DSSC Insight Series

DATA SPACES SUPPORT CENTRE

The Design Principles and Blueprint v.1.5

24 October 2024 | 16:00 to 17:30 CET | online

Prof. Boris Otto
Fraunhofer ISST

Matthijs Punter
TNO

Claire Stolwijk
TNO

Rafiqul Haque
NUI Galway

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DATA SPACES SUPPORT CENTRE

- **Intro** – Prof. Boris Otto, DSSC Project Coordinator, Fraunhofer ISST
- **The Blueprint v.1.5** – Matthijs Punter, Researcher Data Ecosystem, TNO & Claire Stolwijk, Principal Consultant, TNO
- **The Data Spaces Design Principles** – Rafiqul Haque, Research Fellow, National University of Ireland Galway
- **Q&A (You can also ask questions in the chat!)**

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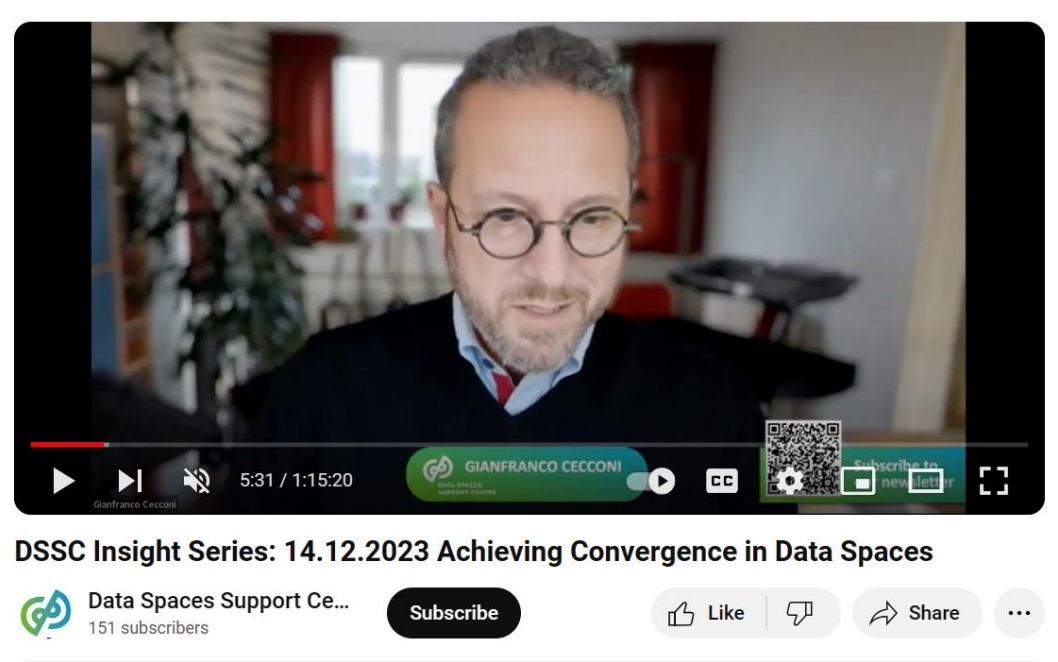

DATA SPACES SUPPORT CENTRE

This webinar is recorded. Did you know? Previous DSSC insight series recordings are available on our Youtube channel. Videos from our annual event are also available!

Check out our YouTube channel here

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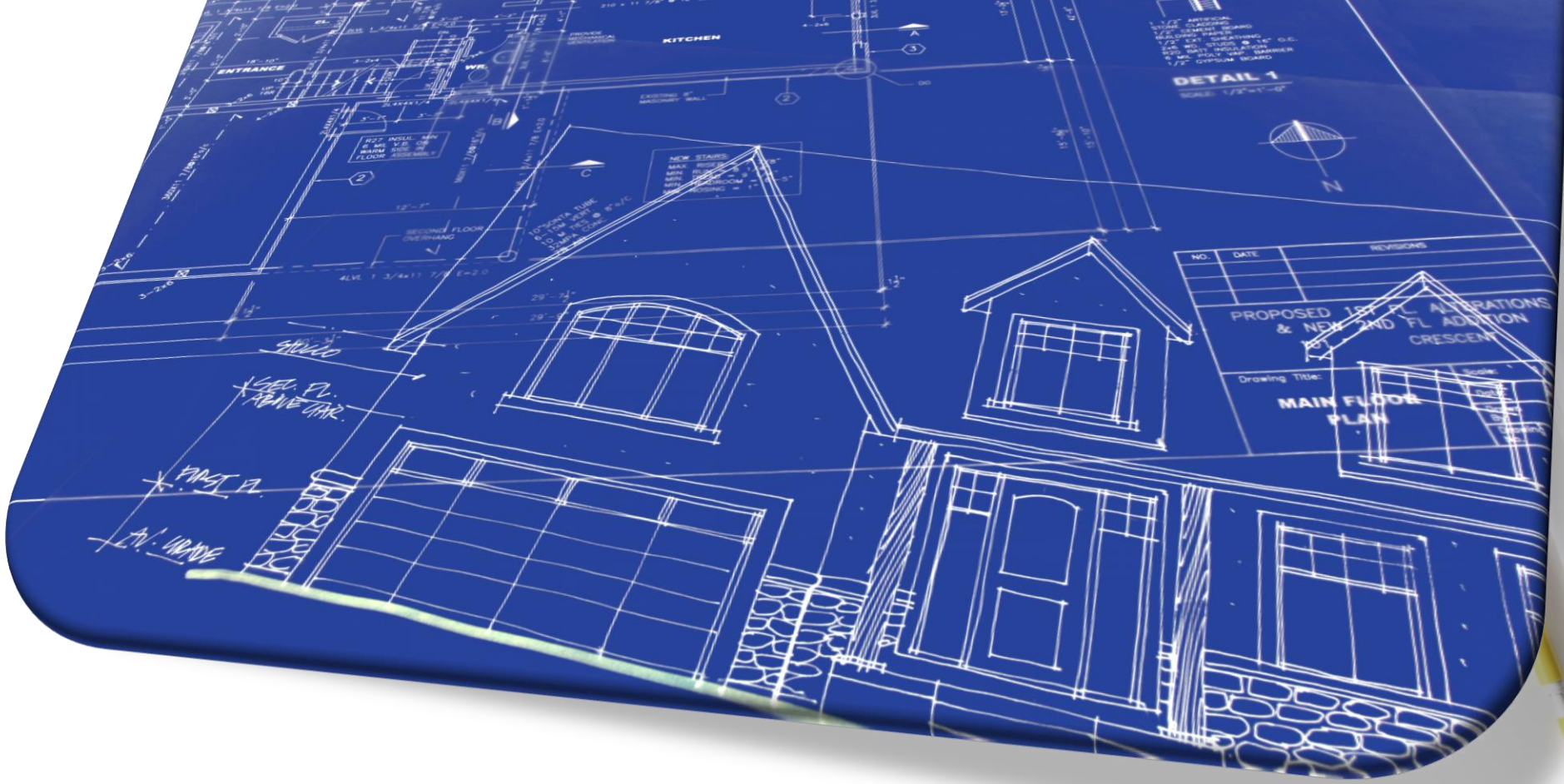

Blueprint for Data Spaces

Version 1.5

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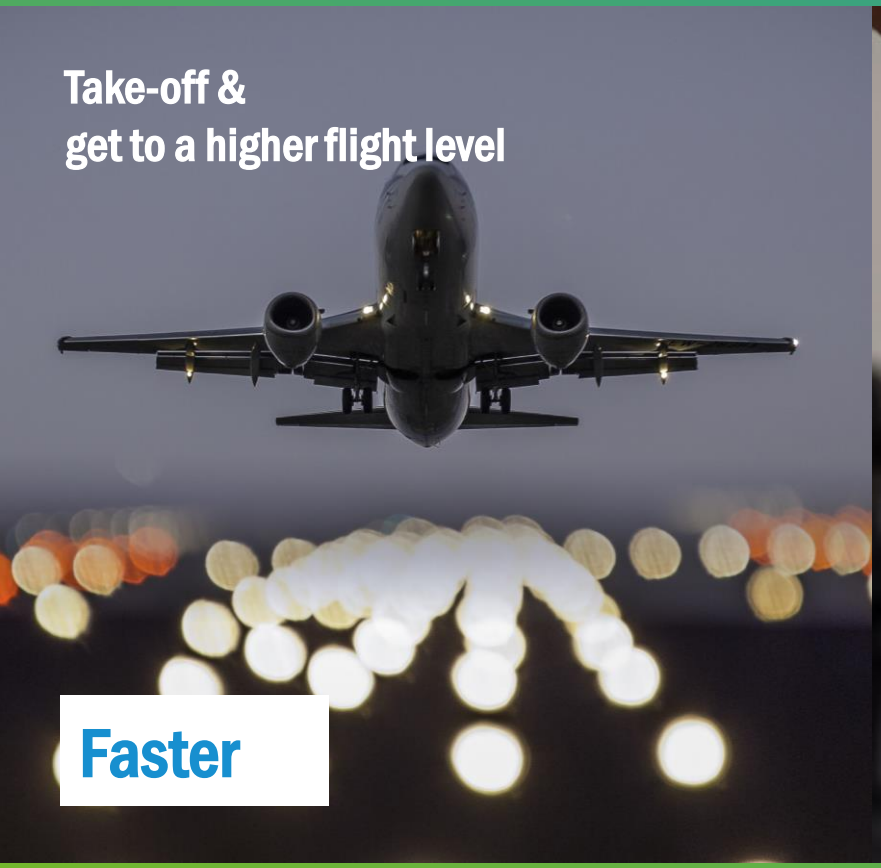
Why a Blueprint for Data Spaces?

