INTERNATIONAL DATA SPACES ASSOCIATION

IDS RAM & Dataspace Protocol

Theory & Practice

Agenda

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- Introducción a la IDS-RAM
- Caso práctico: Architectura proyecto DigiChecks
- Introducción al Dataspace Protocol
- Demostración

Introducción a la IDS-RAM

01

IDSA – state of the union

What we have achieved, where we are

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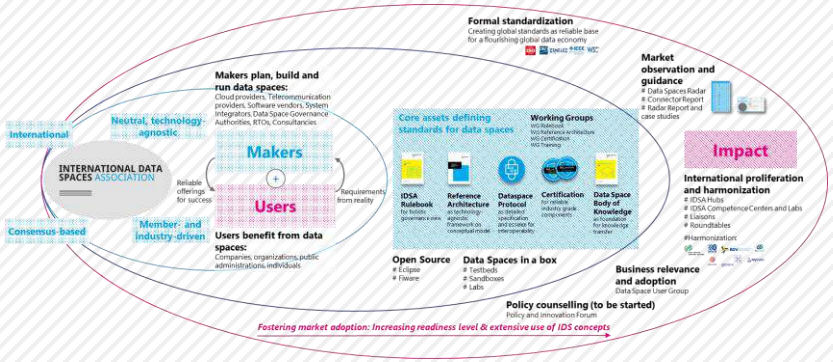
- IDSA has set the **foundation for data spaces and coined the term** (national data strategies and business frameworks are built on IDSA groundwork)
- **IDSA is a neutral**, true international, member-driven and consensus-based organization
- **ONE framework for data spaces** as soft infrastructure for a flourishing data economy and to enable AI
- **All relevant players** on board (users, providers, policy makers)
- **Global reach** (members from all over the world – all continents, hubs and research centers in relevant economic areas)
- **All running data spaces are built upon IDSA concepts** (150+ data spaces on our radar)
- Relevant **technology is in place** and will be brought to broad commercial offerings
- **Global standardization** ensures industry grade quality and wide adoption



A holistic approach to bring data spaces to global scale

IDSA defining global standards for data spaces

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Formal standardization
Creating global standards as reliable base for a flourishing global data economy

Market observation and guidance
Data Spaces Radar
Connector Report
Radar Report and case studies

International

Neutral, technology-agnostic

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Consensus-based

Member- and industry-driven

Makers plan, build and run data spaces:
Cloud providers, Telecommunication providers, Software vendors, System Integrators, Data Space Governance Authorities, RTOs, Consultancies

Makers

+

Users

Reliable offerings for success

Requirements from reality

Users benefit from data spaces:
Companies, organizations, public administrations, individuals

Core assets defining standards for data spaces

Working Groups
WG Rulebook
WG Reference Architecture
WG Certification
WG Training

IDSA Rulebook
for holistic governance view

Reference Architecture
as technology-agnostic framework on conceptual model

Dataspace Protocol
as detailed specification and essence for interoperability

Certification
for reliable industry grade components

Data Space Body of Knowledge
as foundation for knowledge transfer

Impact

International proliferation and harmonization
IDSA Hubs
IDSA Competence Centers and Labs
Liaisons
Roundtables

#Harmonization:

Open Source
Eclipse
Fiware

Data Spaces in a box
Testbeds
Sandboxes
Labs

Business relevance and adoption
Data Space User Group

Policy counselling (to be started)
Policy and Innovation Forum

Fostering market adoption: Increasing readiness level & extensive use of IDS concepts

IDSA's scope

Our core assets

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Reference Architecture Model

» Separation of duties, specification of archetypal roles
» Technology agnostic
» Trust, security, interoperability, governance

IDS Certification

» follows best practices from internationally accredited certification concepts
» each IDS component is expected to behave in adherence with IDS specifications

IDSA Rulebook

» Technical, functional, operational, maintenance and legal agreements
» Conventions for IDSA trust scheme
» Soft infrastructure

Dataspace Protocol

» Ensures communication of data space instances
» Three layers: catalog, contract negotiation, transfer process
» Separation control and data plane

Professional Qualification Program

» IDSA Qualifications offer two competence levels: Fundamentals and Qualified
» courses are built on the neutral, vendor-agnostic, and state-of-the-art IDS framework

Open-source

» 60+ repositories
» IDS component implementations available as open-source
» IDS Testbed, MVDS, Connector, usage control schemes, metadata broker, information model, DAPS, ...

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IDS Reference Architecture Model

The concept for data spaces

The IDS Reference Architecture

Your guide to data spaces

The IDS Reference Architecture Model (IDS-RAM) is a practitioner-oriented guide to designing and implementing architectures for data spaces.

The RAM is both, an introduction to software architecture and a handbook of well-established best practices.

What is IDS RAM?

Overview

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IDS Reference Architecture Model

- The IDS-RAM is a model that provides a conceptual framework for designing and implementing IDS-compliant data spaces.

- It defines the key components, their interactions, and the principles that govern the architecture of an IDS data space.

The IDS-RAM in the magic triangle

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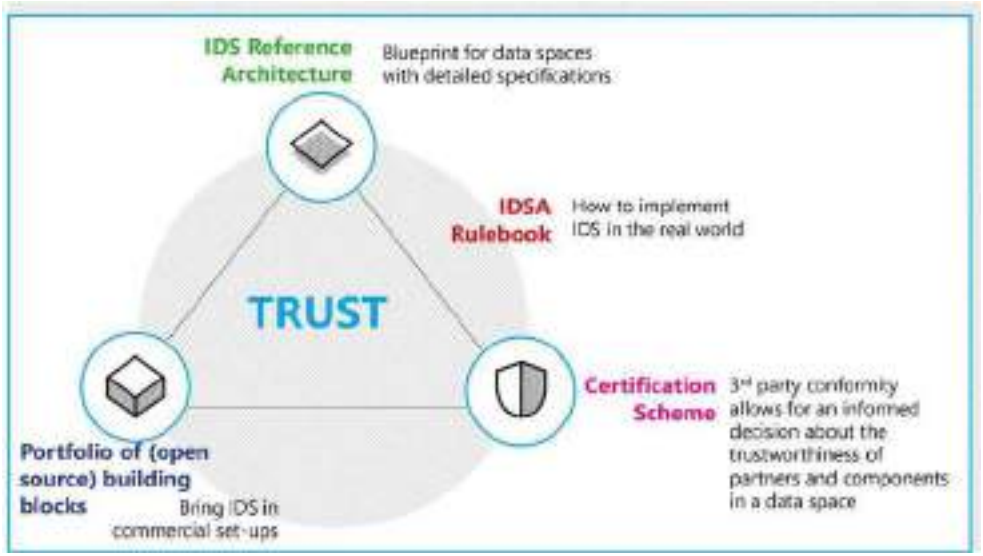
IDSA members work in a consent based way on the Reference Architecture Model and the subsequent specifications

The IDS Certification Scheme follows the IDS-RAM and provides means to validate the compliance to it.

Compliant building blocks are the foundation for commercial setups

The IDSA Rulebook provides additional information to establish Data Spaces (BLOFT thinking)



IDSA ensures consistency of the magic triangle

Structure of the RAM

Five layers and three perspectives

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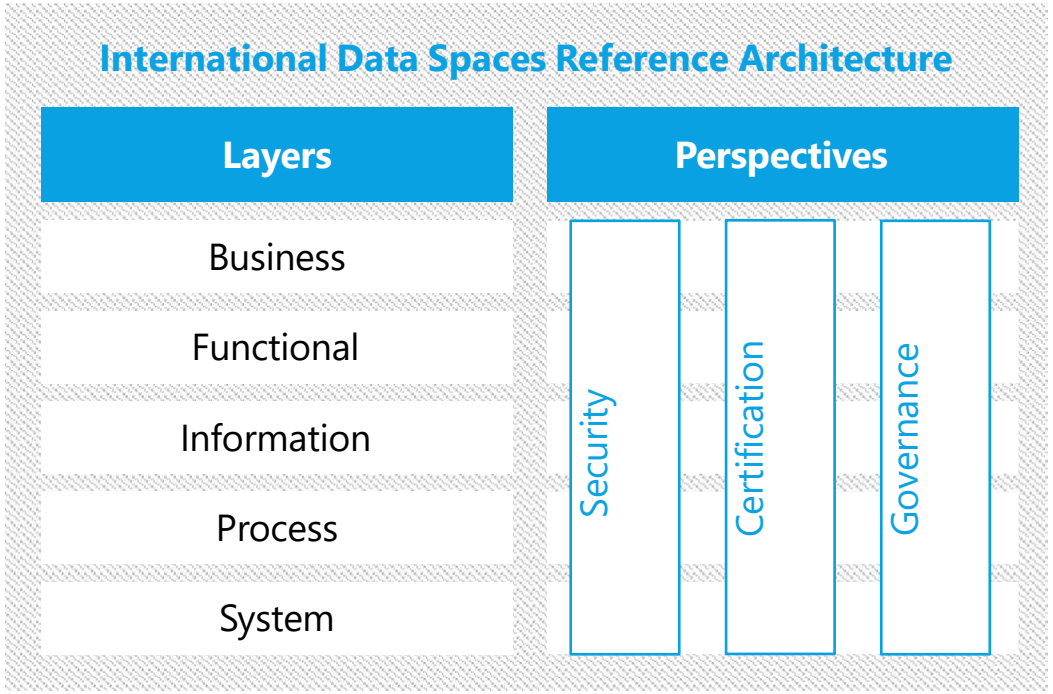

The RAM uses a **five-layer structure** expressing various stakeholders' concerns and viewpoints at different levels of granularity: business, functional, process, information, and system layer.

The RAM comprises **three perspectives** that need to be implemented across all five layers: Security, Certification, and Governance.

Layer structure of the RAM

Five layers express different viewpoints

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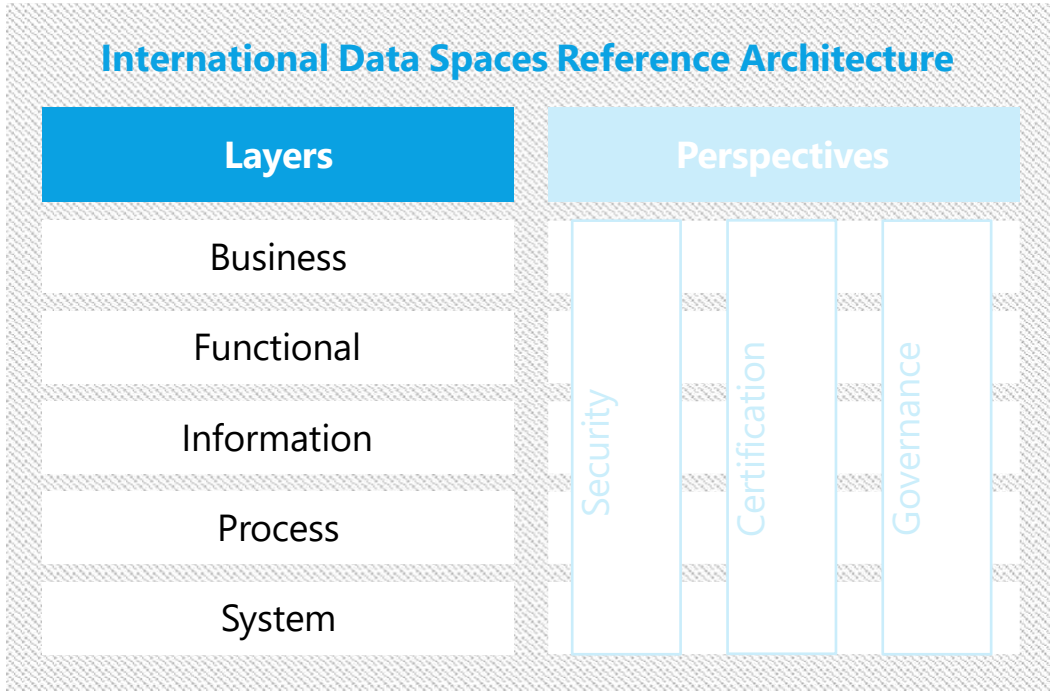

- The **Business Layer** specifies and categorizes the different roles of the participants of IDS
- The **Functional Laye**r defines the functional requirements of IDS
- The **Information Layer** defines a conceptual model that uses linked-data principles for describing IDS' components
- The **Process Layer** specifies the interactions between the different components of IDS
- The **System Layer** describes the decomposition of the logical software components

Three perspectives of the RAM

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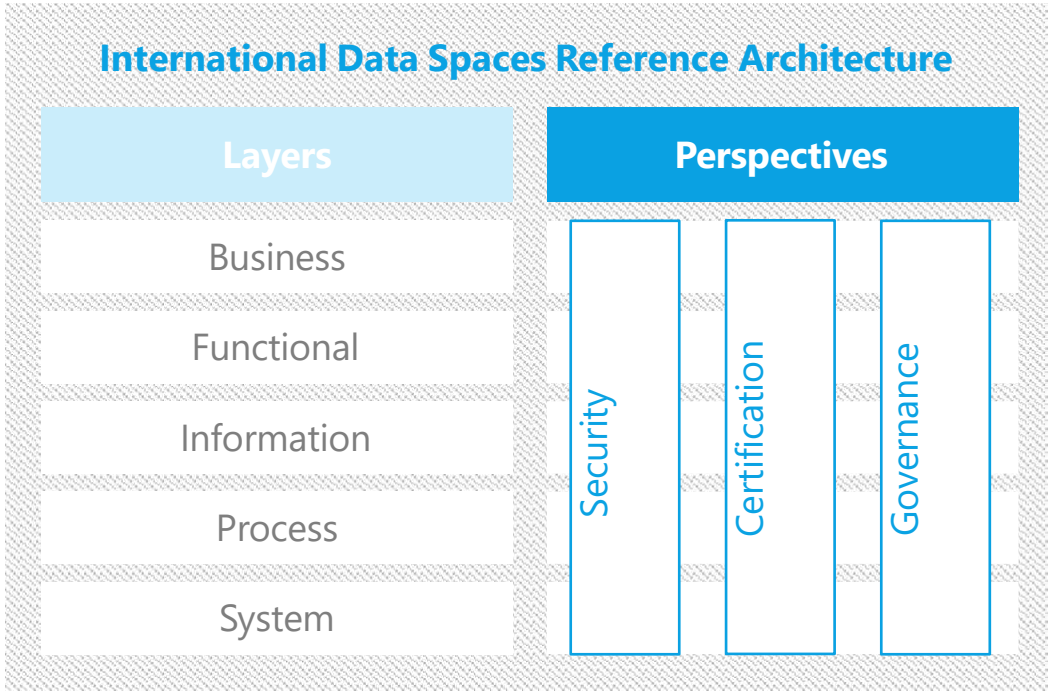

- the role of the architect is central to any successful IDS data space project!
- The RAM comprises **three perspectives** that need to be implemented across all five layers: Security, Certification, and Governance
- The architectural perspective is basically a collection of activities, tactics, and guidelines that ensure an IDS implementation has certain quality attributes
- The architectural perspectives provides a specific direction for IDS implementations

Context of the Reference Architecture Model

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The section on the Context of the RAM is

not normative

but illustrates the related concepts to the Data Spaces approach

- Data-driven business ecosystems
- Data as an economic good
- Industrial cloud platforms
- Big data and AI
- Blockchain
- …

Business Layer – fundamental understanding

Peer to peer approach and general services

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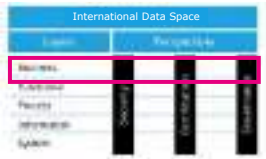
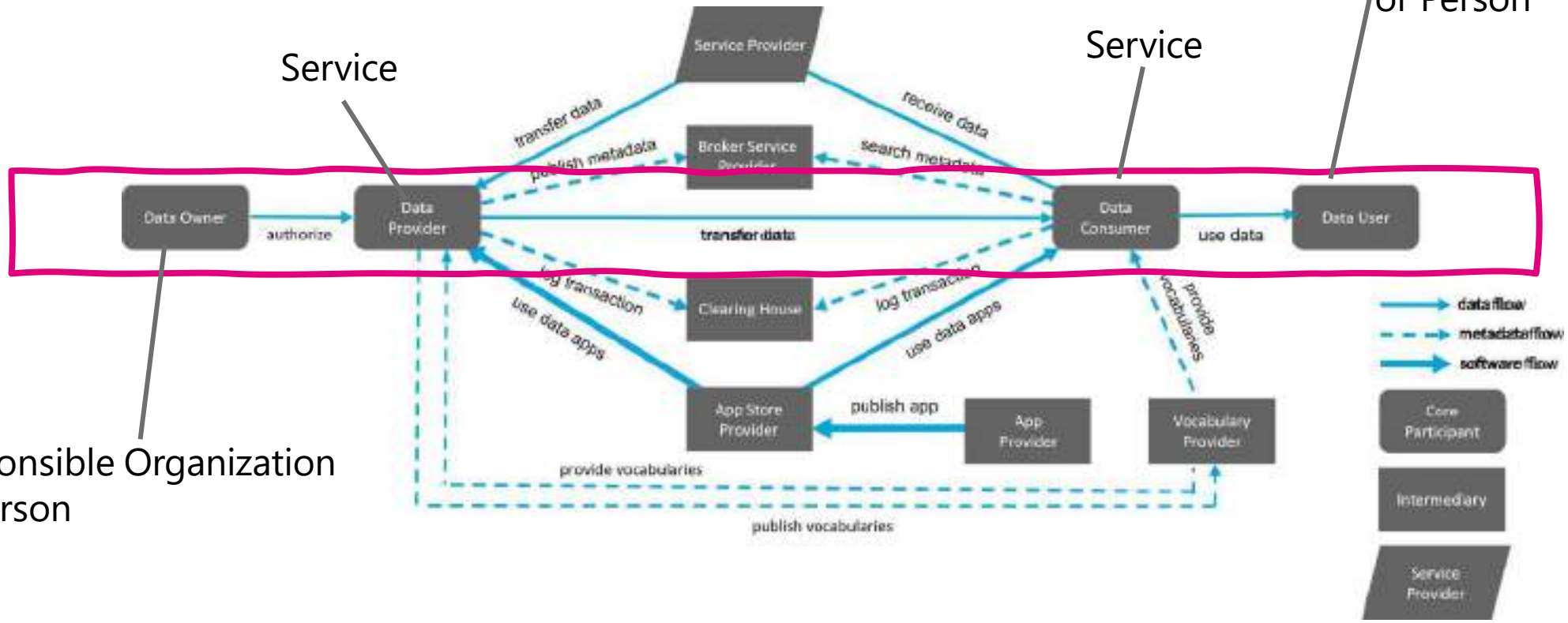


Service

Service

Responsible Organization or Person

Responsible Organization or Person



Functional Layer

Functional Requirements the IDS-RAM is based on

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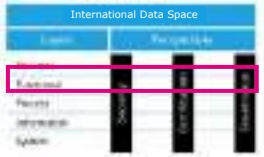

1 TRUST

- Roles
- Identity Management
- User Certification

2 SECURITY & DATA SOVEREIGNTY

- Authentication & Authorisation
- Usage Policies & Usage Enforcement
- Trustworthy Communication
- Security by Design
- Technical Certification

3 ECOSYSTEM OF DATA

- Data source description
- Brokering
- Vocabularies

4 STANDARDIZED INTEROPERABILITY

- Operation
- Data Exchange

5 VALUE ADDING APPS

- Data Processing and Transformation
- Data App Implementation
- Providing Data Apps
- Installing and Supporting Data Apps

6 DATA MARKETS

- Clearing & Billing
- Usage Restrictions and Governance
- Legal Aspects

IDS Information Model

Describing data assets

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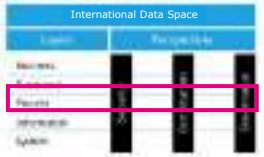

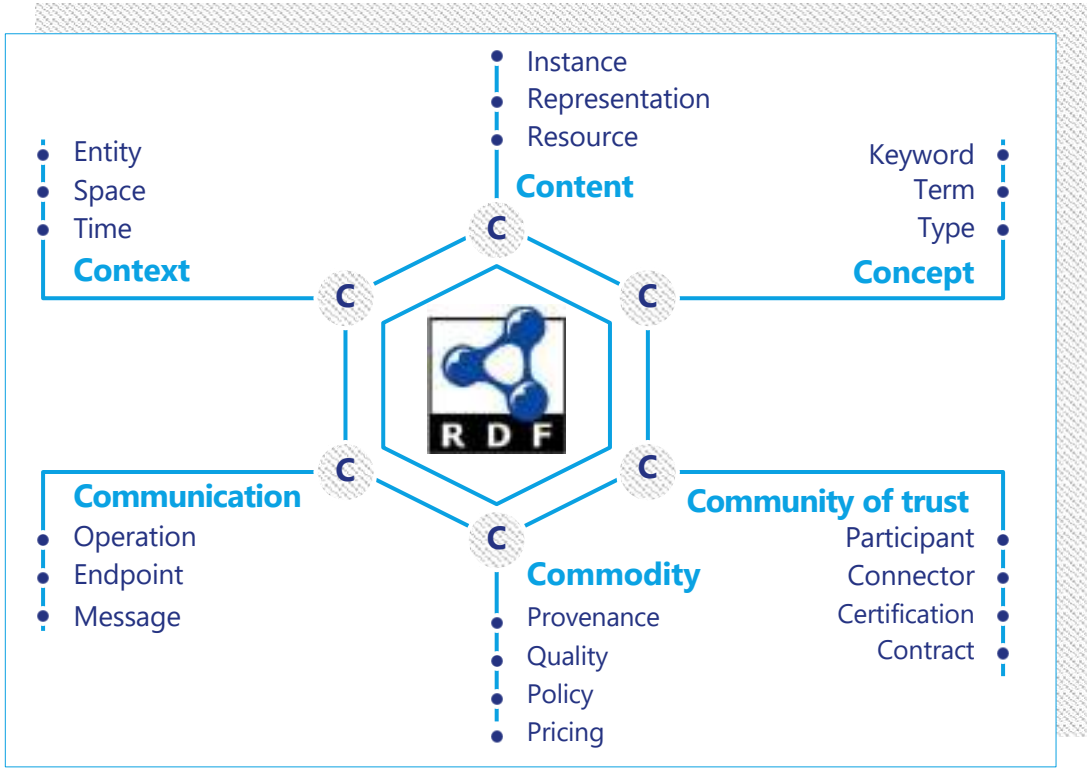

- The essential agreement shared by the participants and components of data ecosystems, facilitating compatibility and interoperability
- Three formal levels of digital representation of the information model
  - » Conceptual (generic description in UML)
  - » Declarative (formal, machine interpretable specification of IDS concept, semantic description)
  - » Programmatic (IDS Information model library in java)

