Jornada Gaia X:
Impulso definitivo a los espacios de datos

Barcelona | 21.03.2024

Silvia Castellvi| Directora innovation y estandarización

International Data Spaces Association

Our members are the backbone of IDSA

INTERNATIONAL DATA SPACES ASSOCIATION
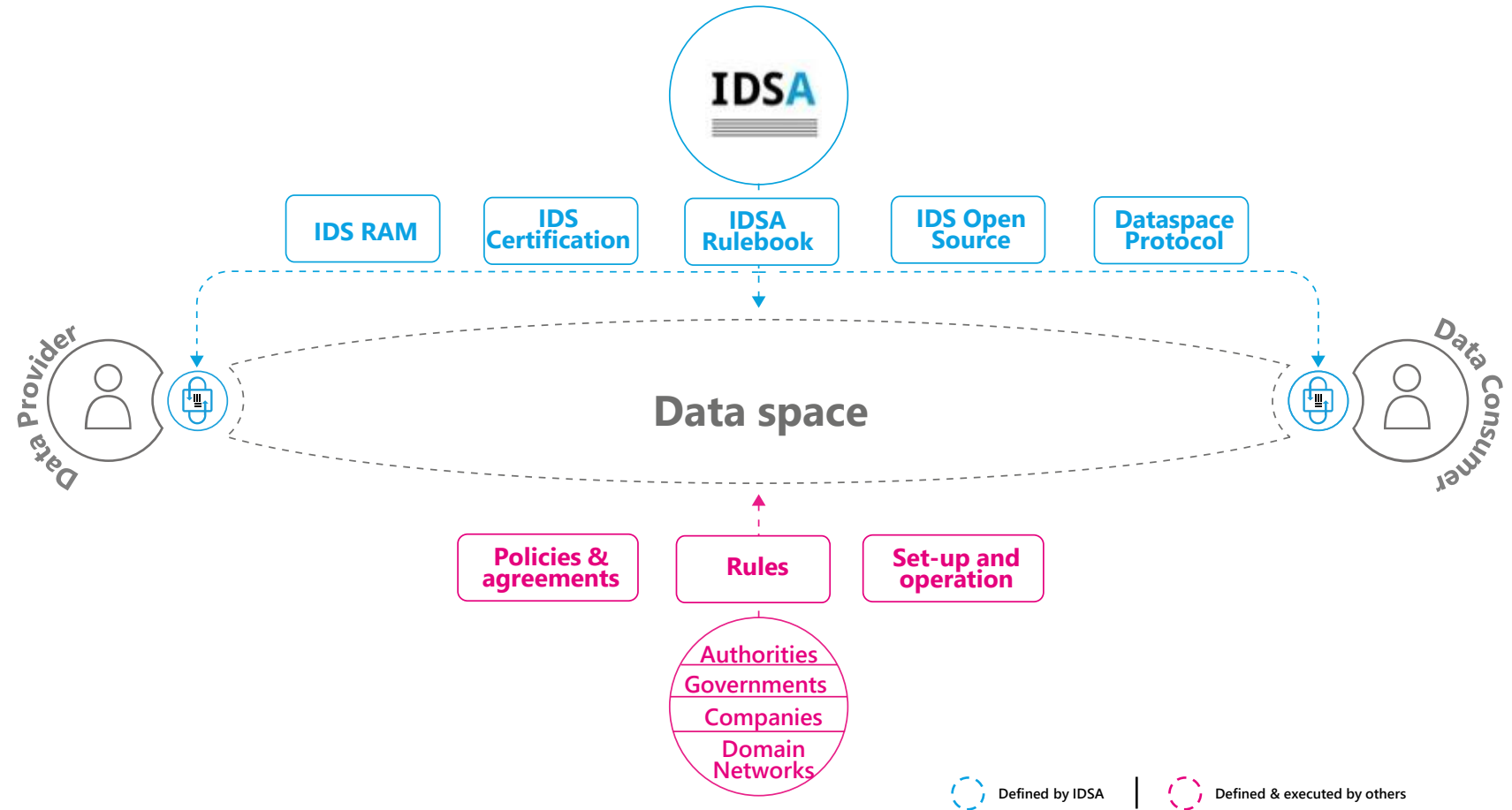
860+ People contributing

31 Countries

153

How IDSA enables data space participation

While ensuring trust and data sovereignty

» Specifies **minimum requirements for participation** in a data space.

» Provides a **technical framework** to participate in a data space.

» Allows data space participants to **share and use data, create value out of it**.

» Guarantees **control over data**, establishes **trust** in data sharing.

» Enables participants to comply with **rules & policies**.

» Ensures **interoperability**.

IDSA

| IDS RAM | IDS Certification | IDSA Rulebook | IDS Open Source | Dataspace Protocol |

Data Provider

Data Consumer

Data space

| Policies & agreements | Rules | Set-up and operation |

Authorities
Governments
Companies
Domain Networks

Defined by IDSA | Defined & executed by others

Data Spaces are becoming airborne

IDSA delivering trust and value to data spaces participants and governance authorities

IDS concepts as baseline for data spaces

Data spaces in multiple sector use IDS principles as blueprint

Early market

Mainstream market

Innovators | Early Adopters | Early Majority | Late Majority | Laggers
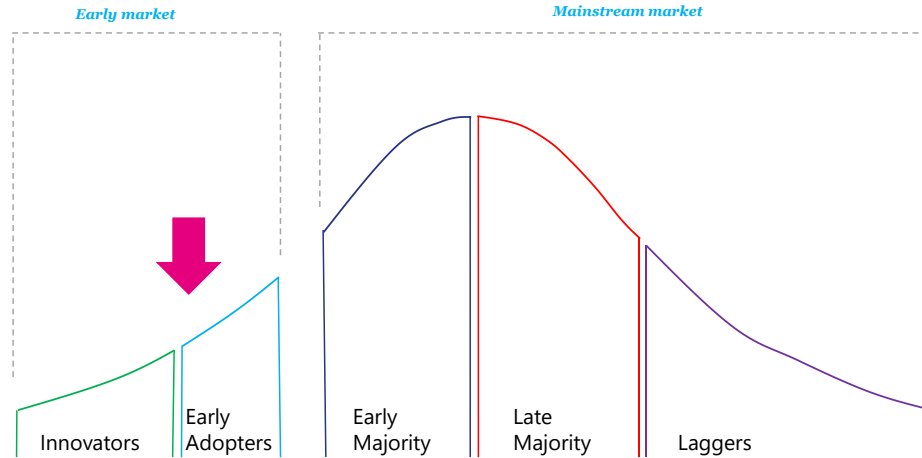
- Catena-X
- MDS
- SCSN
- DATA-EX

- Manufacturing-X
- Health Data Space
- ERJU-Rail Data Space
- Resilience Data Space
- Eona-X
- Media Data Space (DEP – now TEMS)
- Manufacturing Data Space (DEP)
- Kultur Datenraum
- AgDataHub
- Skills Data Space (DEP)

- More CSAs and Deployment actions
- SIMPL

- Shanghai Data Exchange
- Other Chinese Endeavours

- More – see Radar

Intra Data Space Operability:
Catena-X is based on a Gaia-X Compliant IDS System

Motivation & Big Picture
Landscape of Initiatives in the Context of global manufacturing

Manufacturing-X is international. Our intention is to trigger international R&D, partnerships, cooperation, standardization and deployment with and for customers globally.

Many players

to bring our approach to life

Market	**Commercial Software** · Data Markets · Technology Development · **Open Source Software** · Service Offerings (e.g. Certification) · Roll-out and Scale-up Activities · Professional Services · Domain-specific (vertical) Implementations · Standardization · ...
Not-for-Profit Organization (IDSA)	Reference Architecture Model Maintenance · Certification Scheme Maintenance · Certification · Rulebook Maintenance · Requirements Management · Standardization Activities · Knowledge Transfer · Internationalization · Platform for Domain-Specific Activities ...
Research	Reference Architecture Model (RAM, initial version) · Prototype Implementation in Use-Cases · Basic Versions IDS Components · Knowledge Transfer (Research Delivery and Support Center) · Technology Innovation (Usage Control, Trusted Connector etc.) Support of Standardization Activities · ...

