INTERNATIONAL DATA SPACES ASSOCIATION

10th Florence Intermodal Forum: Creating A Common European Mobility Data Space

Giulia Giussani | IDSA | Session D

November 25th 2022

The European strategy for data

... is based on data spaces!

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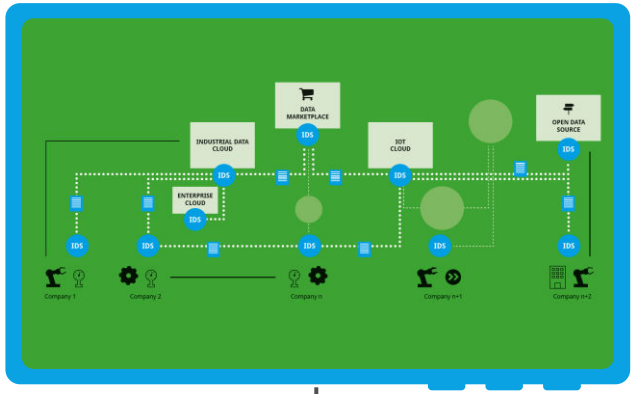
9 **Data spaces in key sectors**

Manufacturing	Green	Mobility
Health	Finance	Energy
Agriculture	Public Administration	Skills

European Data Spaces

- Availabilty of large pools of data
- Infrastructure to use and exchange data
- Appropriate governance mechanisms



- No silos!
- Enlarge the data pool!
- Cross-sectoral benefits!

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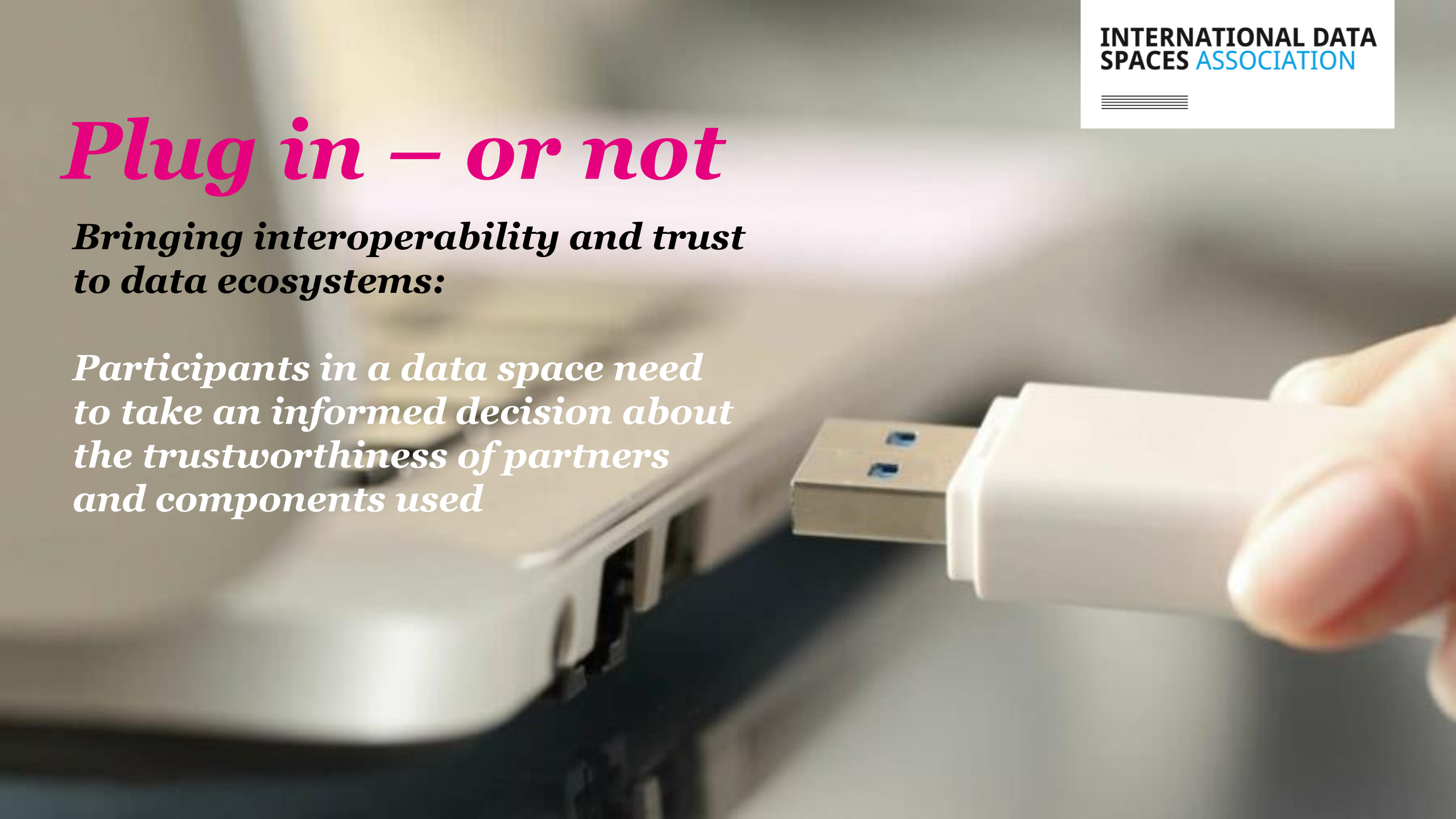
Plug in – or not