Process Layer

Technical Onboarding into a Data Space

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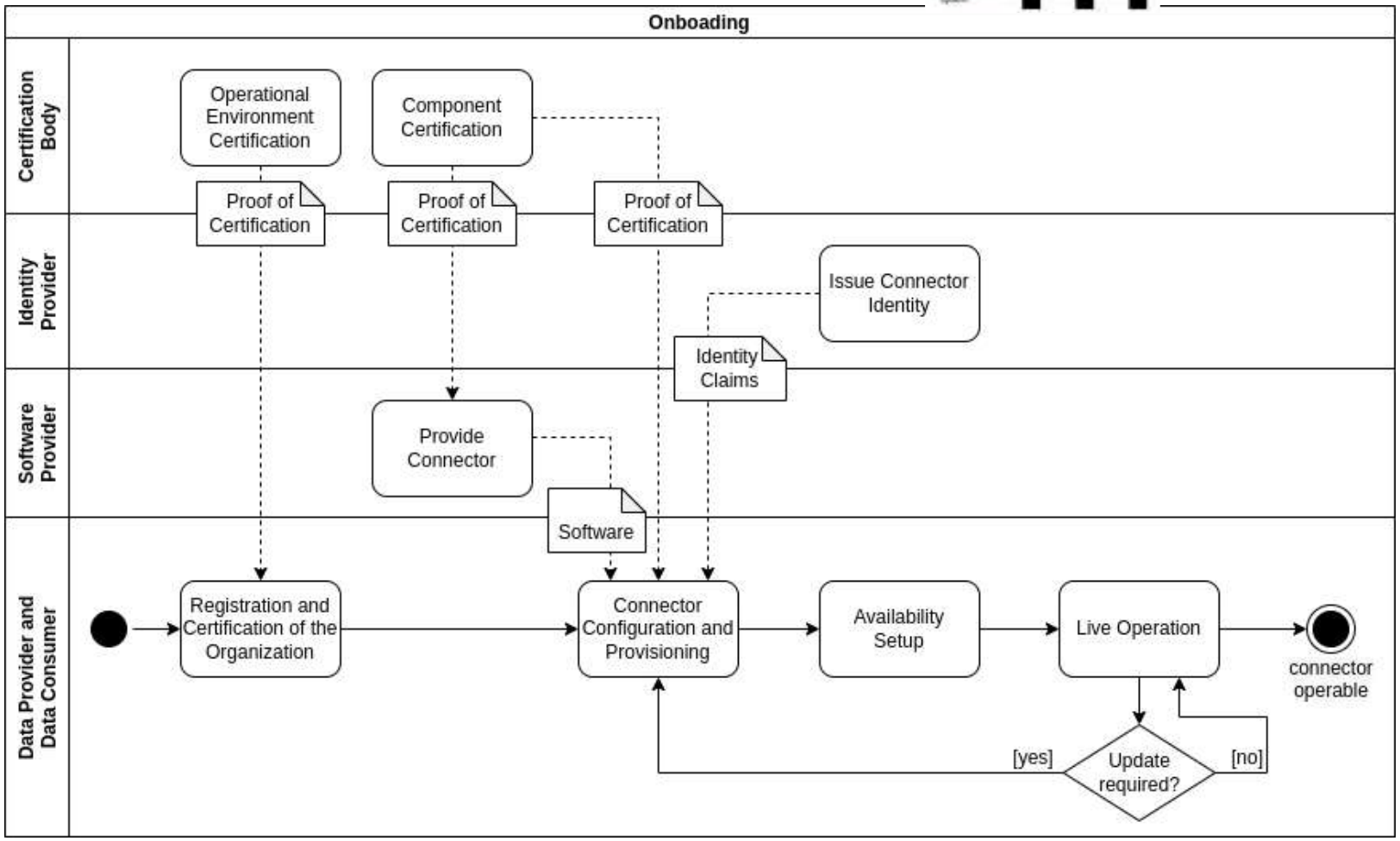

Process Layer

Creating a Data Offering

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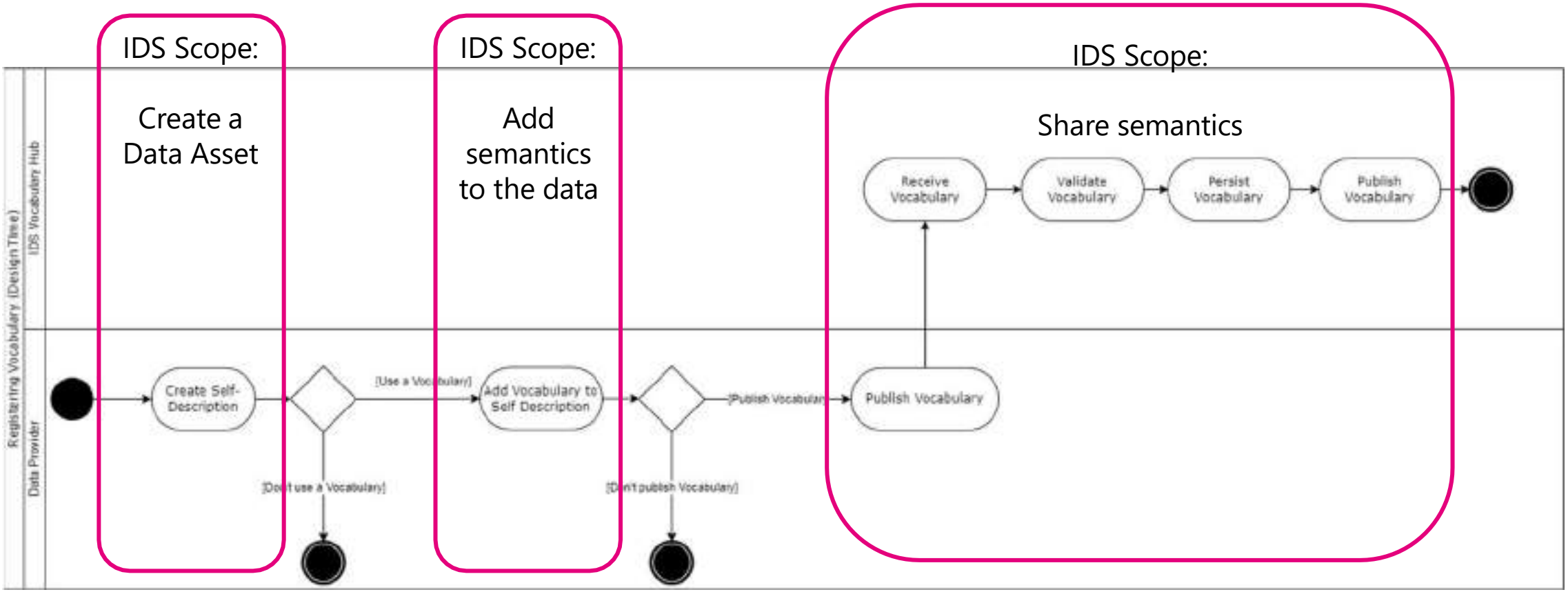

Process Layer

Publication of a Data Offering

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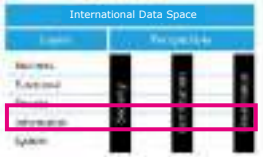


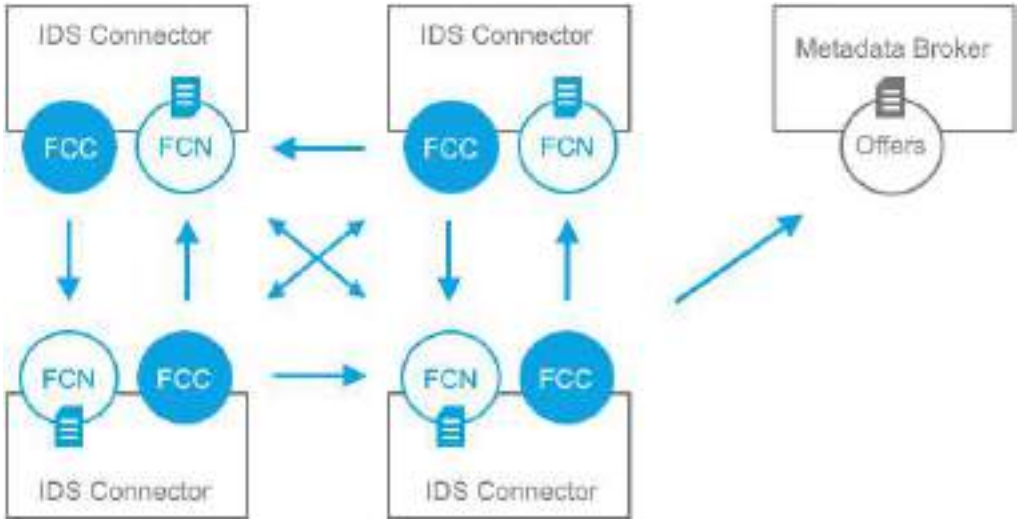
Each Connector publishes one or multiple self descriptions

Connectors can query self-descriptions

Publication of self-descriptions to a Metadata Broker is optional

A Connector MUST implement interfaces for publication and querying of self-descriptions

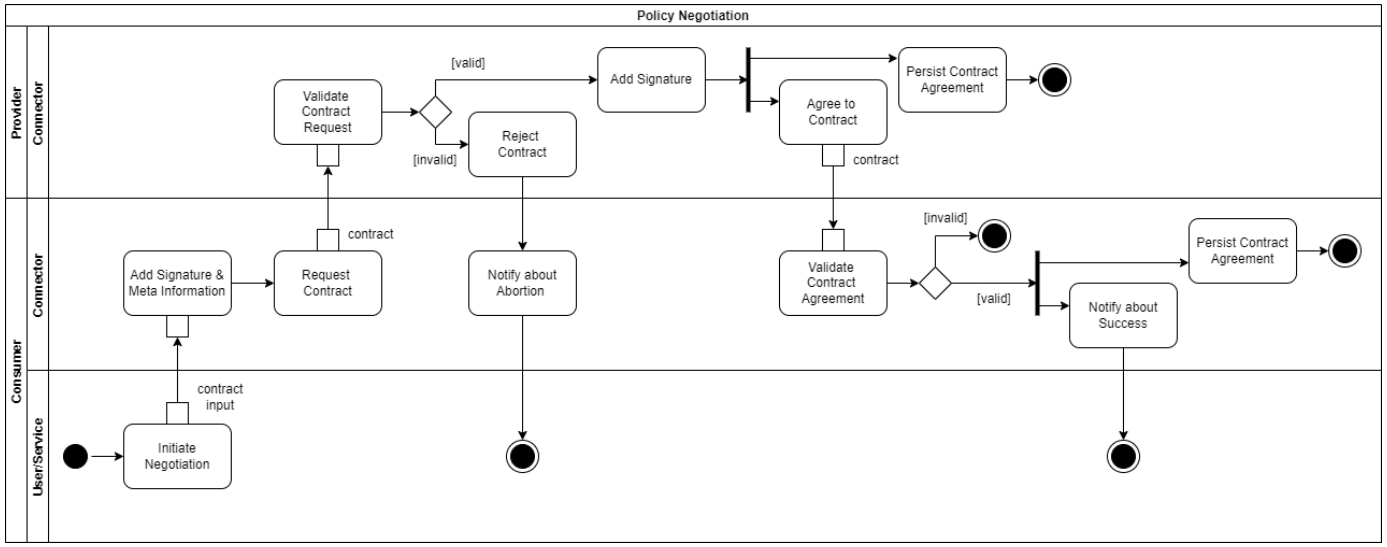
Crawling self-descriptions of partners is a valid approach

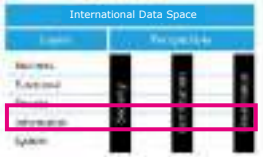


Do not confuse IDS self-descriptions (Data Catalogs) with Gaia-X Self Descriptions (Claims)

Process Layer

Contract Negotiation





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The IDS-RAM includes
- Integration of the Clearing House
- More complex scenarios

The contract negotiation sequence will be updated based on the Dataspace Protocol

Process Layer

Ok, but can we now transfer data?

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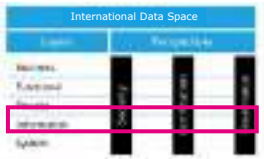

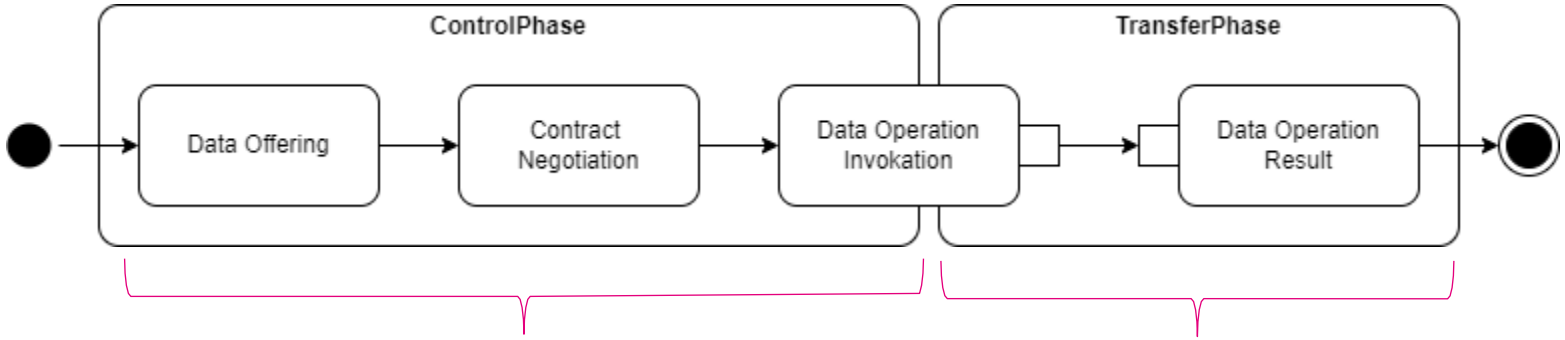

This is part of the Dataspace Protocol

The connector controls the Data exchange

The Data Exchange itself may:

- Use other protocols
- And can be conducted in-band or out-of-band
- As long as you can cope with the Usage Policies

Rules & policies for the data economy

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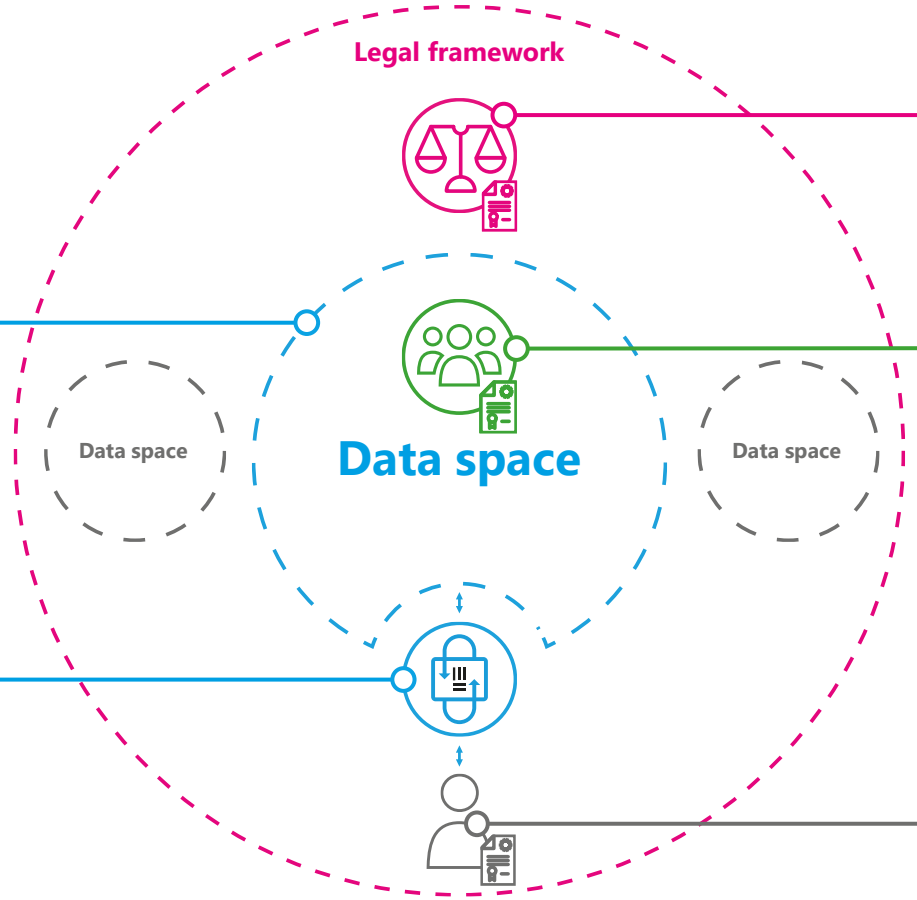
IDS enables the enforcement of different policy systems

IDS provides a **technical framework** to support data sharing based on diverse policies & agreements.

IDSA

The **IDS-based data space connector** connects participants with the data space.

Connectors understand and exchange data based on:
- Global/general policies
- Data space policies
- Data usage policies



The **government** establishes the legal and organizational framework, the **general policies** for data sharing in a country or region.

The **data space authority** defines the **data space policies**.

Which policies are mandatory depends on the design and its requirements.

Participants may choose additional **data usage policies** in their data contracts to further restrict access and use.

Policy Enforcement

Fundamental aspects

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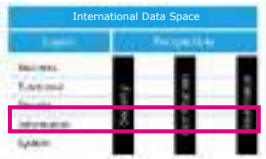
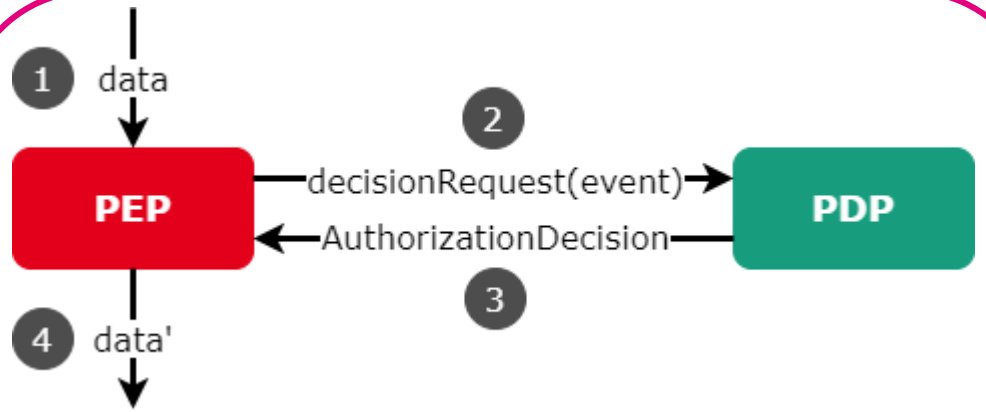
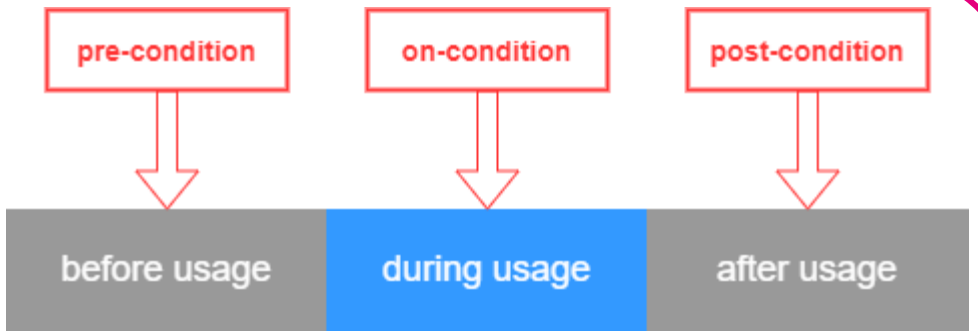




- Policies need to be enforced by a technical component

And

- A decision must be taken based on the Usage Policy and the actual context

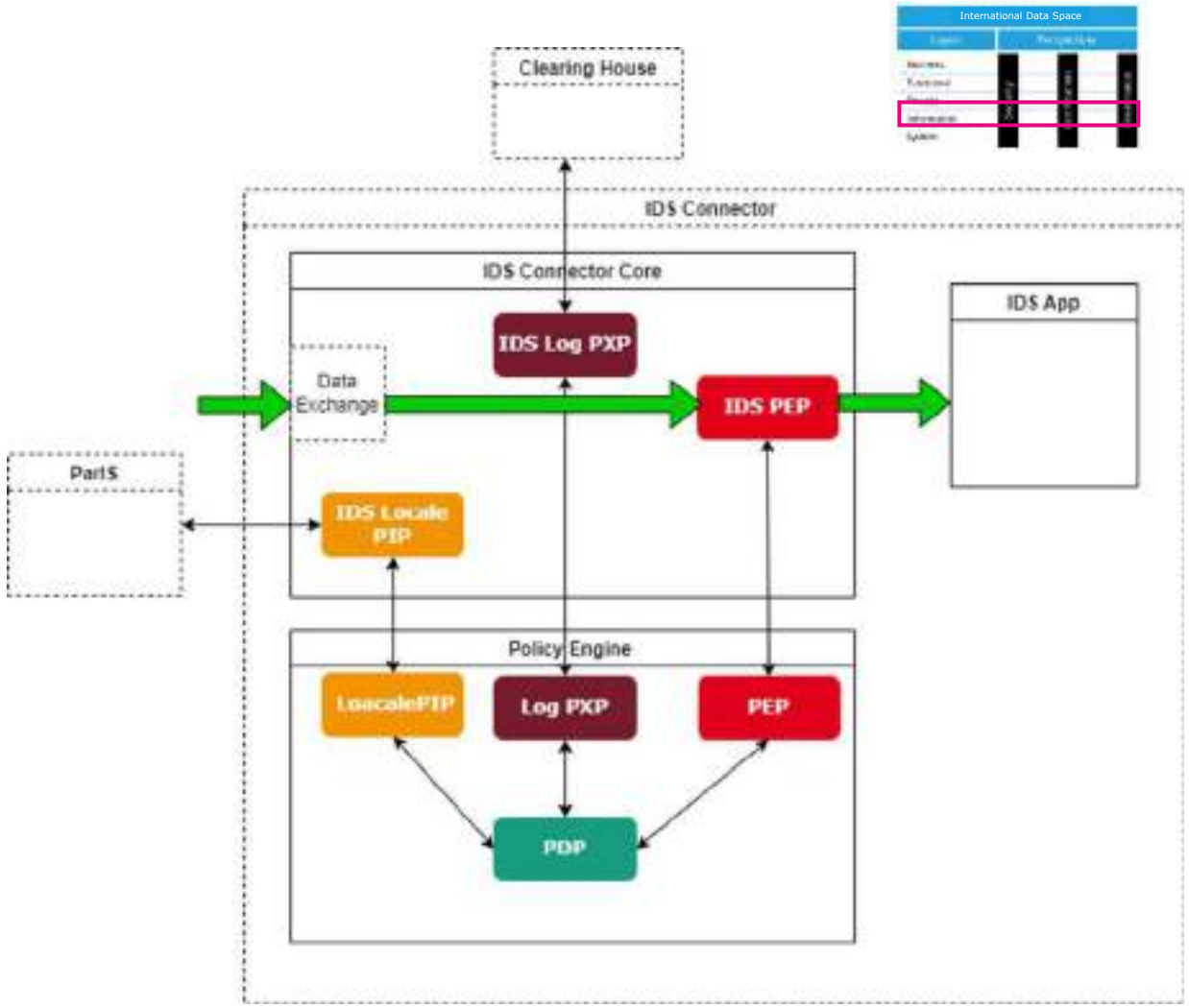


- When is an action required?