Many players

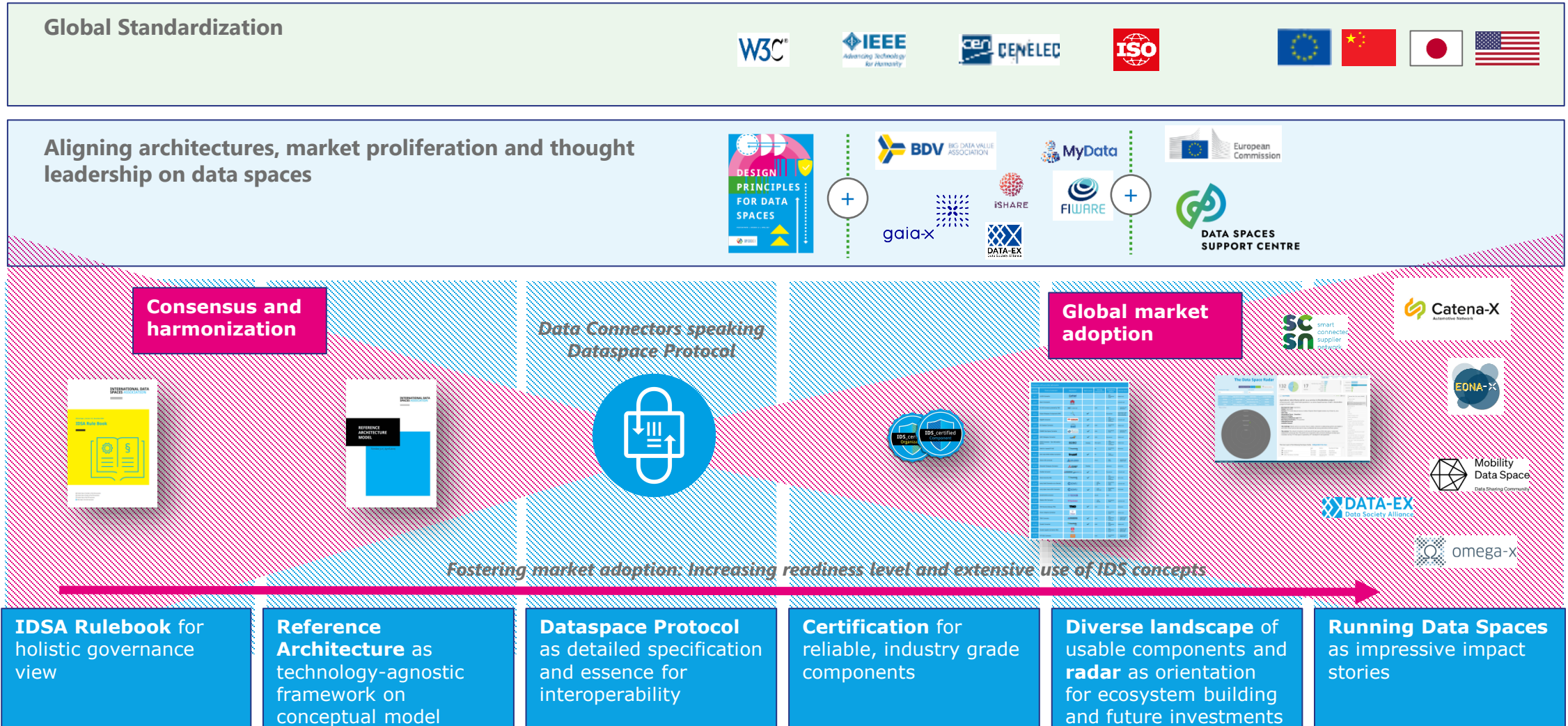*Require collaboration to build Data Spaces*

| Market | **Differentiation in the market** |
| | **Collaboration to build a common set of services in Open-Source** |

| Not-for-Profit Organization (IDSA) | Reference Architecture Model Maintenance · Certification Scheme Maintenance · Certification · Rulebook Maintenance · Requirements Management · Standardization Activities · Knowledge Transfer · Internationalization · Platform for Domain-Specific Activities … |
| Research | Reference Architecture Model (RAM, initial version) · Prototype Implementation in Use-Cases · Basic Versions IDS Components · Knowledge Transfer (Research Delivery and Support Center) · Technology Innovation (Usage Control, Trusted Connector etc.) Support of Standardization Activities · … |

A holistic approach to bring data spaces to global scale

IDSA on its way to a global standard – with the dataspace protocol in its core

Global Standardization

Aligning architectures, market proliferation and thought leadership on data spaces

Consensus and harmonization

Data Connectors speaking Dataspace Protocol

Global market adoption

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

| **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 | **Diverse landscape** of usable components and **radar** as orientation for ecosystem building and future investments | **Running Data Spaces** as impressive impact stories |

Let's create the next IDS-RAM together!

All IDSA members are invited

How topics for RAM 5

- Decentralized approaches
- Trust frameworks
- Usage control
- Interoperability
- Information model
- Data value creation
- Data governance
- Certification
- Relation to other DS initiatives
- Anything dataspace!

We need!

- **Dataspace enthusiasts** with overall concepts

- **Market savvy** for business and functional layers

- **Technical experts** (Systems design, software architects, etc.) for process, system and information layers

- **Artistic eyes** for visuals

How you can support

- **Discuss** in workshops

- Help **write content**

- Create **Diagrams**

- **Lead** a section

https://forms.office.com/e/sP4PztkiCE

Join us!

If you would like to get involved in IDS RAM 5, reach out to us via this registration form or by email

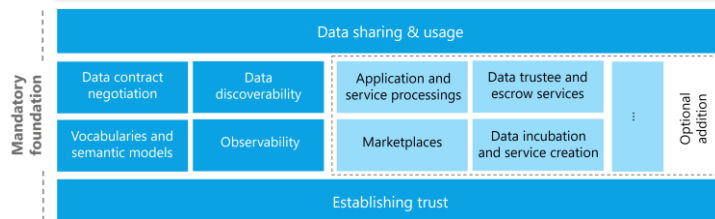https://forms.office.com/e/sP4PztkiCE

sebastian.steinbuss@internationaldataspaces.org
ilknur.chulani@internationaldataspaces.org

The IDSA Rulebook proposes fundamental design principles for data spaces
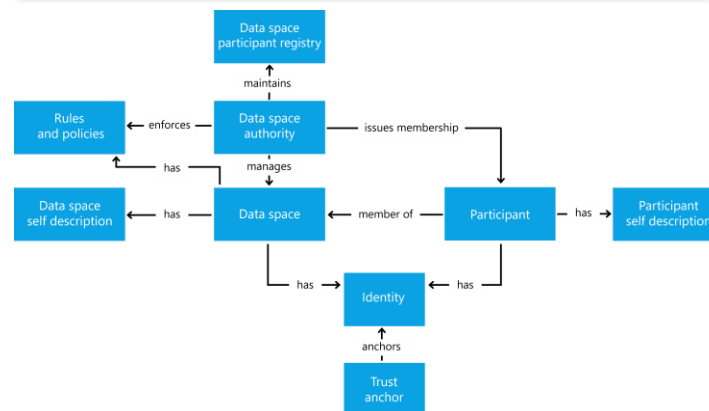
1. Mandatory and optional Requirements.

