DSSC Insight Series

The Data Spaces Blueprint

Version 0.5

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DATA SPACES

SUPPORT CENTRE

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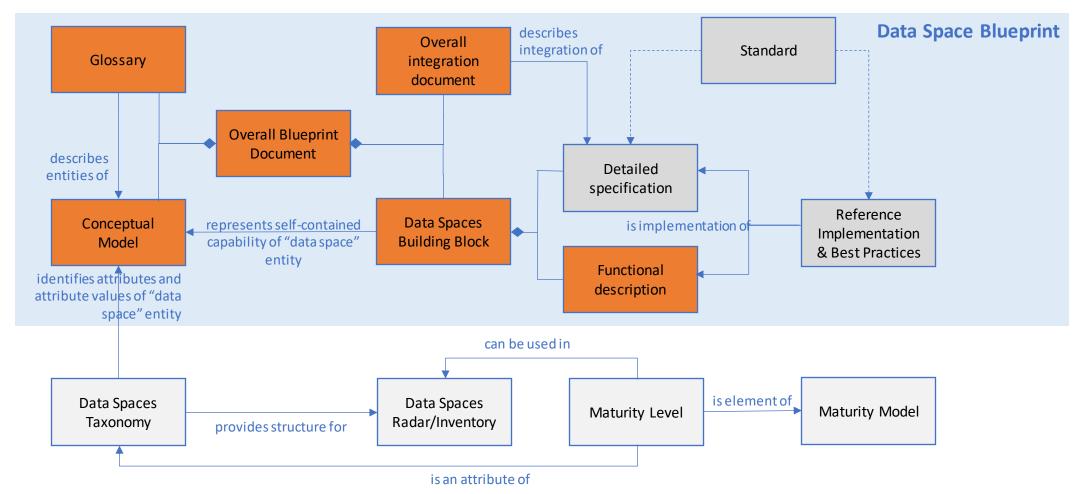
Introduction

By Boris Otto



DSSC Asset Model







Blueprint Benefits

DATA SPACES
SUPPORT CENTRE

- Shorter Time-to-Value
- Reduced Project Risks
- Common Language





Blueprint for Data Spaces



Get to a higher flight level





 Enable data space initiatives to focus on their business & societal objectives

 Build on common standards which are applicable for all data spaces

Provide options/templates to choose from

Create a bigger market





 Provide technology providers with a bigger market

- Economies of scale through standardisation
- Network effects & additional value

Enable collaboration





Enable data space initiatives to work together

- Enable organisations to easily join multiple data spaces
- Maintain data sovereignty

How did we do this?



- Work with sectorial data space initiatives in the Digital Europe programme through our Community of Practice
- Work with key technology & standardisation initiatives in Europe (IDSA, FIWARE, Gaia-X, MyData, BDVA, ...)
- Expert groups, thematic groups
- Bring together needs, available solutions & best practices
- Build on existing materials (e.g. OpenDEI)

How will we move forward?

