ICMA presentation on FinTech & Regulation

Meeting of ECB Operations managers group (OMG)

Gabriel Callsen, Director, ICMA

29 September 2021

Agenda

1) **Introduction**

2) **Common Domain Model (CDM) for repo and bonds**

3) **ERCC focus on automation and settlement efficiency**

4) **Market developments**

   - Operations FinTech directory: overview and key observations

   - CSDR-SD technology directory (cash penalties)

   - Selected examples of DLT applications

5) **Regulatory developments**

   - ICMA FinTech Regulatory Roadmap

   - DLT – Selected legislative and regulatory developments

   - AI/ML – Selected legislative and regulatory developments

6) **Q&A**

1) Introduction

ICMA FinTech Overview

❑ FinTech and market electronification are cross-cutting priorities for ICMA and its membership comprising issuers, intermediaries, investors, market infrastructure providers and others (over 600 across 65 countries).

❑ ICMA's work focuses on: (i) providing resources to members, (ii) engaging with regulators, and (iii) promoting common standards and best practice.

Primary markets	Secondary markets	Repo and collateral	Sustainable Finance

FinTech and market electronification
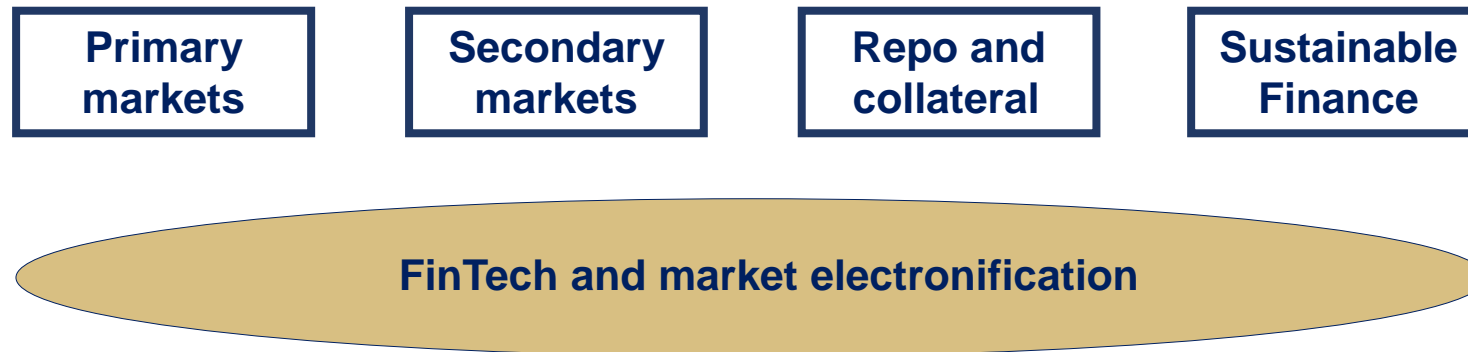
❑ ICMA's engagement is guided by its FinTech Advisory Committee.

❑ Specialist topics are addressed in dedicated groups such as the Common Domain Model (CDM) Steering Committee or the Electronic Trading Council (ETC).

❑ ICMA maintains a dialogue with international and national regulators both bilaterally and through participation in regulator-led working groups.

❑ ICMA has published a number of directories listing vendor solutions for bond issuance, electronic repo and bond trading, as well as middle and back office operations. Further information can be found on ICMA's FinTech Hub.

# Drivers of electronification in cross-border capital markets

Key drivers	Primary markets	Secondary markets	Repo and collateral markets
Efficiency and STP	Emerging technology solutions	Electronic trading	FinTech solutions for repo operations
Liquidity sourcing	-	Platforms & Information networks	Emerging RFQ platforms (D2C)
Regulatory compliance	MiFID II/R - Record keeping	MiFID II/R - Reporting	SFTR - Reporting
Data management	Predictive analytics	MiFID II/R - Trans-parency data; TCA	Reconciliation

Source: ICMA, Market electronification and FinTech (October 2017)