Mandatory functional requirements
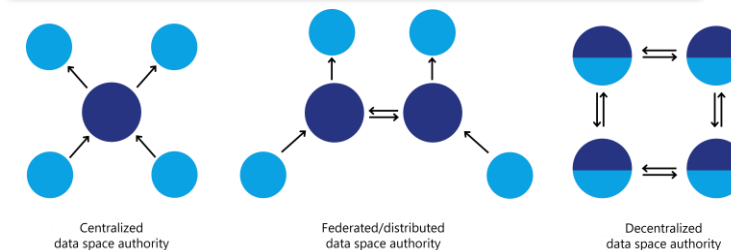are implemented by the **Dataspace Protocol**

2. The existence of a Data Space Authority

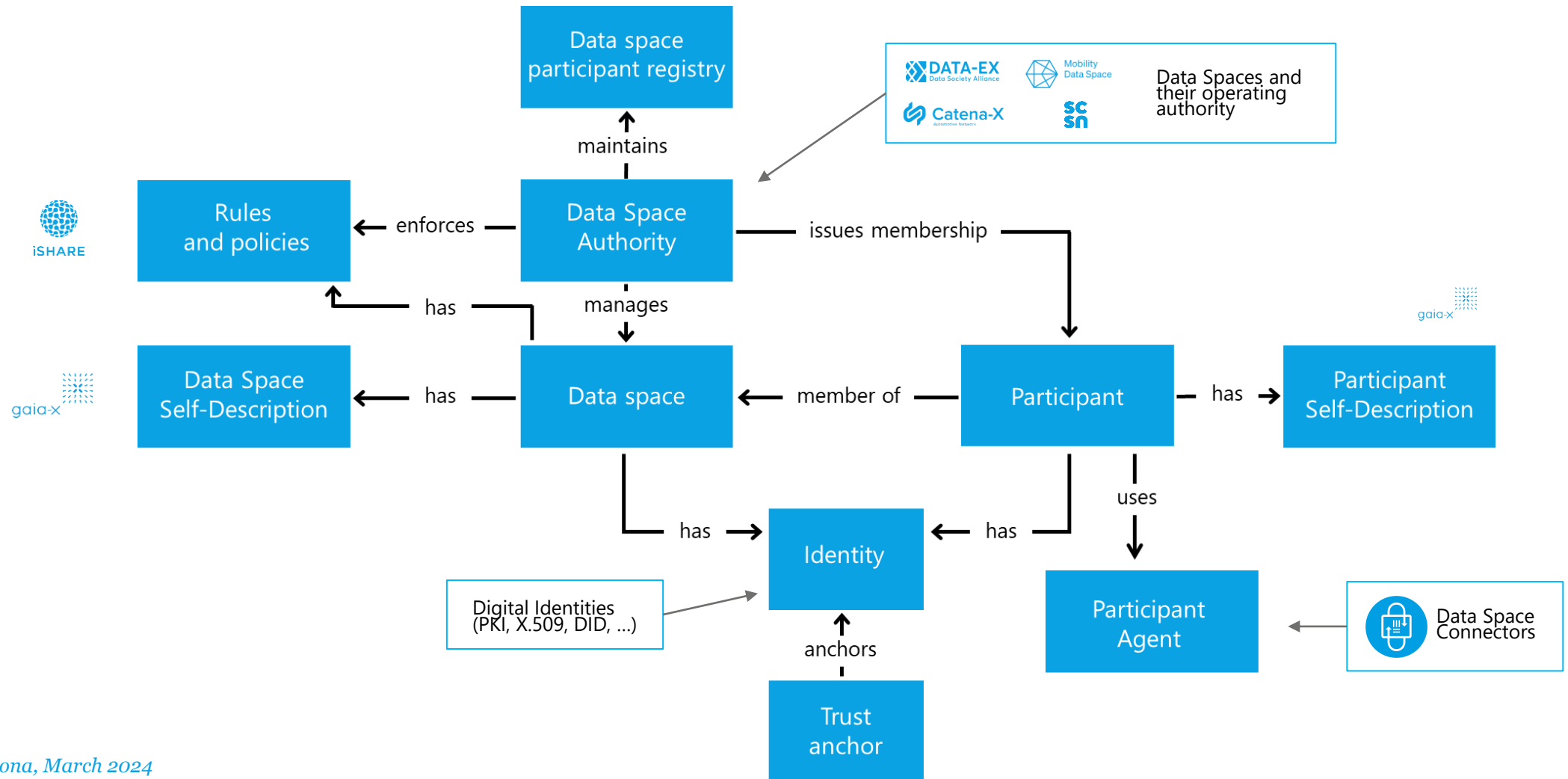The **Data Space Authority** manages participants and policies and rules in a Data Space.

3. Different approaches for Data Spaces

The functional requirements can be realized in a **centralized, decentralized or federated** manner

IDSA Rulebook - Organizational Interoperability needs to be organized

We play an ecosystem game

Release of the Dataspace Protocol

A significant step towards data space interoperability

- IDSA releases stable version (2024-1) of the Dataspace Protocol

- Core component for data space interoperability

- Compliance ensured through the associated Technology Compliance Kit (TCK)

- This framework is set to become the foundation for testing procedures and will be integrated into the IDS Certification process in the future

