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The Dataspace Protocol

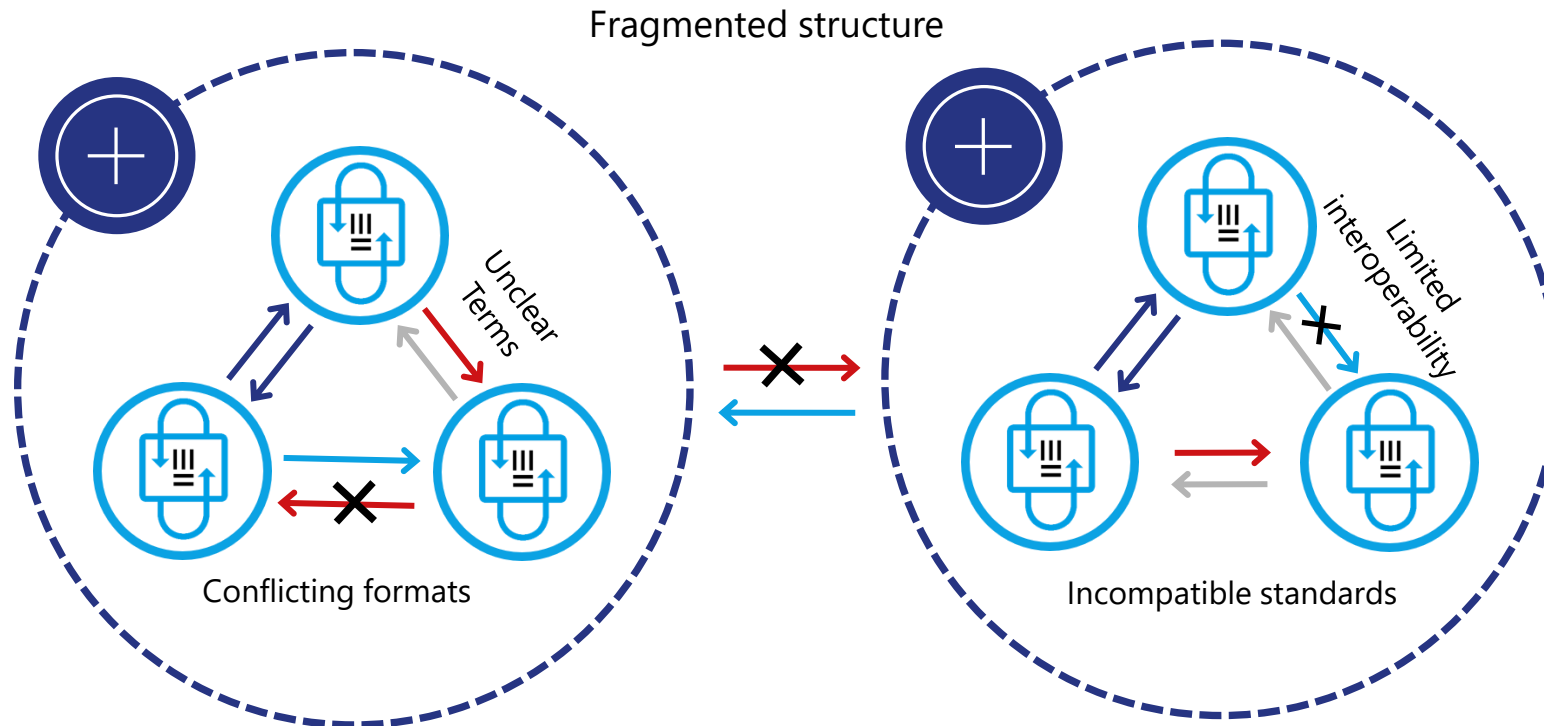
The universal standard for data sharing

What is the Dataspace Protocol?

The essence for interoperability



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Data Spaces Require:

- Data Sovereignty
- Interoperability
- Scalability
- Trustworthiness

Remember these:



What is the Dataspace Protocol?

How does it provide interoperability?



Technical Interoperability

Standardized Connectors: Data providers and data consumers use connectors based on the same protocol = compatible communication.

Policy Enforcement: DSP leverages ODRL to encode usage policies which are automatically enforced during data exchange, ensuring compliance with the data provider's terms.

