



VTT

Data Spaces, European Strategy and Data Spaces Support Centre

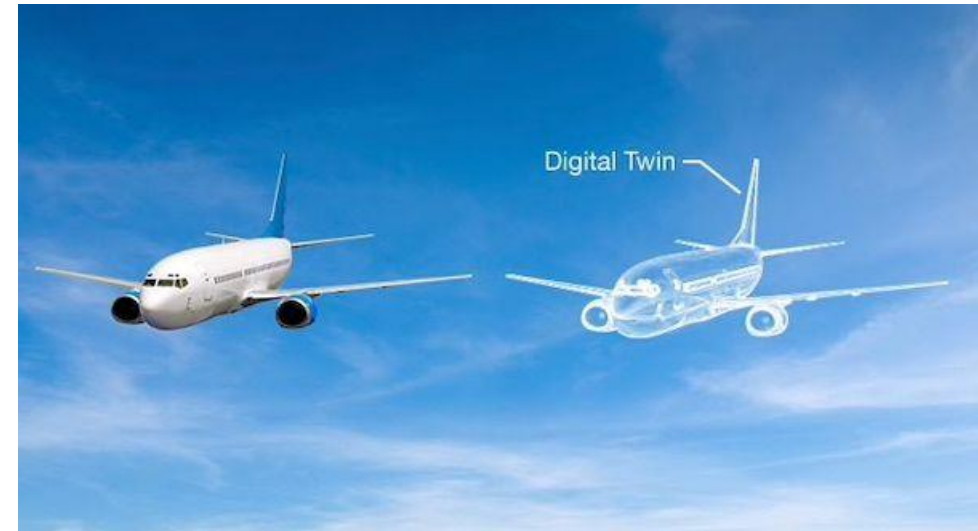
Tuomo Tuikka

19.10.2023

19/10/2023 VTT – beyond the obvious

Data economy and society

- Data will reshape the way we produce, consume and live
- Benefits in every aspects: conscious energy consumption, production, material and food traceability, better health-care, optimized manufacturing, new products and services
- Data is used in training AI systems, forecasting techniques, pattern recognition, for decision making
- Digital twins for smart cities, production facilities, or product – metaverse?



Digital twins create a virtual replica of a physical product, process or system. The replica can for example predict when a machine will fail, based on data analysis, which allows to increase productivity through predictive maintenance.

Library – an example

Available only if you have a library card!

Books provide information, stories,
newspapers news
Indexed shelves help in finding sources
Librarians can help with finding books from
shelves or storage.

Governance model
Cities or communities govern public libraries
and have a **governance** model to run the
library.

Selling books is a **business** for publishers,
and authors get their compensations.
Librarians get salaries, and the reader gets
enjoyment.

Libraries are **regulated** by law



Library – what if you do not find a book?

Go to the nearest computer or talk with the librarian on how to find the book from the [register](#) which libraries use for [sharing](#) information between libraries.

There is no centralized library to hold all the items but books are [decentralized](#).