- IDSA will reveal roadmap for protocol enhancements soon

- Human-friendly and machine-friendly versions available for widespread adoption

Read the news

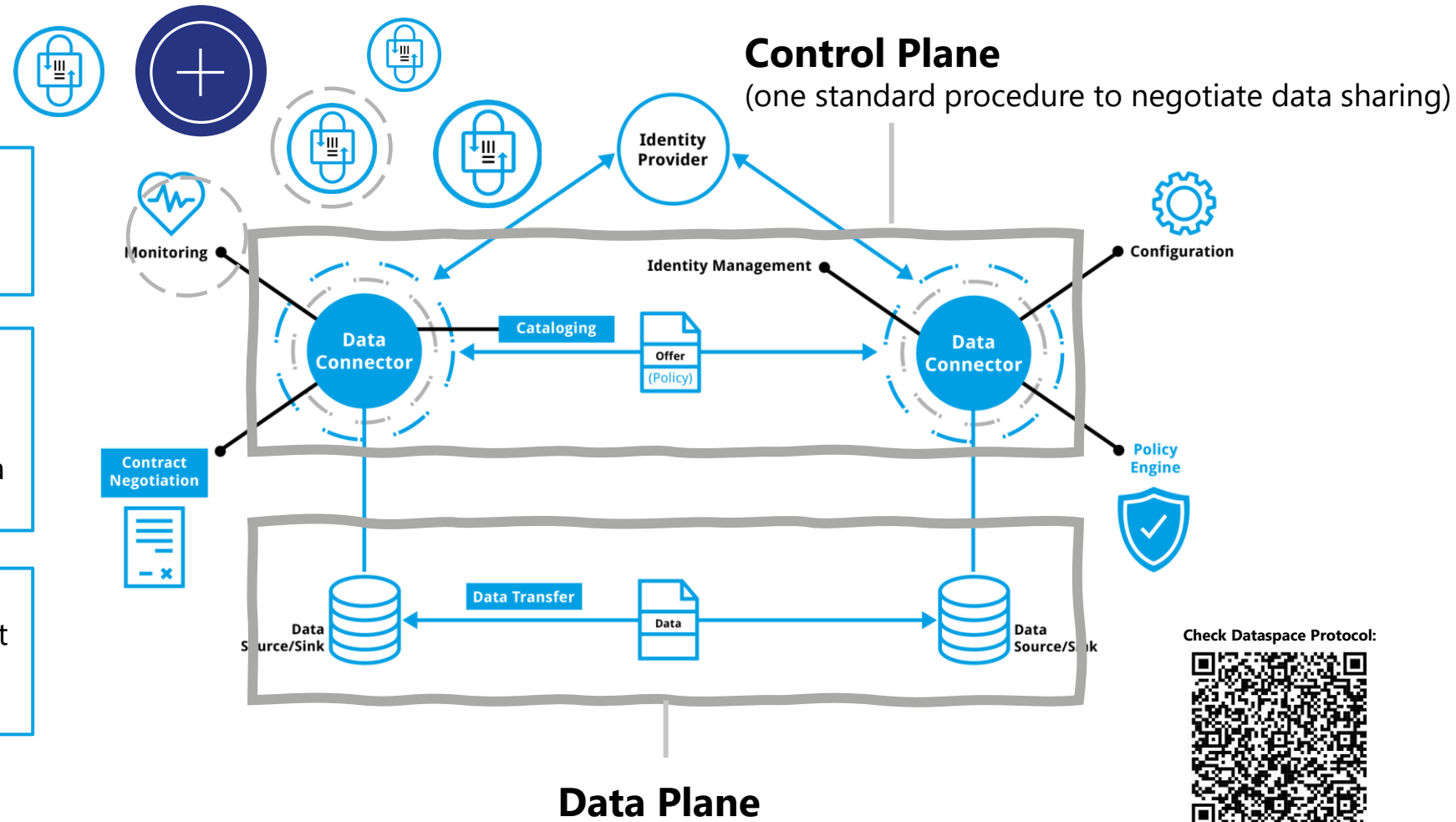INTERNATIONAL DATA
SPACES ASSOCIATION

Dataspace Protocol V1.0 → ISO Standard

Enables standardized data exchange across different data space instances.

Ensures standardized data exchange mechanism between different frameworks, products, or services.

Provides the needed schemas and protocols for cataloging data, negotiating contracts and usage agreements, and accessing data within a data space.

Organizations using this protocol can align with industry standards, foster best practices, and unlock new data-driven business models and opportunities.

Control Plane
(one standard procedure to negotiate data sharing)

Check Dataspace Protocol:

Data Plane
(several possible for different data sharing scenarios:
confidential data sharing, streaming data, event based data, edge devices, …)

IDSA certification scheme: combining the proven with the innovative

Meeting these 156 criteria proves that data spaces are built the way they should be

Adopted security criteria

» ISO/IEC 27001 – the international standard on how to manage information security

» IEC 62443 – cybersecurity for operational technology in automation and control systems

Implemented security criteria

» CSA Cloud Controls Matrix 3.01

» C5 (Cloud Computing Compliance Criteria Catalogue) – the cloud computing IT-Security standard in Germany
  » BSI IT base protection
  » BSI SaaS security profiles

IDS-specific criteria

» Data usage control

» Communication security

» Information model

» Identity management

» Broker and app store integration

» Audit logging

IDS criteria catalogues

First three IDS connectors certified

An unprecedented milestone for market-ready data spaces

World's first three connectors now certified based on IDS Certification – Concept Review.

- Telekom DIH Connector by T-Systems

- DSIL Connector by VTT Technical Research Centre of Finland

- TSG Connector by TNO

Get to know more about IDS Certification

Next steps

➢ Continue connector & operational environment certifications

➢ In parallel, work on **IDS Certification 2.0**
  ➢ Based on **most recent market requirements** and **latest technical developments**
  ➢ Including criteria for **Dataspace protocol** & testing (TCK)
  ➢ Offered as a **modular certification**

Data Connector Report

A monthly publication from IDSA

INTERNATIONAL DATA SPACES ASSOCIATION


31 connectors

Why a Data Connector Report?

− To explain what data connectors are and why they are crucial in data spaces

− To provide transparency about the number of connector implementations available, their maturity and features, following their evolution over time

− To explain how data connectors can be technically interoperable

− To provide additional insights on related technologies and initiatives

Click here to take a look inside

Click here to provide feedback or add a connector

IDSA Barcelona, March 2024

The Data Spaces Radar Report #3

How data spaces innovate mobility
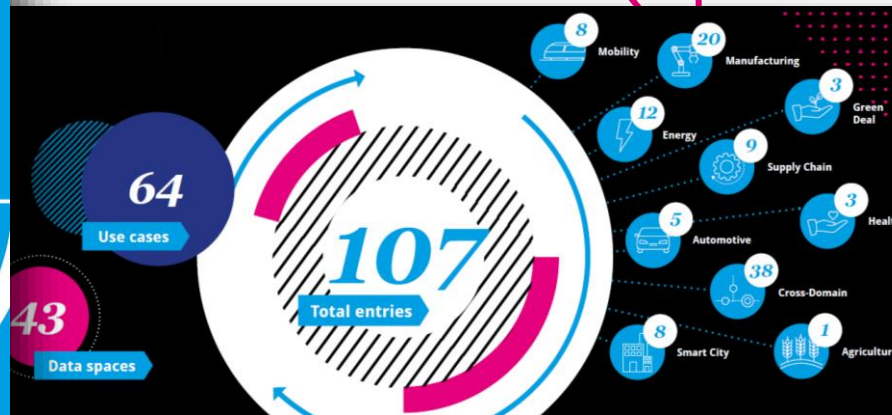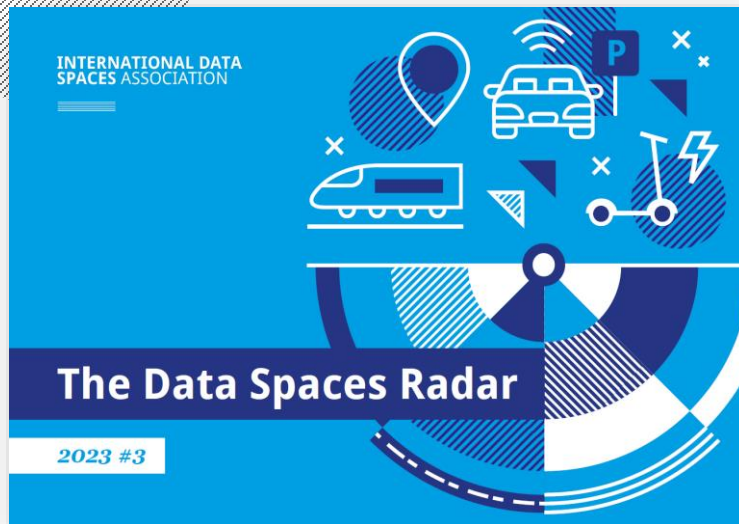
The radar covers usage scenarios of different degrees of maturity from the phase of creating a business case to real data spaces. From planned to pilot to fully operational, across industries and functional domains – the usage scenario that aligns with your business goals is on the radar.

Click here to take a look inside!

>>> www.internationaldataspaces.org/most-important-documents

Professional Training Programme

Watch the master to be the master

» IDSA is developing of a **Professional Certification Programme** about data spaces based on its framework.

» Underpinning the Programme, is the **Data Spaces Body of Knowledge (DSBOK)** laying down essential information to develop trainings.

» It describes first professional certifications to be part of the Programme:

» **Data Spaces Fundamentals**

» **Data Spaces Business Consultant**

» **Data Spaces Technical Consultant**

» The development and the maintenance of the DSBOK occurs in the **Working Group Training** (WG Training).

