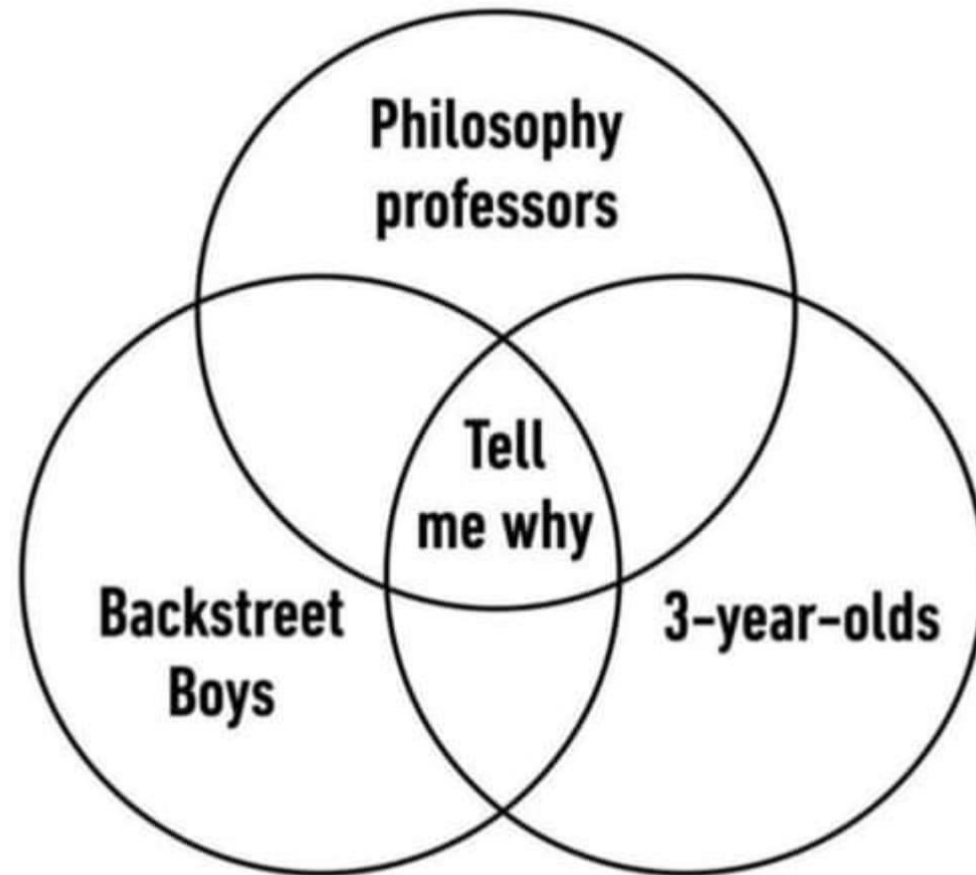# Do we understand our data?

Hyperledger Trade Finance SIG

Harri Rantanen, SEB

2021-05-11

SEB - a Nordic bank with a heritage of entrepreneurship for over 160 years

https://sebgroup.com/

Agenda

SEB

Information Management

Why Knowledge Graphs / Web Semantics?

