Webinar

COMMON DOMAIN MODEL (CDM), DIGITAL ASSETS & DIGITAL REGULATORY REPORTING (DRR)

31 MARCH 2023

10AM TO 12PM

SPEAKERS

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Director, Market Activities

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AGENDA

STANDARD AND DIGITAL

- Understanding the Common Domain Model (CDM)
- Digital assets and blockchain application of the CDM in the field of tokenized assets : the example of CAST "Compliant Architecture for Security Tokens"
- Digital Assets : A taxonomy to facilitate new digital opportunities
- ICMA's Bond Data Taxonomy, and process of bond issuance
- Standards & digital within the bond issuance process

DIGITAL REGULATORY REPORTING

- Security tokens and regulatory reporting, use cases on the application of standards, possibility of exemption from reporting
- Use of the CDM to optimize regulatory reporting, presentation of use cases on the product identification
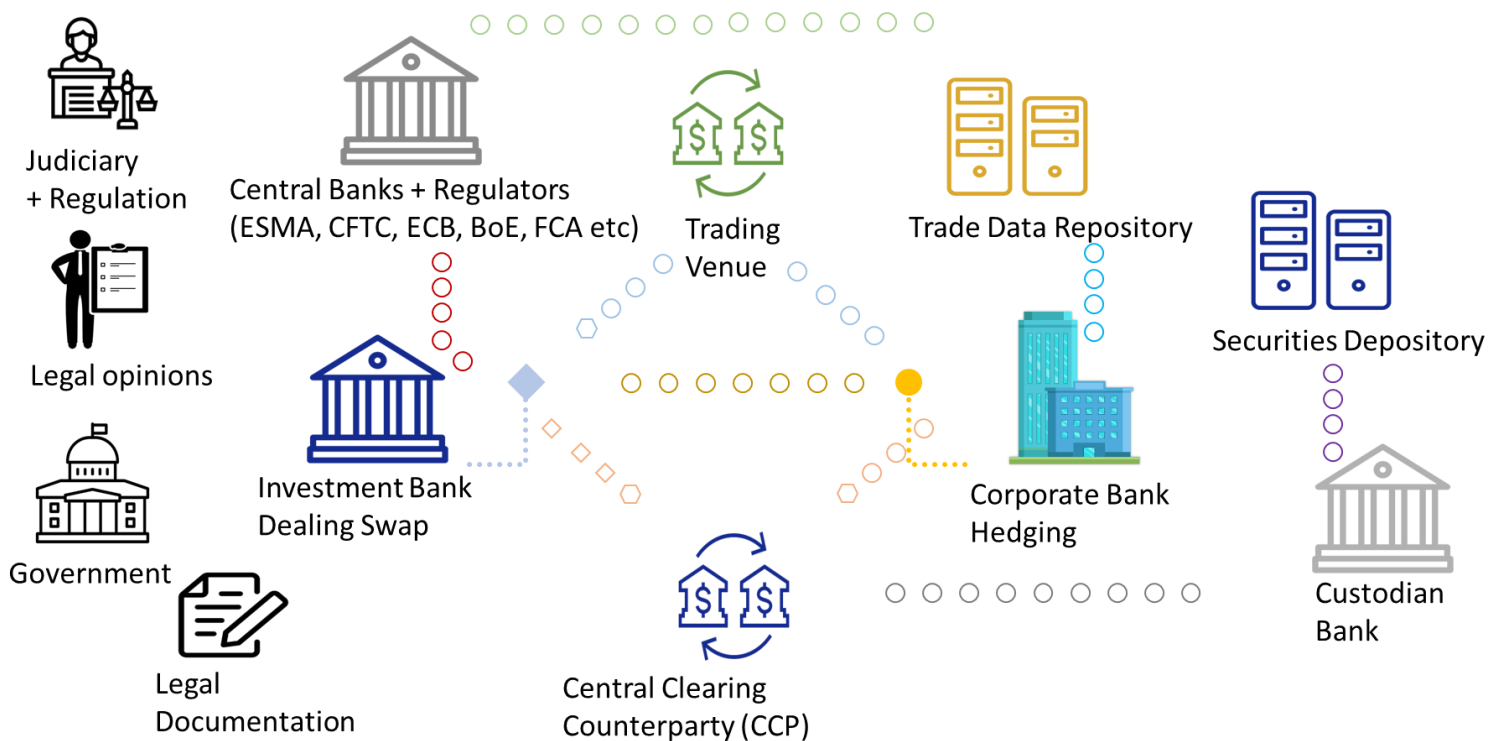
QUESTIONS AND ANSWERS (Q&A)

ASSOCIATION
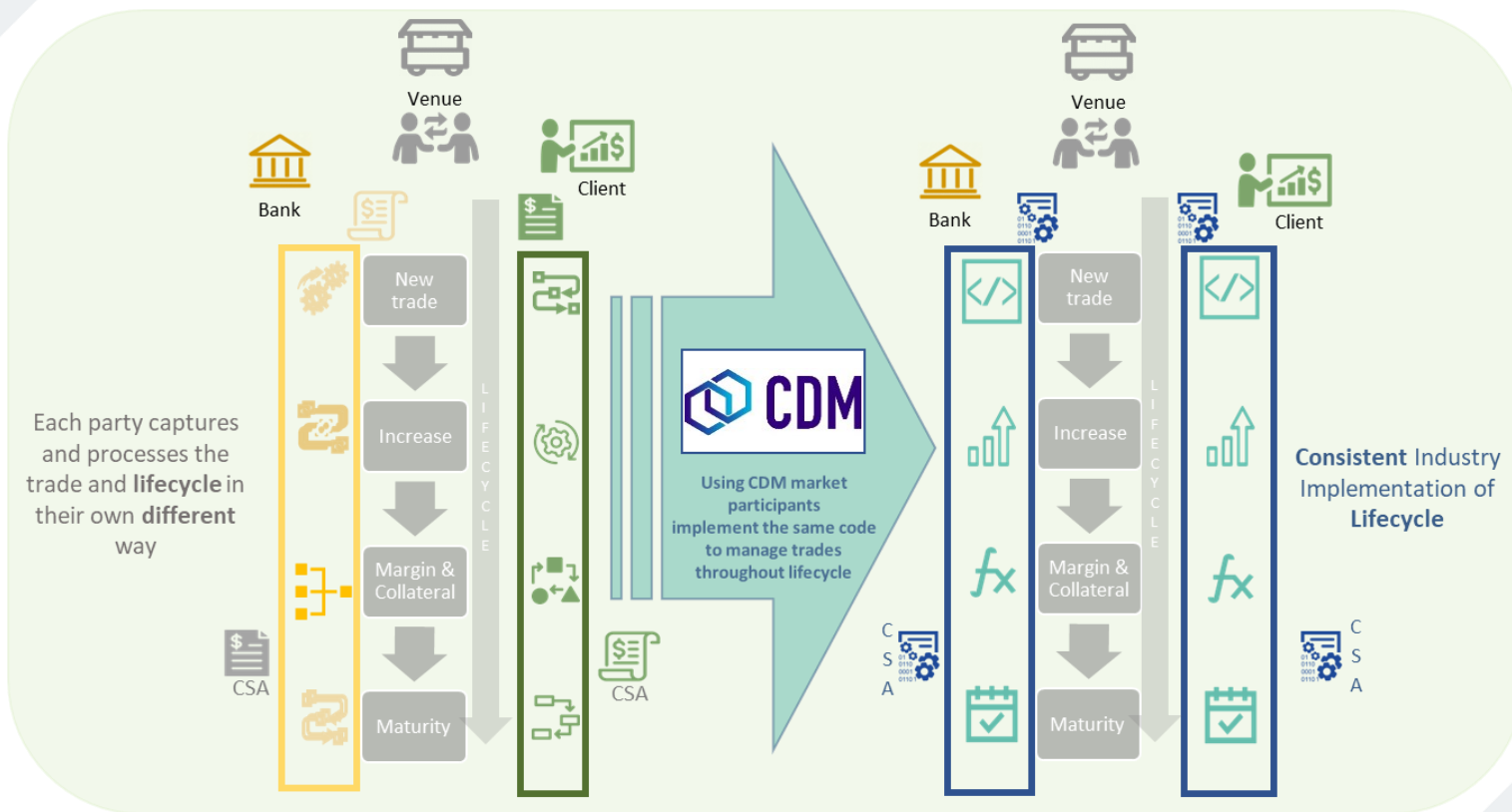FRANÇAISE
DES MARCHÉS
FINANCIERS

Understanding the Common Domain Model (CDM)

WHAT PROBLEM IS THE CDM SOLVING ?

All parties store trade data in bespoke formats and make lifecycle changes to these records inconsistently

Judiciary + Regulation

Central Banks + Regulators (ESMA, CFTC, ECB, BoE, FCA etc)

Trading Venue

Trade Data Repository

Securities Depository

Legal opinions

Investment Bank Dealing Swap

Corporate Bank Hedging

Government

Legal Documentation

Central Clearing Counterparty (CCP)

Custodian Bank

THE COMMON DOMAIN MODEL: A STANDARDISED DIGITAL BLUEPRINT FOR FINANCIAL TRANSACTIONS

WHAT ARE THE BENEFITS OF THE CDM ?

❑ **Interoperability** => Connecting systems internally and externally based on a 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 repo, securities lending, bond and derivative markets under the FINOS open-source framework.

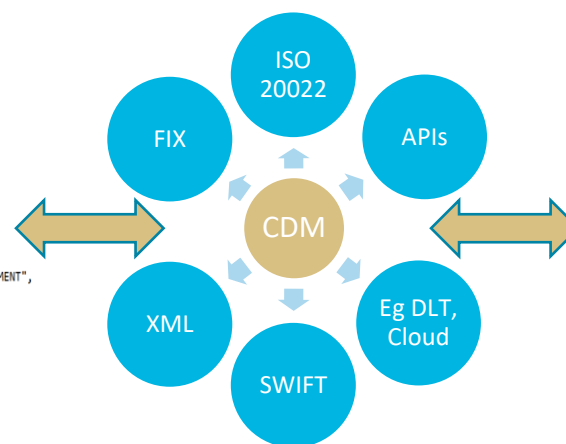**Delivering cost savings & enabling new revenue opportunities**

The CDM is available open-source and is designed to be used by:

- ❑ **A mutualized free open-source standardized digital blueprint** on how to represent financial transaction, performance and business events. **Extensible** to compose financial instruments by assembling reusable components. Already covers robustly derivative, securities and securities financiang transactions.

- ❑ **Market infrastructures, trade repositories, vendor firms** in capital markets.

- ❑ **New players seeking to enter the capital market** by using a standardised industry model.