2) Common Domain Model (CDM) for repo and bonds

CDM: A common language for trade processing

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FIX

ISO 20022

APIs

CDM

XML

FpML

Eg DLT, Cloud
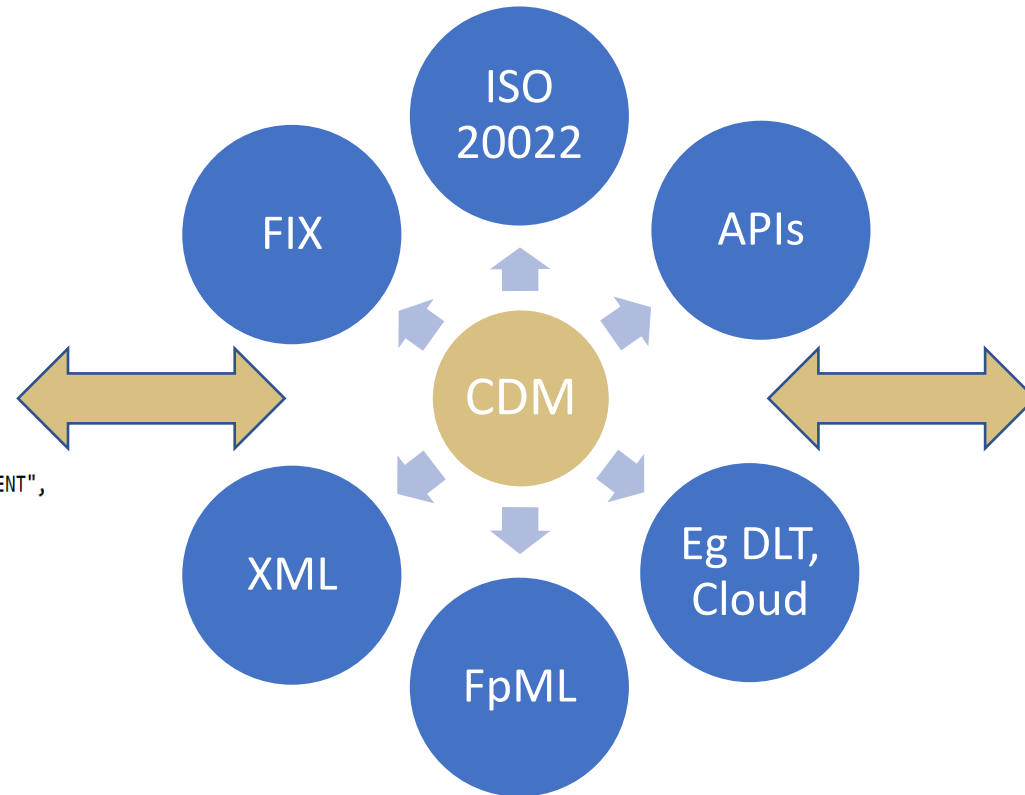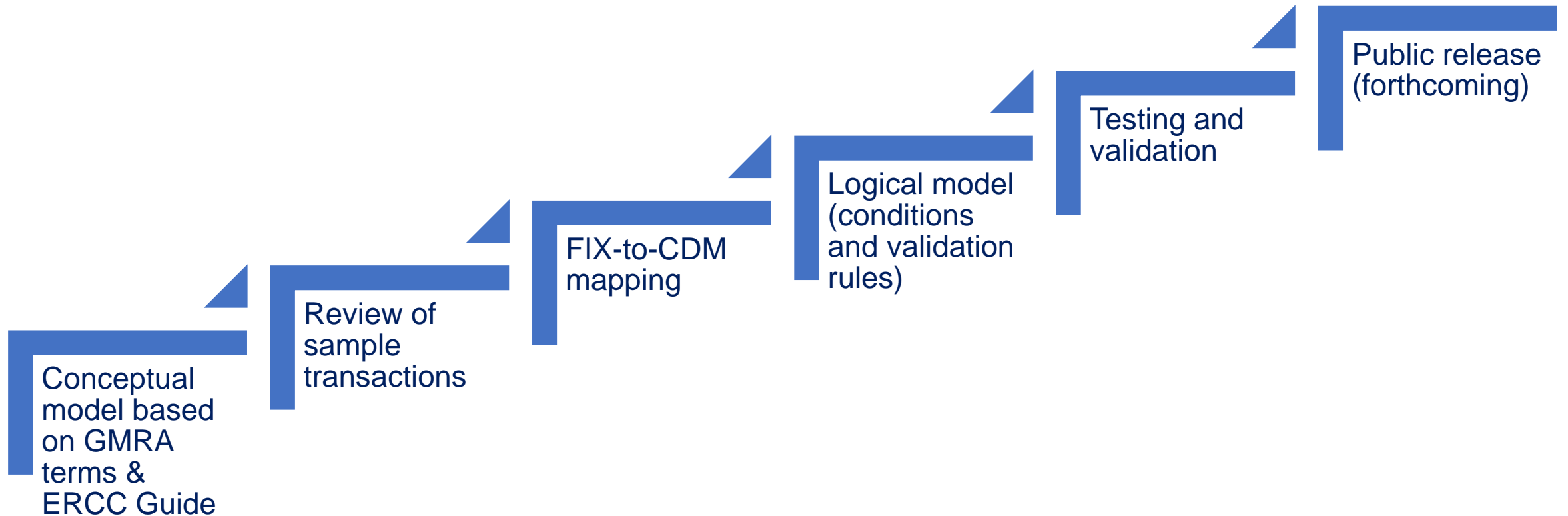
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```

Each party uses the CDM as 'common denominator' or 'common language' to process repo and bond, securities lending and derivative transactions.

CDM project for repo and bonds

❑ **Background:** The Common Domain Model (CDM) is a standardised, machine-readable and machine-executable blueprint for how financial products are traded and managed across the transaction lifecycle, initially developed by ISDA for derivatives.

❑ **Deliverable:** CDM extension for repo and bonds, building on ISDA's and ISLA's work, designed for implementation in a production environment.

❑ **Project Duration:** February – July 2021

❑ **Scope:**

- 'Standard' fixed-term repo transaction.

- Execution, clearing, settlement.

- Bond transaction representation – data points required for settlement.

❑ **Target users:**

- Market participants active in repo and bond markets.

- Financial market infrastructures.

- Vendor firms.

Modelling approach – CDM for repo and bonds

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Conceptual model based on GMRA terms & ERCC Guide

Review of sample transactions

FIX-to-CDM mapping

Logical model (conditions and validation rules)

Testing and validation

Public release (forthcoming)

Industry-wide benefits of the CDM

❑ **Interoperability** => Connecting systems internally and externally based on common language, increasing efficiency, reducing friction and risk of fragmentation.