Policy Enforcement

This leads to the interaction of various components to

- Enforce policies
- Even after an activity
- Intergrate context information from external sources
- Integrate Policy enforcement in Apps
- Provide evidence
- ....



System Layer

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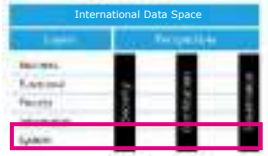

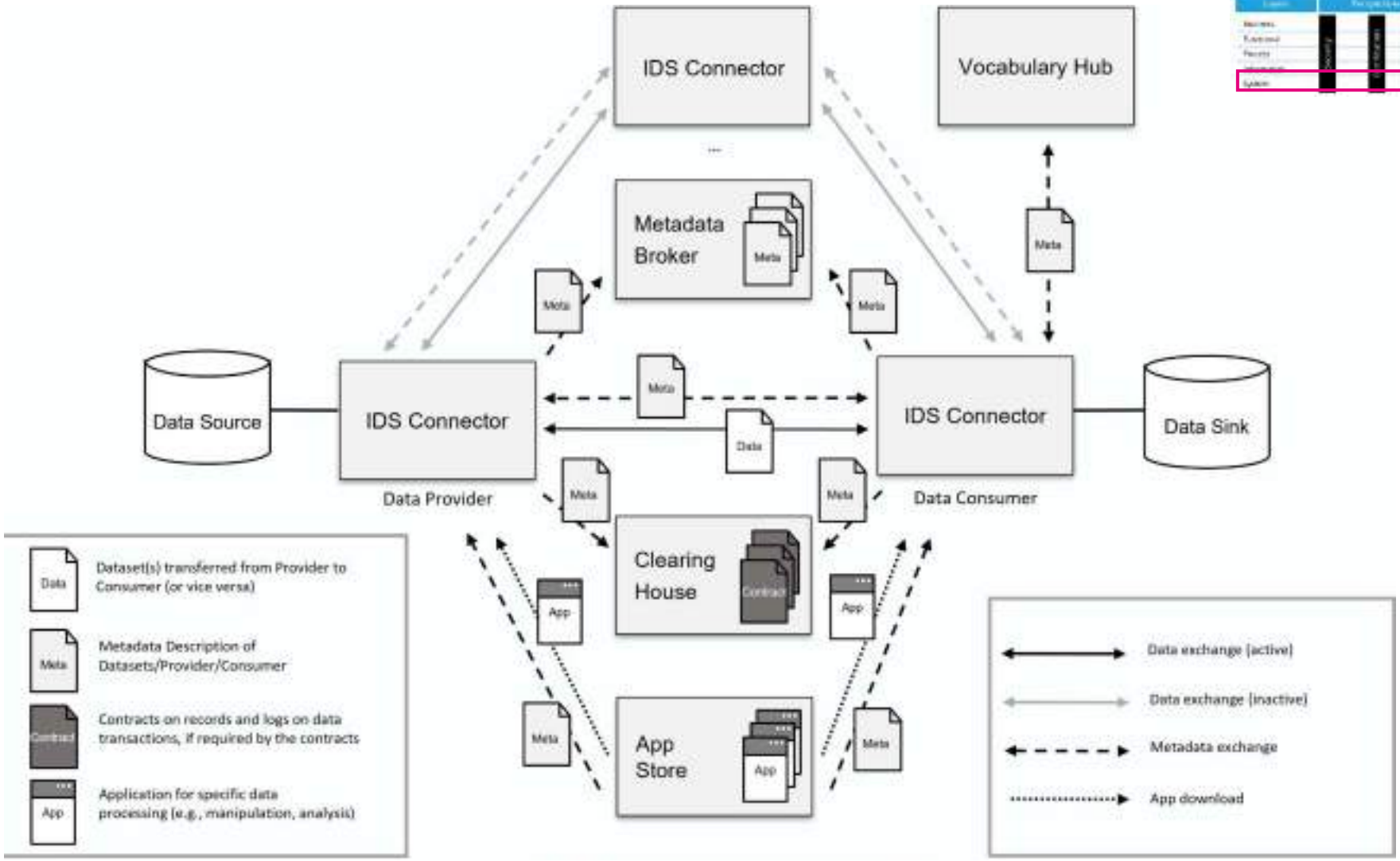

System Layer

The Connector

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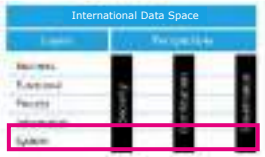
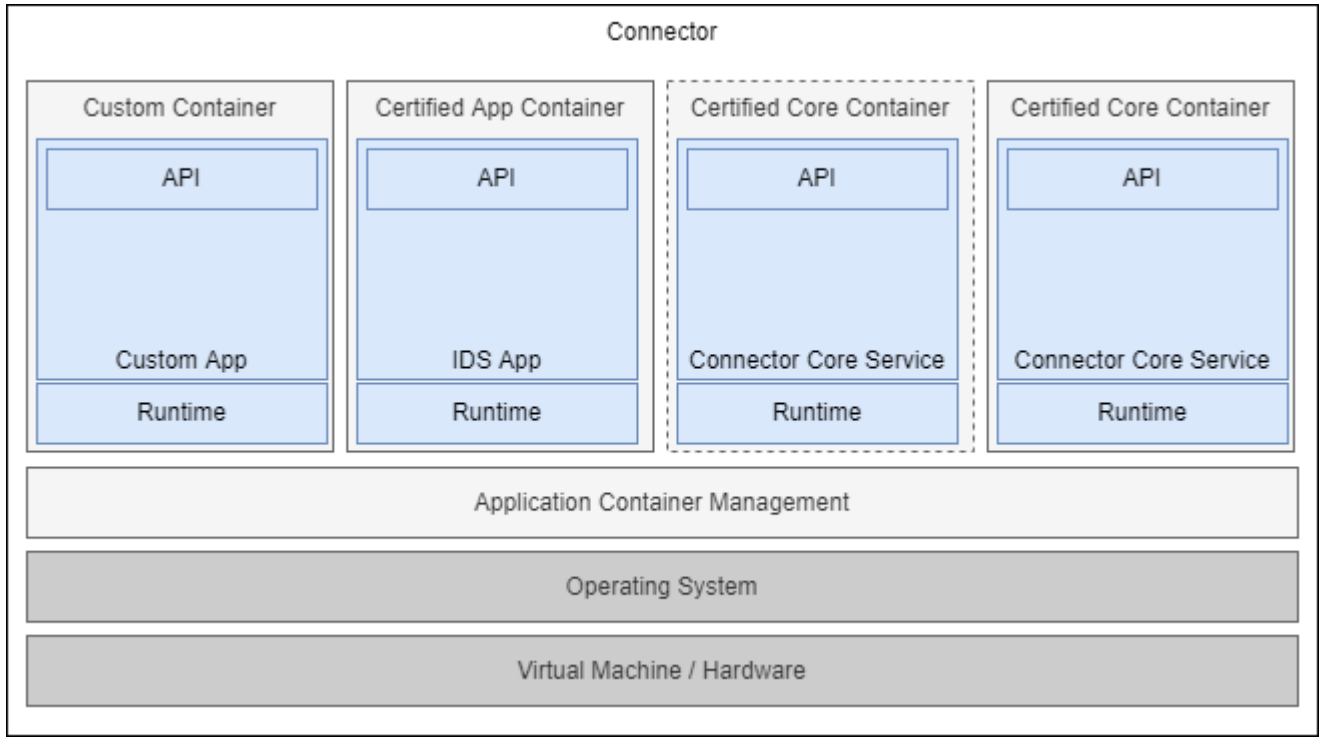


This is a Reference Architecture that should work for:

- Small devices, IoT Gateways
- Enterprise ready solutions
- Integratable into software and platforms
- Highly virtualized environments
- …

And it should be secure

Some aspects can be fixed.



Security Perspective

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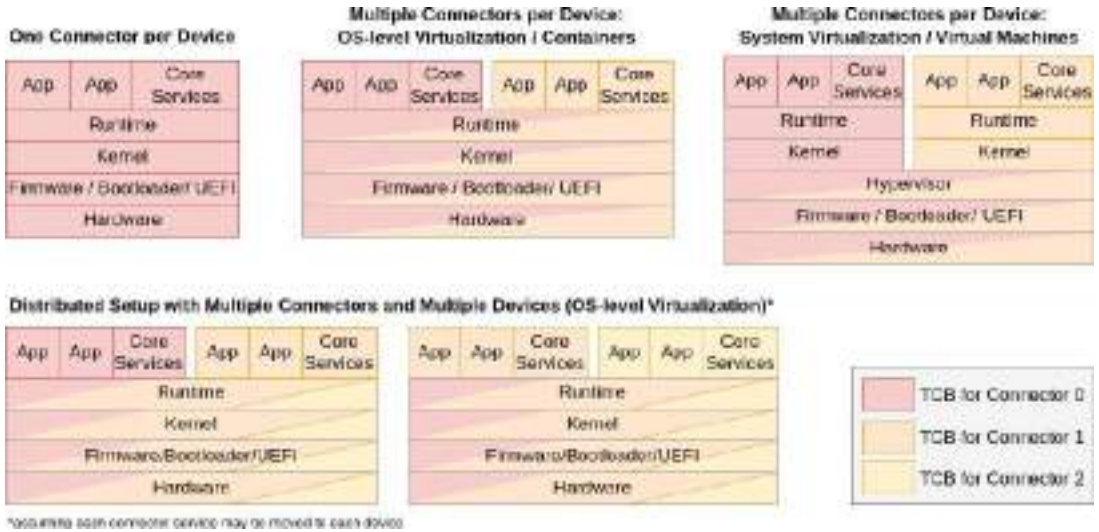
- Identity and Trust Management
  - Digital Identities for organizations and components
  - Claim Management
  - Trust anchors

- Securing the platform
- Securing the application
- Securing the interactions between IDS Components

- Usage Control (next slides)



Data Usage Control

An Extension of Access Control

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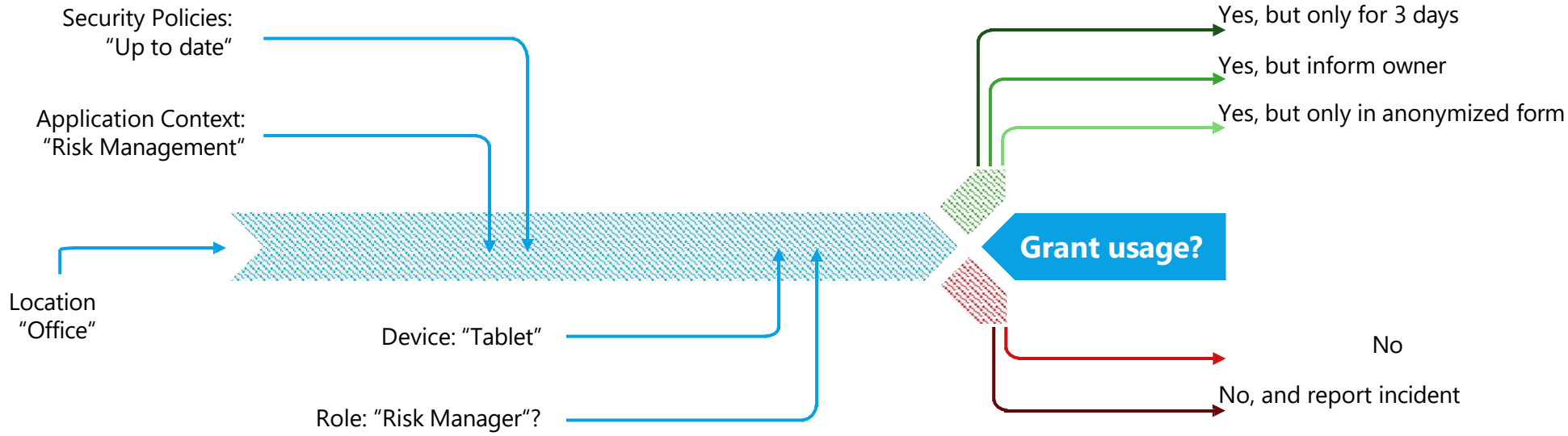
- Fine-grained policies specify how data is handled after access has been granted
- Formalization of data sovereignty requirements and their technical enforcement



Data Usage Control

An extension of access control

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Provision

Past + Present

Roles
Risk Manager

Purpose
Risk Management

Obligation

Future Usages

Obligation
Delete data after 3 days

Obligation
Do not forward

Usage Control

Access Control

Data Usage Control in the IDS

Overview

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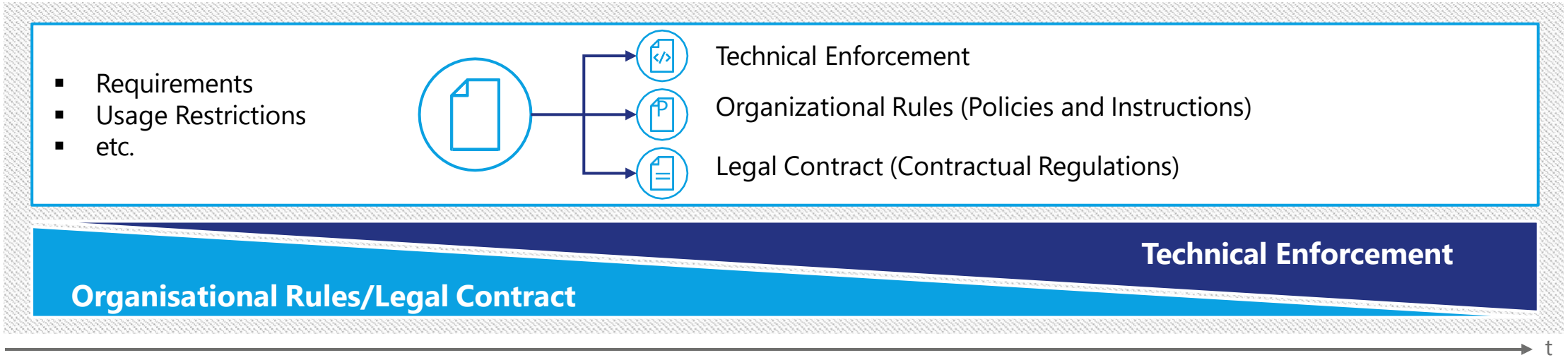
Conception and development …

1. … a **language for the specification of data sovereignty** requirements (technology-independent)
2. … of technologies for the **technical implementation of data sovereignty** requirements

→ Formalization of data sovereignty requirements and their technical enforcement



Certification Perspective

Short version of the Certification Scheme

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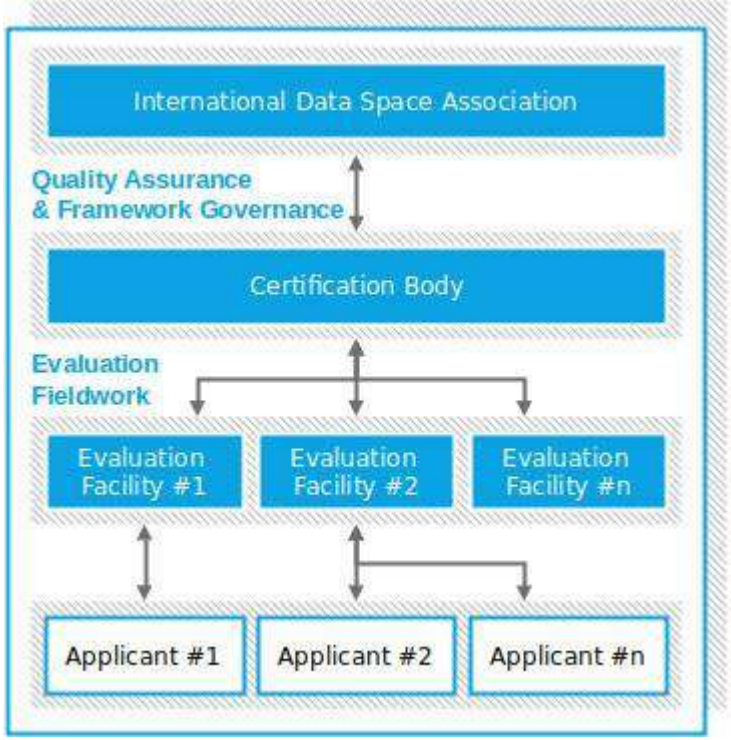
Definition of roles and processes in the IDS Certification

- IDSA for Framework Governance
- Certification Body for Quality Assurance
- Evaluation Facilities conducting the evaluation

- This model holds true for both aspects:
  - Core Component Certification
  - Operational Environment Certification



Certification Perspective

Short version of the Certification Scheme

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Operational Environment

Evaluation effort and assurance

Requirements to be fulfilled

	Assurance Level 1 "Self-Assessment"	Assurance Level 2 "External evaluation of corporate policies and processes"	Assurance Level 3 "External audit of measures controlling the adherence to corporate policies"
Trust Level 1 "Entry into data sharing"	☑	☑	
Trust Level 2: "Providing reliable services"		☑	☑
Trust Level 3: "Offering trust-building services"		☑	☑

Core Component Certification

Evaluation effort and assurance

Requirements to be fulfilled

	Assurance Level 1 "Self-Assessment"	Assurance Level 2 "External evaluation of corporate policies and processes"	Assurance Level 3 "External audit of measures controlling the adherence to corporate policies"
Trust Level 1 "Entry into data sharing"	☑	☑	
Trust Level 2: "Providing reliable services"		☑	☑
Trust Level 3: "Offering trust-building services"		☑	☑

NOTE:
The Certification Criteria, test specifications, test cases and the Reference Testbed are dedicated assets derrived from the RAM

Data Governance Perspective

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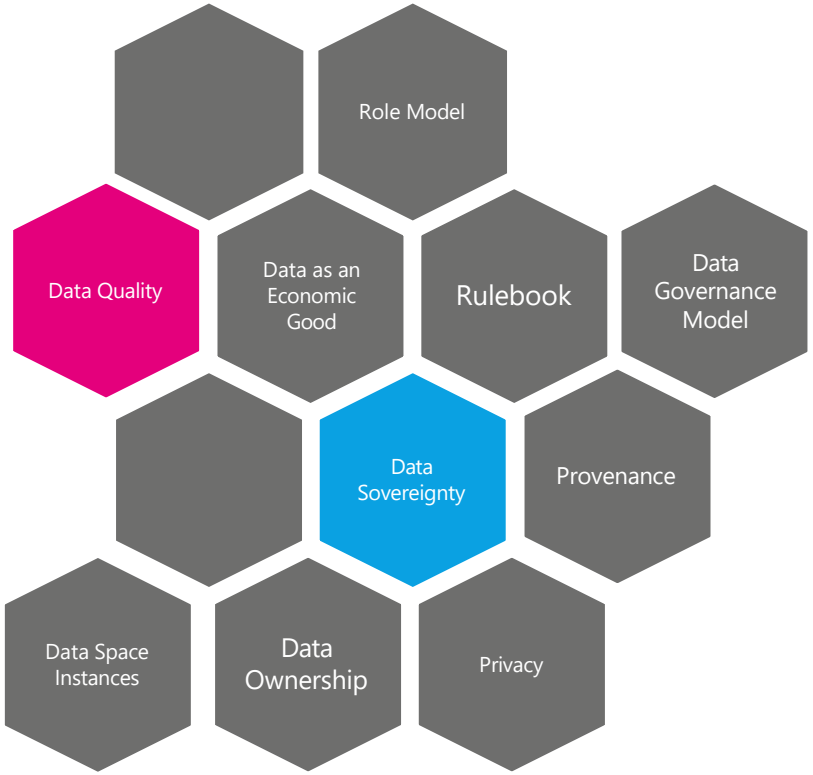
Several topics are discussed in the Data Governance Perspective

The clear relationship between the Governance Perspective and the IDSA Rulebook needs to be defined.