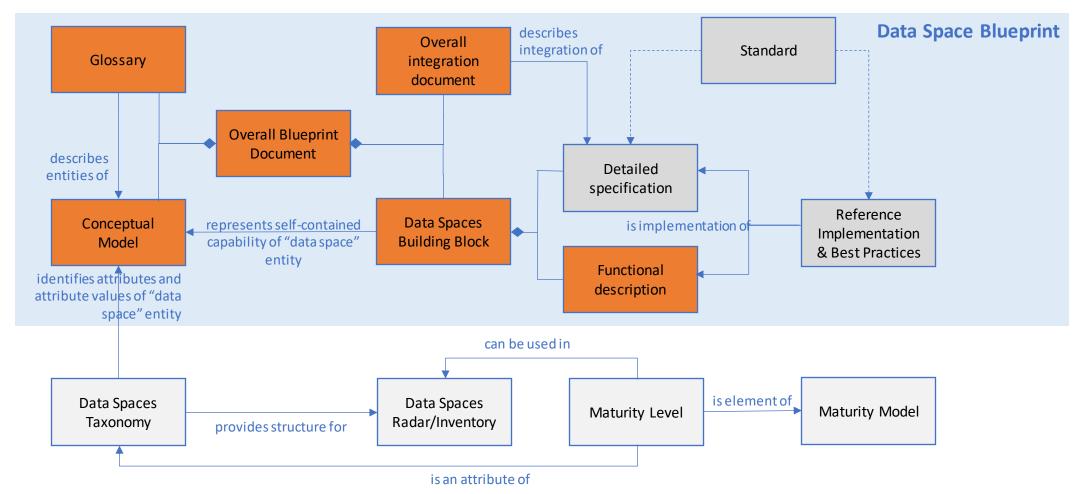


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- Expert groups, thematic groups
- Bring together needs, available solutions & best practices
- Build on existing materials (e.g. OpenDEI)
- Identify further needs, gaps and solutions in a dialogue with you
- Working from 0.5 (today) → 1.0 (March 2024)



DSSC Asset Model









Glossary & Conceptual Model



Glossary – Core Concepts



Glossary

- DSSC Glossary | Version 2.0 |
 September 2023
- Introduction
- 1. Foundation of the European data economy concepts
- · 2. Core Concepts
- 3. Data space use cases and business model
- · 4. Evolution of data space initiatives
- 5. Data space intermediaries and services
- · 6. Data products and services
- 7. Interoperability
- · 8. Data policies and contracts
- 9. Identity and trust
- · 10. DSSC-specific terms
- DSSC Glossary | Version 1.0 | March 2023

2. Core Concepts

Last updated 12 days ago

This section contains the most essential terms to express what data spaces are, and it offers a starting point for defining the governance frameworks for data space initiatives. A common understanding of these core concepts is critical for the convergence and interoperability of different data space architectures and -initiatives. The list of core concepts is intentionally limited to the minimum. The relationships between the concepts are displayed in the DSSCs conceptual model of data spaces.

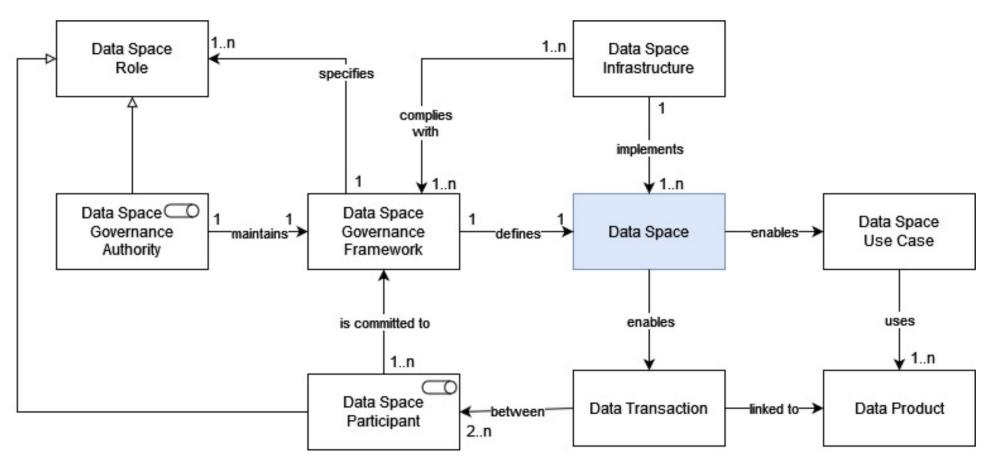
The parties engaged in **data sharing** need reassurance that their data is used in ways they can accept and that the data they need from others will have the promised qualities. To practically enable such trustworthy **data transactions**, groups of **parties** may organise themselves **as a data space initiative** (see section 4. Evolution of data space initiatives) and start deploying and maintaining a **data space**. A data space is defined by a **data space governance framework** and implemented by one or more interlinked **data space infrastructures**. The **data space governance authority** creates and maintains the **governance framework** that all **data space participants** must commit to. The data space creates value for its participants (and for the economy, society and environment) through data **space use cases** by enabling easy, secure and trustworthy data transactions.

