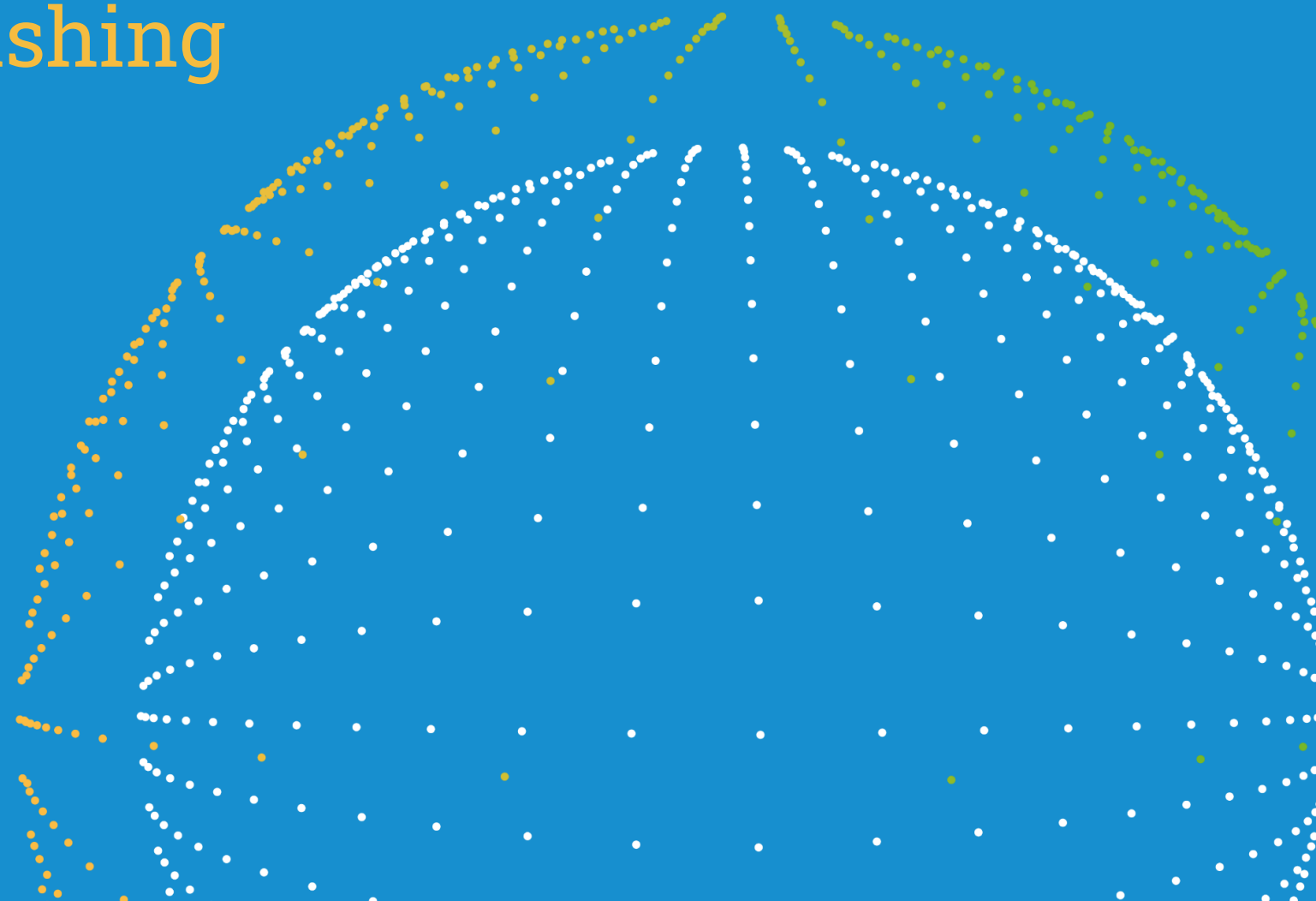


Data Spaces Symposium

Europe to the world – how & why
data space are flourishing

Lars Nagel

INTERNATIONAL DATA
SPACES ASSOCIATION





INTERNATIONAL DATA
SPACES ASSOCIATION



Opening Day 1

Data Spaces Discovery Day

Data Spaces Symposium

Darmstadt | 12.03.2024

Lars Nagel | CEO International Data Spaces Association

Deep insights in the data spaces machine room

This lays the basis for interoperable trustful data sharing



- » **Technology, software, services**
 - » Pioneering solutions
 - » EDC insights, DOS from ZF, Sovity connector as a service, FIWARE Dataspace connector, certified Telekom Connector, Huawei EDS, KPN 4 SCSN, GXDCH meets DSP, ...
- » **Business benefits**
 - » Data Spaces case studies
 - » SCSN, DATA-EX, Catena-X, Volkswagen, Telekom Data Intelligence Hub, Green Deal, Microsoft, DATA-EX, ...
- » **Inter data spaces interoperability via the data spaces protocol**
 - » Connecting data spaces
 - » University of Tokyo testbed, SCSN x Catena-X
- » **More insights on IDSA: Training, Personal Data, Standardization**

Business value of data spaces

How telcos realize data spaces to deliver benefits to end users

Christoph Mertens IDSA, Herman Pals TNO, Rutger Borst KPN, Domenico Chirico KPN, Masaru Dobashi NTT Data, Sven Loeffler T-Systems International, Mario Meir-Huber Magenta Telekom

Data Spaces Symposium

Technical realization of data spaces

Let's tech talk about connectors – part 1: How new generation data space connectors drive interoperability | Tekniker, TNO, Sovity, VTI, T-Systems

Gonzalo Gil Tekniker, Silvia Castellvi IDSA, Maarten Kollenstart TNO, Sebastian Oprel SOVITY, Markus Spiekermann Huawei, Jesus Ruiz FIWARE

Pitch session | Data spaces: Pioneering solutions for implementation, examples for successful operation – presented by IDSA members

Christoph Mertens IDSA, Sylvain Le Bon StartinBlax, Noboru Koshizuka University of Tokyo, Klaus Ostradovetz Eviden, Thorsten Reitz WeTransform, Rainer Straeter IONOS, Natascha Totzler Neojo, Günther Tschabuschnig Data Intelligence Offensive, Alex Bourlier StartinBlax, Markus Lehmann ZF, Noburu Koshizuka The University of Tokyo

Our members are the backbone of IDSA

INTERNATIONAL DATA SPACES ASSOCIATION



860+ People contributing

31 Countries

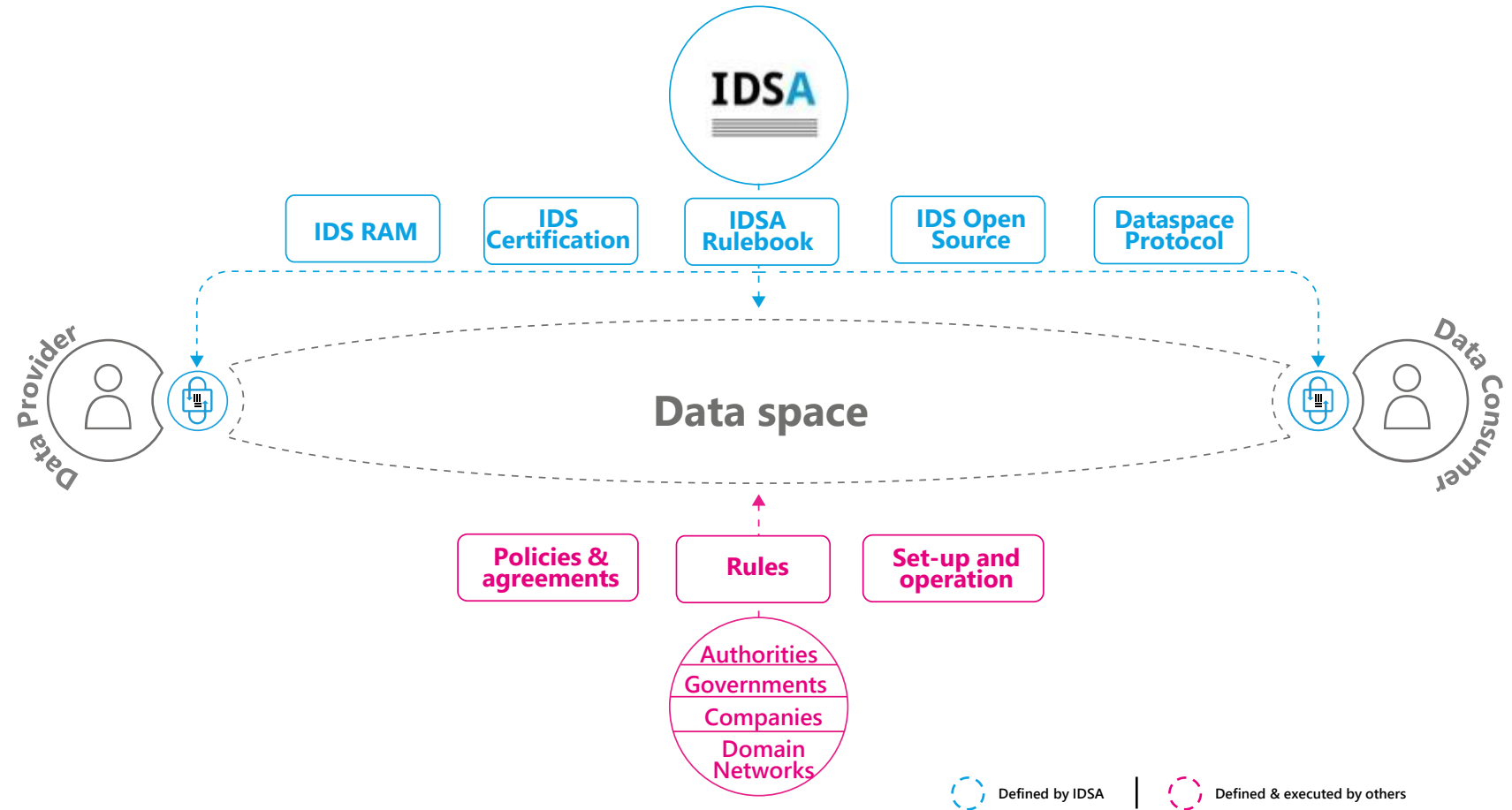
153

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**.



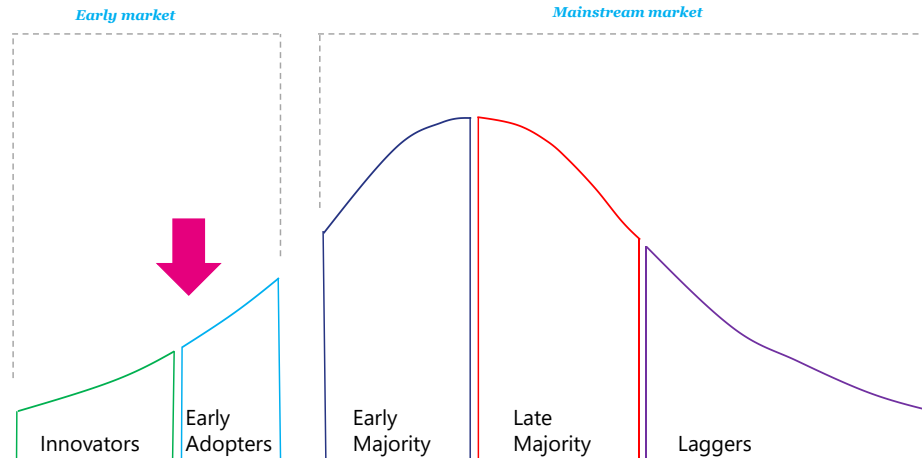
An aerial photograph of a flock of flamingos in a vibrant red lake. The birds are scattered across the frame, with several leaving long, winding trails of white ripples behind them as they move. The water's color is a deep, saturated red, and the sky above is a clear, pale blue. The overall scene is dynamic and visually striking.

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



- 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

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.

Global Manufacturing Initiatives	International Manufacturing-X Council
Manufacturing Initiatives Platform Industrie 4.0, C2M@, Industry Associations, RRI	Global smart manufacturing initiatives are building the foundation for the requirements and needs of infrastructure initiatives, and working together to shape standards.
Infrastructure Initiatives EDC/Eclipse, DATA-EX, IDSA, Gaia-X	Data and digital infrastructure initiatives have to provide building blocks to fulfil manufacturing needs - from cloud to edge to connected devices.
Standards and regulations OPC UA, AAS, ECLASS, IEC reports, Battery Passport	Standards are essential for scaling-up. Cooperation and influence are essential for IM-X. Regulations are a given. Lobbying is needed.
	Orchestrate and cooperate Influence and use Define and lobby

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
Not-for-Profit Organization (IDSA)	Collaboration to build a common set of services in Open-Source
Research	Reference Architecture Model Maintenance · Certification Scheme Maintenance · Certification · Rulebook Maintenance · Requirements Management · Standardization Activities · Knowledge Transfer · Internationalization · Platform for Domain-Specific Activities ... 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

INTERNATIONAL DATA SPACES ASSOCIATION

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

<p>IDSA Rulebook for holistic governance view</p>	<p>Reference Architecture as technology-agnostic framework on conceptual model</p>	<p>Dataspace Protocol as detailed specification and essence for interoperability</p>	<p>Certification for reliable, industry grade components</p>	<p>Diverse landscape of usable components and radar as orientation for ecosystem building and future investments</p>	<p>Running Data Spaces as impressive impact stories</p>
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Let's create the next IDS-RAM together!