DATA SPACES SUPPORT CENTRE



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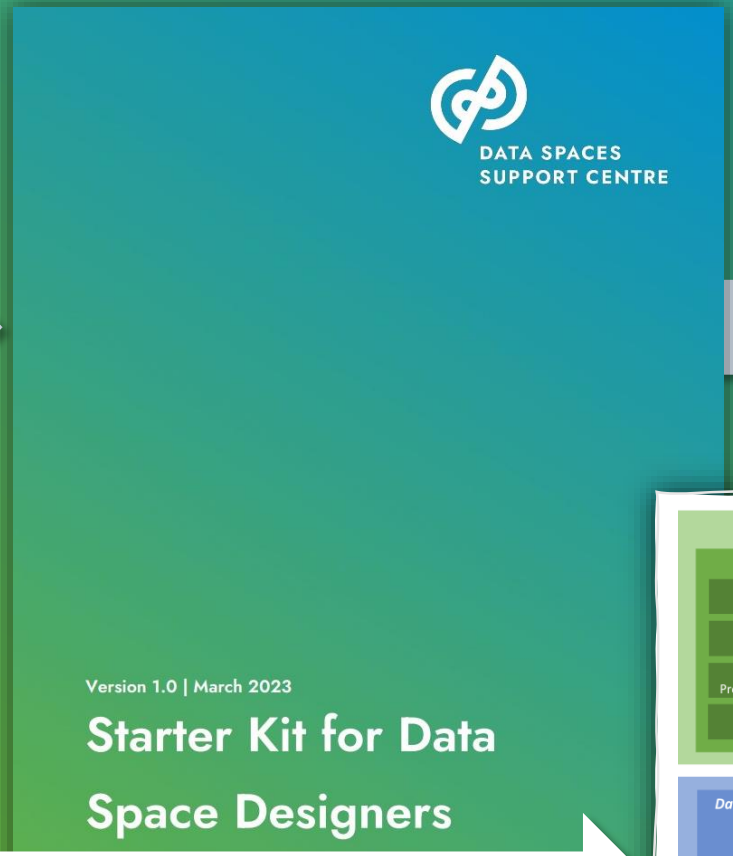
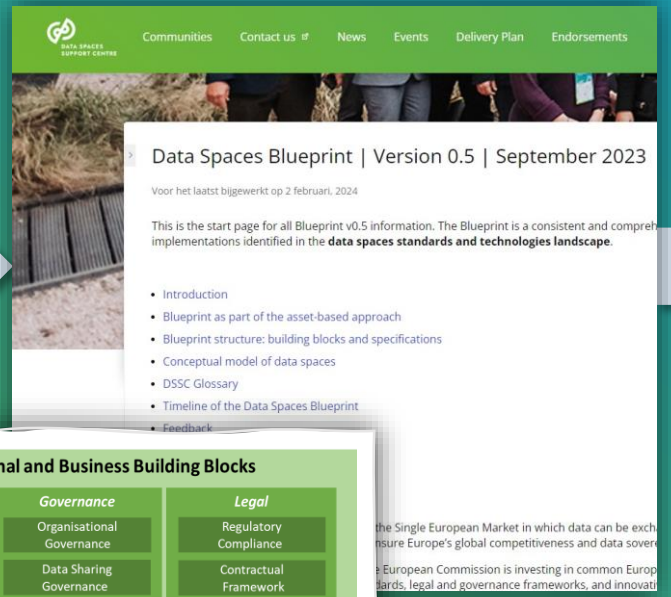
Evolution

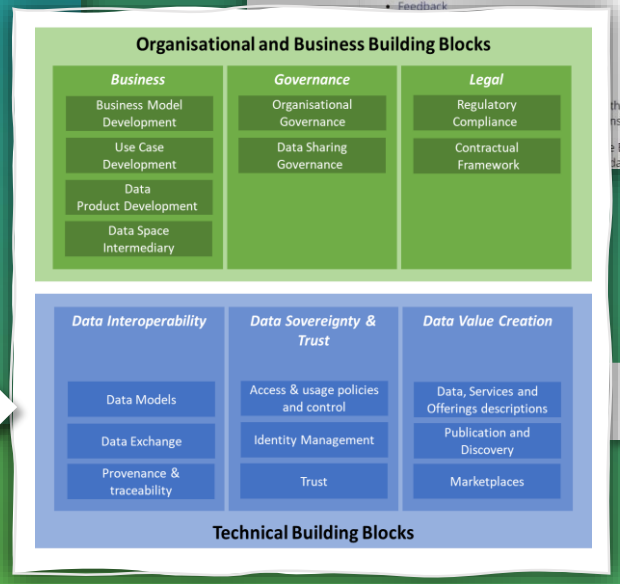
Pre-DSSC / OpenDEI

Start of DSSC



Version 0.5





Version 1.0

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Today:
version 1.5 of the Blueprint for Data Spaces

DATA SPACES SUPPORT CENTRE

New ideas and best practices from:

- Community of Practice
- Strategic Stakeholder Forum
- Experts

Provide guidance for Data Spaces

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Contents of the blueprint

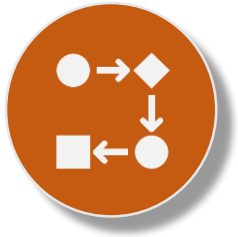
DATA SPACES SUPPORT CENTRE

- Building blocks
  - Scope: what is it about?
  - Capabilities
  - Specifications & standards
  - References to related material

Business & Organisational

Technical

- Co-creation Method
  - For domain specific choices



Co-creation questions

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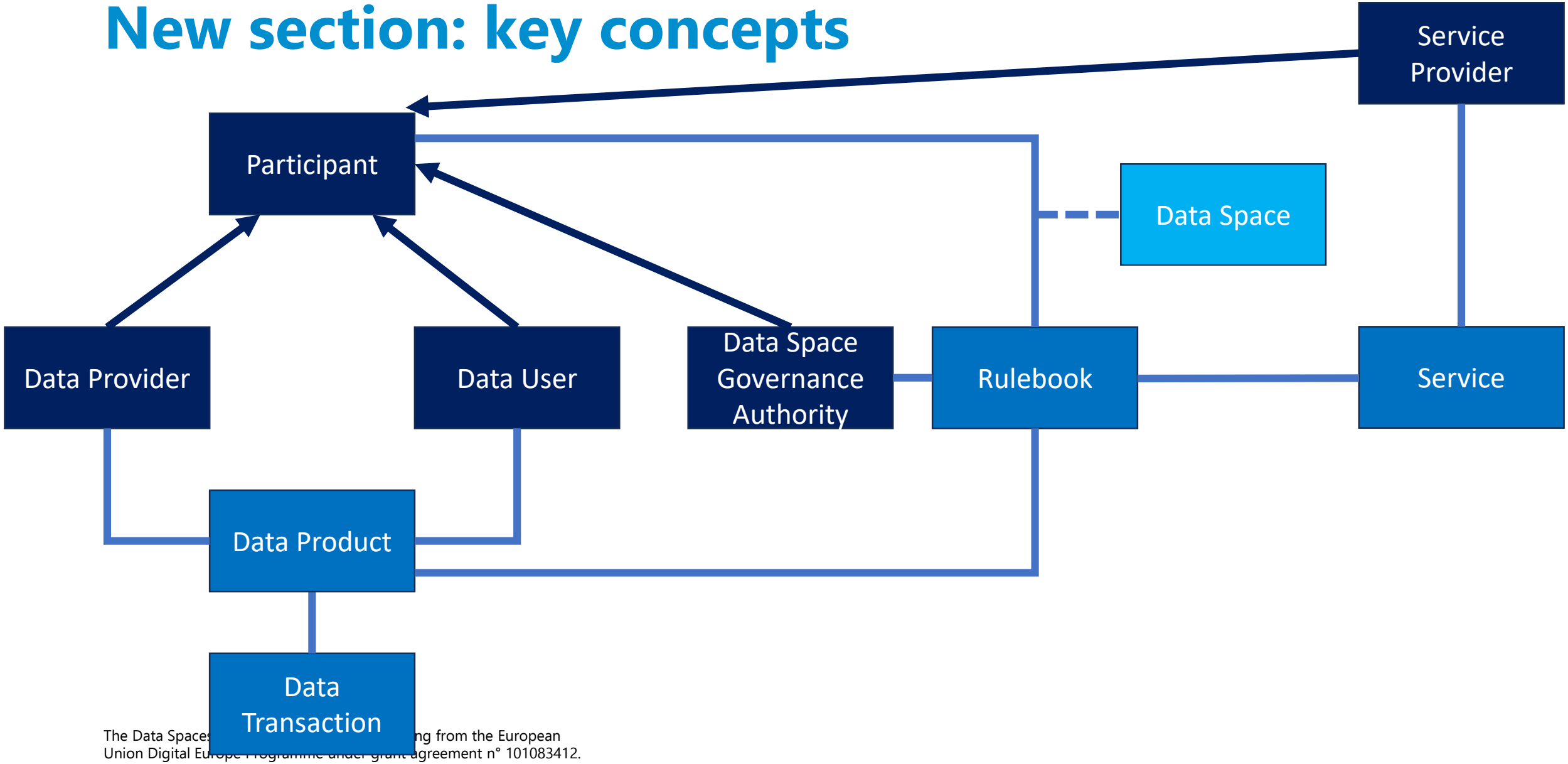
New section: key concepts