Standardised Trust Community

Practical Cases

Summary

Gartner: Flip 'Don't Share Data unless' Mantras to 'Must Share Data unless'
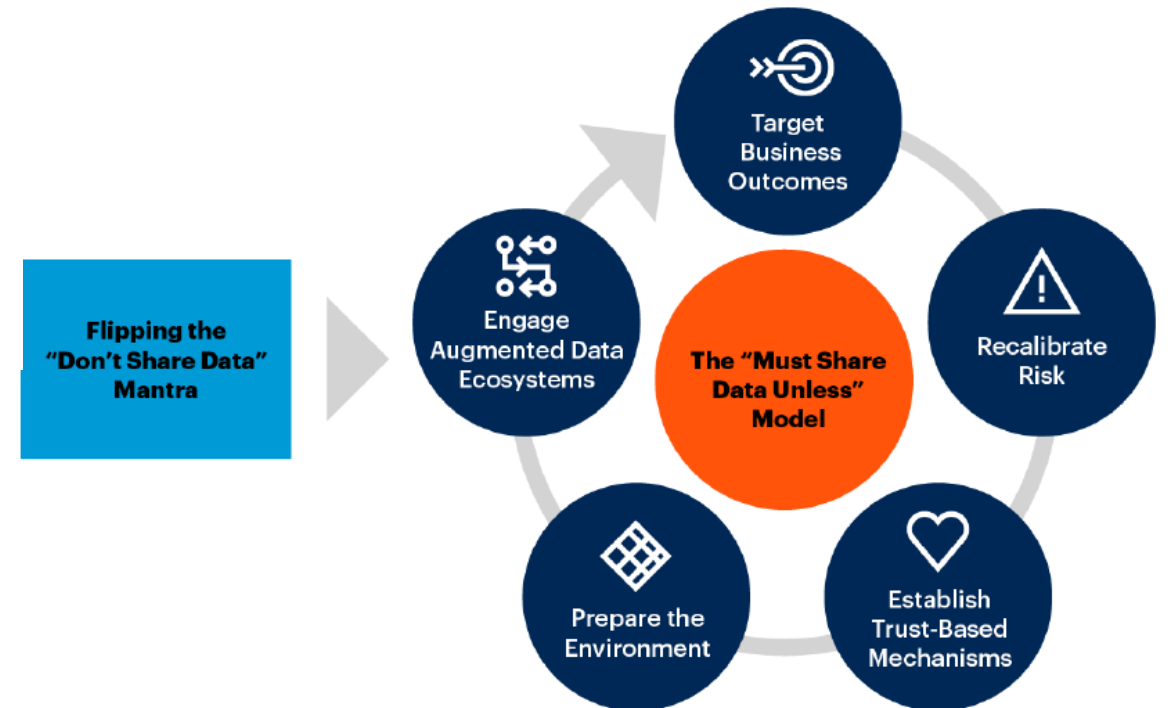
Opportunities and Challenges

- Organizations that share data externally with their partners generate three times more measurable economic benefit than their counterparts that do not. [1]

- Effective data and analytics (D&A) teams are two times more likely to generate measurable benefits from sharing data externally. [1]

- Executive leaders know that data sharing is a key digital transformation capability, but they lack the "know how" to effectively share data at scale and with trust.

- Despite increasing demands for data and data insights, data sharing is stalled by stakeholder resistance, data management and governance policies, a lack of tools and technologies, perceived regulatory legal restraints, and risk assessments of security vulnerabilities.

What You Need to Know

- D&A leaders are increasingly expected to align D&A strategies with digital business outcomes and demonstrate measurable ROI on D&A investment. They are also expected to drive digital transformation, and more recently, organizational resiliency within the COVID-19 recovery and reset. Unnecessarily limiting data sharing gets in the way of meeting these goals.

- D&A leaders should communicate widely the negative outcomes and lost opportunities that result from failing to share data. Then they must recalibrate overly risk-averse positions that result in unnecessary lost business value and declines in market differentiation.

- By adopting the "must share data unless" model, D&A leaders will have access to the right data at the right time, enabling more robust D&A strategies that deliver business benefit and digital transformation.