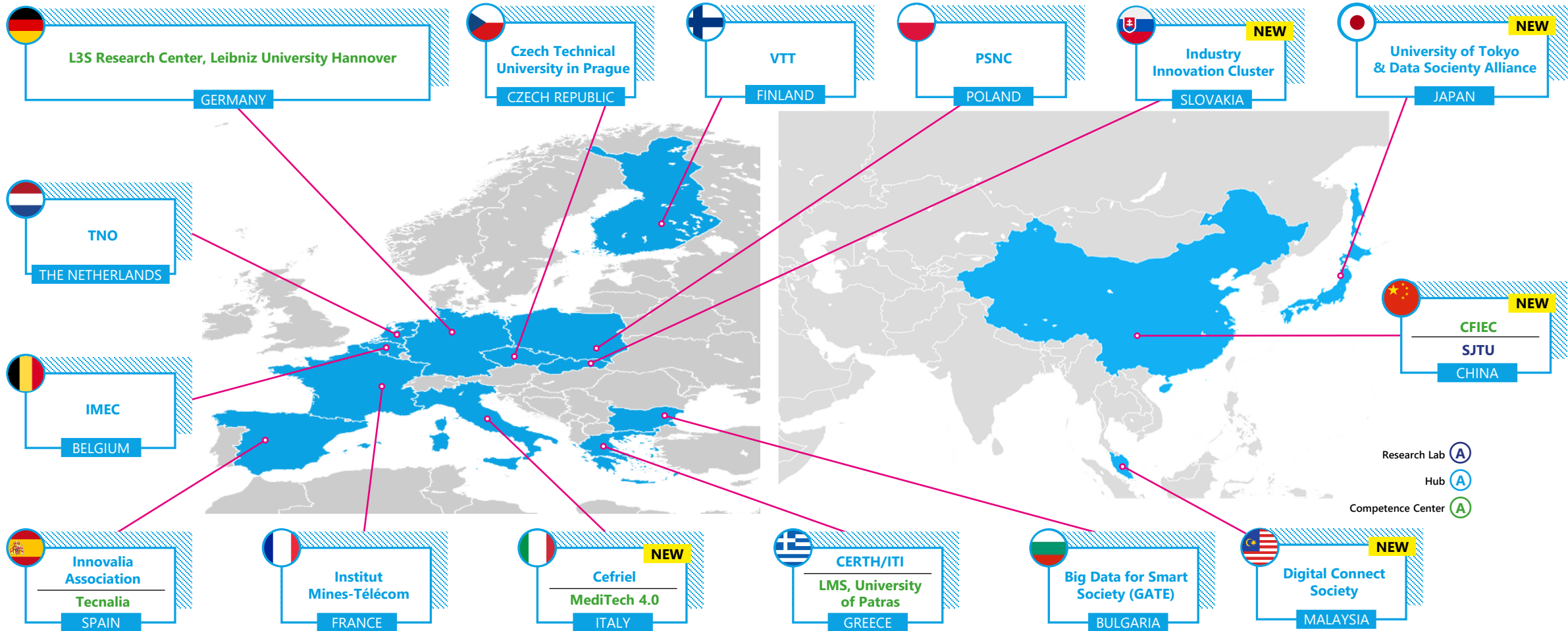» This collaborative endeavour results from the **Association joint experience**.

Professional Certification Programme
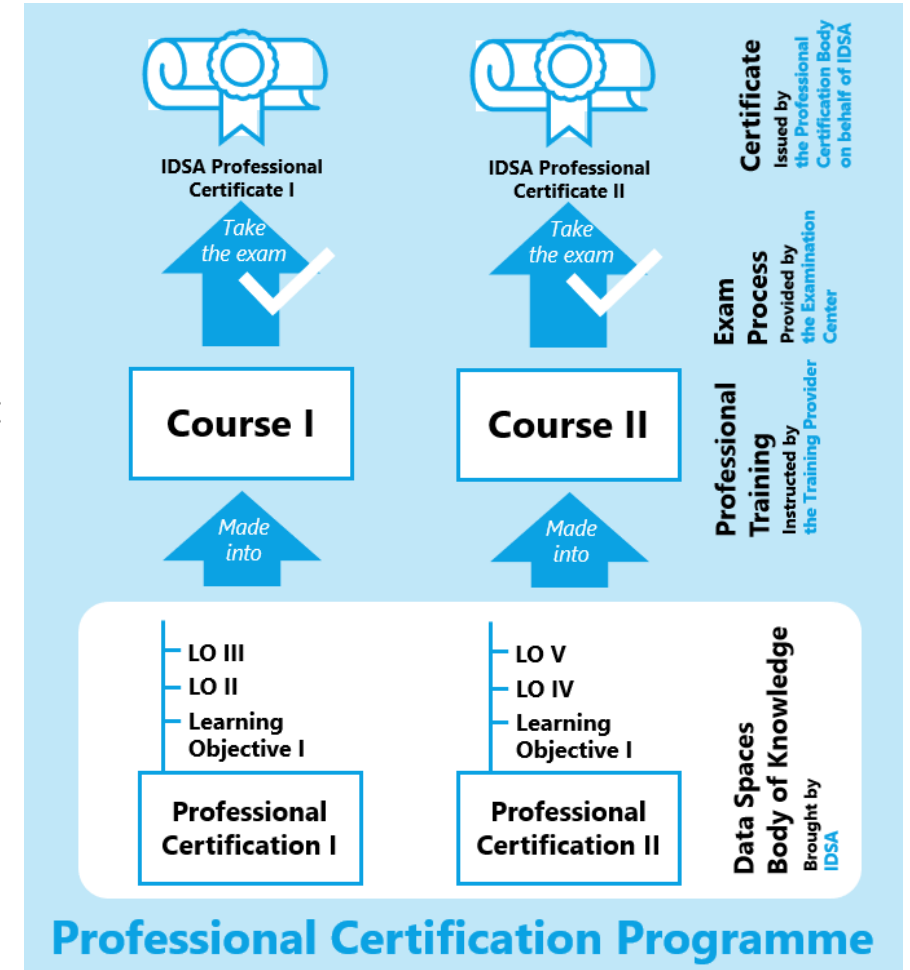
IDSA Hubs, Competence Centers & Labs

Our partners are building momentum across Europe and around the world

INTERNATIONAL DATA SPACES ASSOCIATION

L3S Research Center, Leibniz University Hannover
GERMANY

Czech Technical University in Prague
CZECH REPUBLIC

VTT
FINLAND

PSNC
POLAND

Industry Innovation Cluster — NEW
SLOVAKIA

University of Tokyo & Data Socienty Alliance — NEW
JAPAN

TNO
THE NETHERLANDS

IMEC
BELGIUM

CFIEC
SJTU — NEW
CHINA

Innovalia Association
Tecnalia
SPAIN

Institut Mines-Télécom
FRANCE

Cefriel — NEW
MediTech 4.0
ITALY

CERTH/ITI
LMS, University of Patras
GREECE

Big Data for Smart Society (GATE)
BULGARIA

Digital Connect Society — NEW
MALAYSIA

Research Lab (A)
Hub (A)
Competence Center (A)

IDSA Barcelona, March 2024

INTERNATIONAL DATA SPACES ASSOCIATION

Join the data spaces pioneers

Become a member of IDSA

Name, Date

Download the membership application form.

01

Send the filled form to our email.

02

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

03

Data space pioneer

www.internationaldataspaces.org

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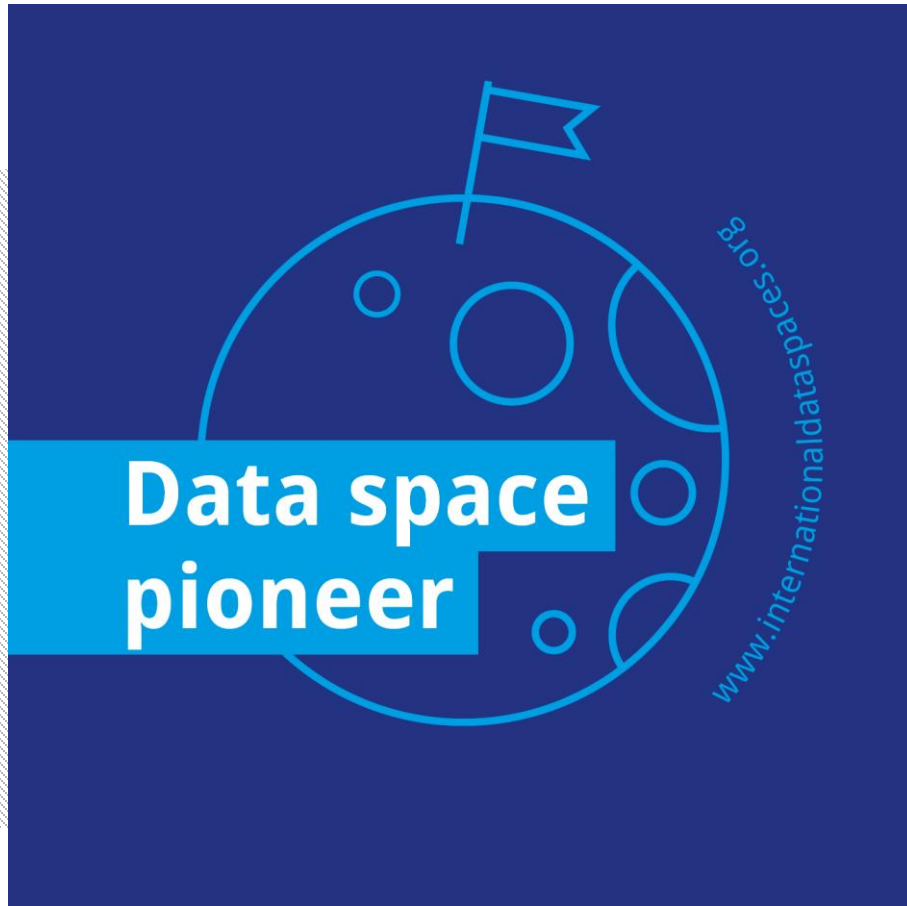
» We all believe in data spaces as enabler for our future wealth.