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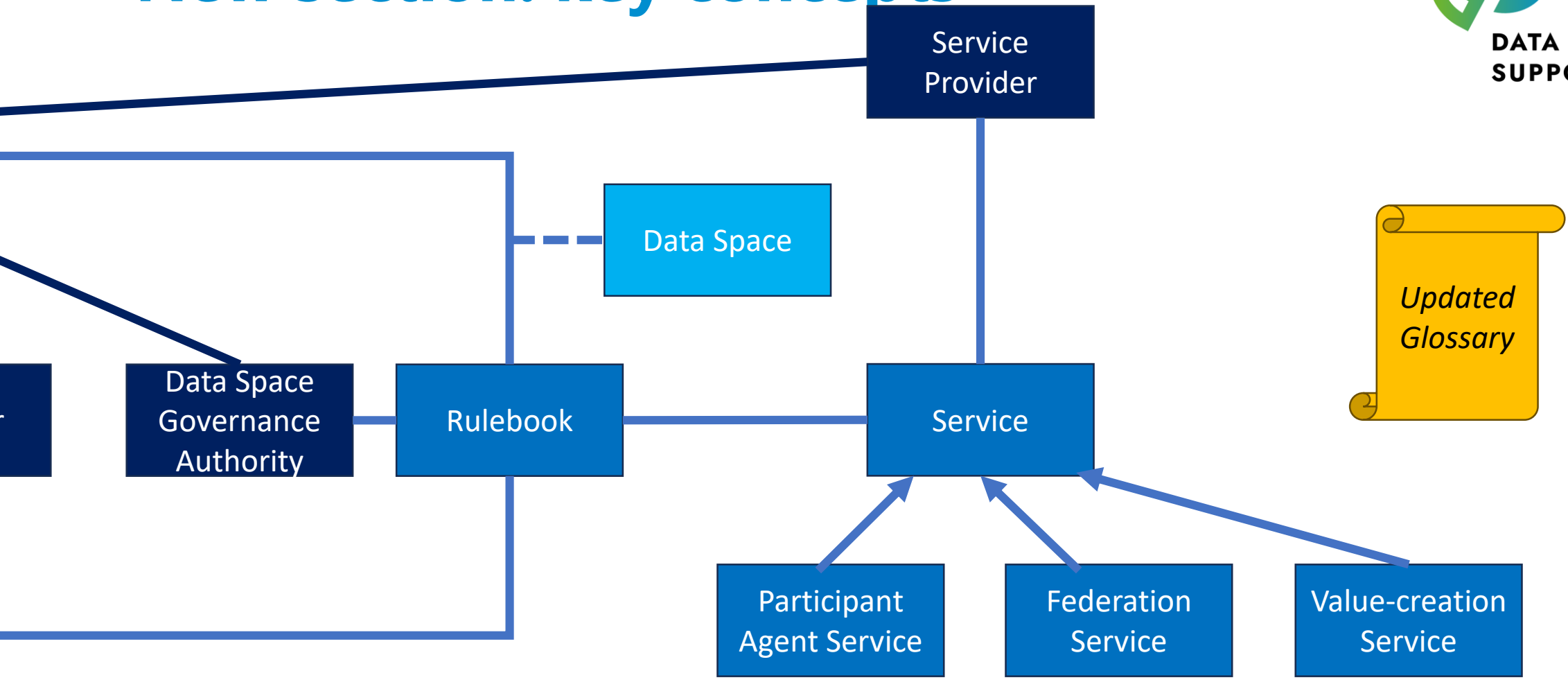

Updated Glossary

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Business & Organisational Building Blocks

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Business

Business model:

- Guidelines on value creation and joint (financial) interests
- Multi sided and collaborative
- Responsibility governance authority

Use case development:

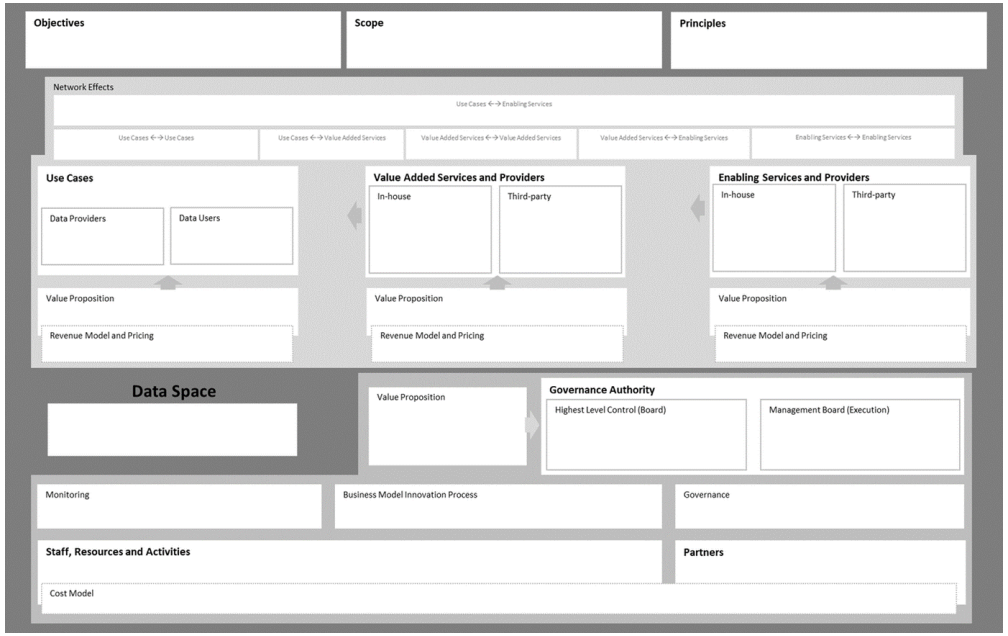
- Guidance to identify, refine and implement use cases
- Based on scenario's

Data product:

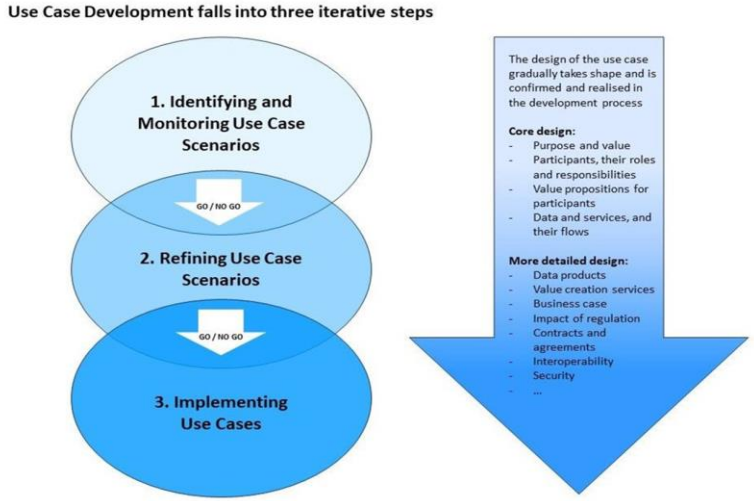
- *"Data sharing units, bundling resources (data and/or data services) and metadata that describes the resources, the associated license terms and other information (e.g., delivery method)"*
- e.g., data products related to transport data, traffic events and roadworks

Intermediaries & operators:

- Different types (e.g. personal data)
- DGA sets mandatory requirements Data Intermediation Services



Business model canvas



Value creation in 3 steps

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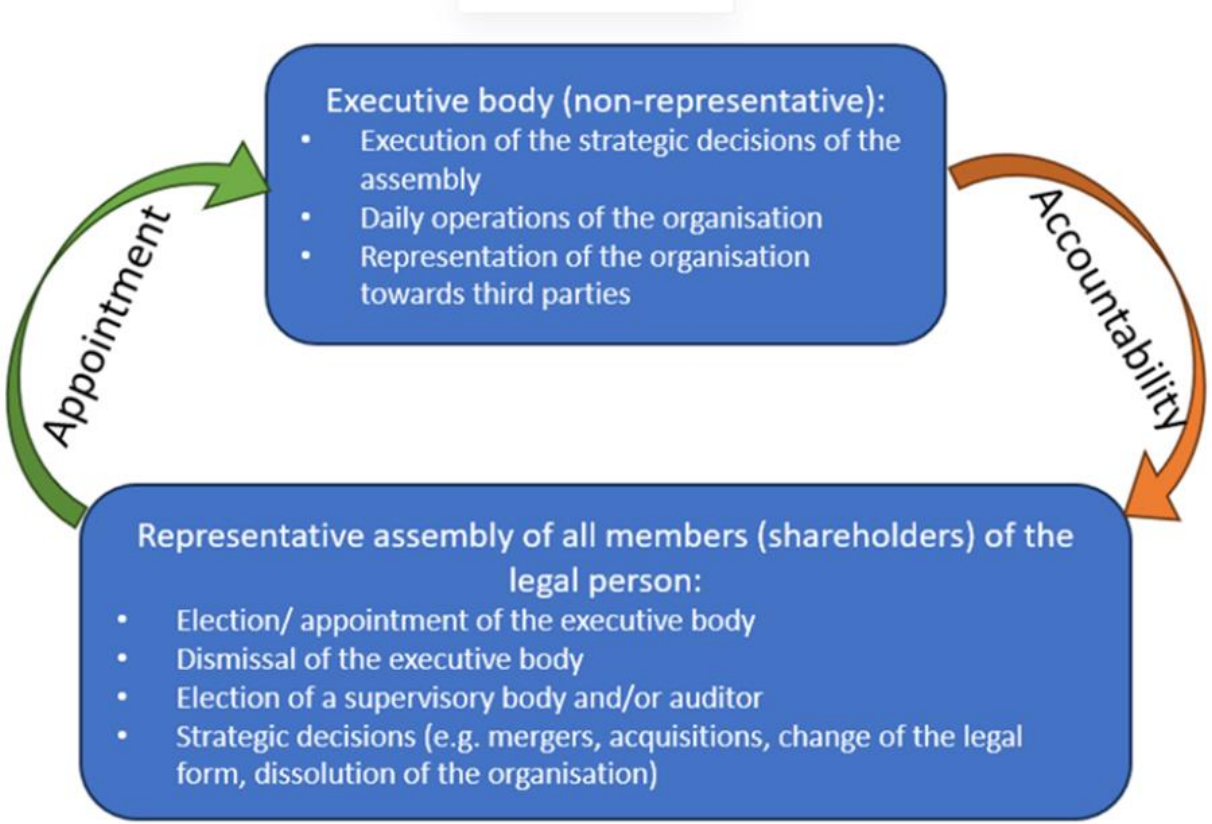
Governance

Organisational form and governance authority:

- Unincorporated & incorporated data space (temporary/non-temporary): implications for the legal form
    - Decision tree to support
- Governance authority: consisting of the members, responsible for decision making
- Governance framework: opertionalisation of the rulebook

Participation management:

- Onboarding
- Offboarding



Governance authority of a data space

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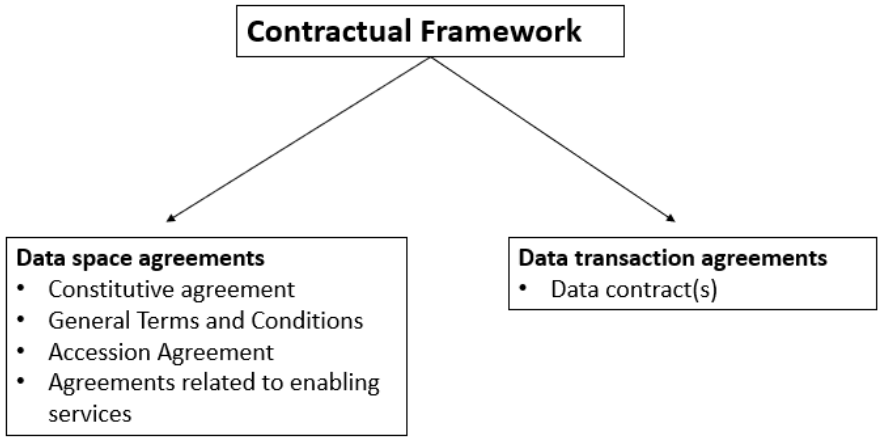
Legal