Bringing interoperability and trust to data ecosystems:

Participants in a data space need to take an informed decision about the trustworthiness of partners and components used



International Data Spaces Association

A not for profit association for data sovereignty

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130+

6 Years of data space engineering

425 People contributing

22 Countries represented

Data Spaces: from concept to reality

IDSA on its way to a global standard

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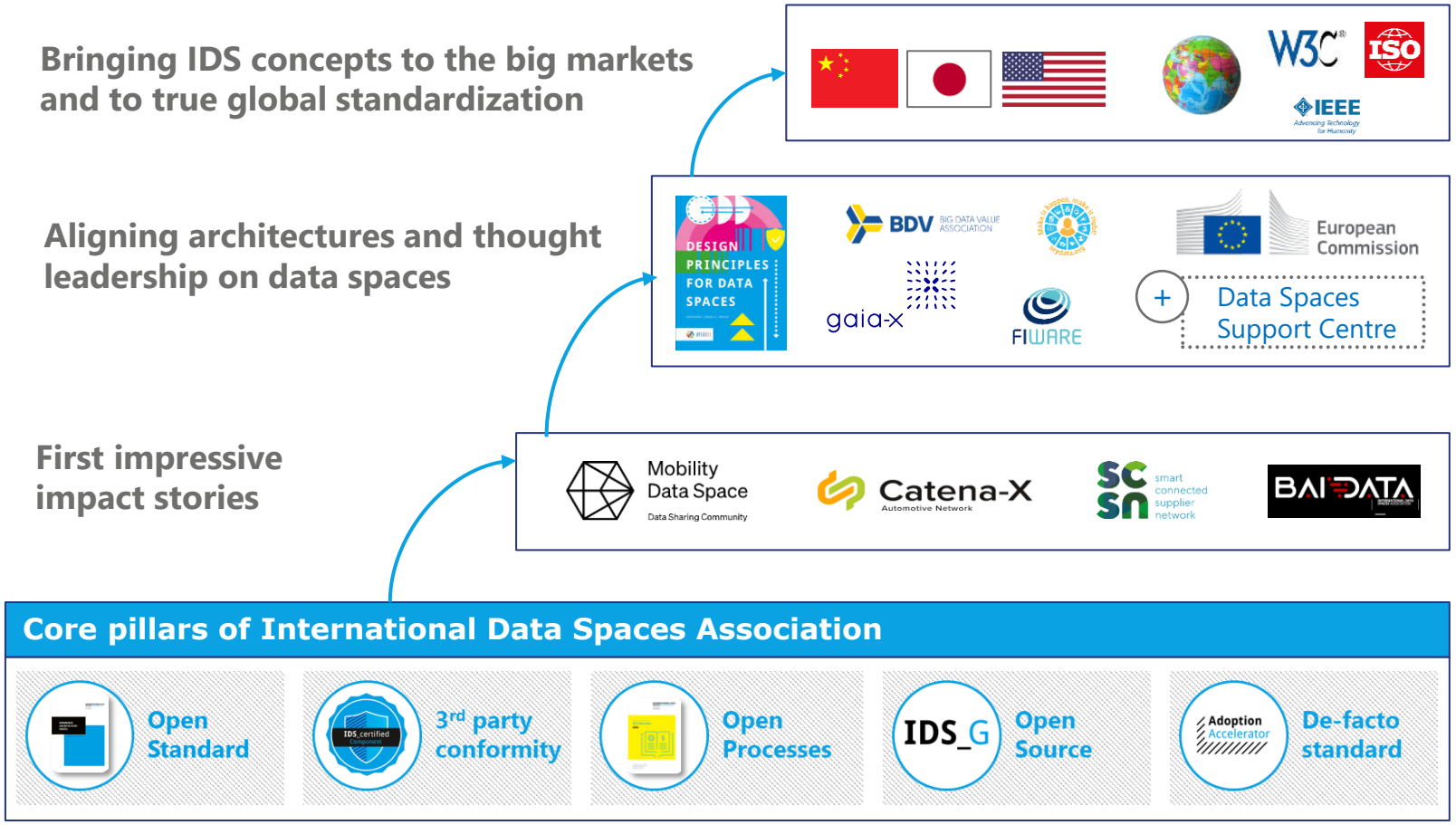
Bringing IDS concepts to the big markets and to true global standardization