Nevertheless, some important topics have a technical dimension and are directly related to the IDS-RAM.



Why we need a new version

Some improvement areas

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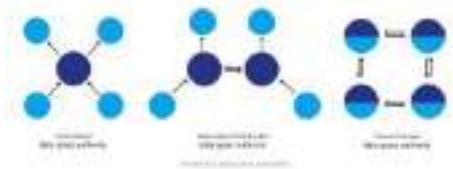
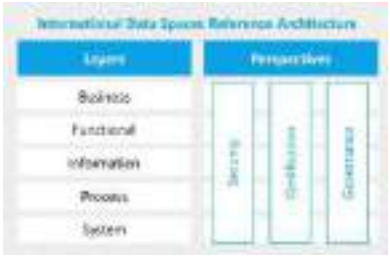
Align with the latest developments
e.g.
Dataspace protocol, Rulebook, DSSC blueprint, etc.

Include **decentralized** and **federated** approaches, e.g., in **Trust framework**



Different roles in data spaces:
Provide architectural guidance for **all**

Present RAM with a **Modular** approach instead of linear



IDS-RAM 5

Main changes

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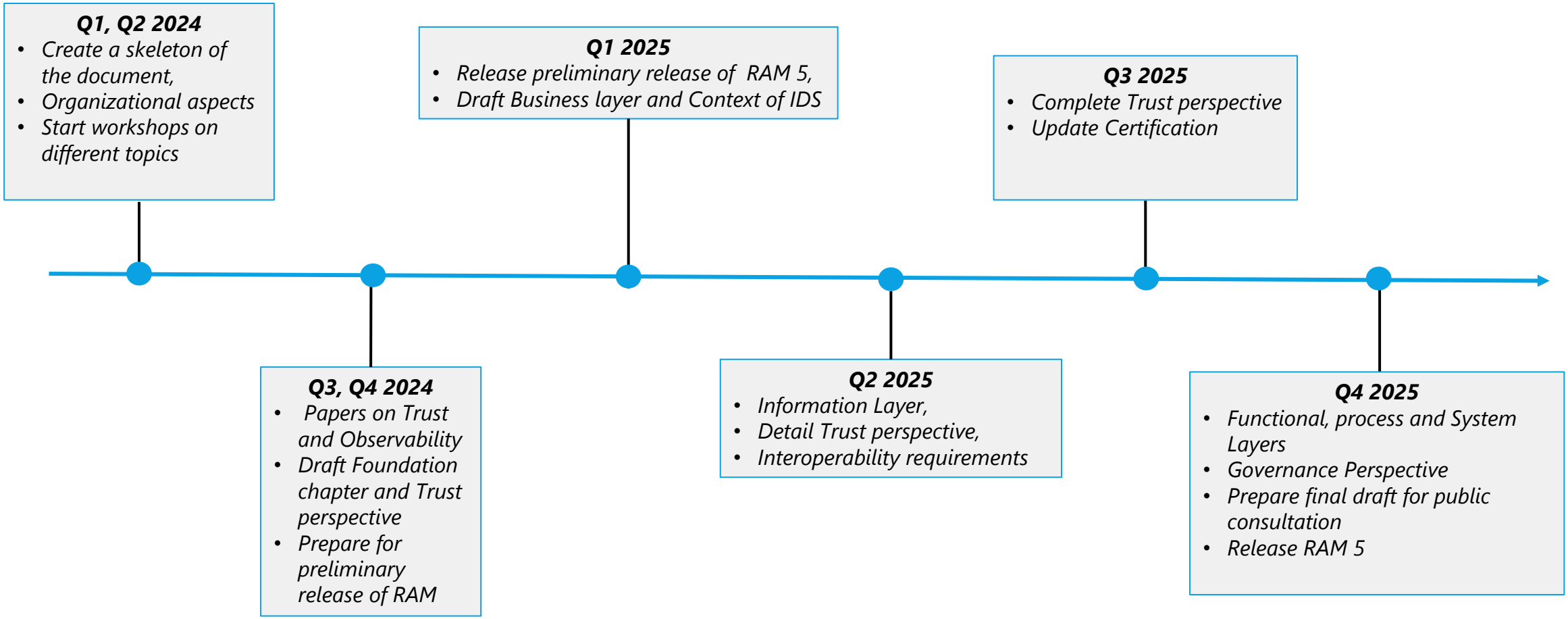
- Alignment with Dataspace Protocol.
- More flexible guidance on how to ensure trust in data spaces, where it is not specified which Identity Provider to use, meaning neither the required identities nor the technology used for authentication and validation are defined. The choice of trust framework to use is delegated to the role of the Data Space Governance Authority.
- The concept of Observability where the Clearing House component disappears. Any participant in the data space can be an Observer but must be authorized to do so. Between a data provider and a data consumer, it is agreed upon who will be the Observers (it doesn't have to be just one). It remains to be clarified at what point in the DSP the Observers are specified.
- Alignment with ongoing standardisation work (e.g. ISO20151, CEN TDT)
- Alignment with IDS Certification 2.0
- Data space governance authority role

When:

Time plan

INTERNATIONAL DATA SPACES ASSOCIATION



Who can contribute

Let‘s do this together!

INTERNATIONAL DATA SPACES ASSOCIATION

- **IDSA members** – Have your say in the next generation of the Data spaces architecture!
- **IDSA Head office** will support you for project management and organizational aspects

How to work together

A collaborative and transparent process

INTERNATIONAL DATA SPACES ASSOCIATION

1 Project plan

A **proposed plan** with **Milestones** for each quarter

Two types of tasks: **organizational** and **content**-related

2 GitHub

Main place for **content creation**

Using **GIT issues** and **milestones**, and typical **OS workflows**

3 RAM 5 Touch-point Calls

Sync point for **contributors** and **maintainers**

Bi-weekly on Mondays at 10 CET

4 Working Group Meetings

The **IDSA WG Architecture** will review/approve

in the regular **quarterly** meetings.

Where to find more details

Some useful links…

INTERNATIONAL DATA SPACES ASSOCIATION

- Current version of RAM: **RAM 4 overview**, **RAM 4 Repository**
- **RAM 5 project plan** document
- **RAM5** Repository on GitHub and Documents on Teams
- **WG architecture** on GitHub and on Teams
- Teams Link for bi-weekly **RAM 5 touchpoint calls,** and info on **upcoming workshops**
- Other relevant resources: **DS Protocol**, **Rulebook**, **DSSC blueprint**

- To find more onboarding info for newcomers and insights on next RAM 5 activities, see the slides and recording from the **RAM5 Q2 Planning meeting**

How to get onboarded to the IDSA GitHub

Where you can find the RAM 5 repository and the WG meeting details

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1 Gain access

- Create a **GitHub** account with your work email address if you do not already have one
- Provide your GitHub username in this **form** to request access to the private repositories in the IDSA GitHub
- You will receive an email response once you are added

2 Go to RAM 5 repository

- **RAM 5 repository** is the main place for RAM-5 co-creation
- Start with one of these:
  - README or Contributing
  - Issues
  - RAM 5 overview board or milestones

3 Explore members-area

- Visit **WG architecture** to find up-to-date info on dates and connection details for the **meetings of the working group** and the **RAM 5 touchpoint calls**.
- Visit the **members-area** to learn about other IDSA working groups, task forces and the organizational handbook

Caso práctico

Digichecks

02

Tekniker | IDSA RAM | DSP

Dr. Gonzalo Gil Inchaurza | Tekniker | 18/02/2025

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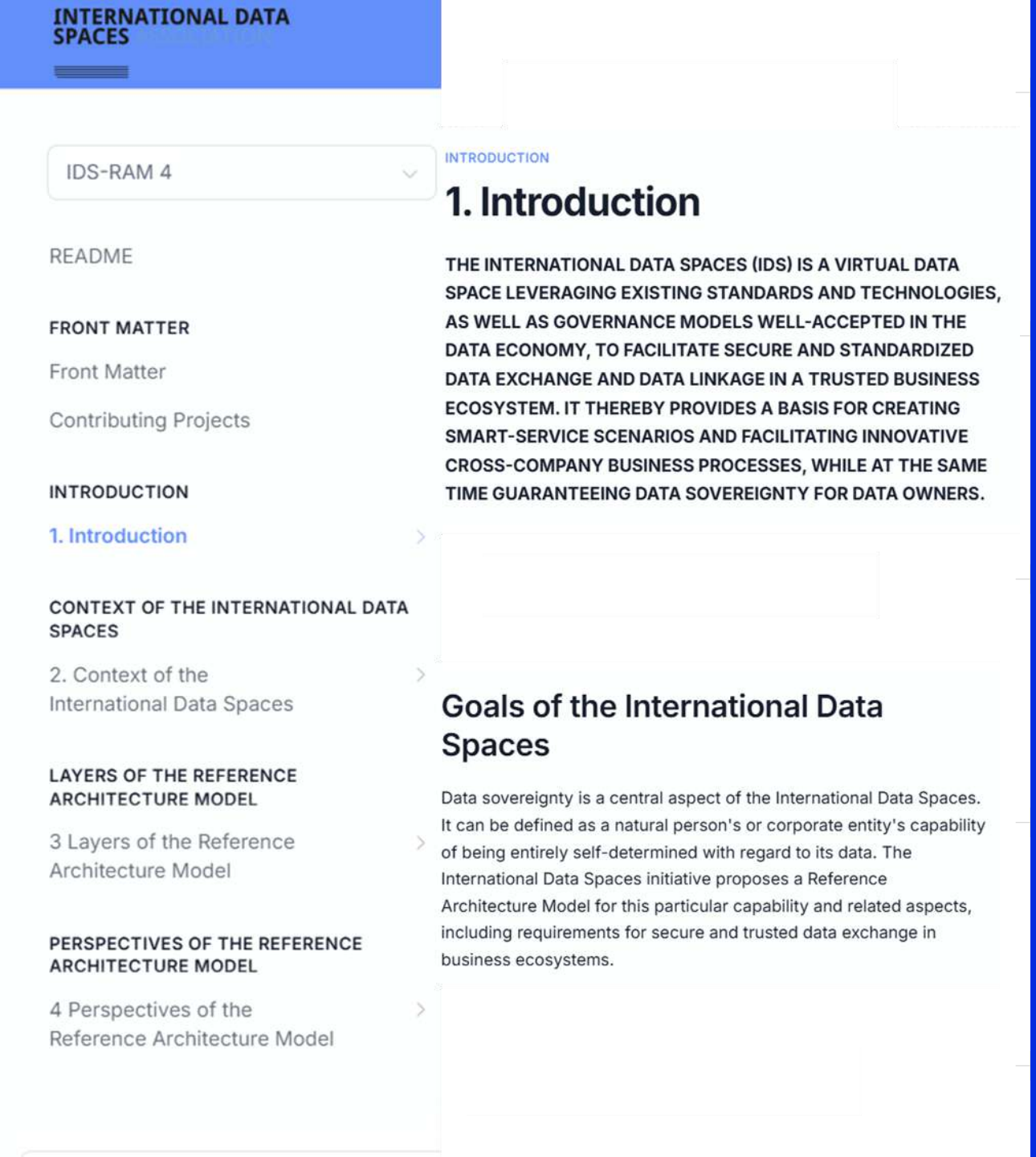
Tekniker
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE



1

Horizon Europe DigiChecks project | Adoption of the IDSA Reference Architecture Model 4.0

DigiChecks: Facilitate the management of building permits based on Data Spaces

DigiChecks

- Topic: HORIZON-CL4-2021-TWIN-TRANSITION-01-10 (IA)
- Project starting date: 01/06/2022
- Project duration: 36 months
- Budget: 6.5 M€

Creation of a new **digital framework** to enable **interoperable, trusted and sovereign data sharing** between platforms of different stakeholders to **facilitate the management of building permits and compliance checks**

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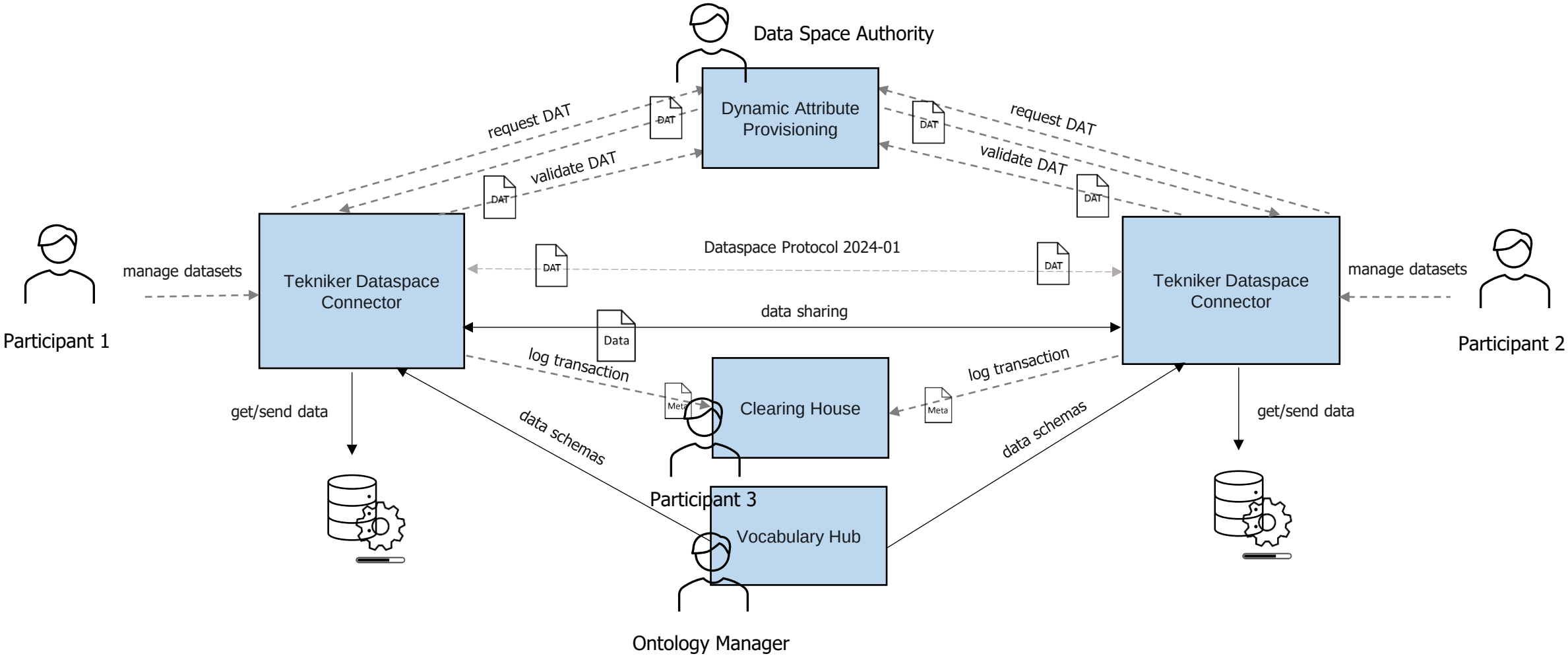
DigiChecks Data Spaces System Layer: General Overview



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DigiChecks Data Spaces System Layer: Dataspace Connector

What Datasets are offered?

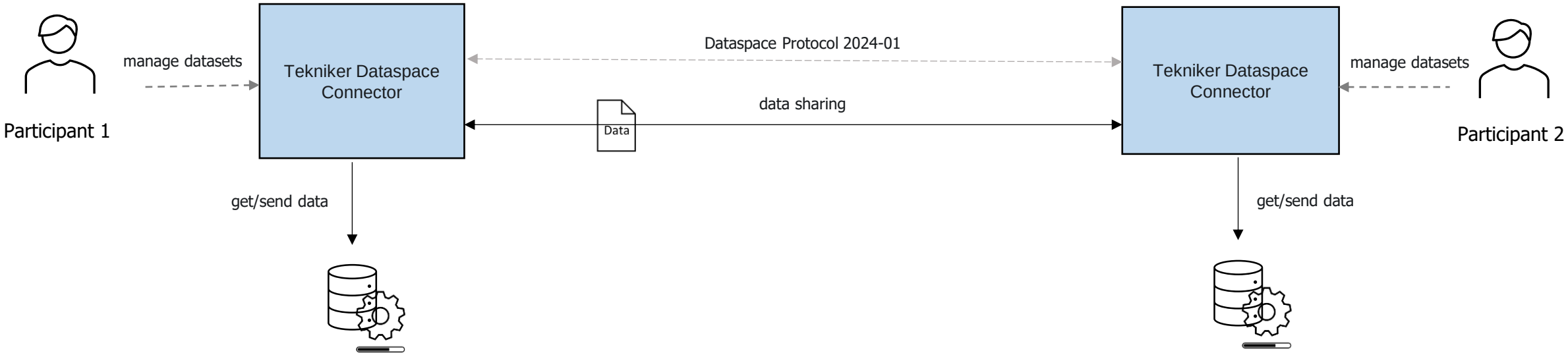
How do I access the Datasets?

What are the usage policies for each Dataset?

©Tekniker

DigiChecks Data Spaces System Layer: Dataspace Connector

- Dataspace Connector:
  - Management of Datasets
  - Interoperable Publication/Discovery of Datasets, Negotiation of Usage Policies, Access to Datasets
  - Data Sharing for different Data Sources and Data types



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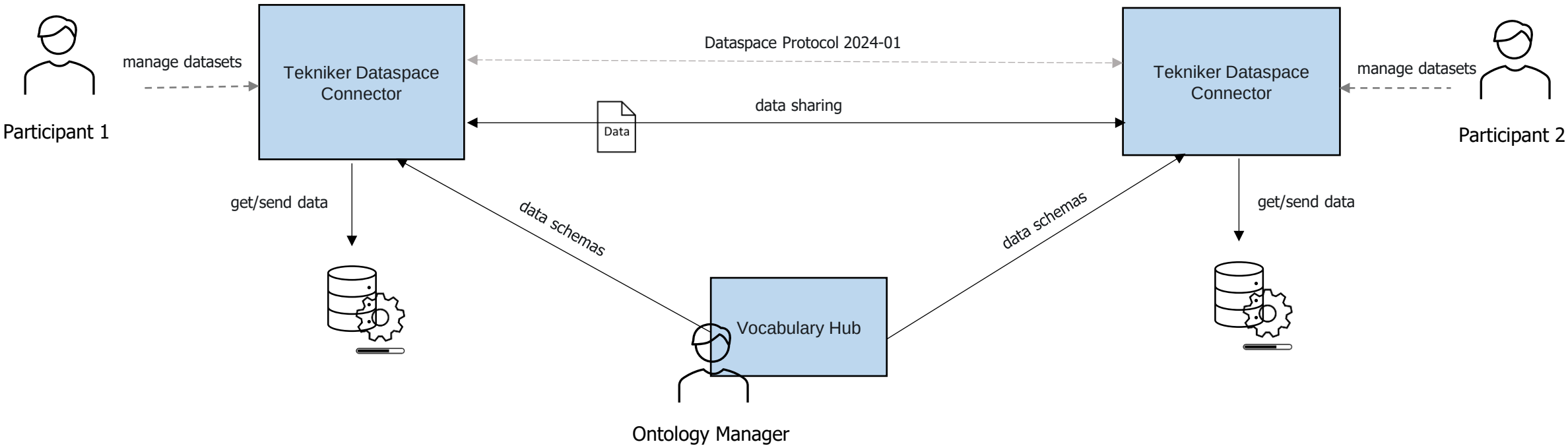
DigiChecks Data Spaces System Layer: Vocabulary Hub

- Dataspace Connector:
  - Management of Datasets
  - Interoperable Publication/Discovery of Datasets, Negotiation of Usage Policies, Access to Datasets
  - Data Sharing for different Data Sources and Data types
- Vocabulary Hub: Interoperability at data level