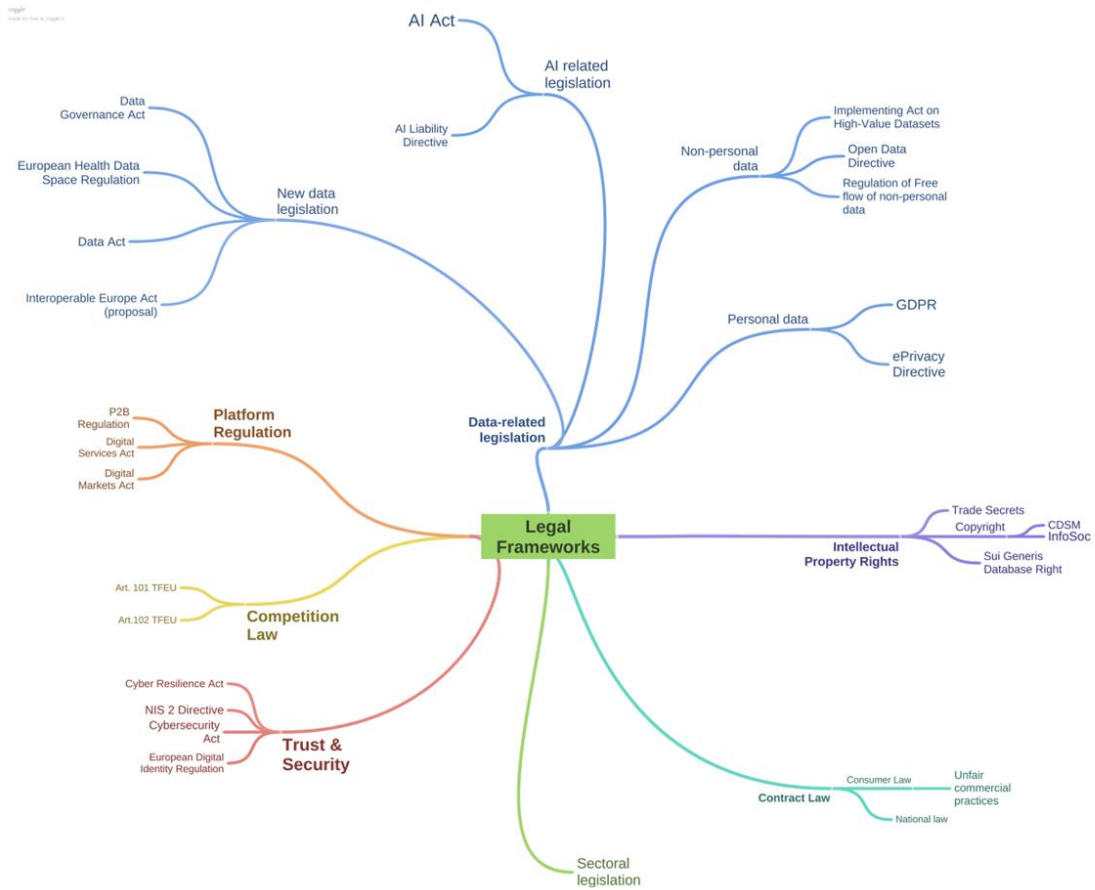
Regulatory compliance:

- Sector agnostic legislation
- Legislation dependent on type of participant, data, use case

Contractual framework:

- Data space agreements
- Data transaction agreements





Sector agnostic legislation

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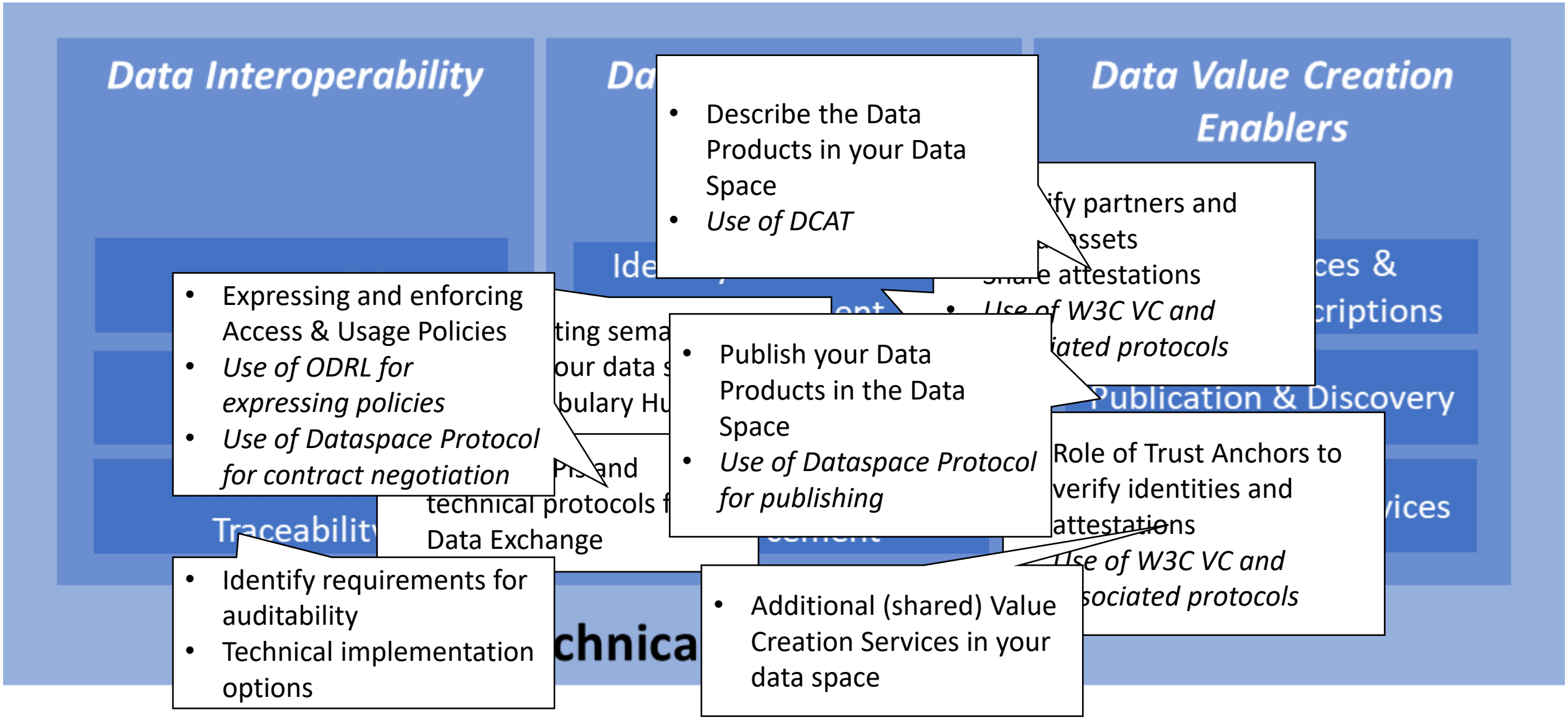

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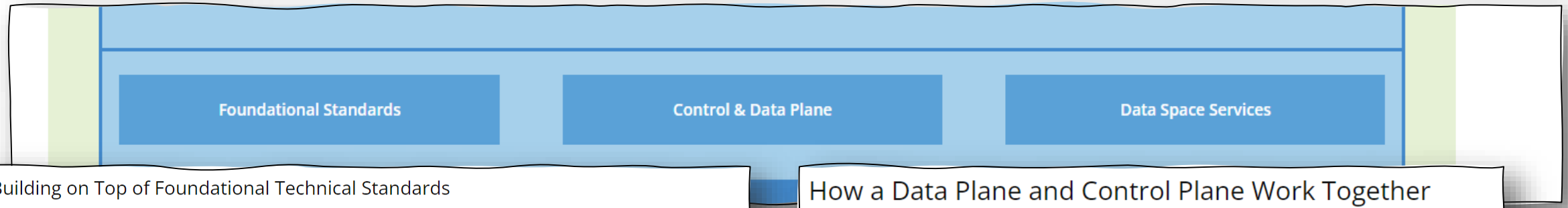
Three new sections

DATA SPACES SUPPORT CENTRE



Building on Top of Foundational Technical Standards

Aangemaakt door 12 dagen geleden

1. Three Key Technical Standards
- Verifiable Credentials
- DCAT v3
- Open Digital Rights Language (ODRL)

2. Protocols Specifying How These Standards Can Work Together
- Dataspace Protocol (DSP)
- Upcoming Protocols

3. Formal Specifications for Data Act Compliance

1. Three Key Technical Standards

Verifiable Credentials

W3C Verifiable Credentials is a standard developed by the World Wide Web Consortium (W3C) to enable the creation, sharing, and verification of digita professional licenses. The key feature of verifiable credentials is that they are tamper-evident and cryptographically verifiable, meaning their authenticity

The standard defines how credentials can be issued, stored, and presented in a way that ensures they can be verified by any party. This model supports present it to potential employers. The employers can verify the diploma's authenticity without contacting the university directly.

How a Data Plane and Control Plane Work Together

Aangemaakt door 12 dagen geleden

Control Plane vs. Data Plane
Control Plane Interactions
- Building on Foundational Standards
- Data Plane Interactions
- Implementing the Control and Data Plane

Control Plane vs. Data Plane

It is important to distinguish between a **control plane** and a **data plane**:

- The control plane is responsible for deciding how data is managed, routed and processed.
- The data plane is responsible for the actual sharing of data.