Each party uses the CDM as 'common language' to process repo, securities lending, bond and derivative transactions. See also short CDM video explainer.
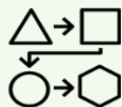
AN OPEN SOURCE DATA MODEL THAT SERVES VARIOUS INDUSTRY USE CASES

CDM
COMMON DOMAIN MODEL

The CDM is both a logical and functional data model where business logic and outcomes are digitised as functions $Y = F(X)$. This approach addresses many use cases.

| Digitisation of legal documents and financial transaction | Digitalisation of trade life cycles (margin, clearing, compression …) | Representation of regulatory and business logic | Standardisation of market infrastructure implementation and communication layers |

F
Functional expression of business logic

X
Transaction event
(represented in CDM)

e.g. a new trade

Y = F(X)
Business outcome

e.g. a compressed portfolio,
a regulatory report, a cleared trade

ISDA
Safe,
Efficient
Markets

ICMA
International Capital Market Association

Amafi
ASSOCIATION FRANÇAISE DES MARCHÉS FINANCIERS
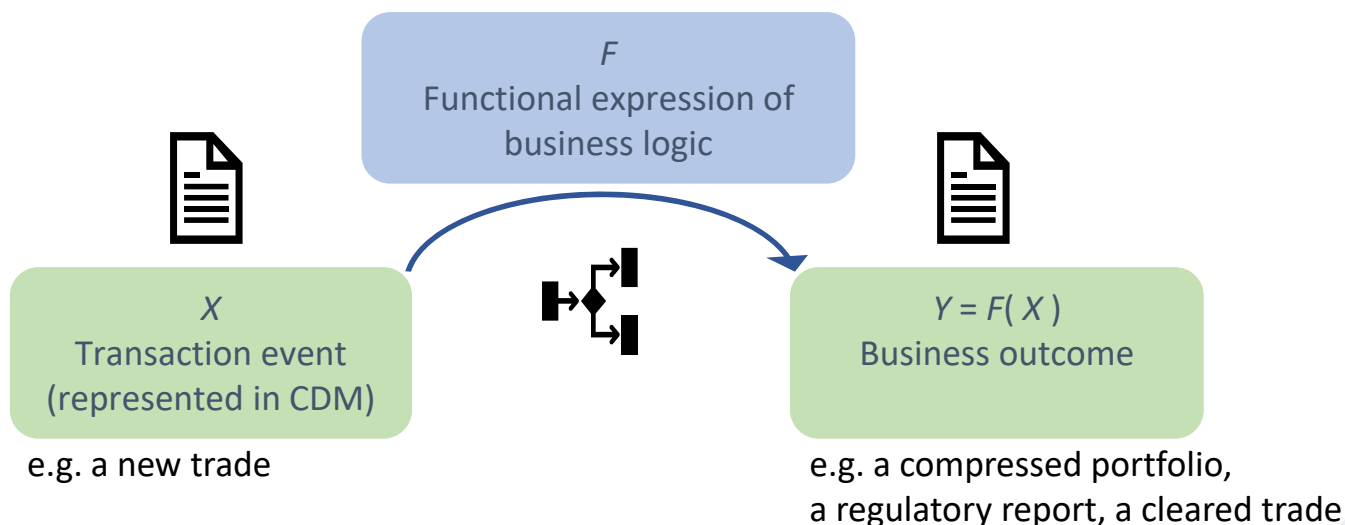
WHAT DOES THE CDM LOOK LIKE ?
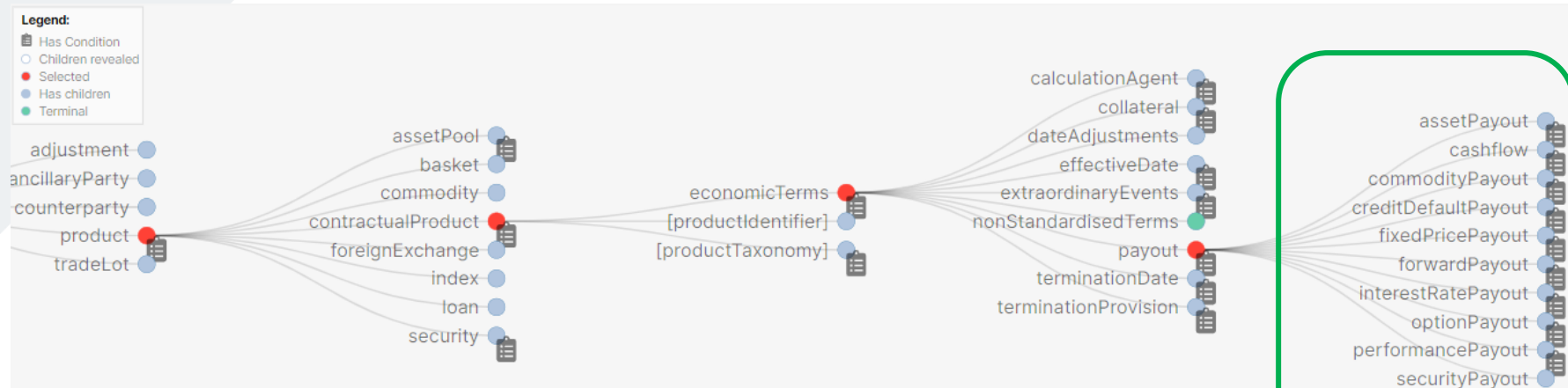

```
type Payout: <"A class to represent the set of future cashflow methodologies in the form of specific payout class(es) that can be
    associated for the purpose of specifying a financial product. For example, two interest rate payouts can be combined to specify an
    interest rate swap, or one interest rate payout can be combined with a credit default payout to specify a credit default swap.">
    [metadata key]

    interestRatePayout InterestRatePayout (0..*) <"All of the terms necessary to define and calculate a cash flow based on a fixed, a
        floating or an inflation index rate. The interest rate payout can be applied to interest rate swaps and FRA (which both have
        two associated interest rate payouts), credit default swaps (to represent the fee leg when subject to periodic payments) and
        equity swaps (to represent the funding leg).">
    creditDefaultPayout CreditDefaultPayout (0..1) <"The credit default payout, which provides the details necessary for determining
        when a credit payout will be triggered as well as the parameters for calculating the payout and the settlement terms.">
    optionPayout OptionPayout (0..*) <"The option payout.">
    commodityPayout CommodityPayout (0..*) <"Defines the payout for the floating leg of a Commodity Swap.">
    forwardPayout ForwardPayout (0..*) <"Represents a forward settling payout. The 'Underlier' attribute captures the underlying
        payout, which is settled according to the 'SettlementTerms' attribute. Both FX Spot and FX Forward should use this component.">
    fixedPricePayout FixedPricePayout (0..*) <"Defines a payout in which one or more payouts are defined as a fixed price.">
```
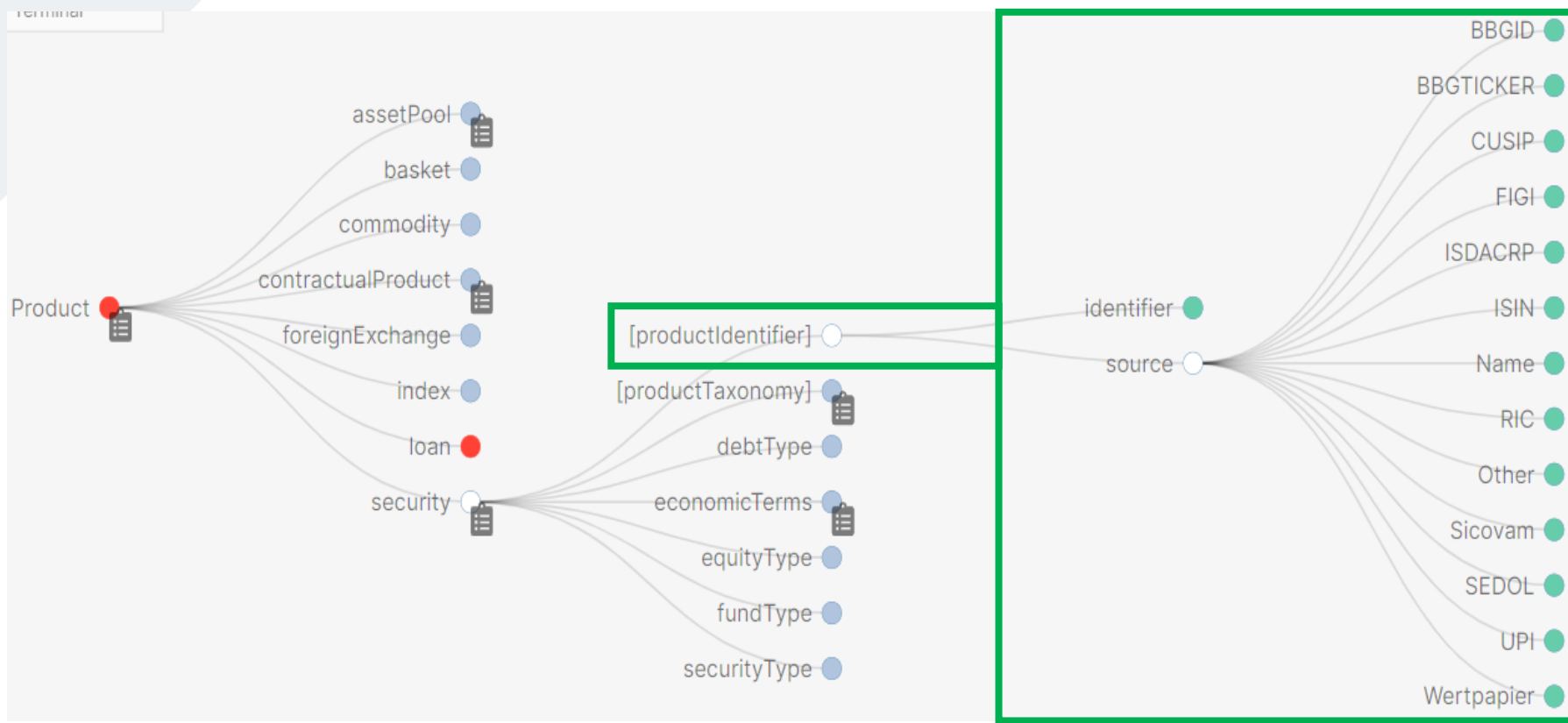
*Illustrative

CDM IS COMPATIBLE WITH STANDARDISED PRODUCT IDENTIFIERS

*Illustrative

ICMA'S CDM PROJECT FOR REPO AND BONDS

❑ ICMA completed phase 2 of its CDM project for repo and bonds in the first quarter of 2023.

❑ Objective: support market efficiency, promote interoperability and foster innovation.

❑ Repo and collateral markets are critically important for the functioning of capital markets. They are characterised by interconnectedness, complexity and high volumes. The total value, at close of business on December 8, 2022, of repos and reverse repos outstanding on the books of the 61 institutions who participated in ICMA's latest European repo market survey exceeded EUR 10,3 trillion.

❑ ICMA has extended the CDM to enable firms to automate trading and post-trade processing of a wide array of repo structures including:

- Fixed-rate and floating-rate repos

- Term and open, repos with an extended notice ('evergreens'), extendibles

- Lifecycle events and processes including re-rates, repricing, interest payments, opening and closing of positions, collateral substitution, partial delivery, shaping, pair-offs and termination.