The Gartner Data Sharing Model
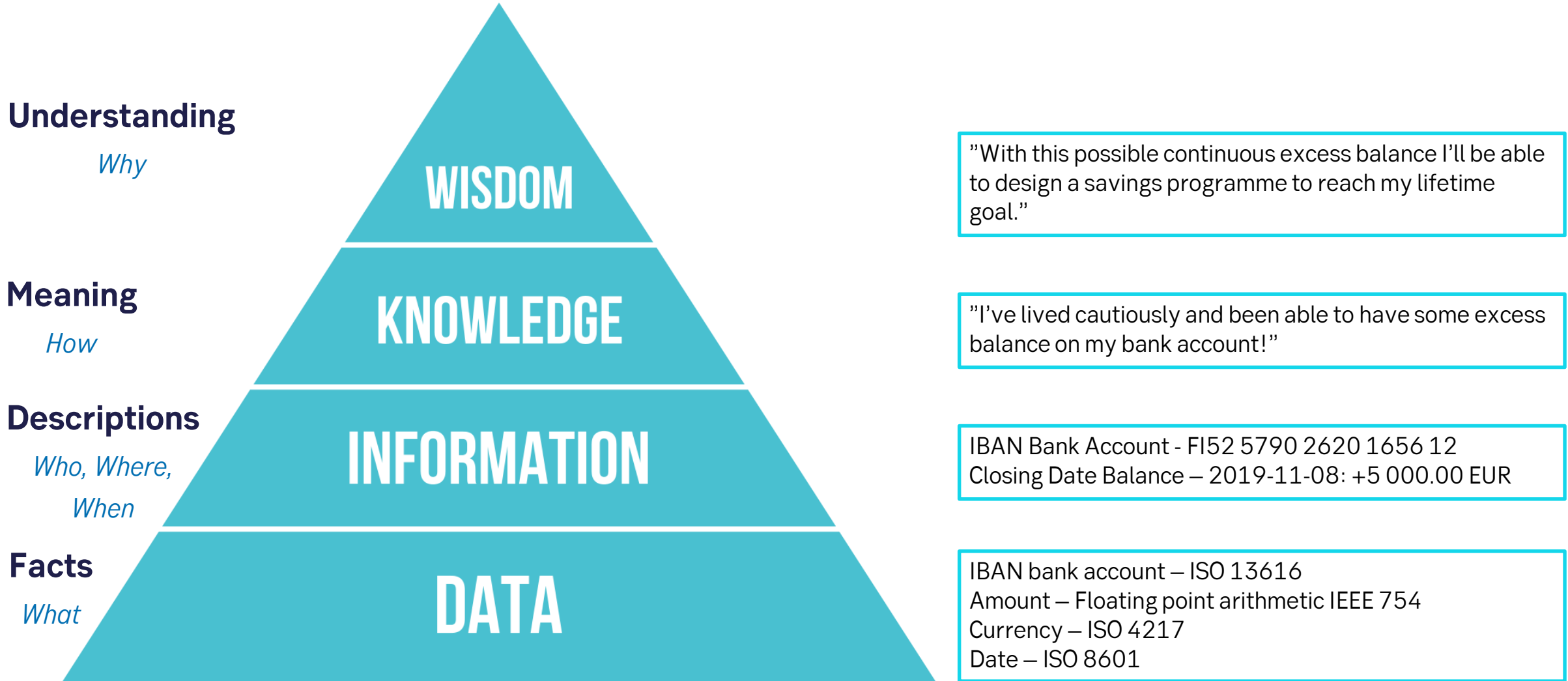To Accelerate Digital Business

Flipping the "Don't Share Data" Mantra

Engage Augmented Data Ecosystems

Target Business Outcomes

Recalibrate Risk

The "Must Share Data Unless" Model

Establish Trust-Based Mechanisms

Prepare the Environment

Source: Gartner

Kevin De Bruyne uses data analysts to broker £83m Man City contract without agent

https://www.mirror.co.uk/sport/football/news/kevin-de-bruyne-uses-data-23870686

Is data the new oil?

SEB

Understanding
Why

WISDOM

"With this possible continuous excess balance I'll be able to design a savings programme to reach my lifetime goal."

Meaning
How

KNOWLEDGE

"I've lived cautiously and been able to have some excess balance on my bank account!"

Descriptions
Who, Where,
When

INFORMATION

IBAN Bank Account - FI52 5790 2620 1656 12
Closing Date Balance – 2019-11-08: +5 000.00 EUR

Facts
What

DATA

IBAN bank account – ISO 13616
Amount – Floating point arithmetic IEEE 754
Currency – ISO 4217
Date – ISO 8601

https://en.wikipedia.org/wiki/DIKW_pyramid

Agenda

ISO 20022 Financial Services Standard and Data Model

Not only a data model, but also:

One of the most important ingredients of the ISO 20022 recipe

Home • ISO20022 repository • Business Model

Business Model

ISO 20022 Repository

The ISO 20022 Repository consists of two major parts:

