DATA SPACES SUPPORT CENTRE

DSSC Insight Series

Standardisation in Data Spaces

26 September 2024 | 16:00 to 17:30 CEST | online

Gianfranco Cecconi
DSSC

Clara Pezuela
FIWARE

Savvas Rogotis
BDVA

Anil Turkmayali
IDSA

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- **Intro** – Gianfranco Cecconi, Executive Director, Data Spaces Support Centre
- **The DSSC and Standardisation, liaison with international standardisation bodies** – Clara Pezuela, VP for Funded Programs at FIWARE Foundation; Savvas Rogotis, Data Ecosystem and Senior Project Manager, BDVA
- **The Data Spaces Protocol** – Anil Turkmayali, Senior Project Manager at the International Data Spaces Association
- **Q&A (You can also ask questions in the chat!)**

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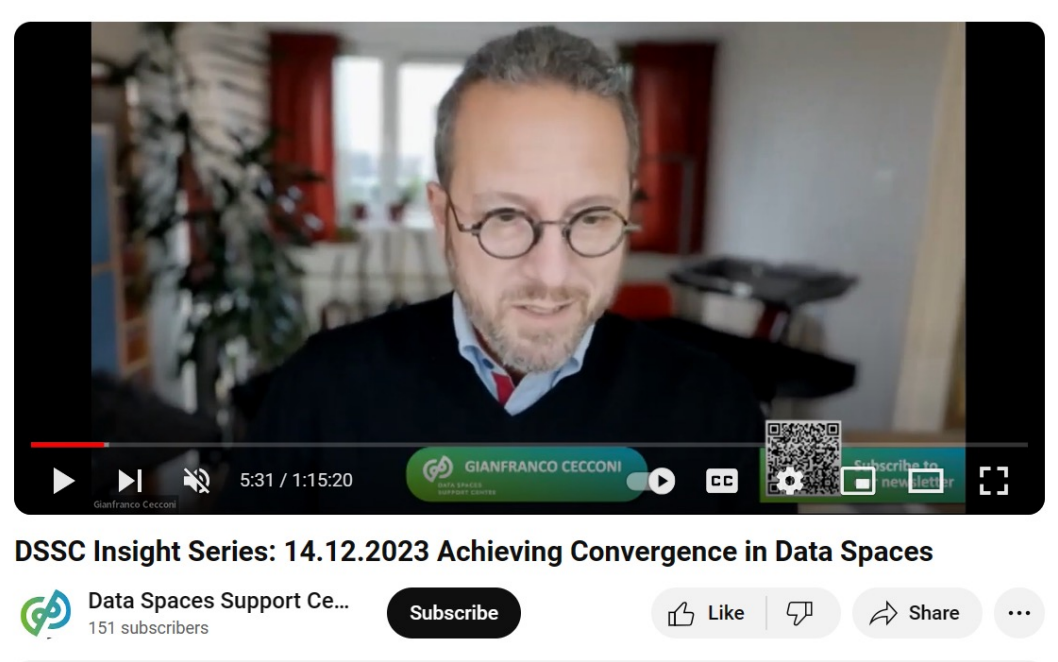

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Standardisation in Data Spaces

Clara Pezuela, Savvas Rogotis

26 September 2024

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Relevance of standardization in data spaces

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For compliance with EU regulation	For achieving interoperability	For alignment with international standards
• FAIR principles • Various Acts implementation	• Data Interoperability (vocabularies, APIs, formats, metadata…) • Data Spaces Interoperability (data governance, data catalogue, agreements…) • Cross Data Spaces Interoperability (federation, decentralized identities…)	• Regulatory convergence • Promote EU standards as international standards • Favor the access of EU companies to global market

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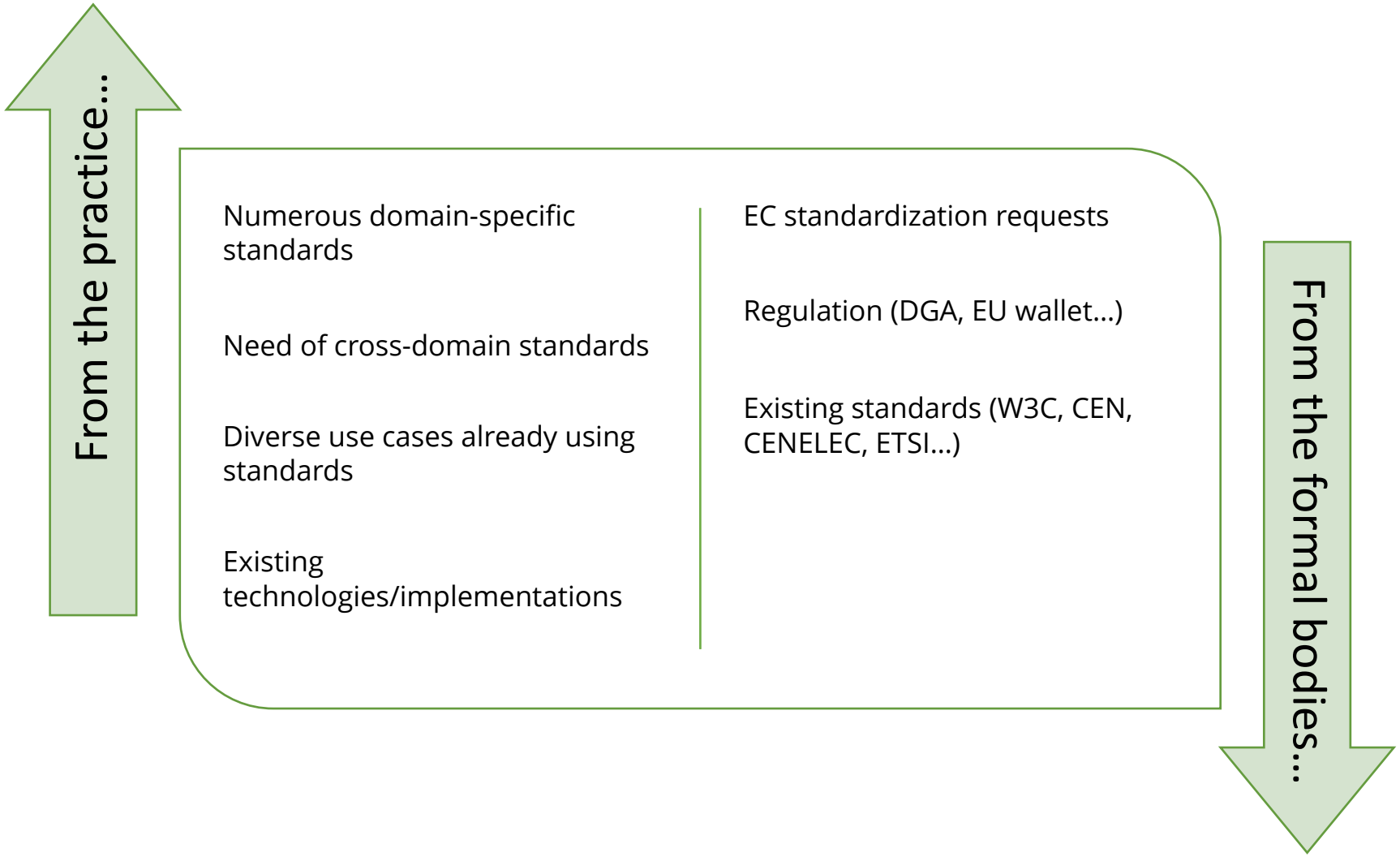
The challenge: being concrete within the regulation