❑ **Automation** => Streamlining trade processing, reducing need for manual intervention to reconcile transaction details, but also facilitating regulatory reporting.

❑ **Innovation** => Enabler for applications of new technologies and business models.

❑ **Cross-industry collaboration** across bond, repo, securities lending and derivative markets.

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ISDA.

ISLA

Delivering cost savings & enabling new revenue opportunities

CDM resources

- ❑ **Recordings** of ICMA's CDM showcase event held on 21 July 2021 are available here:

  - o [Common Domain Model (CDM) for repo and bonds](#) (1hr 25min)

  - o [An introduction to Rosetta by REGnosys](#) (5 mins)

  - o [CDM in action – execution, clearing and settlement of a repo transaction by FINXIS LLC](#) (8 mins)

- ❑ **Further information** can be found on ICMA's [CDM webpage](#).

[CDM for repo and bonds factsheet](#) **(Overview)**

[CDM for repo and bonds factsheet](#) **(Implementation)**

3) ERCC focus on automation and settlement efficiency

ERCC focus on automation and settlement efficiency

❑ Improving settlement efficiency and post-trade efficiency more generally has been a recurring theme for the ERCC (and ERCC Operations Group) over the past years

❑ While the work initially focused on intraday liquidity and related drivers, over the past months the main focus has shifted more directly to settlement efficiency, especially in light of the upcoming implementation of the **CSDR settlement discipline** provisions.

❑ ERCC initiative launched in 2020 to look at a number of relevant **post-trade tools** that are available to help the industry reduce settlement fails with the objective to better understand current usage and remaining obstacles, as well as to explore ways to encourage and optimise usage through best practice and other means.

❑ Kick-off workshop held in Feb 2021 & agreed a number of targeted Best Practice updates and complementary principles (see next slide). This was followed by a **series of targeted workshops** on the individual issues with broad participation among all major stakeholders:

   ❑ Workshop on partial settlement & auto-partialling (25 May)

   ❑ Workshop on shaping (2 July)

   ❑ Workshop on auto-borrowing (10 September)

❑ **Collaboration with the ECB** and relevant stakeholder groups (AMI-SeCo, CSG settlement efficiency Task Force), especially on settlement data. ICMA is also collaborating closely with other relevant trade associations on the topic, including AFME, ISLA and the relevant buy-side associations.

❑ As a follow-up to the workshops, ICMA is preparing further communication with key take-aways, recommendations and next steps.

ERCC principles on settlement efficiency
(agreed in March 2021 as a basis for further discussion)

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Topic	Recommendation
Shaping of instructions	Shaping as currently recommended (i.e. shape size of 50 million nominal) should apply on a mandatory and automated basis in Europe, as this is a key preventative tool. This needs to be implemented either as a joint industry effort, or if this is not possible, mandated by authorities, either by the ECB or through regulation.
Auto-partialling	Auto-partialling should be applied whenever feasible. Partial release functionality is being introduced to overcome any remaining technical obstacles, eg in relation to omnibus accounts, and therefore needs to be universally available. CSDs that have not yet implemented partial release functionality are strongly encouraged to do so as soon as possible. The availability of partial release and the expected increase in the usage of auto-partialling need to be monitored closely in all markets, in collaboration with the ECB, CSDs and ICSDs.
Auto-borrowing	All CSDs should offer auto-borrowing programmes to their clients and all CSD participants are strongly encouraged to use them where possible. CCPs should have a strict requirement in their rules for their members to sign up to an auto-borrowing programme. CSDs and ICSDs would in turn need to develop a framework to help oversee their use. It is recognised that targeted opt-outs may be necessary but these should be extremely limited both in terms of scope (individual ISINs) and time (e.g. automatic expiry of the opt-out). For the most liquid asset classes such as government bonds there should be no need for any opt-outs.
Other aspects	The ERCC will collaborate with the relevant CCPs to further assess whether **CCP rulebooks** need to be strengthened to include stricter measures and concrete escalation procedures for parties that repeatedly and consistently fail within the CCP ecosystem.

Further focus is needed on other operational elements which impact the efficiency of the overall settlement environment, including the timing of settlement. **Developing relevant data points and measurements** will be essential to support this work. We will continue to collaborate closely with the ECB and the ICSDs to obtain the relevant granular settlement statistics that will support the analysis. |

4) Market developments

Overview of ICMA technology directories

- **Primary markets technology directory** (last updated July 2021)
  - Compares the key features and capabilities of technology solutions available to automate all or part of the process of issuing debt securities such as roadshow logistics, legal documentation creation, or book-building.
  - The directory includes over 40 technology solutions.

- **Electronic Trading Platform (ETP) directory** (last updated September 2021)
  - A consolidated mapping of electronic trading solutions for cash bonds covering trading protocols, product scope, regulatory status as well as MIC and LEI codes where relevant, amongst others.
  - The directory comprises over 50 trading venues, OMS/EMS and bulletin boards.

- **Repo trading technology directory** (last updated March 2021 - under review)
  - Covers electronic trading solutions for repo and outlines solution capabilities, including eligible participants, trading methods, clearing as well as collateral management configurations.
  - The directory includes 17 technology solutions.

