



04 October
2023

DCAT-AP for data spaces

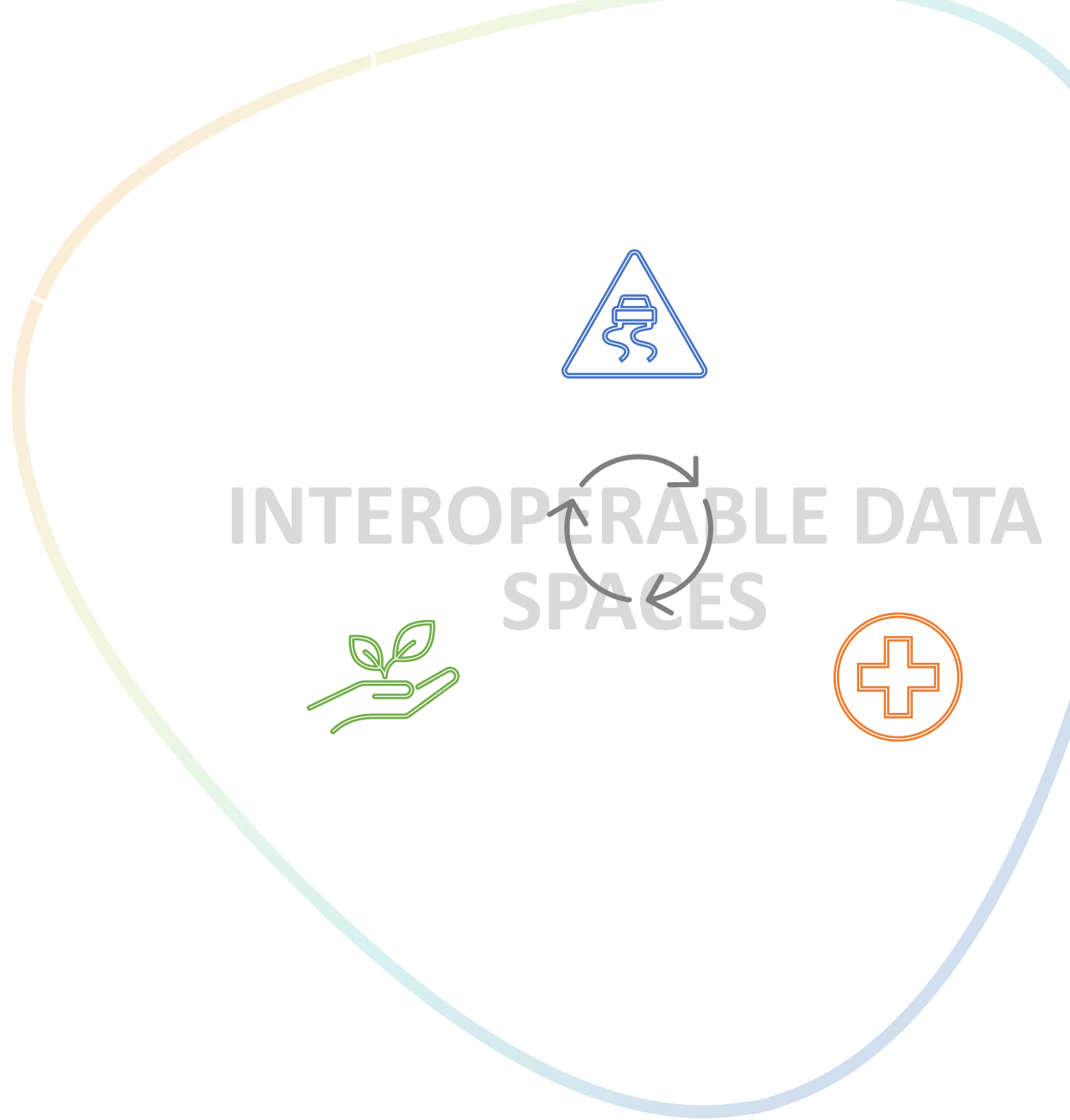
DIGIT.D2 - Interoperability.

interoperable
europe

Goal of today



Enable discoverability of datasets to
maximise their reuse



Agenda



Welcome



The big picture: challenges within and across data spaces



Solution



Testimonials & real-life use cases



DCAT-AP ecosystem & SEMIC Service Offering



Q&A

Webinar practicalities



Please mute your microphones



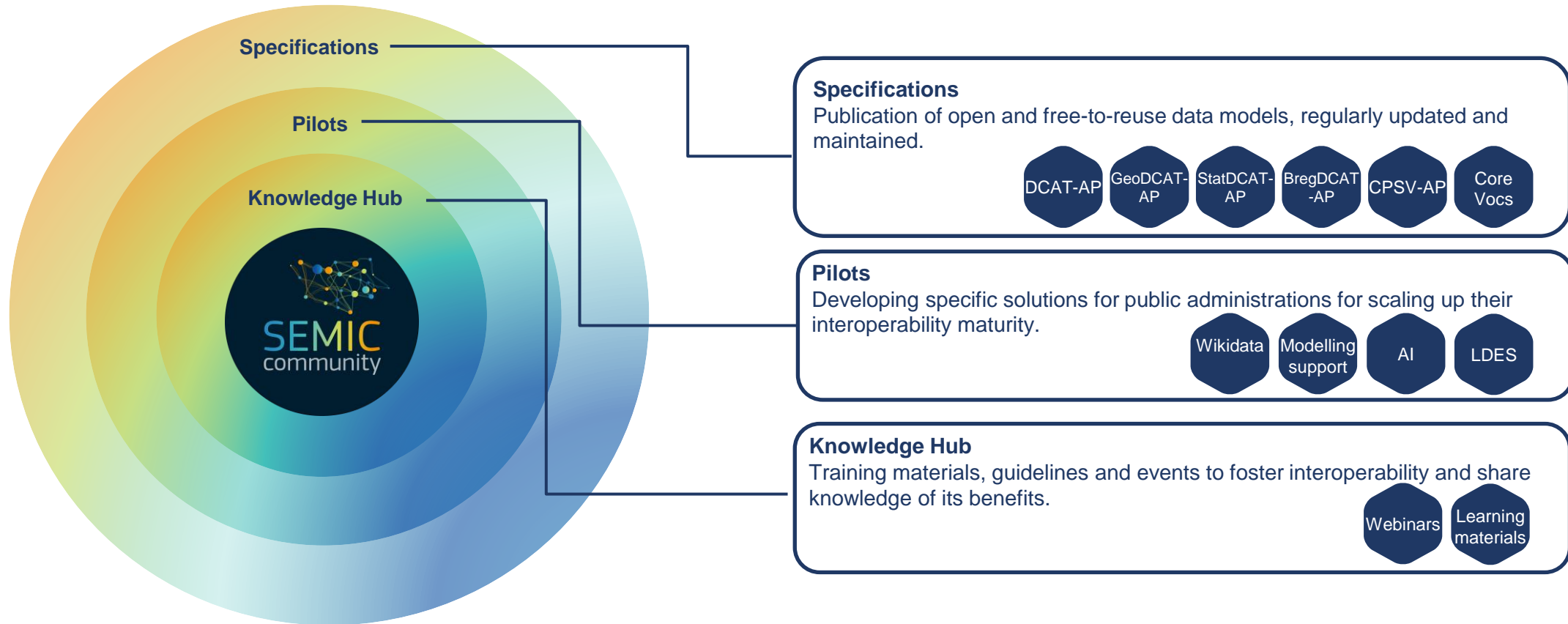
You can also share your questions for the Q&A session via the chat