All IDSA members are invited



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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>

Why do we need a new version

Some improvement areas



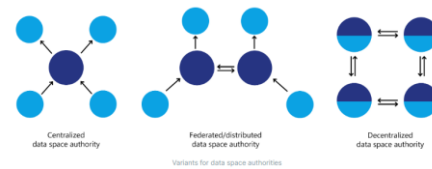
Align with the latest developments

e.g.

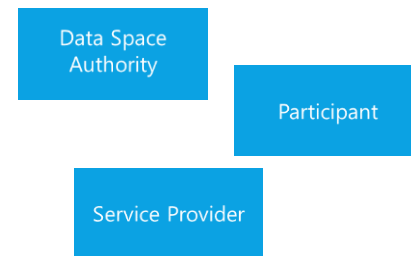
Dataspace protocol, Rulebook, DSSC blueprint, etc.



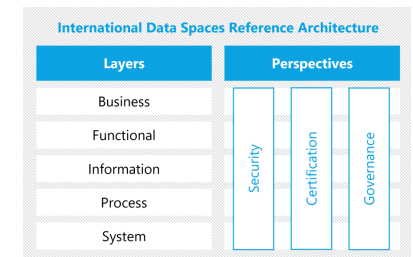
Include **decentralized** and **federated** approaches, e.g., in **Trust framework**



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



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



Towards a modular RAM 5

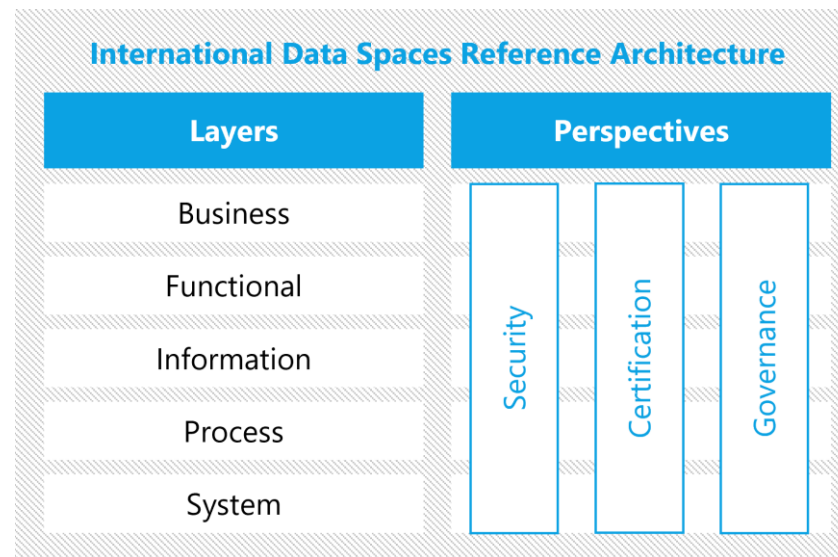
Making progress, but slowly.



- # The IDS-RAM has a very strong focus on the Connector and the perspective of a Data Space Participant.
- # A modular structure will consider 3 key differentiations and support design choices during the realization. RAM 5 will provide support and guidelines for those design decisions.

Do you:

- Build a Data Space (**Data Space Authority**)
- Do you join a Data Space as **participant**
- Do you provide Value Added Services / **Ecosystem Services**



IDS-RAM as System of Systems:

Each System requires design decisions, e.g., centralized vs. decentralized structure

Join us!

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

INTERNATIONAL DATA
SPACES ASSOCIATION



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



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

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](#)

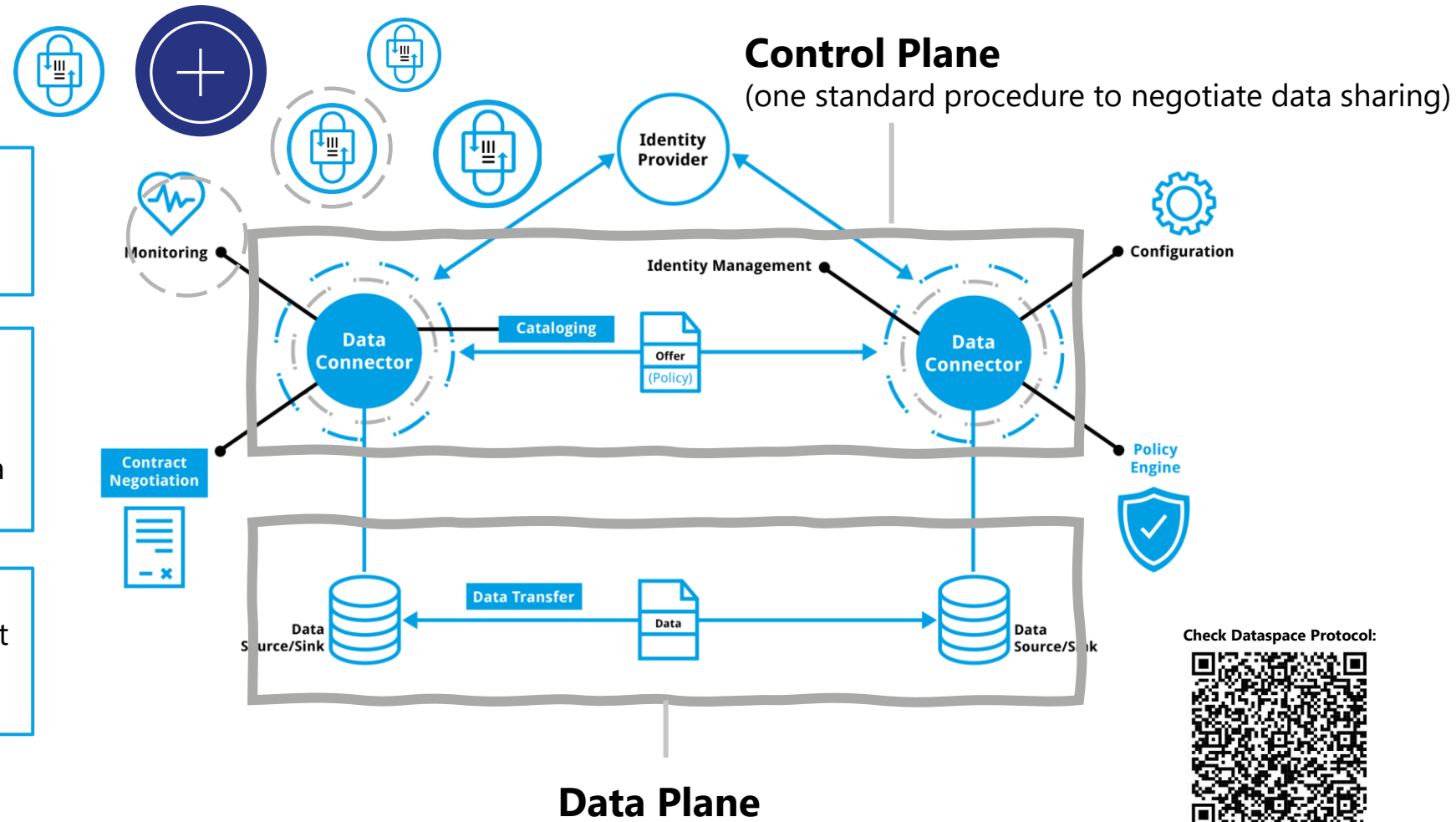
Dataspace Protocol V1.0 → ISO Standard

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.



(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



Issue #12
February
2024



- ### 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

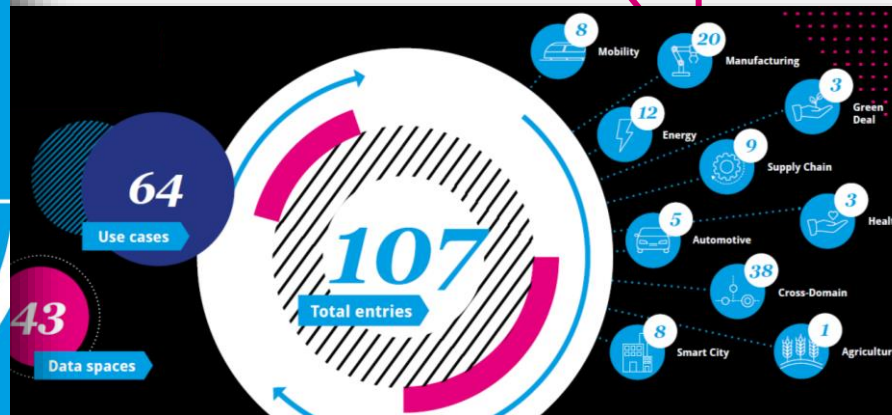
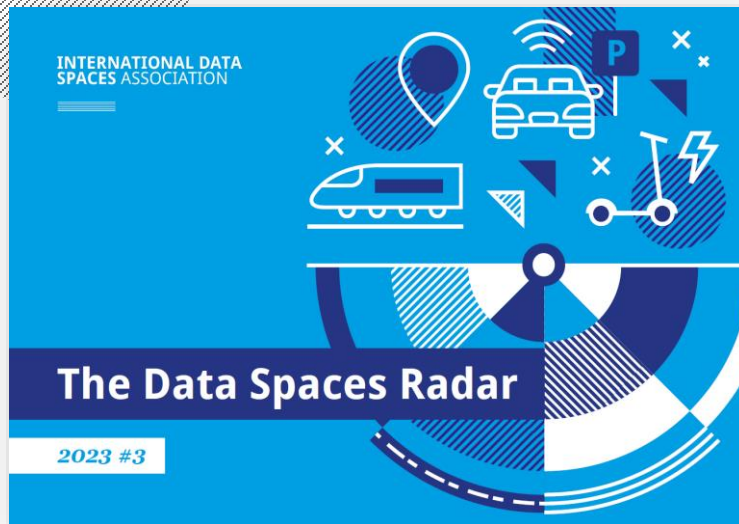
[Click here to take a look inside](#)

[Click here to provide feedback or add a connector](#)

The Data Spaces Radar Report #3

How data spaces innovate mobility

INTERNATIONAL DATA SPACES ASSOCIATION



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

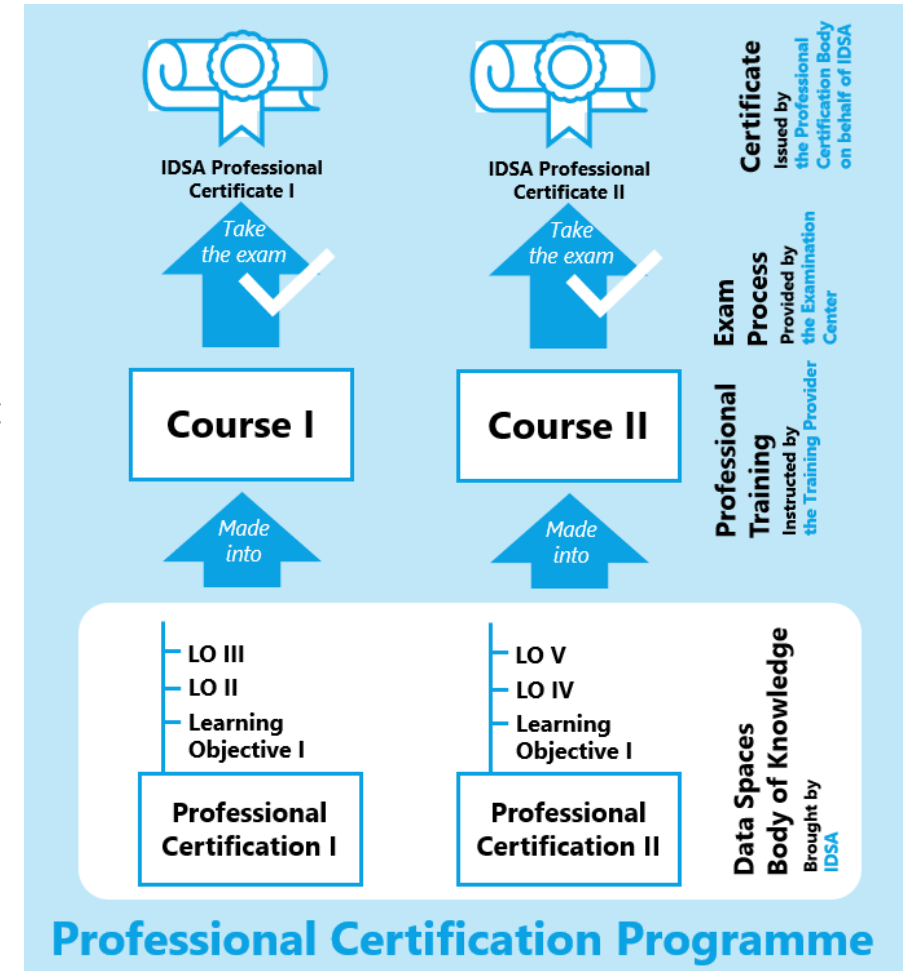
Professional Training Programme

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**.