INTERNATIONAL DATA
SPACES ASSOCIATION

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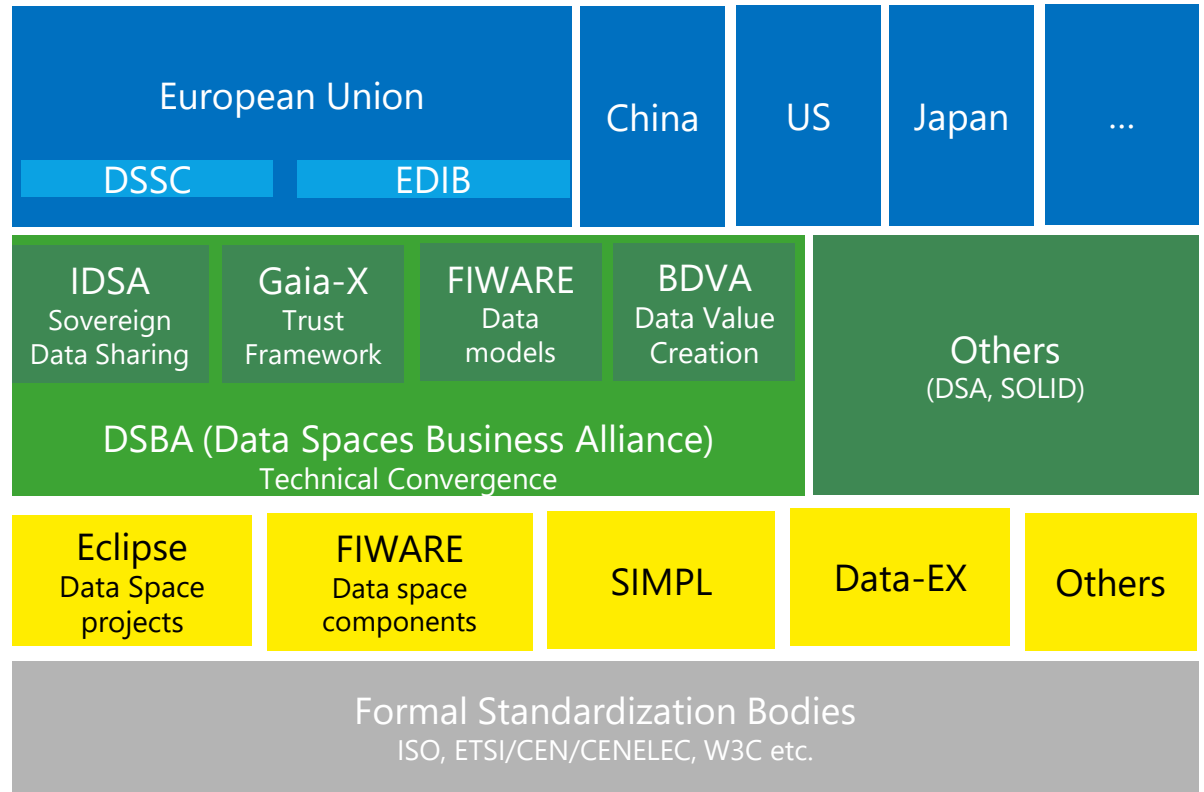
in Silvia Castellvi

Regulatory, business, and technical foundation for Data Spaces within the Edge-Cloud-Continuum

Speaking with one voice, promoting one framework

Data Spaces Business Alliance
Unleashing the Data Economy

European Union		China	US	Japan	...
DSSC	EDIB				

| IDSA
Sovereign Data Sharing | Gaia-X
Trust Framework | FIWARE
Data models | BDVA
Data Value Creation | Others
(DSA, SOLID) |
|---|---|---|---|---|
| DSBA (Data Spaces Business Alliance)
Technical Convergence | | | | |

| Eclipse
Data Space projects | FIWARE
Data space components | SIMPL | Data-EX | Others |
|---|---|---|---|---|

Formal Standardization Bodies
ISO, ETSI/CEN/CENELEC, W3C etc.

Data regulations in economic regions

Data strategies implementation

User requirements, Voice of the communities, coordinate technical specs and business requirements, support to "business design"

Alignment in technical specifications and standards to adopt

Technical implementation driven by OSS, place for the developer communities

Long-term investment security, adoption support etc. through norms and standards

Data Spaces Support Centre (DSSC)

Facilitating interoperable data sharing

- Goal: provide a **blueprint for data spaces** in Europe that comprises common building blocks for business, legal, operational, technical, and societal aspects.

- coordinate on behalf of the European Commission all relevant actions on sectoral data spaces in Europe

- support the establishment of common data spaces in Europe by making technologies and standards widely available across sectors
  - **Coordination and support action funded by the European Commission under the Digital Europe Programme**
  - Multidisciplinary consortium of 12 leading associations and knowledge centers in the domain of data spaces
  - DSSC will support the work of the envisaged Data Innovation Board in view of enhancing the interoperability of data as well as data sharing services between different sectors and domains

DATA SPACES SUPPORT CENTRE
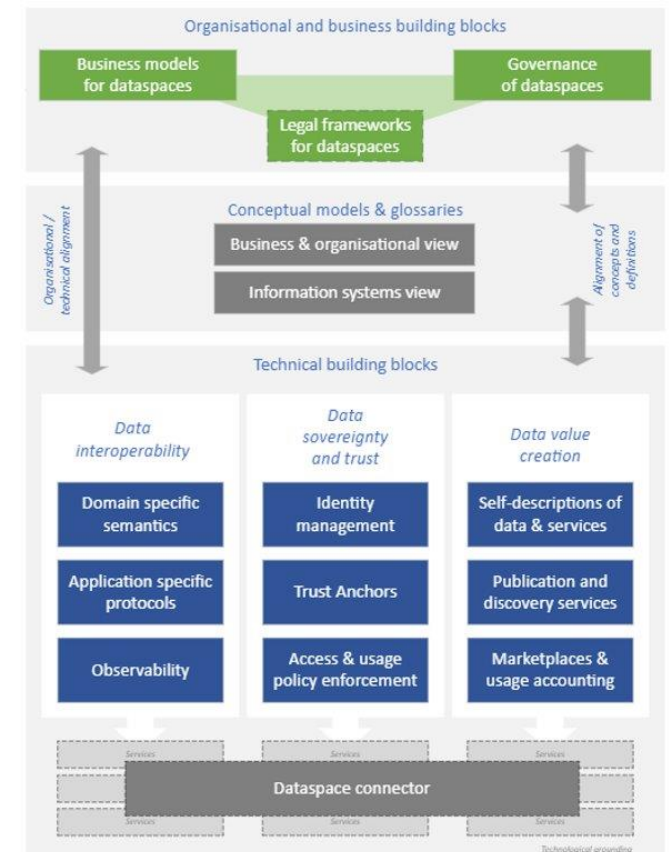
Make the connection and enable data economy

The key to data spaces is the data connector

» **Connects participants in a data space** – to share, utilize, benefit from data.