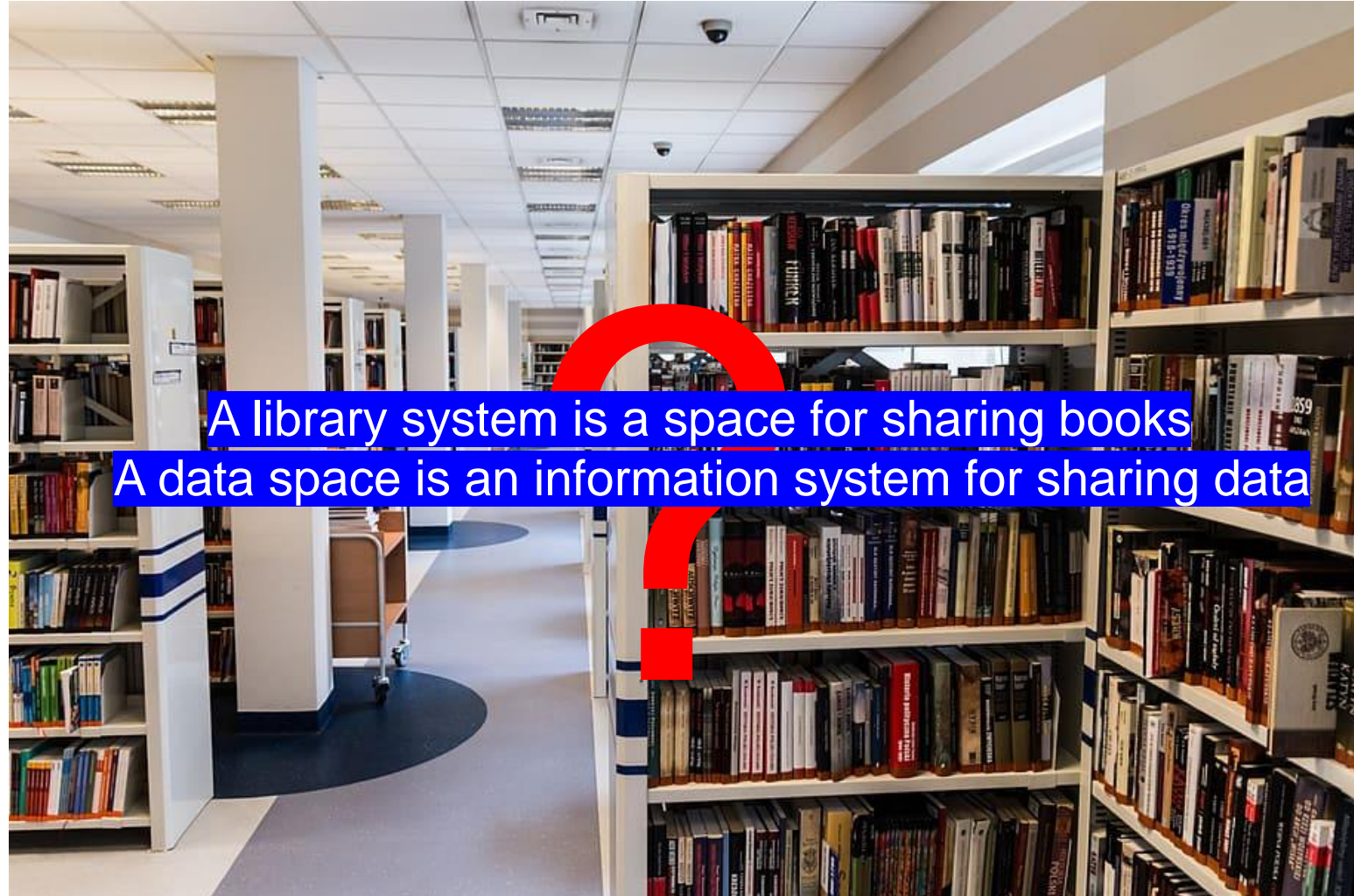
And there you find that the book is in another library.

You [authenticate](#) your [identity](#) using library card provided by the [authority](#). This [credential](#) shows you are a known [trusted](#) person in the system.

Then, after a while, you will receive the book and enjoy the information.

Original library (and you) knows who holds the book and when it is to be returned.

A library system is a [space](#) for sharing books



A library system is a space for sharing books

A data space is an information system for sharing data



"It is hard to get data out from software applications to your own use. Data exchange is not very efficient, or is not working at all. Data is in siloes, everyone is protecting their software and data"

Pellervo Kässä
Agronomist ja dairy farm owner
Uurainen

(Käytännön Maamies -magazine 10/2021)

Creating a single European market for data

European Data Strategy

- [Adopted Feb 2020](#)
- *Genuine* internal data market
- Built on EU values and rules

Technical infrastructure development

Gaia-X, IDSA, Fiware ...