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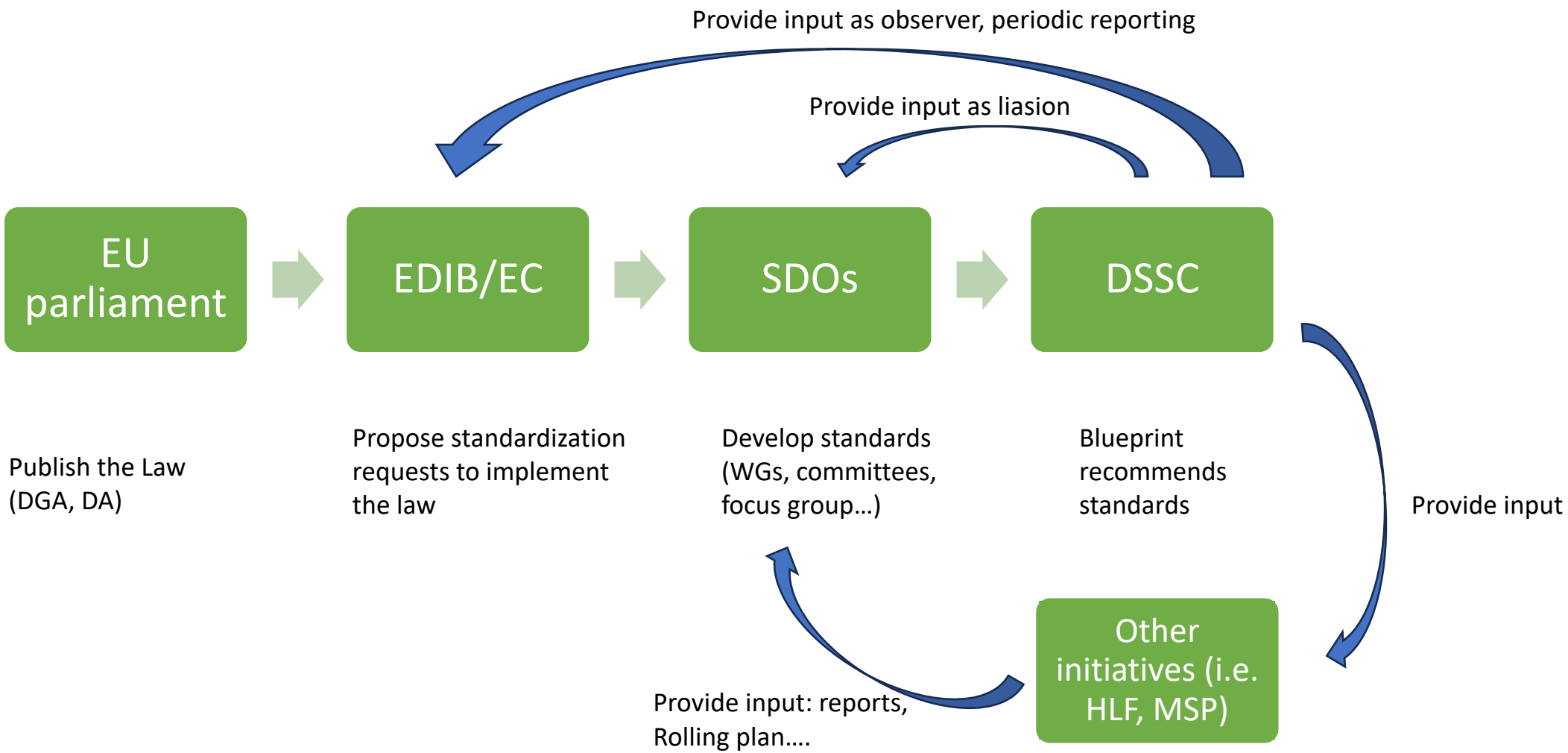
DSSC role in standardization processes