For example, the control plane handles user identification, access, and usage policies, while the data

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Services for implementing Data Spaces

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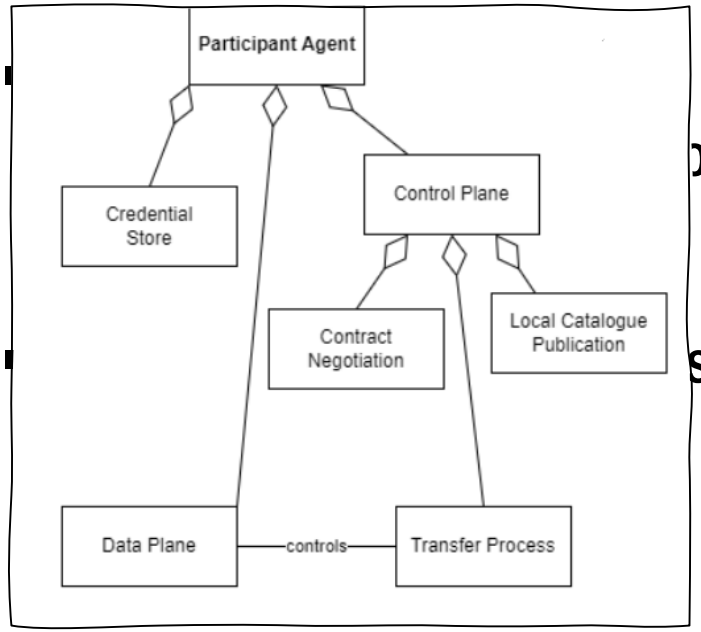
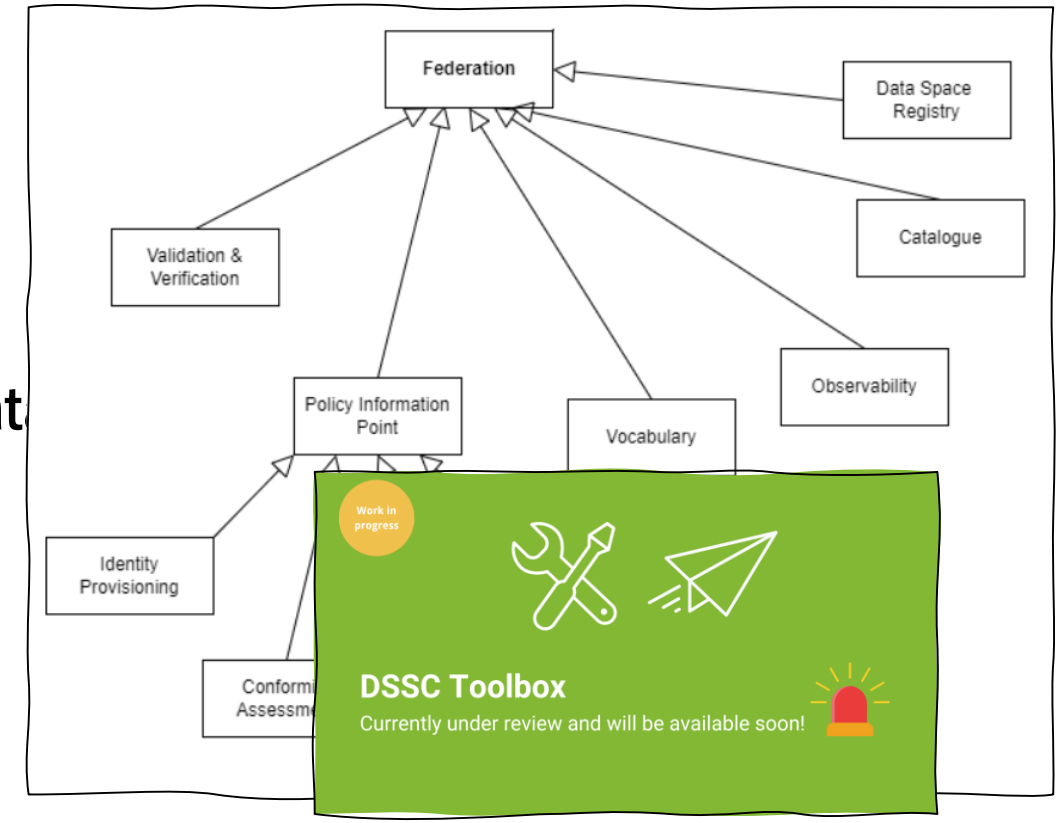
- **Participant Agent Services** → for participants to join a Data Space



of participants

services 'on top of' the Dat



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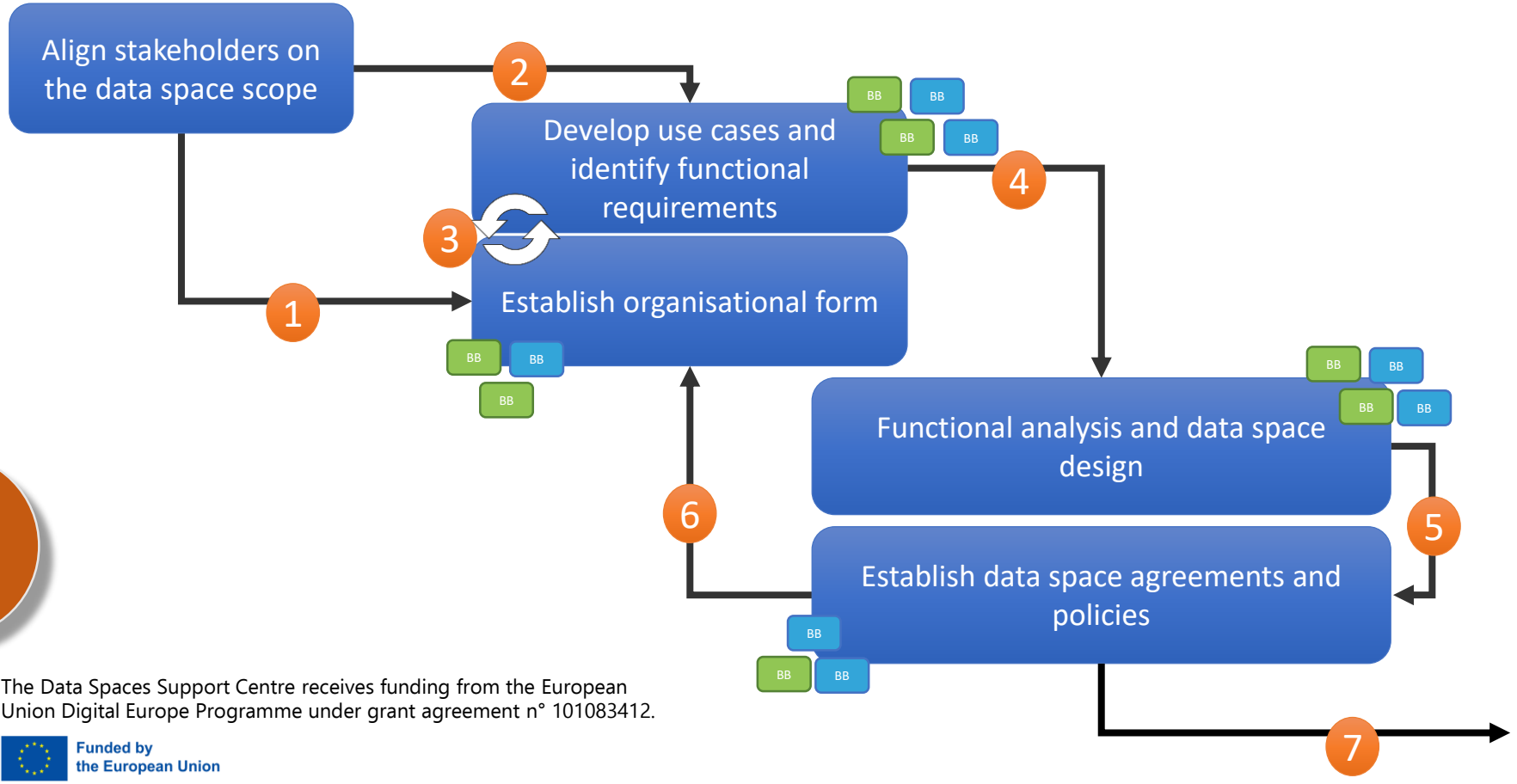
Co-Creation Method

DATA SPACES SUPPORT CENTRE

Exploratory Stage | Preparatory Stage | Implementation Stage | Operations



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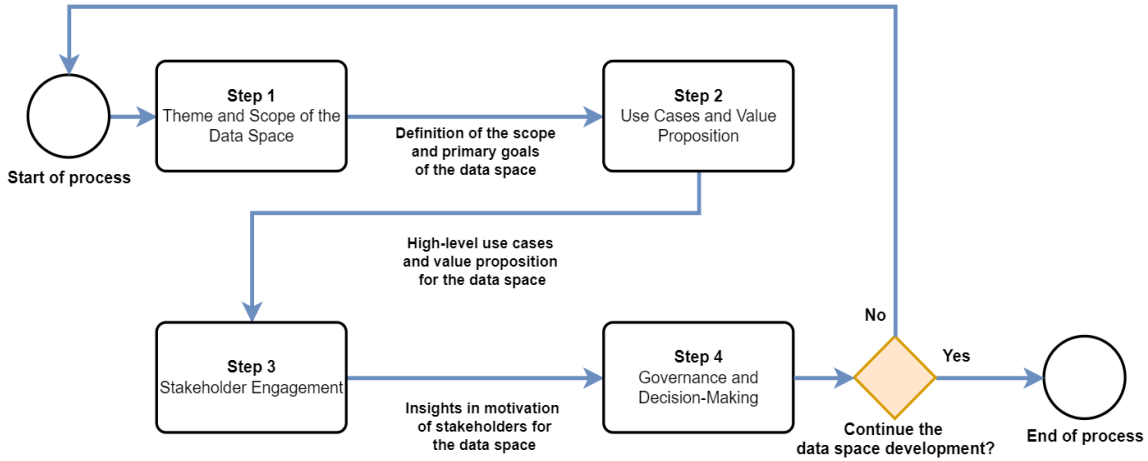
Co-creation Method

What is new?