A cross-sectoral legislative framework

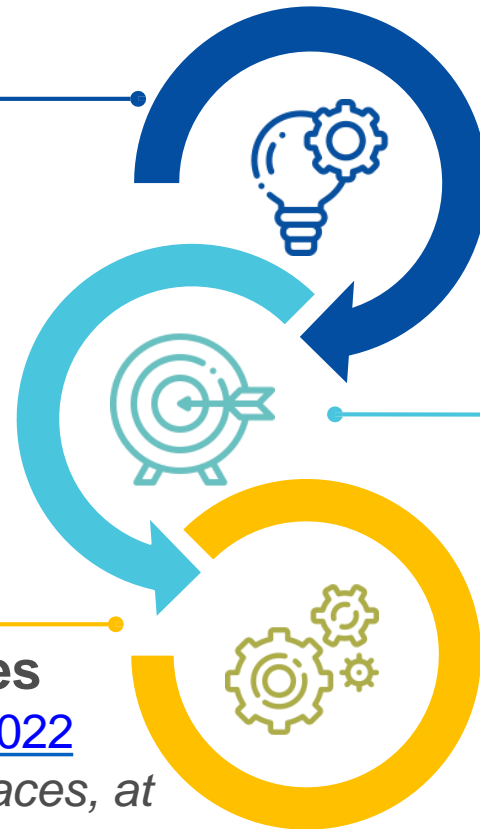
- [Data Governance Act](#) – in force July 2022
- [Data Act](#) – Proposal Feb 2022
- [Implementing Act on High-value datasets](#) (Open Data Directive) – draft Act May 2022

Common European data spaces

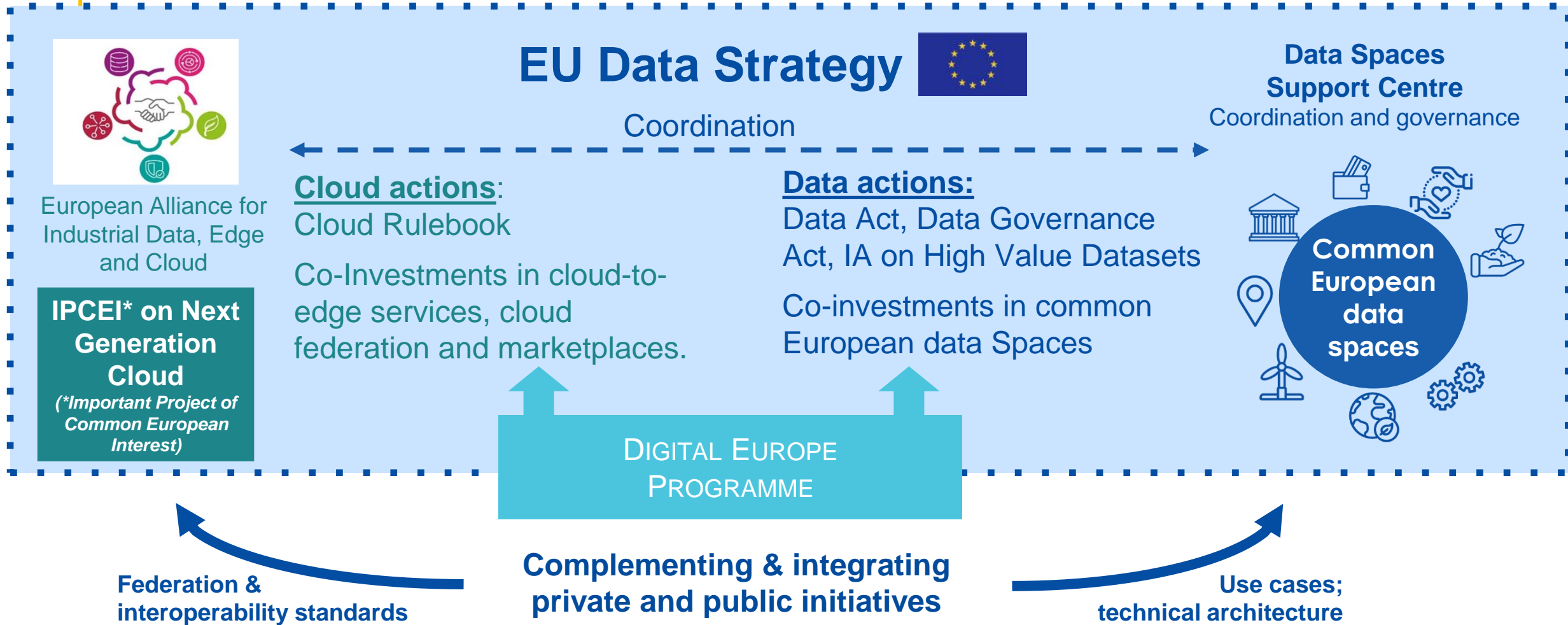
- [Staff Working Document – Feb 2022](#)
Overview development data spaces, at request European Council
 - ✓ Horizontal aspects + sectoral initiatives
 - ✓ EU funding, programmes