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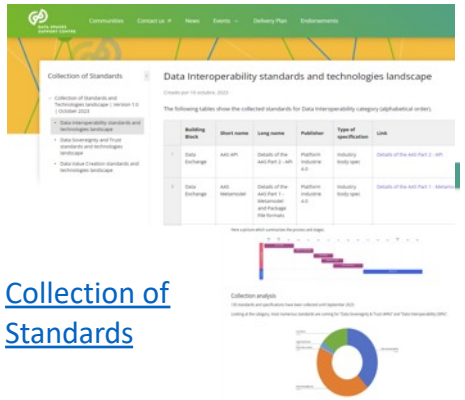
DSSC standardisation activities



[Collection of Standards]

- Overview of most used standards in data spaces
- **DSSC MISSION**: Analyze the collection to give some insights and Identify the cross-domain standards

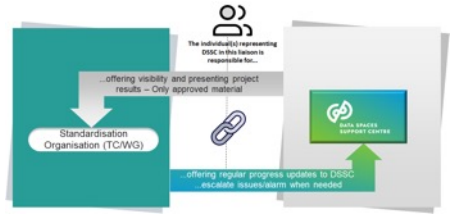
Standards collection

Cross-domain standards recommendation

- Consensus on cross-domain standards to foster interoperability
- Key for data sharing business
- **DSSC MISSION**: Propose wide adopted standards in the Blueprint (DCAT, ODRL, VC)

[Blueprint v1.0]

Standardization plan
Task Force Liaison with SDOs



Engagement with Standards Development Organizations (SDOs)

- Be aware of all committees in Data Spaces
- Unique and consolidated message on standardization topics
- **DSSC MISSION**: Identify and influence the SDOs to contribute (observer, advisor, contributor)

Alignment and contribution to the European standardization initiatives

- Finding the international consensus
- Identify gaps for new standardization requests
- Key topic at European Data Innovation Board (EDIB)
- **DSSC MISSION**: contribution to reports, workshops, EC support

[High Level Forum report]

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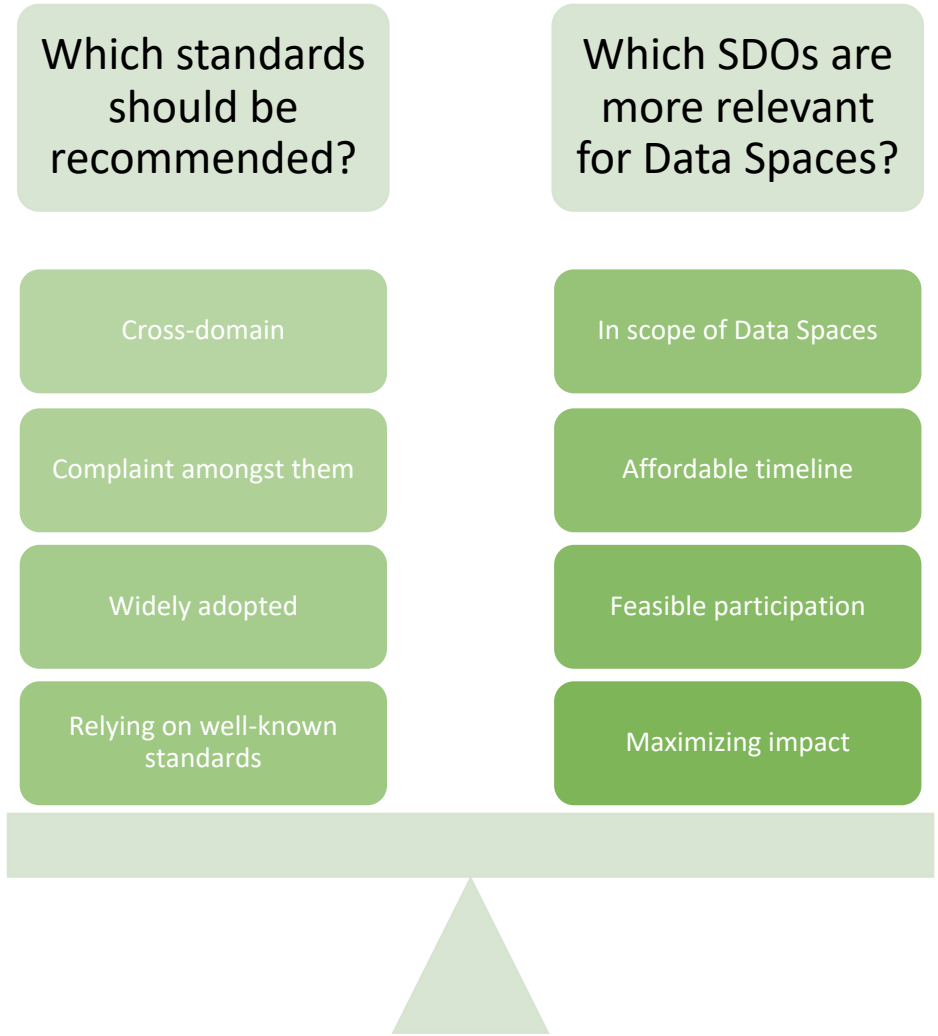
Standards and SDOs in data spaces

Verifiable Credentials

DCAT – Data Catalog Vocabulary

ODRL – Open Digital Rights Language

… more will come



CEN/CLC Focus Group on Cloud, Edge and Data Spaces

CEN/CLC Trusted Data Transactions

W3C DCAT

ISO/JTC1/SC38/WG5

… others under evaluation

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How engagement with standardisation bodies has been handled in DSSC?

Up to June 2024:

Engagement with standardisation bodies was achieved through **DSSC partners participation in specific WGs or TCs**, that DSSC was encouraging consortium partners and the community to do so.

Following June 2024:

DSSC establishing **liaisons as a project** with certain standardisation bodies in order to:

- enhance the project's visibility and

- its capacity to influence data spaces bringing a strong common voice

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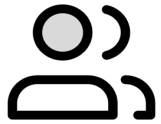
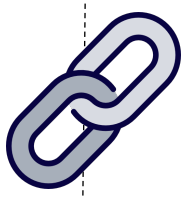
SDO liaison person – purpose of the role



The individual(s) representing DSSC in this liaison is responsible for...