- Extended on the technical side
- Co-creation questions added to each building block
- Various flow charts developed for:
  - Scope alignment
  - Use cases and functional requirements
  - Organisational form
  - Participation



Flow chart for the scope alignment

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Agenda

DATA SPACES SUPPORT CENTRE

- Introducing Data Space Design Principles
  - What?
  - Why?
  - Scope
- Construction of Design Principles
  - Methodology
  - Template
- Design Principles
  - The ”13” Design Principles
  - Pillar - Specific Design Principles
  - Cross-Pillar Design Principles
- Design Principles in Action

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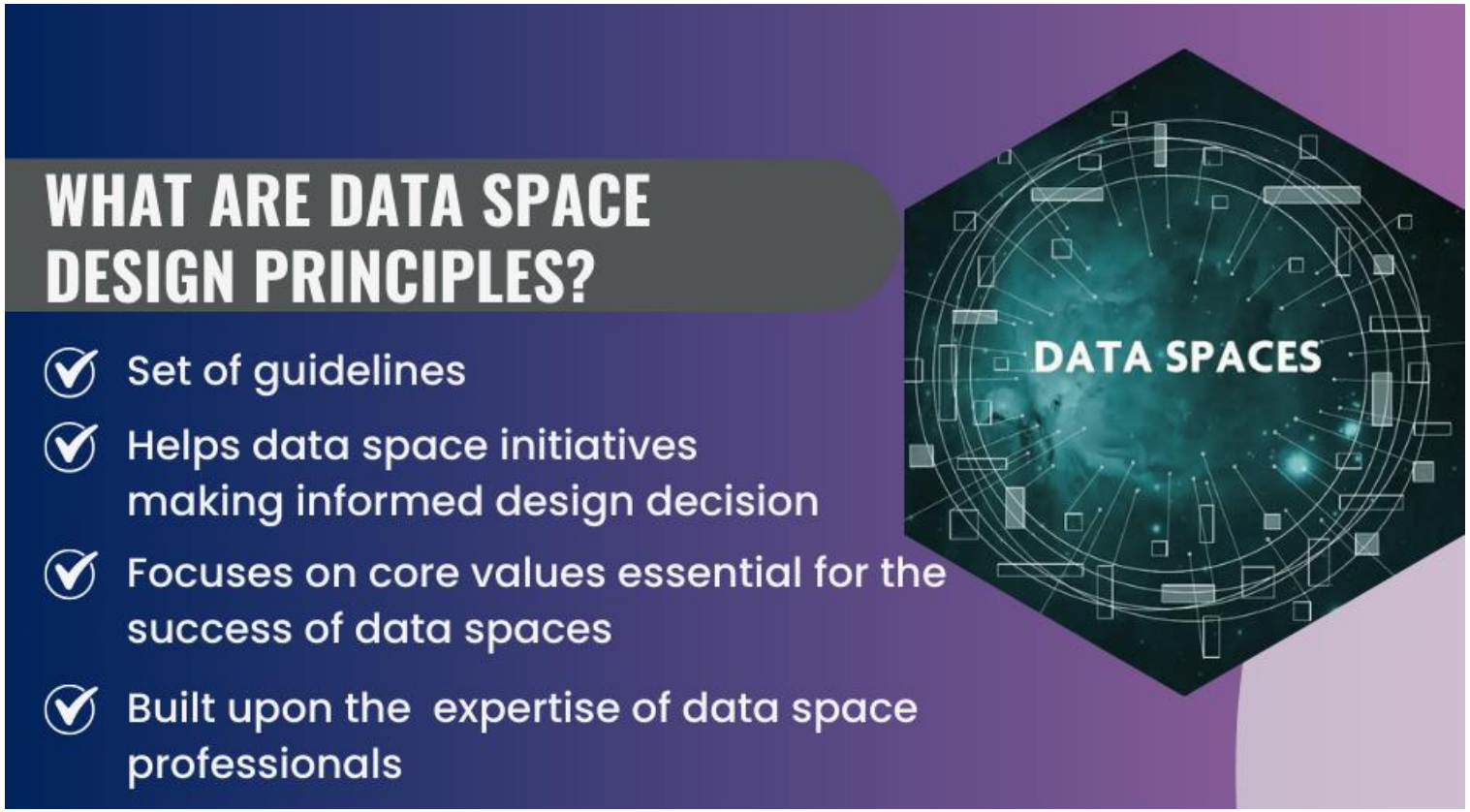
Introducing Data Space Design Principles – What

*"A **principle** may relate to a fundamental truth or proposition that serves as the foundation for a system of beliefs or behaviour or a chain of reasoning" – Stevenson, Angus; Lindberg, Christine A.*



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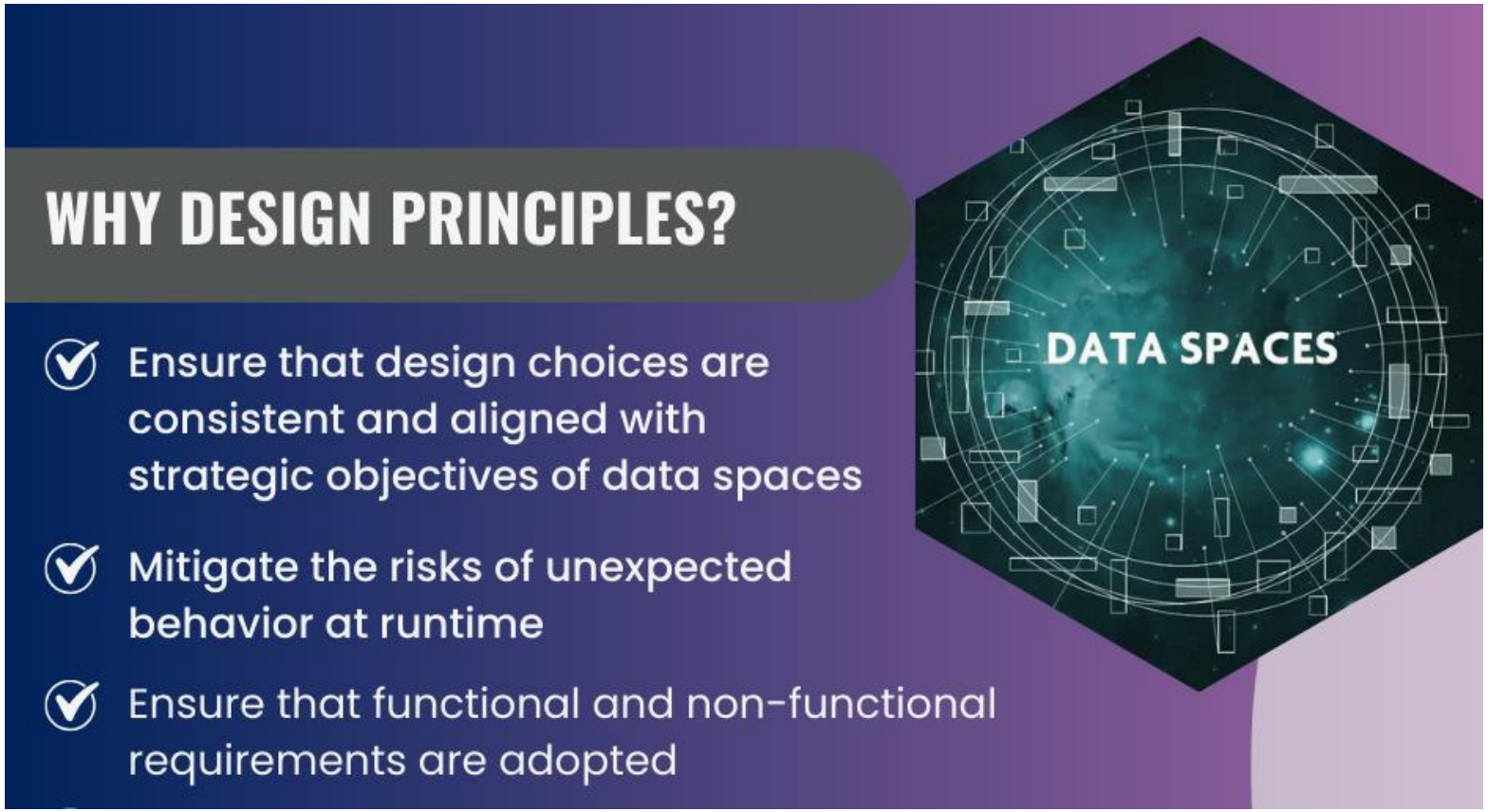
Introducing Data Space Design Principles – Why

"Principles can make values explicit, transforming them into rules and standards that guide behaviour and decision-making."



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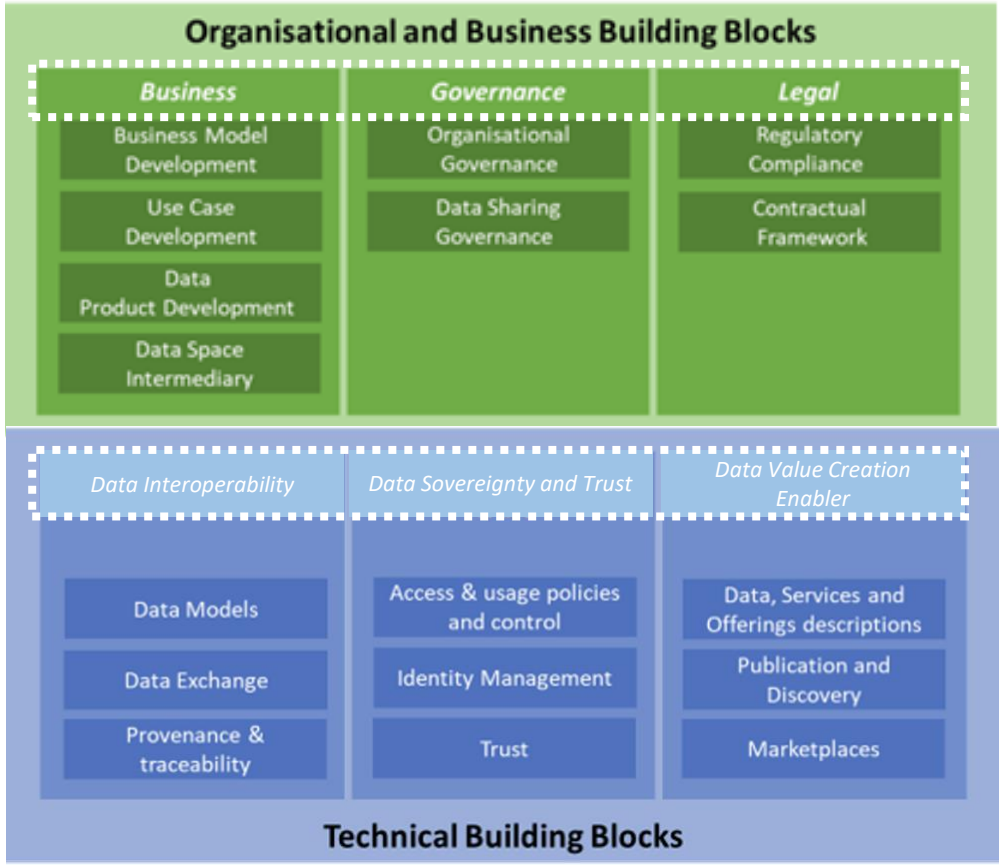
Introducing Data Space Design Principles – Scope

- **Pillar-Specific**: Design principles are defined at the **pillar** level, yet it **covers** the **building blocks** under the pillars.
- **Cross Pillar:** A design principle may cover more than one pillar
- **Sector Agnostic**: Design principles adheres the law of generality that is, they are data spaces sector agnostic.
- **Technology Agnostic**: Design principles are technology agnostic as well.