Term	Description
Data space	A distributed system defined by a governance framework that enables secure and 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 .
Data space participant	A party that has committed to the governance framework of a particular data space and may have one or more roles in it.
Data space role	A distinct and logically consistent set of responsibilities within a data space , that encompass associated rights and duties required to perform specific tasks, and that are designed to be fulfilled by one or more participants .



Conceptual Model 1 – Base Level





Conceptual Model 2 - Outlook



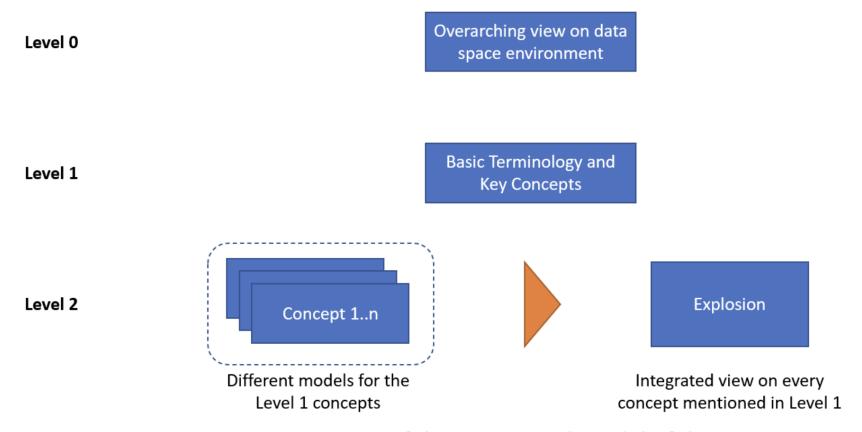


Figure A.5 Structure of the conceptual model of data spaces.



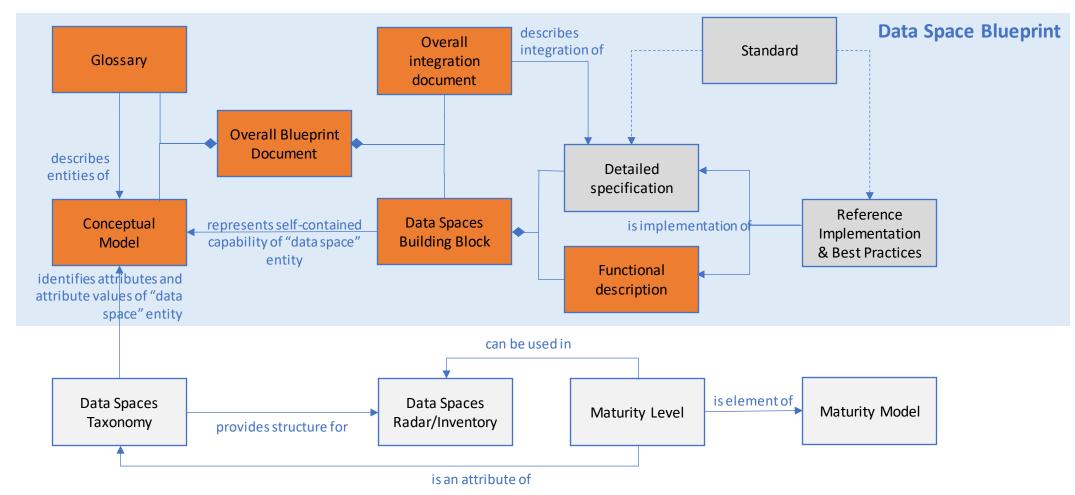


Data Spaces Building Blocks



DSSC Asset Model







Building Blocks for Data Spaces





- "A basic unit or component that can be implemented or a capability that can be deployed and combined with other building blocks to achieve the functionality of a data space"
- Key capabilities needed in data spaces
- Not (just) a software-component that you can download and install!
- Two categories of building blocks:
 - (1) business, governance and legal
 - (2) technical



Building Blocks (BBs)



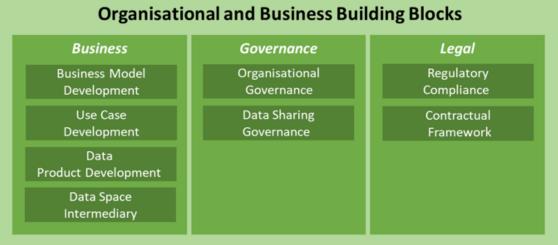
Organisational & business building blocks