- **Operations FinTech directory** (last updated August 2021 – under review)
  - Compares the key features and capabilities of technology solutions available for repo and cash bond operations, split into 10 categories, including collateral management, intraday liquidity monitoring and reconciliations.
  - The directory references over 180 solutions.

ICMA Operations FinTech Directory

- ❑ **Background:** Initially released in November 2017 by ERCC Operations FinTech WG.

- ❑ **Aim:** Create greater transparency by comparing the capabilities of different vendor firms and providing information on how each solution can be used, eg:
  - ○ at which stage of the trade lifecycle,
  - ○ whether for cleared or uncleared transactions and
  - ○ where the solution sits within the IT infrastructure.

- ❑ **Note:** The directory does not constitute an exhaustive list of providers in the market. It is updated on a regular basis to include other existing or new solutions. Relevant providers that are not yet covered by the directory and wish to join are very welcome to do so.

- ❑ **Scope:** The latest version lists more than 180 vendor solutions (up from approx. 80 in November 2017) across the following categories.
  1. Collateral management / Lifecycle
  2. Collateral management / Margin
  3. Corporate actions
  4. Exposure agreement
  5. Intraday liquidity: monitoring and reporting
  6. KYC onboarding
  7. Matching, confirmation & allocation
  8. Reconciliation
  9. Static Data & Standard Settlement Instructions (SSI)
  10. Workflow & communication

- ❑ The directory is publicly available on ICMA's website.

ICMA CSDR-SD technology directory

❑ **Background:** Published in July 2021

❑ **Aim:** To assist market participants prepare for CSDR implementation by providing an overview of technology solutions aimed at managing the requirements under CSDR Settlement Discipline, focusing initially on management of cash penalties.

❑ **Scope:** The current version lists four vendor solutions, comparing functionalities such as:

- o Calculation, aggregation, reconciliation, invoicing, reporting, and appeals or claims management processes
- o Supported connectivity and additional services.

❑ **Note:** The directory does not constitute an exhaustive list of providers in the market. It is updated on a regular basis to include other existing or new solutions. Relevant providers that are not yet covered by the directory and wish to join are very welcome to do so.

❑ The directory is publicly available on ICMA's website (in the CSDR-SD section).

Tokenisation and DLT in bond markets

❑ ICMA's [tracker](#) of new FinTech applications lists more than 60 announcements, proofs of concept, or live transactions, most of which are based on DLT.

❑ Continuous developments in debt capital markets over the last 5 years, involving CBDC more recently.

❑ Use of DLT varies and depends on a range of factors (eg wholesale vs retail considerations, type of instruments, issuance method, current market practice, expected benefits, legal and regulatory requirements, level of maturity of capital market).

❑ Trend towards centralisation and interconnectivity between various stakeholders in the bond issuance chain.

❑ Key challenges include:
- o Terminology (tokenisation vs dematerialisation)
- o Cash on ledger to enable DvP
- o Potential risk of fragmentation
- o Other legal, regulatory and operational considerations

DLT in bond markets – Delivery vs payment (DvP)

Tokenised instrument held in existing electronic register of custodian or CSD

Native digital asset issued and recorded on a DLT network

Security

Party A

Cash

Party B

Tokenised commercial bank money

Private stablecoins

Utility Settlement Coin (USC)

Wholesale central bank digital currency (CBDC)

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DLT in bond markets – Selected examples (i)

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Primary markets	Secondary markets	Repo and collateral markets	Cross-cutting

28 April 2021 - EIB issues its digital bond on a public blockchain

On 27 April 2021, the EIB launched a digital bond issuance on a blockchain platform, deploying this distributed ledger technology for the registration and settlement of digital bonds, in collaboration with Goldman Sachs, Santander and Societe Generale. In a partnership with Banque de France, the payment of the issue monies from the underwriters to the EIB has been represented on the blockchain in the form of CBDC.

The EIB believes that the digitalisation of capital markets may bring benefits to market participants in the coming years, including a reduction of intermediaries and fixed costs, better market transparency through an increased capacity to see trading flows and identity asset owners, as well as a much faster settlement speed. Blockchain is a digital and distributed ledger of transactions using advanced cryptographic technics and the contribution of a network of participants to jointly validate the said transactions by blocks in an ordered and immutable sequence (hence the name 'Blockchain'). This combination of features primarily aims at providing enhanced security and operational efficiency.

This transaction consists in the issuance by the EIB of a series of bond tokens on a blockchain, where investors purchase and pay for the security tokens using traditional fiat. The Joint Lead Managers will then settle the underwriting against the issuer using a representation of central money, the Central Bank Digital Currency (CBDC). The principal is expected to be repaid in commercial fiat at maturity. The transaction will use Ethereum, a public blockchain protocol.

https://www.eib.org/en/press/all/2021-141-european-investment-bank-eib-issues-its-first-ever-digital-bond-on-a-public-blockchain#

Note: For further information see ICMA's New FinTech applications in bond markets webpage. This overview is provided by ICMA for information purposes only. ICMA does not endorse any of those firms or solutions listed.

DLT in bond markets – Selected examples (ii)

| Primary markets | Secondary markets | Repo and collateral markets | Cross–cutting |

7 December 2020 - UnionBank, Standard Chartered pioneer blockchain-enabled bond issuance in the Philippines

Union Bank of the Philippines (UnionBank), in partnership with Standard Chartered Bank (SCB), successfully completed a proof of concept for the issuance of a retail bond on a digital platform leveraging blockchain technology for bond tokenization.