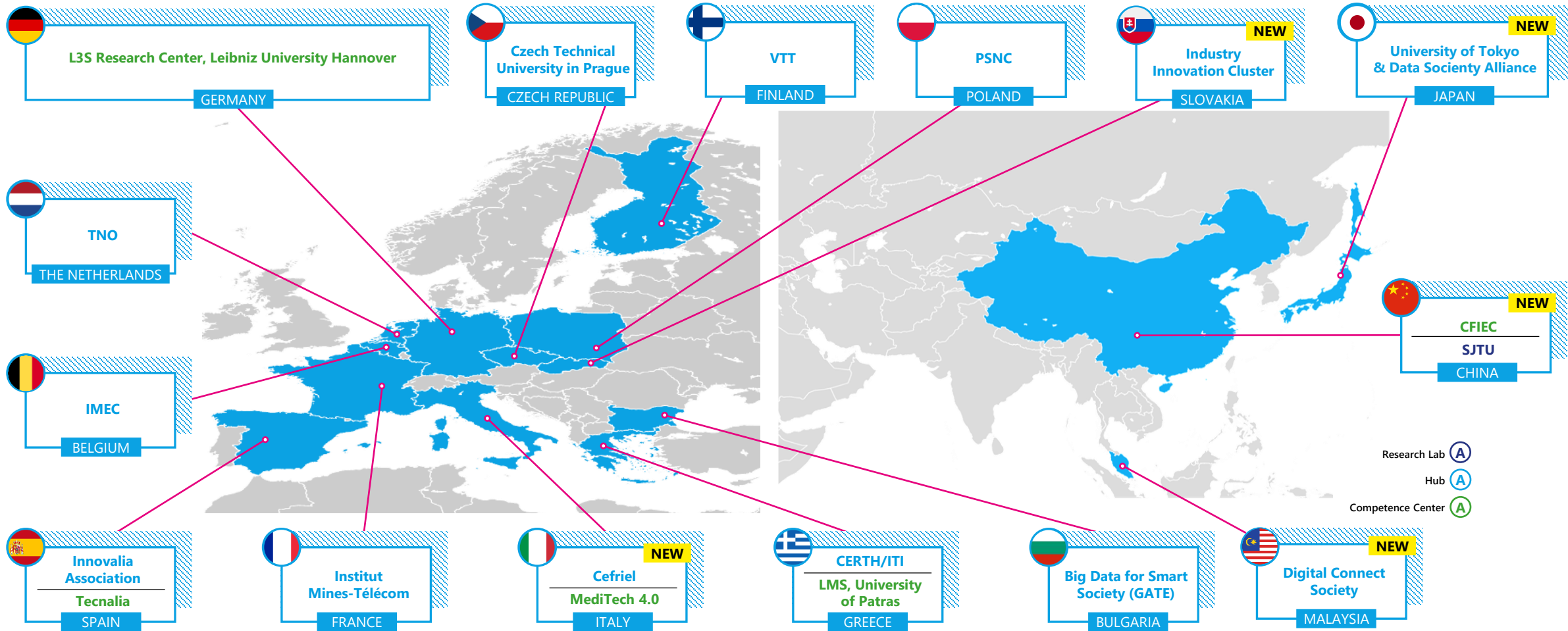
INTERNATIONAL DATA
SPACES ASSOCIATION



IDSAs Hubs, Competence Centers & Labs

INTERNATIONAL DATA SPACES ASSOCIATION

Our partners are building momentum across Europe and around the world





Join the data spaces pioneers

Become a member of IDSA

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

Name, Date



Go for convergence and global standards

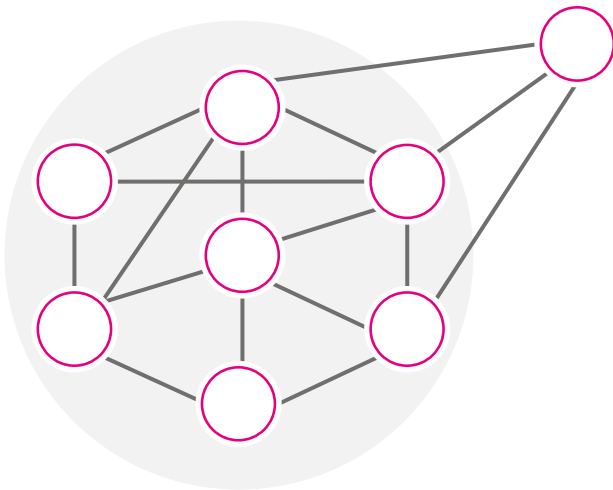
Current activities, roadmap, things to be shaped

Trustful data sharing takes place in data spaces

Where participants share one common trust framework



A decentralized and dynamic data ecosystem:
with many-to-many interactions



A **data space** is the sum of all end points that are able to share data with each other.



- **Decentralized/Centralized/Federated data architecture**: no physical data integration, leave data where it is
- **Interoperability**: no silos, no vendor-dependency
- **Data Sovereignty** and **traceability**
- **Trusted** participants
- **Usage control** for data as economic asset

Trustful data sharing takes place in data spaces

Where participants share one common trust framework



How do we move forward?

Trustful data sharing takes place in data spaces

Where participants share one common trust framework



Invent a wheel each?

Trustful data sharing takes place in data spaces

Where participants share one common trust framework



Or join forces?

Parallel Paths: The Internet and Data Space(s)



Similarities in evolution and the role of protocols

	Initial Conceptualization	Core Protocol Dev	Public Adoption and Standardization	Advanced Networking & Efficiency Measures
The Internet	Multiple isolated networks (e.g. ARPANET, BITNET) with their own communication protocols.	Introduction of TCP/IP (1983) as a universal protocol, enabling different networks to communicate with each other.	World Wide Web & HTML (1990s)	Software-Defined Networking (SDN) & Separation of Control/Data Planes (late 2000s-2010s)
Data Space(s)	Organizations having unique data storage and sharing mechanisms. Isolated data spaces & control/data planes.	Connectors and Protocols to standardize data sharing across different spaces are being introduced.	Rise of solutions making the tech accessible and usable. <u>Widespread adoption of Dataspace Protocol.</u>	Separation of control plane (defining rules and policies) and data plane (actual data transfer).

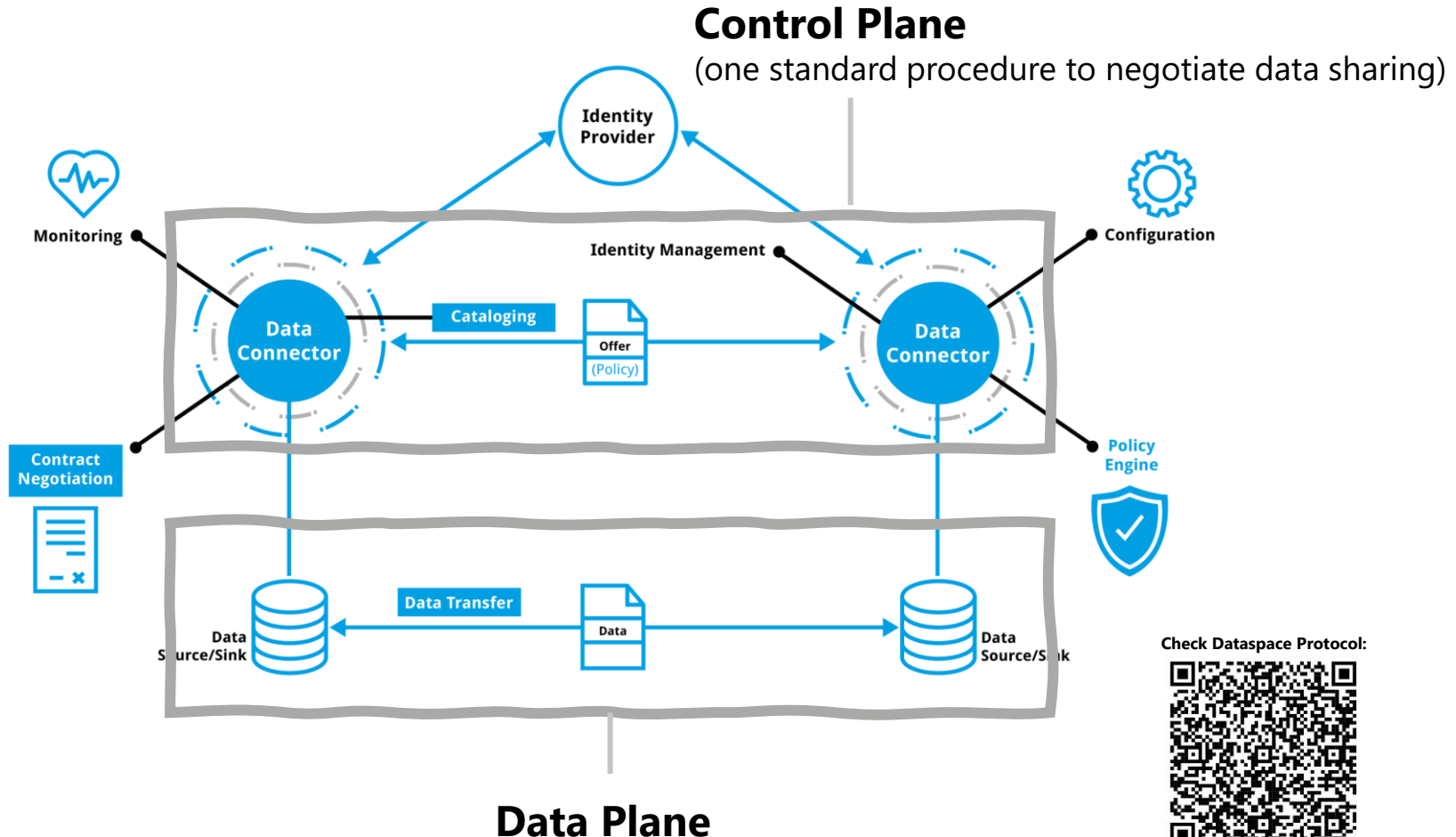
Dataspace Protocol V1.0 → ISO Standard

Enables standardized data exchange across different data space instances.

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

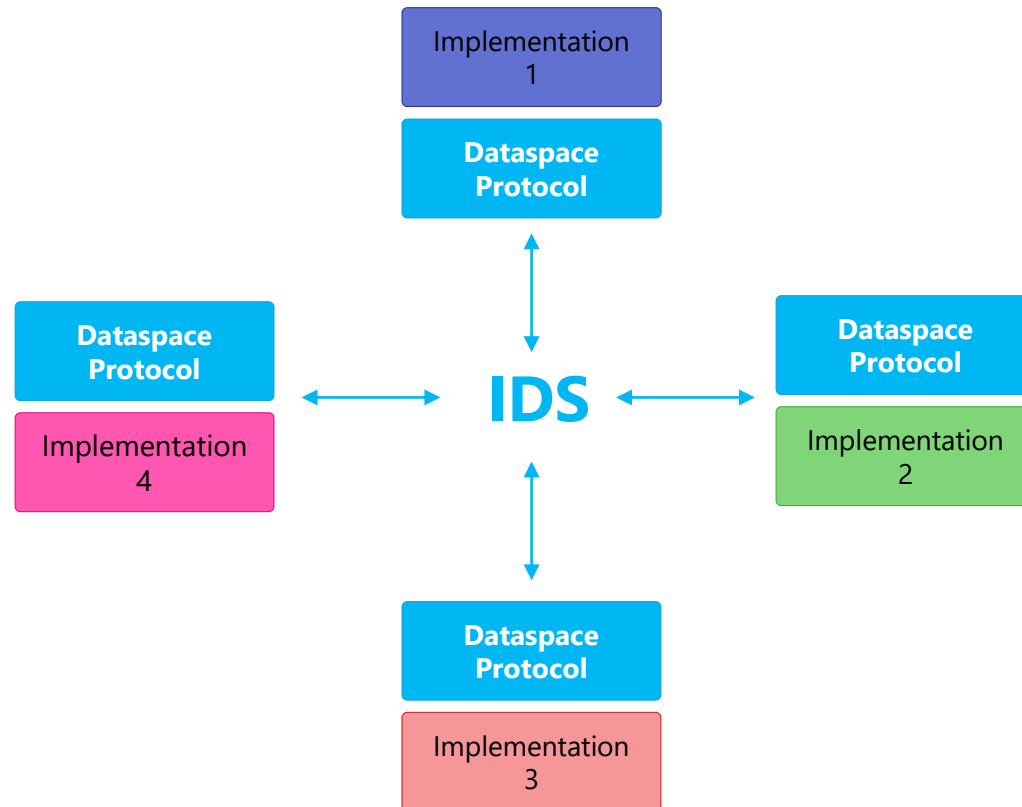


Check Dataspace Protocol:



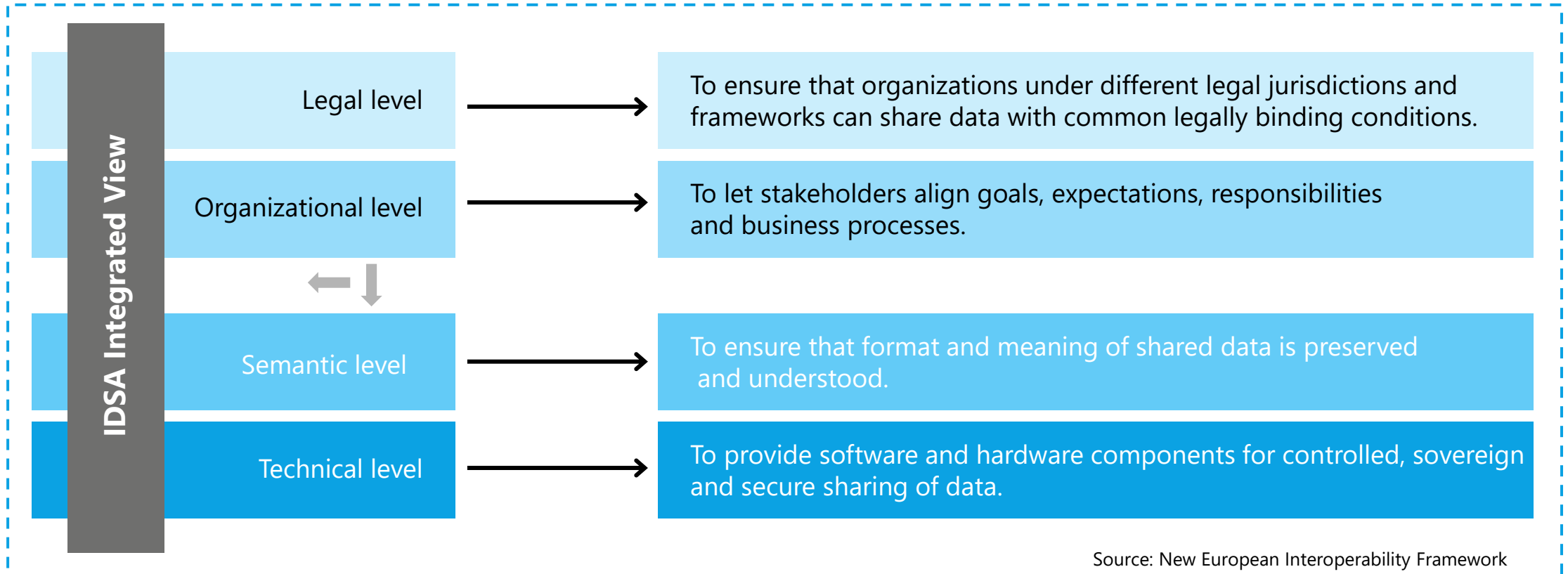
A “minimal interoperability mechanism”

Technical Interoperability



i If components are conformant to the Dataspace Protocol Specification, they will be *interoperable* (regarding the scope of the Dataspace Protocol).

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

IDS & Interoperability

Four Layers of Interoperability & IDS



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

A holistic approach to bring data spaces to global scale

IDSA on its way to a global standard

INTERNATIONAL DATA SPACES ASSOCIATION



Global Standardization

Aligning architectures, market proliferation and thought leadership on data spaces

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

IDS 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

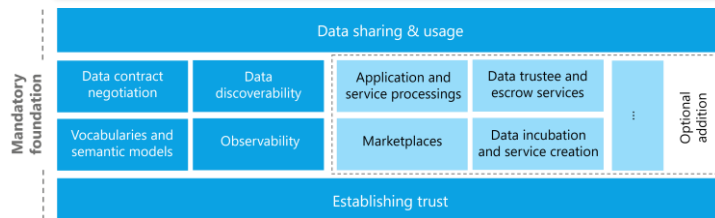
Running Data Spaces as impressive impact stories

The IDSA Rulebook proposes fundamental design principles for data spaces



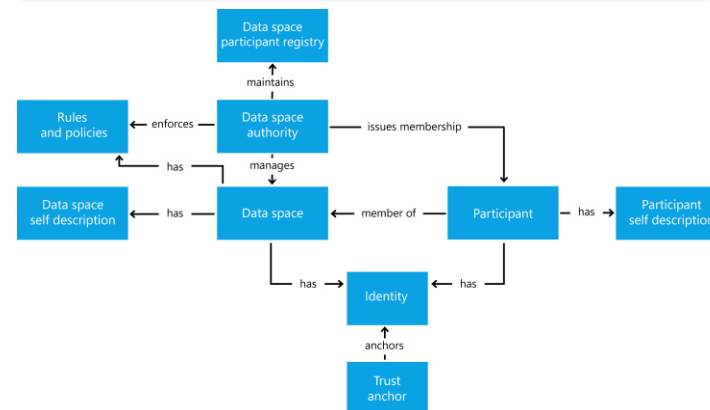
1. Mandatory and optional Requirements.

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



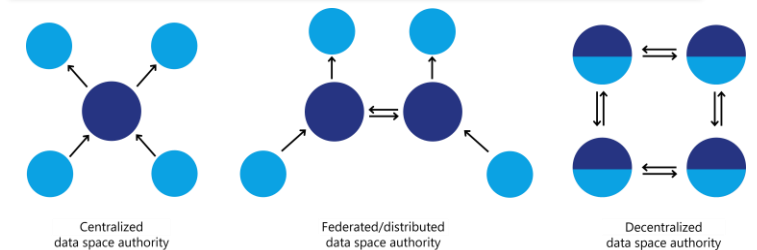
2. The existence of a Data Space Authority

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



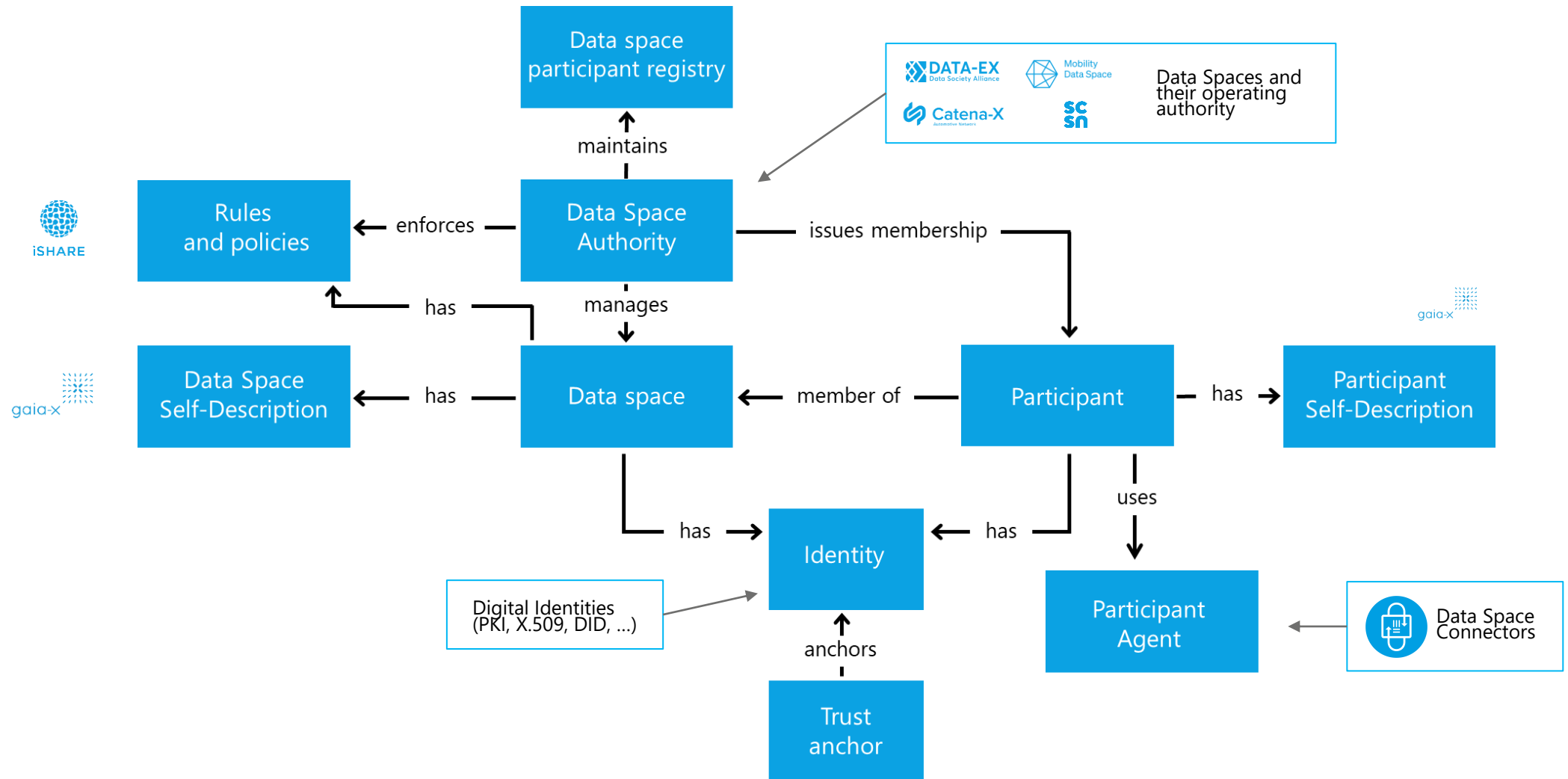
3. Different approaches for Data Spaces

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



Towards a modular RAM 5

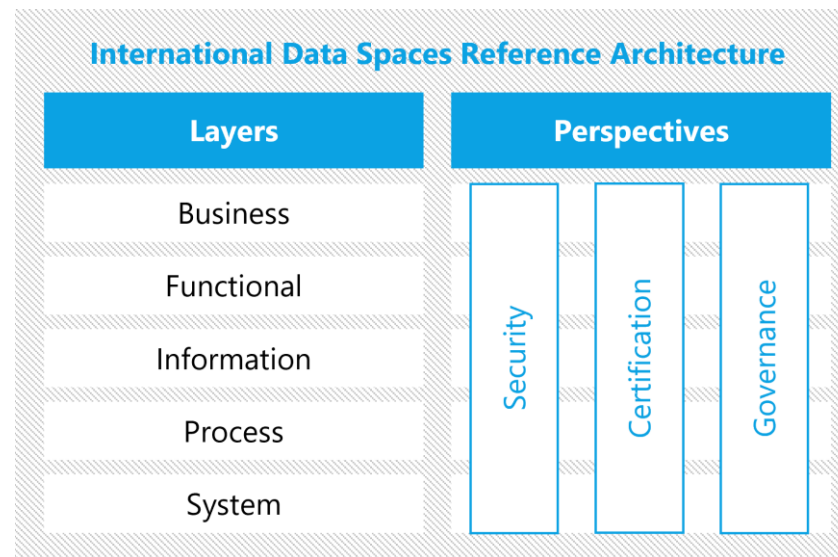
Making progress, but slowly.



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- # A modular structure will consider 3 key differentiations and support design choices during the realization. RAM 5 will provide support and guidelines for those design decisions.

