain projects being pursued by respondents, with the ambition of distinguishing not only between hype and reality but of anticipating early developments, notably in CBDCs, Stablecoins, DeFi, NFTs and the Metaverse. The group also produces a regularly updated paper on custody of digital assets, which aims to identify best practices in private key management, asset servicing and insurance. In addition, it has produced papers on CBDCs, Asset Identification Standards and the DLT Voice of the Customer survey of asset owners and asset managers. The DLT Group is one of the largest and most popular Working Groups, with 102 members drawn from 57 separate firms.
- Financial Crime Compliance. The origins of this group lie in the landmark fine levied on Clearstream by the Office of Foreign Assets Control (OFAC) of the United States Department of the Treasury in January 2014 for apparent violations of US sanctions against Iran. A major consequence of the fine was increased regulatory pressure to subject accounts to sufficient scrutiny to establish the identity of beneficial owners. In response, ISSA published a set of Financial Crime Compliance Principles for Securities Custody and Settlement, which the group has twice revised since they were first published in 2015. The Principles, which drew on the Wolfsberg Principles precedent in the payments industry, are intended to help members of the global securities services industry comply with their obligations to establish beneficial ownership by means of a standard questionnaire. The group is currently extending

the Principles to cover digital assets and tax compliance, and considering how they can be incorporated into the ISO 20222 data standard. An investigation into AML typologies is also under way, with the goal of establishing a template that can be used in multiple jurisdictions despite national differences in AML compliance obligations.

- Digitization. This is a relatively new group which started work in 2021. Its brief is to help the global securities services industry cope with margin compression by identifying best practices to expedite the digitization of the information used to complete operational processes. The scope of its work includes improving account opening procedures, enhancing KYC, AML, CFT and sanctions screening checks, automating the documentation of withholding tax, whether claimed at source or reclaimed, reviewing front-to-back office processes in the privately managed asset markets, with a view to publishing standards and getting them adopted globally, reducing the use of hard copy documents and wet signatures and improving the efficiency of the processing of proxy votes and corporate actions, where standard templates exist but are not being used at scale. The group is also supporting the development of standards for digital assets issued, traded, settled and safekept on blockchain networks. There is some overlap with the work of the Asset Servicing Working Group, though no duplication. A major ambition of the group is to deepen relationships with regulators, with a view to becoming a trusted adviser on the development of regulations.
- Asset Servicing. The aim of this group is to equip the global securities services industry with faster, cheaper and better ways of servicing assets. It accomplishes this by sharing information about what does and does not work and deriving best practices from the pooled information. The group has already published work on corporate actions. Its activity is at present concentrated on two areas: withholding tax and data sourcing. On withholding tax, the group is exploring how to standardize the demands of different national tax authorities and reduce the use of paper in making claims. A paper on the topic will be published shortly. But the group recognizes change will take time and is looking for members to work with local tax authorities to convince them that standardization is not inconsistent with preserving the integrity of the tax system. On data sourcing, the group is investigating how firms obtain and validate data, and what it costs, especially in corporate action processing. Since data accounts for the largest share of the costs of processing corporate actions, the group is exploring how automating the transmission of data from issuers to investors can best be accomplished. The proposed solution is to create a "golden copy" of corporate action information at source. It entails both a stick (persuading stock exchanges to upgrade their rule books on how issuers publish corporate actions) and a carrot (making it easier for issuers to supply information to the stock exchange). A paper will be published on the proposal later this year.
- Domestic CSDs. The purpose of this Group is to research the challenges and issues that impact domestic CSDs, which must strike a balance between serving purely domestic customers in their home markets and supporting international flows of portfolio capital into their market. The Group aims to provide advice which will enable international best practices to be tailored to the needs of a local market. Each domestic market is unique in terms of its regulatory structure, so the Group is always conscious of the need to ensure that its advice is practicable. By

encouraging adoption of best practices, the Working Group is able to help CSDs improve client outcomes, reduce risk and increase efficiency. Two reports, on Operational Resilience and Remote Working, are published already. The current areas of focus are Remote Network Due Diligence and Opening Markets to Foreign Investors.

The two new Working Groups that came into existence in June 2022 are:

- Operational Resilience. The subject of this Working Group has risen up the regulatory priority list in recent years.
 ISSA anticipates that there will be a need for member-firms to request evidence of attested compliance with operational resilience standards and provide comparable information to counterparts. The Operational Resilience Working Group will assist ISSA members in understanding and dealing with these anticipated requirements.
- Standardization. ISSA believes in standardization of data exchanges as the key to increasing efficiency, reducing risk and improving the client experience in the securities services industry. The new Working Group will draw on the experience of member-firms in standardizing their own processes and then share the findings, with a view to developing best practices. The first topic to be discussed by the new Working Group is the development of ESG Compliance Standards.