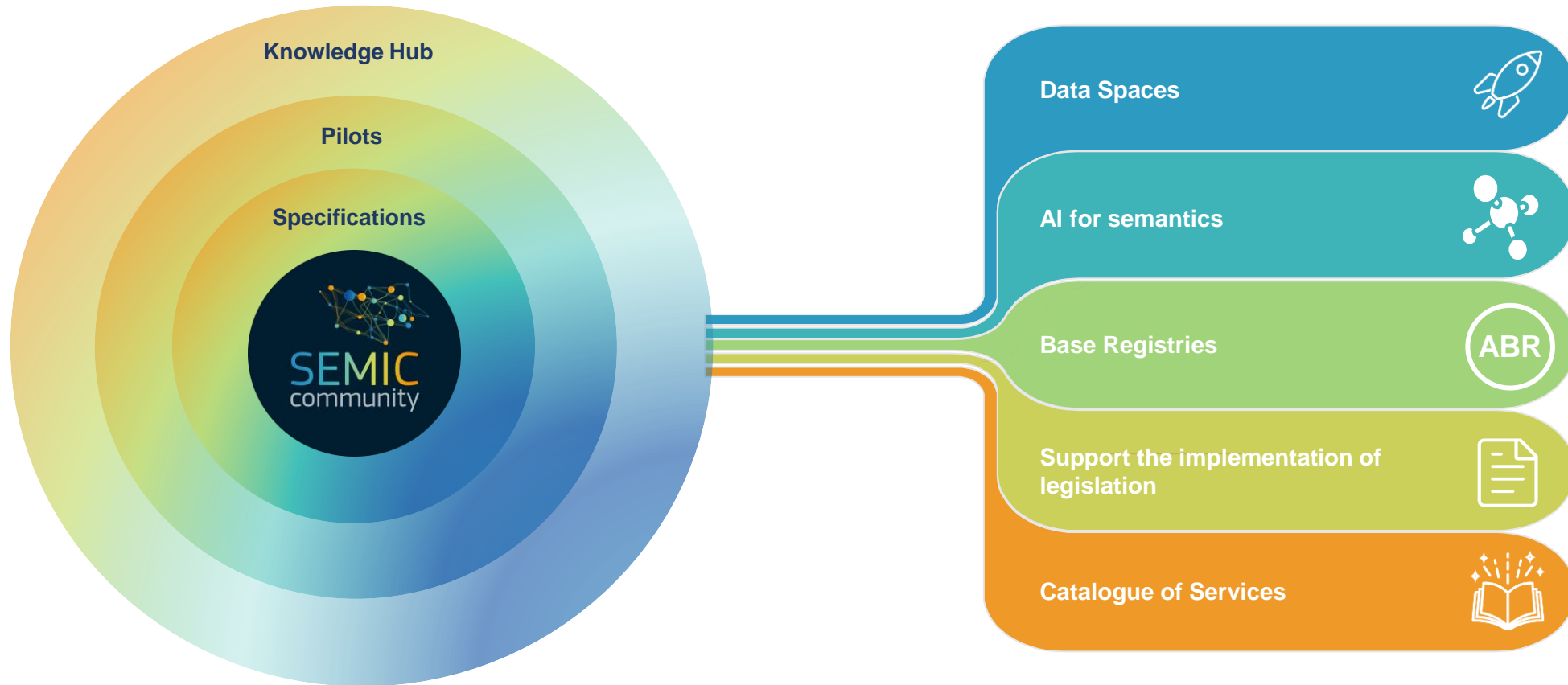
The webinar will be recorded

SEMIC

SEMIC's goal is to deliver pragmatic support to help build an interoperable Europe.