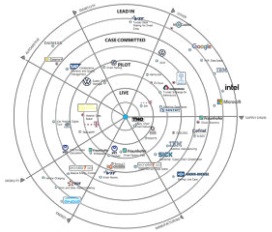
Aligning architectures and thought leadership on data spaces

First impressive impact stories



Increasing readiness level and extensive use of IDS concepts

70+ projects on radar



20+ research projects

The Data Spaces Business Alliance (DSBA)

Data Spaces are a joint endeavour

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Technology and Architecture	The Alliance defines **a common reference model**, based on existing architectures and models. It drives **interoperability** by harmonizing technology components and other elements.
Support	The Alliance assists organizations and data spaces by **pooling their tools, resources and expertise**. The support includes handbooks, roadmaps, access to Digital Innovation Hubs (DIHs) and includes a **go-to-market toolkit**.
Identification and Characterization	The Alliance establishes a **"Data Spaces Radar"** to scout potential data spaces. It provides an overview on data spaces on a European level. The Alliance also promotes frontrunners and identifies best practices used by them, for the benefit of all.

DSBA technical convergence

Discussion paper

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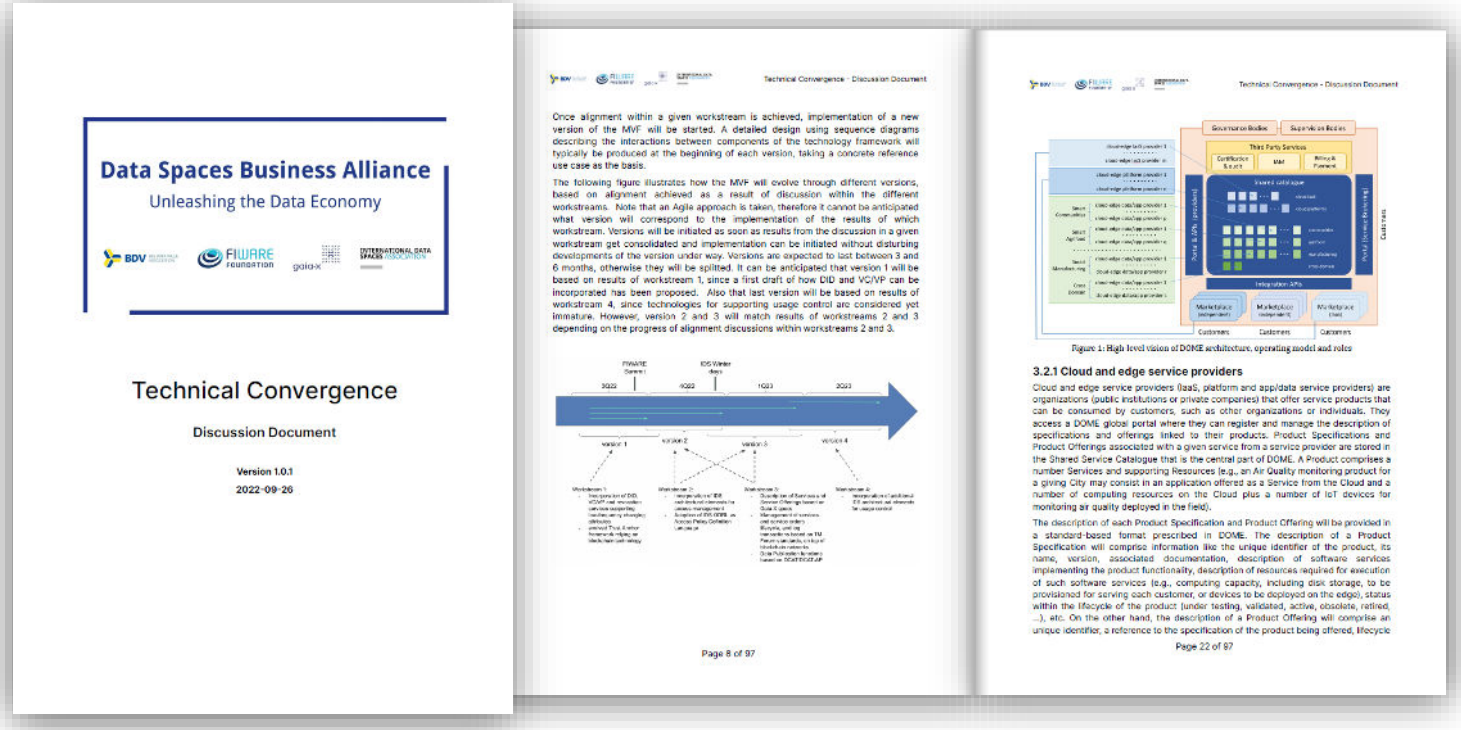