Do you:

- Build a Data Space (**Data Space Authority**)
- Do you join a Data Space as **participant**
- Do you provide Value Added Services / **Ecosystem Services**



IDS-RAM as System of Systems:

Each System requires design decisions, e.g., centralized vs. decentralized structure

Make the connection and enable data economy

The key to data spaces is the data connector



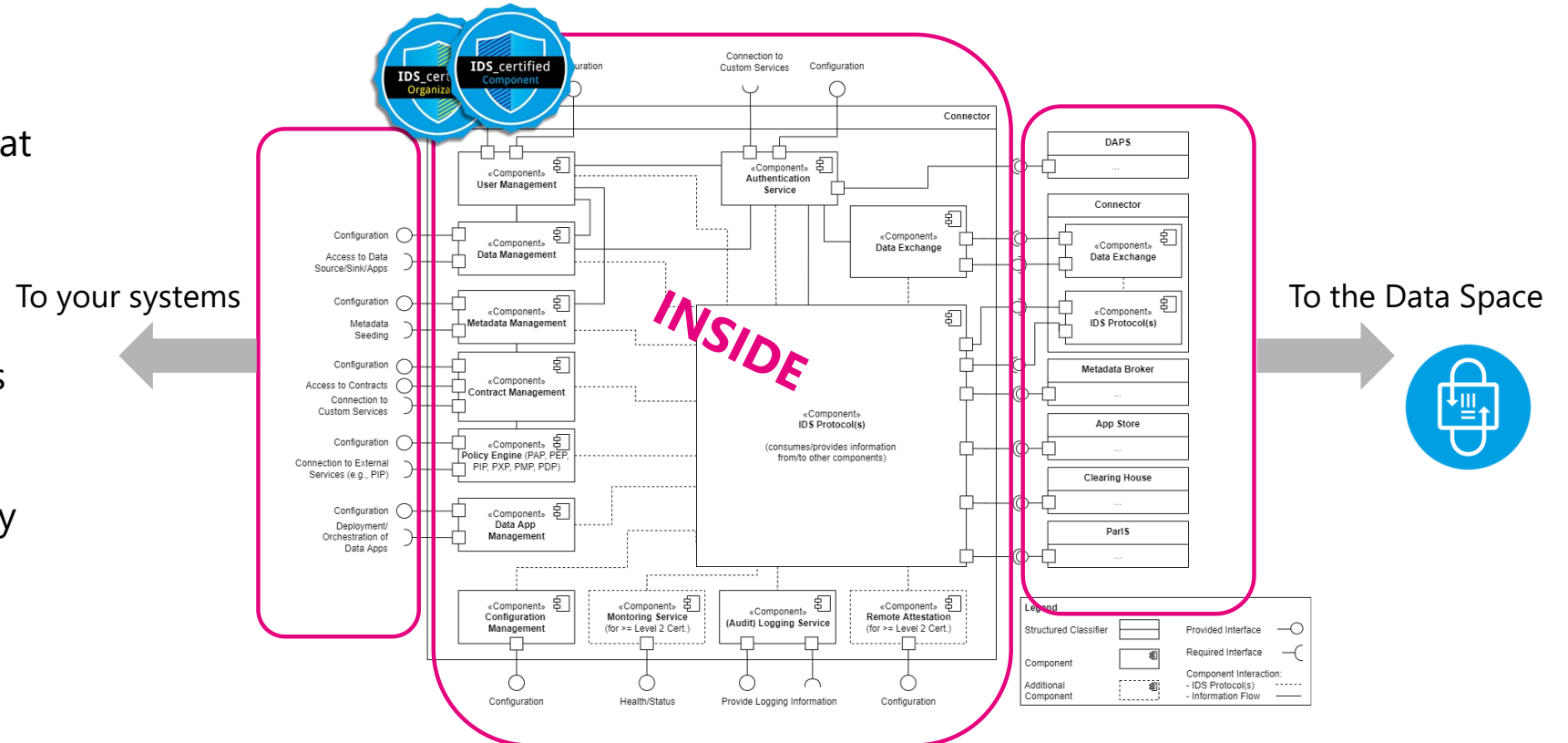
- » **Connects participants in a data space** – to share, utilize, benefit from data.
- » Ensures **trust through IDS Certification** and **cyber security** assessment.
- » Connects to **trust frameworks** and **identity management**
- » Includes **identity & policy management**, ensures **data usage 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



Dataspace Protocol V1.0 → ISO Standard

Foundation for technical Interoperability

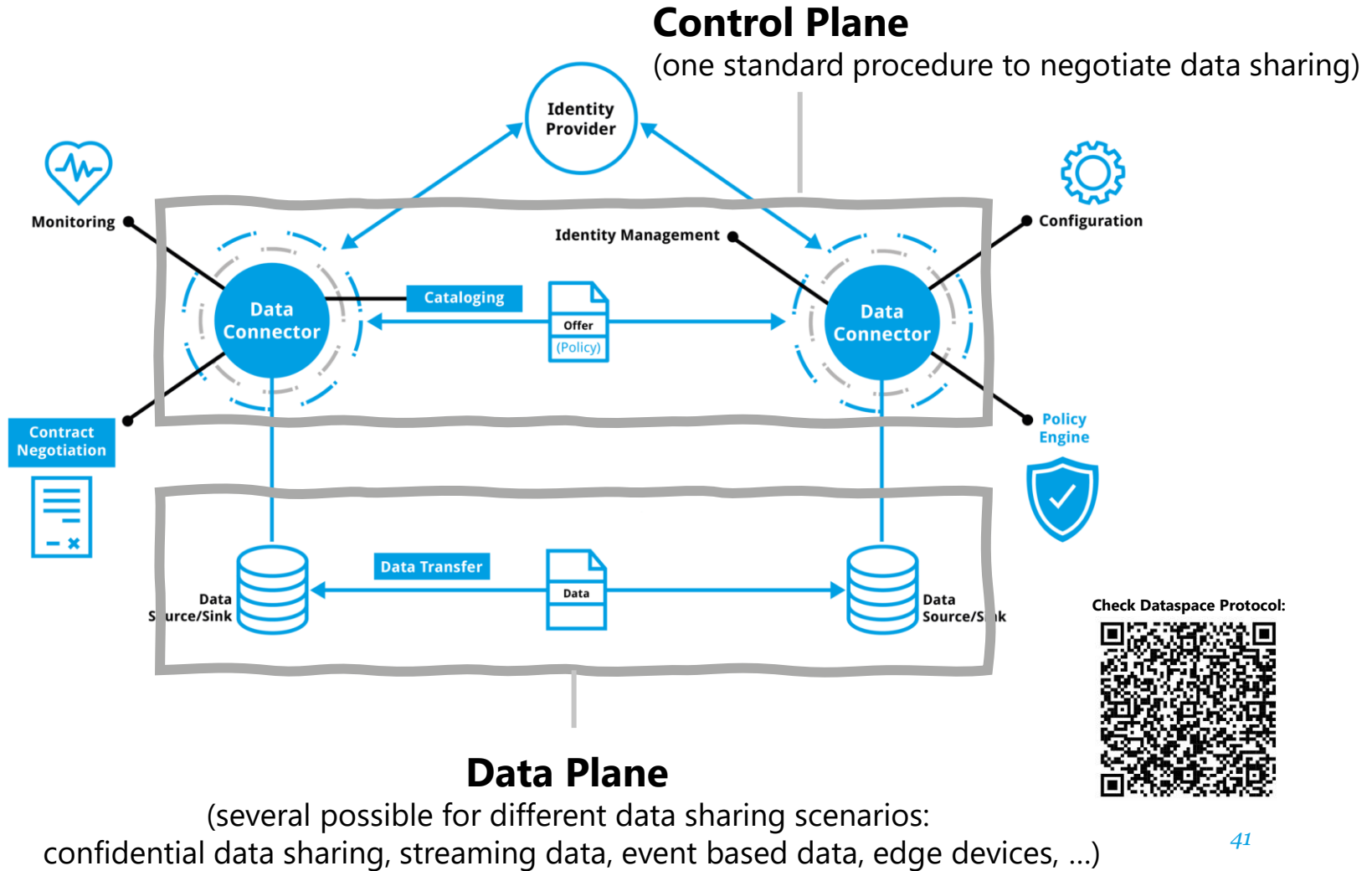
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Conceptually divided, can be combined practically



Dataspace Protocol V1.0 → ISO Standard

Foundation for technical Interoperability



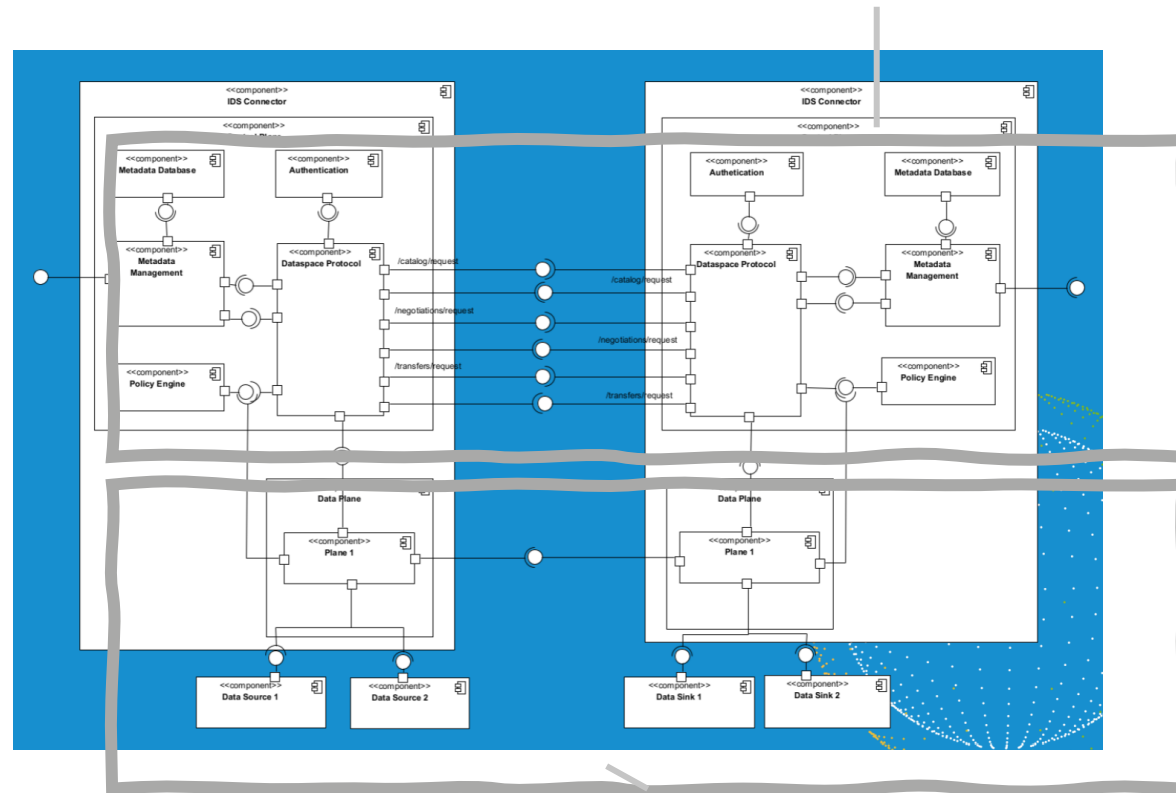
Control Plane decides who can access the data and how.

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:



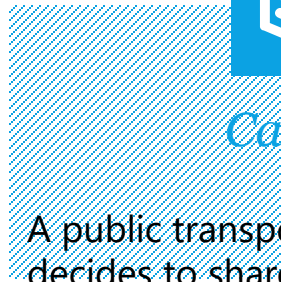
Standardized Data Exchange



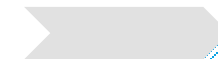
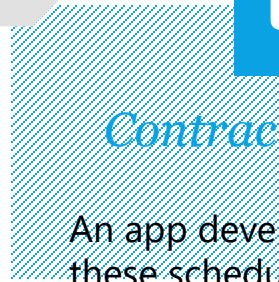
What does this mean? How does Dataspace Protocol ensure that?



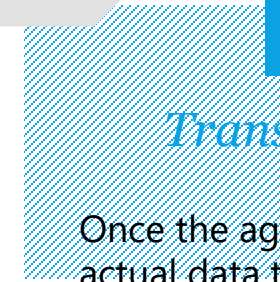
Catalog



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'.

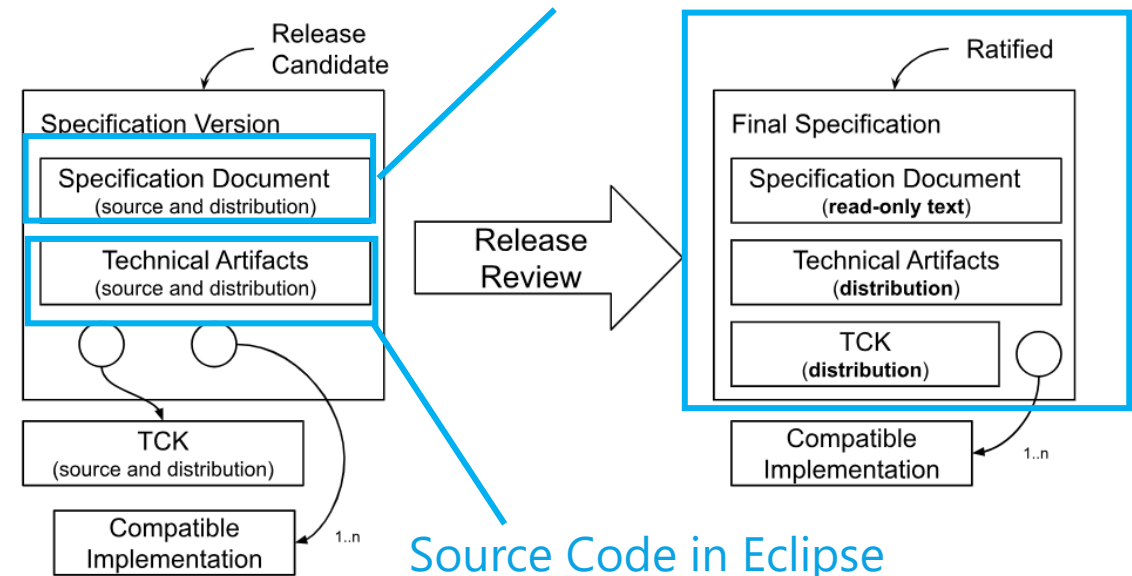
Data transfer is executed through 'Connector-to-Connector Communication' and 'Data Transfer Requests'.