SEMIC Focus Areas



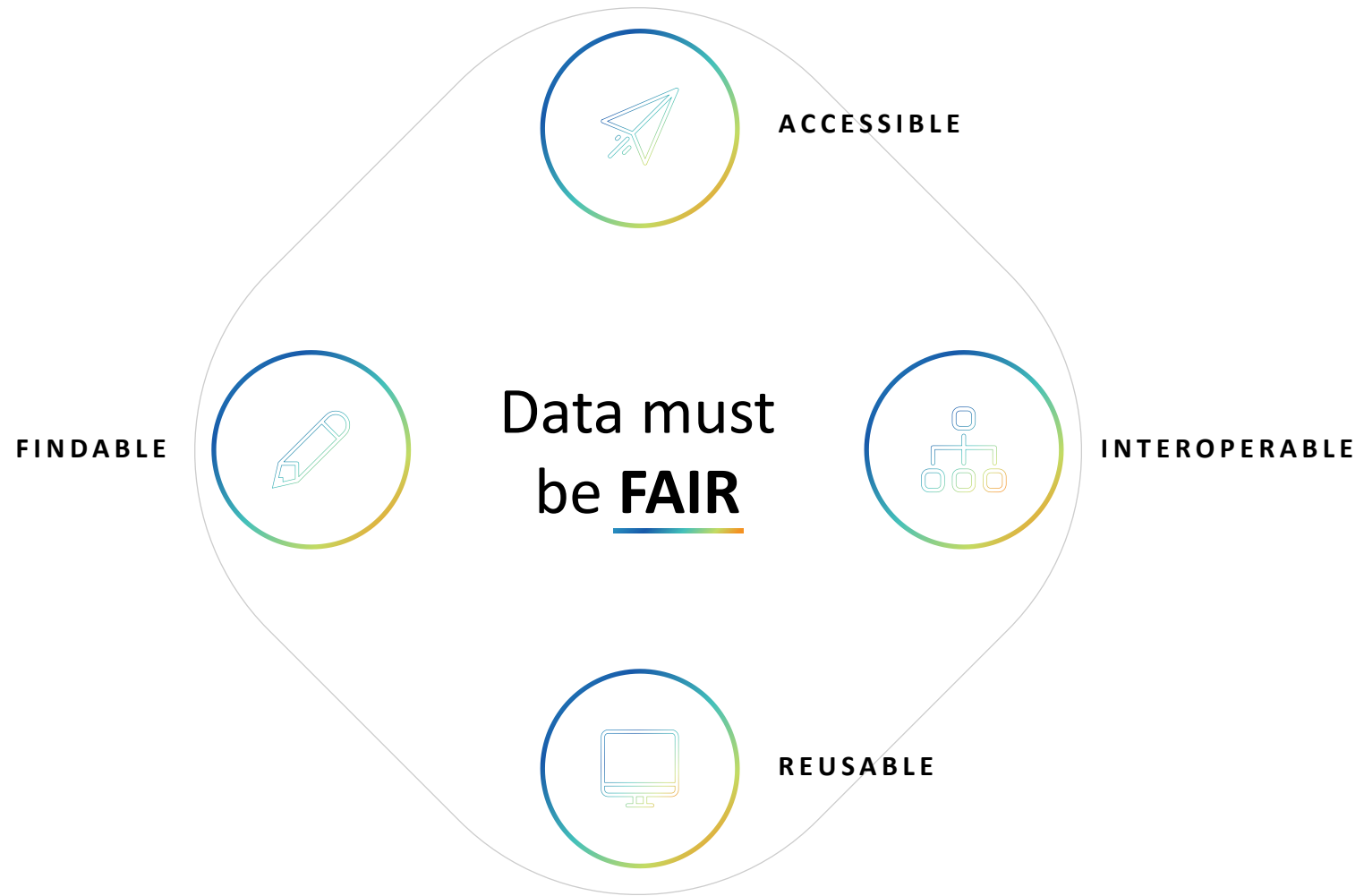


Dataset sharing: interoperability across data spaces



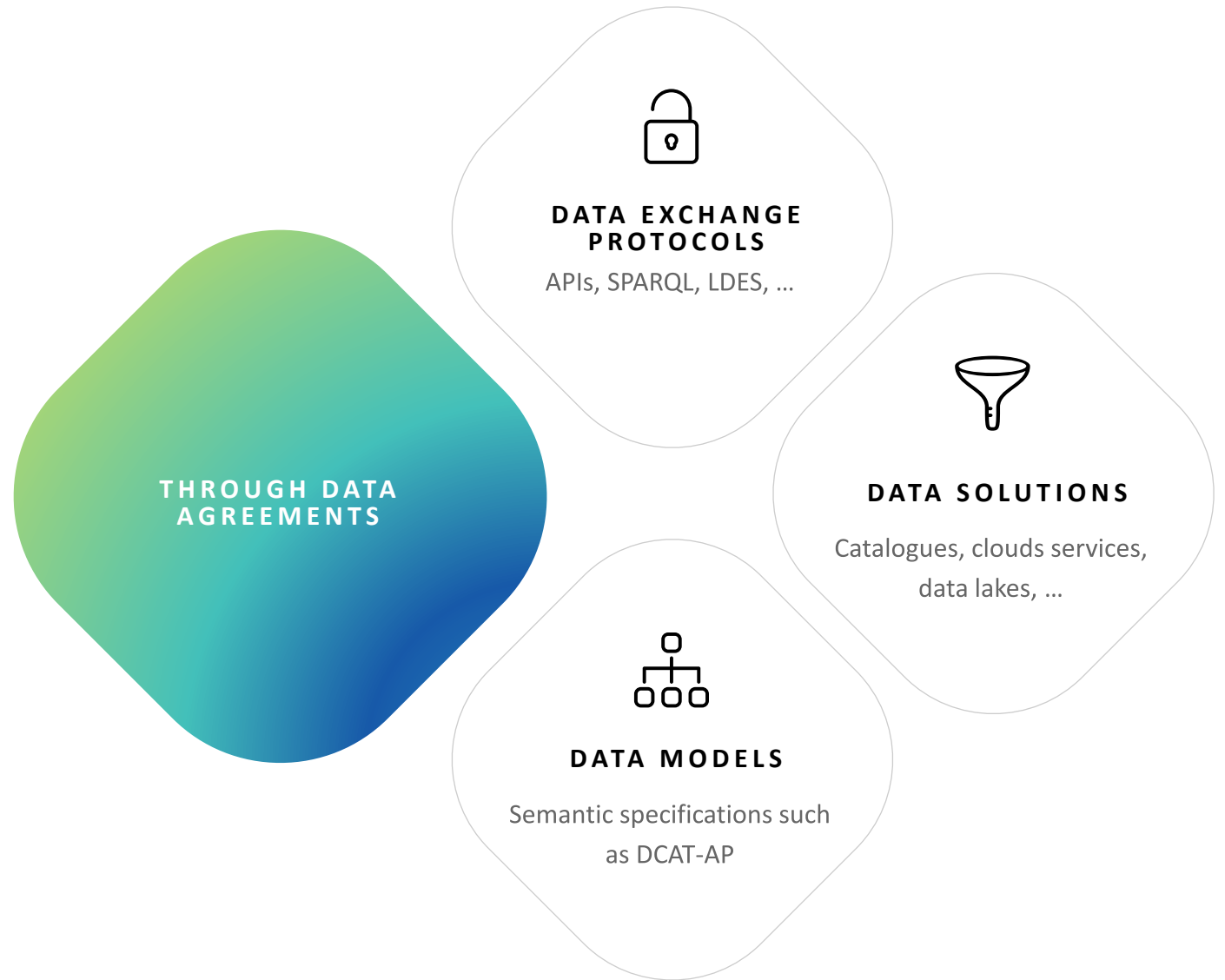
*“Data spaces should foster an ecosystem (of companies, civil society and individuals) creating new products and services based on **more accessible data.**”*

A European strategy for data



HOW?

How to make data more *“accessible”*?





And this is what the data spaces are busy with!



But what if each data (sub-)space develops its own solution to make data more accessible?

We create new barriers for data accessibility!



from



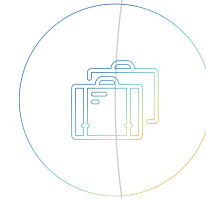
to

How do we enable interoperability...

across data spaces and
the wider semantic web, while



saving costs, time, and



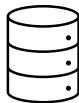
reusing what is already there as
much as possible?



Example of Data Space Solutions



**Agency for
maintenance of
roads**



Publishes the road network in
the area A.



**Agency of
environment**



Publishes the emission of small
dust particles in the area A.



Agency of health



Publishes the absence due to
illness in the area A.

Combining data across data spaces

As a researcher I want to find the impact of road related emissions on work absence...



Findability of Catalogues

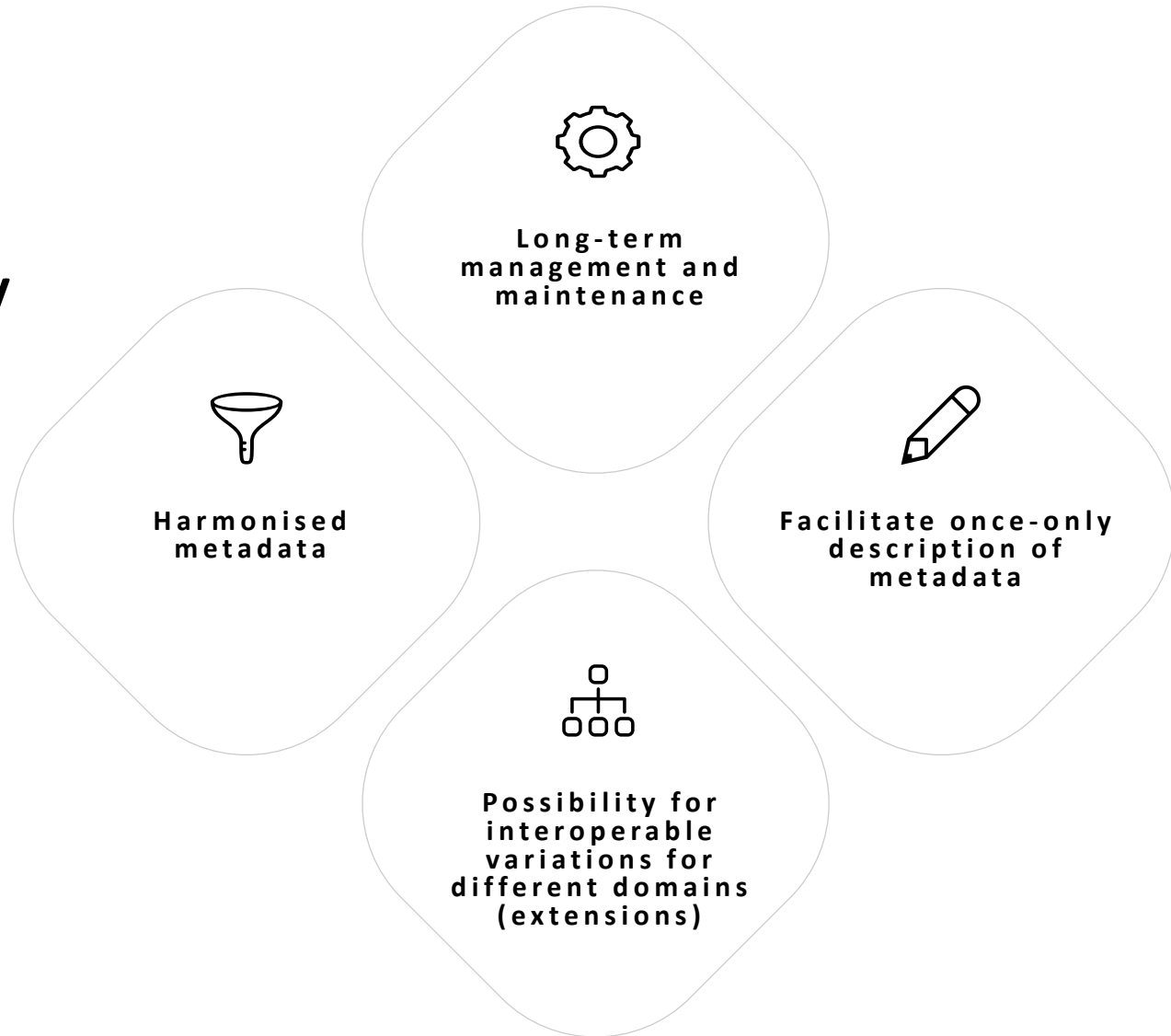
If there are three different portals...
How does the researcher find them?



Understanding dataset descriptions

If portals could share the metadata description...
Is the metadata compatible?