ICMA
International Capital Market Association

BACKGROUND ON ICMA'S CDM PROJECT FOR REPO AND BONDS

Feb 2021
CDM for repo and bonds phase 1 kick-off:
Fixed-term repos

Aug 2021
ICMA, ISDA & ISLA Memorandum of Understanding

September 2022
ICMA, ISDA & ISLA appoint **FINOS** to provide repository for CDM following competitive RFP process

21 Feb 2023
ICMA/ISDA/ISLA CDM Showcase Event

2021   **2022**   **2023**

Jul 2021
Completion of phase 1:
• Trade execution, clearing & settlement
• Settlement of bonds
CDM Showcase event

Feb 2022
CDM for repo and bonds phase 2 kick-off:
• Open repos
• Floating-rate repos
• Repos with extended notice period ('evergreens') & extendibles

Nov 2022
Technical completion of phase 2, including:
• Re-rates
• Interest payments
• Shaping & Pair-offs

16 February 2023
CDM is open source in FINOS

ICMA PRIORITIES FOR 2023

Driving adoption of the CDM through FINOS open-source framework

- ❑ Education & raising awareness
- ❑ Supporting ERCC priorities including automation, settlement efficiency and reporting
- ❑ Facilitating implementation (eg model-to-model mappings, cloud deployment)
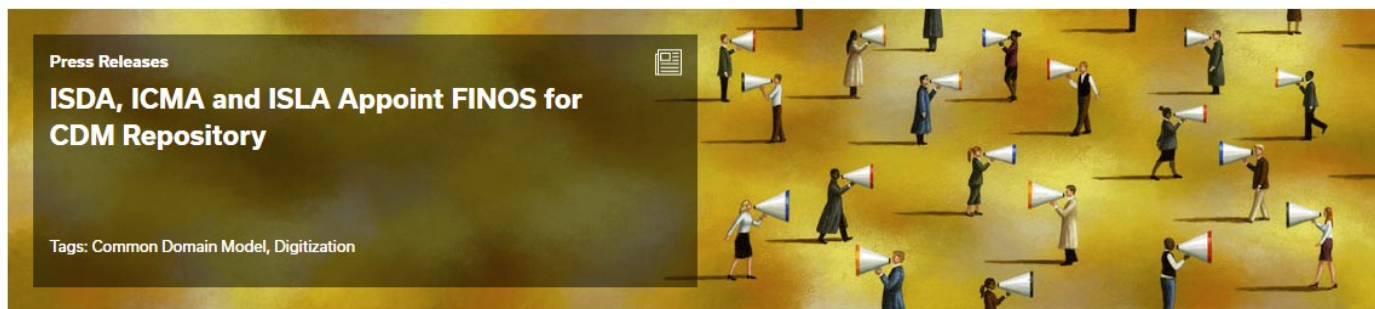
Cross-industry collaboration on collateral management including

- ❑ Eligible collateral schedules
- ❑ Margining
- ❑ Triparty-repo processes

Exploring synergies between CDM and ICMA's Bond Data Taxonomy

- ❑ To support issuance, trading & settlement of DLT bonds
- ❑ Re-using existing functions (eg for interest payments)
- ❑ Expanding CDM functionalities to fully support bond lifecycle

THE CDM IS FREE AND OPEN SOURCE AT THE FINTECH OPEN SOURCE FOUNDATION (FINOS)

Press Releases

ISDA, ICMA and ISLA Appoint FINOS for CDM Repository

Tags: Common Domain Model, Digitization

https://www.finos.org/common-domain-model

For more information, contact cdminfo@isda.org

Compliant Architecture for Security Tokens (CAST)

CAST Framework | Bridging the gap between Capital Markets and Digital Assets (cast-framework.com)

CAPITAL MARKETS ARE ON THE VERGE OF A PROFOUND TECHNOLOGY SHIFT

Internet and Blockchain technologies are sharing similar game-changing characteristics (distributed, fault tolerant, WW client reach, open & easy programming)

Internet innovation lifecycle : it tooks 15 to 23 years* for new business models to emerge (from 1983 ARPANET to 1998 for GOOGLE & 2006 with FACEBOOK & AMAZON)
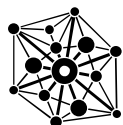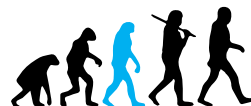
10 years after the start of Bitcoin, **blockchain enters into adoption phase**

Market electronification cycle : 12 years to see electronic business take over on voice business (from 1992 CME Globex to ~2004)*

1 We reached the middle of the journey to see the emergence of new business models based on blockchain

2 Remaining time span (5 to 10 years) **fits perfectly with a second phase of market electronification** cycle, ending by 2030

3 **The CAST Framework is a standardization initiative designed to accompany & shape this market trend, and develop the new generation of capital markets**

WHY GOING DIGITAL TODAY?

Creating the framework for a new market ecosystem encompassing not only financial institutions but also fintechs, corporates, regulators, retail clients, etc. on a common, value-oriented & secure infrastructure to minimise market manipulation

ADDED VALUE FOR DIGITAL BOND ISSUERS

1. **Investors & secondary market transparency:** increased capacity to see trading flows, evaluate liquidity and identify final beneficiaries/asset holders.

2. **Digitalizing & diversifying reach of bond issuances and investor base:** distribution has no technological limit except regulatory, able to better target retail, diaspora, millennials and/or cryptocurrencies liquidity pools.

3. **Automation of bonds corporate events / Straightforward asset issuance & settlement** (intraday vs. 2 days): process automation (bail-in, etc.).

4. **Fewer intermediaries:** increased automation (TA, Paying Agent), no CSD.

5. **Opening new product development landscape** based on non-securities, especially for corporates clients which can integrate better "value units" management into their processes or increase products traceability.

ADDED VALUE FOR DIGITAL BOND INVESTORS

1. **Better traceability, price discovery & liquidity** due to a native worldwide securities registry: investment on ad hoc projects, transparency of the use of raised amounts.

2. **Execution speed:** instantaneous settlement of token issuance, once matched on the market, depending on future developments on cash management / CBDC.

3. **New investment & trading opportunities**, based on new assets class (cryptocurrencies) or non-financial products (utility tokens) or ESG products targeting specific assets with high level of traceability.

4. **Fewer intermediaries & reduced post trade costs,** thus less fees.

5. **Access to decentralized finance (DeFi) mechanisms and liquidity pools** through smart contracts & yields of the crypto-industry.

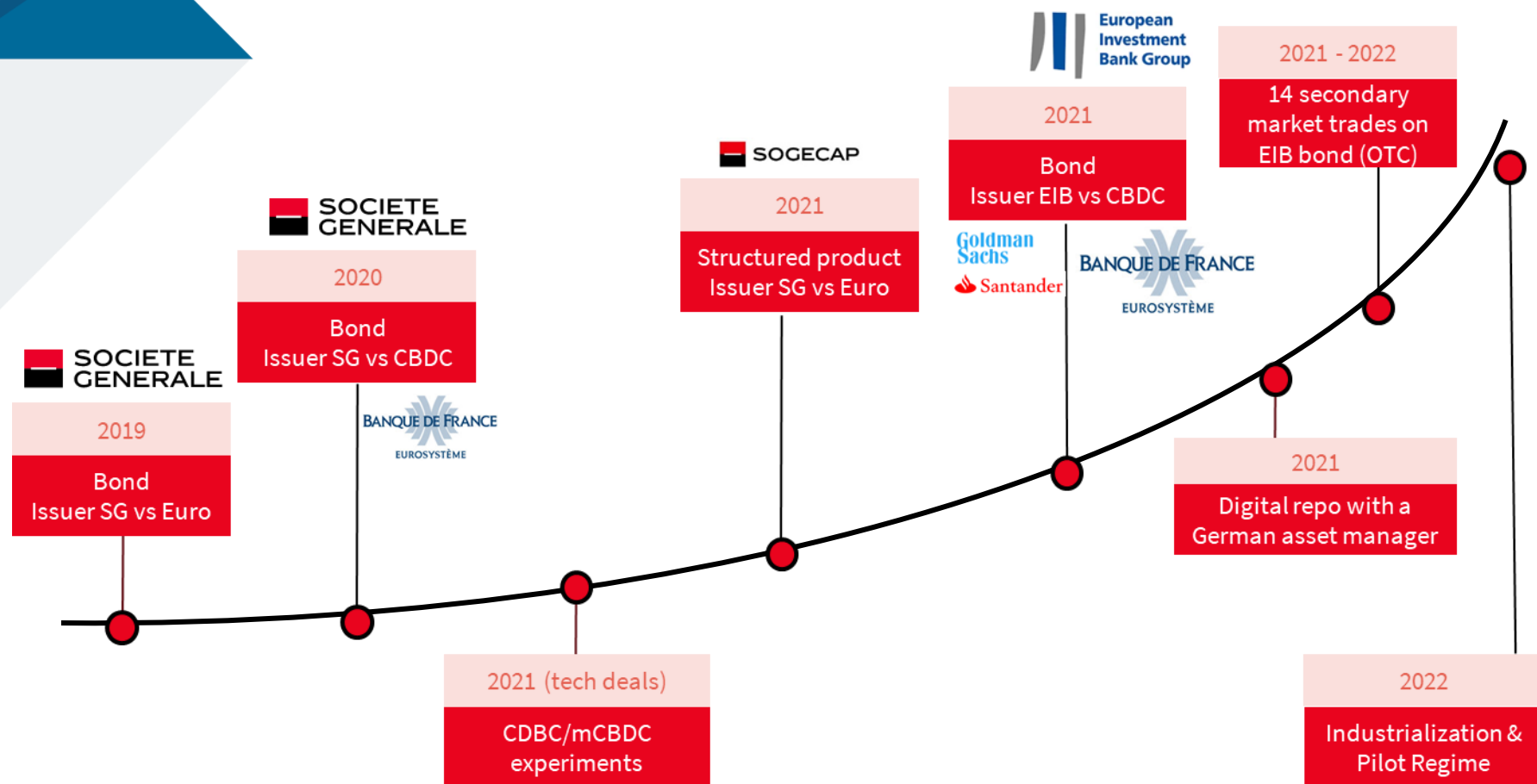RETAIL & WHOLESALE   DISTRIBUTED & WORLDWIDE   TRANSPARENT   REGULATED   EASY CODING & STRUCTURING

CAST-COMPATIBLE MARKET TRANSACTIONS

SG FORGE: OUR SERVICES

SG-Forge is a fully integrated Societe Generale's subsidiary, regulated as investment firm in the EU and dedicated to offering services on digital assets. The entity provides an **end-to-end service suite**, backed by Societe Generale processes & a proven track record in issuing digital assets and settlement using CBDC in partnership with the French central bank.

" **Institutional solutions for new digital assets based on public blockchain, leveraging on Societe Generale's expertise in financial infrastructure, regulatory framework, operations and blockchain standards** "

Pillars	🟥 Token Factory	🟩 Token Brokerage	🟨 Token Custody	🟦 Banking Services	🟪 Token R&D
Description	✓ Primary market solutions ✓ Advisory for structuring new digital assets	✓ Secondary market solutions ✓ Risk management solutions	✓ Safekeeping & notary solutions ✓ Asset servicing solutions	✓ Client on-boarding & monitoring ✓ KYC/AML ✓ Bank accounts & cash management, CBDC	✓ Stable coins ✓ New funding solutions (utility tokens) ✓ Cross border payments

CAST FRAMEWORK
AN OPEN-SOURCE INITIATIVE TO FOSTER ADOPTION

CAST | COMPLIANT ARCHITECTURE FOR SECURITY TOKENS

"

The CAST framework is an open-source initiative designed to foster adoption of digital assets, by providing legal, operational and technical frameworks, to ease at lower cost and secure the on-boarding of potential market participants and their service providers

"

Capital Markets Stakeholders
CAST provides an standardized way to manage digital assets being technologically neutral