Way forward Dataspace Protocol



- Specification Document (created by IDSA) – under the CC-BY License as is
- Create OSS project for TCK -Technology Compatibility Kit – Source Code created under Apache 2 License
- At least one compliant implementation
- Submit to ISO by June '24 via PAS fast track
- Finalize ISO standard by end of '24

Specification Document by IDSA



Find the Dataspace Protocol

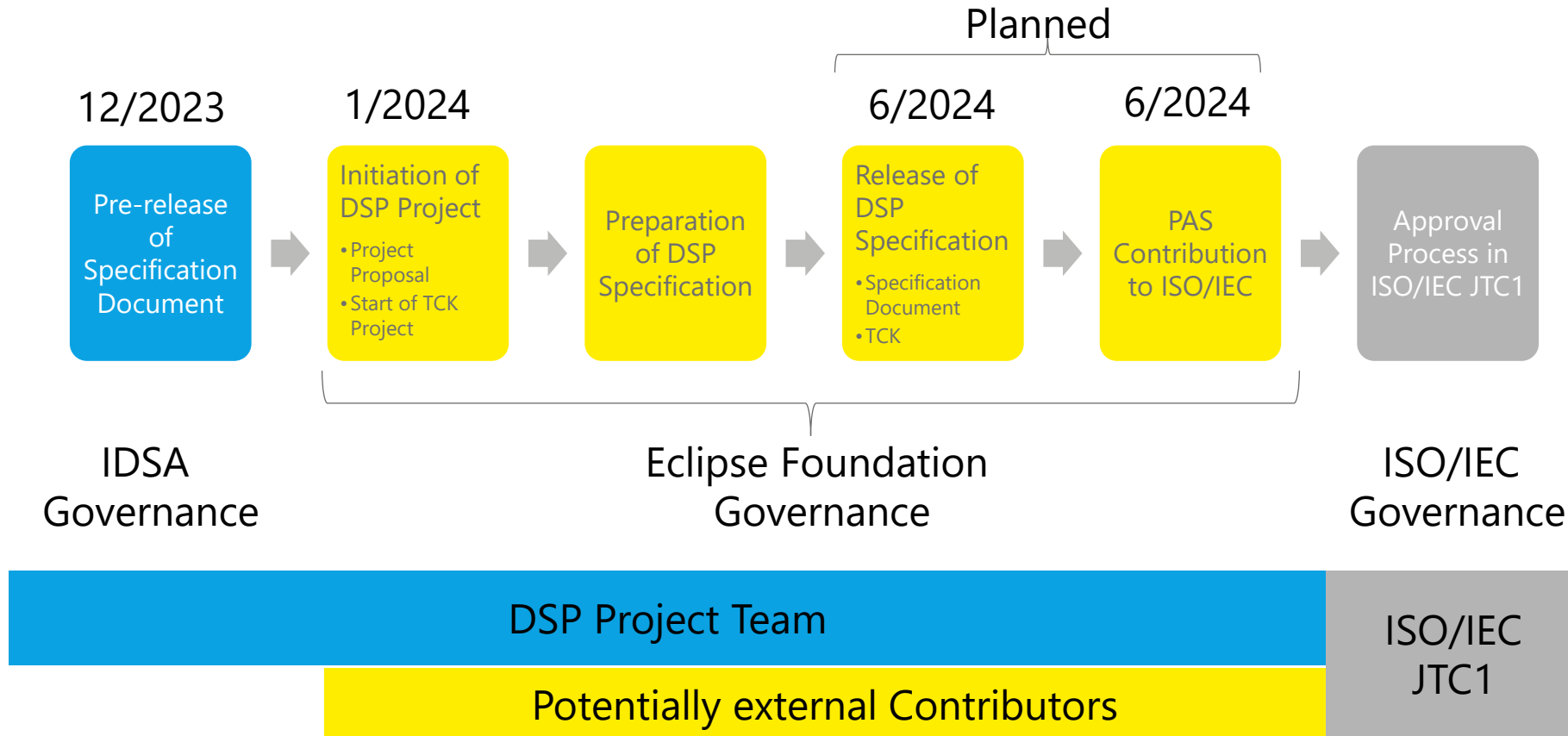
In the IDSA Knowledge Base

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

On GitHub

<https://github.com/International-Data-Spaces-Association/ids-specification>

Milestones



A holistic approach to bring data spaces to global scale

IDSA on its way to a global standard

INTERNATIONAL DATA SPACES ASSOCIATION



Global Standardization

Aligning architectures, market proliferation and thought leadership on data spaces

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

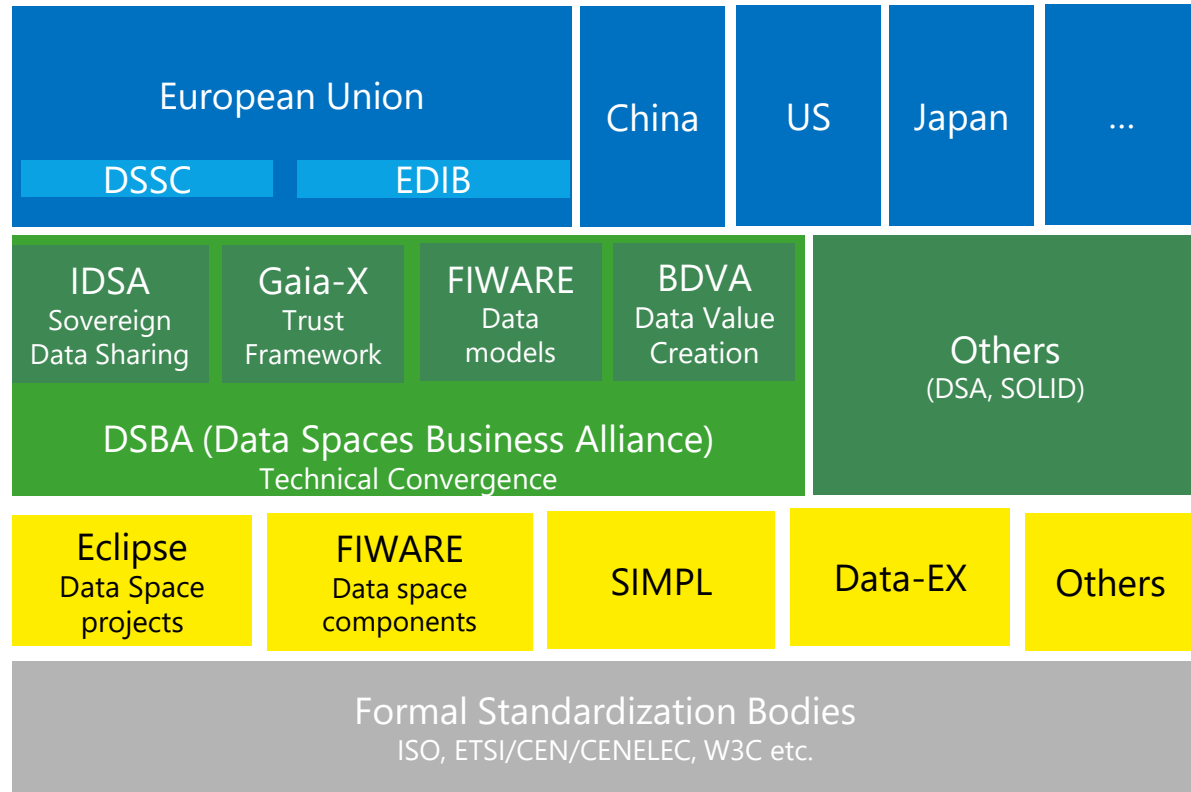
Diverse landscape of usable components and **radar** as orientation for ecosystem building and future investments

Running Data Spaces as impressive impact stories

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

Hot off the press
Brandnew!
 In that case preliminary regarding typos, formal mistakes, spelling, ...

Speaking with one voice, promoting one framework



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

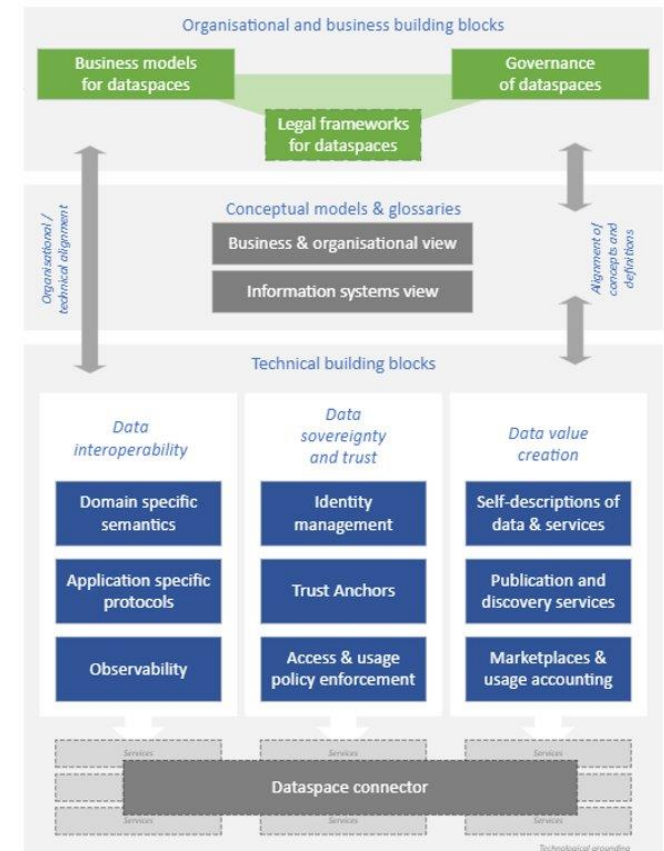
Data Spaces Support Centre (DSSC)

Facilitating interoperable data sharing

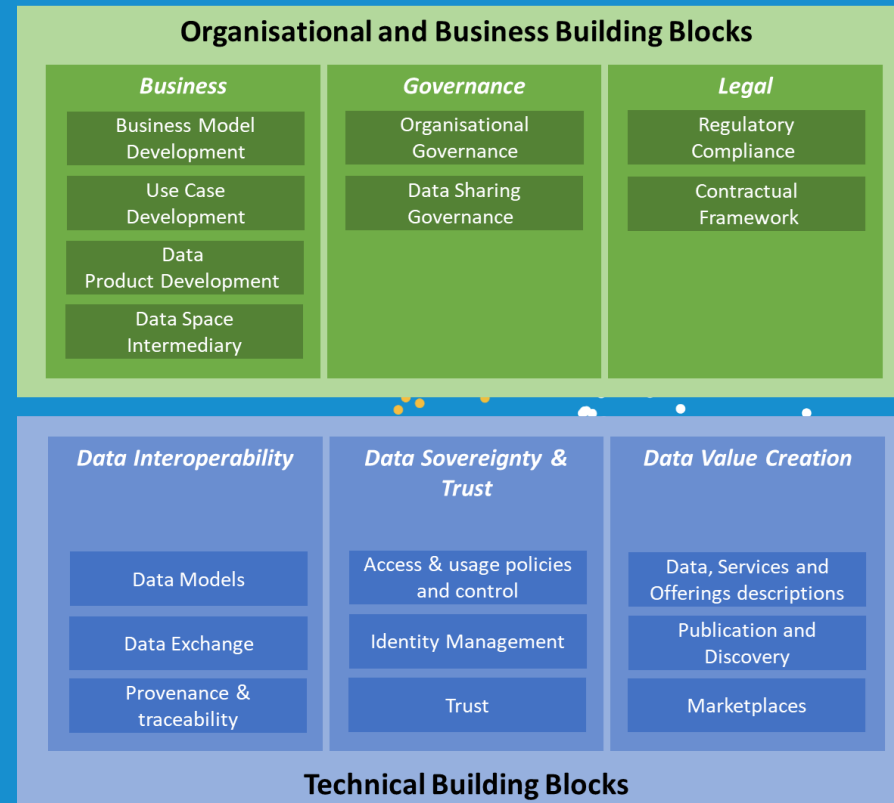
- Goal: provide a **blueprint for data spaces** in Europe that comprises common building blocks for business, legal, operational, technical, and societal aspects.
- coordinate on behalf of the European Commission all relevant actions on sectoral data spaces in Europe
- support the establishment of common 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



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DSSC Building Blocks...