Interoperability for Dataset sharing





Solution

DCAT-AP as a solution

An EU-wide specification that enables interoperability across data spaces through

Description of metadata of datasets in a unified manner

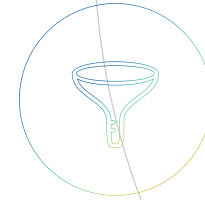
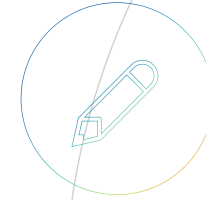
Possibility to go beyond the common specification and create domain-specific data space extensions in a stackable way

A common set of constraints

Resulting in:

Stable and long-term management of metadata and data

Reduced amount of metadata management



Proven track record



W3C STANDARD

Using [DCAT](#) (W3C) as a basis



MATURE IMPLEMENTATIONS

Such as [data.europa.eu](#)



COMMUNITY

Vibrant DCAT-AP community

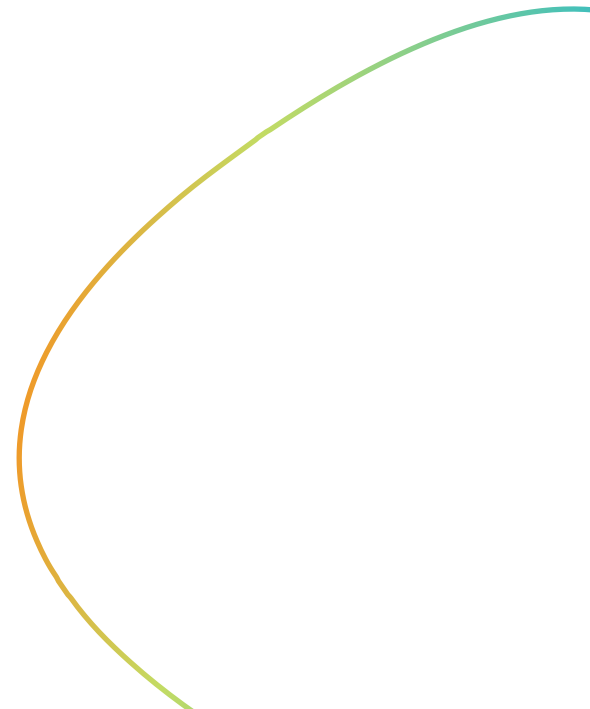
- [GitHub](#) DCAT-AP
- Webinars
- [Joinup](#)



Testimonials & real life use cases



Mobility Data Space



Testimonials



MOBILITY



HEALTH



ENVIRONMENT

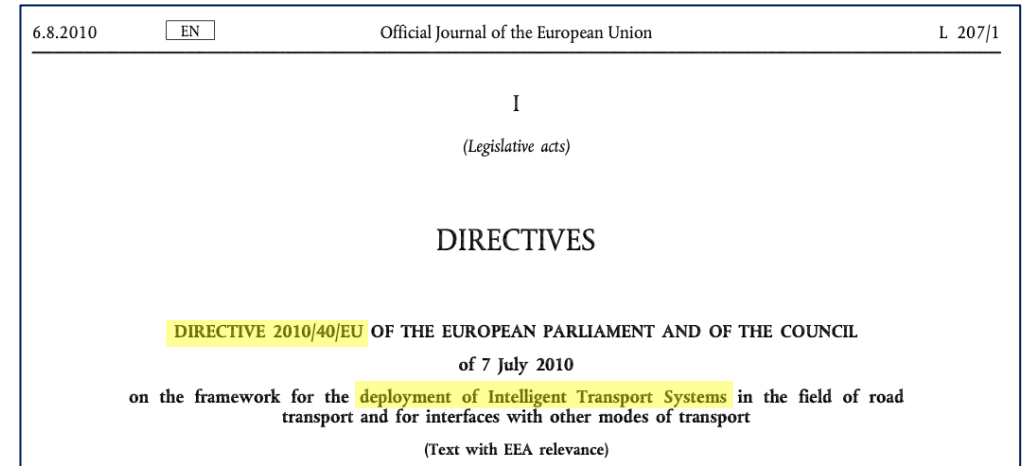


mobilityDCAT-AP: Testimonial

NAPCORE SWG 4.4

October 4th, 2023

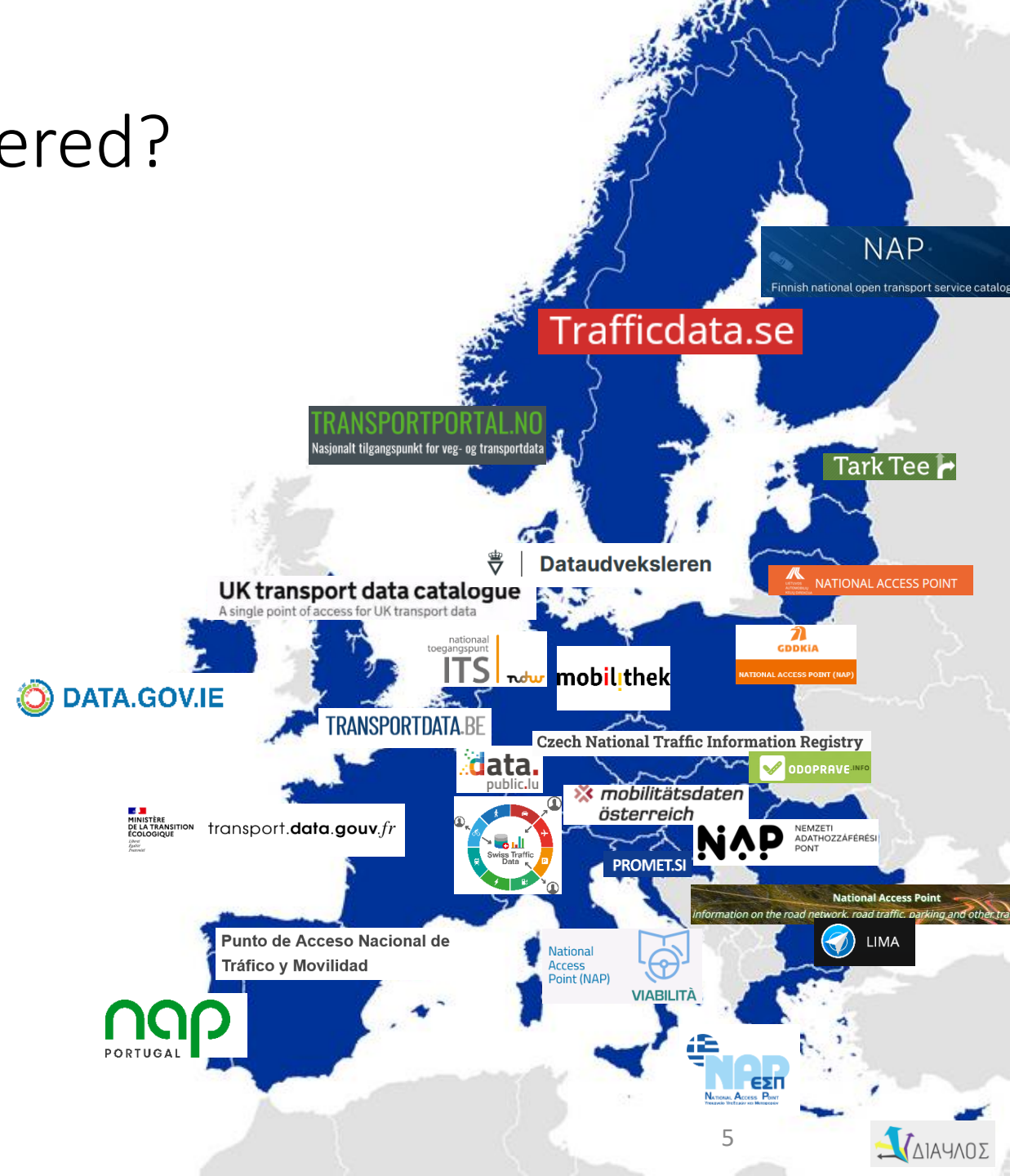
Who are we?