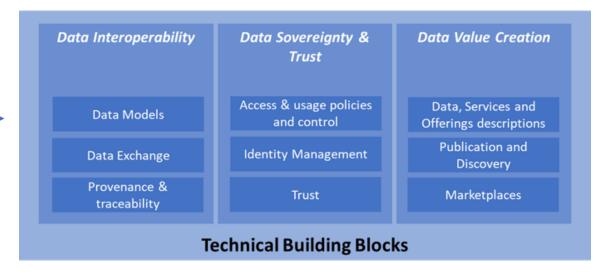
Describe capabilities on a business, governance and legal level.

Technical Building Blocks

Describe capabilities on a technical level about:

Data Interoperability
Data Sovereignty & Trust
Data Value Creation







Organisational and Business BBs - Business



Business model Development

• Supports a data space in developing its business model by guiding in decisions about: Participants (e.g. customers), Value propositions, Data space revenue model, Data space cost model. Data space operations (e.g. services in-house or outsourcing)

Essential concepts in Data

Space Business modelling

Use Case Development Provides a strategic approach to strengthen the value of a data space by fostering the creation, support and scaling of use cases.

Data Product Development • Provides data product templates for the data providers, data space governance rules and stimulates network effects between data providers and users.

Data Space **Intermediaries** Provides data space enabling services to the data space governance authority and participants such as identity, observability, catalogue, and connector services.



Organisational and Business BBs - Governance



Data space-level governance

Organisational Governance

• Guides setting up the data space governance authority by; identifying key decision points and options for establishing inclusive governance and transparent rules and roles.

Data sharing Governance • Supports the governance authority in establishing common rules that promote effective and reliable data sharing processes and introduces different ways to organise data transactions within a data space.



Organisational and Business BBs - Legal



Guidance and resources to ensure legal compliance & a robust contractual framework

Regulatory Compliance • Provides awareness of the legal landscape and an assesses regulatory requirements to ensure legal compliance and alignment with EU values.

Contractual Framework • Establish clear and enforceable rights and obligations for data space participants and provides contractual resources for data space participants to regulate their data transactions.



Building Blocks (BBs)



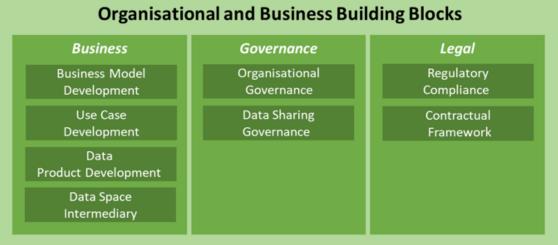
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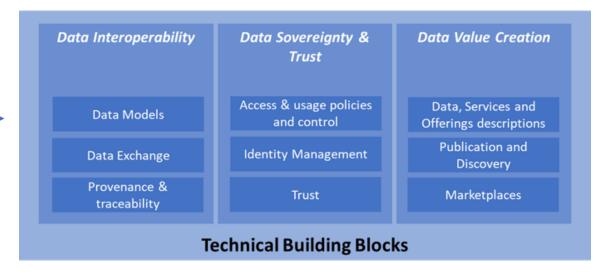
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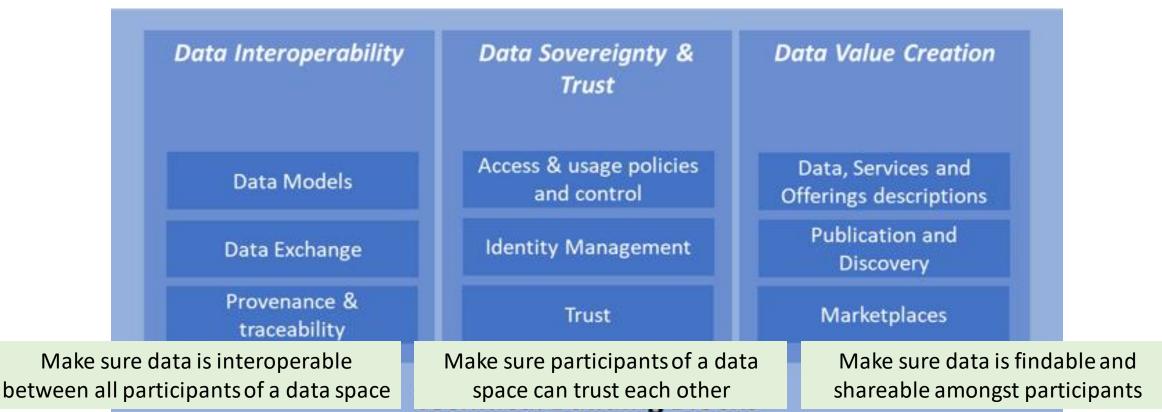