Research programme support

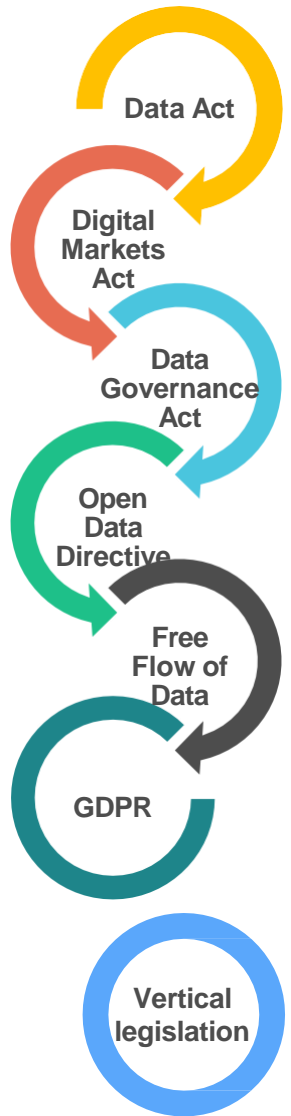
H2020, Horizon Europe, Digital Europe, FP10



The European Data strategy



A comprehensive context legislative framework



Aim	Data Covered	Regulated Actors
Ensure FAIRNESS in the allocation of data value among the actors of the data economy	Private sector data, personal and non-personal data, and co-generated (IoT) data	Businesses, public sector bodies, cloud and other data processing service providers
Tackle imbalances caused by the MARKET POWER of gatekeepers	Personal data and private sector data held by online platforms and originating from the users	Cloud and other data processing service providers, large data platforms
Ensure TRUST in data transactions	Public and private non-personal data, and personal data voluntarily made available by data holders	Data intermediation service providers, public sector bodies, (Recognised) Data Altruism Organisations
Promote use of OPEN DATA	Data in an open format that can be freely used, re-used and shared by anyone for any purpose	Public sector bodies, bodies governed by public law, public undertakings, universities
Ensure FREE FLOW OF DATA other than personal data within the Union	Non-personal data	Member States, competent authorities, professional users
Ensures a high-level of DATA PROTECTION and free flow of personal data in the Union	Personal data	Data controller, data processor, data subject, DPO, supervisory authorities, EDPB
Promote a competitive market according to SECTOR-SPECIFIC rules where necessary, e.g. automotive	Personal and non-personal data	Individuals and private and public sector bodies

Data Space concept

A distributed system defined by a governance framework, that enables trustworthy data transactions between participants while supporting trust and data sovereignty. A data space is implemented by one or more infrastructures and enables one or more use cases (DSSC Glossary)

What is?

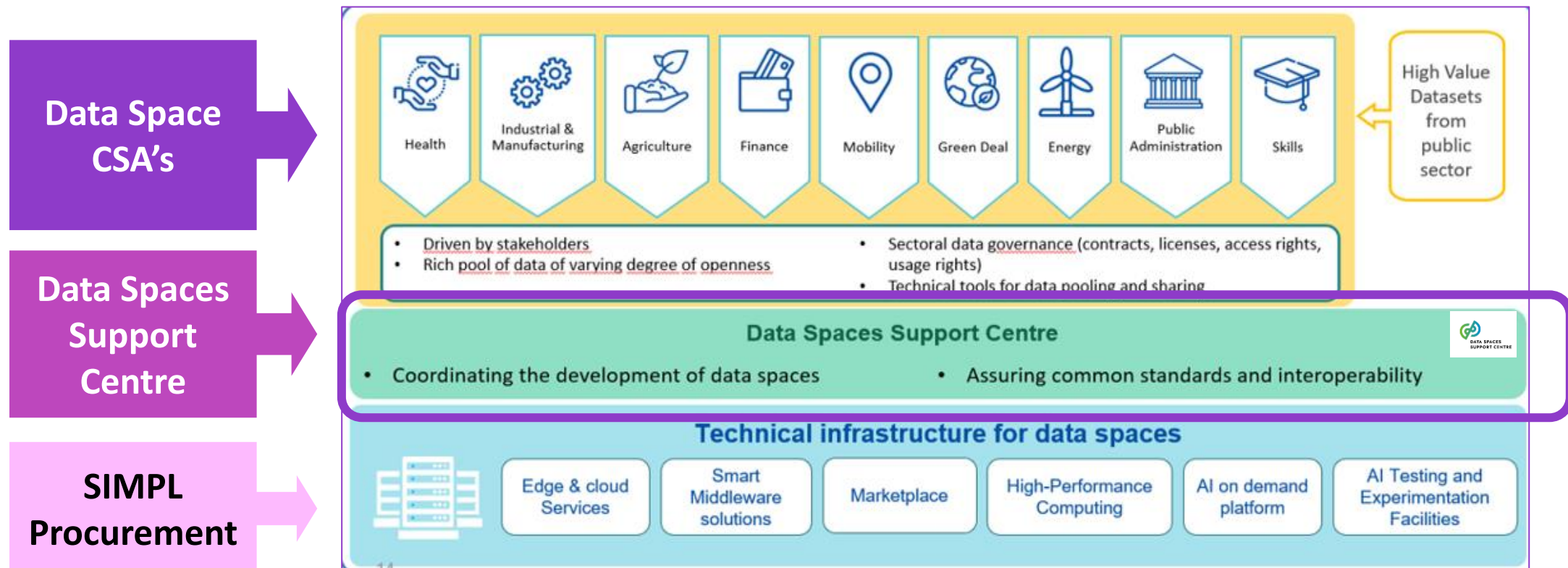
- Several infrastructures supporting one or more use cases
- Distributed structure
- Governance framework
- Enabling trusted data transactions
- Enabling data sovereignty