…**following up the activities** on behalf of DSSC
...**offering visibility** on DSSC objectives and activities
…**providing feedback** based on DSSC results ensuring alignment

Standardisation Organisation (TC/WG)



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...**offering regular updates** wrt SDO activities
...**raising issues** which may affect to DSSC decisions on standards

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High priority SDOs for DSSC

SDO	Relevance for data spaces	DSSC contribution
W3C - Dataset Exchange WG	• Maintain and revise the DCAT, taking into account feature requests from the DCAT user community. • Define and publish guidance on the specification and use of application profiles when requesting and serving data on the Web	• Extensions of DCAT when needed and specifically for services descriptions, mainly from Data Value Creation Enablers Expert Group
CEN-CENELEC Trusted Data Transaction workshop	• Reinforce trust between all parties involved in the data transactions and by that contribute to the acceleration of the data ecosystems. • Provide a better understand of the concept and implications of Trusted Data Transaction and to anticipate future related standardisation requirements	• Ensure Alignment in a framework for trusted data transactions • Common perspective on: o Glossary, o Data Product, o Use cases (stages)
CEN-CENELEC Focus Group on Data, Dataspaces, Cloud and Edge	• Identify the standardization gaps in the data spaces, cloud and edge standards • Connect various stakeholders working on the topic	• Feedback on proposed standardization requests and plans • Engage with wider range on stakeholders on the topic

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What is next?

- Continous participation and reporting on liased SDOs
- Evaluate other SDOs for liaison (i.e. CEN/CLC JTC 25)
- Continous maintenance of Collection of Standards (for experts and for domains)
- Periodic reporting on standardization activity to the EDIB
- Promote standardization activities of the DSSC community

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Thanks!

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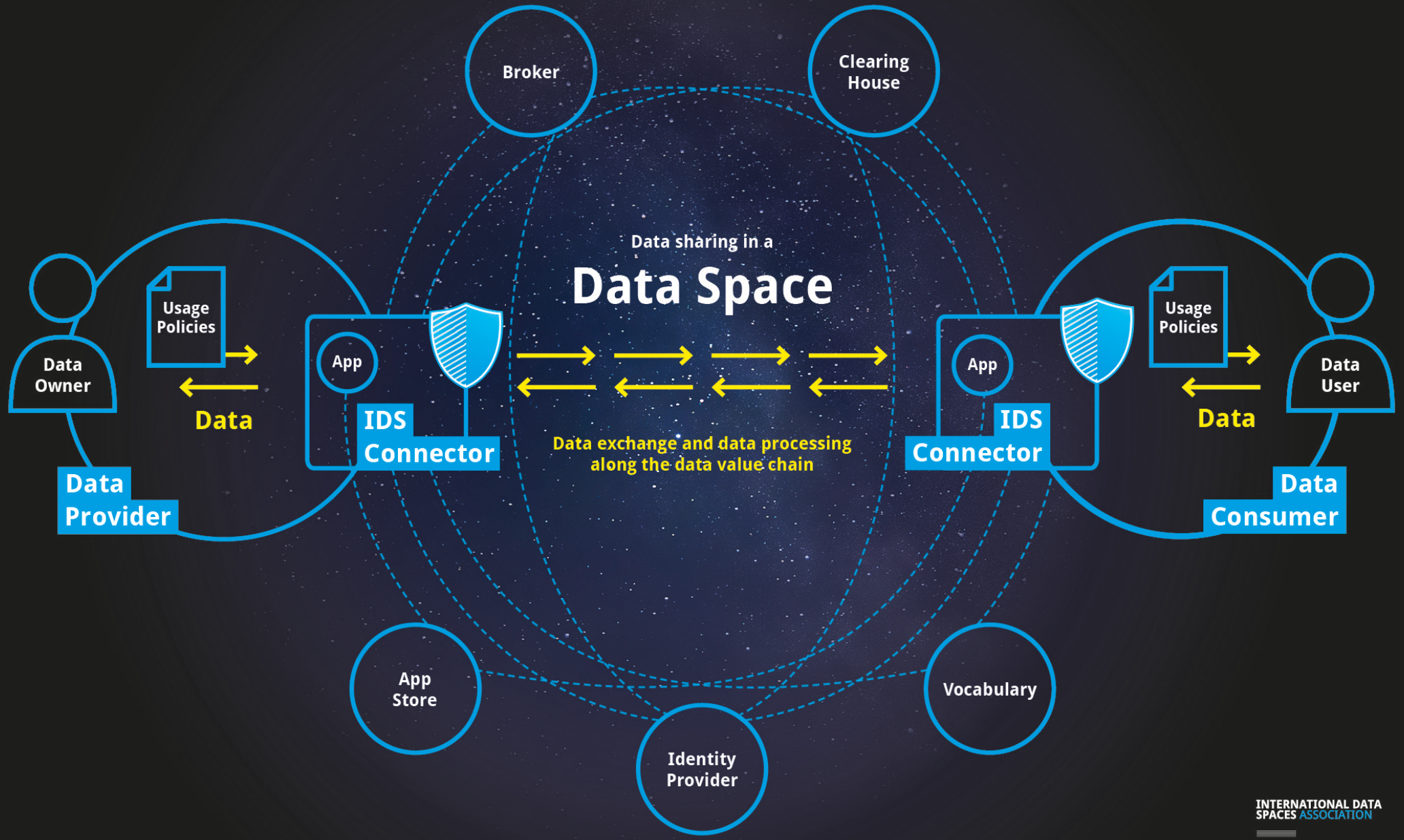
The Dataspace Protocol

The universal standard for data sharing

Anil Turkmayali, IDSA



What is the Dataspace Protocol?

