deployEMDS

Pushing the boundaries of mobility data exchange

Casper Van Gheluwe

Towards a common European mobility data space

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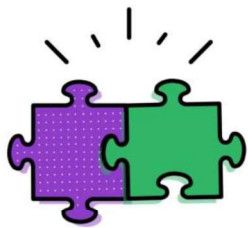
Context

Context

PrepDSpace4Mobility

Digital Europe Programme
Oct 2022 – Sep 2023

Map existing data ecosystems

Analyse and recommend common
building blocks for a future EMDS

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Digital Europe Programme
Nov 2023 – Oct 2026

Common technical infrastructure
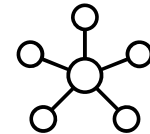
Common governance mechanisms

Real-life implementation projects

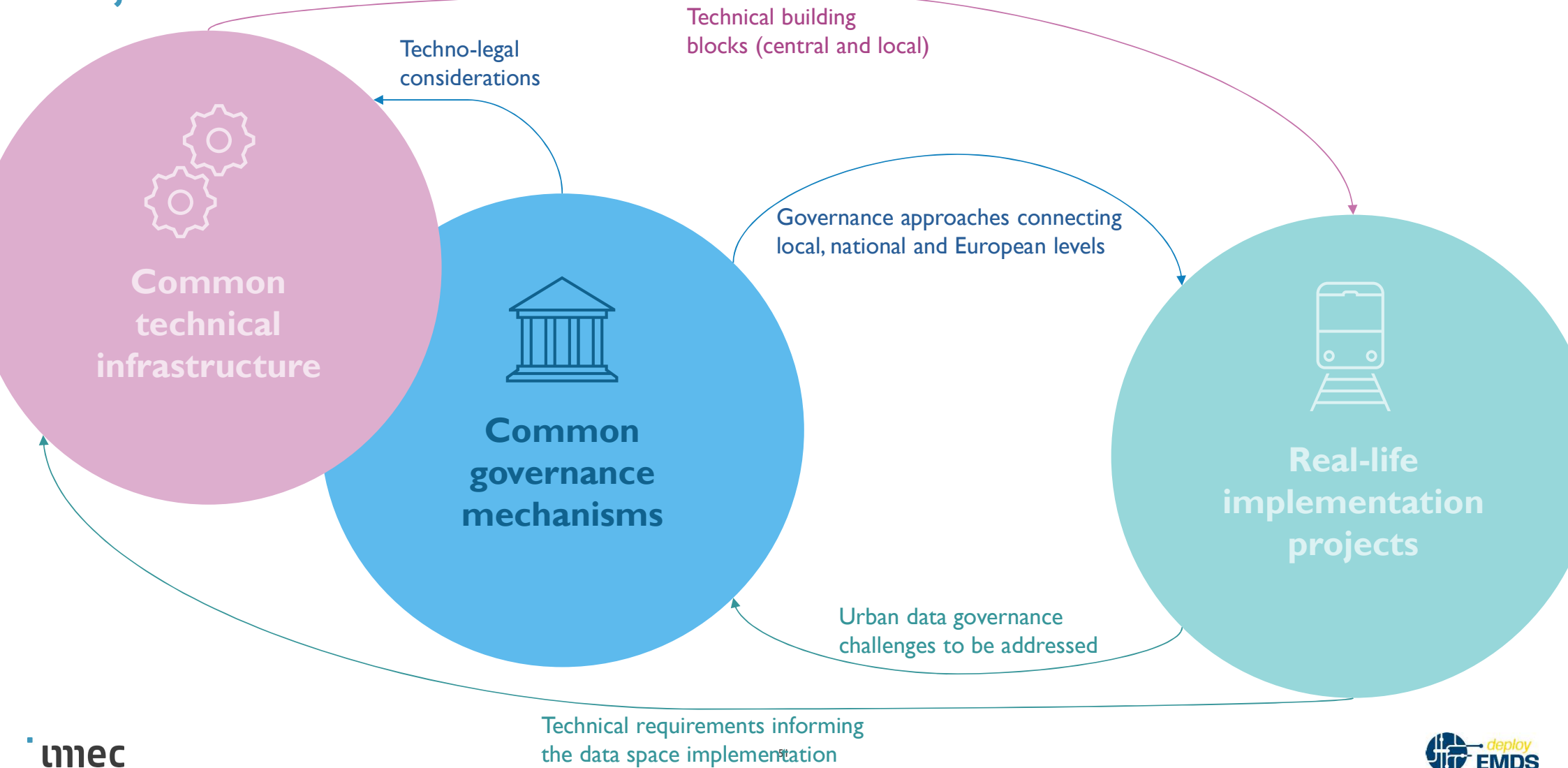## Technical assistance study

Connecting Europe Facility

Interlinking layer

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Context
Mobility and Logistics Data EDIC

- **European Digital Infrastructure Consortium (EDIC):** new mechanism to implement MCPs created by the [Digital Decade Policy Programme 2030](#)

- **Mobility and Logistics Data EDIC** to ensure long term sustainability of common data infrastructure and promote large scale adoption.
  - Allowing the coordination and alignment on common standards among its members.
  - Support the implementation of cross-border use cases under a coherent approach

- Currently under preparation by the Netherlands (host), Austria, Germany, Finland, France, Slovakia, and Spain, along with other relevant organisations
- Early 2025 → expected start of supporting project MOBIEDIC

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Project structure

Technical building blocks (central and local)

Techno-legal considerations

Common technical infrastructure

Common governance mechanisms

Governance approaches connecting local, national and European levels

Real-life implementation projects

Urban data governance challenges to be addressed

Technical requirements informing the data space implementation

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Use cases

Barcelona

Budapest

Flanders

Tampere

Île-de-France

Lisbon

Milan

Sofia

Stockholm

Use cases

Flanders

*"Making the **exchange of traffic measurements** understandable, exchangeable, re-usable and future proof; by using standards, data space technology, building an ecosystem and a clear governance."*


Sofia

*"Delivering **MaaS** by implementing a multimodal mobility solution involving public transport and green on-demand mobility services."*