- NAPCORE = project to coordinate the National Access Points (NAPs) and National Bodies (NBs) under the ITS Directive.
- ...to facilitate **EU-wide coordination of NAPs and NBs** for the harmonisation of the implementation of the European specifications on the ITS Directive
 1. ...to **increase interoperability** by standards and recommendations for data exchange formats, content, access and data availability in the mobility domain
 2. ...to empower the NAPs as the **backbone for ITS digital infrastructure** and mobility data exchange
 3. ...to address developments and challenges with a **joint European strategy and voice**

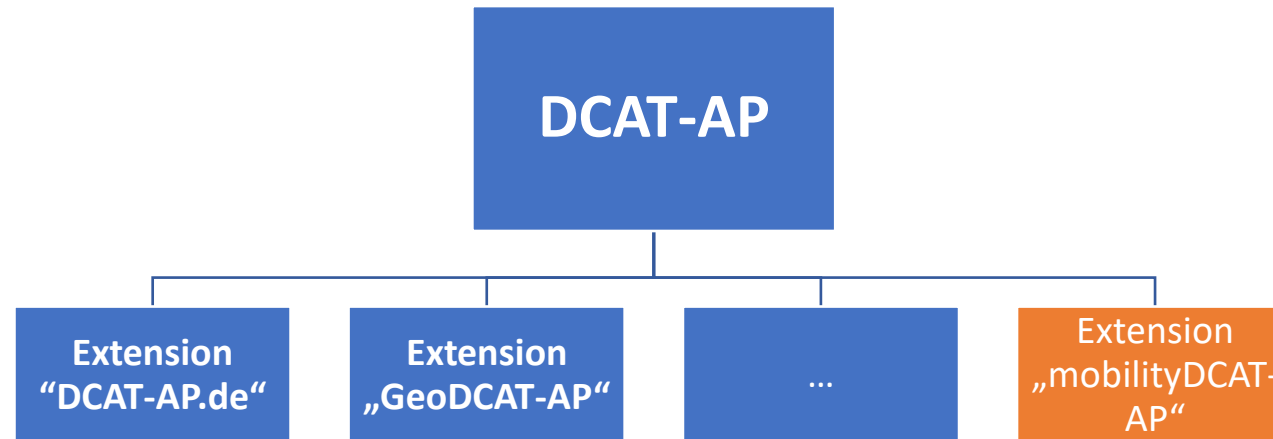
Which challenges encountered?

- National Access Points (NAPs)
... so far very inconsistent and heterogenous
- Common metadata approach...
... can harmonise NAP metadata functions
... make NAPs interoperable someday



Solutions and standards used?

- Idea: a DCAT-AP extension for mobility data...



- Plus: look at other suitable RDF vocabularies...

Data on the Web Best Practices: Data Quality Vocabulary

W3C Working Group Note 15 December 2016



Collaboration with SEMIC?

- 1st step: exploration of SEMIC works, attendance at webinars
- 2nd step: expert interviews for guidance on extending DCAT-AP
- 3rd step: thorough feedback by SEMIC on draft version of mobilityDCAT-AP
- 4th step: (hopefully) close interaction between NAPCORE and SEMIC
i.e., aligning future versions of DCAT-AP and mobilityDCAT-AP

Thank you!

Federal Highway Research Institute

bast

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European Health Data Space



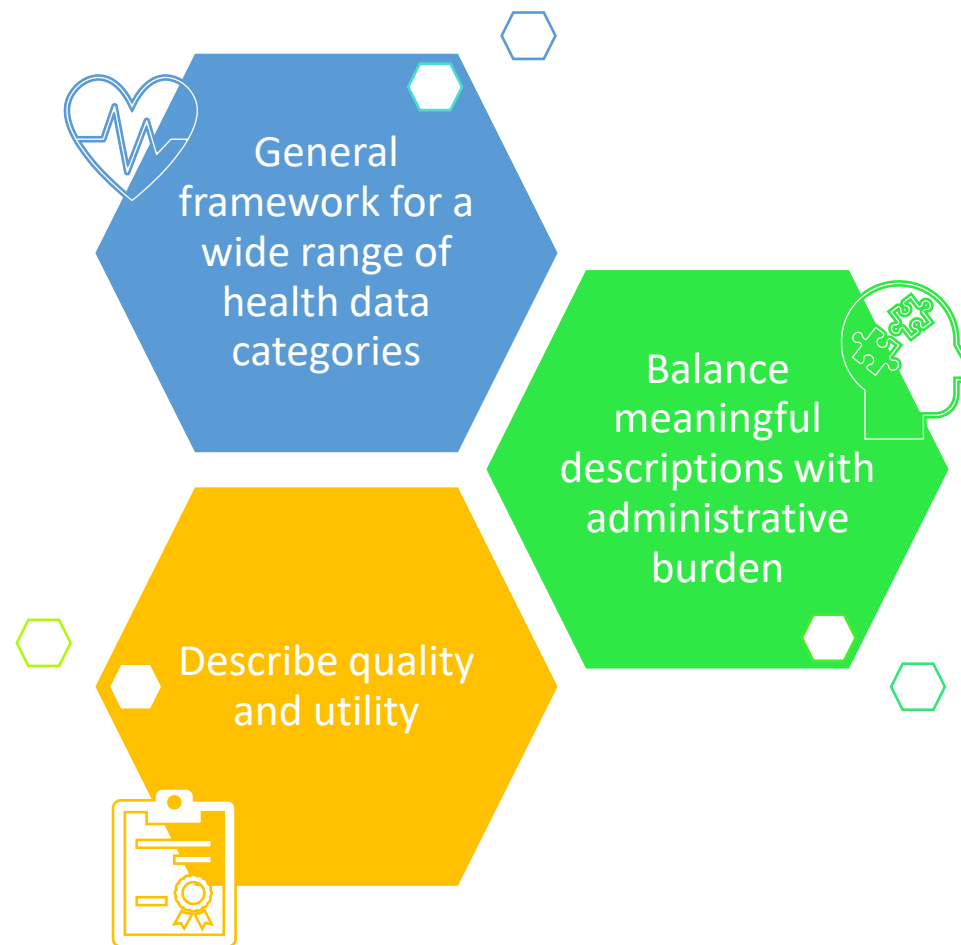
Ambition

Make health data discoverable

at European scale

for research and innovation,
policy-making and
regulatory activities, as well
as for precision medicine.

Challenges



Candidate solutions



DCAT-AP

- Adopted by EC for policies towards data discoverability
- Common standard between data spaces



Health Application Profile

- Extending without braking
- Address highly specialised requirements of the EHDS
 - dataset description
 - data quality and utility label
 - balance obligations and burden



Interplay with SEMIC

**Build on top of SEMIC experience
and DCAT-AP standards**
ensuring semantic consistency
across different data spaces

**SEMIC supporting the
HealthData@EU Pilot**
in designing the DCAT Health
Application Profile



European Common Green Deal Data Space



European Common Green Deal Data Space

Webinar on DCAT-AP for data spaces

Wednesday 4 October 2023

European Commission - Directorate-General for Environment

Unit 01 Strategy, Digitalisation, Better Regulation & Economic analysis

DIGITAL Team



Development and implementation of the Green Deal data space

Development and implementation of the Green Deal data space in support of the Green Deal strategies (including the GreenData4All initiative and coordination of the INSPIRE Directive).



GeoInt

Geospatial Intelligence (GEOINT). Better use of Copernicus data and AI for policy development, evaluation and compliance assurance.



DIGITAL coordination

Coordination of DIGITAL Strategy files and Space related files.



Corporate data policy

Support to initiatives to make the Commission and DG ENV more data-driven (including streamlining of regulatory reporting)



<https://inspire.ec.europa.eu/events/inspire-conference-2023>

Challenges encountered when setting your data space

Challenges

- Identify the stakeholder community
- Identify the essential data for the Green Deal Data Space
- Interoperability between European Common Data Spaces
- How to govern overlaps between European Common Data Spaces
- Architectural building blocks (Data, Business cases, Technology, Application / Use cases)
- Moving from a provider-centric to a user-centric data sharing approach
- Interconnect distributed and fragmented data sharing building blocks based on European values and legal frameworks

Preparatory actions for the Green Deal Data Space

(DEP Coordination and Support Action)



Data Spaces Support Centre
Common building blocks

Solutions or standards to tackle challenges

- Too early in the process of defining the European Common Green Deal Data Space
- Any common building block will be proposed to the Data Spaces Support Centre
- On top of the role of GREAT and DSSC, existing communities and their practices have to be leveraged and scaled and the wheel not reinvented
- Possible candidates (indicative and not exhaustive)

Publication & Discovery – Metadata description

Data Spaces Support Centre

A recommendable option to implement the descriptions is to use DCAT, a W3C recommendation that provides a standardized way to describe metadata about datasets and data catalogs. DCAT provides RDF (Resource Description Framework) classes and properties to allow datasets and data services to be described and included in a catalog.