...need to be viewed in different dimensions

Governance Plane

- Regulatory, Domain, Ecosystem

Technology Specification Plane

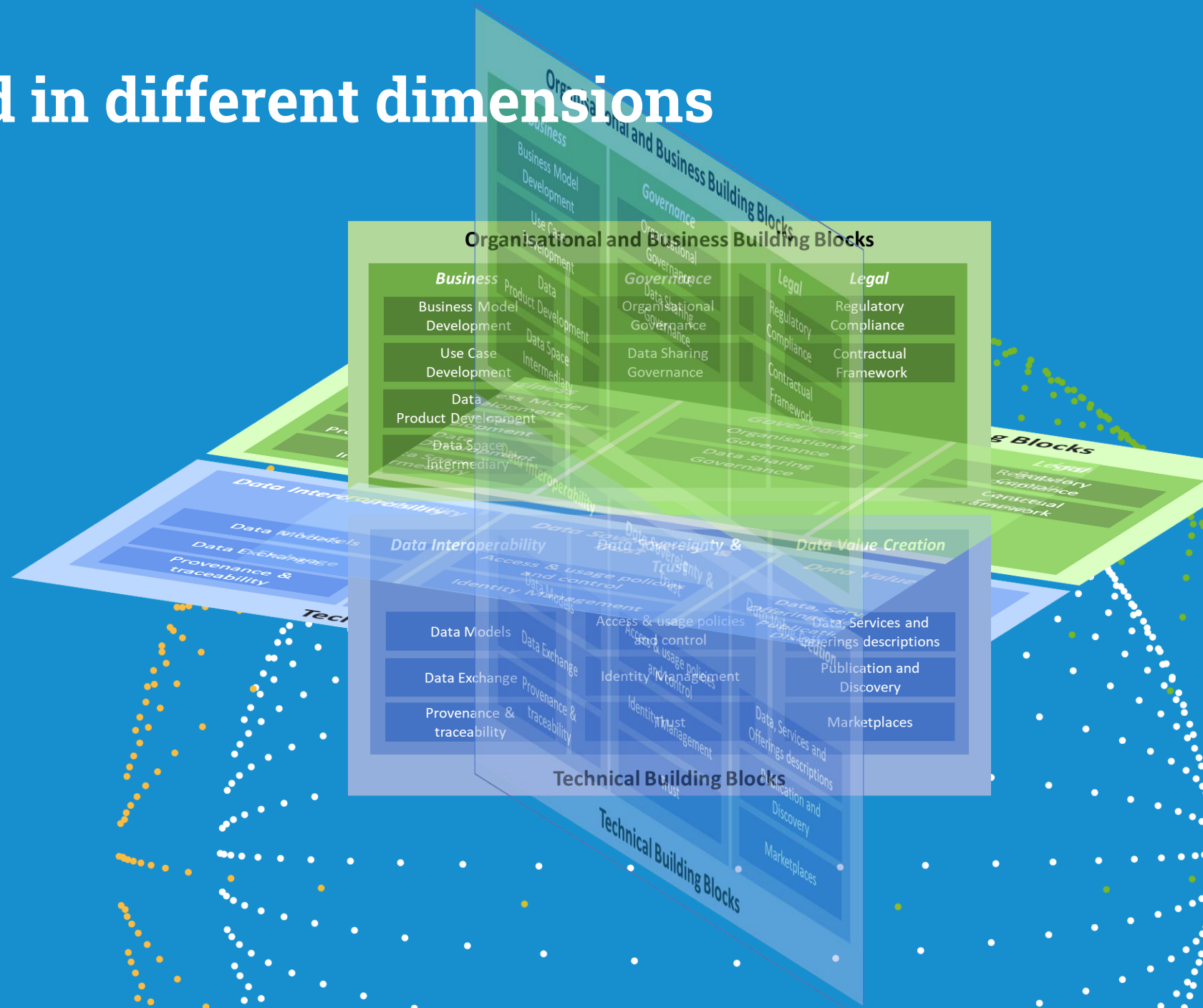
- Distributed Model
- Description Models
- Trust & Identities
- Publication & Discovery
- Policies

Software & Services Plane

- OSS Community projects
- Commercial software
- Software Services
- Platforms

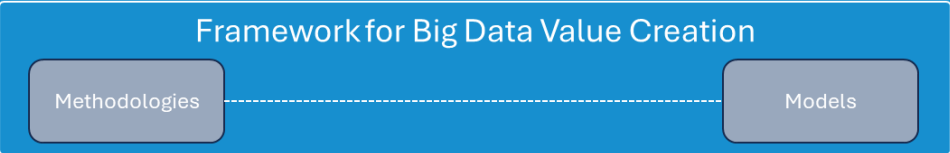
Commercialization Plane

- Operationalization
- Data & Service Platforms
- Marketplaces
- Billing

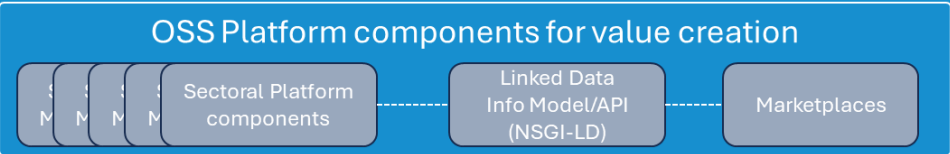


Complementary, integrated specifications

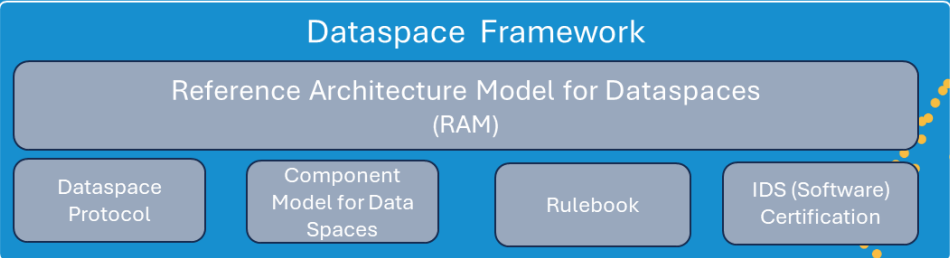
BDVA



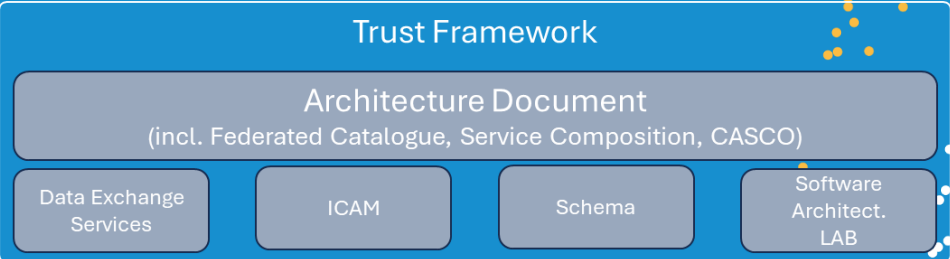
FIWARE



IDSA



Gaia-X



W3C: RDF, DID, VC, DCAT, ODRL

Specification of components and protocols to allow trusted data exchange

Conceptual model (attributes and rules) for consent management in data exchange

DSBA

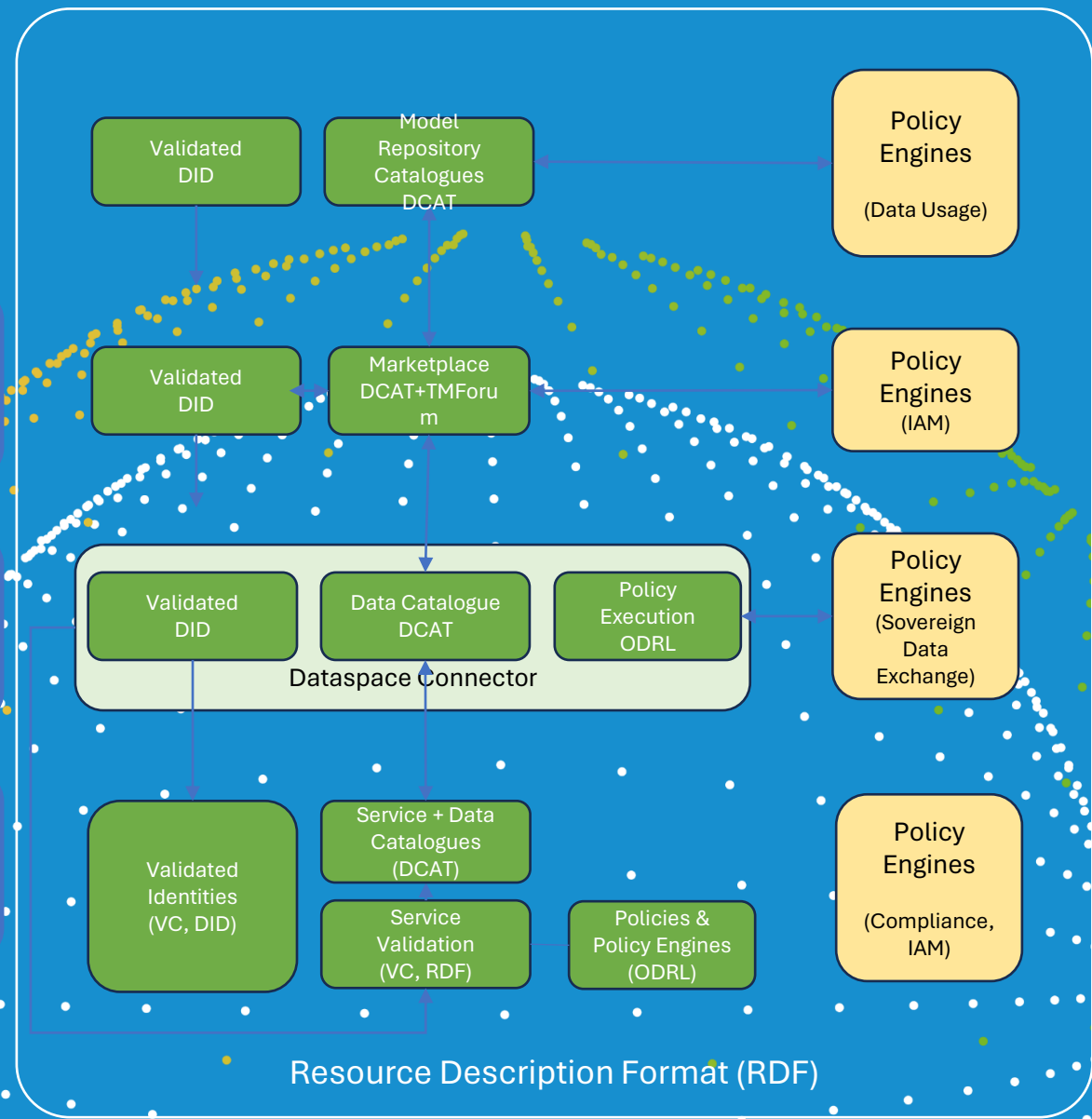
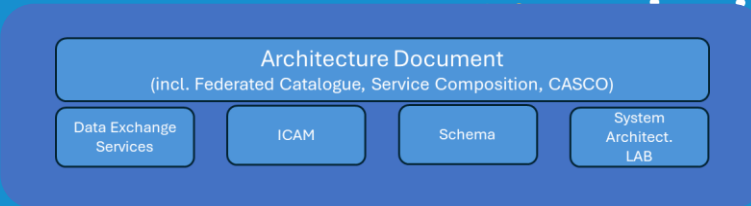
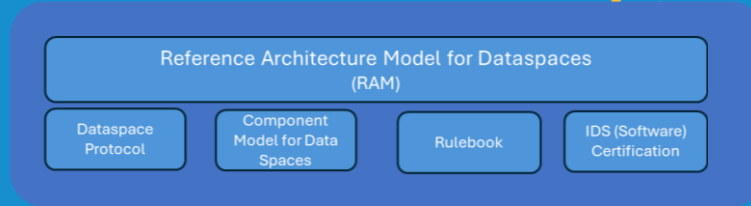
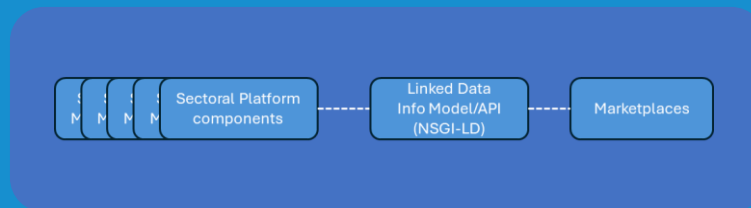
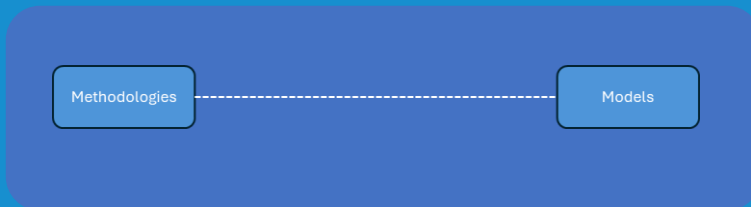
BDVA
Framework for big data value creation

FIWARE
OSS Platform components for value creation

IDSA
Dataspace components and protocols

Gaia-X
Trust Framework distributed digital ecosystems (infra & data)

Specifications & simplified top level component view



Common Standards

Trusted Data Transactions

Avoiding confusion



The term transaction and more specifically “Data Transaction” is used broadly in the DSSC Blueprint and in various other contexts. It is used heavily in the current European legislation, e.g., Data Act. Given the fact, that the current DSSC Blueprint is dealing with legal definitions, business related aspects and technical aspects, it should be considered, that the term “transaction” has different meaning and understanding in such domains.

Business:

- **Definition:** In the business context, a transaction refers to an exchange or interaction between two or more parties involving the transfer of goods, services, or money.
- **Key Elements:** Transactions typically involve an agreement between parties, consideration (payment or value exchange), and the intention to create legal relations.