The 3 and 5.25-year dual tranche issuance totalling PHP 9 billion by UnionBank was successfully mirrored on the platform co-created by UnionBank and SC Ventures, the innovation and ventures arm of Standard Chartered. Orders received were tokenized, and to stay within existing retail bond guidelines, tokens issued mirrored the traditional transaction but were not allocated directly to investors. SC Ventures built the bond tokenisation platform making the process simpler, faster and widely accessible.

The success of this proof of concept will open up a host of possibilities around solving for liquidity and transparency in the retail bond markets. The Online Bond Reservation portal of UnionBank where the bonds were made available is also the Philippines' first digitally enabled platform allowing clients to view and place order reservations for corporate bond offerings conveniently anytime, anywhere -making a highly cumbersome and manual process simpler and more widely accessible. Through the portal, UnionBank clients experience a fully digital end-to-end service, from account verification, client suitability assessment and the filling up of the application to purchase form, up to allocation to the investor. The portal also makes the purchase of bonds completely paperless and more efficient as it cuts the processing time for customers from a couple of days to mere minutes.

https://av.sc.com/corp-en/nr/ph/content/docs/SCB_PR-UnionBank-Standard-Chartered-pioneer-blockchain-enabled-bond-issuance-in-the-Philippines-.pdf

Note: For further information see ICMA's New FinTech applications in bond markets webpage. This overview is provided by ICMA for information purposes only. ICMA does not endorse any of those firms or solutions listed.

DLT in bond markets – Selected examples (iii)

Primary markets	Secondary markets	Repo and collateral markets	Cross–cutting

16 August 2019 - Bond-i tap – managed by CBA, RBC and TD – increases liquidity of Blockchain Bond and broadens market participation

The World Bank (International Bank for Reconstruction and Development, IBRD rated Aaa/AAA) has raised an additional AUD 50 million for its Kangaroo bond due August 2020 - the first bond created, allocated, transferred and managed through its life-cycle using distributed ledger (blockchain) technology.

The successful tap expands market participation with the Bond-i platform combining three joint lead managers, Commonwealth Bank of Australia (CBA), RBC Capital Markets (RBC) and TD Securities (TD), and brings together new market participants, including an offshore investor, and the exisiting investor community including ongoing support and input from TCorp (NSW Treasury Corporation).

https://www.worldbank.org/en/news/press-release/2019/08/16/world-bank-issues-second-tranche-of-blockchain-bond-via-bond-i

Note: For further information see ICMA's New FinTech applications in bond markets webpage. This overview is provided by ICMA for information purposes only. ICMA does not endorse any of those firms or solutions listed.

DLT in bond markets – Selected examples (iv)

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Primary markets	**Secondary markets**	Repo and collateral markets	Cross–cutting

14 October 2020 - BondEvalue Gets MAS Approval to Operate The BondbloX Bond Exchange

Singapore-based fintech BondEvalue has been approved as a Recognised Market Operator (RMO) by the Monetary Authority of Singapore (MAS). It operates BondbloX Bond Exchange (BBX), the world's first blockchain-based bond exchange, and aims to bring trading of a wide range of fixed-income securities to the mass market across the region.

BondEvalue officially graduated from the MAS' regulatory sandbox on 1 October 2020. The move means that BondEvalue has successfully concluded proof of technology and business model. It is now no longer bound by restrictions such as limits on trading volume and disclosures specific to the sandbox model.

https://bondevalue.com/news/bondevalue-gets-mas-approval-to-operate-the-bondblox-bond-exchange/

12 August 2020 - Singapore fintech BondEvalue brings bond trading to masses with BondbloX, world's first blockchain-based bond exchange; goes live with first trade

Singapore fintech BondEvalue launched BondbloX Bond Exchange (BBX), the first blockchain-based exchange that makes possible fractional ownership of bonds by allowing them to be traded in smaller denominations of US$1,000. This paves the way for many more investors to buy and sell bonds, making bond trading much faster, highly transparent and at lower cost. In Asia and Europe, bond trading is traditionally the preserve of affluent individuals, institutions and corporations as they are typically traded in unit size US$200,000 in the secondary market. Trading is also carried out over the counter (by phone) making for an opaque process and pricing.

Settlement on BBX is on a T+0 basis, that is within seconds instead of the normal two-day settlement cycle, thereby reducing counterparty settlement risks for investors. Investors around the world can trade on BBX via web and mobile devices by opening an account with their banks, wealth managers, family offices or robo-advisors, subject to individual country restrictions on bond trading. In Singapore, BBX is open to accredited and institutional investors.

Note: For further information see ICMA's New FinTech applications in bond markets webpage. This overview is provided by ICMA for information purposes only. ICMA does not endorse any of those firms or solutions listed.

DLT in bond markets – Selected examples (v)

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Primary markets	Secondary markets	Repo and collateral markets	Cross-cutting

10 December 2020 - J.P. Morgan Executes Intraday Repo Transaction Using Blockchain

J.P. Morgan (NYSE: JPM) announced it completed a live, blockchain-based intraday repo transaction. The transaction was successfully conducted between J.P. Morgan's broker dealer and banking entity, using an in-house developed blockchain application which supported instantaneous settlement and maturity of the transaction in hours, as opposed to days.