Minimal Interoperability Mechanisms (concept)

OASC (Open & Agile Smart Cities) MIM7 : Places

Expose data through a service interface either through OGC WFS or OGC API features. Ensure that all published features have unique identifiers that follow the requirements of the Inspire directive data specifications, chapter 14 Identifier management.

Collaboration with SEMIC

Metadata

GeoDCAT-AP - Version 2.0.0

A geospatial extension for the DCAT application profile for data portals in Europe



- The INSPIRE Directive mandates the use of the ISO 19115 metadata standard for the documentation of spatial datasets and services as it is specifically developed for spatial data management. To guarantee interoperability with the open data community and the Open Data Portal managed by OP, JRC has developed the GEODCAT-AP that allow to convert ISO 19115 metadata to DCAT-AP metadata on the fly and supports harvesting of metadata from the INSPIRE geoportal by the Open Data Portal.
- For the moment DCAT-AP is being reviewed, A new version DCAT-AP 3.0 is being developed, taking into consideration metadata provisions coming from the High-value datasets Implementing Regulation and supporting compatibility with ISO 19115 metadata standard mandated for spatial data in scope of the INSPIRE Directive

Personal Data Spaces

Enabling the Twin Digital and Green Transition via personal IoT data

- The Case of Electric Vehicles

interoperable
europe

- A SOLID proof of concept to explore the feasibility to share personal (vehicle) data within the boundaries of the European legal framework



Charging grid infrastructure

"Is it possible to improve future grid charging infrastructure by embedding data streams sourced in EV batteries?"



Battery lifespan

"Is it possible to expand the lifespan of an EV battery and facilitate its repurposing by embedding charging data sourced in the vehicles?"



Thank you



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Q&A



SEMIC DCAT-AP Service Offering

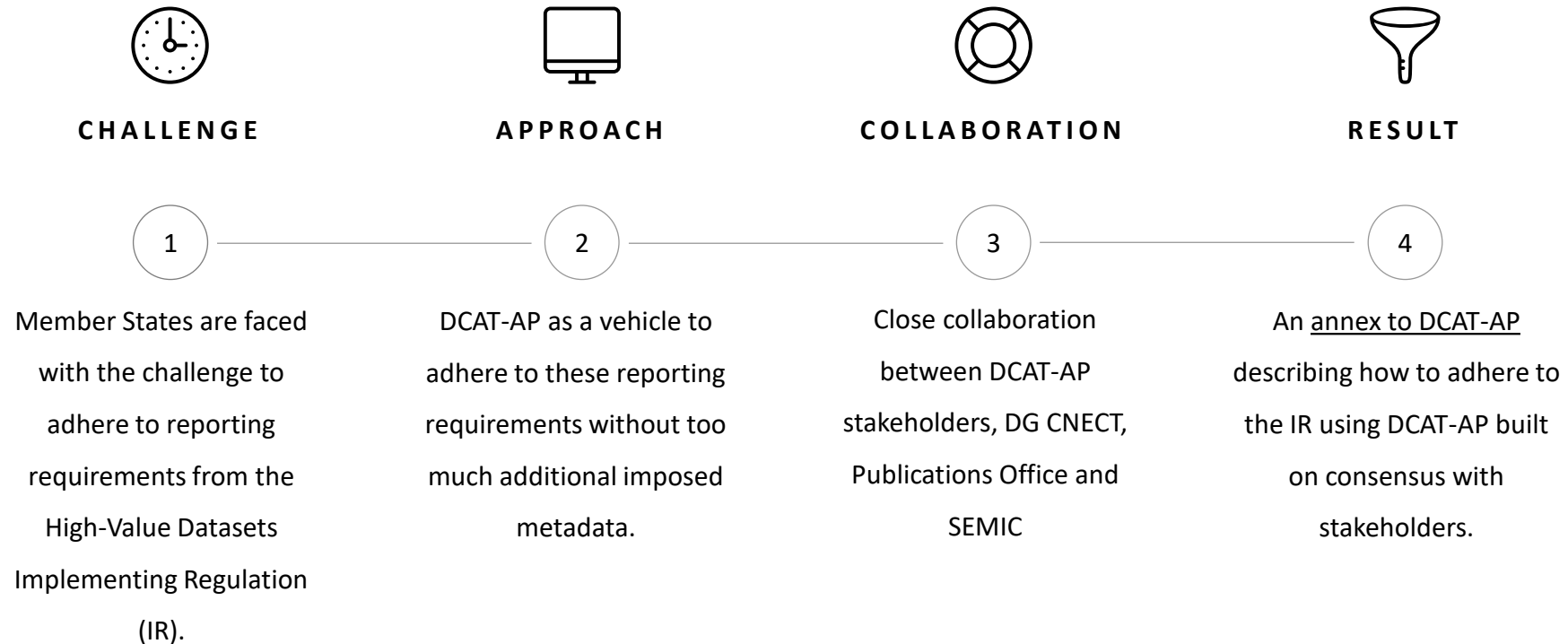
Benefits of the DCAT-AP ecosystem



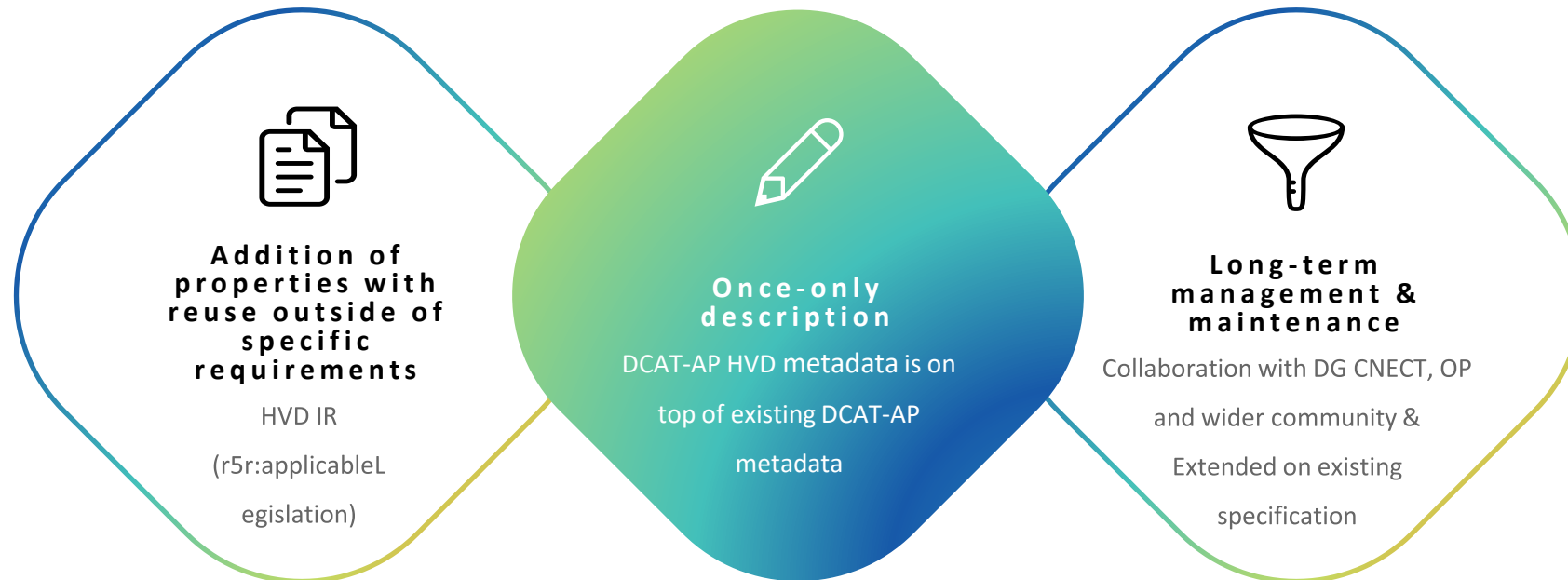


How does this translate
to SEMIC services?