Milan

*"**Optimising** the entire **local public transport** mobility network consisting of the provinces of Pavia, Lodi, Monza-Brianza and the Metropolitan City of Milan, through the integration of multiple data sources."*

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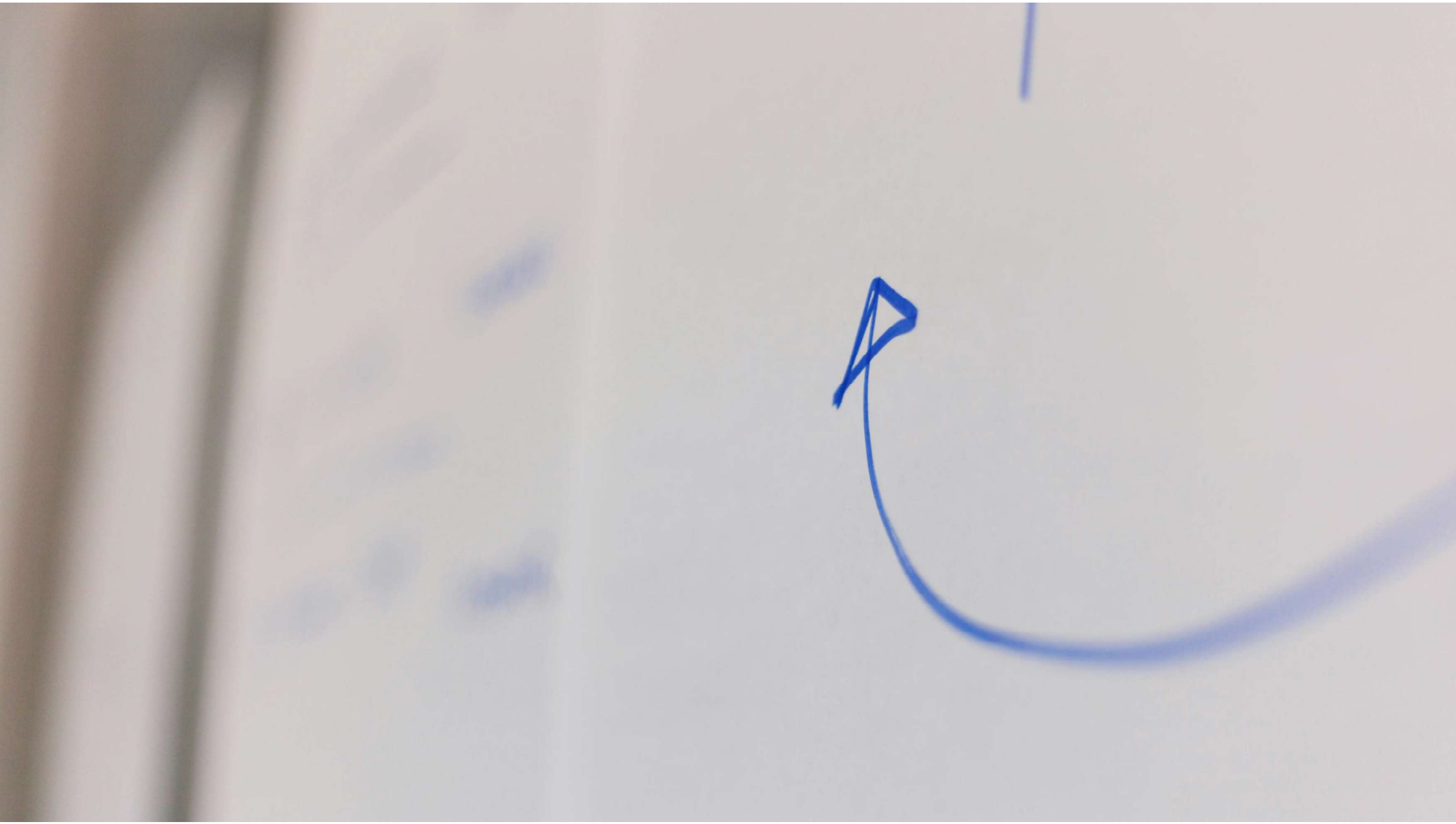
Requirements analysis for the technical infrastructure

Characteristics

- Bottom-up
- Capability-driven
- Technology agnostic
- Based on existing frameworks:
  - Open Data Product Specification (ODPS)
  - DSBA Technical Convergence
  - DSSC Blueprint v1.0