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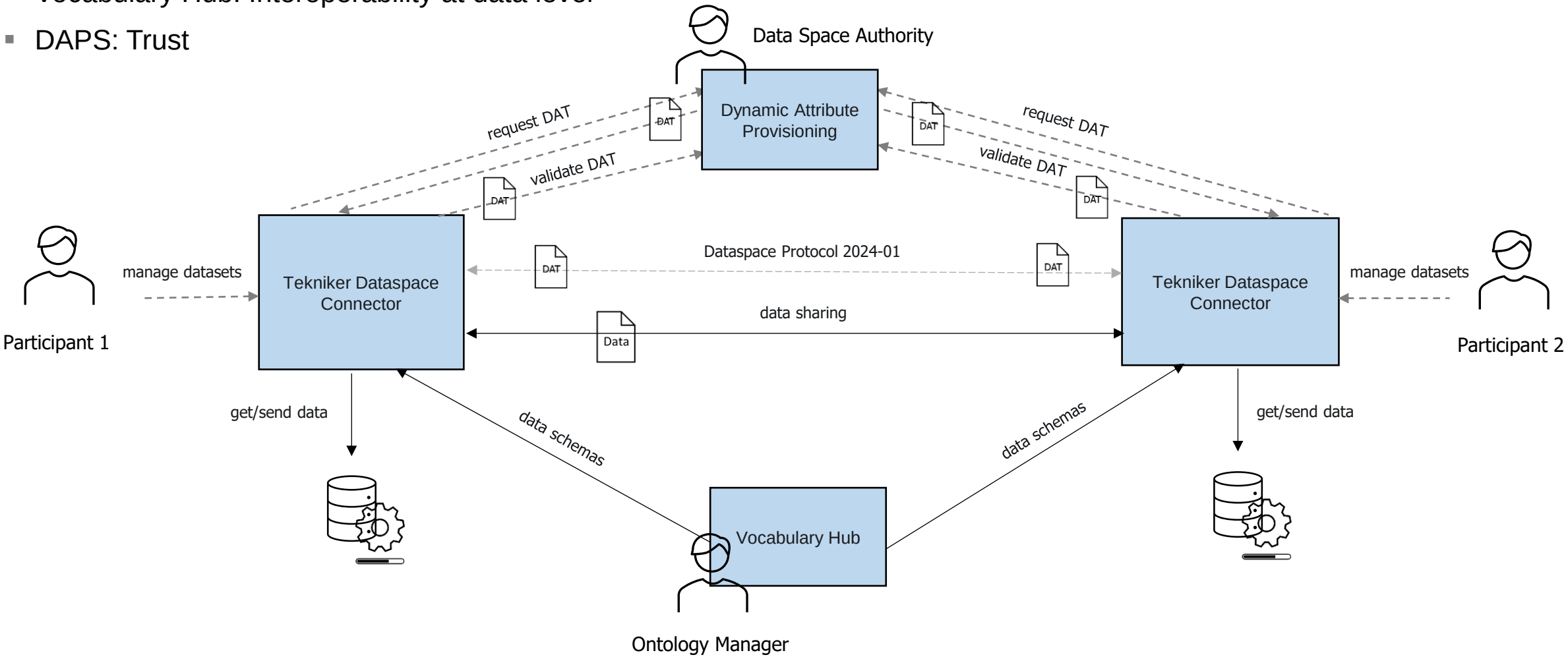
DigiChecks Data Spaces System Layer: Dynamic Attribute Provisioning Service

- Dataspace Connector:
  - Management of Datasets
  - Interoperable Publication/Discovery of Datasets, Negotiation of Usage Policies, Access to Datasets
  - Data Sharing for different Data Sources and Data types
- Vocabulary Hub: Interoperability at data level
- DAPS: Trust



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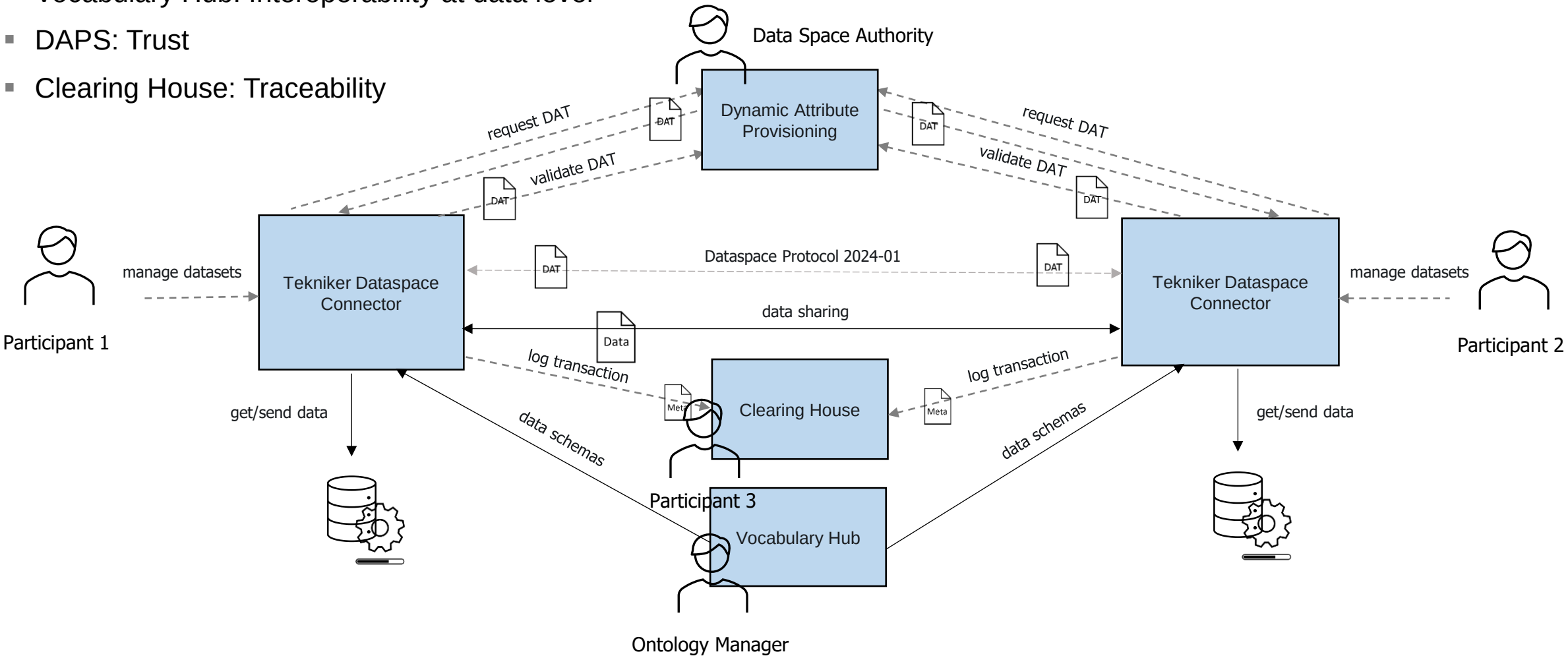
DigiChecks Data Spaces System Layer: Clearing House

- Dataspace Connector:
  - Management of Datasets
  - Interoperable Publication/Discovery of Datasets, Negotiation of Usage Policies, Access to Datasets
  - Data Sharing for different Data Sources and Data types
- Vocabulary Hub: Interoperability at data level
- DAPS: Trust
- Clearing House: Traceability



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Dataspace Protocol

03

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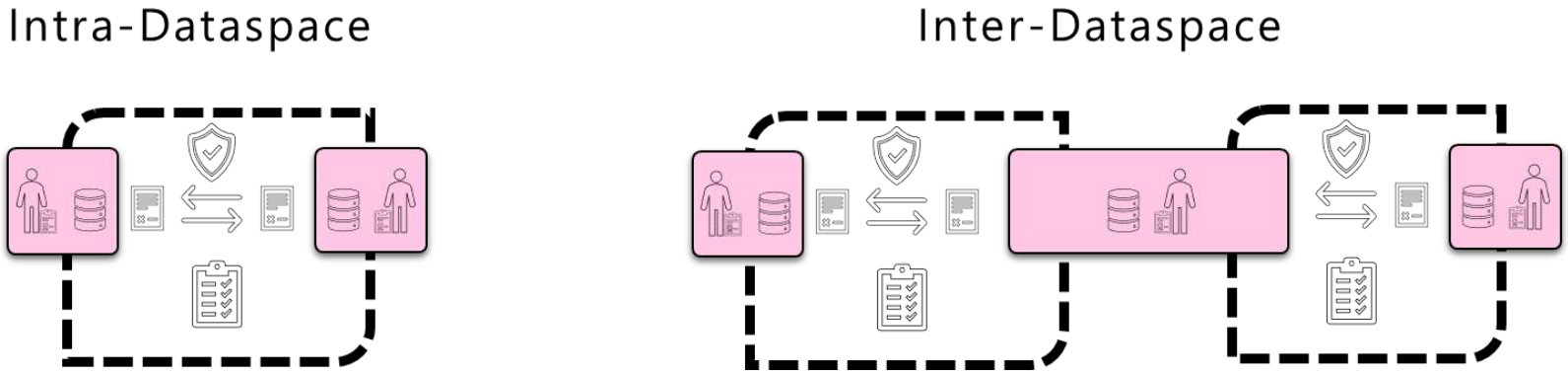
Breaking down the Dataspace Protocol

The foundation for sovereign data sharing

Global Alignment & Interoperability

INTERNATIONAL DATA SPACES ASSOCIATION



- ***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 (sounds & looks easy, but it's not!!!)

Layered model for interoperability

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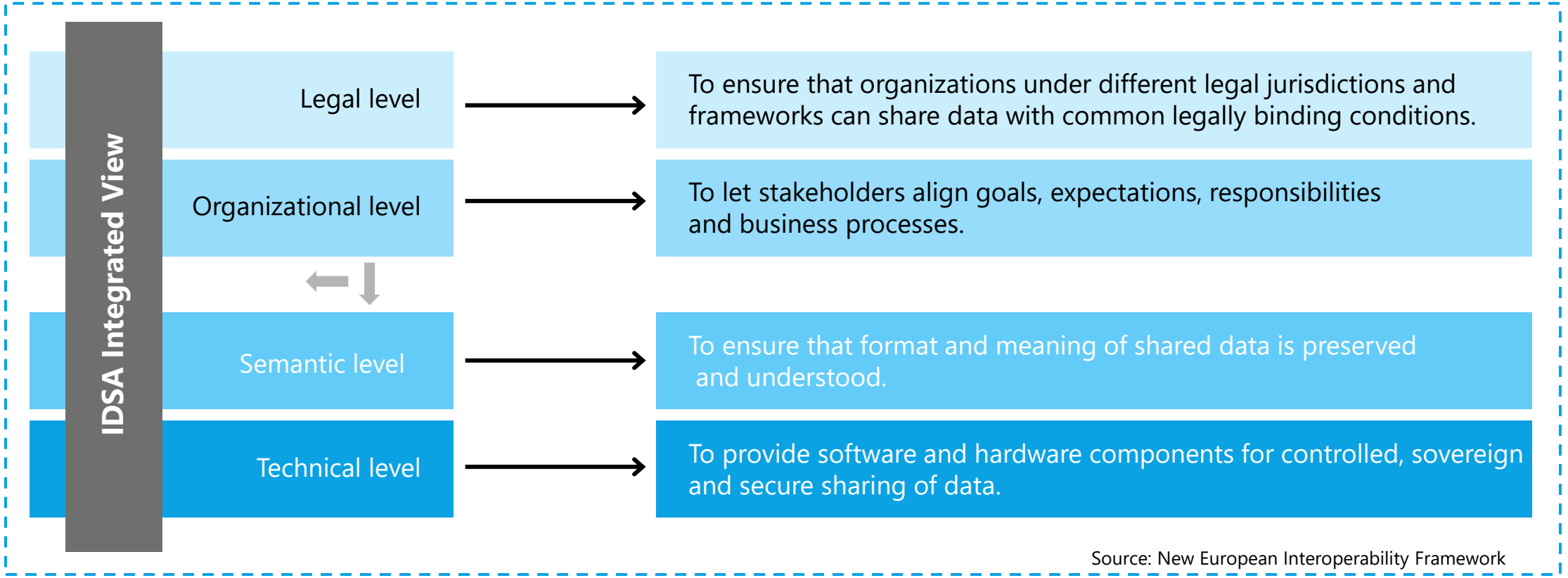

Source: New European Interoperability Framework

- **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

IDS & Interoperability

Four Layers of Interoperability & IDS

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Technical

» "How do different dataspace instances communicate seamlessly with each other?"

Dataspace Protocol
Connectors, component frameworks

Semantic

» How are data definitions interpreted across different platforms?
» How are data definitions harmonized across different platforms?

Dataspace Authority Policies
Semantic Models (e.g., IDS Information Model)

Organizational

» How the operational processes and procedures could be harmonious?

IDSA Rule Book

Legal

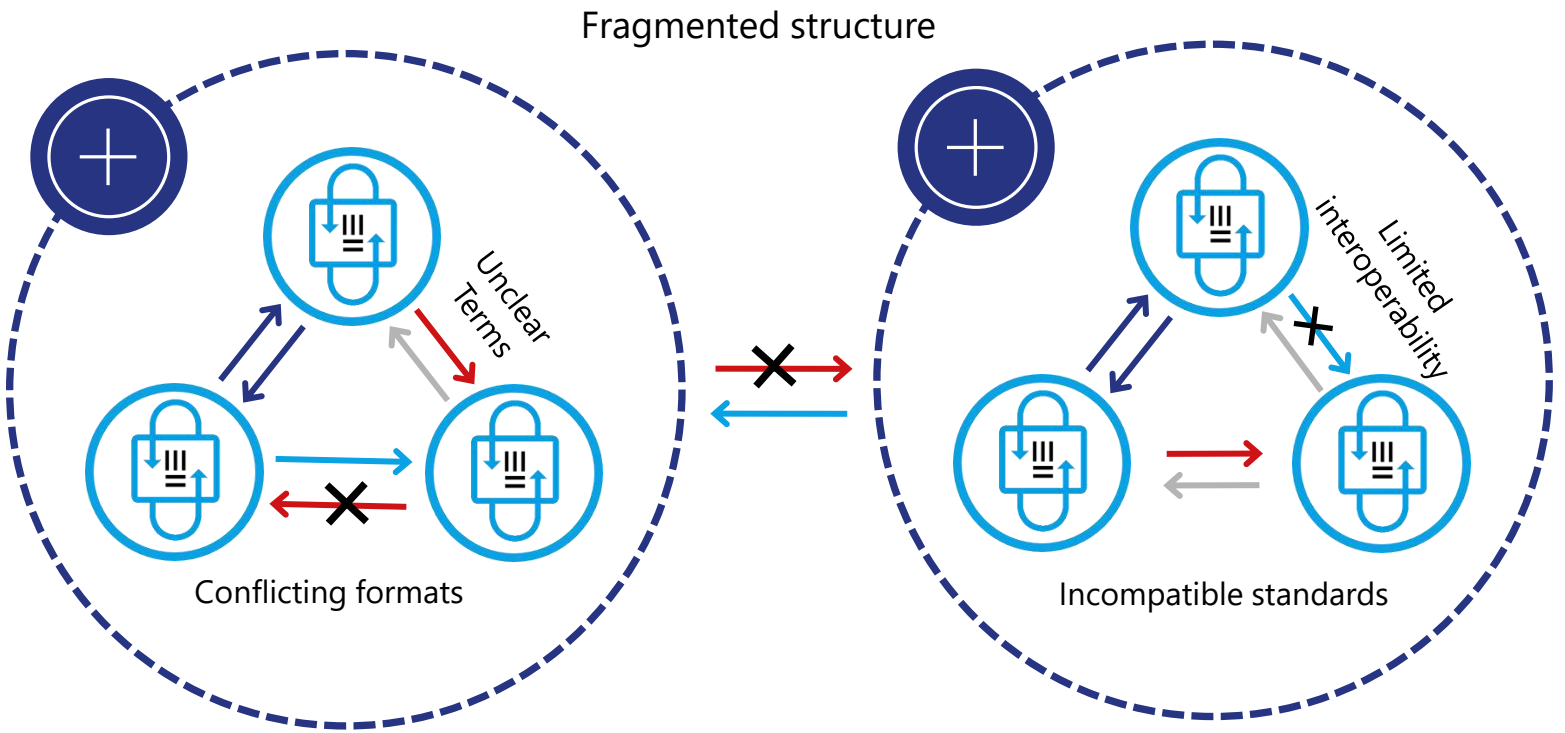
» How are contractual agreements recognized in different jurisdictions?
» What challenges arise when enforcing contractual terms across borders?

IDSA Task Force Legal Framework

What is the Dataspace Protocol?

The essence for interoperability

INTERNATIONAL DATA SPACES ASSOCIATION



Data Spaces Require:

- Data Sovereignty
- Interoperability
- Scalability
- Trustworthiness

Remember these:

HTTP GSM SWIFT

What is the Dataspace Protocol?

How does it provide interoperability?

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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?

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Semantic Interoperability

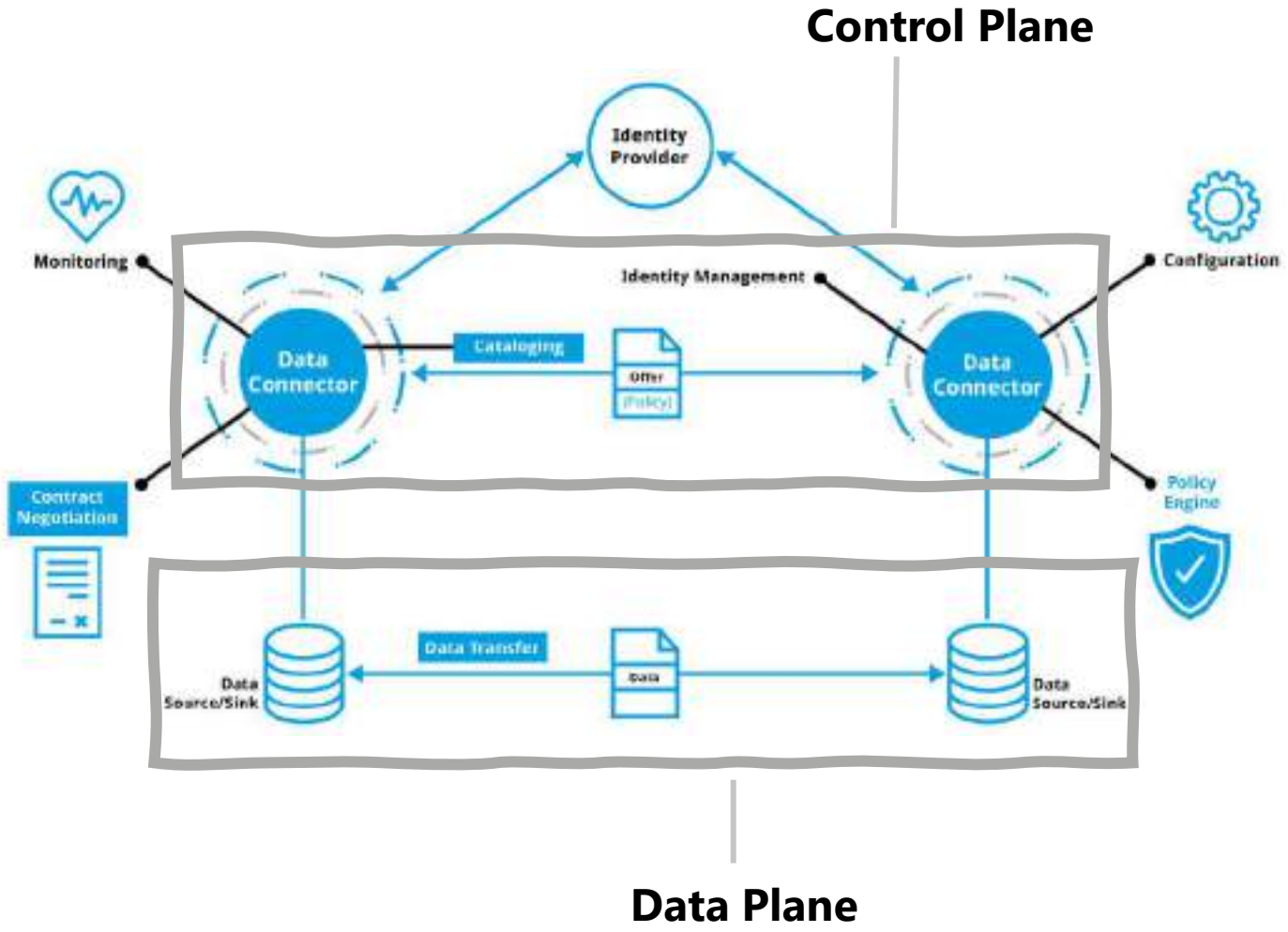
Common Data Models: DSP promotes shared models (e.g., JSON-LD, RDF) so data providers and consumers consistently interpret the same structure.

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.

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.

Dataspace Protocol

Why separating these layers (control plane & data plane)?

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Flexibility

- Separate decision-making from action-taking.
- Different data transfer protocols can be used without changing control mechanisms.

Scalability

- With a clear distinction, it is easier to scale each plane independently based on the needs of the system.

Security

- Control plane focusing on secure & trusted data exchange.
- Data plane focuses on efficient data transfer.

Modularity

- Data transfer process could be changed without affecting control mechanisms.
- Control mechanisms could be changed without affecting data transfer processes.