Click here to take a look inside!

- The discussion document defines a common reference technology framework
- This framework is based on the technical convergence of existing architectures and models and leverages mutual infrastructure and implementation efforts.
- The goal is to achieve **interoperability and portability of solutions across data spaces** by harmonizing technological components

Data Spaces Support Centre (DSSC)

Facilitating interoperable data sharing

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

DATA SPACES SUPPORT CENTRE

Fundamental design principles

… for data spaces to be built on

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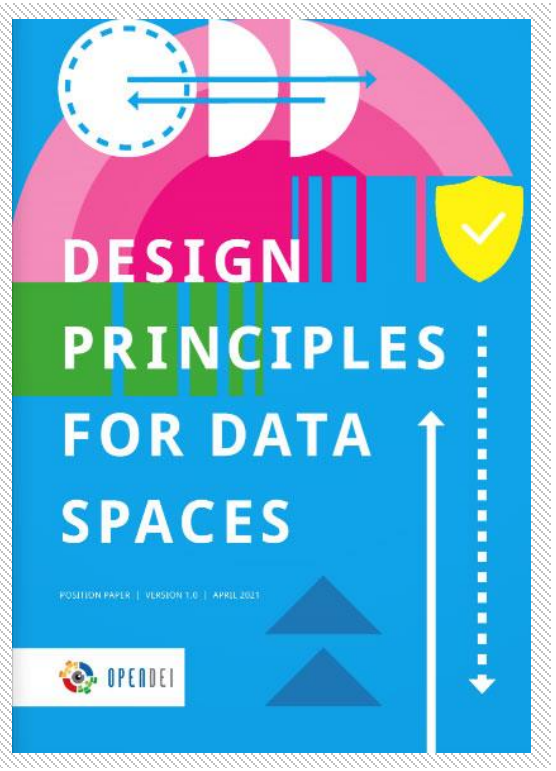
1. Data Sovereignty
2. A level playing field for data sharing and exchange
3. A distributed soft infrastructure
4. Public-private governance