Steps

- Canvas design
- Intake process
- Capability mapping

Read

Canvas design

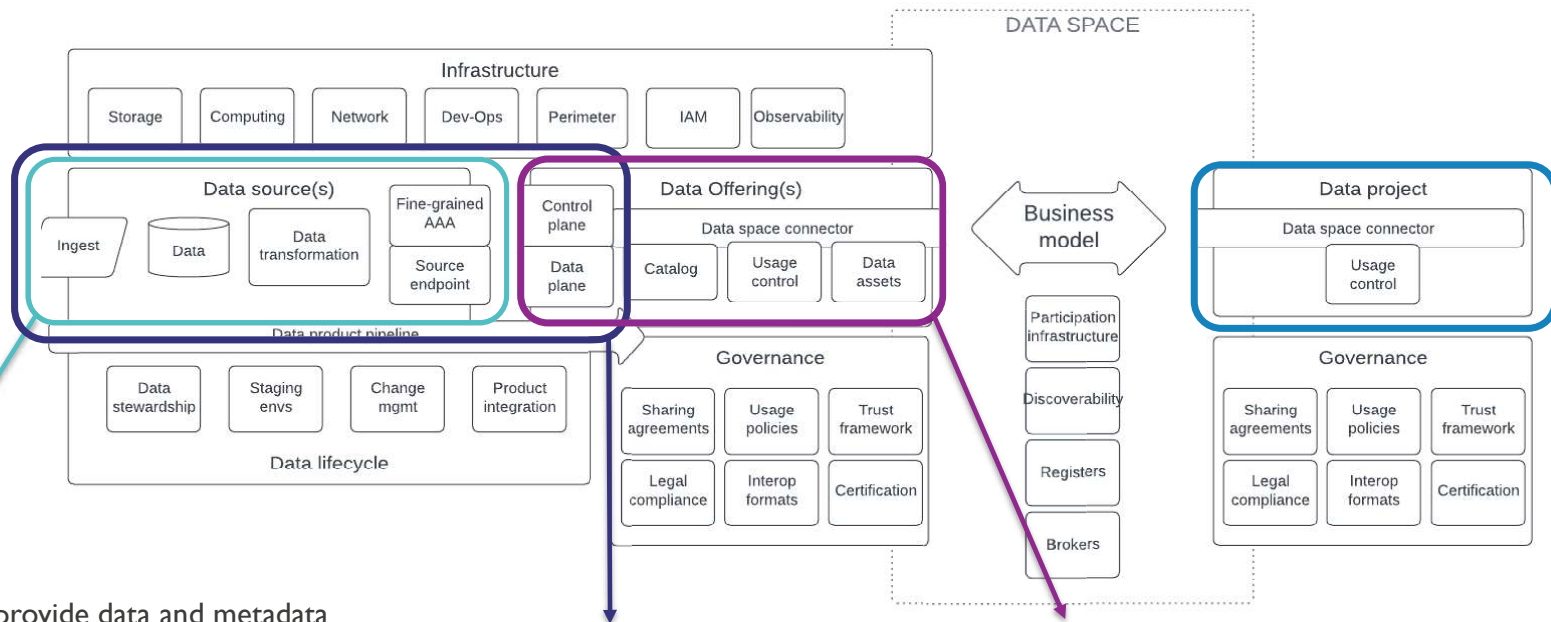Survey the expectations of the data space participants

Stimulate a 'data space state of mind' in the implementation sites

Identify relevant technologies, data sharing protocols and access control mechanisms in implementation sites

By using data space
core concepts

Data sources provide data and metadata in its final form, but they are not yet integrated in the governance of the data space.

e.g., Real-time position of bus A on the server of the transport authority of Amsterdam

A **data product** is a standardized data unit that packages relevant data resources and improves the utility of data by providing metadata, related policies, and support elements in the same package.

e.g., 100 data sources on the real-time positions of all 100 buses in Amsterdam going 1 year back in time, GTFS-RT compliant and in Protobuf format.

A **data product offering** defines how the data product is offered to the data space. The data space connector implements the data offering, and handles usage control, formats, data assets publication, data asset catalogue etc.

e.g., the real-time positions of all buses in Amsterdam can be freely accessed by Dutch researchers if their credentials are verified by ORCID. They may use the data for research only and must use a specific citation in publications. This data will be transferred to an S3 file storage bucket that can be accessed by the researcher.

Data projects offer value for the end users of the data space use cases i.e., business apps, training models etc.

e.g., A researcher of UvA will use the data to analyze the air quality in Amsterdam

Canvas design

DATA PRODUCT OFFERINGS   GOVERNANCE   BUSINESS MODELS & STAKEHOLDERS   DATA SPACE FEDERATION

2. Data Product Offering

Background	The data product offering is the implementation of the data product in the deployEMDS and determines how a data product becomes a data asset. The data offering could be implemented in the data space connector, and handles usage control, formats, data assets publication, data asset catalogue, ... In other words, it defines how the data product is offered to the data space. The information we request here might not be immediately available during the intake phase of the project, but many "horizontal components" of the deployEMDS data space depend on these answers. Our main goal is to define a prioritised roadmap for implementing data products in the data space.

| No	Question to be answered	Answer	Example answer	Context	Canvas reference
1	Can you provide a name for your data product offering?		*Multimodal Traffic Counts*	Define/specify the data product offering being analysed in this sheet.	Do0
2	Can you provide a functional description of your data product offering?		*"Multimodal Traffic Counts" is a data product offering designed to provide comprehensive, integrated traffic data across various modes of transportation for traffic managers, city administrations, researchers, and other stakeholders.*	Functional description of the data product offering.	Do4
3	What is the scope of the data offering in terms of transport modalities?		*Truck, car, bicycle, pedestrian*	Used for grouping and quantitative analysis.	Do3
4	What is the geographical data product offering scope?		*Flanders*	Used for grouping and quantitative analysis.	Do3
5	What is your data product offering type?		*3) For a federated data space structure, we provide an intermediary service to link VSDS with EMDS*	1) The data owner publishes the data product offering in the data space (without intermediary service) 2) The data owner onboards the data product on an intermediary offering 3) You are yourself a data intermediary (see glossary)	Do1
6	What are the data sources that will use this kind of data product offering?		*FI.01.01 - FI.01.09*	A data product offering can be an aggregation of more than one data source (and a data source can have multiple data product offerings), therefore it's best to standardise the data product offering in a way that it can be reused. To answer this question, please refer to the dataset Nr. in the overview excel.	

3. Data product governance

Background	The information in this section will help identify standard practices in data management and product compliance, including industry/domain standards and governance models relevant for various use cases. Data product owners should outline their trust-building processes, which will guide our decision on supporting identity management and data sovereignty, and to see if a fully managed trust model is needed by the data space.

| No	Question to be answered	Answer	Example answer	Context	Reference
13	Which data model (if any) would you like to use?		*OSLO Verkeerstellingen, MobilityDCAT-AP*	This question refers to the desired conformity of the data sources. Possible answers are for example: OSLO, MMTIS, MDS, DATEX-II, TOMP, GTFS, GTFS-RT, NeTeX, ... or none.	Dp1
14	Are there any requirements for authentication and identification of participants?		*Participants registered to VSDS must be able to claim EMDS data products without re-registering. If they are Flemish citizens, their identity must be linked to 'Mijn burgerprofiel'.*	We need to know if participants are bound to specific identity management governance or processes and verifications when they want to use the data product. Think of claims participants could need, specific identity standards they must adhere to (e.g., EIDAs), domain registries that can identify them (e.g., a company registration registry). Which certification bodies and identity providers are involved?	Dp5
15	Are there any requirements for access control to the data product?		*Participants that want to access the data product should prove they are European citizens or companies with a primary seat in a European country.*	We need to know which claims can be verified by which trust anchor.	Dp6
16	Self asses your data product governance maturity.		*3: up until now only open data in the VSDS, so little experience with governance, but the team agrees on the roadmap.*	We would like you to think carefully about the maturity of the data product governance and to indicate this on a scale from 1 (not discussed yet) to 5 (all partners agree on the roadmap). Please also elaborate on why you chose this number. This self-assessment will allow us to identify mature and early-stage components of the data product offering. The results can be used to prioritise certain building blocks, organise training, cluster	