The essence for interoperability

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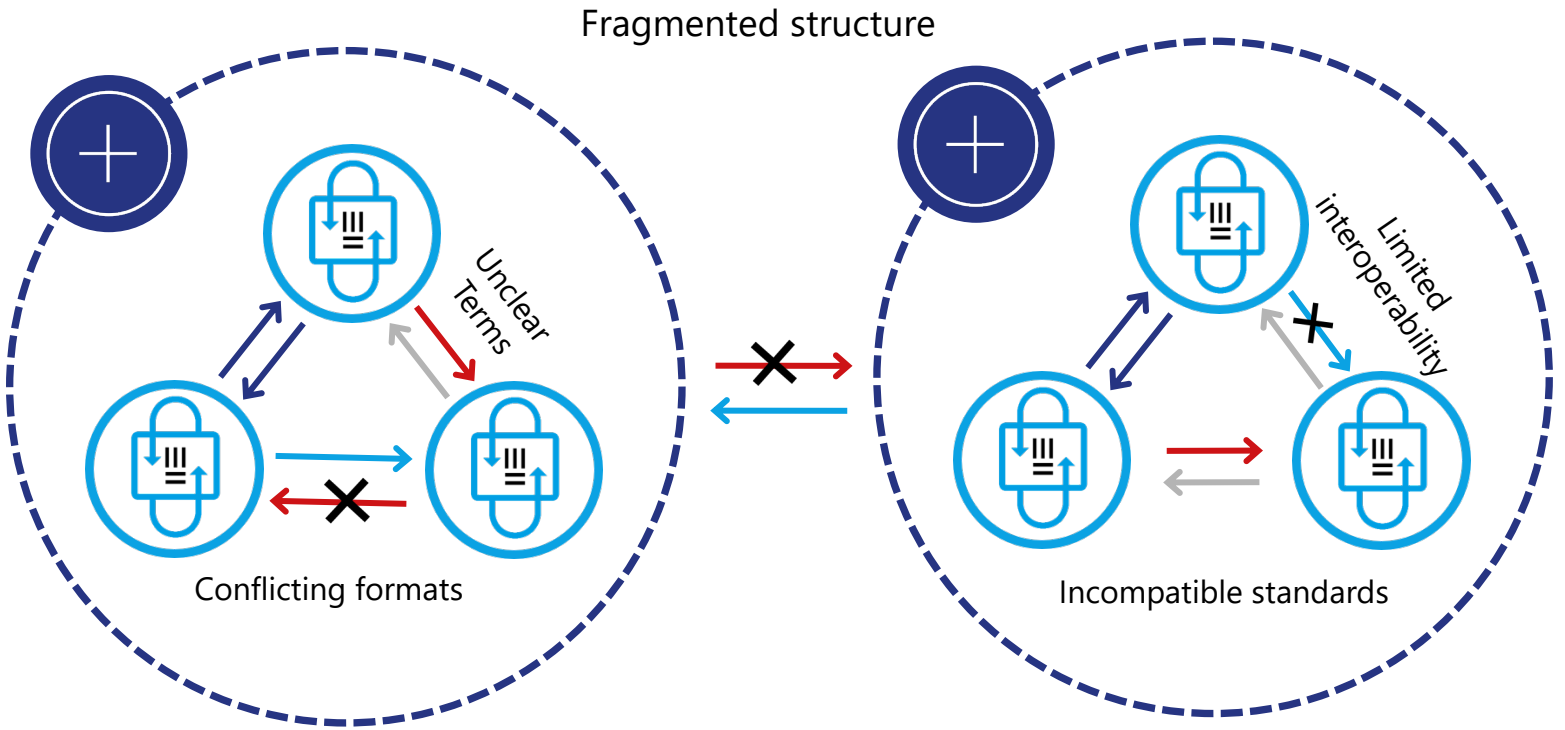

Data Spaces Require:

- Data Sovereignty
- Interoperability
- Scalability
- Trustworthiness

Remember these:

- SWIFT
- HTTP, TCP/IP
- GSM
- Bluetooth

The need for Dataspace Protocol

Ensuring data space interoperability

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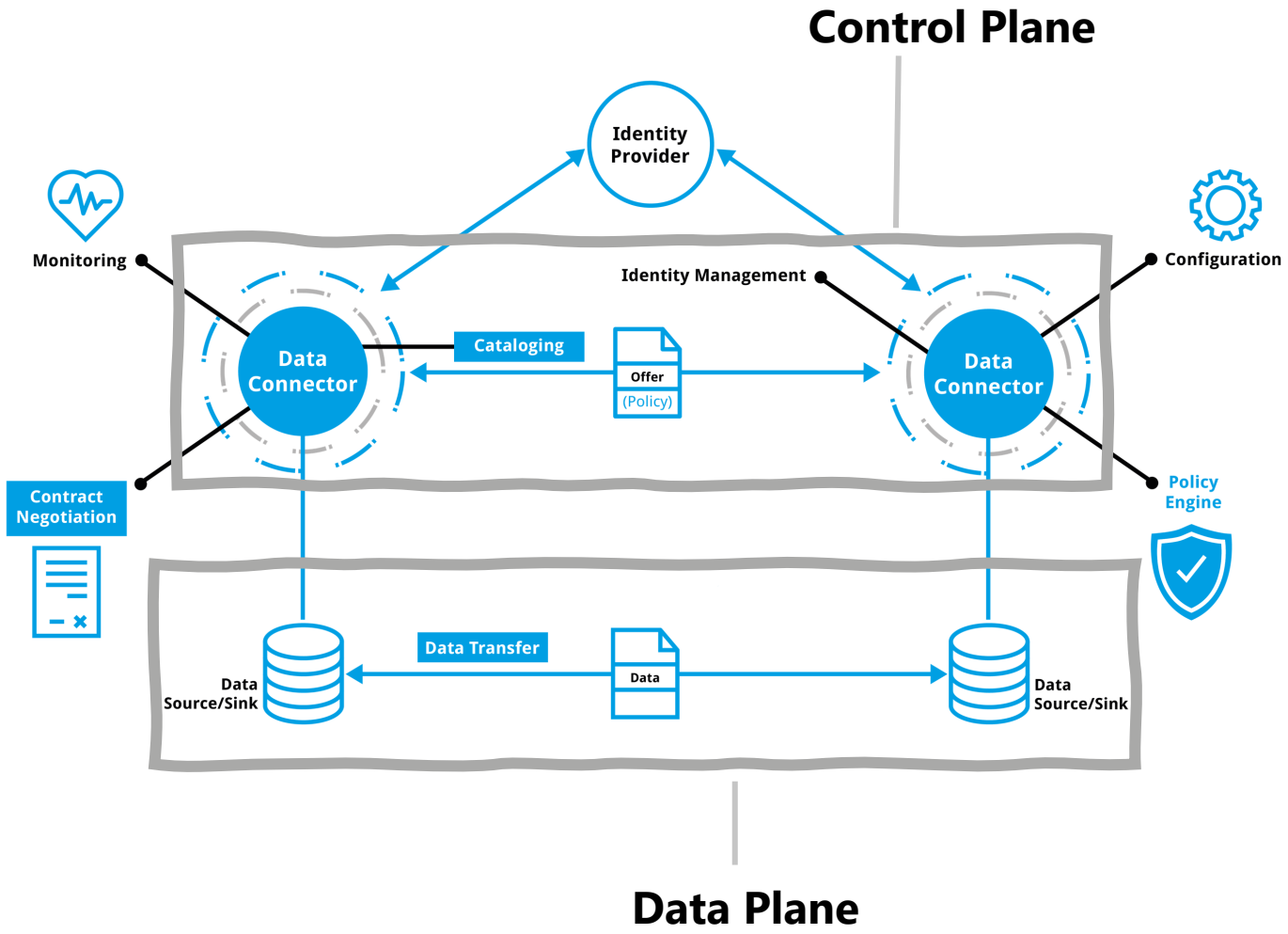

Promotes seamless technical interoperability, while addressing certain aspects of semantic interoperability.

Enables standardized data exchange across different data space instances.

Provides flexibility and scalability through the separation of control plane and data plane.

What is the Dataspace Protocol?

The essence for interoperability

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Before HTTP, there wasn't a common way for computers to communicate over the web. HTTP became the universal protocol for transferring and sharing hypertext across different systems.

Before SWIFT, financial messaging across borders was difficult and insecure. SWIFT created a global standard for secure and simple communication between banks.

Before Bluetooth, short-range device communication was unreliable. Bluetooth standardized wireless connections between devices.

Prior to GSM, mobile communication lacked a global standard. GSM unified mobile networks, enabling global connectivity.

Layered model for interoperability

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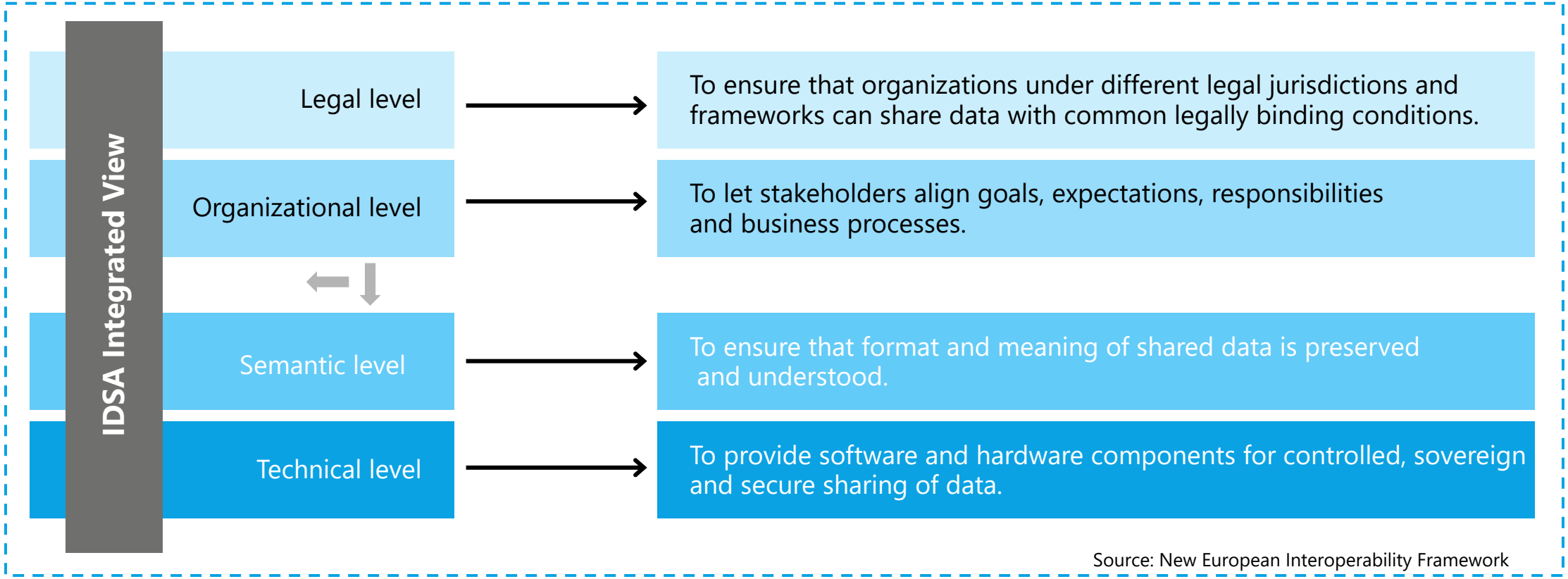

Source: New European Interoperability Framework

- **Intra data space interoperability,** between the data space authority, processing, and data sharing building blocks within a single data space instance
- **Inter data space interoperability,** between multiple data space instances at each of the functional levels