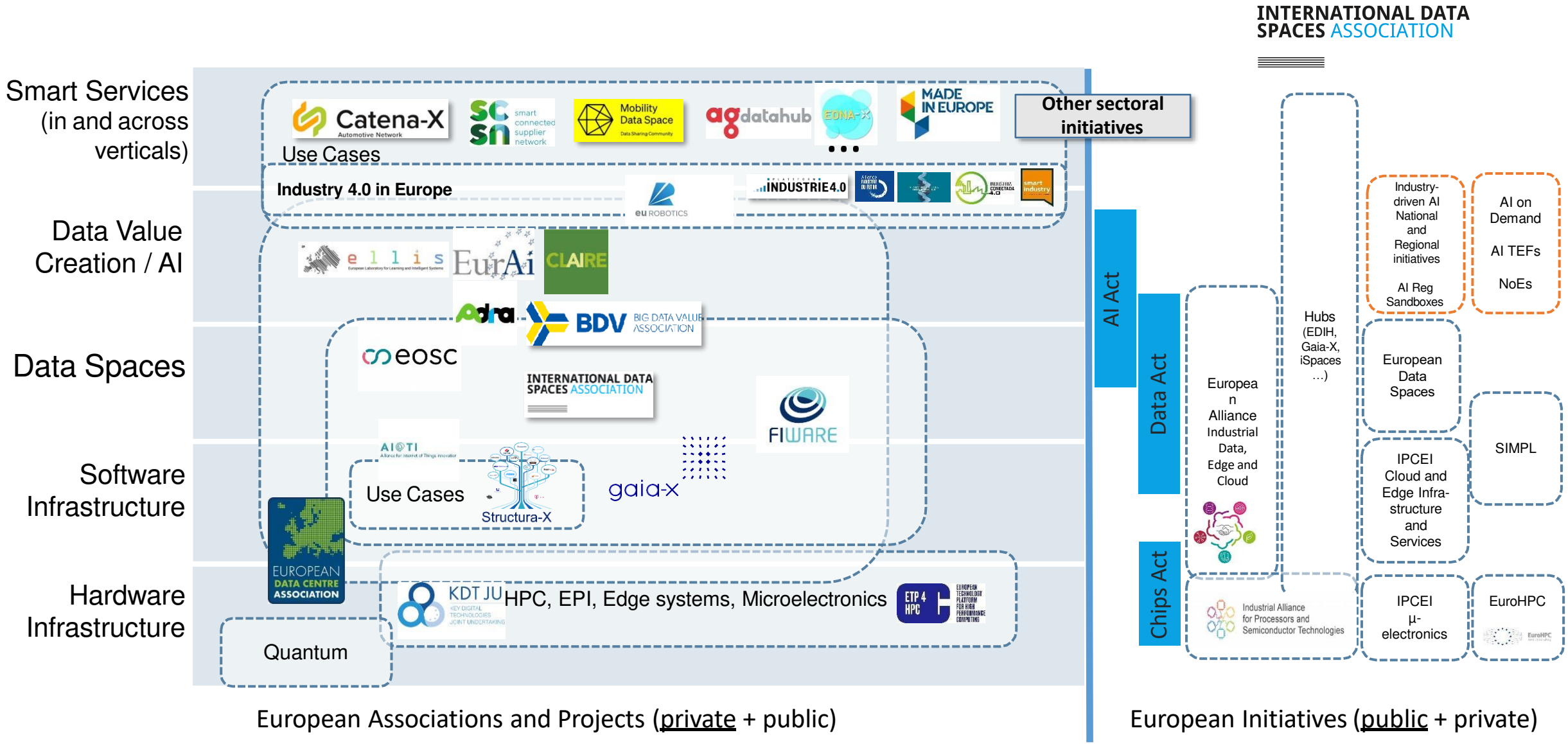
This co-created in the EU funded CSA OpenDEI and written down in the Paper "Design Principles for Data Spaces"

OpenDEI Background

- Digitizing European Industry Program
- 40 organizations involved
- 27 big EU projects, hundreds of companies
- Fundamentals of data spaces, building blocks, future governance, transition



www.design-principles-for-data-spaces.org


Smart Services (in and across verticals)
Data Value Creation / AI
Data Spaces
Software Infrastructure
Hardware Infrastructure
Catena-X
Automotive Network
smart connected supplier network
Mobility Data Space
Data Sharing Community
agdatahub
EDNA-X
MADE IN EUROPE
Other sectoral initiatives
Use Cases
Industry 4.0 in Europe
eu ROBOTICS
INDUSTRIE4.0
ellis
European Laboratory for Learning and Intelligent Systems
EurAi
CLAIRE
Adra
BDV
BIG DATA VALUE ASSOCIATION
eosc
INTERNATIONAL DATA SPACES ASSOCIATION
FIWARE
AIOTI
Alliance for Internet of Things Innovation
Use Cases
Structura-X
gaia-X
EUROPEAN DATA CENTRE ASSOCIATION
KDT JU
KEY DIGITAL TECHNOLOGIES JOINT UNDERTAKING
HPC, EPI, Edge systems, Microelectronics
ETP 4 HPC
EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING
Quantum
European Associations and Projects (private + public)
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AI Act
Data Act
Chips Act
Hubs (EDIH, Gaia-X, iSpaces …)
Industry-driven AI National and Regional initiatives
AI Reg Sandboxes
AI on Demand
AI TEFs
NoEs
European Alliance Industrial Data, Edge and Cloud
European Data Spaces
SIMPL
IPCEI Cloud and Edge Infra-structure and Services
Industrial Alliance for Processors and Semiconductor Technologies
IPCEI µ-electronics
EuroHPC
EuroHPC
European Initiatives (public + private)