The repo market provides a widely used form of secured financing, however, current operational limitations prevent the meaningful use of such financing to meet intraday liquidity needs. Using blockchain enables borrowers and lenders to execute shorter-term, intraday repo transactions with real-time, simultaneous transaction settlement, creating new ways to access intraday liquidity. Both collateral and cash legs of the repo transaction were settled using blockchain, with the cash leg leveraging JPM Coin.

The offering will be made available in production to external counterparties in the U.S. – some of which have already simulated transactions on the new application. J.P. Morgan developed the solution and tested its viability by conducting trades between two of its affiliates, alongside successful simulations of trades with Goldman Sachs and other entities, with BNY Mellon as the triparty agent.

https://www.jpmorgan.com/news/jpmorgan-executes-intraday-repo-transaction-using-blockchain

Note: For further information see ICMA's New FinTech applications in bond markets webpage. This overview is provided by ICMA for information purposes only. ICMA does not endorse any of those firms or solutions listed.

DLT in bond markets – Selected examples (vi)

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| Primary markets | Secondary markets | **Repo and collateral markets** | Cross-cutting |

3 December 2019 - Commerzbank, Credit Suisse and UBS execute first live transactions on the Deutsche Börse-HQLAx securities lending platform

Deutsche Börse and HQLAX successfully launched their jointly developed Distributed Ledger Technology (DLT) solution for frictionless collateral swaps in the securities lending market. The live transactions were executed by Commerzbank, Credit Suisse and UBS on the Eurex Repo F7-trading system. As part of these transactions, ownership of a basket of German government bonds and a basket of corporate bonds was swapped between UBS and Commerzbank, both using Clearstream Banking S.A. as custodian. This was followed by a cross-custodian swap between UBS and Credit Suisse, in which ownership of a basket of corporate bonds at Clearstream Banking S.A. and a basket of German government bonds at Euroclear Bank was exchanged without the need for securities to be physically moved between the collateral agents. Instead, the change in ownership was recorded on the digital collateral registry, which is one of the four layers of the HQLAX operating model and was built on Corda Enterprise, the commercial distribution of R3's blockchain platform.

In addition to Commerzbank, Credit Suisse and UBS, over 15 market participants, including CIBC, Citi, Goldman Sachs and ING, are currently engaged in different phases of onboarding to the HQLAX platform. Meanwhile, J.P. Morgan is in the process of becoming the third tri-party agent in the HQLAX operating model, alongside Clearstream Banking S.A. and Euroclear Bank. This will add another important custody/collateral location to the solution, further increasing collateral mobilisation efficiencies for participants.

https://deutsche-boerse.com/dbg-en/investor-relations/news-and-services/press-releases/Commerzbank-Credit-Suisse-and-UBS-execute-first-live-transactions-on-the-Deutsche-B-rse-HQLAx-securities-lending-platform-1631518

https://www.commerzbank.com/en/hauptnavigation/presse/pressemitteilungen/archiv1/2019/quartal_19_04/presse_archiv_detail_19_04_85450.html

Note: For further information see ICMA's New FinTech applications in bond markets webpage. This overview is provided by ICMA for information purposes only. ICMA does not endorse any of those firms or solutions listed.

DLT in bond markets – Selected examples (vii)

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Primary markets	Secondary markets	Repo and collateral markets	Cross-cutting

8 July 2021 - Banque de France and Monetary Authority of Singapore completion of wholesale cross-border payment and settlement experiment using CBDC

The Banque de France (BdF) and the Monetary Authority of Singapore (MAS) announced the successful completion of a wholesale cross-border payment and settlement experiment using central bank digital currency (CBDC). The experiment, supported by J.P. Morgan's Onyx, simulated cross-border transactions involving multiple CBDCs (m-CBDC) on a common network between Singapore and France. This experiment is one of the last of the Banque de France wholesale experiment program, which will be achieved by fall 2021, and is the first m-CBDC experiment that applied automated market making and liquidity management capabilities to reap cross-border payment and settlement efficiencies.

Cross border payments currently rely on correspondent bank arrangements that are subject to limited transparency on foreign exchange rates, restricted operating hours of payment infrastructures and currency settlement delays due to differences in time zones. To address these challenges, the experiment used a common m-CBDC network, aimed at facilitating cross border payments on a 24 x 7 real time basis. The experiment simulated cross-border and cross-currency transactions for Singapore Dollar (SGD) CBDC and €uro (EUR) CBDC, and was conducted using a permissioned, privacy-enabled blockchain based on Quorum technology. Four key outcomes were achieved: (1) The demonstration of interoperability across different types of cloud infrastructure. Blockchain nodes were set up across private and public cloud infrastructures in both countries. (2) The design of a common m-CBDC network that enabled the two central banks to have visibility on cross border payments, while retaining independent control over the issuance and distribution of their own CBDC. (3) The setup of an experimental m-CBDC network that incorporated automated liquidity pool and market-making service for EUR/SGD currency pairs. The use of smart contracts automatically managed the EUR/SGD currency exchange rate in line with real-time market transactions and demands. The simulation of an experimental m-CBDC network that showed that the number of correspondent banking parties involved in the payment chain for cross-border transactions can be reduced. Consequently, the number of contractual arrangements, the KYC (Know Your Customer) burden as well as the associated costs could be cut down.

https://www.banque-france.fr/en/communique-de-presse/banque-de-france-and-monetary-authority-singapore-break-new-ground-cbdc-experimentation-0

https://www.mas.gov.sg/news/media-releases/2021/monetary-authority-of-singapore-and-banque-de-france-break-new-ground-in-cbdc-experimentation

Note: For further information see ICMA's New FinTech applications in bond markets webpage. This overview is provided by ICMA for information purposes only. ICMA does not endorse any of those firms or solutions listed.