Dataspace Protocol

Protocol's Structure

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Catalog Protocol

- Defines how data is listed and organized by the provider.
- Makes data easy to find and understandable for potential consumers.
- Ensures data is described in a consistent, standard format.
- **You prepare and offer what is available**

Contract Negotiation Protocol

- Facilitates the agreement on data usage terms between provider and consumer.
- Defines how long, for what purpose, and under what conditions data can be used.
- Provides a clear process to negotiate and finalize these terms.
- **You negotiate and agree on how the data will be used**

Transfer Process Protocol

- Manages the actual transfer of data once terms are agreed upon.
- Ensures data is shared securely and follows the negotiated rules.
- Supports different types of data transfers (e.g., one-time or continuous).
- **You execute the data transfer according to the agreed terms**

Standardized data exchange

What does this mean? How does Dataspace Protocol ensure that?

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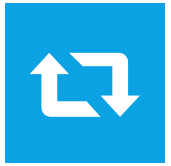

	Catalog	*Contract Negotiation*	*Transfer Process*
What happens?	A public transportation authority decides to share its transit schedules with app developers.	An app developer wants to use these schedules to create a route planning application.	Once the agreement is in place, the actual data transfer begins.
Problem	Inconsistent data formats for schedules across different platforms.	Need for clear terms regarding the use and distribution of the transit data.	Ensuring secure, efficient, and reliable transfer of transit data.
Role of DSP	Standardizes the format for publishing transit schedules.	Facilitates agreement on data usage terms and conditions.	Manages the secure and efficient transfer of the agreed-upon data.
Specification Example	The transportation authority shares its schedules in a standardized format (DCAT) and defines who can access the data using simple rules (ODRL).	Developer and authority negotiate using *'Contract Offer'* messages, leading to a *'Contract Agreement'*.	The data is securely transferred between both parties using a trusted, automated process (Connector-to-Connector Communication).

Standardized data exchange

What does this mean? How does Dataspace Protocol ensure that?

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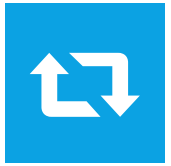

	Catalog	*Contract Negotiation*	*Transfer Process*
What is done?	Represent the entire dataset catalog (DCAT)	Enter the details of the contract negotiation	Execute secure and sovereign data exchange
Example	**Title:** Transit Schedules **Description:** Schedules for public transit in City X, including buses, trams, and subways. **Keywords:** transit, schedules, public transport, City X **Theme:** Transportation **Access URL:** http://cityx.gov/transit/schedules	**Provider:** City X Government **Consumer:** Research Institution **Contract Start:** 2024-01-01 **Contract End:** 2024-06-30 **Permissions:** Use data for academic research. **Prohibitions:** Commercial use of the data.	**Source:** City X Government **Destination:** Research Institution **Transfer Method:** IDS Connector **Type:** Pull Transfer **Security:** TLS encryption **Authentication:** OAuth 2.0 **Monitoring:** Monitored to ensure secure transfer

Driving data spaces innovation

Collaborators defining and embracing the Dataspace Protocol

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Who co-defined it?

SAP
Microsoft
IONOS
Fraunhofer
SOVITY
FIWARE
eng
HUAWEI
TNO
Tekniker
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE
T Systems
BOSCH
ZF
Catena-X
BMW

Who is currently using it?

Catena-X
Tekniker
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE
ONENET
one network for Europe
IONOS
ZF
AMADEUS
VTT
Cofinity-X
PROMETHEUS-X
T Systems
Boot-X
HUAWEI
SAP
truzzt
TECH2B
X-ROAD
Open

Driving data spaces innovation

Collaborators defining and embracing the Dataspace Protocol

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R&D Projects Adopting DSP

Be a pioneer & co-create the future

How to contribute to the Dataspace Protocol?

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1

Become a Co-Creator of DSP

Your expertise can shape the future of data spaces. Adopt, run experiments, contribute to it.

Project repository

&

2

Technology Compatibility Kit

Once the TCK is ready, test your compliance with Dataspace Protocol.

Project repository

Facilitating Interoperable Data Sharing

Introduction to the Dataspace Protocol

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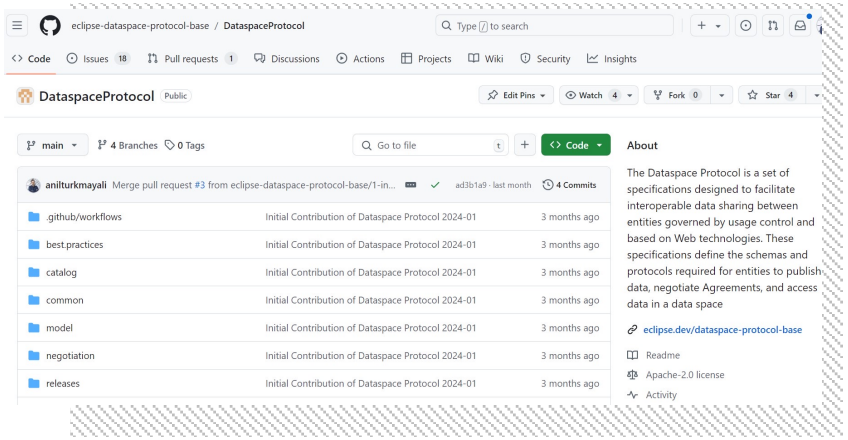
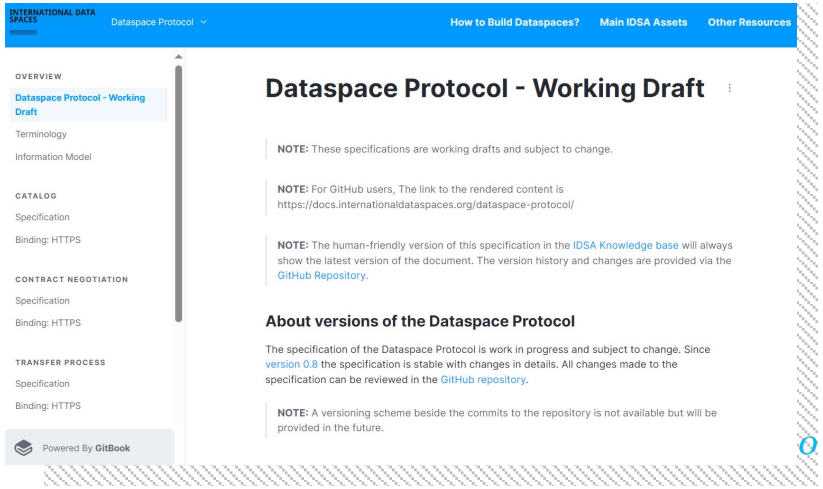