- the Data Dictionary
- the Business Process Catalogue

Yet, it is still missing true semantics –
under construction at
ISO/TC68/SC9/WG1
Financial Services, Information Exchange, Semantic Technology
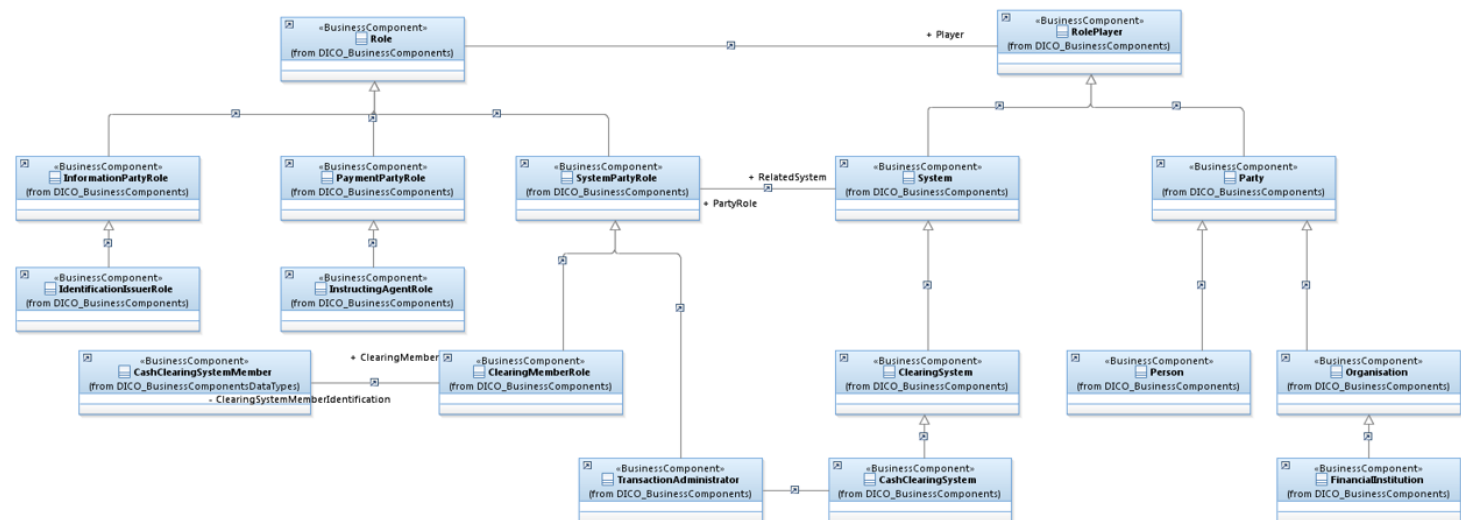
Web Evolution

Web 3.0:

The Semantic Web

Internet of Value

Decentralised and Stateful Web (blockchains)

Spatial Web

Web 1.0	Web 2.0	Web 3.0
1996	2006	2016
The Web	The Social Web	The Semantic Web
Tim Berners Lee	Tim O'Reilly	Sir Tim Berners Lee
Read only web	Read and write web	Read, write and execute web
Information sharing	Interaction	Immersion.
Million of users	Billion of users	Trillion of users
Ecosystem	Participation	Understanding itself
Connect information	Connect people	Connect knowledge
Brain and Eyes (= Information)	Brain, Eyes, Ears, Voice and Heart (= Passion)	Brain, Eyes, Ears, Voice, Heart, Arms and Legs (= Freedom
The Hypertext/CGI Web. (the basics)	The Community Web (for people: apps/sites connecting them).	The Semantic Web (for machines).
Pushed web, text/graphics based flash	Two way web pages, Wikis, video, pod casts, shading, Personal publishing, 2D	3D portals, avtar representation, Interoperable profits, multi-user virtual environment (MUVEs),

Tim Berners-Lee's vision in 1999:

I have a dream for the Web [in which computers] become capable of analyzing all the data on the Web — the content, links, and transactions between people and computers. A "Semantic Web", which makes this possible, has yet to emerge, but when it does, the day-to-day mechanisms of trade, bureaucracy and our daily lives will be handled by machines talking to machines. The "intelligent agents" people have touted for ages will finally materialize.