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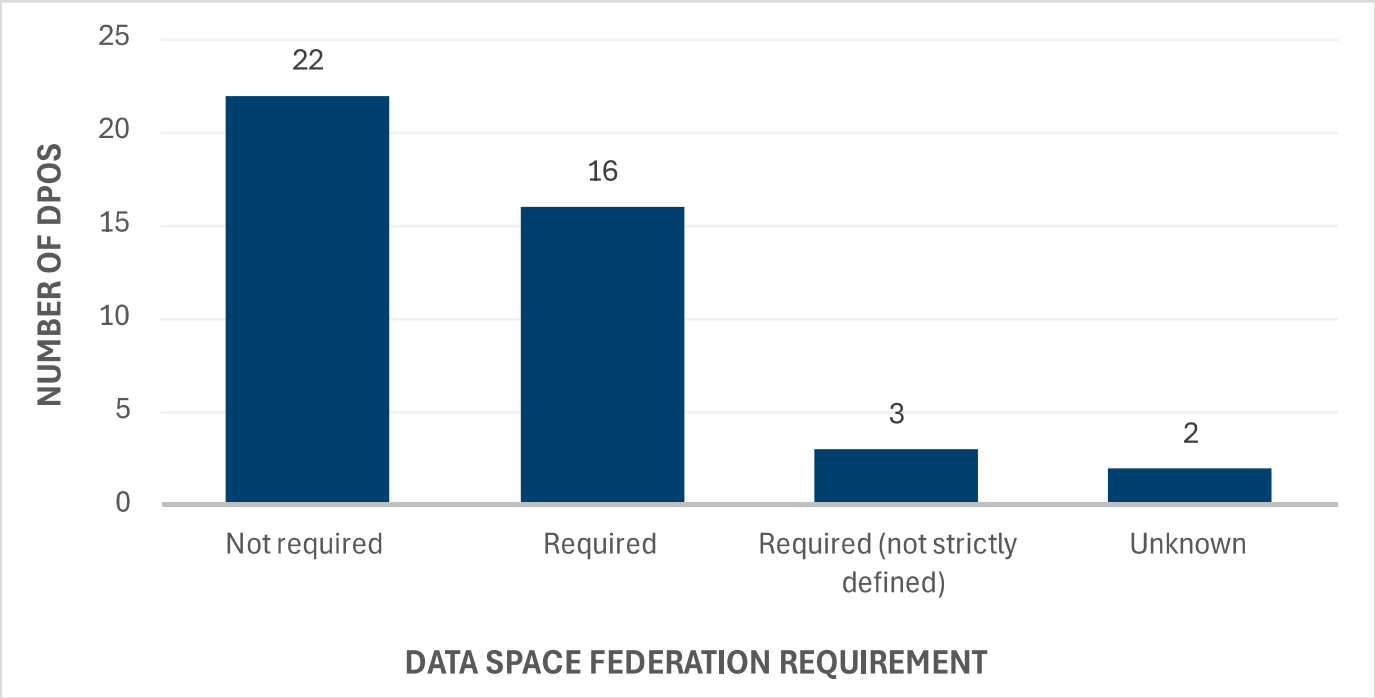
What are we dealing with?
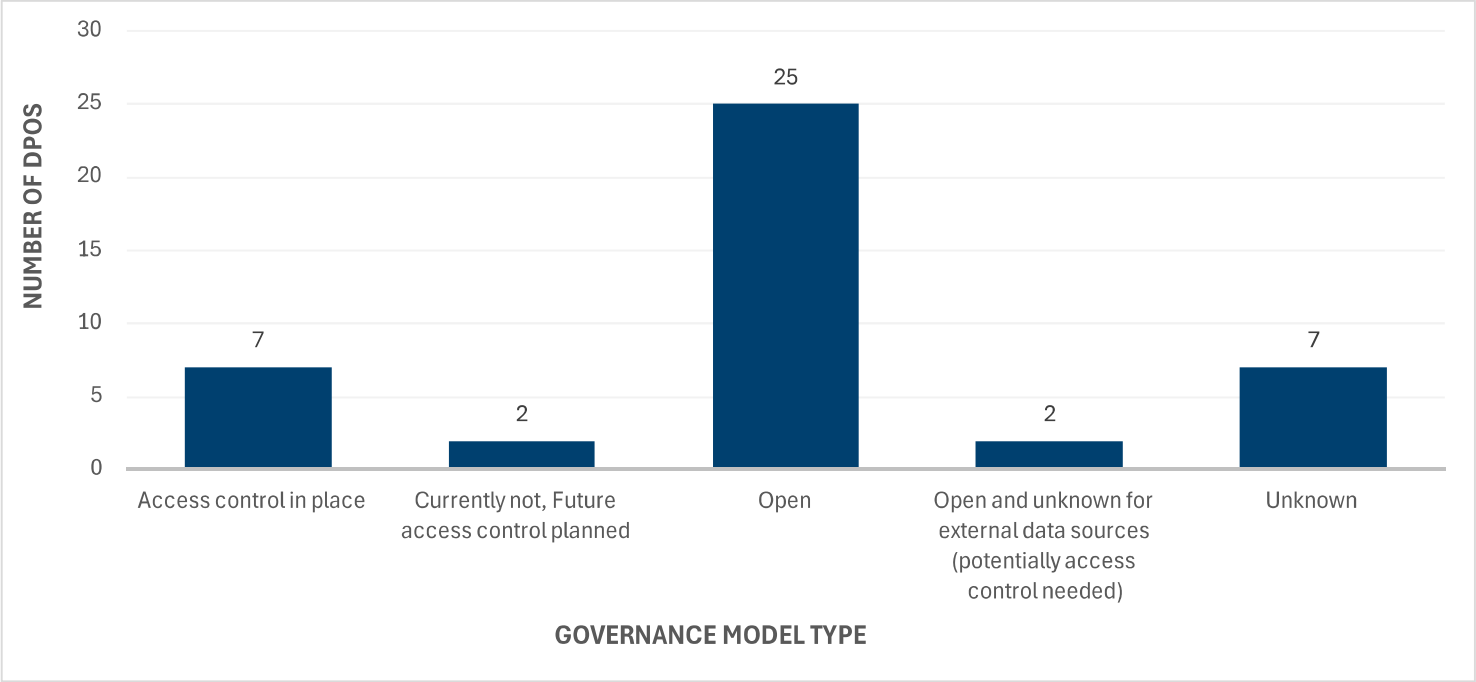
A lot of open data