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**

Driving data spaces innovation

Collaborators defining and embracing the Dataspace Protocol

INTERNATIONAL DATA SPACES ASSOCIATION

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
IONOS
ZF
AMADEUS
VTT
SOVITY
Cofinity-X
PROMETHEUS-X
T Systems
NTT DATA
Boot-X
HUAWEI
SAP
truzzt
tecnalia
TECH2B
X-ROAD
Open

Driving data spaces innovation

Collaborators defining and embracing the Dataspace Protocol

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R&D Projects Adopting DSP

Specification lifecycle of Dataspace Protocol

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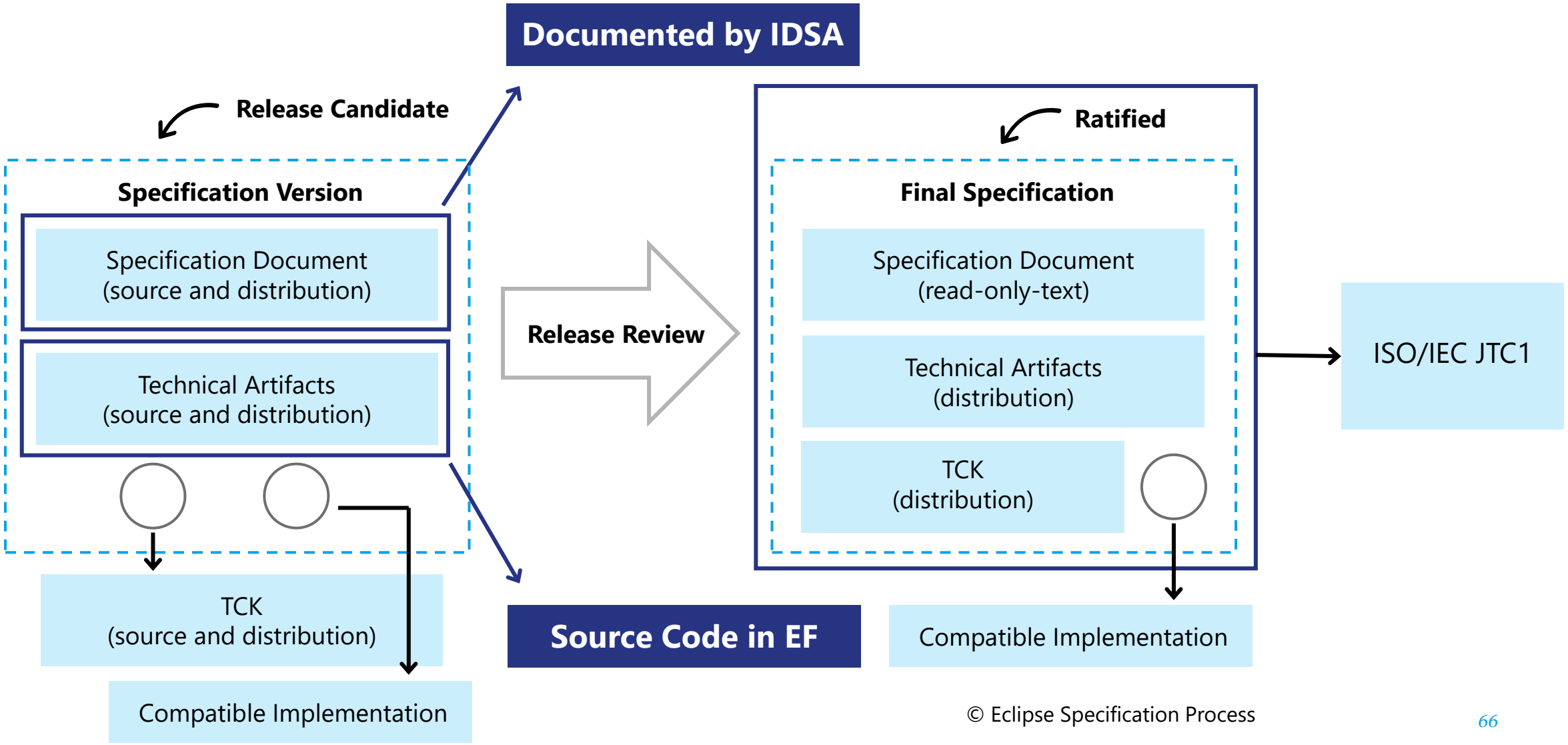

© Eclipse Specification Process

Why the Dataspace Protocol is essential?

for data sovereignty and data space interoperability

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

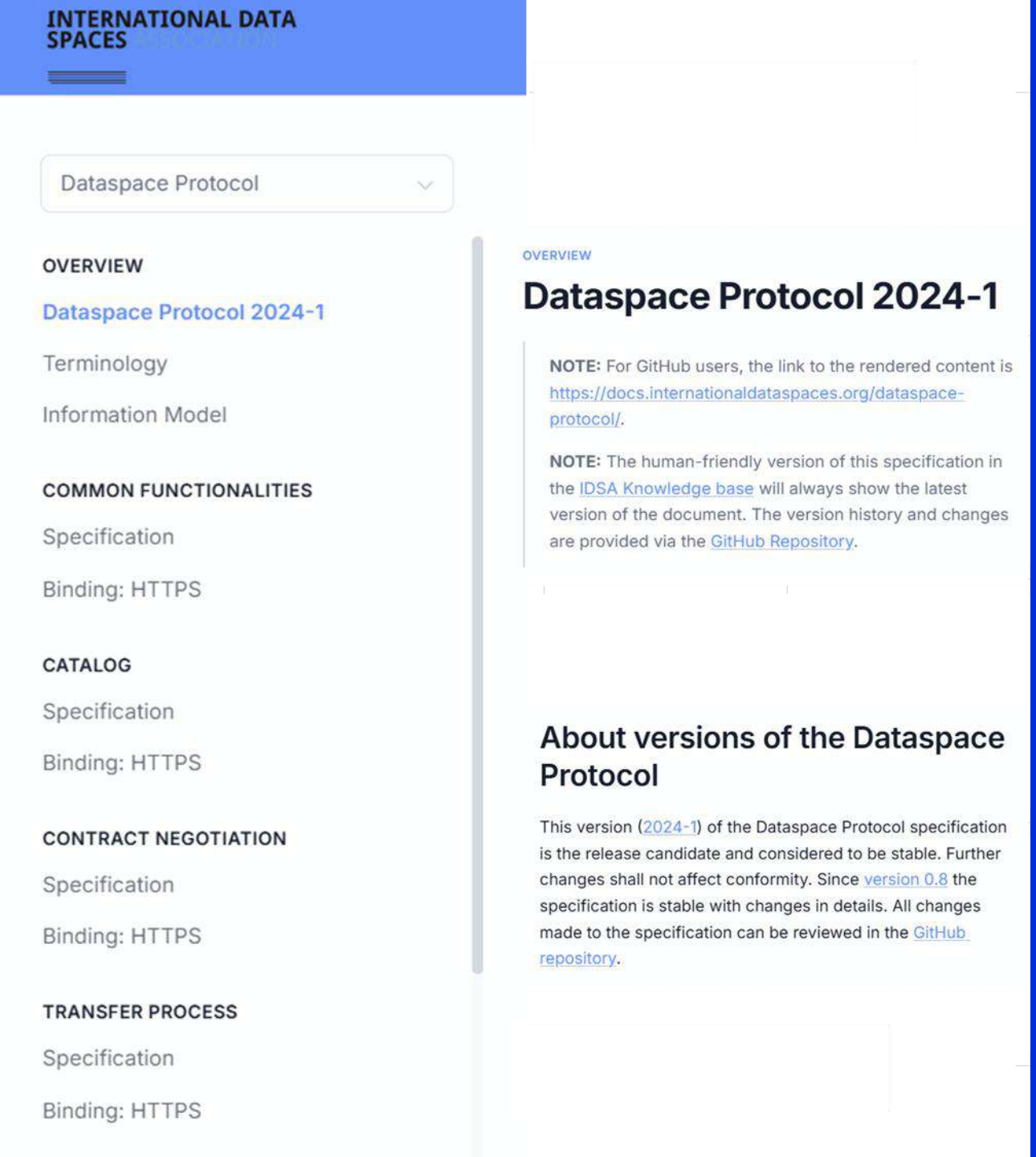
02 **Interoperability** is achieved through standardized data exchange formats and protocols.

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.

Caso práctico

04

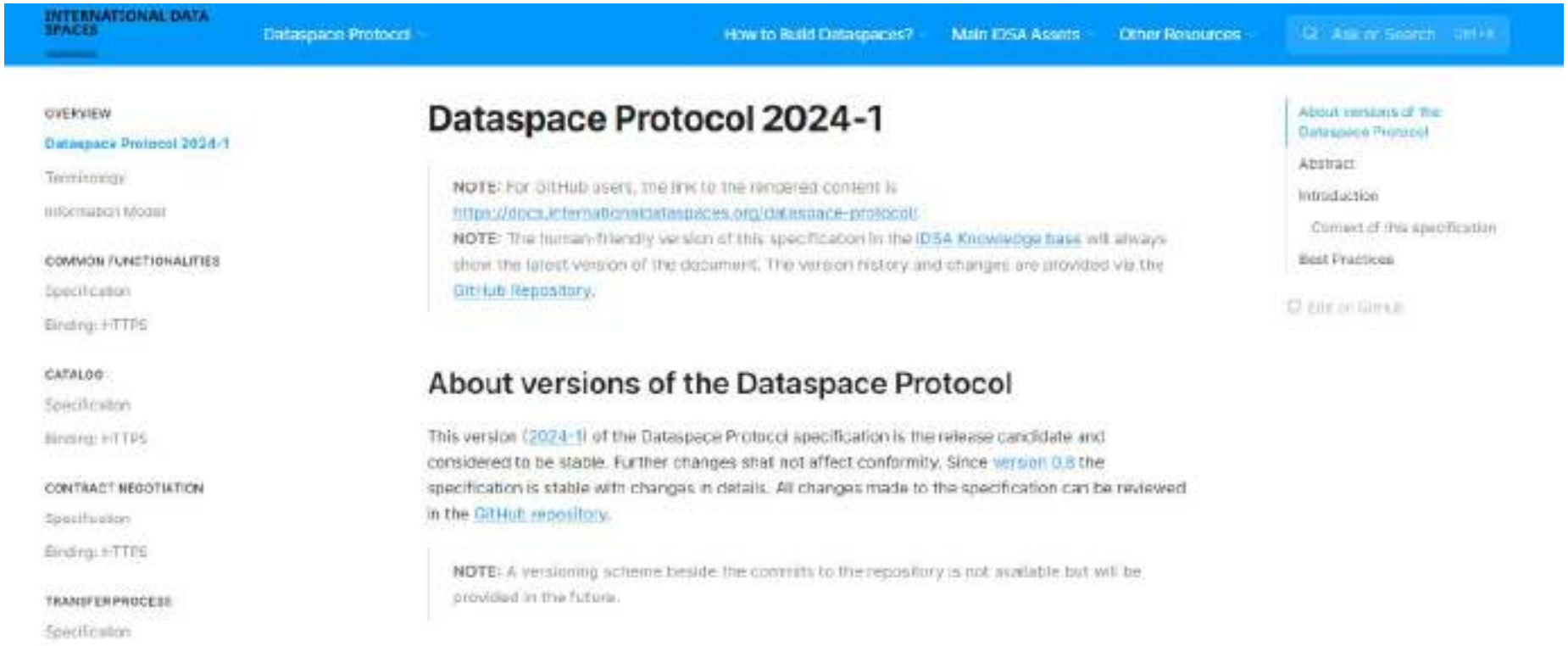


2

Tekniker Dataspace Connector | Implementation of the Dataspace Protocol 2024-1

INTERNATIONAL DATA SPACES ASSOCIATION

- Set of specifications that define the protocols and schemas required for entities to publish datasets, establish usage agreements, and access negotiated datasets as part of a data space.



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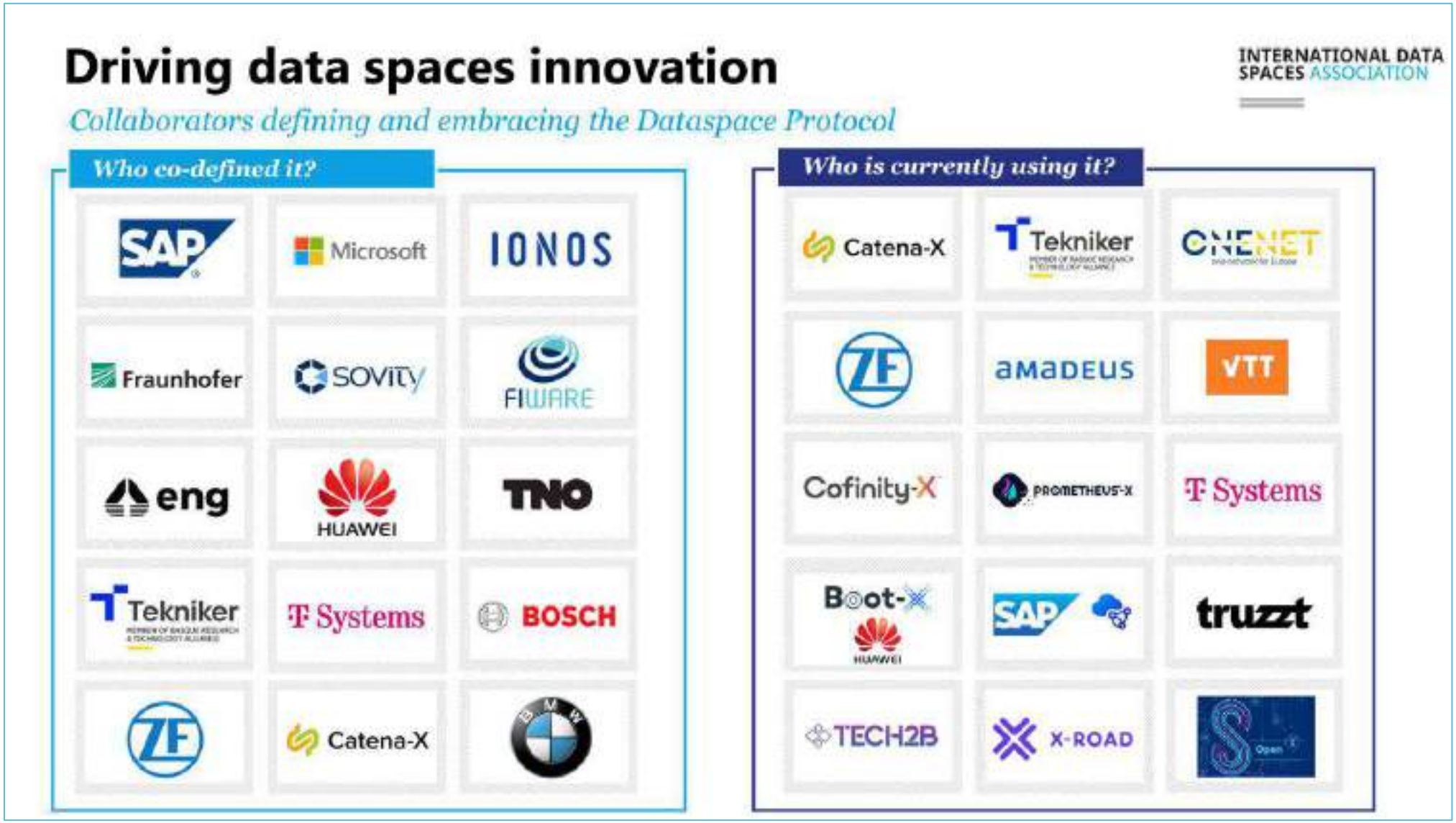
Driving data spaces innovation
INTERNATIONAL DATA SPACES ASSOCIATION
Collaborators defining and embracing the Dataspace Protocol
Who co-defined it?
SAP
Microsoft
IONOS
Fraunhofer
SOVITY
FIWARE
eng
HUAWEI
TNO
Tekniker
T Systems
BOSCH
ZF
Catena-X
BMW
Who is currently using it?
Catena-X
Tekniker
ONENET
ZF
AMADEUS
VTT
Cofinity-X
PROMETHEUS-X
T Systems
Boot-X
HUAWEI
SAP
truzzt
TECH2B
X-ROAD

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Tekniker Dataspace Connector

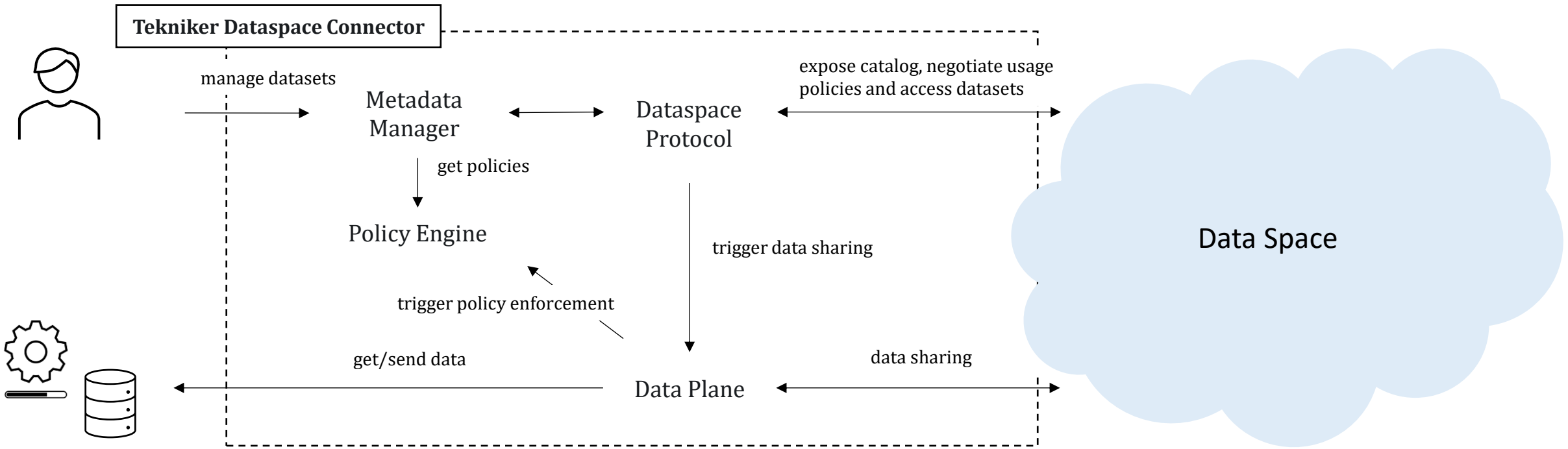
What is it?

Modular solution that allows companies to establish a single point of entry to the data offered and requested through a data space:

- **Interoperability** at data sharing
- **Data Sovereignty** throughout its life-cycle

How does it work?

1. **Metadata Manager:** management of datasets offered and requested through the data space
2. **Dataspace Protocol:** description of catalogs, negotiation of use agreements and standardized access to datasets
3. **Data Plane:** data transfer through different protocols adapted to the requirements of the use cases
4. **Policy Engine:** enforcement of usage control policies



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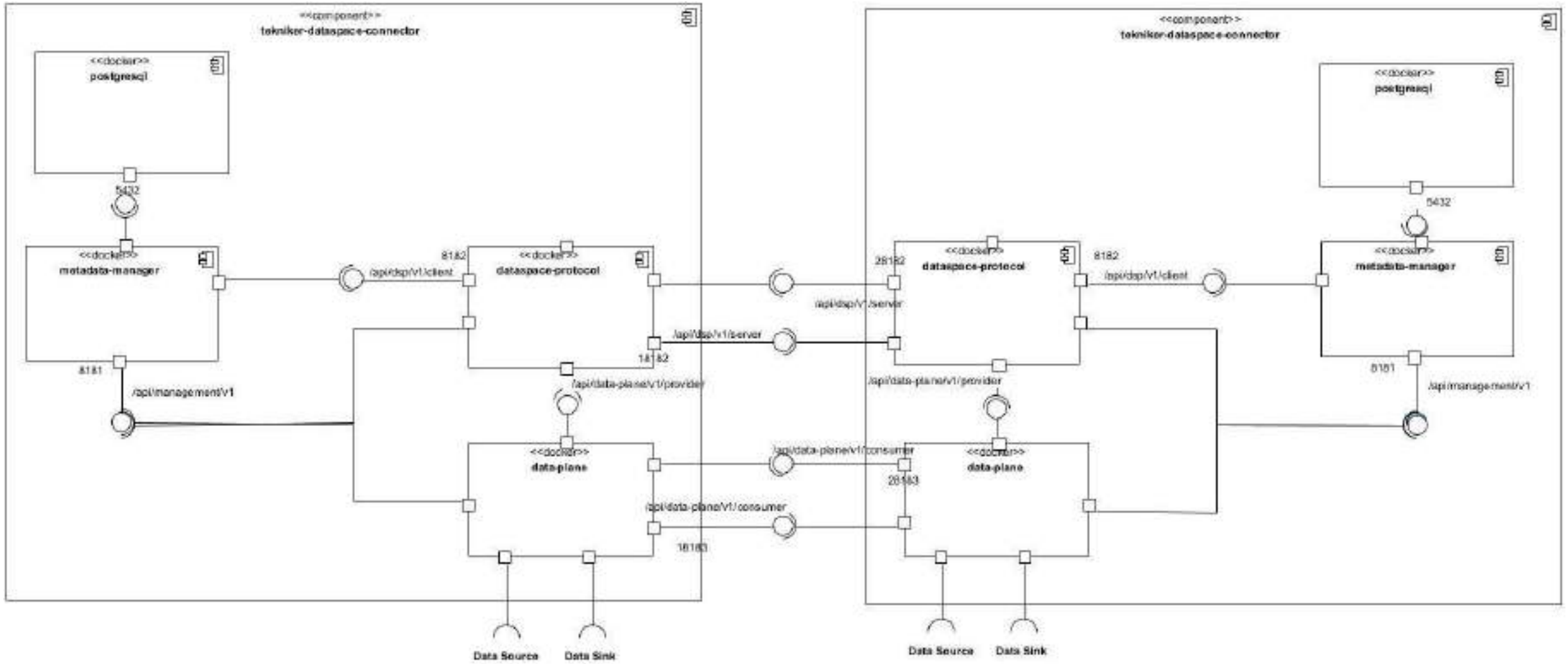
Tekniker Dataspace Connector: General Architecture