https://www.rtinsights.com/can-the-real-web-3-0-please-stand-up/

Knowledge Graphs Making Information as Knowledge
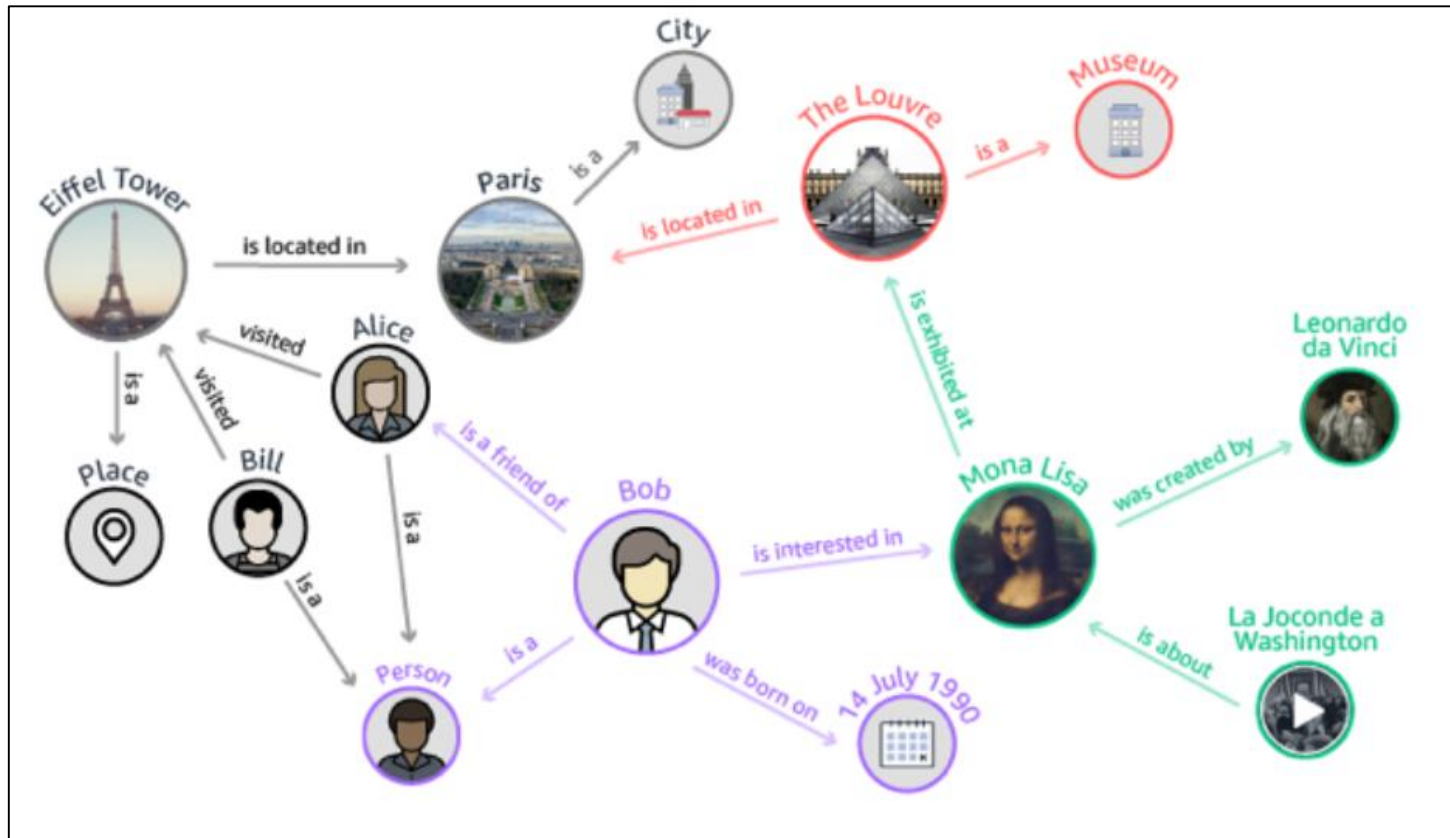
W3C Semantic Web standard
" The term "Semantic Web" refers to W3C's vision of the Web of linked data."