Data Spaces everywhere

Lots of IDS initiatives have started

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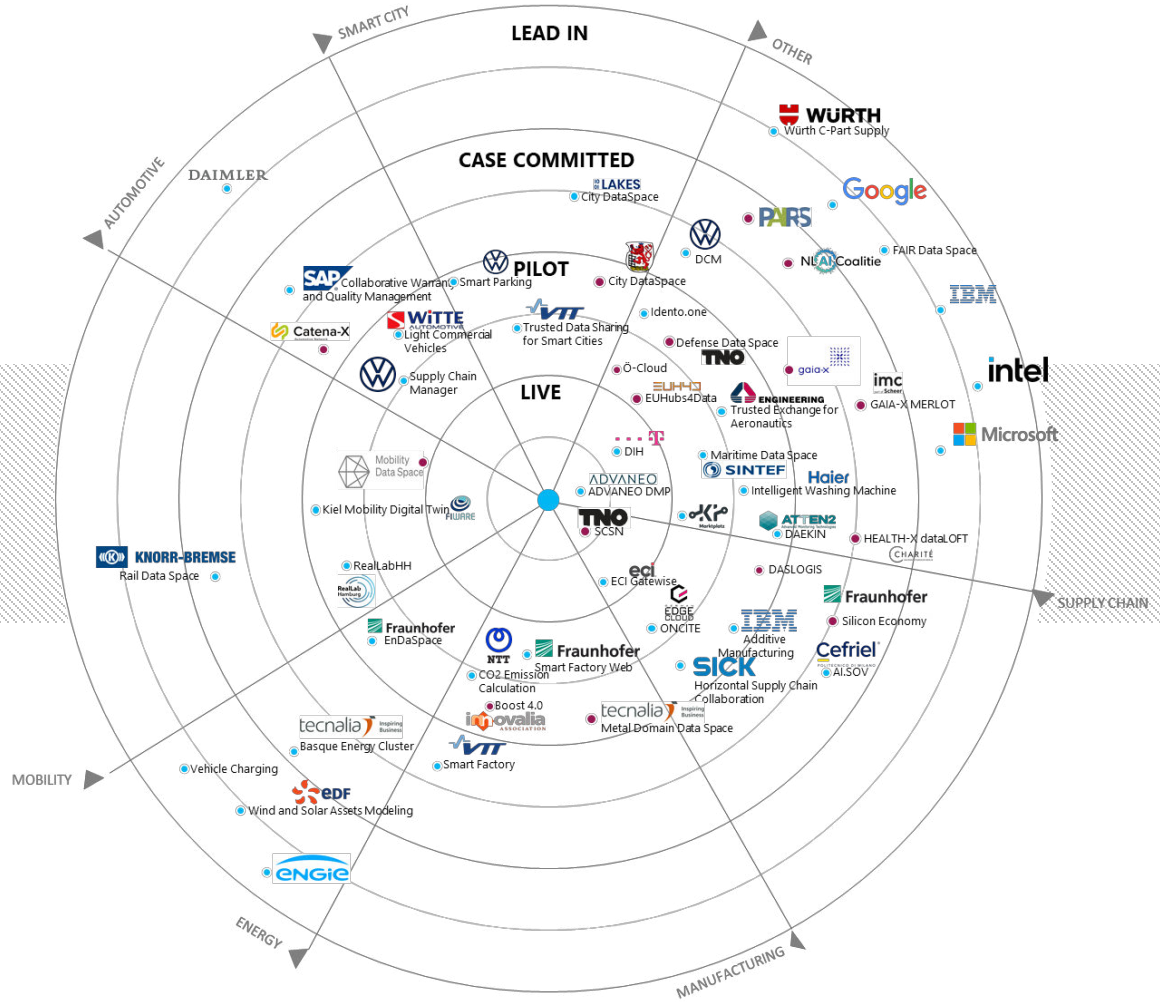