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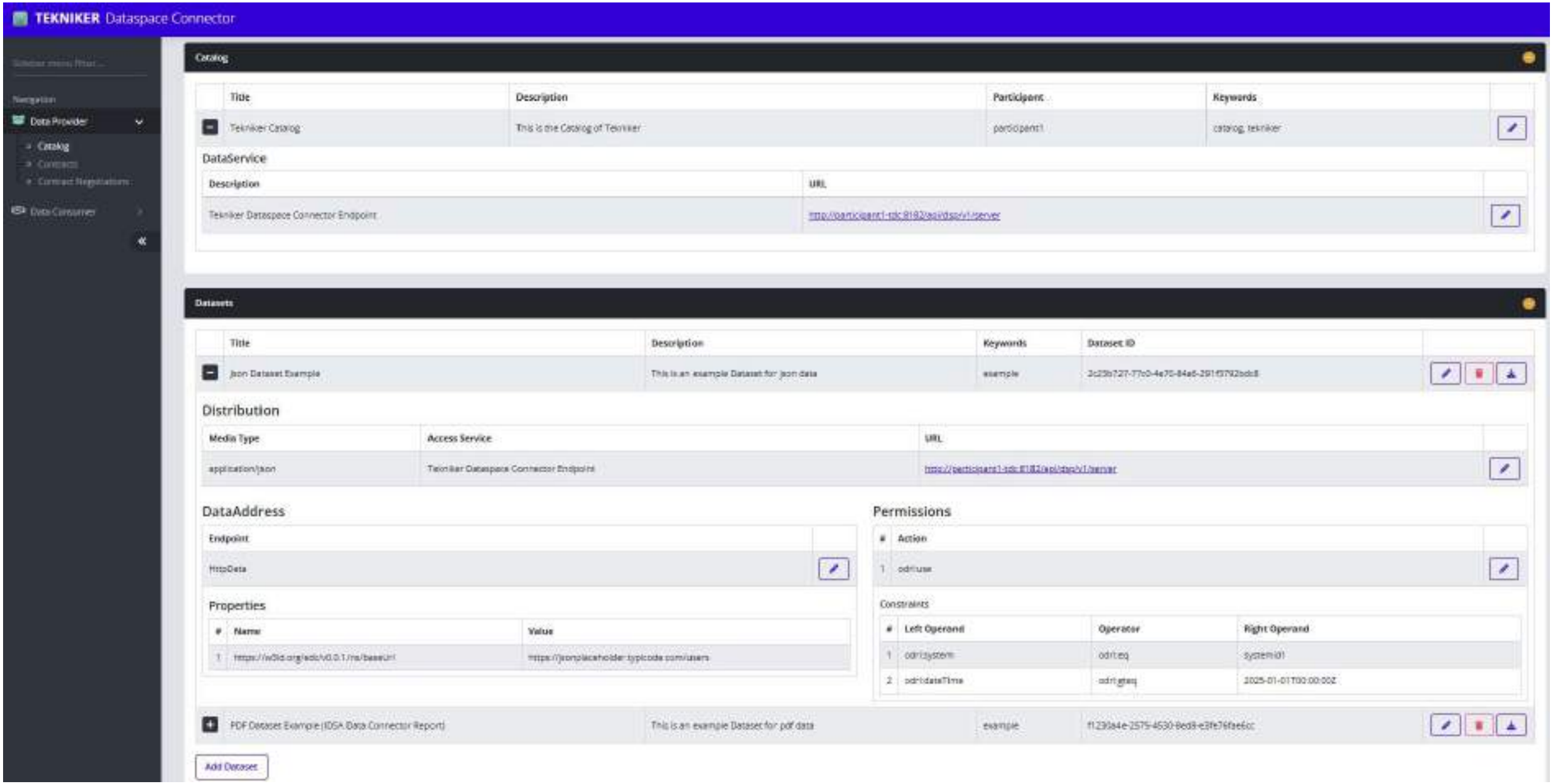
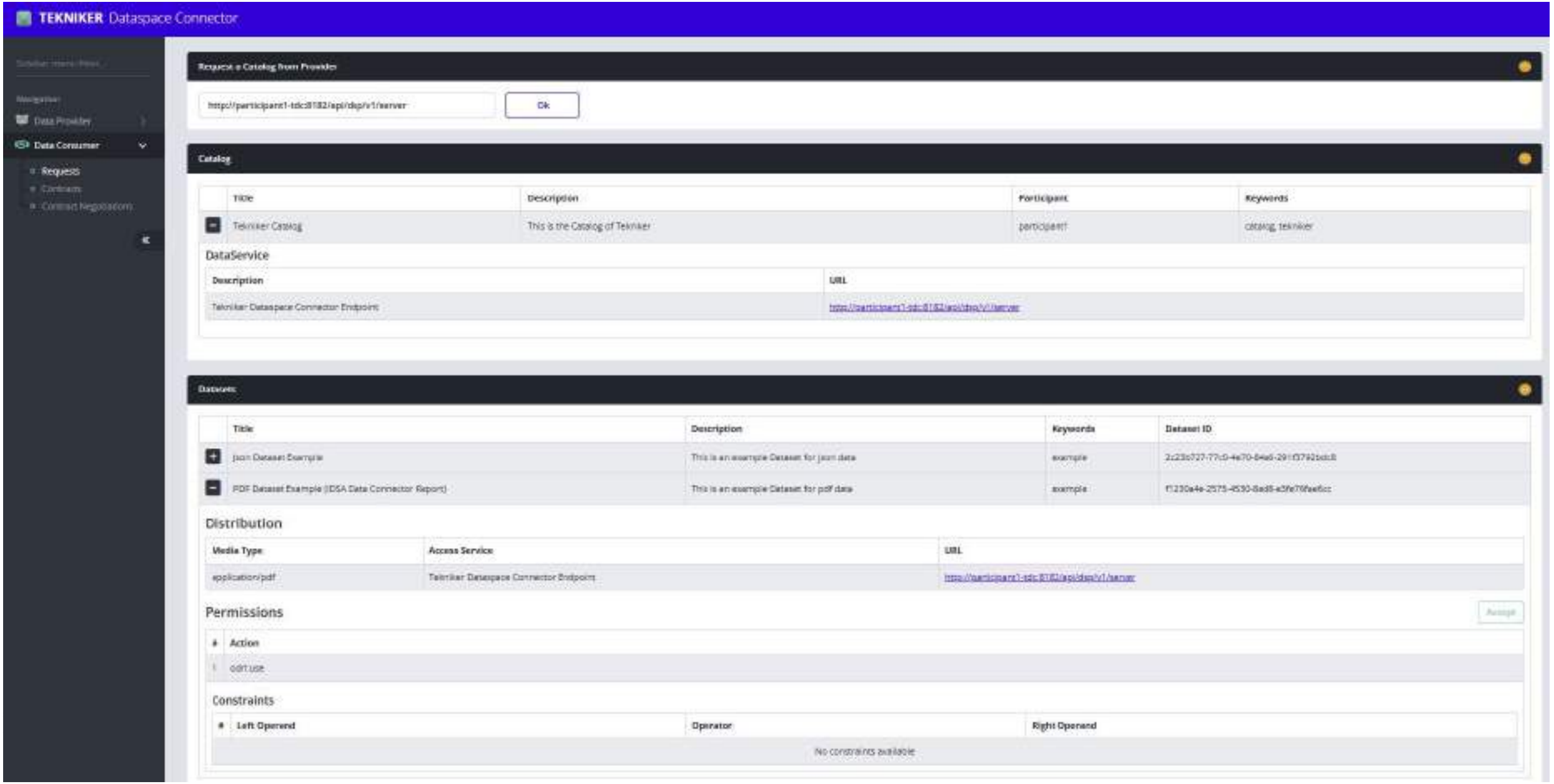
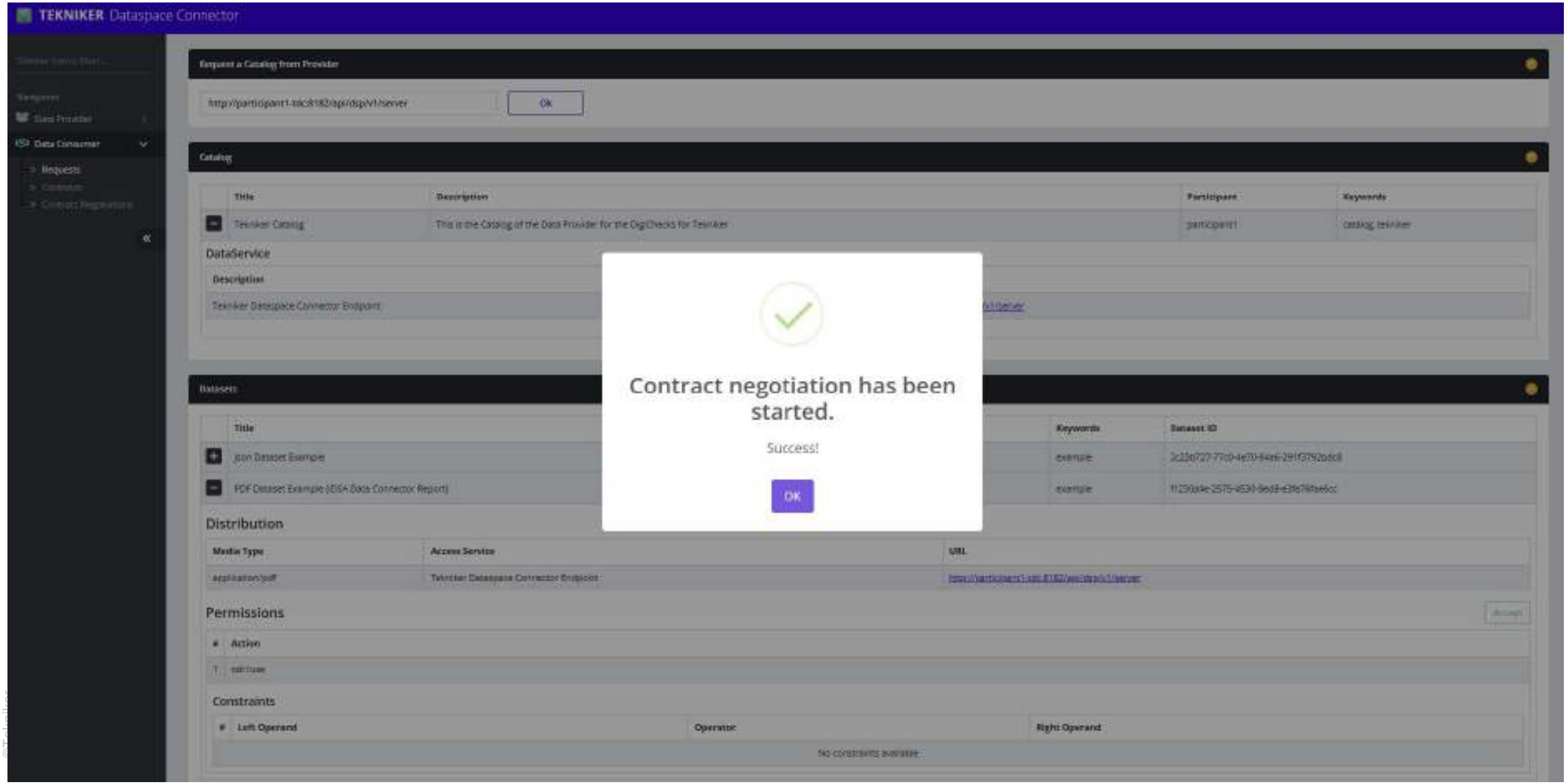
Data Provider: Create, Read, Update, Delete & Download the Catalog



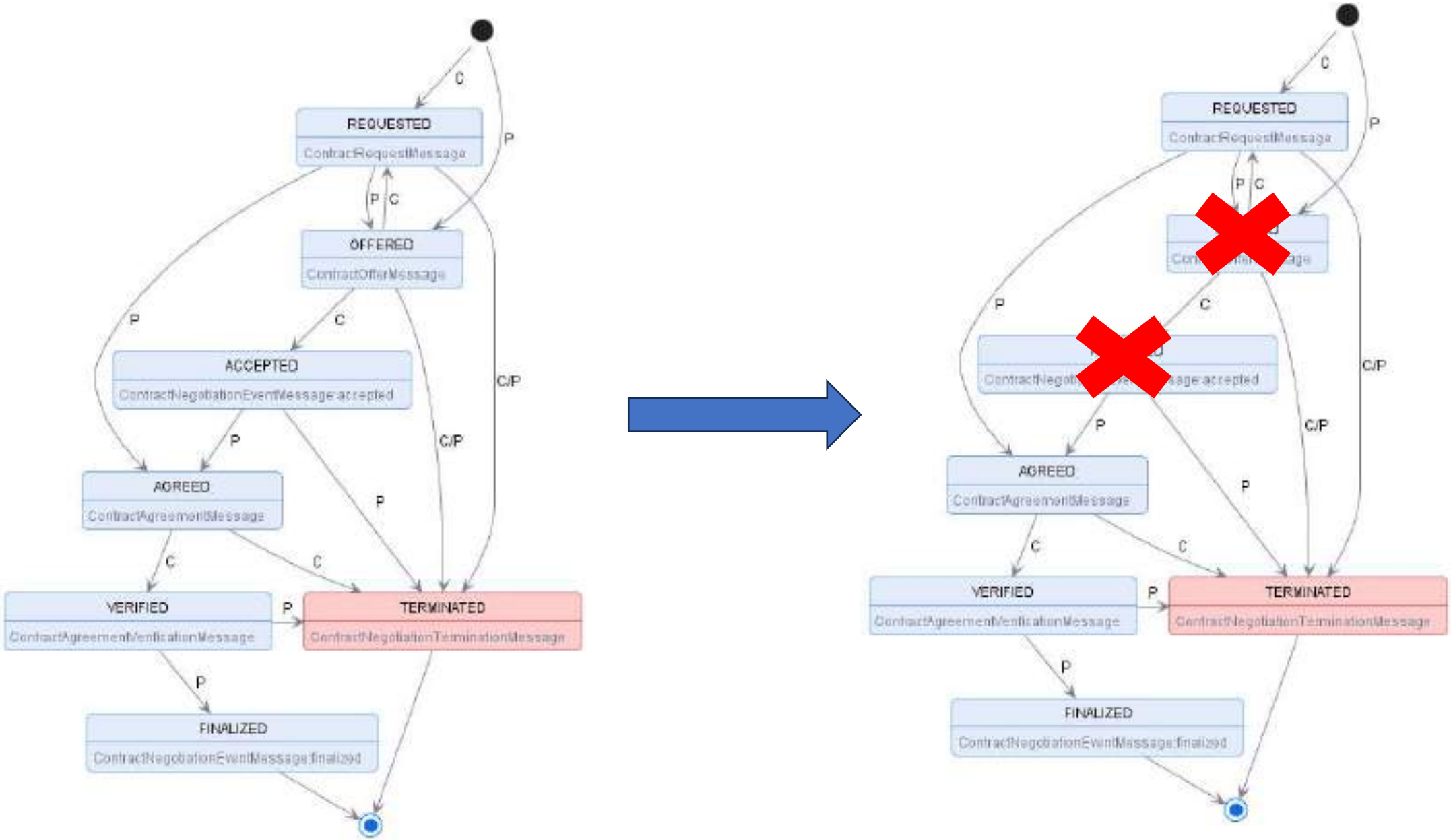
Data Consumer: Search for a Catalog



Data Consumer: Contract Negotiation Started



Dataspace Protocol 2024-1: Contract Negotiation Protocol



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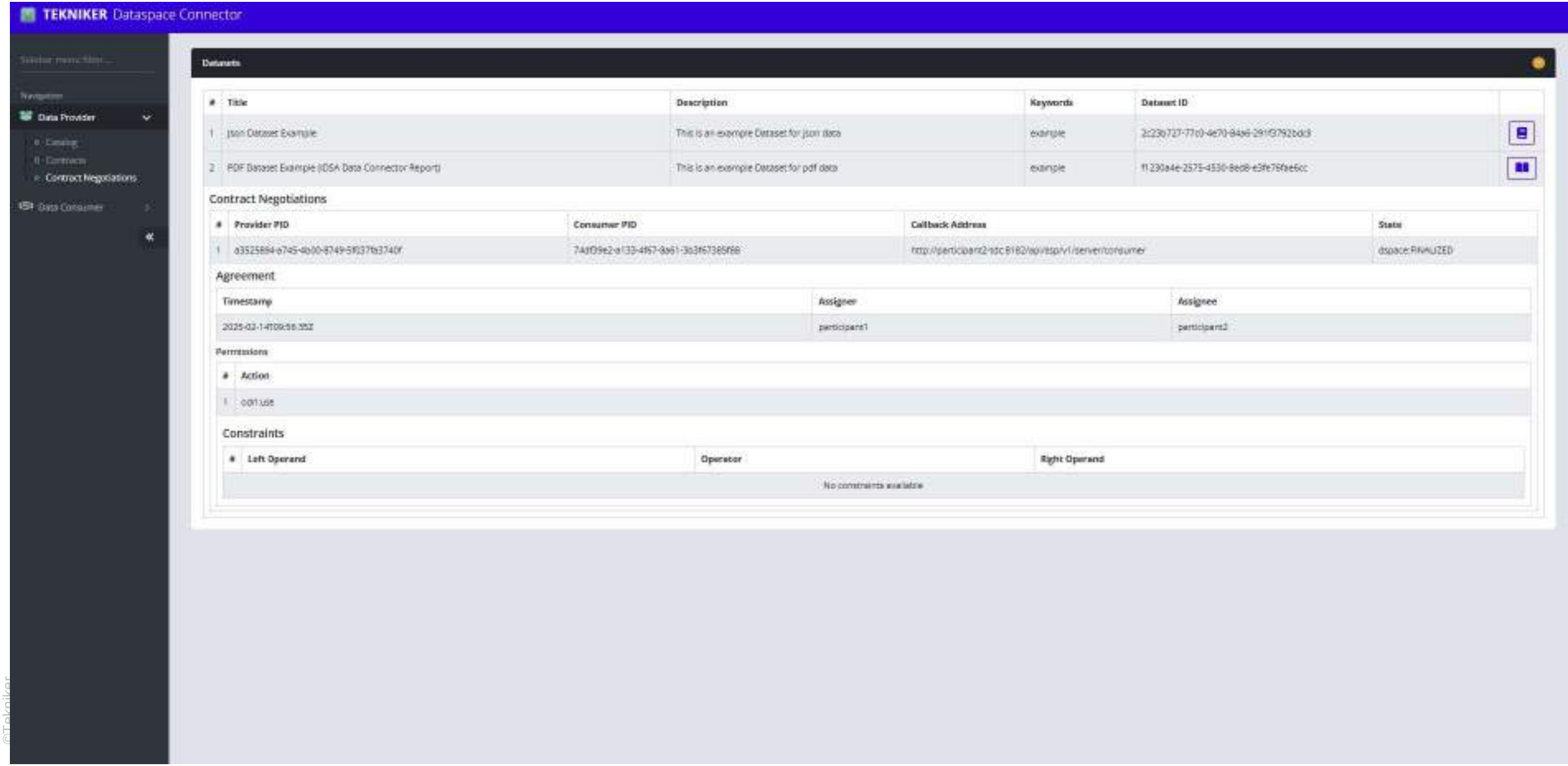
Data Provider: Contract Negotiation Monitoring