» Ensures **trust through IDS Certification** and **cyber security** assessment.

» Connects to **trust frameworks** and **identity management**

» Includes **identity & policy management**, ensures **data usage control**.

» Guarantees **interoperability**.

» Understands and enforces **data usage policies**.

» **Master** for other connectors of diverse feature sets.

System Layer – The Connector

The connector – functional components

- **Software component** that is being defined by IDSA community since 2016
- Enables **data sharing** between different parties under predefined policies
- **Strictly controlled** environment to enable trust and data sovereignty
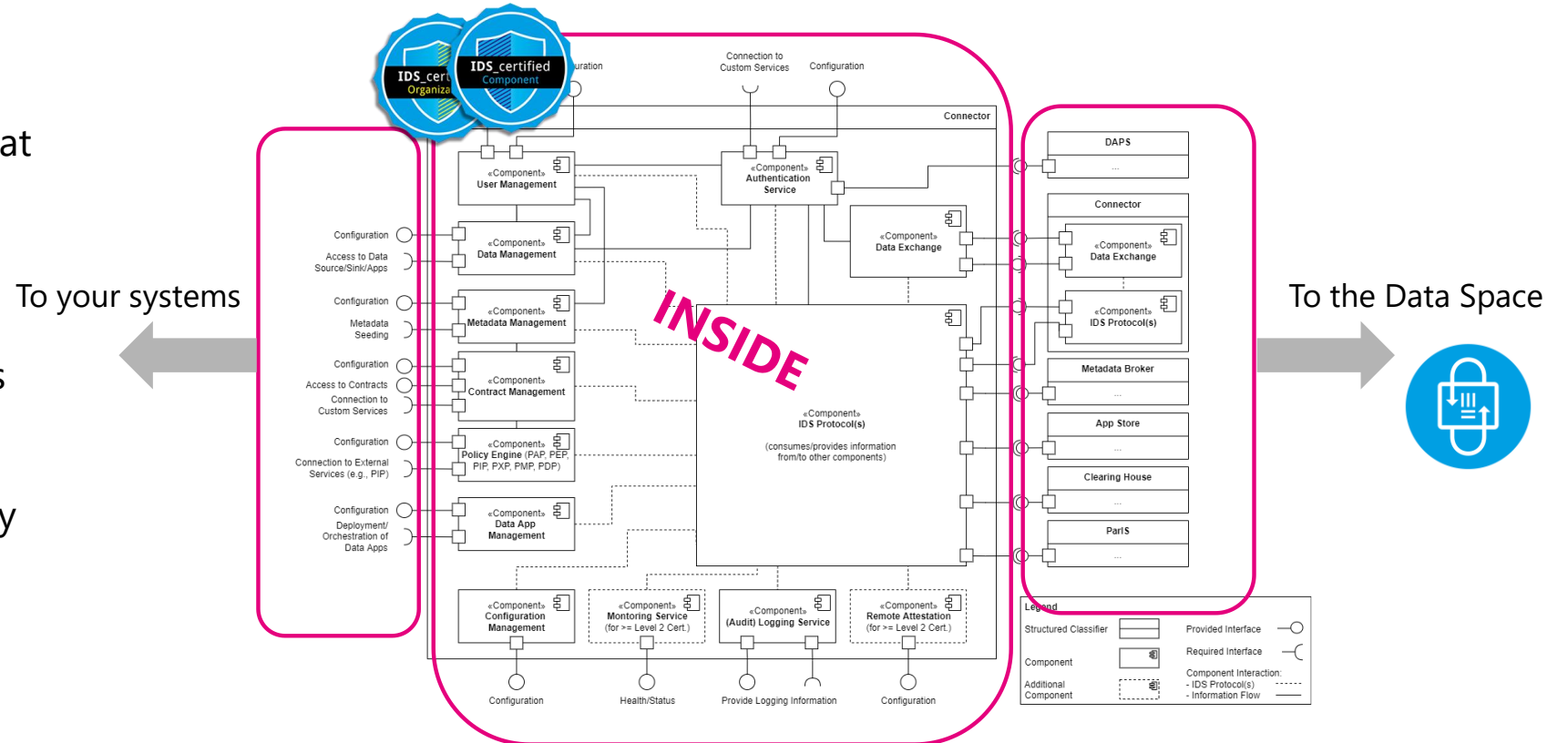
To your systems

To the Data Space
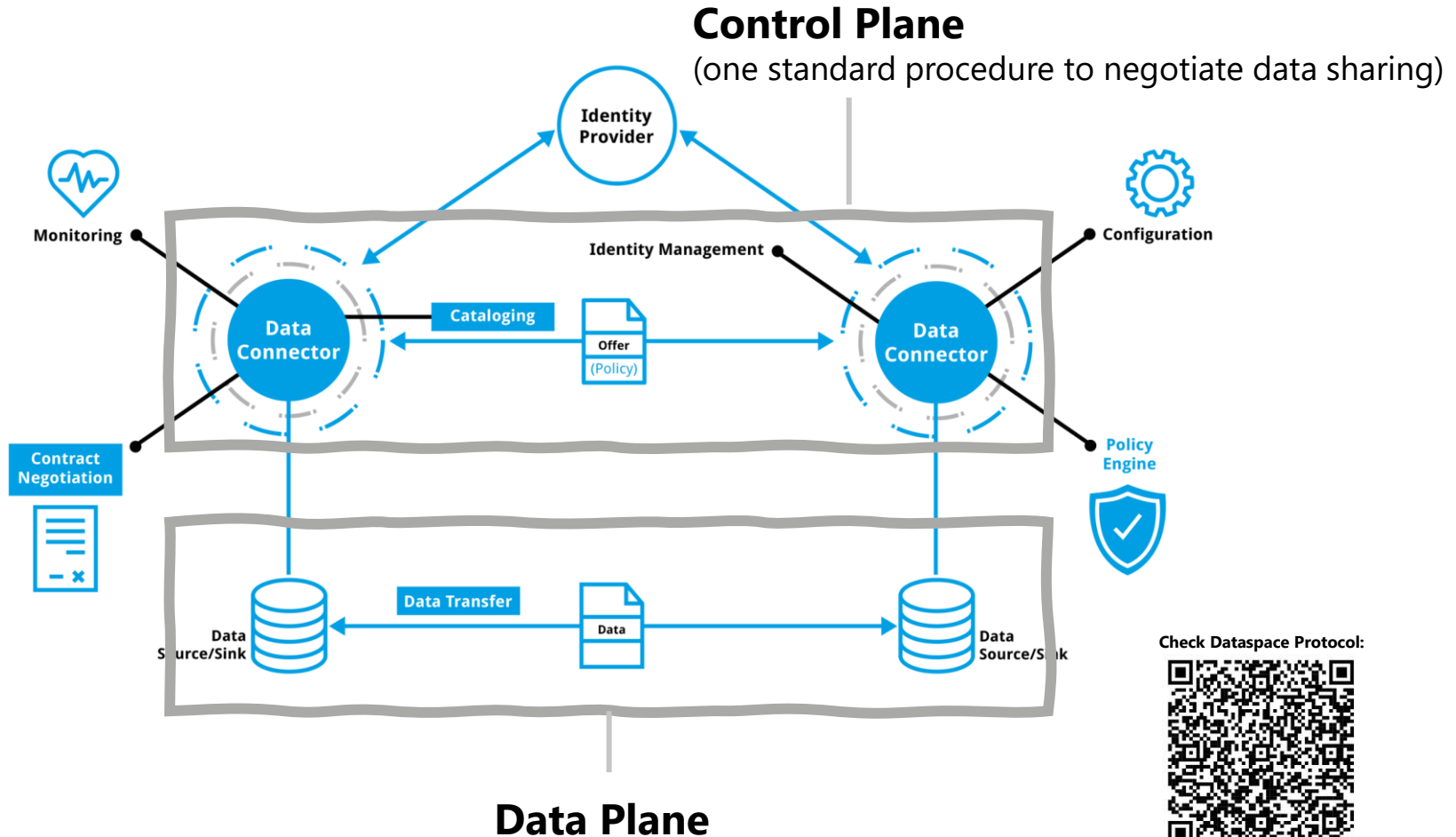
Dataspace Protocol V1.0 → ISO Standard

Foundation for technical Interoperability

Control Plane decides who can access the data and how.