What is not?

- A data lake
- Only a data platform
- Only a digital ecosystem

DSSC and PrepDSpace4Mobility

Within the broader EU perspective



The Data Spaces Support Centre receives funding from the European Union Digital Europe Programme under grant agreement n° 101083412.

What could be reference architecture for European 'data space'?

INTERNATIONAL DATA SPACES

INTERNATIONAL DATA
SPACES ASSOCIATION



- IDS started as a research project in Fraunhofer, and now includes over 110 companies and other research institutes such as VTT and TNO.
- IDS provides reference architecture and services for companies to start tinkering with the technology and business all the way to certification of technology.
- Use cases demonstrate IDS e.g. in logistics, manufacturing and management of IoT data.
- Around 7-8 years of development as IDSA and before that in research projects
- [Internationaldataspaces.org](https://internationaldataspaces.org)
- idsa-finland.fi – Finland hub web page

GAIA-X



- GAIA-X is an initiative started in cooperation by France and Germany to give birth to European data sharing infrastructure. [Published in October 2019](#)
- GAIA-X foundation was established as an AISBL in Belgium on 15.9.2020
- European trusted and federated cloud solution
- Initiative has gathered in fast speed around 300+ companies and other players.
- Industrial ministries of Germany and France are 'patrons' of the effort.

[Idsa-finland.fi](https://idsa-finland.fi)

IDSAs Hub Finland

Bringing Finnish stakeholders to the future of the
global data economy

The International Data Spaces Association (IDSAs) and its Finnish hub – IDSA Hub Finland – are on a mission to create the future of

Data Spaces Support Centre - mission



- Enable data spaces to reach a higher flight level faster: a **quick start** and an **accelerated scale-up**
- Provide the tools to address the **basic organizational and technical matters**, required by every data space
- This includes a **blueprint**, best practices, common standards and reference implementations which will be developed according to a **co-creation process**
- Enable dataspaces to focus on their domain-specific business challenges and **provide business benefits to their participants**

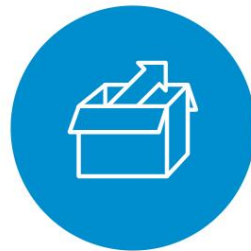


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Data Spaces Support Centre – dssc.eu