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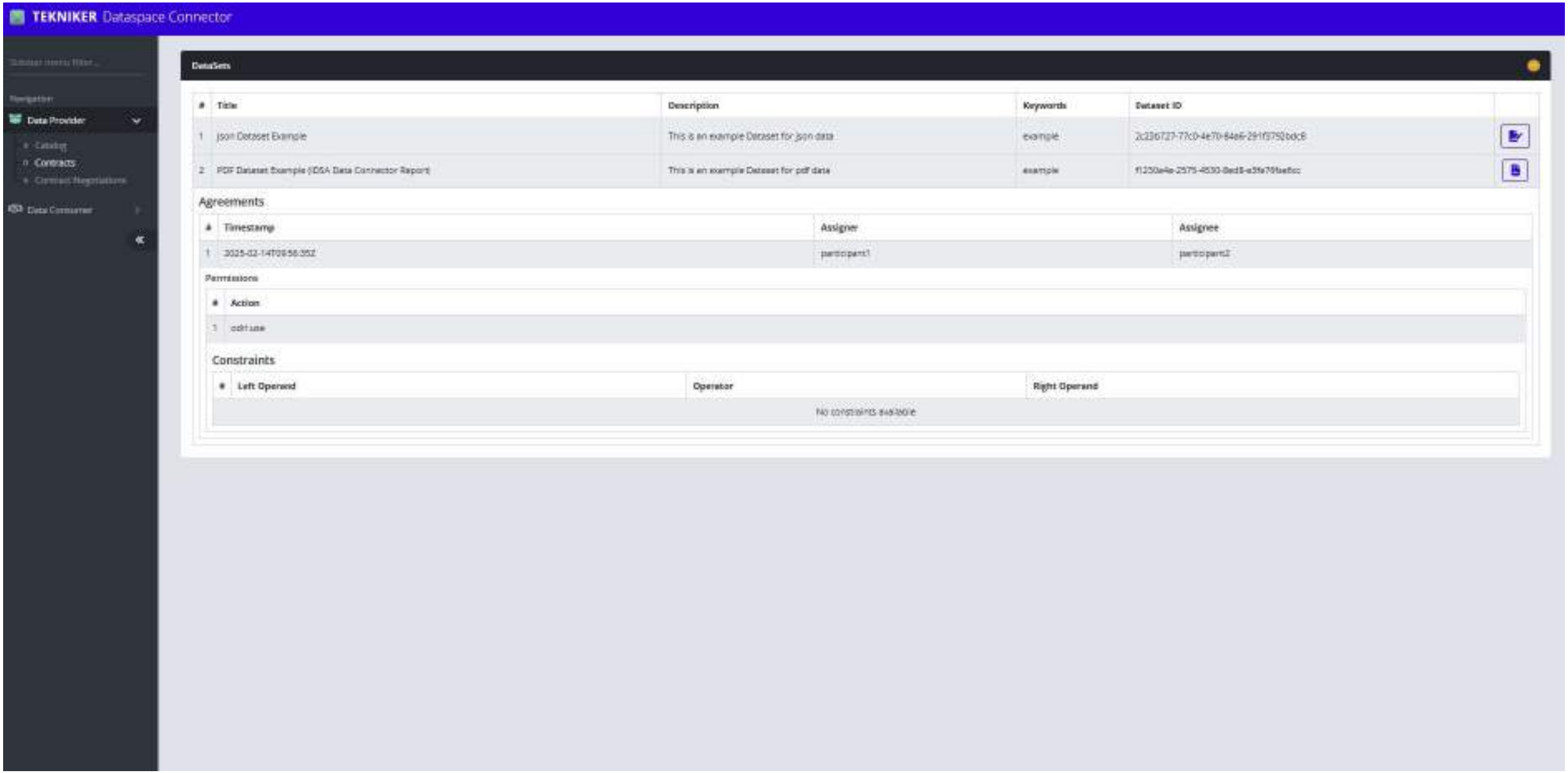
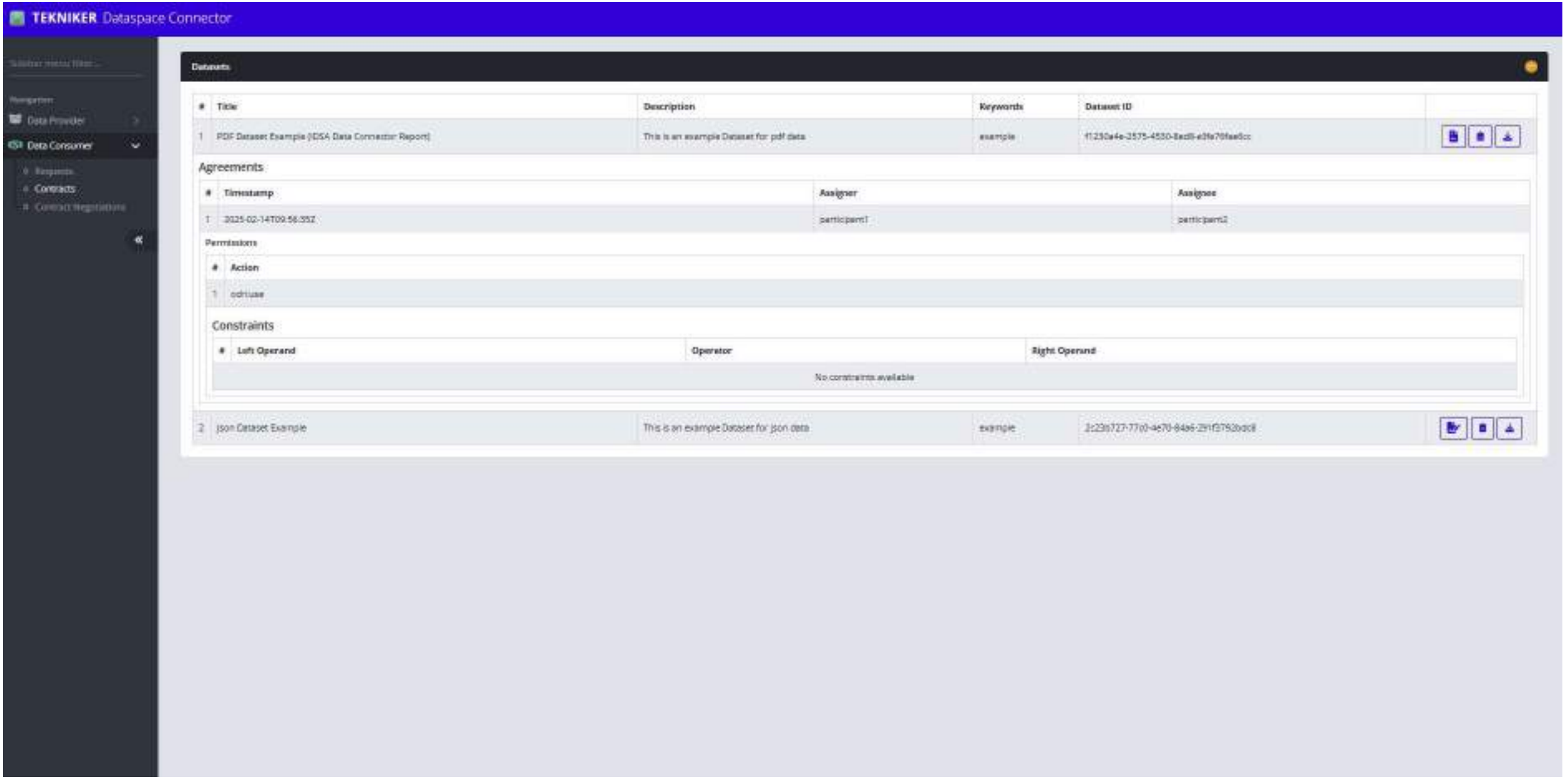
Data Consumer: Contract Negotiation Monitoring

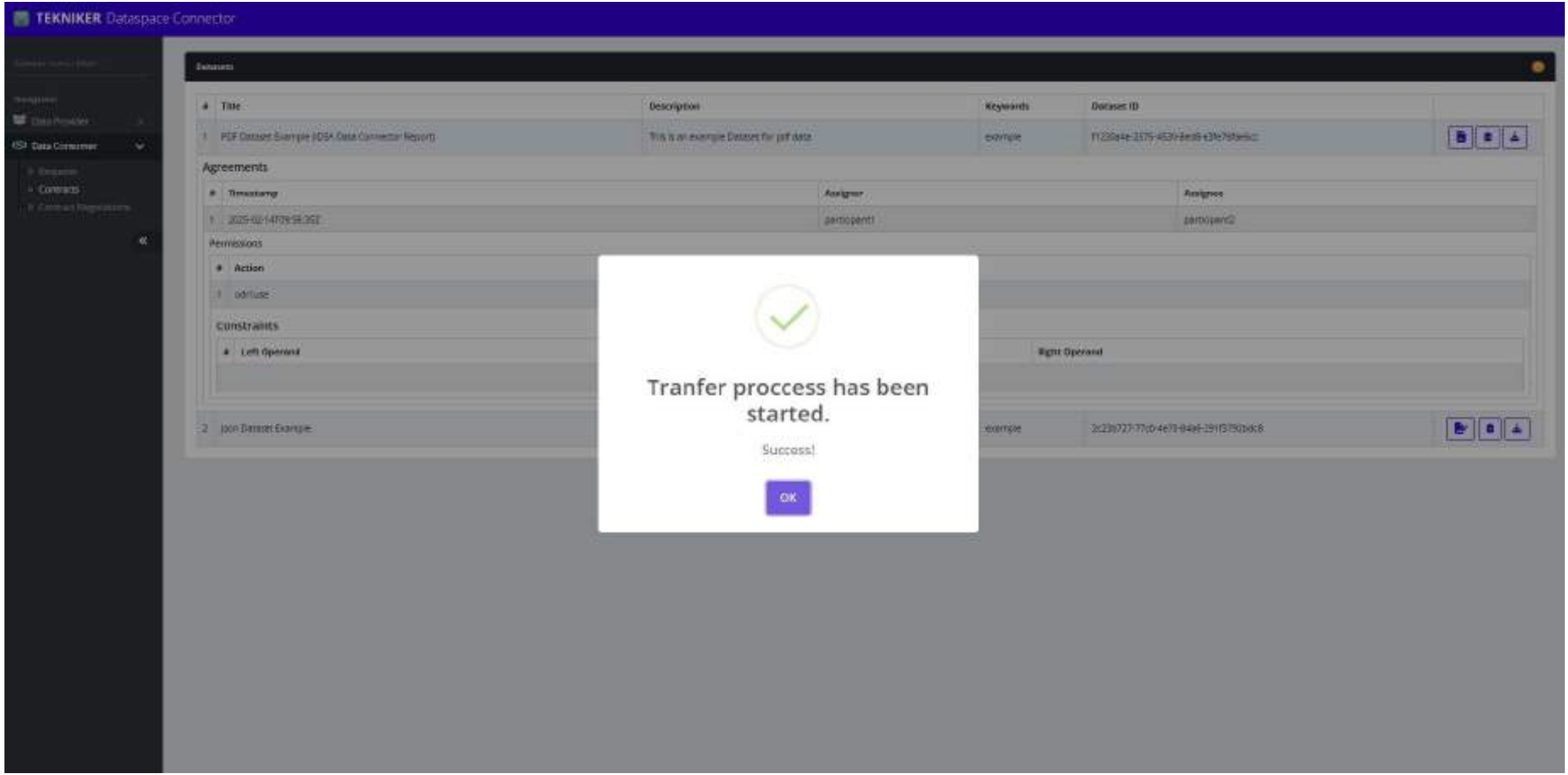
Data Provider: Contracts



Data Consumer: Contracts



Data Consumer: Transfer Started



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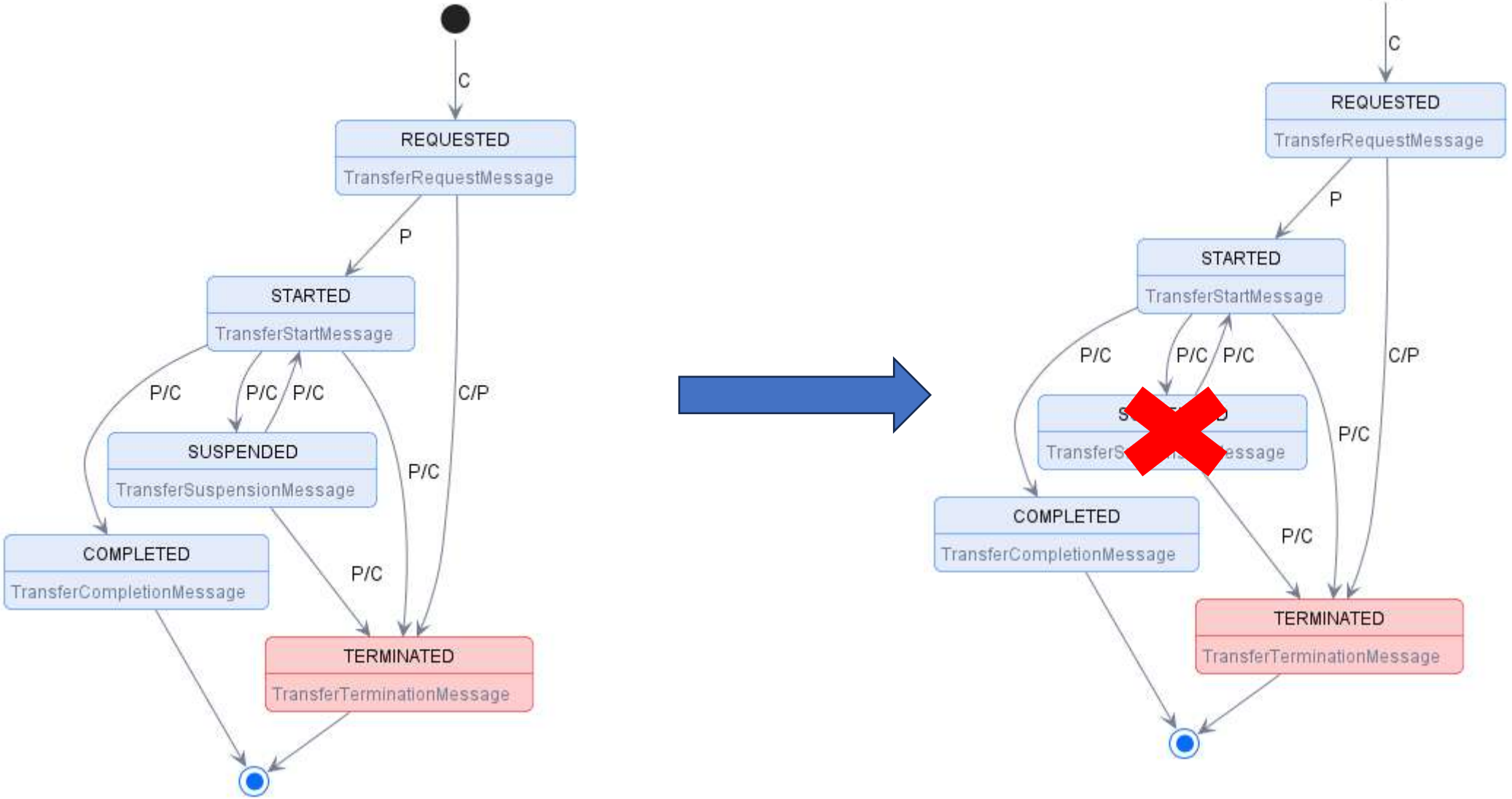
Dataspace Protocol 2024-1: Transfer Process Protocol



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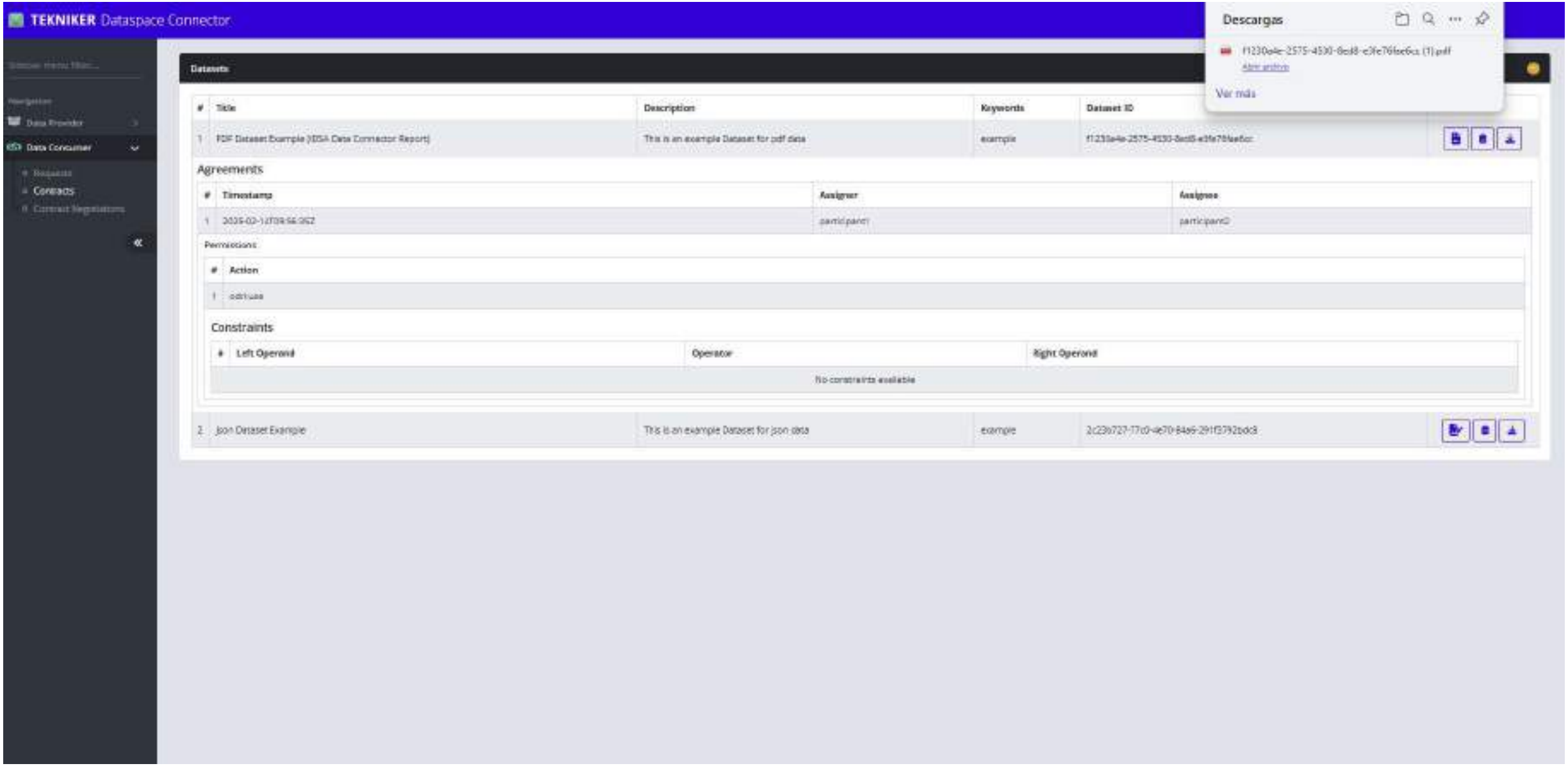
Data Consumer: Dataset Download



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Thank you!

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INTERNATIONAL DATA SPACES ASSOCIATION

Tech Talk

The Dataspace Protocol in action: Insights & best practices

February 27, 2025 | 10:00 - 11:30 CET

Sebastian Steinbuss
IDSA

Nicolas Auricchio
Eviden

Arian Firouzbakhsh
IONOS

Matthias Buchhorn-Rot
Cofinity-X

INTERNATIONAL DATA SPACES ASSOCIATION

EVIDEN

IONOS

Cofinity-X


INTERNATIONAL DATA
SPACES ASSOCIATION
Join the data space pioneers
Become a member of IDSA
Name, Date

3 reasons to be part of the team

What we do and why it matters

INTERNATIONAL DATA SPACES ASSOCIATION

01

Be an active player

You will be an active player of the biggest community dedicated to the holistic approach of data spaces, with a strong focus on technology towards global flourishing data economy.

02

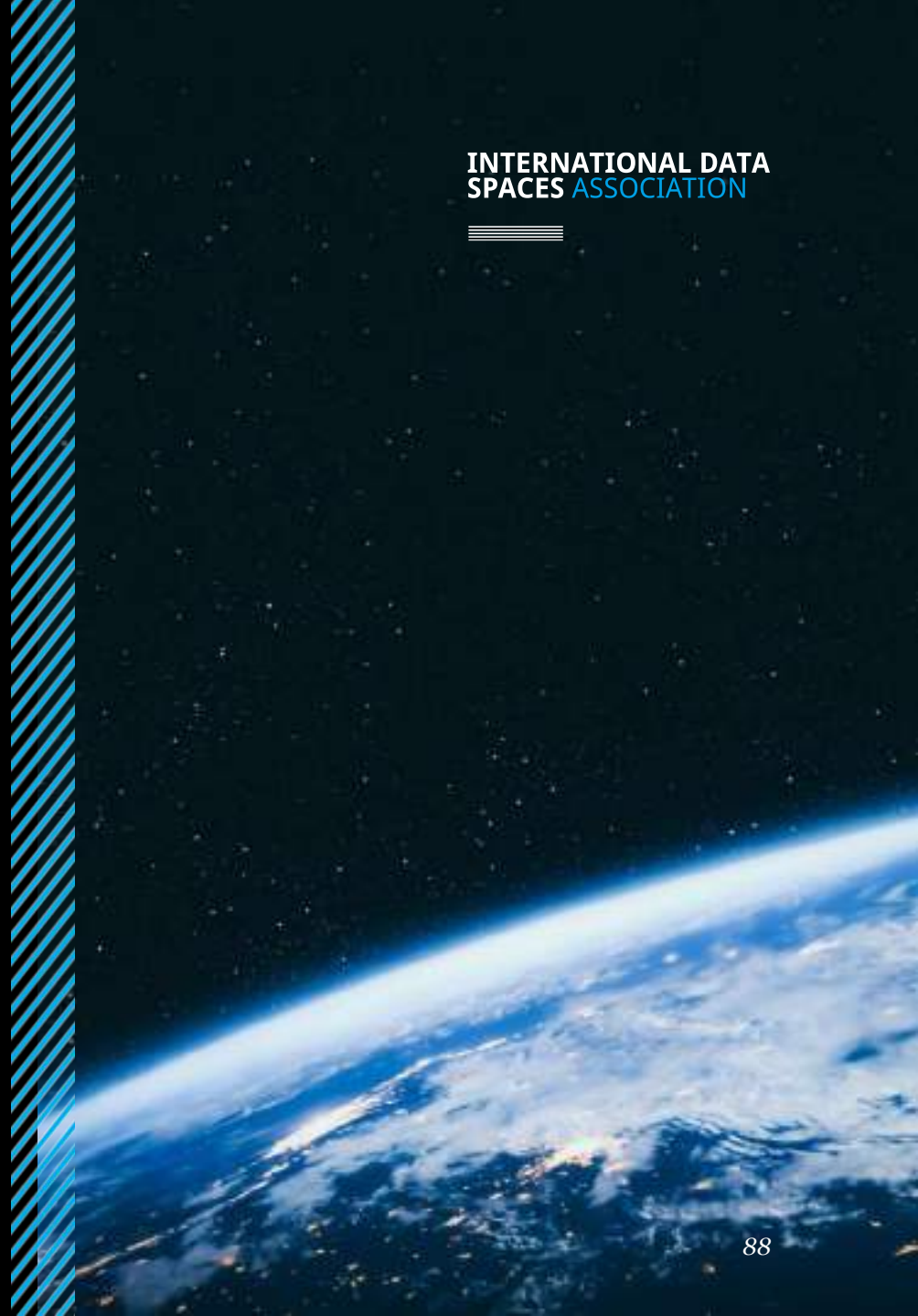
You're in good company

- **Get a stake in the market** of developers and global hyperscalers (Microsoft, Google, T-Systems, NTT, KPN…)
- **Set up close collaboration** on neutral ground with tech providers, software vendors, RTOs and consultancies, IDSA Hubs and Competence Centers stakeholders in relevant economic areas all over the world

03

Co-create the future of data spaces

Contribute to IDSA's assets (Dataspace Protocol, Certification, IDSA Rulebook, etc.) as well as to the work of the European Data Spaces Support Centre (DSSC)



It‘s easy to get started

Join IDSA to shape the future of the data economy

01 Download the membership application form.

02 Send the filled form to our email.

03 **Welcome aboard!**
We will personally guide you through your onboarding.

www.internationaldataspaces.org/we/become-a-member/


INTERNATIONAL DATA
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Any Questions?

INTERNATIONAL DATA SPACES ASSOCIATION

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