Ontologies and technologies:
JSON-LD – JSON for Linking Data
RDF - Resource Description Framework
OWL – Web Ontology Language
SKOS - Simple Knowledge Organization System
SPARQL - Query Language for RDF

Triples – Subject, Predicate, Object
as "The sky has got color blue"

KNOWLEDGE GRAPH DEVELOPMENTS – THINGS VS. STRINGS

HUMAN UNDERSTANDABLE REPRESENTATIONS → **MACHINE UNDERSTANDABLE REPRESENTATIONS**

1960	1970	1997	2004	2012+	2013+
Flat files	Relational model Schema	XML XML Schema	Semantic web languages RDF/RDFS/OWL	Knowledge graph	Distributed semantic representations

Strings → **Things** → Vectors

ISO 20022
Universal financial industry message scheme

EDM Council and FIBO

- [FIBO](#) = Financial Industry Business Ontology
- [EDM Council](#) = Enterprise Data Management Council
- [FIBO Viewer](#)

> ● Business Entities
> ● Business Process Domain
> ● Corporate Actions and Events
Domain
> ◐ Derivatives Domain
> ◐ Financial Business and Commerce
> ◐ Foundations
> ● Indices and Indicators
> ● Loans
> ● Market Data Domain
> ◐ Securities

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Agenda

SEB

Creating a Common Language for Trade Finance

- Common White Paper - Standardised Trust - and a LinkedIn community (now 323 members)

- Standardised Trust Events started in October 2017

- Working Group approach started in June 2018 with currently 20+ active, mostly European, members participating

- Community-wide quarterly meetings started in October 2018

- Creation of common semantic model for Guarantees started in May 2019 and for Documentary Credits in April 2021

- www.standardisedtrust.com
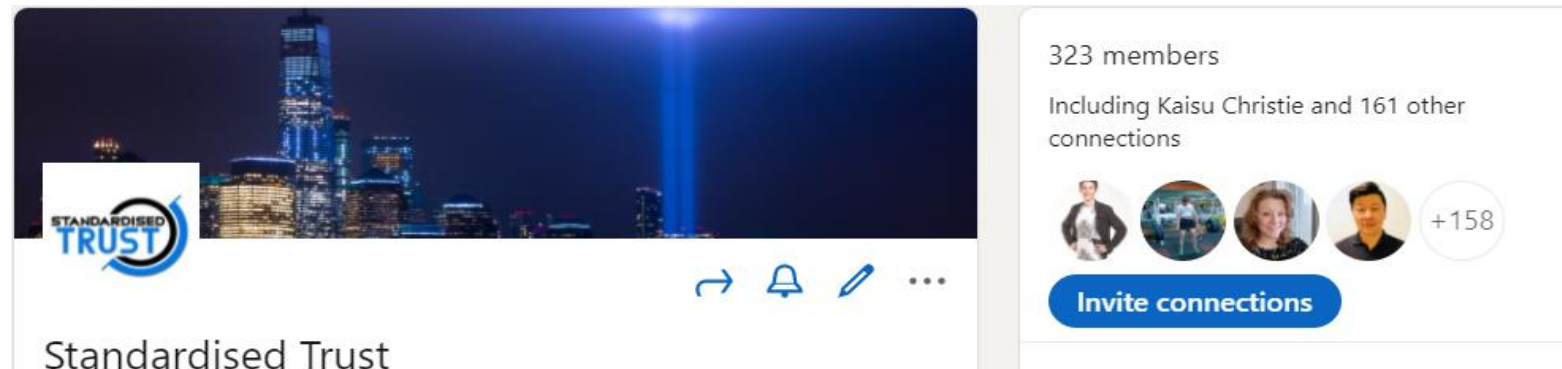
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Information Management

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Summary

PoC participants and their roles

WÄRTSILÄ

- SEB's customer, Wärtsilä Marine
- PoC Data Exchange party
- Exporter matters' validation

SITRA

- <u>Finnish Innovation Fund</u>
- <u>IHAN TestBed</u> (Fair data economy) platform for the PoC
- Corporate Data Sharing Rulebook

S|E|B

- Financial sponsor of the PoC
- PoC Data Exchange party
- PoC coordination and Advising Bank matters' validation

digital living

- Data economy specialist and Nexus data sharing enabler
- PoC preparation, coordination and concept support
- PoC implementation on the IHAN Testbed
- Project support for SEB and Wärtsilä

NIXU cybersecurity.