Blueprint v0.5 just released

<https://dssc.eu/page/knowledge-base>



Starter Kit



Blueprint



Building Blocks



Conceptual model



Glossary

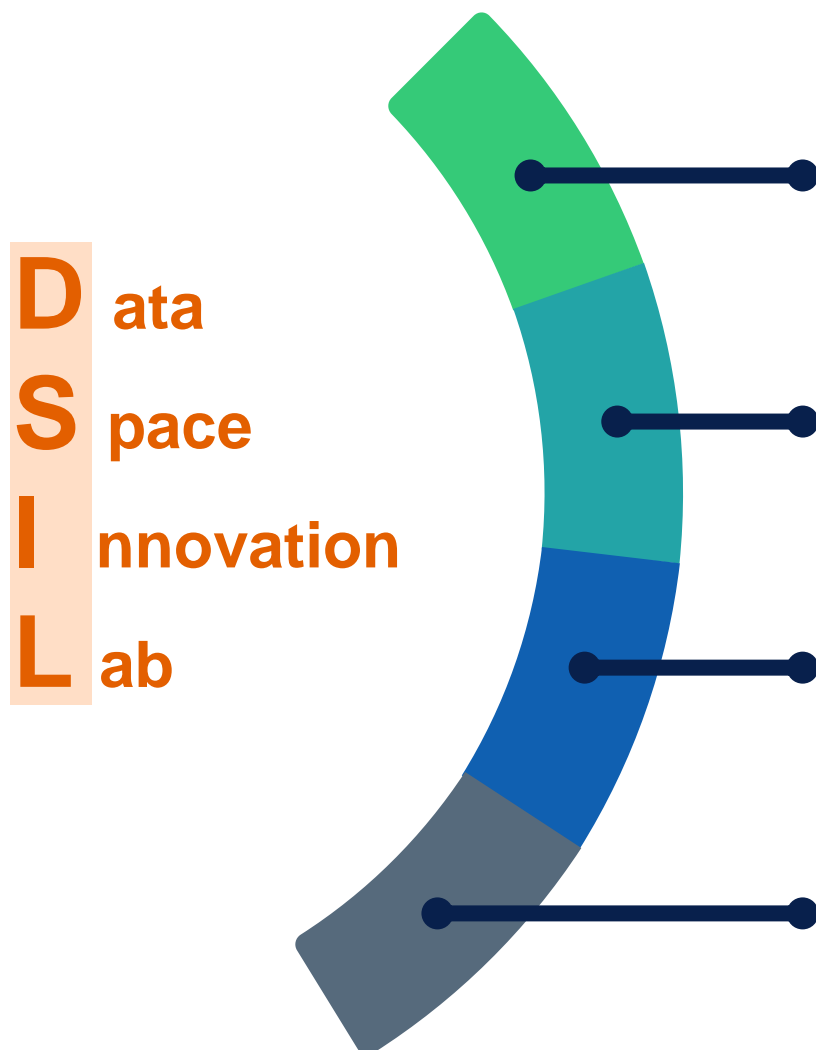
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How to keep posted

- News and publications at dssc.eu
 - [Get support](#)
- Join the Thematic Groups
 - Knowledge base and periodic meetings
 - [Get involved](#)
- Monthly DSSC Insights Series
 - Next one about the Blueprint on 12th October at 16:00
- Data Spaces Symposium in March 2024

Data Space Innovation Lab - DSIL at VTT

VTT's Data Space Innovation Lab (DSIL) support the development, utilization and testing of data space concepts



BENEFITS OF DATA SPACES

Cross sectoral flow of data

Data spaces enable the integration of data across sectoral, organizational and geographical boundaries. They are key for innovative data enabled processes, products, and services.

High security and trust

Data spaces are federated data ecosystems where trusted partners apply the same high standards and rules to the storage and sharing of data.