They can rely on…
▼

IT Integrators
By promoting collaboration and use of CAST frameworks, they foster adoption and propose solutions/services to ease their clients on-boarding.
Certification program managed by FORGE
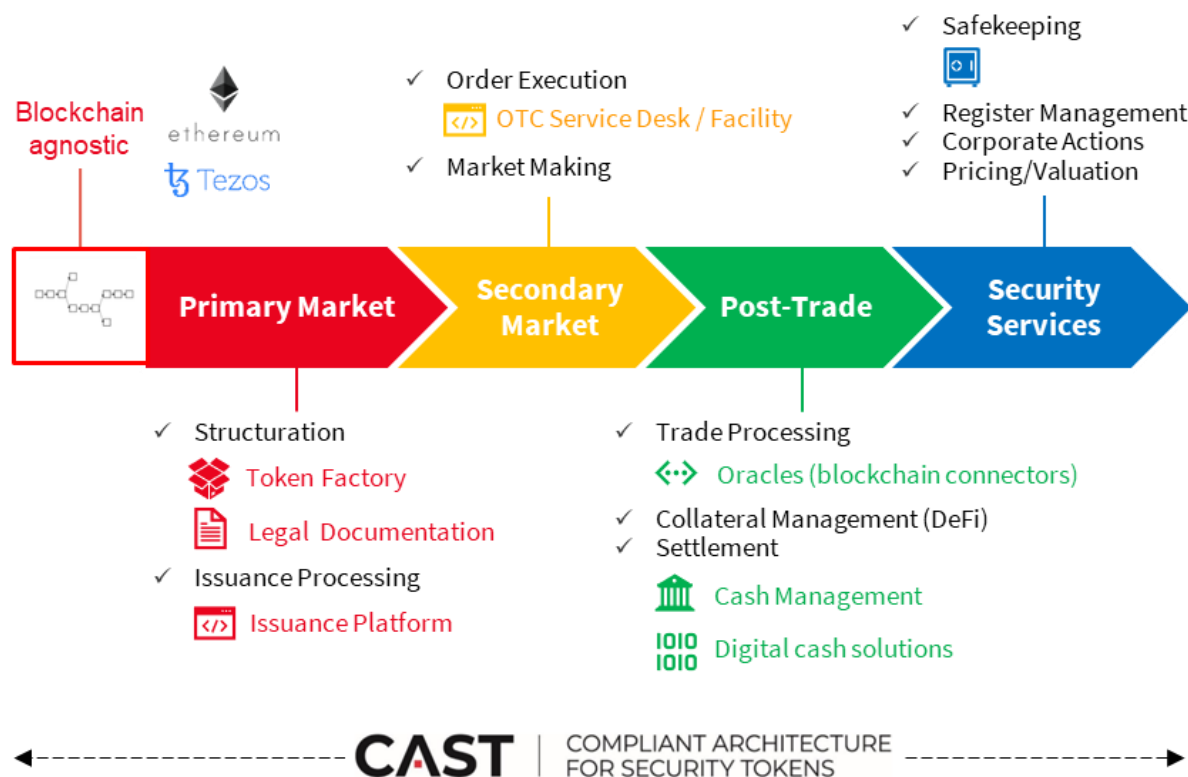
They can partner with…
▼

IT Service Providers (DLT)
CAST provides a set of standards and operating model to design secure, compliant and user-friendly solutions/services

Goldman Sachs · MEAG · AXA · European Investment Bank Group · Hong Kong Monetary Authority · SOGECAP · BANQUE DE FRANCE EUROSYSTÈME · Santander · Boursorama · Boerse Stuttgart · DEUTSCHE BUNDESBANK EUROSYSTEM

They are already certified !

accenture · pwc · KPMG · DXC.technology · Grant Thornton · onepoint beyond the obvious · inetum. Positive digital flow · Lunalogic

tokeny · Tezos · taurus · Ledger · consensys · MAKER · Fireblocks

FORGE
SOCIETE GENERALE GROUP

AMAFI
ASSOCIATION FRANÇAISE DES MARCHÉS FINANCIERS

CAST COVERAGE | SECURITIES LIFECYCLE & VALUE CHAIN

SECURITY TOKEN STRUCTURE

✓ Security token is designed according to the CAST Framework

✓ Security token is composed of:

- Methods corresponding to business transactions (e.g. subscription, trade, redemption, etc.)

- Instruments features data

- Positions & balances data

- A list of "Operators" (identified by a public address) with specific profile, granting rights to call some methods: the Registrar and the Settlement Agent

- A list of settlement workflows, each corresponding to the settlement status of a business transaction

✓ Only the Issuer can register/revoke Operators (by calling dedicated methods)

Blockchain

`</>`

Smart Contract T
▐▐▐ (AddT)

Methods/Functions:

initiateTransfer()

initiateSubscription()

initiateTrade()

initiateRedemption()

…

getInstrumentDetails()

…

grantOperator()

revokeOperator()

…

confirmPayment()

confirmTransfer()

…

Instrument features:

ISIN code, Digital Token Identifier (DTI)/UPI code, FIGI code, Issuer, Symbol, Denomination, Nominal amount, Maturity, etc.

Balances:

▐▐▐	(Add1)	80
▐▐▐	(Add2)	50
▐▐▐	(Add3)	30

List of "Operators" (with profile):

▐▐▐	(AddR)	Registrar
▐▐▐	(AddS)	Settlement Agent

List of Settlement Workflows:

sw (uuid1, state A)

sw (uuid2, state B)

…

CDM & CDD combined with a
Layered Convergence Approach on
Digital Assets
A taxonomy to facilitate new
digital opportunities

Professor Lisa Wilson [Short]

DUniv., FBCS., FRSA., Grad. Cert Sc., Bch T&D, Dip. T&A Sys.,
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Founder Areté Business Performance

Programme Director, CFTE, Blockchain & Digital Assets for Financial Services
Advisory Council, Centre for Digital Trade & Innovation
International Association of Trusted Blockchain Associations [INATBA]
Academic Advisory Board & Co-Chair Digital Credentials Task Force

In 2020, 2021 & 2022
Top100 B2B Thought Leader in the World to Follow
Top 20 Global Thought Leader & Influencer on Blockchain, Crypto & Edtech
Top100 Women in Crypto

@lisagshort
#cryptoaunty
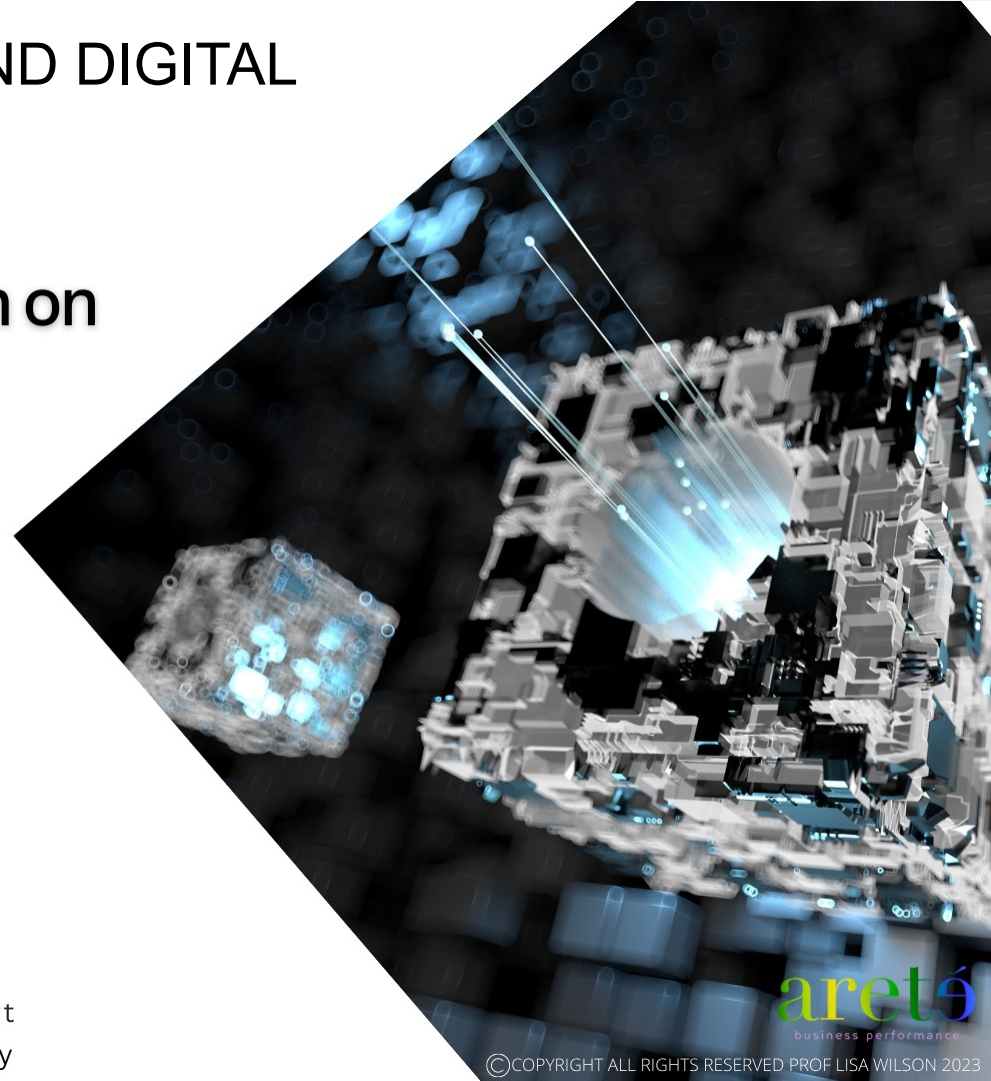
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business performance
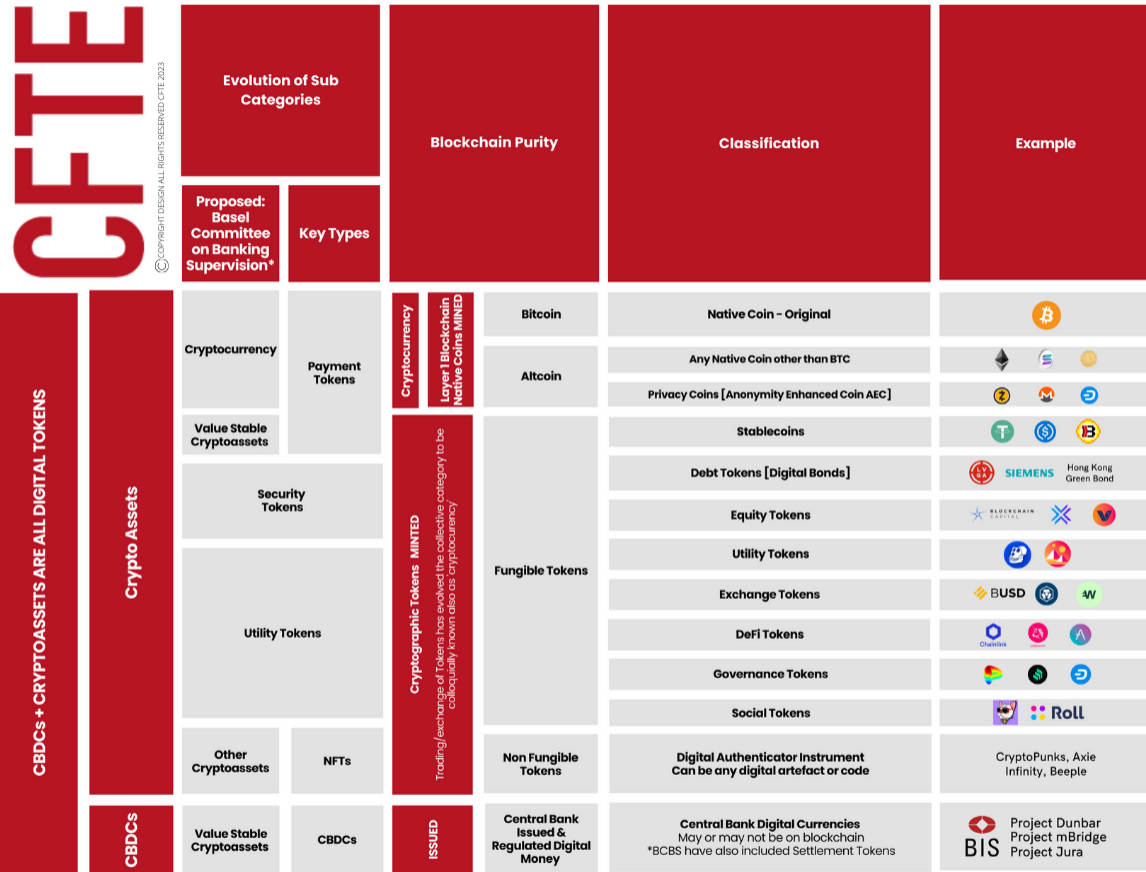
Where does the conversation start?
Why have we been led astray?

There is an important relationship between the technical purity of the development of digital assets, the evolution of language and the need for CDD to bring together convergence on digital asset definitions at this level .