Transfer Process Agreement: Both parties agree on executing the data plane.

What is the Dataspace Protocol?

How does it provide interoperability?



Semantic Interoperability

Common Data Models: DSP promotes shared models (e.g., JSON-LD, RDF) so data providers and consumers consistently interpret the same structure.

Metadata Standards: Contextual metadata (e.g. data source, intended use, usage constraints defined in ODRL) is embedded directly using DCAT.

Support for Domain-Specific Extensions: DSP allows participants to define extensions tailored to their industry's needs while ensuring compliance with the protocol's interoperability requirements.

Driving data spaces innovation

Collaborators defining and embracing the Dataspace Protocol



Who co-defined it?



IONOS



TNO



Who is currently using it?



IONOS



amadeus



Cofinity-X



T Systems



truzzt



Driving data spaces innovation

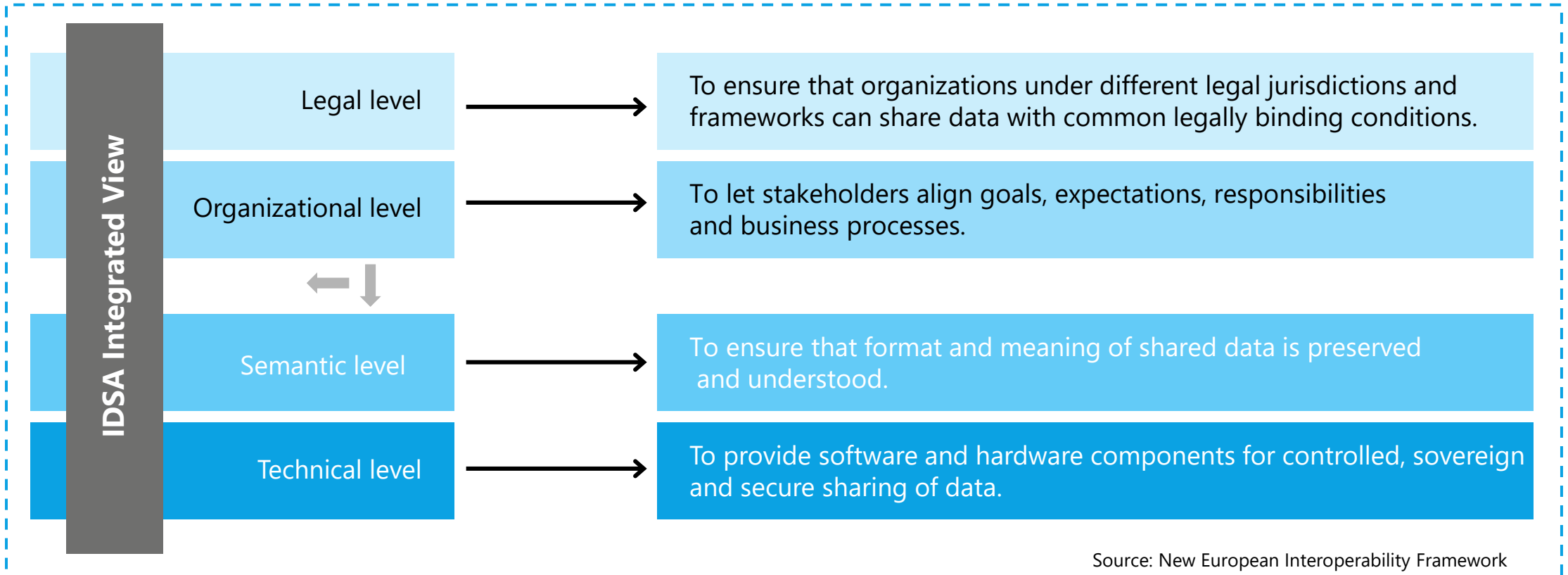
Collaborators defining and embracing the Dataspace Protocol



R&D Projects Adopting DSP



Layered model for interoperability



- **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



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

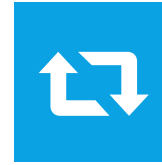
What does this mean? How does Dataspace Protocol ensure that?

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Catalog

Represent the entire dataset catalog (DCAT)



Contract Negotiation

Enter the details of the contract negotiation



Transfer Process

Execute secure and sovereign data exchange

What is done?

