Architecting trusted open data ecosystems: interoperability of data standards, technologies and methodologies

Risk management, interoperability and information standardization: XBRL, a commitment from the institutions and the financial sector

Interoperability and financial entities

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Overview of EU initiatives and trends

- Solvency II
- AIFMD
- CRD IV (Basel II) / CRR
- EMIR
- ESEF
- MiFID II/MiFIR
- SHS
- MMSR
- AnaCredit
- SFT
- BSI-MIR
- AMLD IV
- IFRS
- Integrated reporting
- BCBS 239
- T2S
- ECB Statistical Data Dictionary & BIRD
- European Reporting Framework

Trends and directions:
- Dictionaries
- Identifiers and reference data
- Data ecosystems not siloes
- Granular data
- Accessibility to data (OpenAPIs)
- Analysis (network, big data)
- Unstructured data combined with structured
- Trade repositories
- New technologies (blockchain, DLT)
- Combination of statistical and supervisory data
Data ecosystems components

Standards:
- ISO20022, FpML, FIX, MISMO, XBRL, DPM, RIXML, IFX, OFX, BPM6, SDMX, SDDS, MDDL, ACORD

Projects:
- FIBO, ACTUS, DPM2ISO, SMCube

Identifiers:
- Product: UPI, ISIN (ISO 6166, ISO18774), Alternative Instrument Identifier, CUSIP, NSIN, FIGI (Bloomberg), RIC (Reuters)
- Entity: LEI (ISO 17442), MFI Code (ECB), IBAN (ISO 13616), BIC (ISO 9362), MIC (ISO 10383)
- Transaction: USI, UTI (CPMI-IOSCO, ISDA)
Financial institutions data flows
Levels and connections of financial data ecosystems

Law:  
(data in regulations)

Logic:  
(data description, semantics)

Technology:  
(data exchange and processing, syntax)

Repository:  
(data storage and source of data for analysis)

Past

Local regulations

Forms

Programs

Files

Present

International standards

Dictionaries, taxonomies

Data standards XML-derivatives

Databases

Future

Single approach?

Ontologies?

Open APIs?

Distributed ledger?
**Trusted Open Data Ecosystems**

### Regulations

- **XBRL, SDMX, ISO20022**
  - Open data standards
  - Open data technologies
- **DPM, SMCube, SDMX-IM**
  - Open data methodologies
  - Open data architectures
- **DLT/BLOCKCHAIN**
  - Open data technologies
  - Open data architectures

### Non/financial
- **Mobile acquisition / dissemination**
- **Social engagement**
- **Platform/Data/Software as a Service**
- **Agile distribution**

- **UTI, UPI, LEI**
- **OpenAPI, open repositories**
Data Standards Map

- **Identification**
- **Insurance / mortgage**
- **Market / trade**
- **Universal / finance**
- **Research / statistics**

**Specialisation**
- ISO 20022
- XBRL GL
- MDDL
- IFX
- ACORD
- FpML
- MISMO
- CCS
- FIX Protocol

**Abstraction**
- DPM
- XBRL
- SDDS
- RIXML
- ACTUS
- SDMX

**Transactional / Detailed**
- LEI
Dictionaries (DPM) & interoperability with data technologies

**XBRL**
DPM is extensively used with XBRL Taxonomies for which a specific, corresponding taxonomy architecture has been developed.

**Custom XML**
DPM has been tested with custom XML Schemas for the purpose of “flattening” of multidimensional metadata.

**SDMX**
DPM has been tested with SDMX schemas for alignment of variables.

**SQL**
Dedicated relational database schemas exist for DPM-based metadata and data.

**New**
ISO 20022 FpML
Interactions between BIRD, ERF and SDD (AnaCredit example)
Statistical Data Dictionary details

- Newly developed methodology (called SMCube) is in line with most material syntaxes used (DPM, SDMX)
- Relevant DPM and SDMX dictionaries are imported to SDD (constituting Non-referenced part of SDD)

Methodological integration (common syntax for all the non-referenced dictionaries)

- Creation of referenced part of SDD dictionary
- Mapping between existing concepts from Non-referenced dictionaries and newly created concepts in Referenced dictionary
- Single Referenced dictionary being able to (i) reflect all reporting requirements and (ii) work as a "mapping layer between concepts from Non-referenced dictionaries"

Semantic integration (is the definition of „loan” the same for statistical and prudential frameworks?)
Non-referenced dictionaries (i.e. SDMX models reflected according to SMCube methodology)

- CRD4/CRR
- BSI

Other frameworks:
- AnaCredit
- RIAD
- CSD
- SHS
- MIR

Referenced dictionary

- LOAN (according to CRD4/CRR Framework)
- LOANS AND ADVANCES
- LOANS THAT ARE NOT ADVANCES
Technical introduction: blockchain & DLT

Bitcoin Structures: Transaction Block Chains

Alice → Bob

coinbase generation

beginning

$\Rightarrow$ (challenge, proof)

10 min

Frankfurt Group Technical Workshop
Thank you

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How important each area of interoperability will be in the next 5-10 years?

- Creation of harmonised dictionaries (e.g. DPM): 8.3
- Distributed ledger technologies (blockchain): 7.2
- Collection of more granular data: 7.7
- Introduction of global identifiers: 8.4
- Technology enabling connectivity (e.g. OpenAPI): 7.9
- Electronic data standards (XBRL, SDMX, ISO20022): 9