- Actively contribute to the development of the Dataspace Protocol
- Join discussions, track issues, and review the evolution of the protocol through commits and updates.

https://github.com/eclipse-dataspace-protocol-base/DataspaceProtocol

- Explore the IDS Knowledge Base on Gitbook for comprehensive documentation and specifications of the Dataspace Protocol, in an easier to read format.

https://docs.internationaldataspaces.org/ids-knowledgebase/v/dataspace-protocol/



Eclipse Dataspace Protocol

Friday, February 16, 2024 - 03:05 by Sebastian Steinbuss

Basics

This proposal is in the Project Proposal Phase (as defined in the Eclipse Development Process) and is written to declare its intent and scope. We solicit additional participation and input from the community. Please login and add your feedback in the comments section.

Is this a specification project?
Eclipse Dataspace

Patent License
Implementation Patent License

Project
Eclipse Dataspace Protocol

Parent Project
Eclipse Technology

Working Group
Eclipse Dataspace

PROJECT LINKS

Website

Proposal

ECLIPSE INCUBATION

Specification lifecycle of Dataspace Protocol

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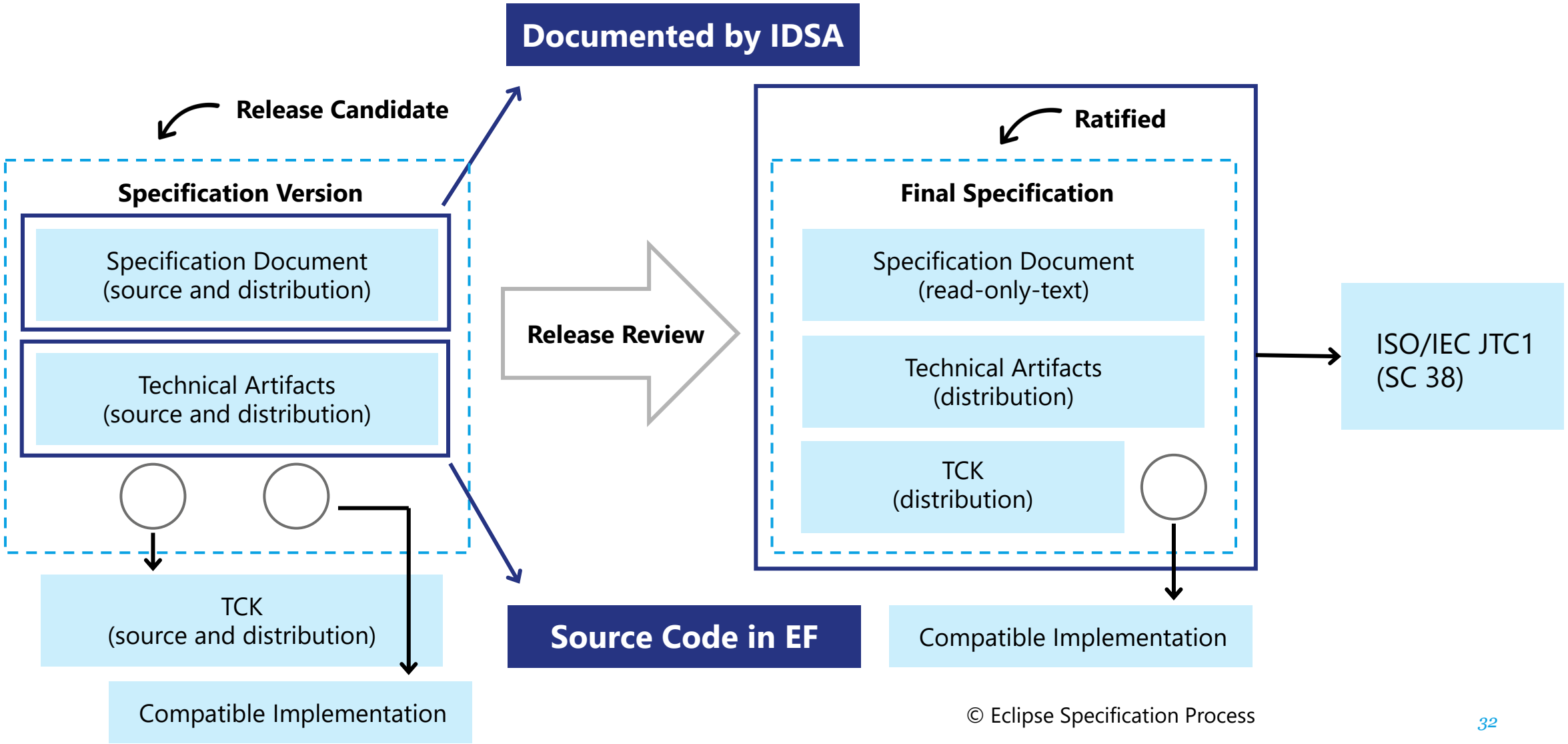

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Q&A

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