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

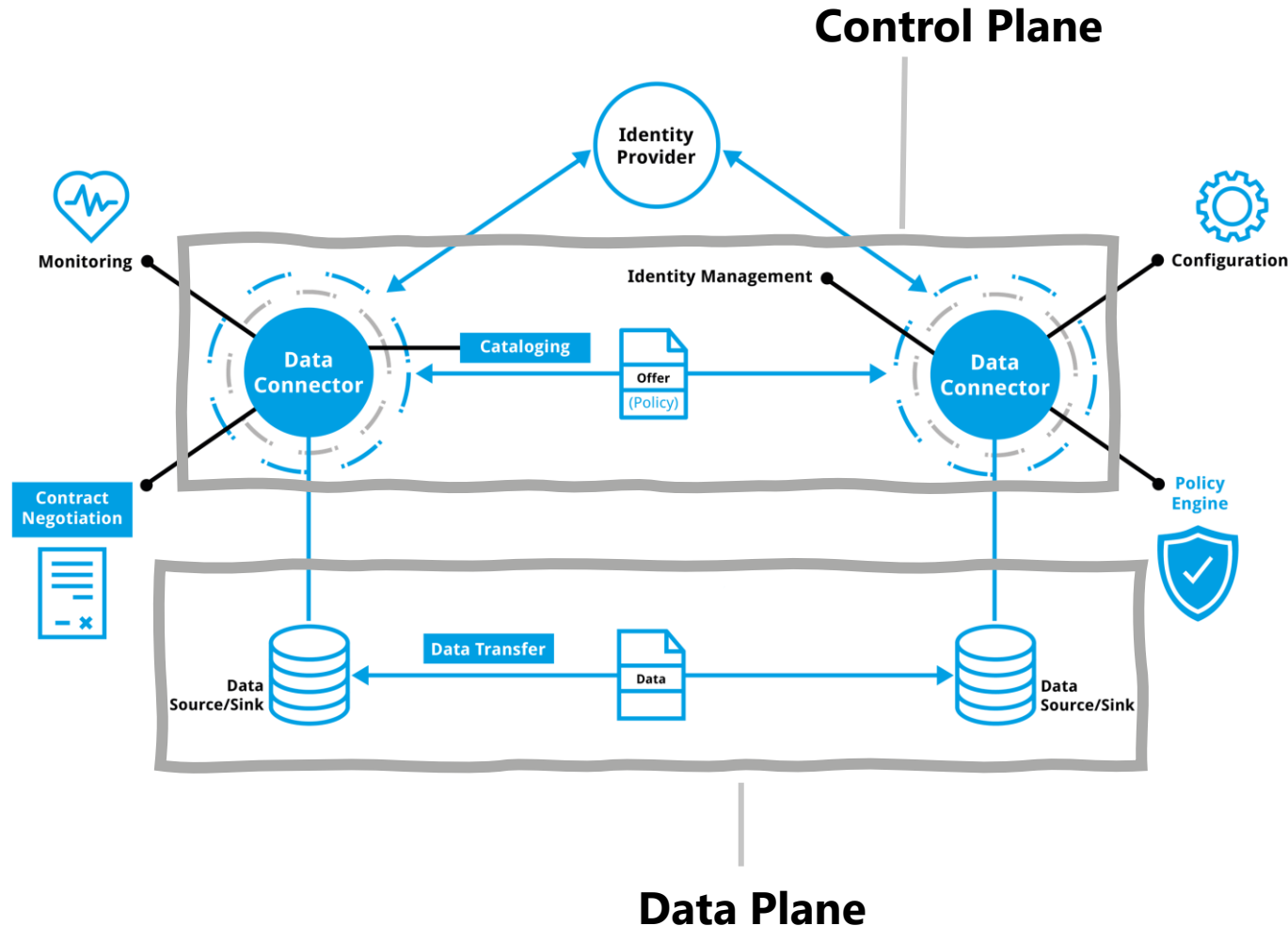
Type: Pull Transfer

Security: TLS encryption

Authentication: OAuth 2.0

The need for Dataspace Protocol

Ensuring data space interoperability



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

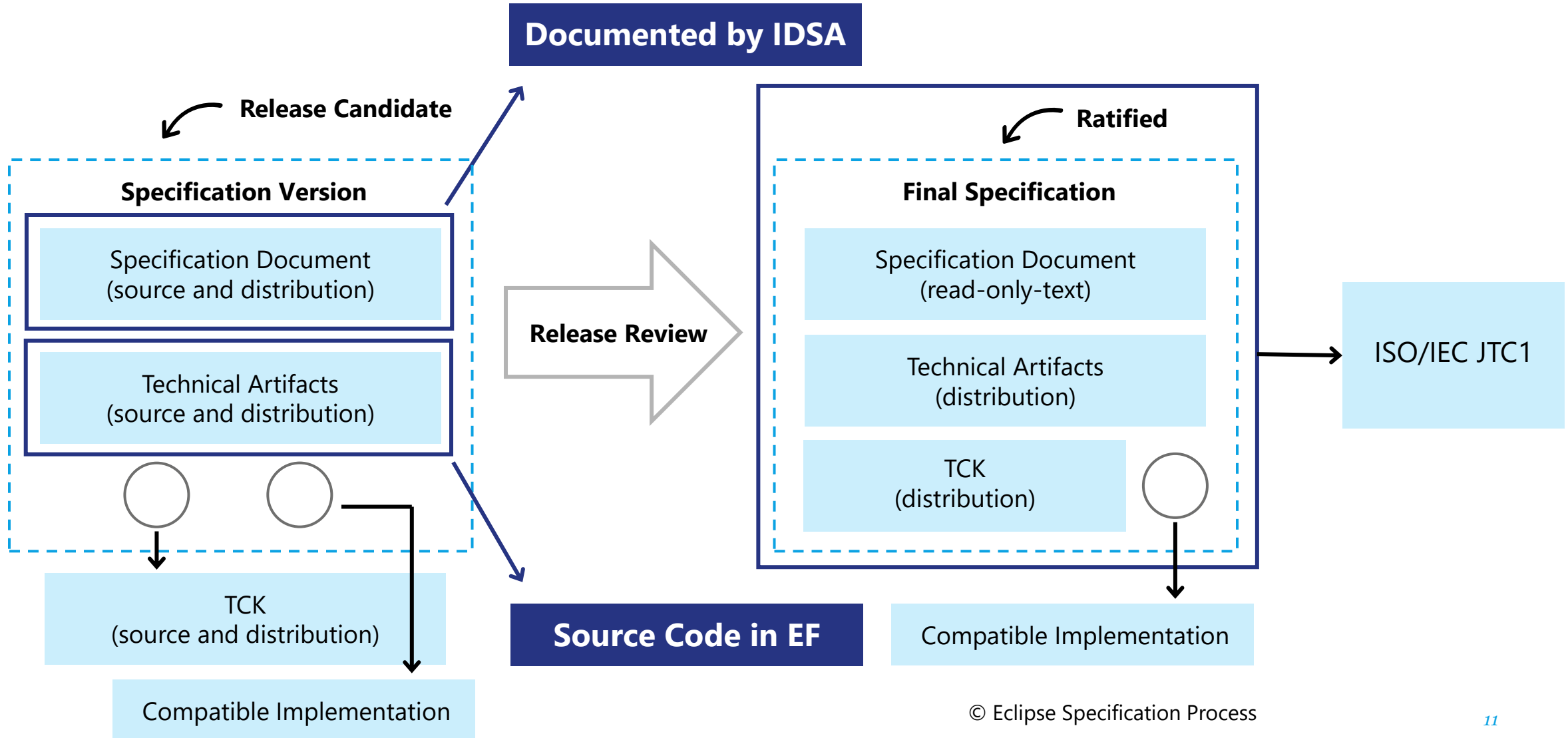


Enables standardized data exchange across different data space instances.



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

Specification lifecycle of Dataspace Protocol



Why the Dataspace Protocol is essential?

for data sovereignty and data space interoperability



01 **Data sovereignty** is maintained by allowing data providers to set and enforce their own usage policies.

02 **Interoperability** is achieved through standardized data exchange formats and protocols.

03 **Growth and scalability** are supported by the protocol's flexible, modular architecture that adapts to evolving needs.

04 DSP establishes **foundational technical and semantic interoperability needed for data exchange** while it allows individual domains to customize and implement their specific interoperability requirements.