- Note: Design principles do not cover elements for designing software or hardware of data products (e.g., data lake, analytics etc.).



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Design Principles – Methodology

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AGRI DATASPACE

DS4Skills Data Space for Skills

Requirements collected in T4.1

Requirement Analysis

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Design Principles V1.0

DATA SPACES SUPPORT CENTRE

DATA SPACES SUPPORT CENTRE

Workshops, Meeting Thematic Groups and Expert Groups

Design Principles V2.0

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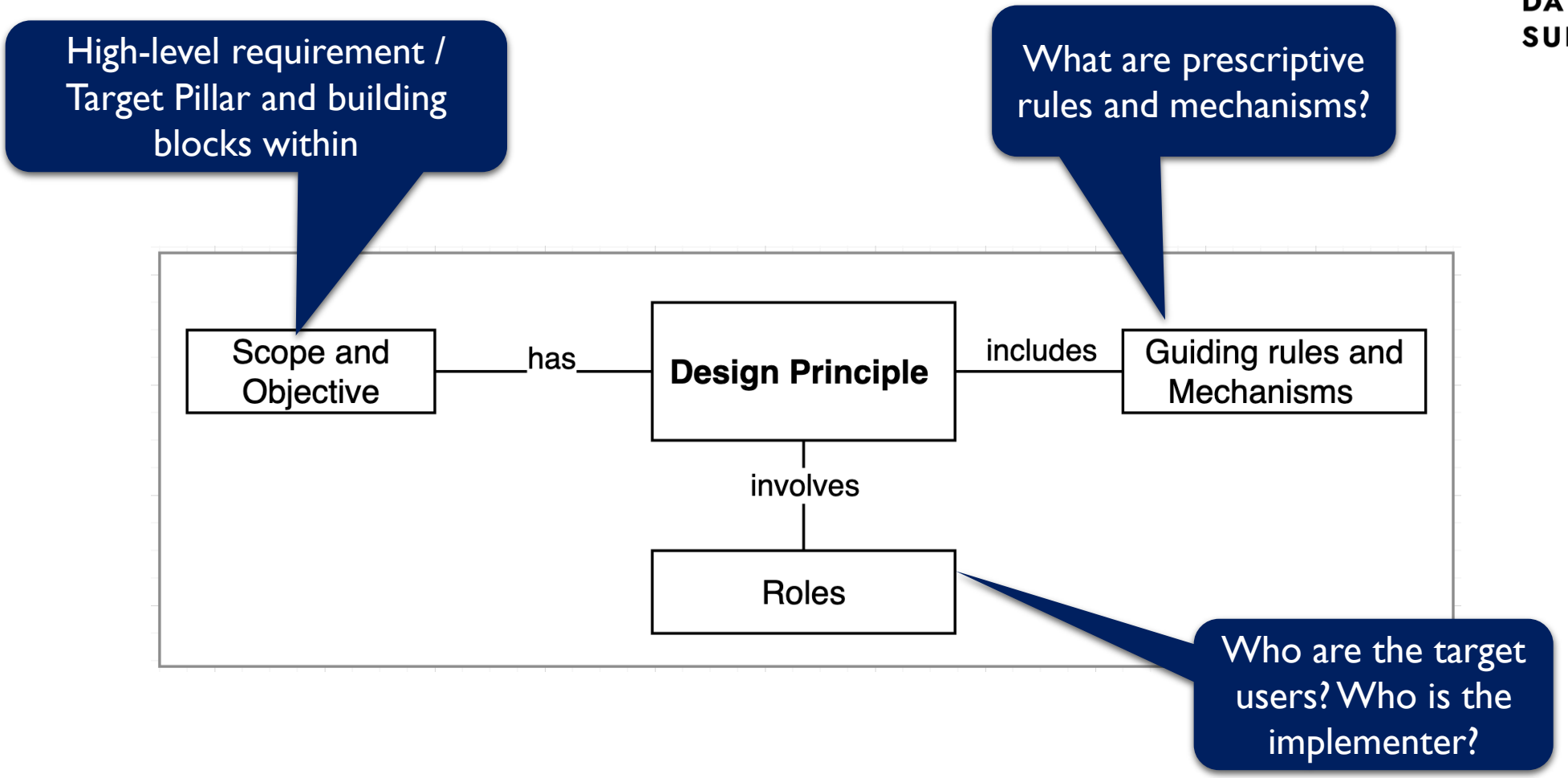
Design Principles – Template



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Gregor, Shirley, Leona Chandra Kruse, and Stefan Seidel. "Research perspectives: the anatomy of a design principle." Association for Information Systems, 2020.

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The “13” Design Principles

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S#	Design Principles	Category
1	Incentives and synergies between data space participants	Cross-pillar Design Principles
2	Discoverability, Availability, and Accessibility of Data	
3	Transparency	
4	Establishing Trust and Security in Data spaces.	
5	Ensure compliance with EU legal framework and norms	
6	Ensure Participants Rights in Data Sovereignty	
7	Promote Participation Through Inclusivity	
8	Promote environmental sustainability	
1	Reusability of Data	Pillar – Specific Design Principles
2	Ensure Data Interoperability in data spaces	
3	Establish a fit-for-purpose contractual framework	
4	Adaptable data space governance framework	
5	Pursuit Quality by Design	

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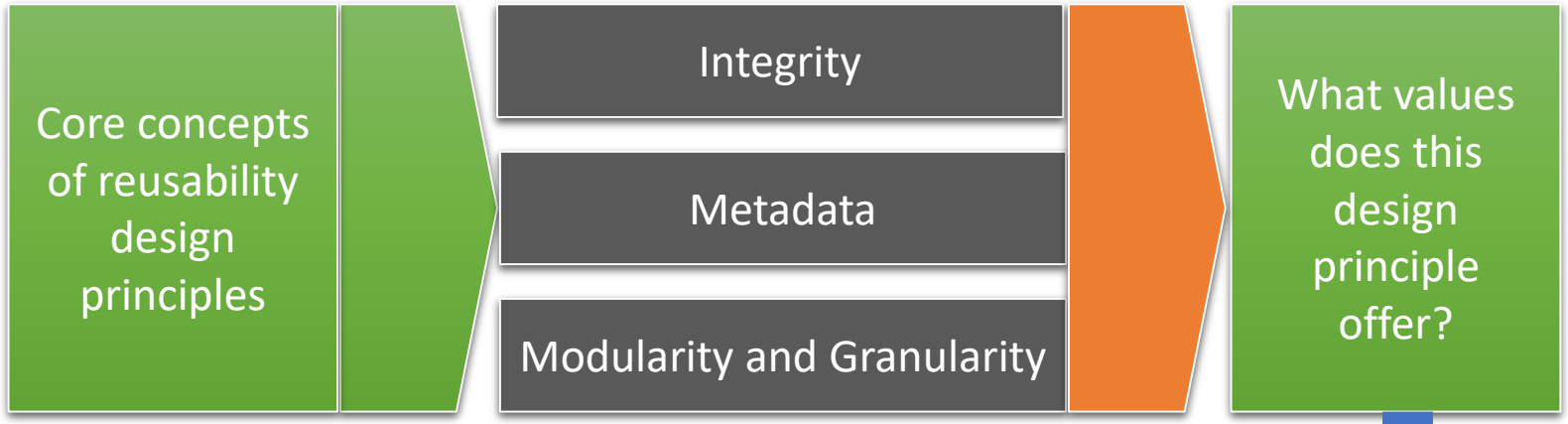
DP01 – Reusability of Data



Building blocks included in the scope

Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty and trust	Data Value Creation Enablers
Reusability of Data						√

- Cost efficiency
- Breaking down silos and boosting collaboration
- Rapid decision-making in real-time environments
- Reducing redundancy

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DP02 – Pursuit Quality by Design

Building blocks included in the scope

Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty	Data Value Creation
Pursuit Quality by Design						√

- Trust and usability of data
- Increased interoperability and integration
- Compliance and risk mitigation
- Reputation and attractiveness

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DP03 – Adaptable Data Space Governance Framework

Building blocks included in the scope

Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty and trust	Data Value Creation Enablers
Adaptable data space governance framework			√			

- Responsive to Regulatory Changes
- Fostering Cross-Sector Collaboration

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DP04 – Establish a fit-for-purpose contractual framework

Building blocks included in the scope

Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty and trust	Data Value Creation Enablers
Establish a fit-for-purpose contractual framework		√				