Examples

- CBDC's + CRYPTOASSETS = DIGITAL TOKENS
- CRYPTOASSETS = CRYPTOCURRENCY + FUNGIBLE/NF TOKENS
- CRYPTOCURRENCY = Bitcoin + ALTCOINS
- COINS = Bitcoin + ALL LAYER 1 Native Coins [Altcoins]

Professor Lisa Wilson [Short]
DUniv., FBCS., FRSA., Grad. Cert Sc., Bch T&D, Dip. T&A Sys.,
Adv. Dip. OHS, BA (Economics, Geog., Fin. Mgt.) Dip. Ed.

There's a relationship between the evolution of key regulatory approaches to digital asset classifications and how they converge at a descriptive level - but not at a definition or detail level. We can use a CDM & CDD to create an overall international model. The importance of the ability for this to grow and for LEI's, UPI's and ITC are key

Primary Financial Services Digital Asset Categories

CFTE	Evolution of Sub Categories		Blockchain Purity		Classification	Example	International Securities Services Assocation [ISSA] 2019 [updated 2022]		Covered by Existing EU Regulatory Frameworks	Markets in Cryptoassets [MiCA]					International Tokenisation Standards Association [ITSA] International Token Classification Framework [ITC] 2022 – Current Live	US Securities Exchange Commission [SEC] Digital Assets Framework
	Proposed: Basel Committee on Banking Supervision*	Key Types					Payment Tokens	Utility Tokens	Security Tokens	e-Money Tokens [EMT] / e-Money Tokens	Asset Reference Tokens [ART]	Cryptoassets not regulated by existing EU Law	Unregulated Tokens	Exchange Tokens		
CBDCs + CRYPTOASSETS ARE ALL DIGITAL TOKENS	Cryptocurrency	Payment Tokens	Cryptocurrency / Layer 1 Blockchain Native Coins MINTED	Bitcoin	Native Coin – Original		YES						YES		Unpegged Payment Token	All blockchain related digital assets [cryptoassets, utility tokens or non-security tokens, security tokens, derivatives and collective investment tokens, commodities] will be treated as securities or commodities under the purview of SEC Existing Regulations. Sponsors will need to prove otherwise via the use of 'Howey' and 'Reves' Tests
				Altcoin	Any Native Coin other than BTC		YES						YES		Transactional Utility Token	
					Privacy Coins [Anonymity Enhanced Coin AEC]		YES						YES		Unpegged Payment Token	
	Value Stable Cryptoassets		Cryptographic Tokens MINTED	Fungible Tokens	Stablecoins		YES			YES	YES		YES		Pegged Payment Token	
Crypto Assets	Security Tokens				Debt Tokens [Digital Bonds]	SIEMENS Hong Kong Green Bond			YES						Security/Investment/Fund Token	
					Equity Tokens				YES						Investment/Fund Token	
	Utility Tokens				Utility Tokens			YES					YES		Utility Settlement & Governance	
					Exchange Tokens	BUSD		YES					YES	YES	Utility Settlement	
					DeFi Tokens			YES					YES		Utility Settlement & Governance	
					Governance Tokens			YES					YES		Utility Governance	
					Social Tokens	Roll		YES					YES		Utility Settlement & Governance	
	Other Cryptoassets	NFTs		Non Fungible Tokens	Digital Authenticator Instrument Can be any digital artefact or code	CryptoPunks, Axie Infinity, Beeple	No Category			EXCLUDED BY MiCA [Except where fractionalised]			YES		Utility Settlement & Governance / Utility Settlement & Governance	
CBDCs	Value Stable Cryptoassets	CBDCs	ISSUED	Central Bank Issued & Regulated Digital Money	Central Bank Digital Currencies May or may not be on blockchain *BCBS have also included Settlement Tokens	BIS Project Dunbar Project mBridge Project Jura	COVERED UNDER EXISTING REGULATORY FRAMEWORKS [Outside Cryptoasset Frameworks]									

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business performance

ICMA's Bond Data Taxonomy, and process of bond issuance

DYNAMICS IN PRIMARY BOND MARKETS

❑ Primary markets play a critical role as a source of funding for the real economy.

❑ ICMA's most recent assessment of its **primary markets technology directory** has identified several new and emerging platforms designed to facilitate the issuance of debt instruments. As of the time of publication, the directory comprises a total of 45 solutions, representing a slight decrease from Q4 2021, and more than double the number available when the directory was launched in 2018.

❑ Market structure => Diverse and heterogeneous

   ▪ Few incumbent platforms for specific processes such as bookbuilding.

   ▪ A growing number of new entrants targeting different processes of bond issuance value chain (eg legal documentation generation; issuer communication; investor connectivity)

❑ Key observations:

   ▪ **DLT:** As more participants look toward the potential gains of using DLT, several platforms have emerged to provide tokenisation-related services for debt securities.

   ▪ **Connectivity:** Several vendors announced enhanced connectivity between their solutions and other market platforms, such as linking buy-side OEMS' with syndicate banks as part of the bookbuilding process.

   ▪ **Consolidation:** Since the directory's launch in 2018,14 solutions have been removed from the directory. Reasons range from consolidation and re-branding following acquisitions or partnerships, to platform unwinding due to unfavourable conditions or uptake.

ASSOCIATION FRANÇAISE DES MARCHÉS FINANCIERS

ICMA
International Capital Market Association

Typical syndicated Eurobond issuance workflow

Mixed terminology (eg nominal currency, specified currency, denomination currency) is used for communicating identical data points, leading to inconsistencies and manual intervention.

As a result, market participants are required to map or translate data points between vendor solutions, market infrastructures and internal systems.

STP requires interoperability between vendor solutions and market infrastructures along the issuance process.

ICMA Bond Data Taxonomy (BDT)

What is the BDT?

➢ A common, standardised language for key bond information.
➢ Initial focus on key economic terms, dates, and other vanilla bond term sheet information (over 90 fields).

What are the benefits of the BDT?

Implementation of the BDT as a 'common language' is expected to:

➢ ***Promote automation*** and ***reduce the risk of fragmentation*** across the issuance process.
➢ Promote straight-through-processing (STP) and interoperability, assisting firms involved during the issuance process and streamlining post-trade operations.
➢ Be vendor agnostic, facilitating the exchange of data between multiple solutions and systems.
➢ Lay a common foundation for leveraging new technologies, such as DLT.

Who is involved?

➢ Primary bond market participants, including SSA issuers, banks, investors, law firms, market infrastructure and vendor providers.

What are next steps?

➢ Supporting market adoption and alignment with BDT common language.
➢ All market constituents welcome to engage in the direction and development of the BDT.

See also: ICMA BDT Factsheet

Approach for building consensus

Issuers	Banks	Law firms	Market infrastructure	Primary market vendors	Investors

Working Group Discussions

Consensus on key field representation

- ICMA Primary Market Handbook
- Bond term sheets
- Infrastructure/vendor taxonomies
- Various other market practices and standards (eg ISO standards)

Naming examples
- Aggregate Nominal Amount
- Nominal Amount
- Notional Amount
- Size
- Total Issue Size
- Amount
- Issue Amount
- Principal Amount
- Aggregate Principal Amount
- Issue Nominal amount

- **Name**: Aggregate Nominal Amount
- **Data type**: Decimal
- **Required field**: Yes
- **Annotation**: Aggregate nominal amount on issue of the initial tranche.

ICMA Bond Data Taxonomy

- An agreed language to represent key bond information in a standardised and machine-readable manner

Key information

- **Security identifier**
- **Nominal amount**
- **Rate of Interest**
- **Maturity date**
- Series, Tranche Number
- Form of the Note
- Status of the Note
- Day Count Fraction
- Interest Commencement Date
- Interest Payment Dates
- …
- **Issuer**
- **Governing Law**
- **Listing**
- Specified Denomination
- Specified Currency
- Issue Price
- Reoffer Price
- …

Product Definition

```
<xs:element name="SecurityIdentifier"
type="SecurityIdentifier", minOccurs="0"
maxOccurs="unbounded">
```

```
<xs:element name="AggregateNominalAmount"
type="xs:decimal" minOccurs="1" maxOccurs="1">
Annotation: Aggregate nominal amount on issue of the
initial tranche.
```

```
<xs:element name="InterestRate" type="xs:decimal"
minOccurs="0" maxOccurs="1"> Annotation: Rate of
fixed interest payments.
```

```
<xs:element name="MaturityDate" type="ISODate"
minOccurs="1" maxOccurs="1"> </xs:element>
```

Security Identifier Definition

```
<xs:element name="ISIN"
type="ISINOct2015Identifier"
minOccurs="0" maxOccurs="1">
</xs:element>
```

ISO Types

```
<xs:simpleType
name="ISINOct2015Identifier">
Annotation: International Securities
Identification Number (ISIN). A
Numbering system designed by…
```

```
<xs:simpleType name="ISODate">
Annotation: A particular point in the
progression of time in a calendar year
expressed in the YYYY-MM-DD format.
```

Enumerations

```
<xs:simpleType name="PartyRoleType">
<xs:enumeration
value="Issuer">…Guarantor,
JointLeadManager, FiscalAgent, Trustee..
```

```
<xs:simpleType name="GoverningLaw">
<xs:restriction base="xs:string">
<xs:enumeration
value="ENGLISH_LAW"/><xs:enumeration
value="LUXEMBOURG_LAW"/>….
```

```
<xs:simpleType name="ListingMarket">
<xs:restriction base="xs:string">
<xs:enumeration
value="LUXEMBOURG_STOCK_EXCHAN
GE"/>….
```

Issuance Definition

```
<xs:element name="PartyRole" type="PartyRole"
minOccurs="1" maxOccurs="unbounded">
```

```
<xs:element name="GoverningLaw"
type="GoverningLaw" minOccurs="0" maxOccurs="1">
</xs:element>
```

```
<xs:element name="Listing" type="Listing"
minOccurs="0" maxOccurs="1"/>
```

Legend

| Categories |
| Enumerations |
| ISO Types |

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ICMA
International Capital Market Association

NEXT STEPS

Supporting market adoption

❑ **Awareness**

- Engagement across ICMA committees, industry working groups, regulatory bodies

- Webinars / tutorial videos

❑ **Maintenance, development**

- BDT Working Group

❑ **Implementation**

- Implementation sub-group

- Bilateral support

Adoption paths

- Client interface terminology

- Within internal systems

- Common language when exchanging data electronically across participants

- Document generation using BDT terminology

- Use of BDT terminology within ICMA Primary Market Practices Committee issuer-facing term sheet standardisation initiative

- Issuance, trading, settlement of DLT securities (eg EU's DLT Pilot Regime, UK's FMI Sandbox, other jurisdictions)

ICMA
International Capital Market Association

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Digital Regulatory Reporting
Security tokens and regulatory reporting, use cases on the application of standards

SECURITY TOKENS AND REGULATORY REPORTING, USE CASES ON THE APPLICATION OF STANDARDS

Common Domain Model goes on top of the Distributed Ledger Technology as a logical model as CDM uses standards and interacts easily with smart contracts in order to achieve fluidity of security tokens processing in full interoperability with existing systems.

The [Distributed Ledger Technology (DLT) Pilot Regime](#) started to apply on 23 March 2023 in Europe. It is a sandbox regime for DLT based market infrastructures. The regime extends MIFIR to some tokenised financial instruments with he possibility of being exempt from reporting under some conditions.

The choice of an integrated infrastructure offers the possibility of providing access to reading nodes, allowing access to information recorded in the DLT, enriched with off-chain data. As such, the authorities will be able to have direct and immediate access to replace the ISO 20022 reporting of financial instrument transactions.