What are we dealing with?
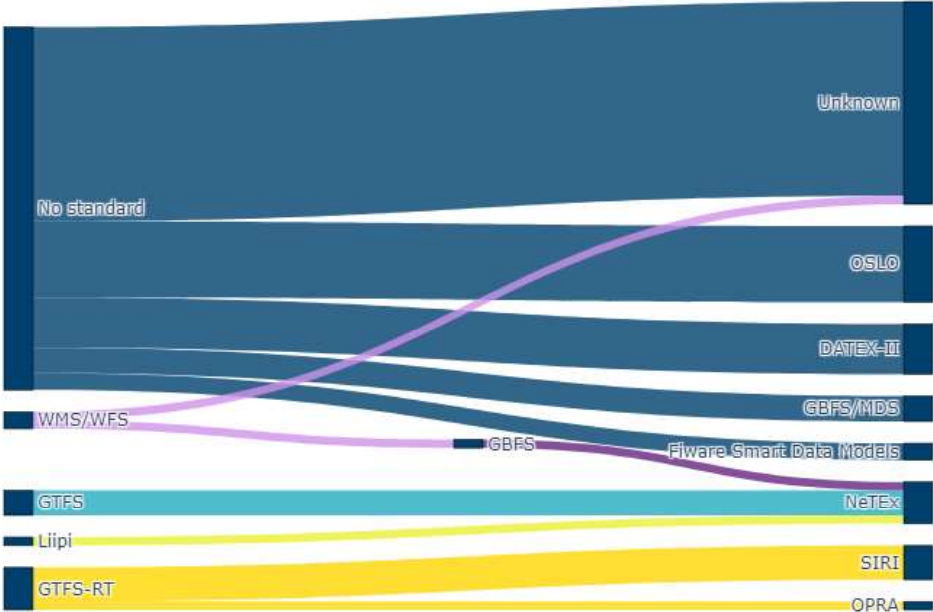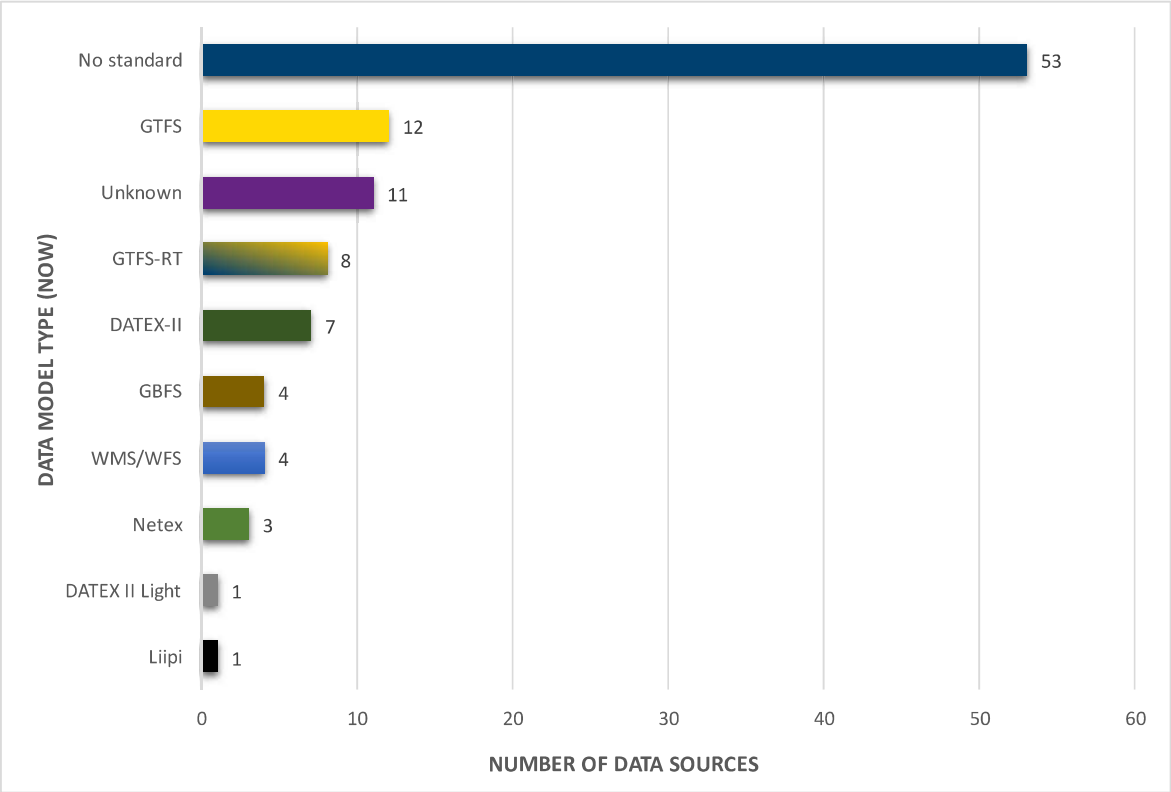
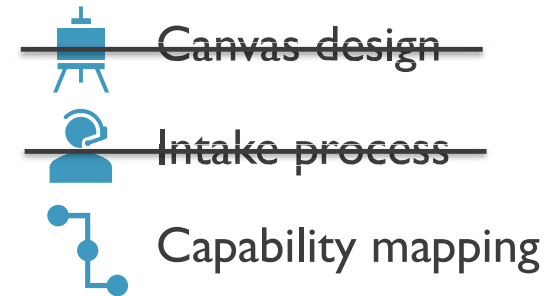Little standardization (for now)

What are we dealing with?