Data Plane is where the action (data sharing) happens.

Conceptually divided, can be combined practically

Control Plane
(one standard procedure to negotiate data sharing)

Data Plane
(several possible for different data sharing scenarios:
confidential data sharing, streaming data, event based data, edge devices, …)

Check Dataspace Protocol:

Dataspace Protocol V1.0 → ISO Standard

Foundation for technical Interoperability

Control Plane
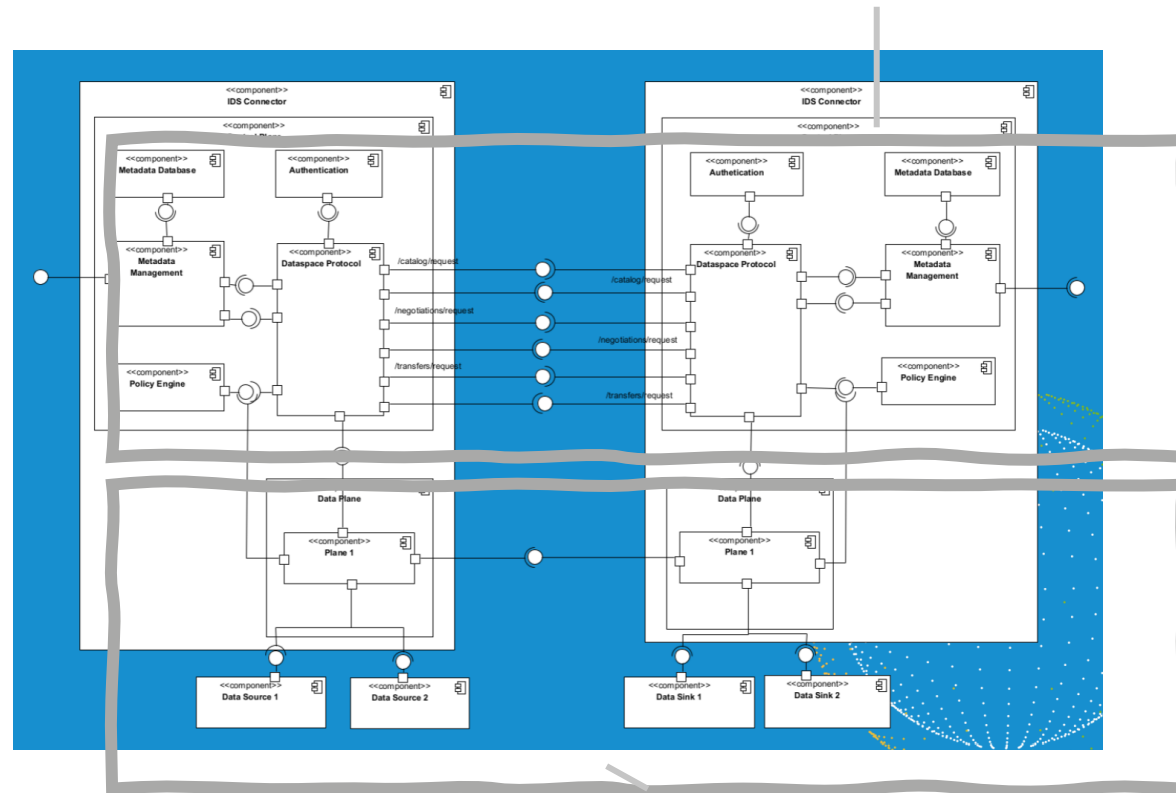(one standard procedure to negotiate data sharing)

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Standardized Data Exchange

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

|	*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	Data provider publishes schedules using *'DCAT Catalogs'* and sets access rules with *'ODRL Policies'*.	Developer and authority negotiate using *'Contract Offer'* messages, leading to a *'Contract Agreement'*.	Data transfer is executed through *'Connector-to-Connector Communication'* and *'Data Transfer Requests'*.

Way forward Dataspace Protocol

- <u>Specification Document</u> (created by IDSA) – under the CC-BY License as is

- Create OSS project for <u>TCK -Technology Compatibility Kit</u> – Source Code created under Apache 2 License

- At least <u>one compliant implementation</u>

- Submit to ISO by June '24 via PAS fast track

- Finalize ISO standard by end of '24

Specification Document by IDSA
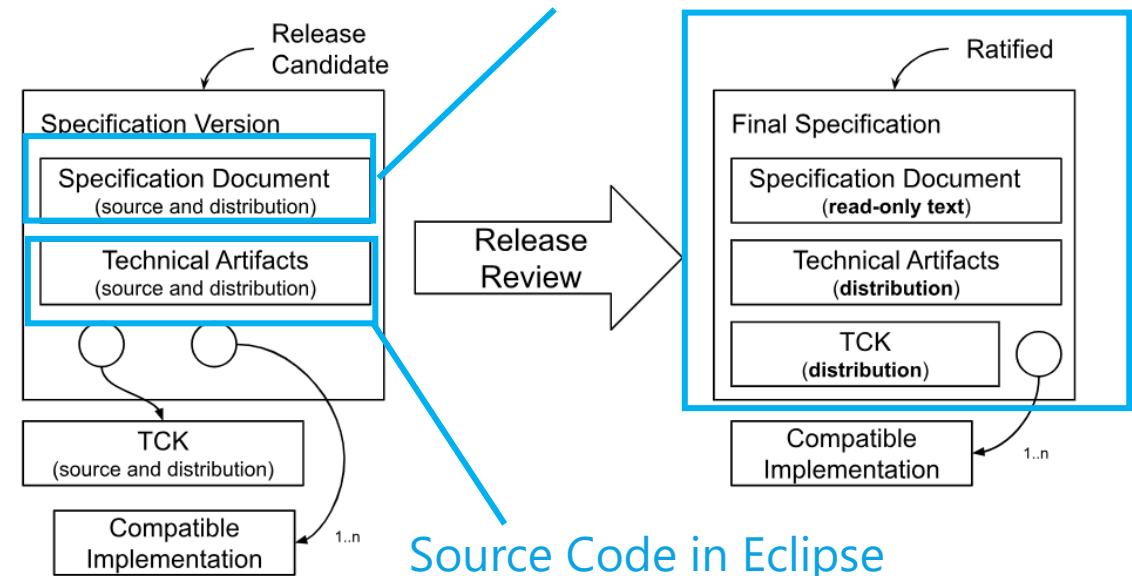
Source Code in Eclipse

Find the Dataspace Protocol
In the IDSA Knowledge Base
     https://docs.internationaldataspaces.org/ids-knowledgebase/v/dataspace-protocol
On GitHub
     https://github.com/International-Data-Spaces-Association/ids-specification

Milestones

Planned

12/2023

1/2024

6/2024

6/2024

Pre-release of Specification Document

Initiation of DSP Project
• Project Proposal
• Start of TCK Project

Preparation of DSP Specification

Release of DSP Specification
• Specification Document
• TCK

PAS Contribution to ISO/IEC

Approval Process in ISO/IEC JTC1

IDSA Governance

Eclipse Foundation Governance

ISO/IEC Governance

DSP Project Team

Potentially external Contributors

ISO/IEC JTC1