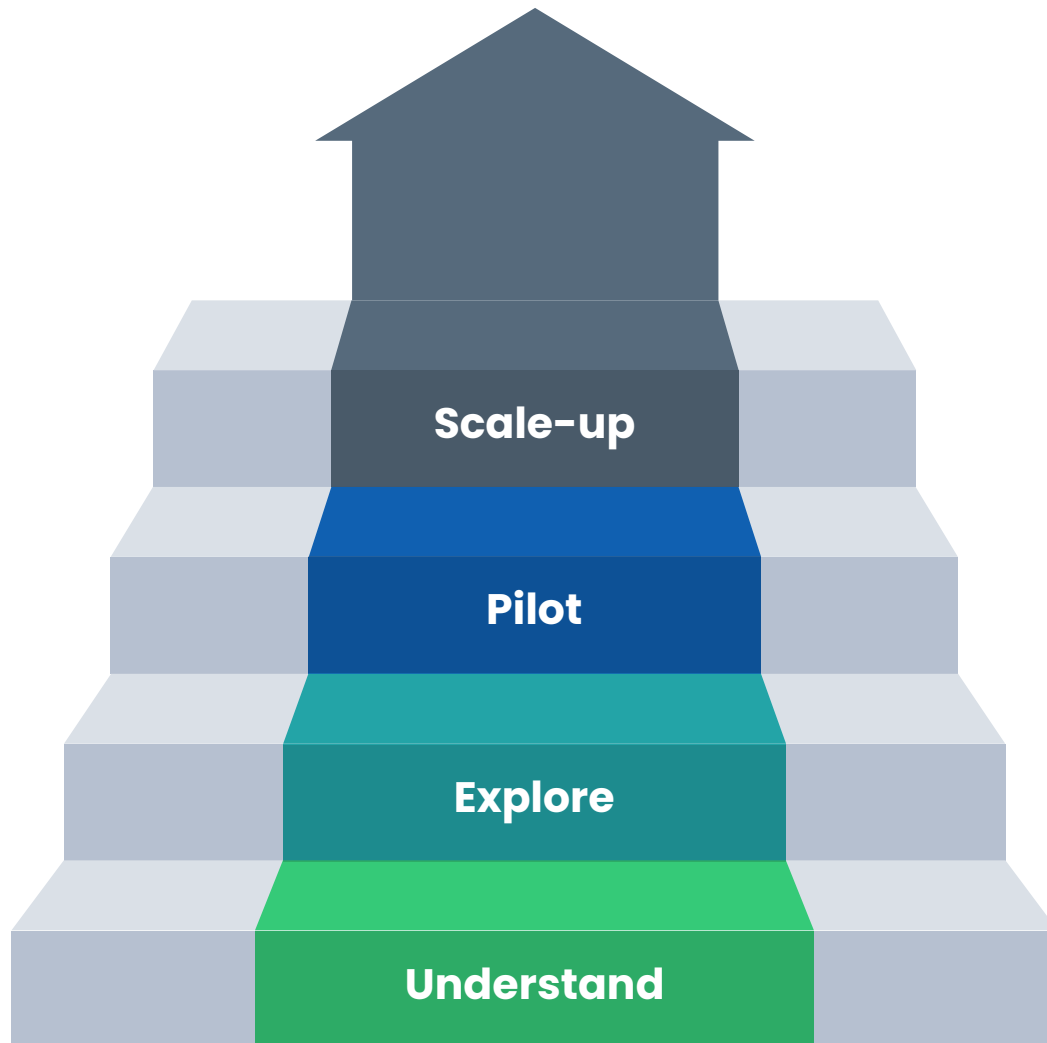
Self-determined control of your's data use

Organizations and individuals have self-determined control of the use of their data (data sovereignty) as they grant the access and usage rights to the data they generate.

Compliance for European data markets

By utilizing data space, one can assure that the data sharing is compliant with current and future European standards, policies and rules, which support data business scale up.

The data space innovation lab supports the journey towards data spaces



Technical advisory, strategy support and access to right networks to support your journey in expanding data space operation from pilots to concrete businesses.

Create concrete pilot cases to showcase the actual benefits restrictions in real environments. VTT's data space pilot environment, certified connectors and leading experts ensure effective pilot creation and analysis.

Explore the opportunities data space have in your businesses and operations. Get concrete understanding of relevant solutions and create initial business cases for your use cases. Neutral information for your decision making and planning.

Advisory services for create an understanding about data spaces and their pros and cons vs. other solutions on market. Concretize the value and what you need to do in order to enter data spaces era.

The innovation lab services cover the critical aspects of data spaces development

Expert support

VTT's leading technology, application and business experts are at your service through innovation lab. In addition, the innovation lab offers concrete connection to European networks, pilot cases and experts.

Data space innovation infra

VTT's data space connectors received its certificate 2nd in the world. The connector and other pilot infrastructures are continuously developed in various Horizon Europe and other projects to offer you the latest solutions in data spaces.

Use case library

Innovation lab offers access to the most recent use cases. Use case library enables concrete understanding of how data spaces are applied in real environments.

Project services

The Innovation lab offers access to VTT has a wide R&D project services, through which we can help you to accelerate your development. We can help you to develop own connector, data space or to join existing ones.