Digital Token identifier codes (DTI) could easily added as security identifier type in the CDM to identify digital assets

FROM FRAGMENTED AND DIVERSE MARKET IMPLEMENTATIONS OF THE REGULATION TODAY

Regulatory Rules & Best Practices

REGULATORS & TRADE ASSOCIATIONS
Publish rules and develop best practices

Regulatory Text Artefacts

Data Field Mapping Tables

Graphs and Spreadsheets of Trading Scenarios
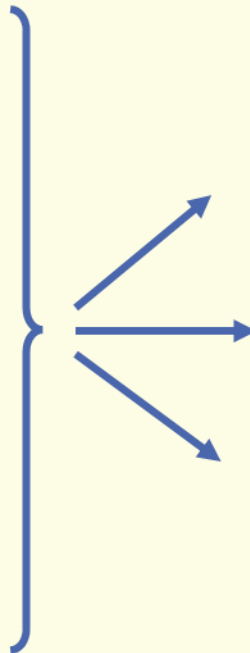
INDUSTRY PARTICIPANTS
Implement their own solutions based on individual interpretations

Dealer X

Dealer Y

Vendor Z

Resulting in fragmented and inconsistent implementations & operational Inefficiencies

- **Every industry participant left to implement their own version based on interpretation of artefacts**

- **Loss of inter-operability between solutions**

- **Pervasive reconciliation issues and other operational inefficiencies**

MANY "TRUTHS"

ISDA® Safe, Efficient Markets

AMAFI / 23-30
12 avril 2023

Amafi — ASSOCIATION FRANÇAISE DES MARCHÉS FINANCIERS

TO A MUTUALISED EFFICIENT AND SCALABLE ANSWER TO REGULATORY COMPLIANCE

REGULATORS & TRADE ASSOCIATIONS
Publish rules and develop best practices

INDUSTRY PARTICIPANTS
Implement the same code in their solutions

Regulatory Rules & Best Practices

Regulatory Text Artefacts

Tables of Data Field Mappings

Graphs and Spreadsheets of Trading Scenarios

A Common Industry Interpretation of Rules and Best Practices is Encoded using CDM

D R R

SINGLE "TRUTH"

Dealer X

Dealer Y

Vendor Z
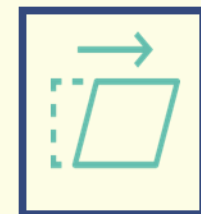
Consistent Industry Implementations

ISDA® Safe, Efficient Markets

Amafi ASSOCIATION FRANÇAISE DES MARCHÉS FINANCIERS

HOW IS DIGITAL REGULATORY REPORTING (DRR) DOING THIS ?

➢ ISDA's DRR is turning regulatory reporting rules and other tech. specifications **into free and open-access code**.

➢ When implemented, this ensures **consistent implementation** and allows **transparency** and **alignment** between regulators and reporting parties.

➢ ISDA's DRR approach **resonates with the European Commission's observations on the innovative potential of MRER** - Machine Readable and Executable Reporting **https://data.europa.eu/doi/10.2874/036007**

DRR

F1: Functional Expression of Reporting and validation rules

F2: Functional Expression of format mapping (iso 20022)

X: CDM Transaction Data and Reference Data (UPI, LEI,ISIN, …)

Formatted Report
$Y = F_{1+2}(X)$

Trade Data Repositories

CFTC Rewrite

EMIR Refit

UK-EMIR regimes

Other regimes

AMAFI / 23-30
12 avril 2023
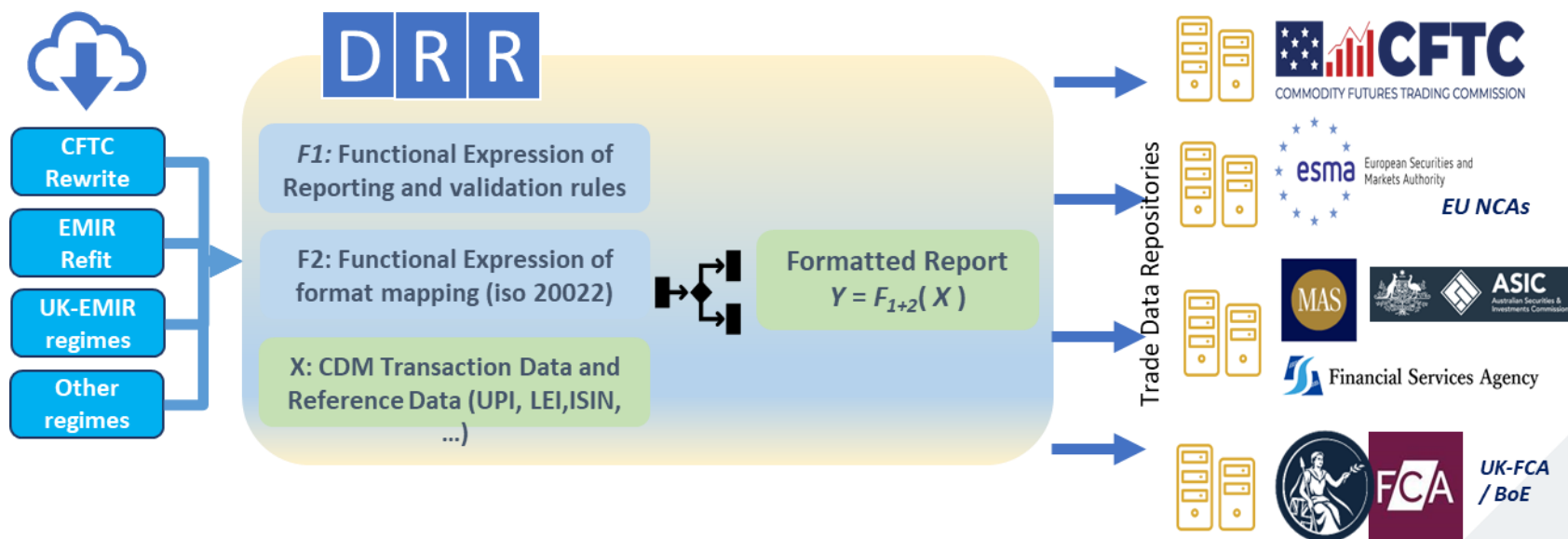
WHY ADOPT DIGITAL REGULATORY REPORTING ENABLED WITH CDM ?

Mutualize regulatory reporting compliance effort

- Cost of rule interpretations and compliance effort is spread across the industry

Produce unambiguous rule interpretation and best practices

- Reflects the outcome of the industry interpretation in unambiguous instructions

Free and open access for all to maximise transparency

- The open access DRR models and accompanying test data are all be accessible to all regulators and market participants for reference, scenario analysis and testing

Defines core regulatory reporting ruleset only once

- Only incremental efforts are required to extend the DRR model to other jurisdictions and future changes to reporting rules. Such updates will be delivered through centralized DRR model changes

Significant resource and cost savings through accelerated consistent implementation response

- Firms leveraging DRR are more likely to reap significant compliance, reporting and implementation project savings, both for initial implementation and ongoing BAU regulatory reporting change cycles.

DIGITISE YOUR CORE REGULATORY REPORTING RULESET ONLY ONCE
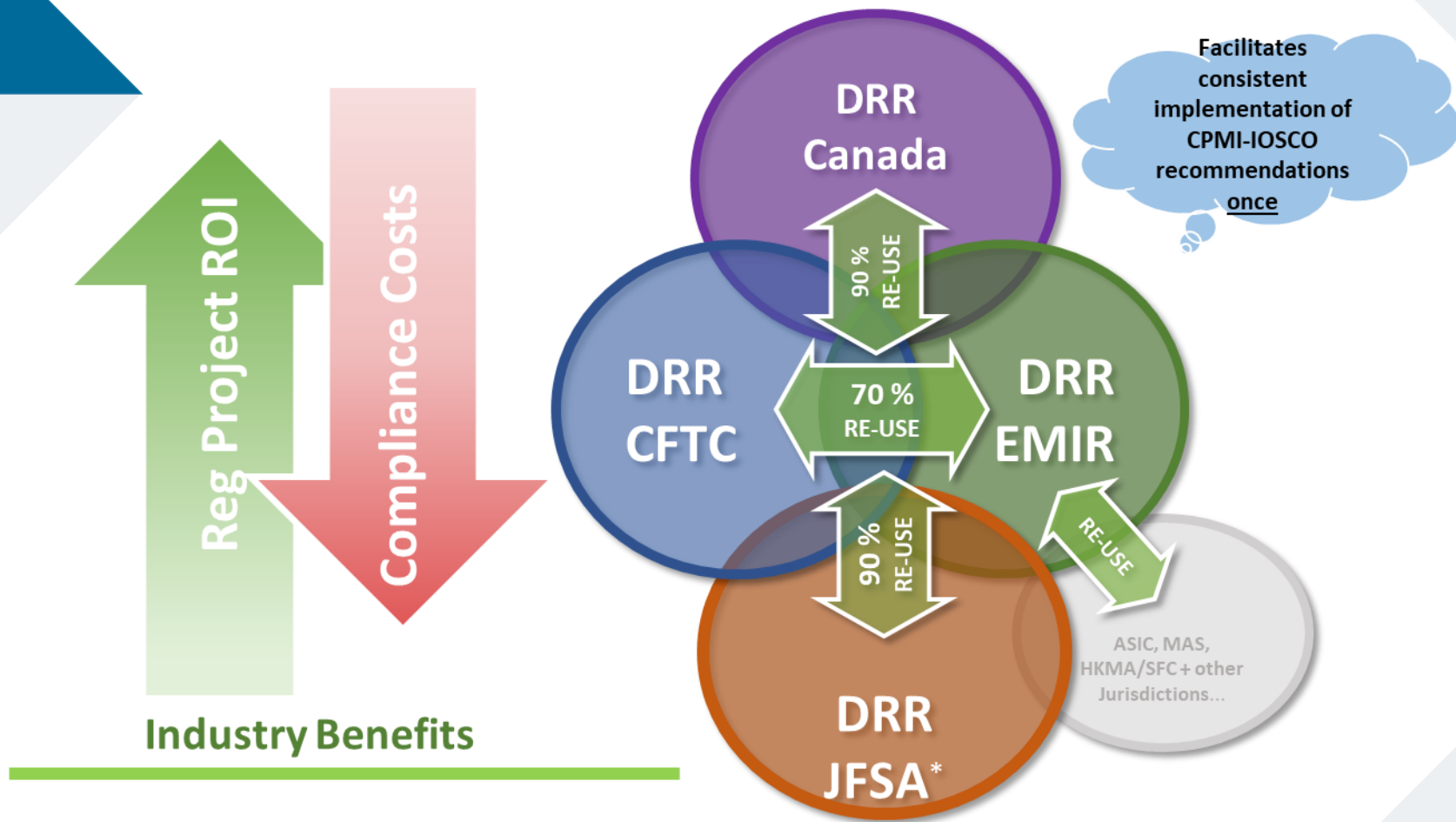
DRR ALIGNS WITH INDUSTRY RECOGNISED PRODUCT TAXONOMIES

Regulatory reference

```
reporting rule OptionStyle <"Option Style">
    [regulatoryReference CFTC Guidebook_Extension table "Table_Ref1" field "Option Style" …
    [regulatoryReference CFTC DTCC_Specs table "Table_Ref1" field "Option Style" …
    [regulatoryReference CFTC CME_Specs table "Table_Ref1" field "Option style" …
    [regulatoryReference ISDA EMIRReportingBestPractice table "2" field "79" …
    extract TradeForEvent( ReportableEvent ) then
        extract Trade -> tradableProduct -> product then
            extract
            if IsFloor( Product ) or IsCap( Product )
                | then "EURO"
                else if IsOption( Product ) then …
        as "TR Option Style"
```

Functional rule logic

Functional Qualification

```
func IsCap:
    inputs: product Product (1..1)
    output: result boolean (1..1)
    set result:
        Qualify_InterestRate_CapFloor( product -> contractualProduct -> economicTerms ) = True
        and product -> contractualProduct -> economicTerms -> payout -> interestRatePayout -> rateSpecification ->
            floatingRate -> capRateSchedule exists
```

Functional Qualification

```
func Qualify_InterestRate_CapFloor: <"Qualifies a product as an interest rate cap, interest rate floor, or an interest
    rate collar based on the economic terms and the following criteria: 1) An interest rate product with one one leg
    that includes a cap and/or a floor.">
    [qualification Product]

    inputs: economicTerms EconomicTerms (1..1)
    output: is_product boolean (1..1)
        [synonym ISDA_Taxonomy_v1 value "InterestRate_CapFloor"]
        [synonym ISDA_Taxonomy_v2 value "InterestRate_CapFloor"]

    set is_product:
        Qualify_AssetClass_InterestRate_Swap(economicTerms) = True
        and economicTerms -> payout -> interestRatePayout count = 1
```

If true then the data representation matches the ISDA Taxonomy V_1 and V2

*Illustrative

HOW DO I KNOW DRR IS FIT FOR PURPOSE ?