Data Space Radar
+70 entries

The Data Connector Report

Overview

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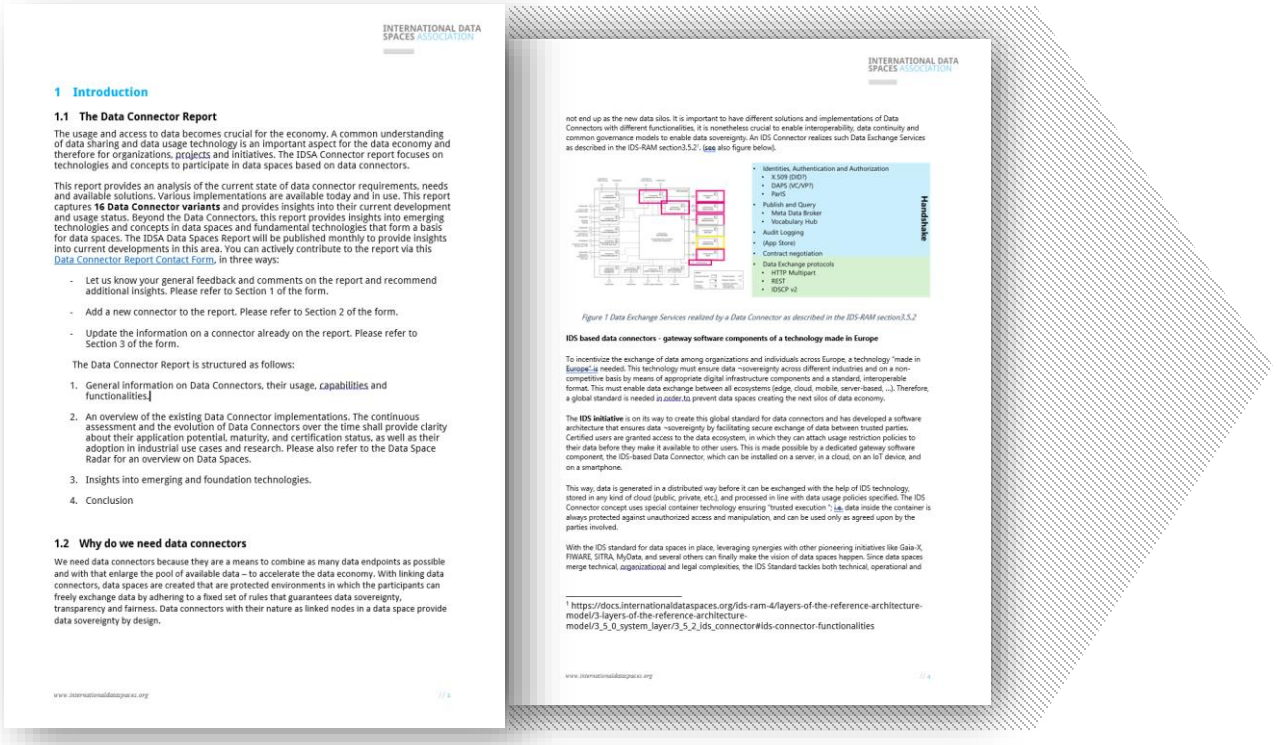

1 Introduction

1.1 The Data Connector Report

The usage and access to data becomes crucial for the economy. A common understanding of data sharing and data usage technology is an important aspect for the data economy and therefore for organizations, projects and initiatives. The IDSA Connector report focuses on technologies and concepts to participate in data spaces based on data connectors.

This report provides an analysis of the current state of data connector requirements, needs and available solutions. Various implementations are available today and in use. This report captures **16 Data Connector variants** and provides insights into their current development and usage status. Beyond the Data Connectors, this report provides insights into emerging technologies and concepts in data spaces and fundamental technologies that form a basis for data spaces. The IDSA Data Spaces Report will be published monthly to provide insights into current developments in this area. You can actively contribute to the report via this Data Connector Report Contact Form, in three ways:

- Let us know your general feedback and comments on the report and recommend additional insights. Please refer to Section 1 of the form.
- Add a new connector to the report. Please refer to Section 2 of the form.
- Update the information on a connector already on the report. Please refer to Section 3 of the form.

The Data Connector Report is structured as follows:

1. General information on Data Connectors, their usage, capabilities and functionalities.
2. An overview of the existing Data Connector implementations. The continuous assessment and the evolution of Data Connectors over the time shall provide clarity about their application potential, maturity, and certification status, as well as their adoption in industrial use cases and research. Please also refer to the Data Space Radar for an overview on Data Spaces.
3. Insights into emerging and foundation technologies.
4. Conclusion

1.2 Why do we need data connectors

We need data connectors because they are a means to combine as many data endpoints as possible and with that enlarge the pool of available data – to accelerate the data economy. With linking data connectors, data spaces are created that are protected environments in which the participants can freely exchange data by adhering to a fixed set of rules that guarantees data sovereignty, transparency and fairness. Data connectors with their nature as linked nodes in a data space provide data sovereignty by design.

not end up as the new data silos. It is important to have different solutions and implementations of Data Connectors with different functionalities, it is nonetheless crucial to enable interoperability, data continuity and common governance models to enable data sovereignty. An IDS Connector realizes such Data Exchange Services as described in the IDS-RAM section3.5.2[1]. (see also figure below).