Many local data spaces

2. Data Product Offering

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Steps

- ~~Canvas design~~
- ~~Intake process~~
- Capability mapping

DSSC Blueprint 1.0

Blogpost authors: Géraud Guilloud, Mirjam Huis in 't Veld Tonia Sapia and Clara Pezuela.

DATA SPACES SUPPORT CENTRE

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Technical specifications report

Goal

Methodologically assess several data space

technology stacks

Check

- Can they meet the requirements?
- Maturity
- Implications of using them
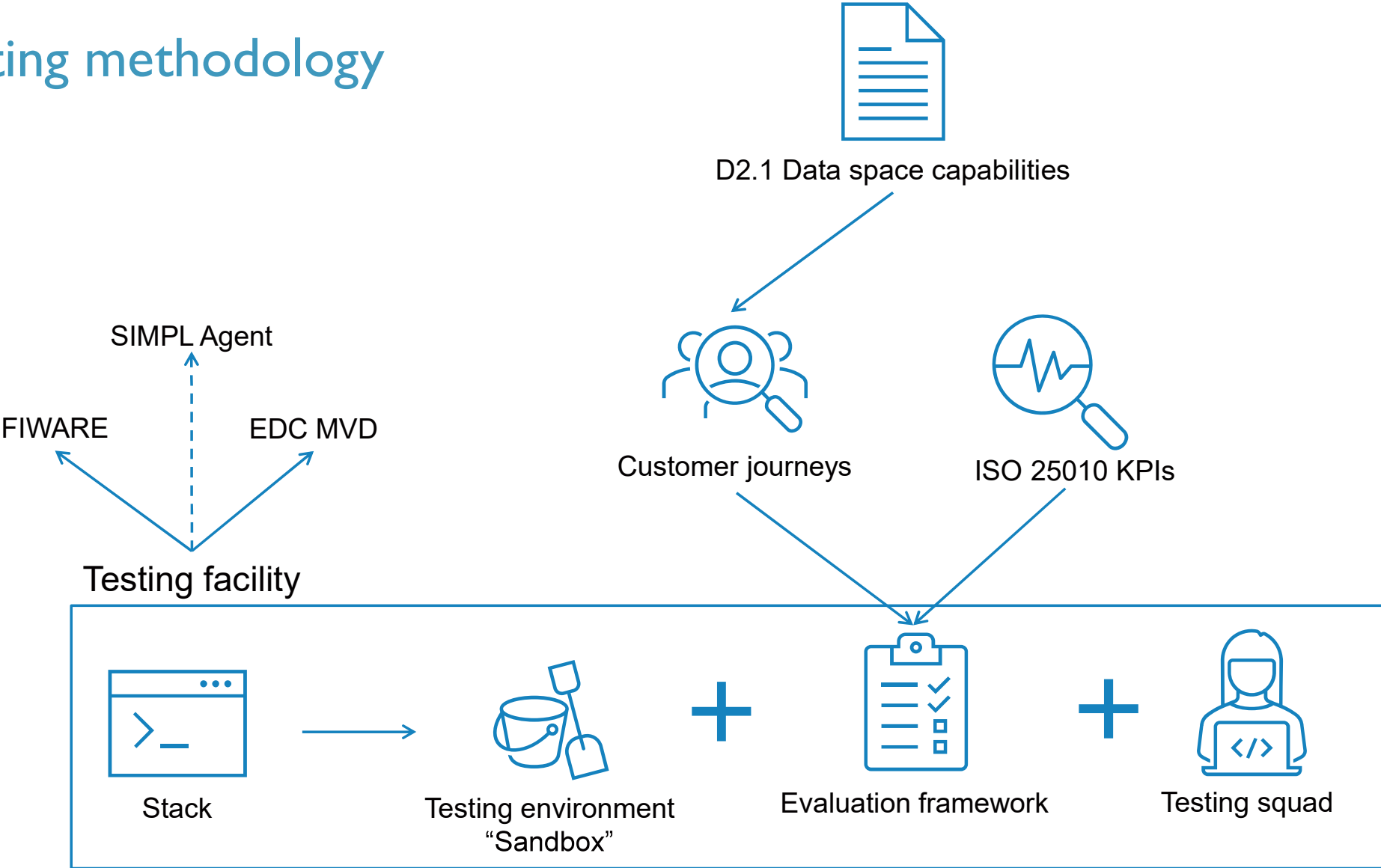- Gap analysis