➢ DRR is already an Industry Driven Digital Solution **implemented for CFTC Rewrite**.
➢ +30 Top Tier financial institutions have **mutualised *Compliance & Operations* subject matter input.**
➢ **Systematically review** and validate a complex regulation turned
➢ **Unambiguous concise machine executable and human readable code**.
➢ **Freely available** DRR 1.0 with a defined **global industry governance.**

Compliance WG	Reference Data WG	DRR Peer Review WG	CDM ARC

30+ Top Tier Institutions

Banks, CCPs, SDRs, TRs, Vendors

100+ Leading Industry Experts

3 2 0 0 0

Industry Person-Hours

Reporting Logic

Design and Validation

Machine Executable Code

Best Practices

Testing Framework

D R R

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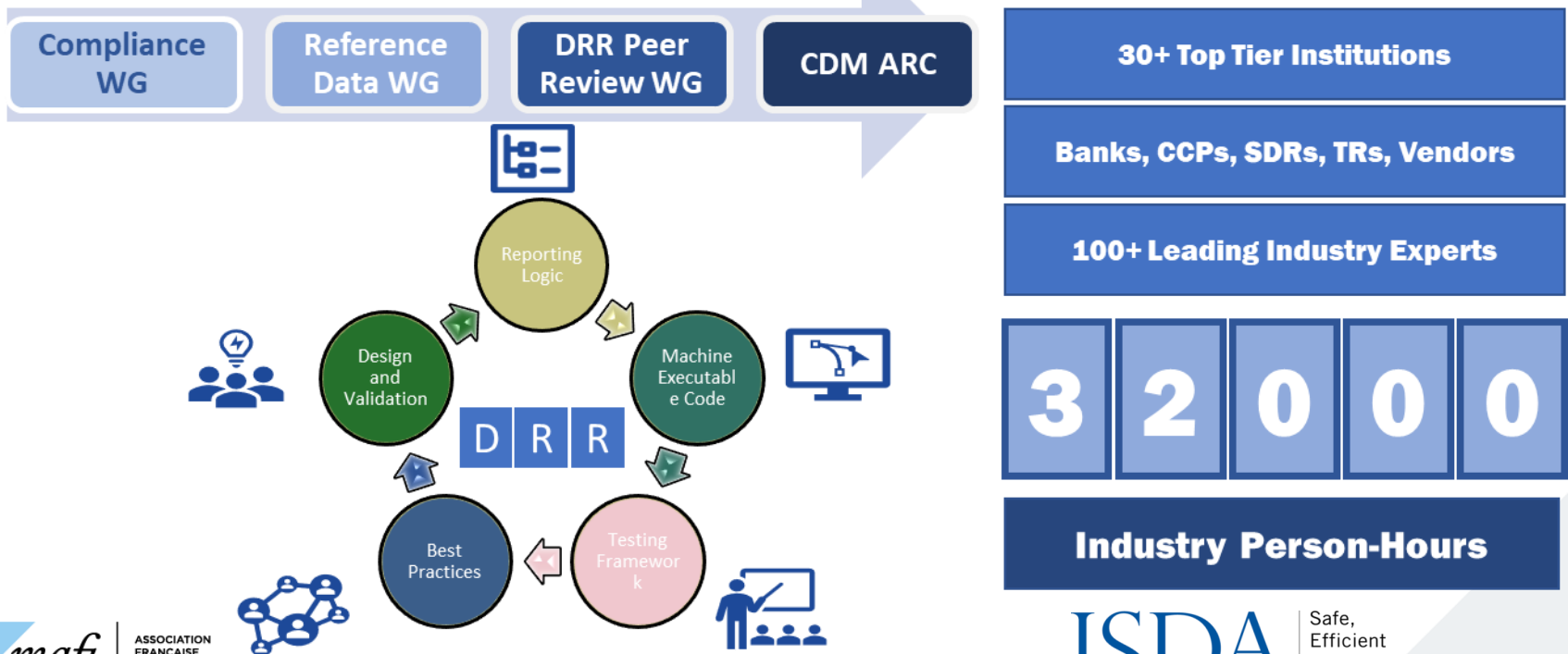
HOW DO I USE DRR ?

➤ DRR offer different levels of adoption and usage – **" A la Carte"**

Interpret

Use DRR to **validate interpretation** of the regulation and alignment with best practices.

Validate

Use DRR to benchmark IT production reporting systems output against the **DRR Test Pack**

Benchmark

Use DRR as a component of a **parallel implementation** to control and validate production output with SDR technical support.

Integrate

Use DRR code as a **primary component in a production reporting service** to trade repositories implemented through some internal integration effort with IT dept.

DRR HAS ALREADY BEEN SUCCESSFULLY IMPLEMENTED FOR CFTC REWRITE

Press Releases

ISDA and BNP Paribas Successfully Test Digital Regulatory Reporting for CFTC Rules

Tags: CFTC, Data, Digital Regulatory Reporting, Reporting
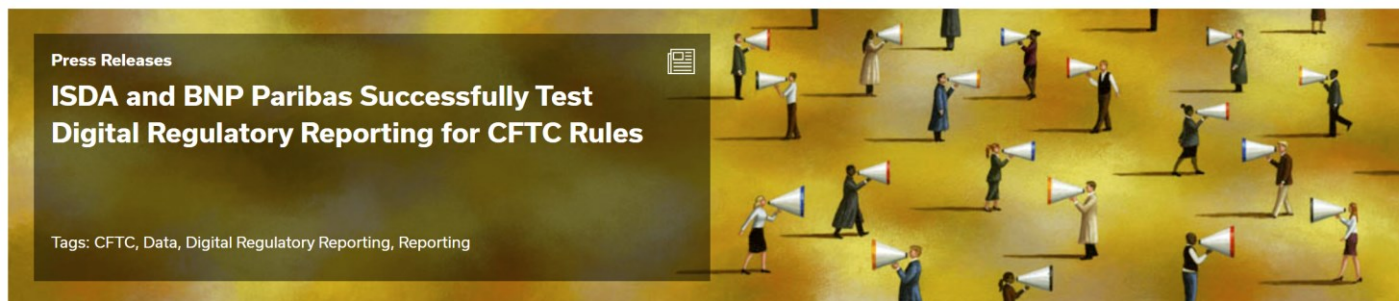
November 2, 2022

ISDA has today announced that BNP Paribas has successfully implemented and tested a new initiative to enable digital regulatory reporting under the US Commodity Futures Trading Commission's (CFTC) amended swap data reporting rules. This marks the first time ISDA's Digital Regulatory Reporting (DRR) initiative has been deployed in a real-world, production-level environment, with a successful submission of data to the Depository Trust & Clearing Corporation's (DTCC) swap data repository (SDR).

The DRR initiative is intended to create efficiency as firms adapt their reporting systems to comply with changes to reporting rules, and to improve the accuracy and consistency of what is reported. The CFTC will be the first regulator to amend its swap data reporting framework to incorporate harmonized critical data elements developed by the Committee on Payments and Market Infrastructures and the International Organization of Securities Commissions, with the initial round of changes coming into effect on December 5.

https://www.isda.org/2022/11/02/isda-and-bnp-paribas-successfully-test-digital-regulatory-reporting-for-cftc-rules/

ISDA'S DRR IS FREE AND OPEN ACCESS

➢ ISDA is currently digitising EMIR REFIT and other upcoming regulations that are being revamped. Join the effort!

➢ Introduction to the ISDA DRR Initiative

➢ https://drr.docs.rosetta-technology.io/

➢ For more information, contact cdmdrr@isda.org

LINKS

LINKS

Videos:
Introduction to the ISDA DRR Initiative
BoE/FCA DRR project
BIS Innovation Hub/Saudi presidency of the G-20 TechSprint
(Regulatory Reporting category)

Articles:
What is DRR?
What is CDM?
Digital-Regulatory-Reporting-Market-and-Regulatory-Initiatives
ISDA derivatiViews "Time to Digitize Trade Reporting"
Open Access to CDM 2.0 for all
EC's Final Report on MRER proof of concept

Publications
Report on open finance (europa.eu)

HOW TO IMPLEMENT THE CDM?

❑ A recording of ICMA's CDM phase 2 proof-of-concept presentation on "Automating repo transactions" is available on ICMA's CDM resources webpage.

❑ Further resources to learn more about the CDM and understand how to use the CDM are available, including:

- ICMA/ISDA/ISLA CDM Showcase Event (February 2023)
- ICMA Webinar: How to implement the CDM and automate repo trading and related lifecycle events (July 2022)

❑ Public announcements of CDM implementations include:

- ISDA and BNP Paribas Successfully Test Digital Regulatory Reporting for CFTC Rules (November 2022)
- EIB issues euro-denominated digital bond on a private blockchain with hedging activity leveraging industry developed Common Domain Model for interest rate swaps (November 2022)

❑ The FINOS Technology Architecture Working Group will be meeting on a regular basis from 13 April 2023 to address common technical questions in relation to implementation.

❑ ICMA is promoting adoption of the CDM in collaboration with its CDM SteerCo, ERCC committees and bilaterally.

❑ The CDM is publicly available under the FINOS open-source framework.

APPENDIX

INTERNATIONAL CAPITAL MARKET ASSOCIATION

❑ ICMA is a not-for-profit trade association, with offices in Zurich, London, Paris, Brussels and Hong Kong, that serves the needs of its wide range of member firms in global capital markets.

❑ Its membership of over 600 spans 65 jurisdictions includes members include private and public sector issuers, banks and securities dealers, asset and fund managers, insurance companies, law firms, capital market infrastructure providers and central banks.

❑ ICMA's market conventions and standards have been the pillars of the international debt market for over 50 years, performing a crucial central role in the market by providing industry-driven standards and recommendations including:

  o ICMA's Primary Market Handbook & Legal model language for sovereign debt instruments
  o ICMA's Secondary Markets Rules and Recommendations
  o Global Master Repurchase Agreement (GMRA) and ERCC Guide to Best Practice in the European Repo Market
  o Green Bond Principles (GBP), the Social Bond Principles (SBP), the Sustainability Bond Guidelines (SBG) and the Sustainability-Linked Bond Principles (SLBP).

❑ ICMA is a leading supplier of education programmes for financial markets at all levels and delivered in online self-study, live streamed and classroom-based formats. Many of the courses are certificated and are accredited by regulators and academic bodies.

ICMA'S FOCUS ON FINTECH AND DIGITALISATION

1) **Providing market intelligence** and horizon scanning, including:

 - Technology directories covering debt issuance, bond and repo trading, post-trade and lifecycle management.

 - FinTech Regulatory Roadmap, DLT regulatory Directory, tracker of new FinTech applications.

2) **Promoting best practice, open and common standards** to avoid fragmentation and drive interoperability. Initiatives include:

 - Bond data taxonomy

 - Common Domain Model (CDM) for repo and bonds

3) **Advocacy & regulatory engagement** to ensure effective outcomes for all market stakeholders in the international debt capital markets. Activities include:

 - ICMA response to Eurosystem consultation on the potential use of new technologies such as Distributed Ledger Technology (DLT) for wholesale central bank money settlement.