DLT in bond markets – Legal considerations

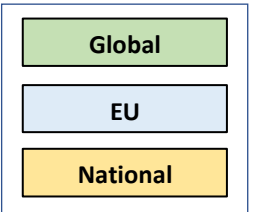***Where's my blockchain bond*** by Scott Farrell, King & Wood Mallesons, ICMA Quarterly Report, Second Quarter 2019:

❑ **Background**: Records of financial instruments in the capital markets are usually held through intermediaries such as custodians and clearing systems and a cascading series of interests, where one entity's entitlement is constituted by it being recorded by the intermediary one higher in the chain.

❑ **Key question**: where is someone's entitlement in the bonds located if the registrar, clearing system, custodian and bondholder are all in different countries with different laws?

❑ **Established practice**: treat someone's rights as being located in the place where the intermediary that actually records their interest is (called the Place of the Relevant InterMediary Approach or PRIMA).

❑ **Challenges**: For example, if a bondholder's interest in bonds is being recorded by its custodian in a distributed ledger maintained by it and its related entities in multiple countries, where is that interest located and which law applies?

❑ **Solution**: Constructing blockchain's legal architecture so as to address these particular issues until the sort of cross-border consistency of local laws which supports PRIMA develops.

Data analytics and AI/ML in bond markets

❑ Use of (Big) Data analytics in capital markets is not a new phenomenon. In fixed income markets, electronification has created increasingly large volumes of data.

❑ Ever-growing capacity requirements to process and store data. Accessibility has improved significantly through the use of cloud networks, which has enabled firms that do not have the required capacity to access and make use of data.

❑ Market participants tend to make use mostly of structured data sets (provided by third-party data providers, for example), and to a lesser extent unstructured data (for sentiment analysis or market surveillance).

❑ Limiting factors include low data quality, data dispersion across different sources, lack of standardisation, and cost of data.

❑ Example: European Stability Mechanism (ESM) - Predicting investor behaviour in European bond markets through machine learning.

❑ See: Big Data in securities markets, ICMA Quarterly Report, Q3 2019.

5) Legislative and regulatory developments

FinTech regulatory roadmap

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Legend:
- Global (green)
- EU (blue)
- National (yellow)

By 2021
- **EU** to issue interpretative comm. on crypto-assets
- **EC** to integrate low or zero emission DLT and IoT in sustainable finance taxonomy
- **EC** to present strategy on supervisory data
- **ESAs** and **ECB** to explore development of regulatory and supervisory guidance on AI applications in finance

Mid-2021
- **EC** and EFIF framework for launching x-border testing
- **EU** to establish digital finance platform

Q3 2021
- **EBA** to develop guidelines on digital ID & verification
- **EC** to propose Data Act

Q2 2022
- **EC** to provide a 'cloud rulebook' - a coherent framework around applicable rules for cloud services

Q4 2022
- **EC** to launch European cloud services marketplace

Q1 2022
- **BoJ** to finalise Phase 1 PoC experimentation on CBDC.

Q2 2022
- **BoE** to release data collection solution design to industry

Timeline: 2021 | 2022 | 2023 | 2024 +

By 2021
- **PBoC** to institute sound fundamental framework for FinTech development

H1 2021
- **FCA** assessment of CP accessing and using data in wholesale financial markets
- **OSC** sandbox details planned for Spring 2021.
- **HKMA** to host RegTech Hackcelerator Challenge

H2 2021
- **BoE** to publish discovery results from Data collection transformation programme
- **Australian** Select Committee on FinTech and RegTech to present final report 30 Oct 2021
- **UK** Law Commission to publish proposals for law reforms related to smart contracts & digital assets
- **BoE/FCA** to publish final AIPPF paper Q4 2021
- **FCA** and City of London corporation to run second digital sandbox cohort
- **Turkey** Central Bank to create economic, technological and legal infrastructure of digital money; Finance Office to prepare Fintech Strategy, 31 Dec 2021

By 2021
- **ISO/TC 307** to produce International Standards on blockchain and DLT and support innovation, governance and development

H2 2021
- **G20** TechSprint 2021 Initiative winners to be announced Oct 2021

By Dec-2021
- **FSB** completion of international standard-setting work for Global Stablecoin arrangements
- **FSB**, with SSBs*, to establish or adjust cooperation among authorities for Global Stablecoin arrangements

By Jul-2022
- **FSB**, with SSBs, to establish or adjust regulatory, supervisory and oversight frameworks consistent with FSB recommendations, int. standards and guidelines for Global Stablecoin arrangements
- **CPMI in collaboration with BISIH, IMF and WB** to identify and analyse options for access to and interlinking of CBDCs that could improve cross-border payments