- Sitra IHAN TestBed <u>security solution provider</u>
- PoC setup for digital identities, roles and consent management

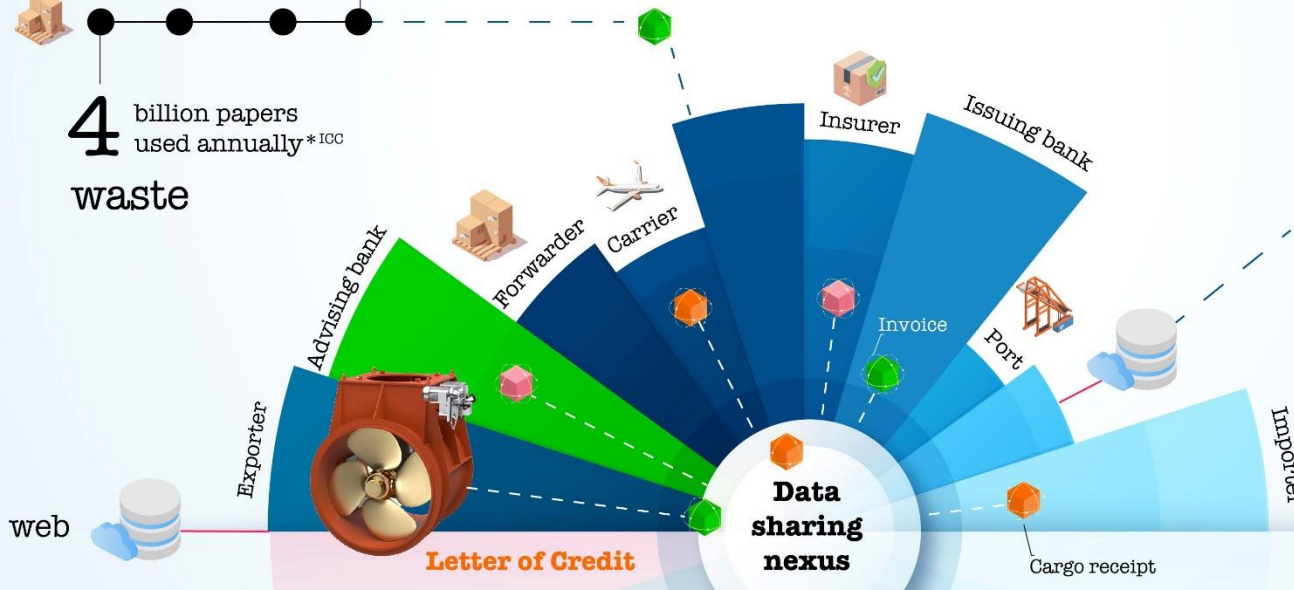# Secure Corporate Data Sharing – Use Case TF Letter of Credit

Press Release
Case Study in details
Short demo video

EU and Data Governance – Fair Data Sharing Platforms

[Gaia-X](#) and [IDSA](#) → [Collaboration](#)
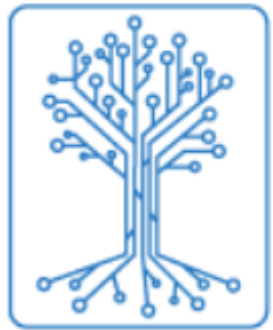
GAIA-X: A Federated Data Infrastructure for Europe

[Gaia-X for Finland](#) → [Sitra IHAN](#) – Fair data economy

Big Cloud vs Gaia-X vs IHAN

Infrastructure and SaaS solutions

The big cloud providers tend to provide services in two main categories - infrastructure, and SaaS solutions.

On the infrastructure side they provide the datacenter management and other capabilities so you can deploy your software on their managed servers, or use their managed storage services.

For SaaS they build on those capabilities and provide ready-to-use services, such as logging, error reporting, databases, analytics, and so on.

They also often have their own marketplace for ready "recipes" to deploy common Open Source Software on their infrastructure, and you can use existing OSS management tools such as Terraform to do that on any of the infrastructure providers also other providers than just Big Cloud.

Infrastructure and deployment automation

Gaia-X seems to have their main focus in reducing dependency on the infrastructure from the big cloud providers.

They are building tools to standardize deployment to (primarily European) datacenters, so the infrastructure side is similarly handled by professionals on-site.

Additionally they're building tooling to describe software deployments and their dependencies, so e.g. when you deploy common Open Source projects, the database they require is also deployed and configured at the same time.