Technical building blocks

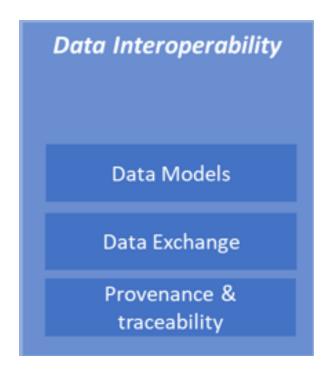






Technology - Data Interoperability





- Capabilities needed for the exchange of data: (semantic) models, data formats and interfaces (APIs)
- DSSC will not prescribe these (→ domain specific)
- Focus on approaches to set this up
- Vocabularies
- Vocabulary hub
- Mapping data models → formats + APIs for data exchange

Technology - Data Sovereignty & Trust



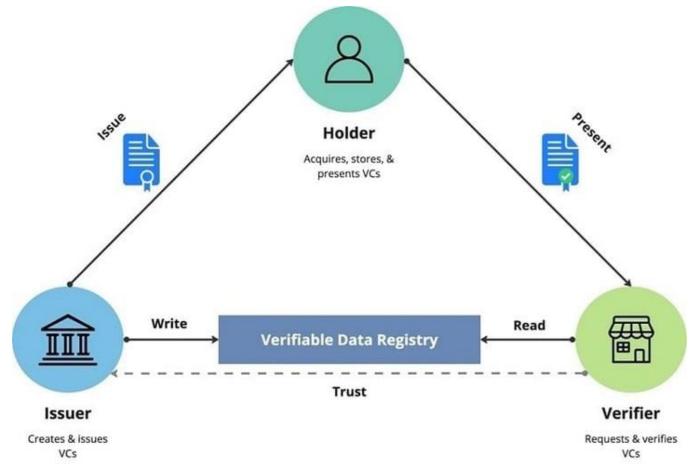


- Capabilities needed for
 - the identification of participants and assets
 - the establishment of trust
 - defining and enforcing policies for access and usage control

Leveraging W3C Verifiable Credentials







Trust Anchor

- Using W3C VC/VP for identification of data space participants
- Using W3C VC/VP for validating claims
- Provide more examples and architectural guidance
- Link to business & organisation building blocks
- Link to conceptual model



Leveraging ODRL for data access & usage policies



```
W3C standard for
                                                expressing digital rights
                                                                 structure
"@context": "http://www.w3.org/ns/odrl.jsonld",
"@type": "Agreement",
"uid": "http://example.com/policy:1012",
"profile": "http://example.com/odrl:profile:01",
                                                                 SSC
"permission": [{
                                                                  for use in
    "target": "http://example.com/asset:9898.movie",
    "assigner": "http://example.com/party:org:abc",
    "assignee": "http://example.com/party:person:billie",
                                                                  ing blocks
    "action": "play"
} ]
                                                                 erational
```

Technology - Data Value Creation





- Enable value-creation in a data space
- Register and discover data offerings or services
- Provide marketplace functionality
- Enable monetisation of data sharing

 Capabilities will depend on data space specific business & governance models

Leveraging DCAT v3



Resource

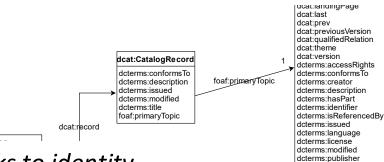
cat:qualifiedRelation

dcat:Relationship

d...