Legal:

- **Definition:** In legal terms, a transaction is a specific act or series of acts conducted according to legal rules and regulations.
- **Key Elements:** Legal transactions may include contracts, agreements, or other legally binding actions. They often require the presence of certain legal elements like offer, acceptance, and consideration.

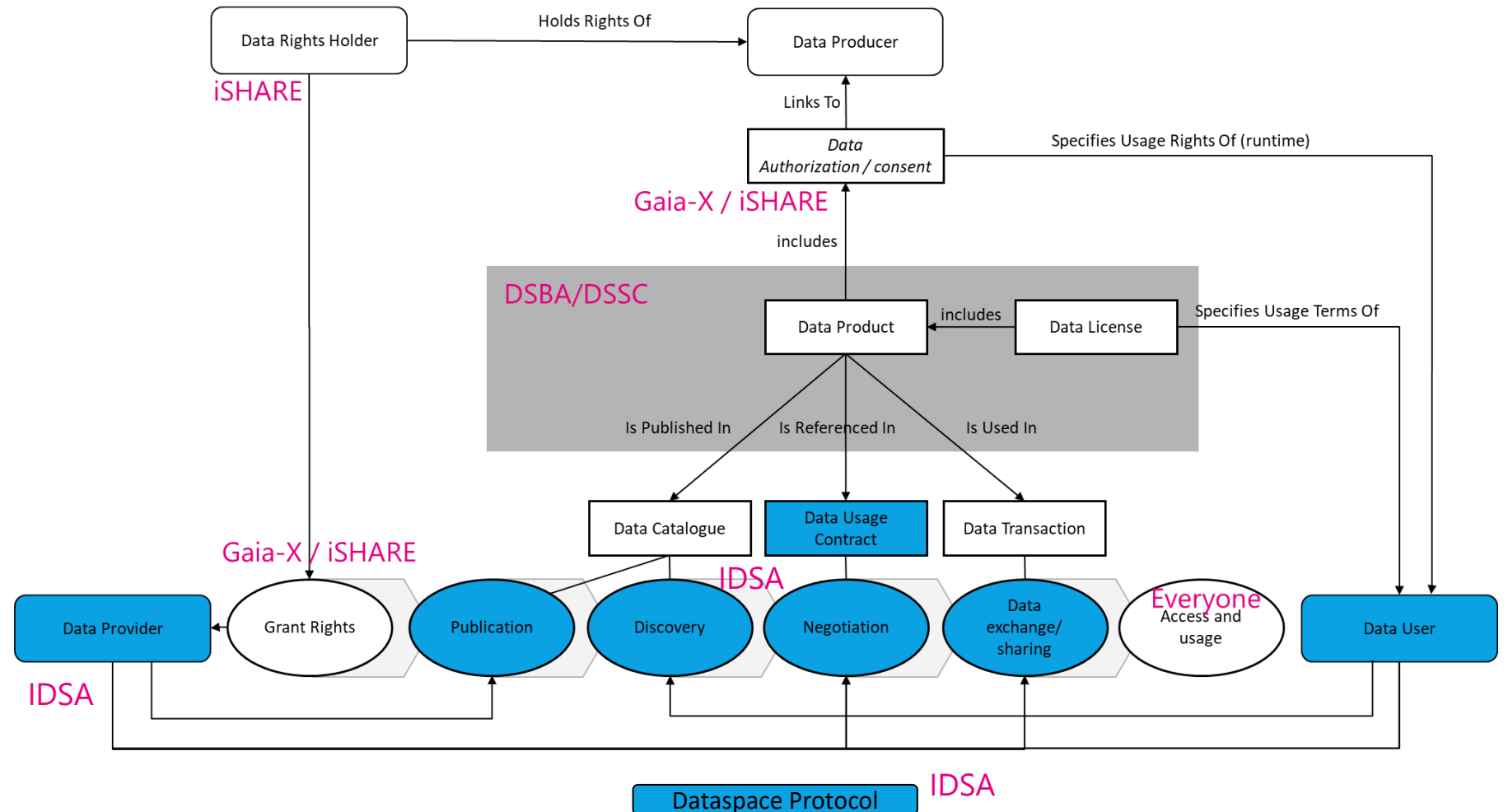
Computing:

- **Definition:** In computing, a transaction refers to a sequence of one or more operations that are executed as a single unit, ensuring consistency and integrity of data.
- **Key Elements:** In database management systems, for example, transactions are used to maintain the integrity of data by ensuring that all operations within the transaction are completed successfully or none are executed at all (atomicity). Transactions also adhere to the principles of consistency, isolation, and durability (ACID properties).

Trusted Data Transactions

This figure is the preliminary result of the CWA TDT and agreed with the participants, Gaia-X, BDVA, FIWARE, IDSA, TNO, Fraunhofer, Dawex, European Commission (what about DSSC?).

It gives a pretty good overview on required actions and structural elements



Trusted Data Transactions

A proposal for definition



The process of an interaction between two participants with the purpose of creating a lawful and contractual basis for data sharing, publication, discovery, sharing, accessing, exchanging, and processing data.

Explanatory text:

A data transaction implies data sharing among involved participants and its usage on a lawful and contractual basis. It relates to the technical, financial, legal, and organizational arrangements necessary to make a data set from Participant A available to Participant B. The physical data transfer may or may not happen at the time of the data transaction.

Key elements of a data transaction are

- The Data Holder **grants rights** to a data provider.
- The Data Product is **published** by the Data Provider, including the option to publish them to a third-party service provider.
- **Discovery** of Data Products by a potential data consumer / data user
- **Negotiation** of a contract including technical policies between data user / data consumer and the data provider
- Data exchange or data sharing, i.e., **Data Transfer**, between the parties, including optional transaction participants, like observers.
- Data access and **data usage on the consumer/** user side
- acknowledging that not all activities need to be conducted in every transaction and that parts of the activities may be visited in loops or conditional flows.

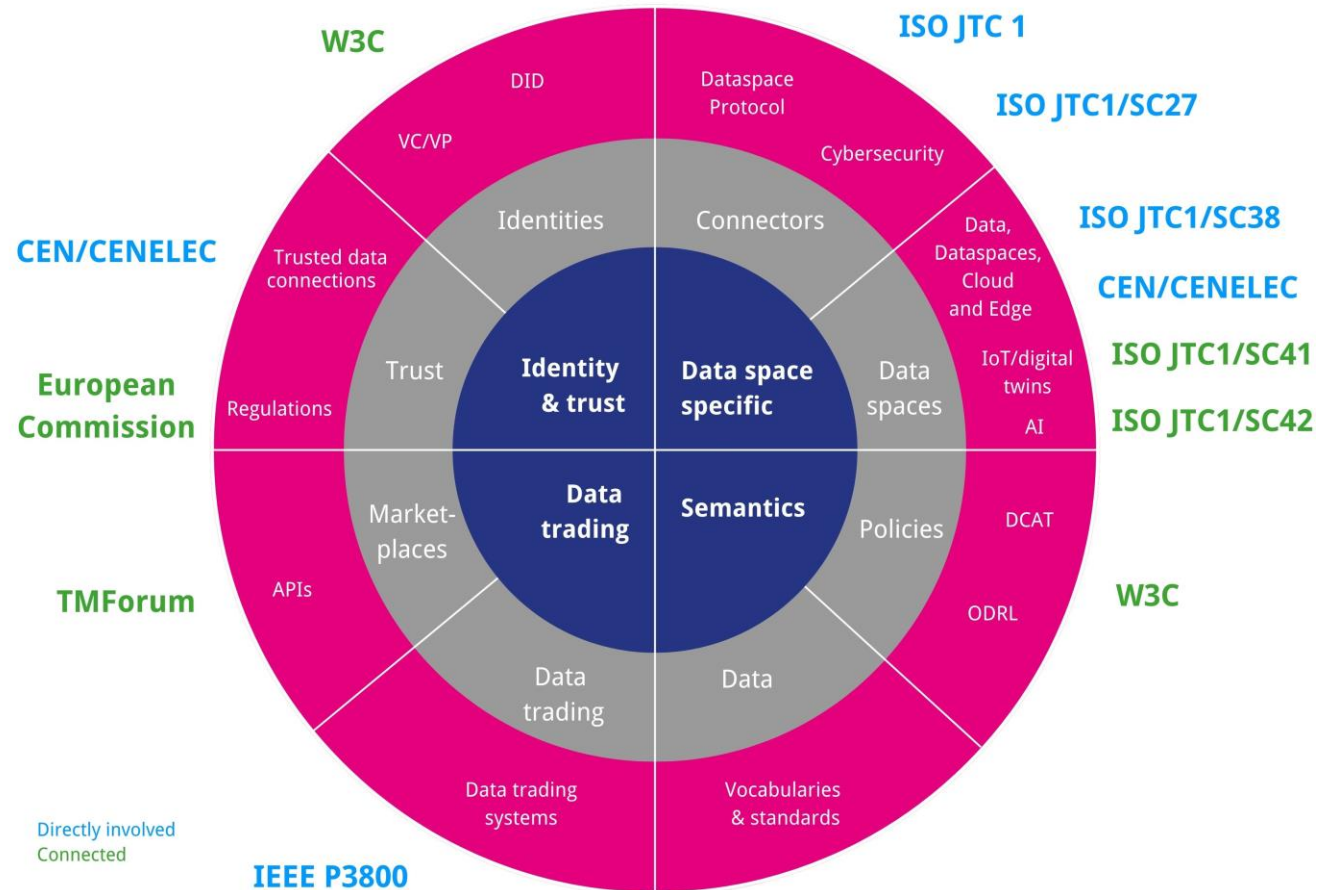
Standardization activities

State of the art

1. IDSA does not consider domain specific standards.
2. IDSA supports the integration into domain specific standards

NEW: ISO/IEC JTC 1 SC 38 Cloud Computing and distributed platforms | WG 5 – Data in Cloud Computing and related technologies | ISO/IEC AWI 20151 Dataspaces concepts and characteristics

NEW: CEN/CENELEC Focus Group Data, Dataspaces, Cloud and Edge



The Time to Act is Now!

A holistic approach to bring data spaces to global scale

IDSA on its way to a global standard

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Join the data spaces pioneers

Become a member of IDSA

Download the [membership application](#) form.

01

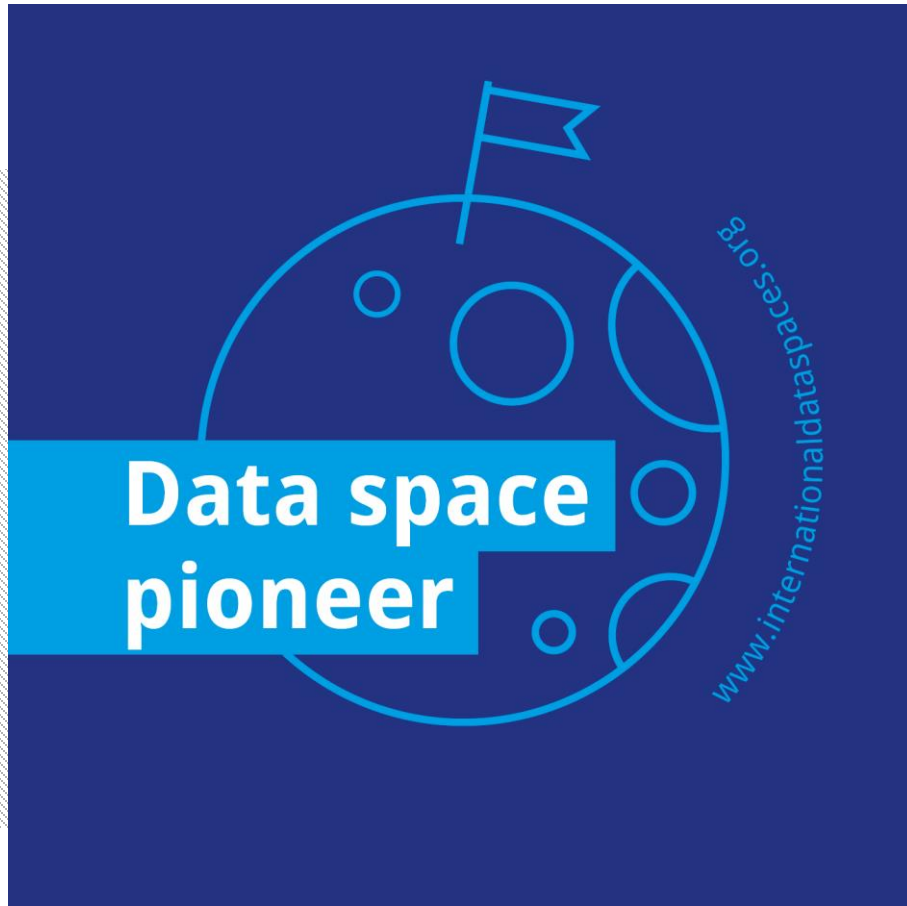
Send the filled form to our [email](#).

02

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

03

Name, Date



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



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CEO



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