What we do? DCAT-AP for HVD as an example



Things we considered



SEMIC Levels of Service Offering



- Provide documentation
- SEMIC Specification



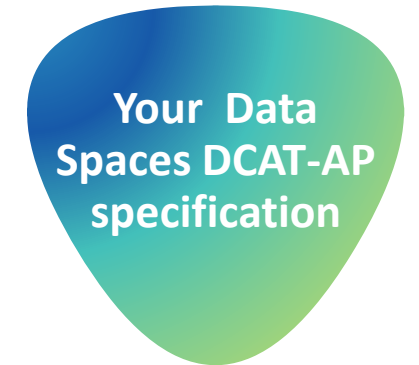
- Provide documentation
- SEMIC specification
- Review your specification








- Provide documentation
- SEMIC specification
- Review your specification
- Participate in development of specification

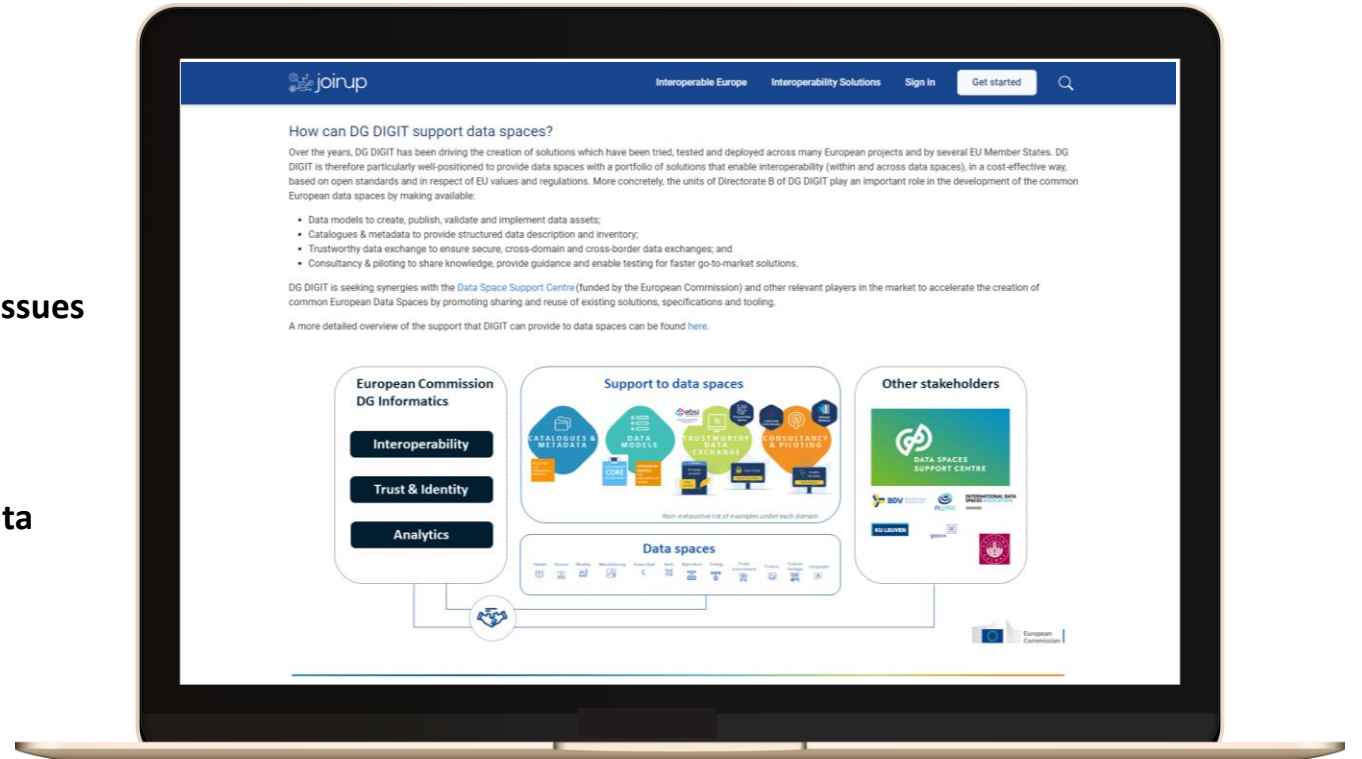


- Provide documentation
- SEMIC specification
- Review your specification
- Co-organise development of the specification



SEMIC DCAT-AP Support in 2023

- 7 - Nov - 23  **DCAT-AP working group webinar on status & governance**
- 21 - Nov - 23  **DCAT-AP working group webinar on technical issues**
- Ongoing  **Public review DCAT-AP 3.0.0**
- Dec - 23  **Training materials on DCAT-AP, dedicated to Data Spaces**
- Dec - 23  **Guidelines on profiling and extending DCAT-AP**



DATA SPACES SUPPORT CENTRE

04 October 2023

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

Motivation



- Data spaces are essential for enabling data sharing among participants in a sovereign, interoperable and trustworthy manner
- There are several independent initiatives aiming at establishing data spaces [1]
- Creating a data space is a complex task
- The lack of common guidelines and standards can result in:
 - fragmented, incomplete, and siloed implementations of data spaces
 - duplication of efforts
 - high costs

DSSC: Data Spaces Support Centre



- Funded by the European Commission as part of the Digital Europe Program, the DSSC is aimed at initiatives and companies that want to create sovereign data spaces
- The DSSC contributes to the creation of **common data spaces**, that were outlined in the **European Data Strategy**, that collectively create a data sovereign, interoperable and trustworthy data sharing environment, to enable data reuse within and across sectors, fully respecting EU values, and supporting the European economy and society

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

DSSC Consortium Partners



**INTERNATIONAL DATA
SPACES ASSOCIATION**



KU LEUVEN



SITRA

TNO innovation
for life



OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY

VTT

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



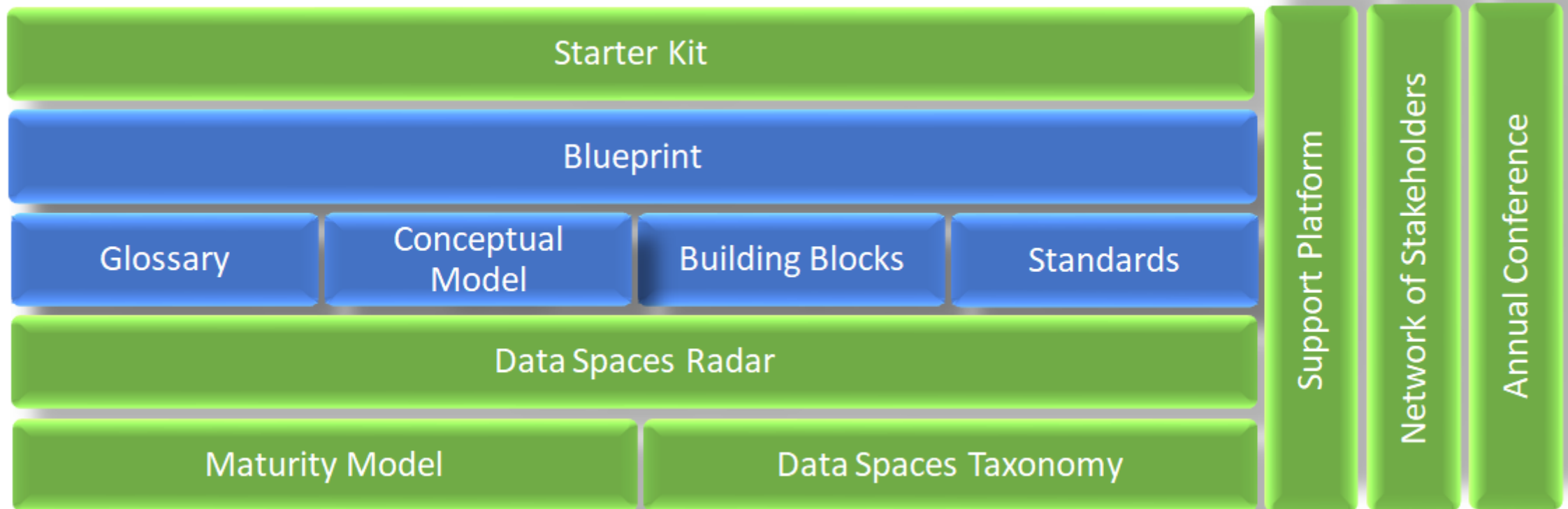
DSSC Mission



- To explore the needs for data space initiatives
- To define common requirements and establish best practices to accelerate the formation of sovereign data spaces, while respecting EU values, and supporting the European economy and society as a whole
- To enable various stakeholders, as a consequence of increased circulation of information, to make better decisions, thereby contributing to the objectives of the Green Deal and the SDG'20

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

DSSC Assets



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

DSSC Assets: Blueprint



- The Blueprint is a consistent and comprehensive set of guidelines to support the development cycle of data spaces, consisting of:
 - **Glossary:** a curated set of terms and definitions
 - **Conceptual Model:** a model of the data space domain which represents the concepts (entities) and the relationships between them.
 - **Building Blocks:** a basic unit or component that can be implemented and combined with other building blocks to achieve the functionality of a data space. For each building block, specifications and reference implementations will be identified, especially for technical building blocks.