 - Participation in ECB AMI-SeCo AMI-Pay FinTech Task Force (2019-2021), Bank of England Data Standards Committee (2021-Present), IOSCO FinTech Network.

4) **Education & Events** to raise awareness on relevant topics driving industry transformation:

 - Annual FinTech Forum and regional FinTech events

 - Executive Education including Primary Markets Technology course and Digital Assets course.

ICMA FINTECH STRATEGIC PRIORITIES & GOVERNANCE

ICMA FinTech Advisory Committee

FinTech Open Source Foundation (FINOS)
part of Linux Foundation

DLT Bonds WG

- **Aim:** (i) Provide a forum for discussion on how to support liquidity in DLT/blockchain bonds, through best practice recommendations; (ii) "Demystify" blockchain bonds => FAQs; (iii) Respond to official sector consultations.
- **Participants:** Issuers, banks, central banks, investors, market infrastructures, law firms, data providers and vendor firms from Europe, MENA, US and APAC.

Bond Data Taxonomy WG
(formerly Common Data Dictionary WG)

- **Aim:** Promote automation and interoperability from issuance to settlement in bond markets.
- **Participants:** Issuers, banks, investors, market infrastructures, law firms, data providers and vendor firms from Europe, US and APAC.

CDM for repo and bonds Steering Committee

- **Aim**: Support automation and interopability in repo and collateral markets, including open repos, floating-rate repos and evergreens.
- **Participants**: Banks, investors, market infrastructures, law firms, and vendor firms from Europe and US.

CDM Steering WG
(and related WGs)

- **Aim:** Developing the technical and modelling guidelines for the open-source CDM, setting and revising the project's strategic roadmap, and vetting proposed changes.
- **Participants:** ICMA, ISDA, ISLA, financial institutions, market infrastructure providers, vendors and individuals contributing to open-source projects.

ESG data: Identify, standardise and integrate requirements for bond transactions.

INTERNATIONAL SWAPS AND DERIVATIVES ASSOCIATION

Since 1985, the International Swaps and Derivatives Association has worked to make the global derivatives markets safer and more efficient.

ISDA's pioneering work in developing the ISDA Master Agreement and a wide range of related documentation materials, and in ensuring the enforceability of their netting and collateral provisions, has helped to significantly reduce credit and legal risk. The Association has been a leader in promoting sound risk management practices and processes and engages constructively with policymakers and legislators around the world to advance the understanding and treatment of derivatives as a risk management tool.

ISDA has over 1000 member institutions from 79 countries. These members comprise a broad range of derivatives market participants, including corporations, investment managers, government and supranational entities, insurance companies, energy and commodities firms, and international and regional banks. In addition to market participants, members also include key components of the derivatives market infrastructure, such as exchanges, intermediaries, clearing houses and repositories, as well as law firms, accounting firms and other service providers.

ISDA's work in three key areas – reducing counterparty credit risk, increasing transparency, and improving the industry's operational infrastructure – show the strong commitment of the Association toward its primary goals; to build robust, stable financial markets and a strong financial regulatory framework.

ADDITIONAL REFERENCE MATERIAL

MRER Proof of Concept: Assessing the feasibility of machine readable and executable reporting for EMIR
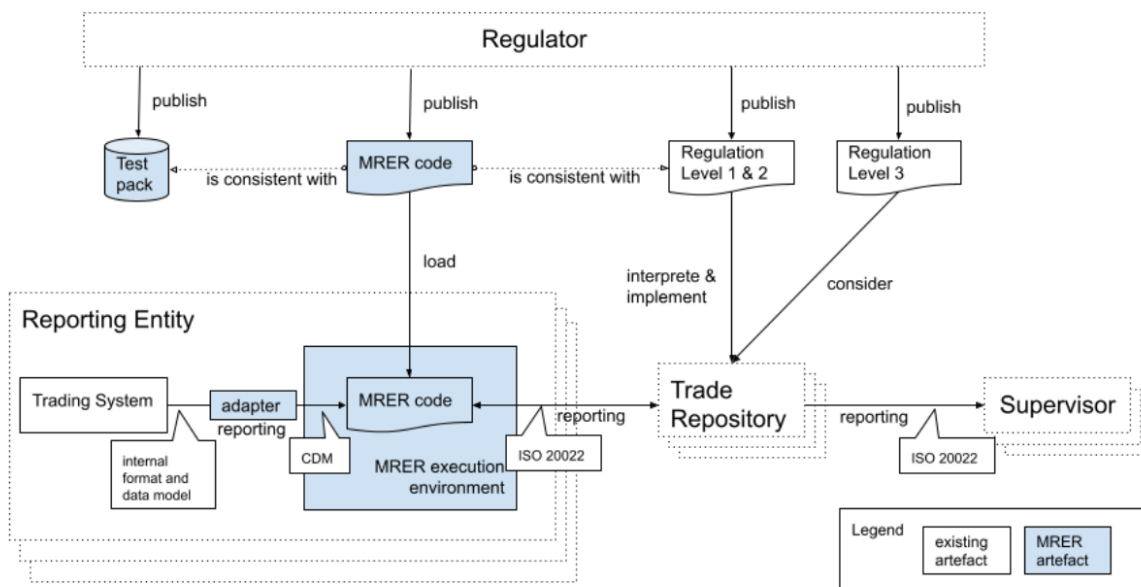

Figure 9: High-level architecture of a top-down local reporting system.

European Commission, Directorate-General for Financial Stability, Financial Services and Capital Markets Union, *MRER proof of concept : assessing the feasibility of machine-readable and executable reporting for EMIR*, Publications Office of the European Union, 2022, **https://data.europa.eu/doi/10.2874/036007**

ENHANCE INTEROPERABILITY, PROMOTE TRANSPARENCY, ACCELERATE INNOVATION

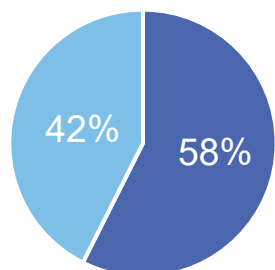| Efficiency	Transparency	Accelerated Innovation
Enhance interoperability, reduce reconciliations and promote straight-through processing	**Promote transparency and alignment between regulators and market participants**	**Create an environment for innovation in financial markets**

- ❑ A **mutualised free open-source standardised digital blueprint** on how to represent financial transactions, performance and business events.

- ❑ **Extensible** to compose financial instruments by assembling reusable components. Already covers robustly derivative and securities financial transactions.

- ❑ **Scalable** as event-driven model that encapsulates primitive components that will de facto make the fabric of complex business and operational processes.

- ❑ **Operational and functional** to codify the contract mechanics and business logic of legal agreements.

- ❑ **Unambiguous** in digitising functionally complex business and regulatory logic into code.

- ❑ **Directly approachable** as published in both **human readable and machine executable languages.**

- ❑ **Implementable across several strategic uses cases** in capital markets for better automation and greater consistency e.g. Trade management systems, clearing, digital documentation, collateral managements, regulatory reporting.
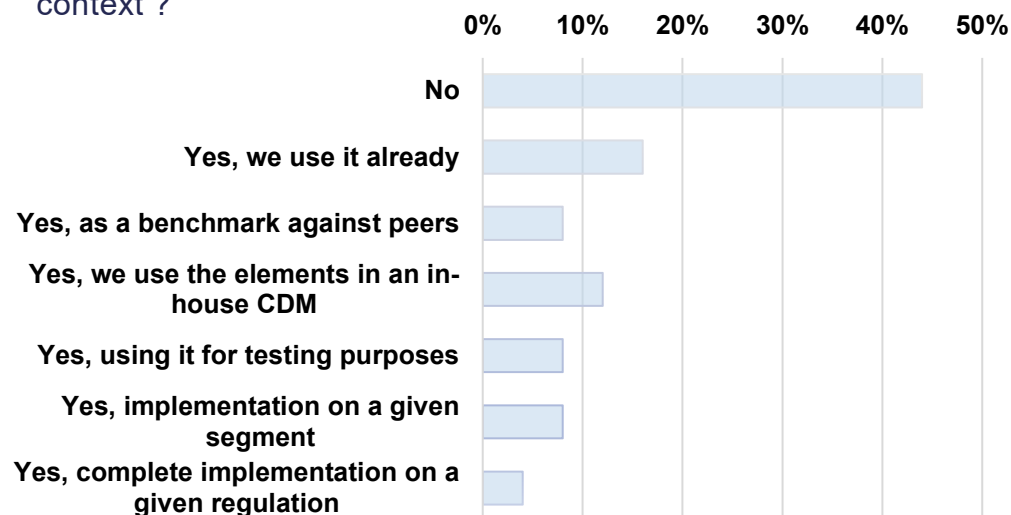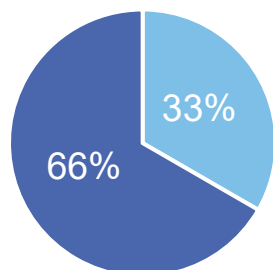
POLLS RESULTS

Have you heard about Common Domain Model ?

- Yes
- No

42%
58%

Do you use/are you using CDM ? If so, in what context ?

| | 0% | 10% | 20% | 30% | 40% | 50% |

- No
- Yes, we use it already
- Yes, as a benchmark against peers
- Yes, we use the elements in an in-house CDM
- Yes, using it for testing purposes
- Yes, implementation on a given segment
- Yes, complete implementation on a given regulation
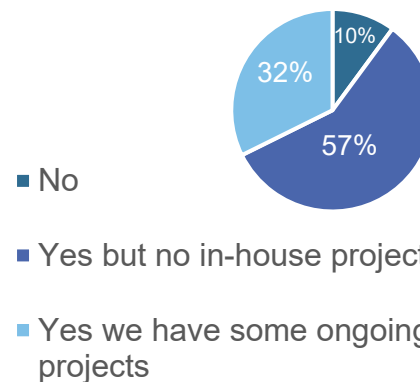
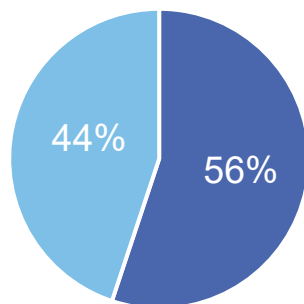### Have you hard of ICMA's Bond Data Taxonomy (BDT) initiative ?

33%
66%

- Yes
- No

Have you heard about asset tokenisation ? If so, have you got in-house projects on tokenised assets (using DLT) ?

10%
32%
57%

- No
- Yes but no in-house project
- Yes we have some ongoing projects

POLLS RESULTS

Have you heard about Digital Regulatory Reporting (DRR) ?

44% No
56% Yes

- Yes
- No

Do you now have a better understanding of Common Domain Model opportunities ?
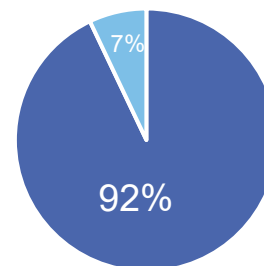
7% No
92% Yes

- Yes
- No

Now that you have a better understanding of these concepts, would you consider/explore using them on digital assets or on digital regulatory reporting ?
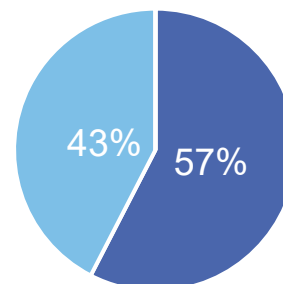
100% Yes

- Yes

Would you be interested in more details/following workshops on those subjects ?

43%
57%

- Yes, on DRR
- Yes, on standards and digital assets
- Other
- No

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