dcat:hadRole

dcterms:relation



- Links to identity
- Links to vocabularies
- Links to policies
- Bundling of resources in a catalogue

dcat:contactPoint dcat:hasCurrentVersion dcat:first dcat:hasVersion dcat:keyword dcat:landingPage dcat:last dcat:prev dcat:previousVersion dcat:qualifiedRelation dcat:theme dcat:version dcterms:accessRights dcterms:conformsTo dcterms:creator dcterms:description dcterms:hasPart

dcterms:identifiers

dcterms:language

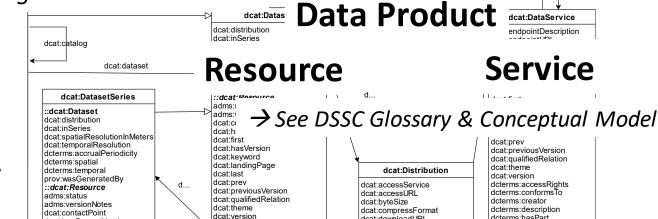
dcterms:issued

dcterms:license

dcterms:modified

dcterms:publisher

dcterms:isReferencedBy



dcterms:relation

dcterms:replaces dcterms:rights

prov:qualifiedAttribution

dcterms:title dcterms:type odrl:hasPolicy



- W3C standard for data catalogues
- Building on EU open data experience
- Already integrated in several technology initiatives