VTT's data spaces innovation lab

Data Spaces Innovation Lab – testbed

DOMAINS



BUSINESS SERVICES



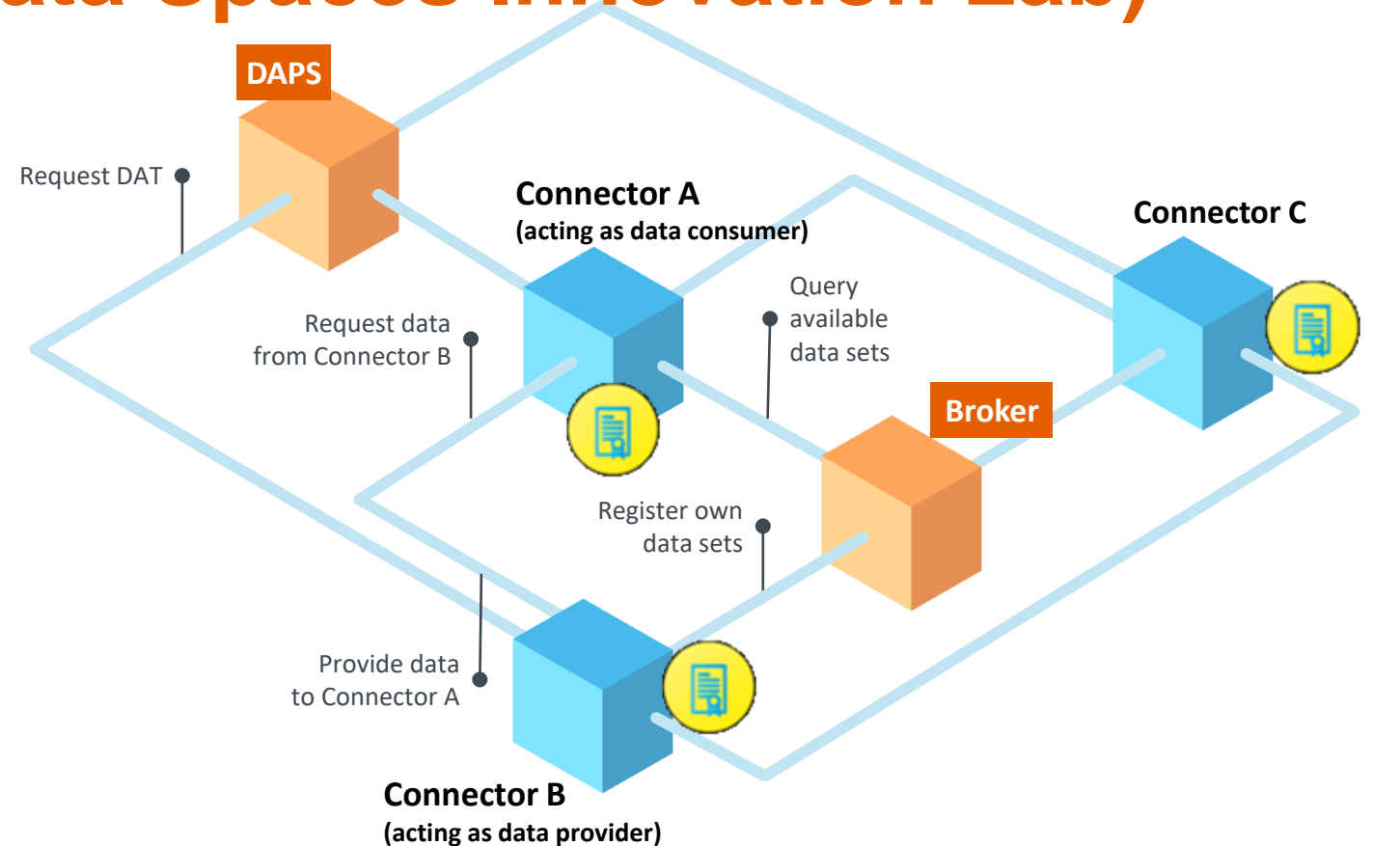
DATA SPACE INNOVATION LAB INFRA





Experts


- Opportunity assessment
- Legal and governance
- SW and cloud technologies
- Architecture and blueprinting
- ...

Experimentation and testing environment (DSIL – Data Spaces Innovation Lab)



 IDS Ecosystem operational service components
DAPS: Dynamic Attribute Provisioning Service

 IDS certified Connectors
DAT: Dynamic Attribute Token

 Identity certificate issued by The Certificate Authorities