Data Spaces Blueprint | Version 0.5 | September 2023

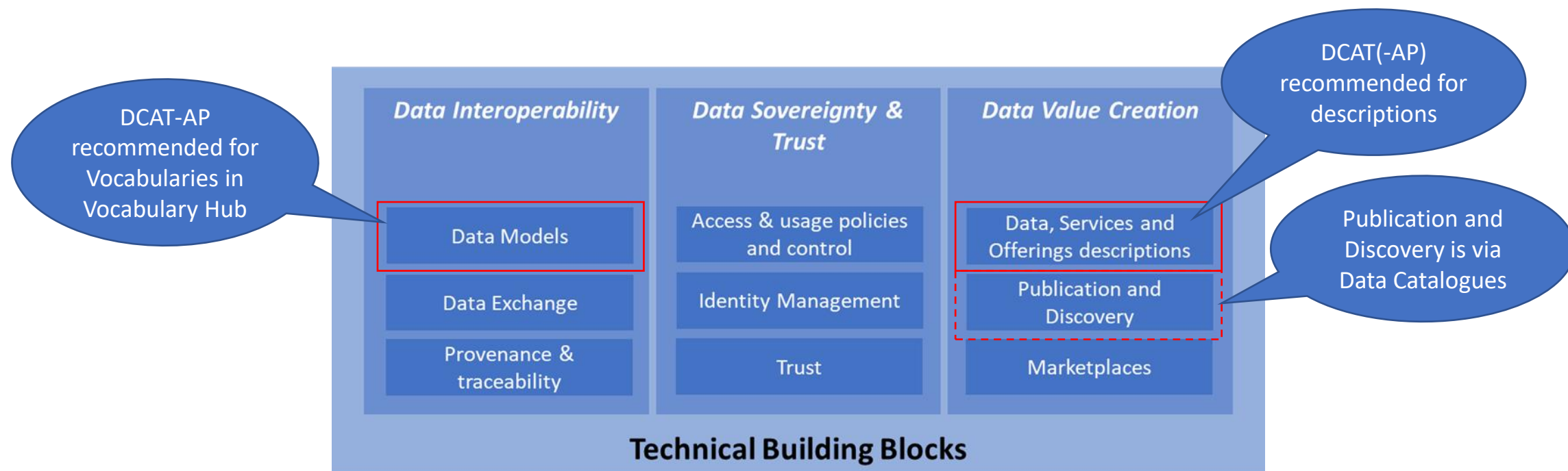
Last updated 2 days ago

This is the start page for all Blueprint v0.5 information. The Blueprint is a consistent and comprehensive set of guidelines to support the development cycle of **data spaces**. In the blueprint, you can find the **conceptual model of data space**, **data space building blocks**, and recommended selection of standards, specifications and reference implementations identified in the **data spaces standards and technologies landscape**.

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



Semantic Interoperability in the DSSC Blueprint v0.5



DSSC: Support



- The Support Centre drives adoption through support activities, the platform for knowledge and asset sharing, a help desk, toolboxes, and active engagement with the CoP.
- The support options are packaged to serve the needs of the data space initiatives at different maturity levels.
- The work of the DSSC will continuously evolve with a user-centric approach as the result of co-creation with the stakeholders and the sharing of lessons and experiences between data spaces.

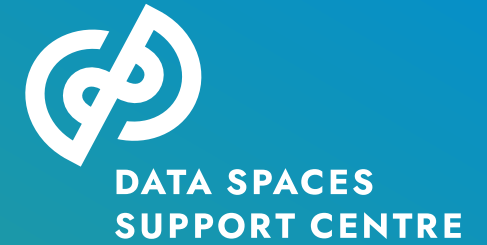
Further Information



- The DSSC Website: <https://dssc.eu>
- DSSC Delivery Plan – Summary & timeline of assets publication: <https://dssc.eu/space/DDP/117211137/DSSC+Delivery+Plan+-+Summary+of+assets+publication>
- How to get involved – Community of Practice, Strategic Stakeholder Forum, Liaisons and Collaborations: <https://dssc.eu/space/DC/28016695/Communities>
- Email: contact@dssc.eu

Contact

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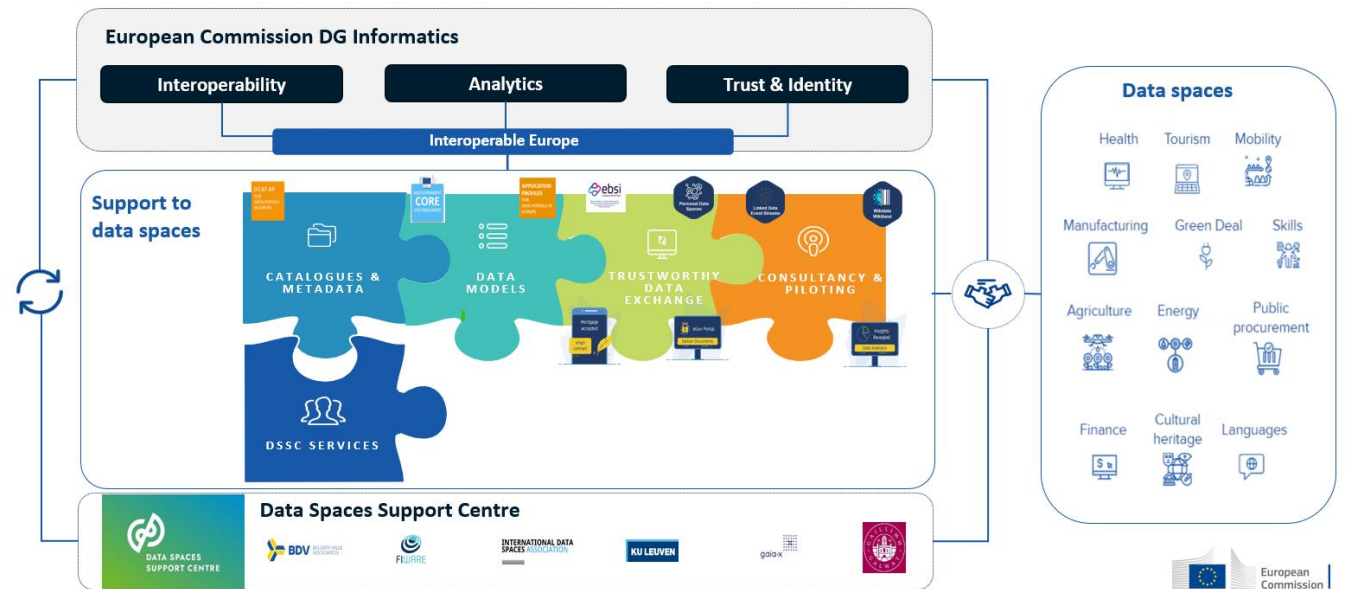
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www.fit.fraunhofer.de

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



Close collaboration with the Data Spaces Support Centre

- SEMIC as part of a larger support ecosystem for data spaces
- DCAT-AP & other SEMIC specifications as a reference standard of the DSSC





Q&A

Questions






01 |

What do you see as a challenge for interoperability?

02 |

How can DCAT-AP help with these challenges?

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Stay in touch



[GitHub](#)



[SEMIC Support Centre](#)



contact@semic.eu

The image features a dark blue background with a complex network visualization. The network consists of numerous thin, light blue lines that form a dense, interconnected web. The lines are thicker in some areas, particularly in the center, where they converge and then fan out again. Small, semi-transparent dots in shades of blue, green, and yellow are scattered throughout the network, representing nodes or data points. The overall effect is one of dynamic energy and connectivity.

Thank you