Implementing technical building blocks

traceability

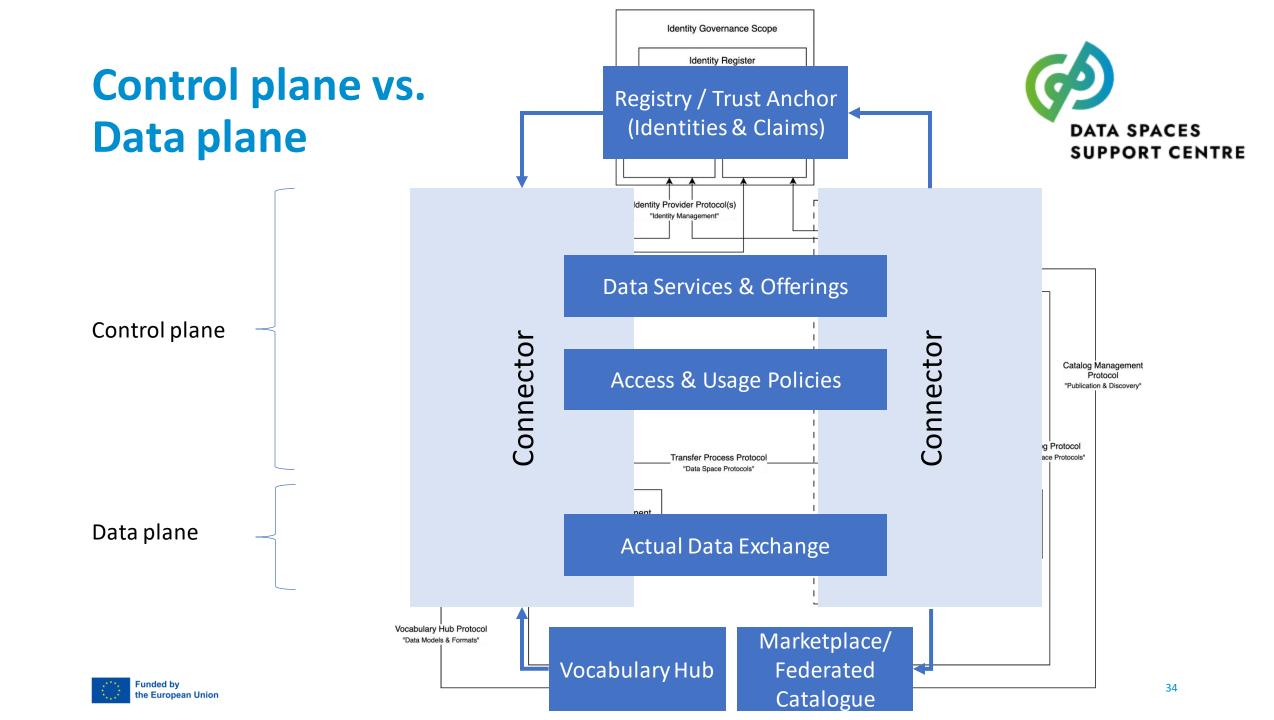


Components for each Shared services Data Value Creation participant in a data Data Interoperability Data Sovereignty & in a data space Trust space Access & usage policies Data, Services and Data Models and control Offerings descriptions Federated services **Data Space** Publication and **Identity Management** Data Exchange Connector Discovery Provenance & Marketplaces Trust

Registries for identifying participants & claims

Technical Building Blocks

Data Space Registry



Moving forward



 Continuous dialogue with our Community of Practice & Strategic Stakeholder Forum

- Extending specifications, providing best practices
- Working with industry partners (e.g. Data Spaces Business Alliance) on technological convergence
- Building a toolbox



<u>www.dssc.eu</u> → knowledge base → blueprint (**)





Data Spaces Blueprint | Version 0.5 | September 2023

Voor het laatst bijgewerkt op 2 dagen geleden

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 **concep** reference implementations identified in the **data spaces standards and technologies landscape**.

- Introduction
- · Blueprint as part of the asset-based approach
- · Blueprint structure: building blocks and specifications
- · Conceptual model of data spaces
- DSSC Glossary
- · Timeline of the Data Spaces Blueprint
- Feedback
- · Reading guide

Introduction

Data spaces enable a fair data economy in the Single European Market in which data can be exchanged and shared for the benefit of ecosystems while protecting the interest of individual parties regarding data so economy to harness the societal value of data, and to ensure Europe's global competitiveness and data sovereignty.

Through the Digital Europe Programme, the European Commission is investing in common European data spaces in strategic economic sectors and domains. This blueprint targets emerging data spaces and suppcexperts, developing data sharing technologies, standards, legal and governance frameworks, and innovative business models.

A data space is 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 implem might entail traffic management in smart cities, end-to-end intermodal mobility services as well as detailed traffic infrastructure monitoring. In data spaces, compliance to legal provisions regarding the management

Creating a data space entails activities at the governance, business, and technical levels. Addressing all three levels, the Data Space Blueprint aims at designing new data spaces, evaluating existing data spaces, and

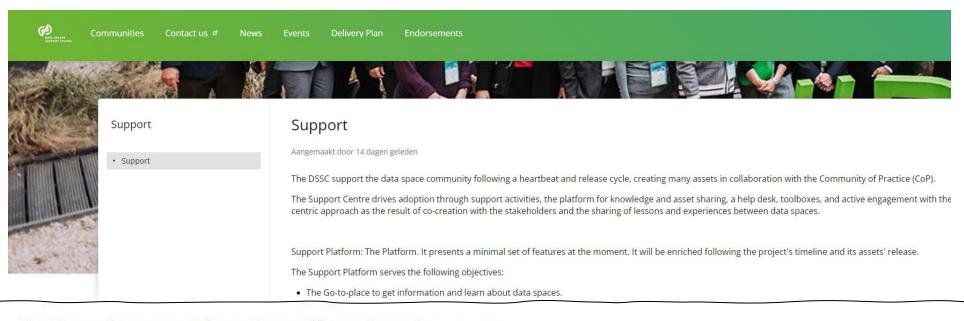
Blueprint as part of the asset-based approach



Blueprint

 Data Spaces Blueprint | Version 0.5 | September 2023

<u>www.dssc.eu</u> → support



- The Go-to-place to get information and learn about data spaces.
- Access point to join the co-creation process of the data spaces blueprint and other assets supporting the realization of data spaces.
- An entry point to organize the support by data spaces experts (in priority for data spaces funded under the Digital Europe Programme).
- For support requests please reach out via the Help Desk https://dataspacessupportcentre.atlassian.net/servicedesk/customer/portal/5



DATA SPACES

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Q&A