Figure 1 Data Exchange Services realized by a Data Connector as described in the IDS-RAM section3.5.2

IDS based data connectors - gateway software components of a technology made in Europe

To incentivize the exchange of data among organizations and individuals across Europe, a technology "made in Europe" is needed. This technology must ensure data -sovereignty across different industries and on a non-competitive basis by means of appropriate digital infrastructure components and a standard, interoperable format. This must enable data exchange between all ecosystems (edge, cloud, mobile, server-based, ...). Therefore, a global standard is needed in order to prevent data spaces creating the next silos of data economy.

The **IDS initiative** is on its way to create this global standard for data connectors and has developed a software architecture that ensures data -sovereignty by facilitating secure exchange of data between trusted parties. Certified users are granted access to the data ecosystem, in which they can attach usage restriction policies to their data before they make it available to other users. This is made possible by a dedicated gateway software component, the IDS-based Data Connector, which can be installed on a server, in a cloud, on an IoT device, and on a smartphone.

This way, data is generated in a distributed way before it can be exchanged with the help of IDS technology, stored in any kind of cloud (public, private, etc.), and processed in line with data usage policies specified. The IDS Connector concept uses special container technology ensuring "trusted execution ", i.e. data inside the container is always protected against unauthorized access and manipulation, and can be used only as agreed upon by the parties involved.

With the IDS standard for data spaces in place, leveraging synergies with other pioneering initiatives like Gaia-X, FIWARE, SITRA, MyData, and several others can finally make the vision of data spaces happen. Since data spaces merge technical, organizational and legal complexities, the IDS Standard tackles both technical, operational and

[1] https://docs.internationaldataspaces.org/ids-ram-4/layers-of-the-reference-architecture-model/3-layers-of-the-reference-architecture-model/3_5_0_system_layer/3_5_2_ids_connector#ids-connector-functionalities

Click here to take a look inside!

SOVITY

Dataspace Connector

TNO

TNO Security Gateway

EGI

EGI DataHub Connector

Eclipse Dataspace Connector

EDC

T Systems

Telekom DIH Connector

ENGINEERING

TRUE Connector

Interoperability

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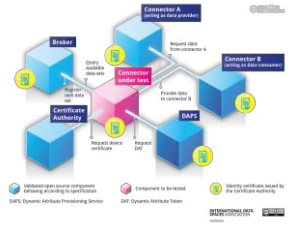
Interoperability Governance	Description	IDSA Interoperability
Legal Interoperability	Ensure that organizations under different legal frameworks can work together	SITRA rulebook Data Sharing Canvas
Organizational Interoperability	Let organisations align busines processes, responsabilities, expectations and goals.	IDS RAM IDS Rulebook
requirements		
Semantic Interoperability	Ensure that format and meaning of shared data is preserved an understood.	IDS Information Model Vocabulary provider Domain data models
Technical Interoperability	Covering applications, service and infrastructures and secure data sharing	IDS reference testbed

Integrated Governance Interoperability



Source: European Interoperability Framework & IDSA

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It's time to plug in – or not

Bringing interoperability and trust to data ecosystems

Participants in a data space need to take an informed decision about the trustworthiness of partners and components used

Upcoming events

Let's meet and build data spaces!

INTERNATIONAL DATA SPACES ASSOCIATION

Q&A Session

Your essential guide to data spaces

online | December 1

DSSC Insights Series

Data Spaces Support Centre: Discover how to bring data spaces to life

online | December 1

SEMIC

Data spaces in an interoperable Europe

Brussels | December 6

SITRA

Data spaces technology landscape 2023

Helsinki & online | Dec. 14

IDSA Update Session

Review and strategic outlook

online | December 16

www.internationaldataspaces.org/events

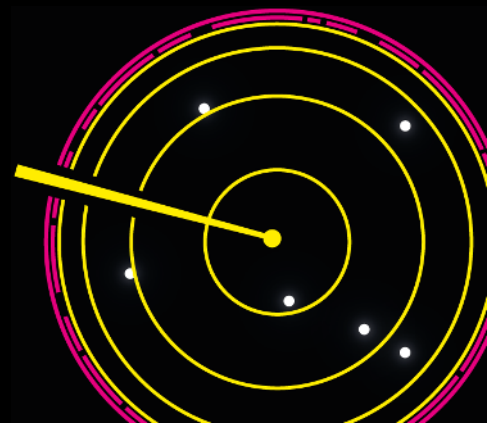
Data Spaces Discovery Days

Netherlands | March 21 to 23, 20

We will bring together several data sharing events and initiatives:

Under the flags of IDSA, BDVA, FIWARE, Gaia-X and TNO, and in combination with the DSSC Annual Conference, we are organizing the largest event on data spaces.

1,000+ participants expected



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