Steps

Software KPIs

Customer journeys

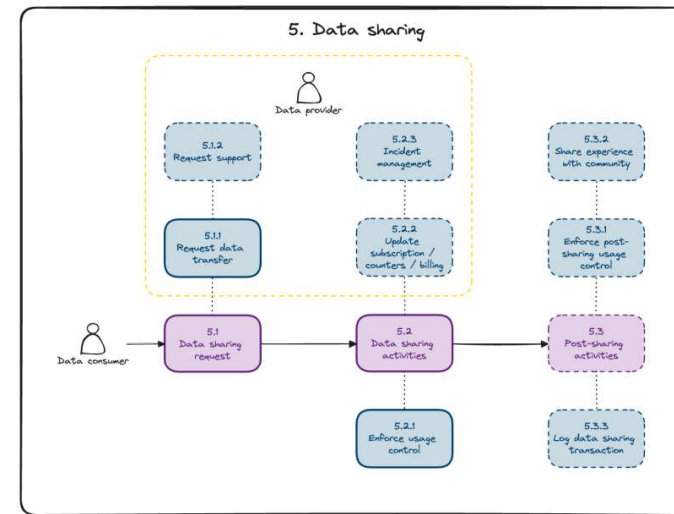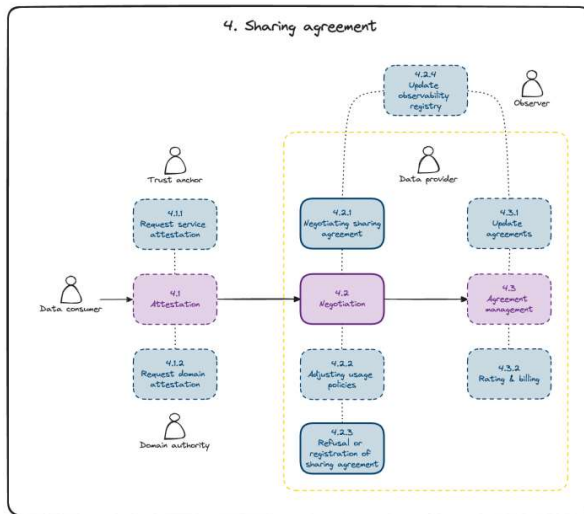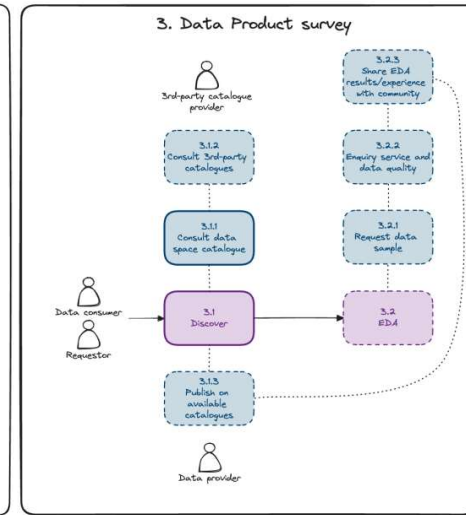Evaluation framework

Testing facility execution

Gap analysis

Testing methodology

D2.1 Data space capabilities

SIMPL Agent

FIWARE   EDC MVD

Customer journeys   ISO 25010 KPIs

Testing facility

Stack   →   Testing environment "Sandbox"   +   Evaluation framework   +   Testing squad

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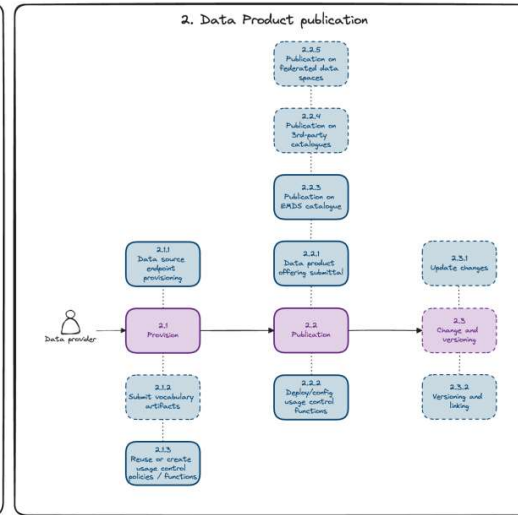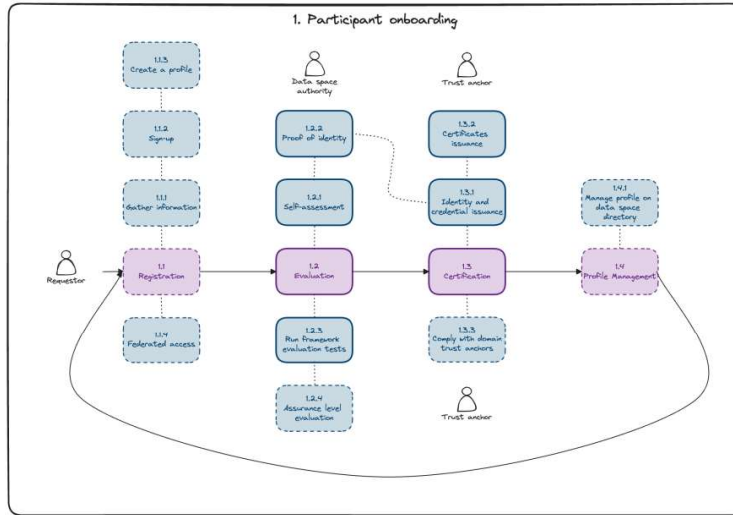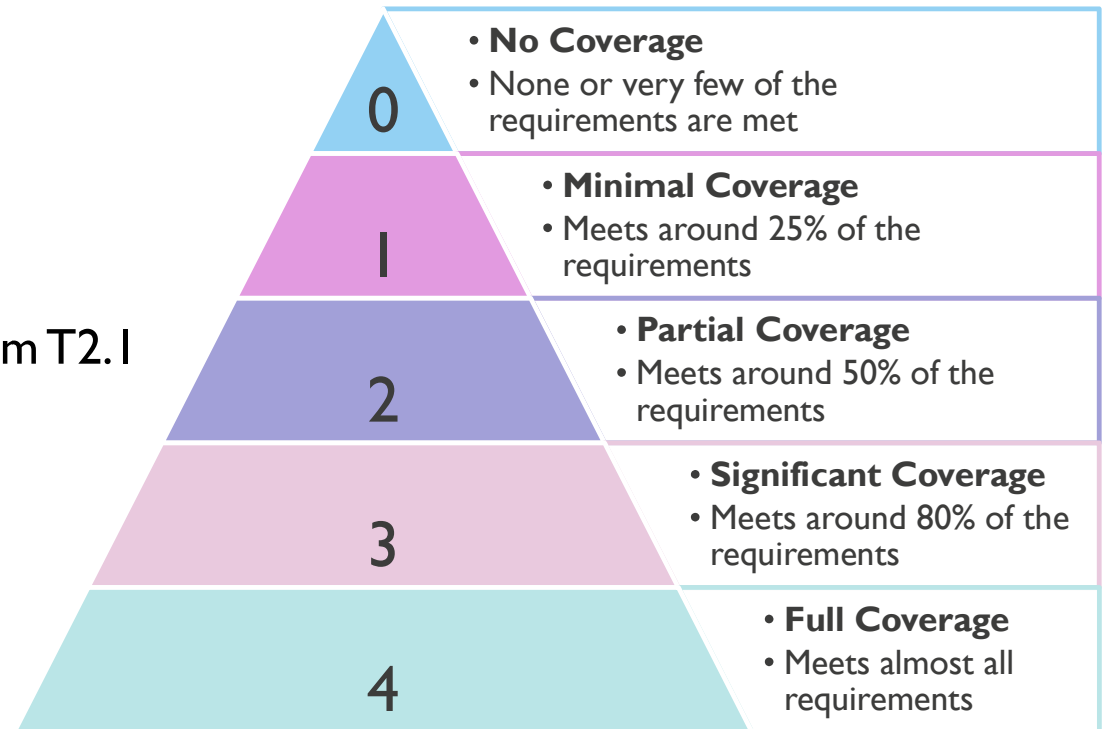
Customer journeys