This is similar to many OSS Kubernetes management tools already out there, and they build heavily on Kubernetes and OpenStack.

Data standardization

Unlike the other ones, IHAN does not have an opinion on where and how server infrastructure is managed.

IHAN is focused on data standardization and building both fair markets for, and access to standardized data.

IHAN is building open standards for this, and the implementations built for that can be hosted on any infrastructure, and deployed using any tools chosen for the task.

IDSA is working on standardizing data vocabularies and is currently very closed.

Big Cloud, Gaia-X, and any other infrastructure provider can run IHAN compliant systems, and the software can be deployed using Gaia-X's deployment tools, using e.g. Kubernetes Helm, or manually.

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Legal Framework Enabling Data Exchange

UNCITRAL — UNITED NATIONS COMMISSION ON INTERNATIONAL TRADE LAW

UNCITRAL Model Law on Electronic Transferable Records

First local jurisdiction adaptations

- Bahrain, 2019
- Abu Dhabi Global Market and Singapore, 2021
- UK, setting goal for year 2022
- [G7 agreed, on the 28th of April, 2021](), to make local activities available for the jurisdiction consistency

[UNCITRAL MLETR]()

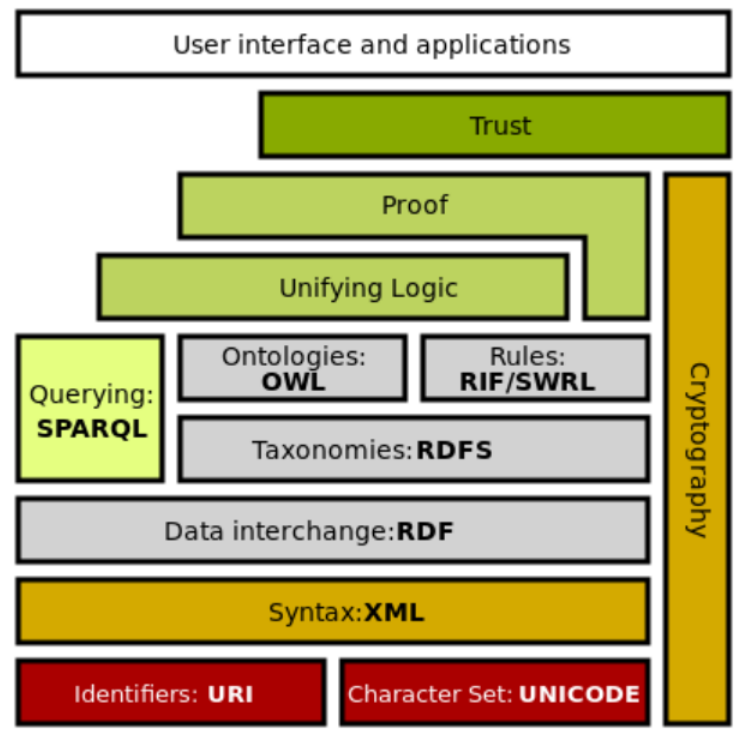# Trust over Internet Protocol – ToIP
Self-Sovereign Identities - SSI

The Semantic Web Tech Stack

ToIP White Paper at ToIP Foundation

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Components of (Trade Finance) Business Digitalisation

1. **Common Legal Framework** to allow data exchange with or instead of documents
2. Internationally interoperable **digital identities** for private persons, legal entities, personas and things
3. Human and machine readable, understandable, meaningful and harmonised use of **business data standards**, also openly available
4. Data sharing platform(s), where data owners (persons and legal entities) are able to securely and **digitally consent the use of data** for the data consumer allowing also digital ownership transfer of the data, where the platform(s) would have **openly available governance rulebook** for practical commitment.
5. Technology does not matter, if the **development resources would be openly available**

Building Blocks

- UNCITRAL MLETR
- ToIP – Trust over Internet Protocol
- LEI – Legal Entity Identifier and Verifiable Credentials
- Web Semantics and Knowledge Graphs
- Secure Corporate Data Sharing with value network rulebooks
- Standards and market practices - ICC DSI
- Shipping standards – DCSA
- FIBO and BIAN as Financial Services base frameworks
- **Collaboration!**