By end-2022
- **BISIH** to assess practical and technological complexities of implementing multi-CBDC arrangement designs and interoperability types
- **SWIFT** to support ISO 20022 messaging standard for payment instructions and reporting messages between FIs. MT to be decommissioned Nov 2025

By Jul-2023
FSB, with SSBs*, review implementation and assessment of need to refine or adapt international standards on Global Stablecoin arrangements

Jul-2023
ECB to conclude digital euro project

By 2024
- **EU** to have framework
  - o for crypto-assets
  - o enabling the uptake of DLT and crypto-assets in the financial sector
  - o enabling use of interoperable digital identity solutions
- **EU** to enable use of innovative technologies eg RegTech/SupTech and promote data sharing between supervisory authorities
- **EU** to disclose publicly released info under EU financial services legislation in standardised and machine-readable formats
- **EC** and **ESAs** to ensure clarity on supervisory expectations and how legislative framework on financial services apply to AI applications

Notes
*SSB: standard-setting bodies

See also: **European Commission** Digital Finance Package

Proposed legislation: EC Digital Finance Package

❑ **European Union:** On 24 September 2020, the EC [put forward](#) legislative proposals, including clarification of 'financial instruments' based on DLT, and a DLT pilot regime for market infrastructures for these instruments, as part of its Digital Finance Package.

❑ Proposal for a [regulation on a pilot regime for DLT market infrastructures:](#)

- o **Objectives:** support the development of secondary markets for 'tokenised' financial instruments, promote the uptake of DLT in the trading and post-trading area.

- o **Applicable to:** market infrastructures ie multilateral trading facilities (MTFs) and central securities depositaries (CSDs). Under this proposal, DLT market infrastructures can request exemptions from specific requirements embedded in EU legislation (MiFID II, CSDR) from national competent authorities (NCAs).

- o **Instrument scope (art. 3):**

    (1) a) Shares, the issuer of which has a market capitalisation or a tentative market capitalisation of less than EUR 200 million; or b) convertible bonds, covered bonds, corporate bonds, other public bonds and other bonds, with an **issuance size of less than EUR 500 million**.

    (2) Sovereign bonds are excluded from this regime.

    (3) The total **market value of DLT transferable securities recorded […] system shall not exceed EUR 2.5 billion**.

- o **Next steps: Currently under review by European Parliament and Council**, legislative text expected to be finalised and adopted within 18 months.

DLT in bond markets – Selected legislative and regulatory developments

ICMA
International Capital Market Association

❑ **Germany:** On 6 May 2021, German Parliament adopted the Electronic Securities Act (Gesetz über elektronische Wertpapiere, eWpG), allowing for electronic bearer bonds to be issued electronically and registered at a centralised or decentralised electronic securities register. See further information here (in German).

❑ **Switzerland:** On 11 December 2020, the Swiss Federal Council brought into force, effective from 1 February 2021, the parts of the Adaptation of Federal Law to Developments in Distributed Ledger Technology (DLT bill) that enable ledger-based securities to be introduced. The remaining provisions of the DLT bill entered into force on 1 August 2021.

❑ **Singapore:** On 21 July 2020, the MAS published its consultation paper on a new Omnibus Act for the financial sector, with 'Digital Tokens' (DTs) defined as a digital representation of capital markets products which (i) can be transferred, stored or traded electronically; and (ii) satisfies such other characteristics as MAS may prescribe.

See further information in **ICMA's DLT Regulatory Directory** available here.

AI/ML– Selected legislative and regulatory developments

❑ **European Union:** On 21 April 2021, the European Commission made a proposal for a regulation laying down harmonised rules on artificial intelligence (Artificial Intelligence Act).

  o **Scope:** Cross-industry

  o **Applicable to:** providers placing on the market or putting into service AI systems in the EU, users of AI systems located within the EU, providers and users of AI systems that are located in a third country, where the output produced by the system is used in the EU.

  o Rules follow a risk-based approach distinguishing:

  • Unacceptable risk => prohibited (eg threat to safety, or "social scoring" by governments)

  • High risk eg critical infrastructures, education, employment.

  • Limited risk eg chatbots

  • Minimal risk

  o **Next steps:** Currently under review by European Parliament and Council, legislative text expected to be finalised and adopted within 18 months.

  o See legislative proposal [here](#)

AI/ML– Selected legislative and regulatory developments

❑ **Germany:** On 15 June 2021, BaFin published its supervisory principles relating to Big data and artificial intelligence: Principles for the use of algorithms in decision-making processes.

- o Follows publication of the report Big data meets artificial intelligence" in 2018.

- o **Objective:** promote the responsible use of big data and artificial intelligence (BDAI) and facilitate control of the associated risks.

- o **Challenge:** How to distinguish between BDAI processes and processes driven by conventional statistics. Based on three features:

  1) Complexity of algorithms

  2) Frequent recalibrations

  3) Increased automation

- o Two-phased approach for algorithm-based decision-making process: developments and application.

See further information on BaFin website.

6) Q&A

Thank you for your attention

Useful links:

ICMA FinTech Overview

ICMA FinTech newsletter

CDM for repo and bonds

QR article on FinTech and sustainable bond markets (January 2021)

ICMA Podcasts – Recent additions:

- How FinTech is changing capital markets
- The Common Domain Model – fundamental & genesis