Evaluation

How did we evaluate the data space software stacks?

- 22 minimal tests completed
  - Prioritized based on requirements from T2.1
- Uniform grading scale

0 — No Coverage — None or very few of the requirements are met

1 — Minimal Coverage — Meets around 25% of the requirements

2 — Partial Coverage — Meets around 50% of the requirements

3 — Significant Coverage — Meets around 80% of the requirements

4 — Full Coverage — Meets almost all requirements

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Results
The summary at least

- EDC covers **most necessary components** for our MVDS and early deployment

- FIWARE offers **stronger performance** for the available components, but complicated set-up and a lot is **missing**

- **None** of the stacks **fully meet** the technical requirements

- **EDC** is recommended for implementation sites that cannot wait for the evaluation of **SIMPL**

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Next steps

Specify development plan to fill the gaps

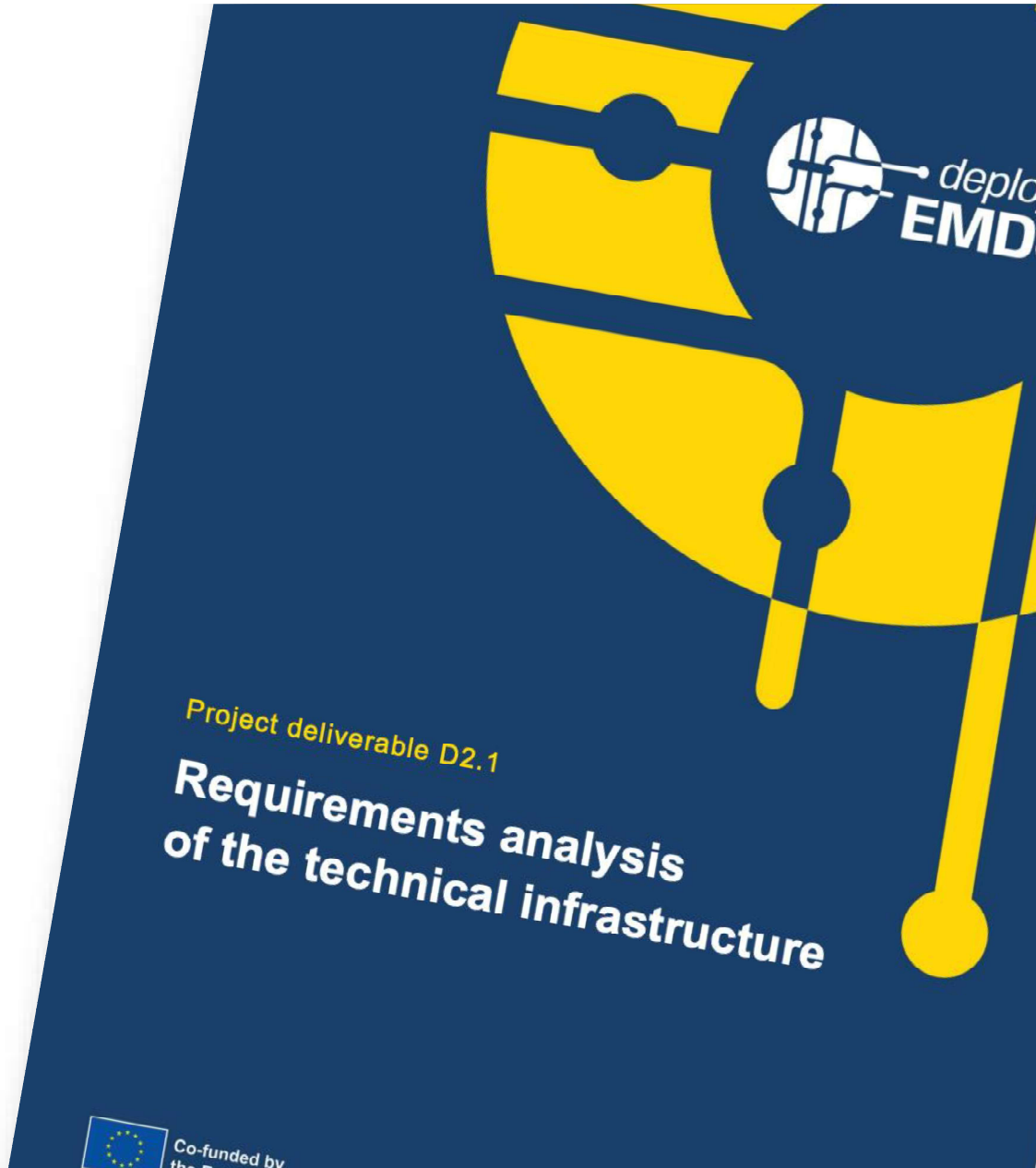Implement the necessary data space building blocks

Deploy and operate the data spaces

Want more?

+ D2.3 Technical specifications report _soon_!

https://deployemds.eu/wp-content/uploads/2024/05/D2.1-Requirements-analysis-of-the-technical-infrastructure-3.pdf

Project deliverable D2.1

Requirements analysis of the technical infrastructure

Co-funded by
the E...

Contacts

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