- Responsive to Regulatory Changes
- Fostering Cross-Sector Collaboration

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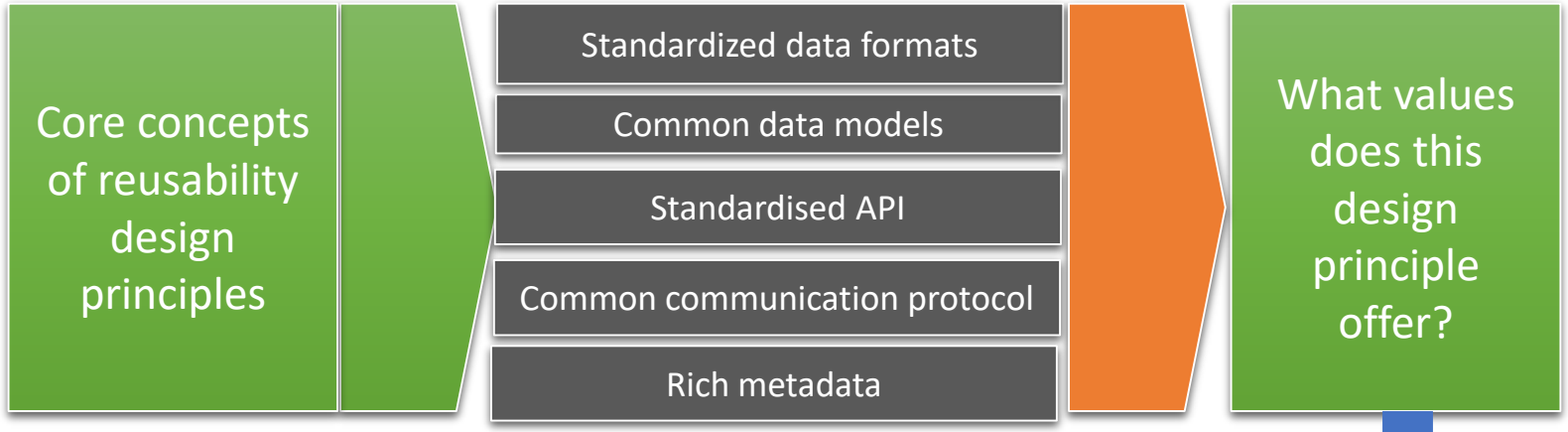
DP05 – Ensure Interoperability in data spaces



Building blocks included in the scope

Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty and trust	Data Value Creation Enablers
Ensure Data Interoperability in data spaces				√		

- Breaking Silos
- Consistency Across Systems
- Streamlined Operations
- Cross-Sector Collaboration

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  - **Cross-Pillar Design Principles**
- Design Principles in Action

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DP06 – Incentives and synergies between data space participants

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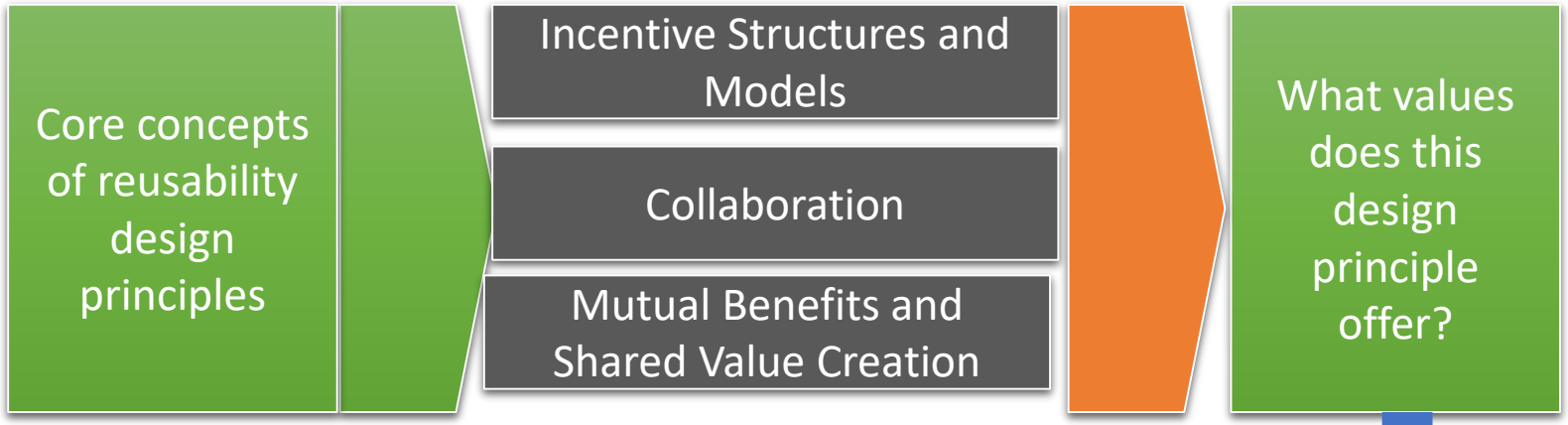

Building blocks included in the scope

Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty and trust	Data Value Creation Enablers
Incentives for and synergies between data space participants	√					√

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DP07 – Ensure compliance with EU legal framework and norms

Building blocks included in the scope

Pillar-Specific Design Principles						
Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty and trust	Data Value Creation Enablers
Ensure compliance with EU legal framework and norms		√	√		√	

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DP08 – ADA (Availability, Discoverability, & Accessibility) of Da

Building blocks included in the scope

Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty and trust	Data Value Creation Enablers
Discoverability, Availability, and Accessibility of Data	√			√		√

- Maximizing the Utilization of Data
- Promoting Data Democratization
- Scaling Data Space Across Borders and Industries

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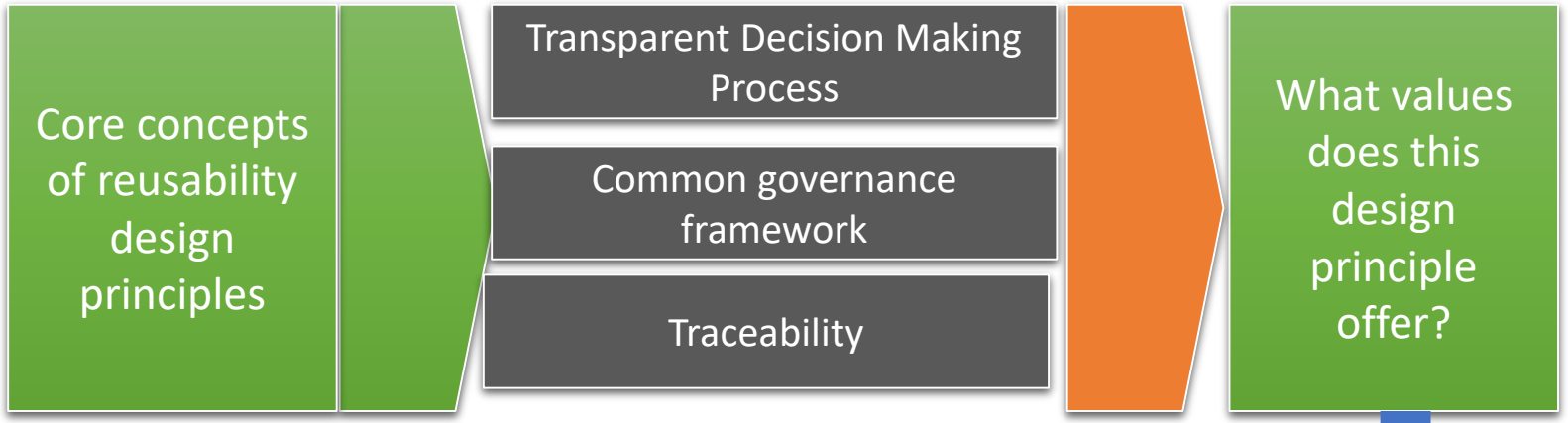
DP09 – Transparency



Building blocks included in the scope

Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty and trust	Data Value Creation Enablers
Transparency			√	√	√	√

- Building trust among Data Space participants
- Accountability and governance
- Enhances collaboration
- Mitigating risks and conflicts

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DP10 – Establishing Trust and Security in Data spaces

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Building blocks included in the scope

Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty and trust	Data Value Creation Enablers
Establishing Trust and Security in Data spaces.		√			√	

- Increased Trust Among Participants
- User Empowerment and Satisfaction
- Willingness to Share Data

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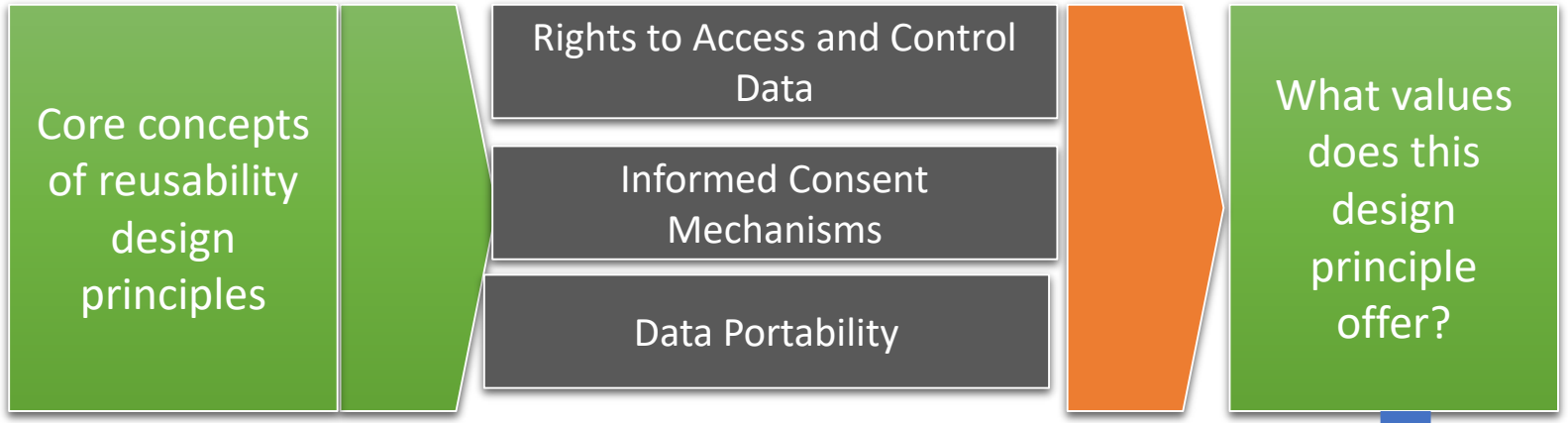
DP11 – Ensure Participants Rights in Data Sovereignty



Building blocks included in the scope

Design Principles	Business	Legal	Governance	Interoperability	Data Sovereignty and trust	Data Value Creation Enablers
Ensure Participants Rights in Data Sovereignty			√	√	√	

- Enhanced Data Sharing
- Empowerment of Participants
- Enhanced Data Sharing

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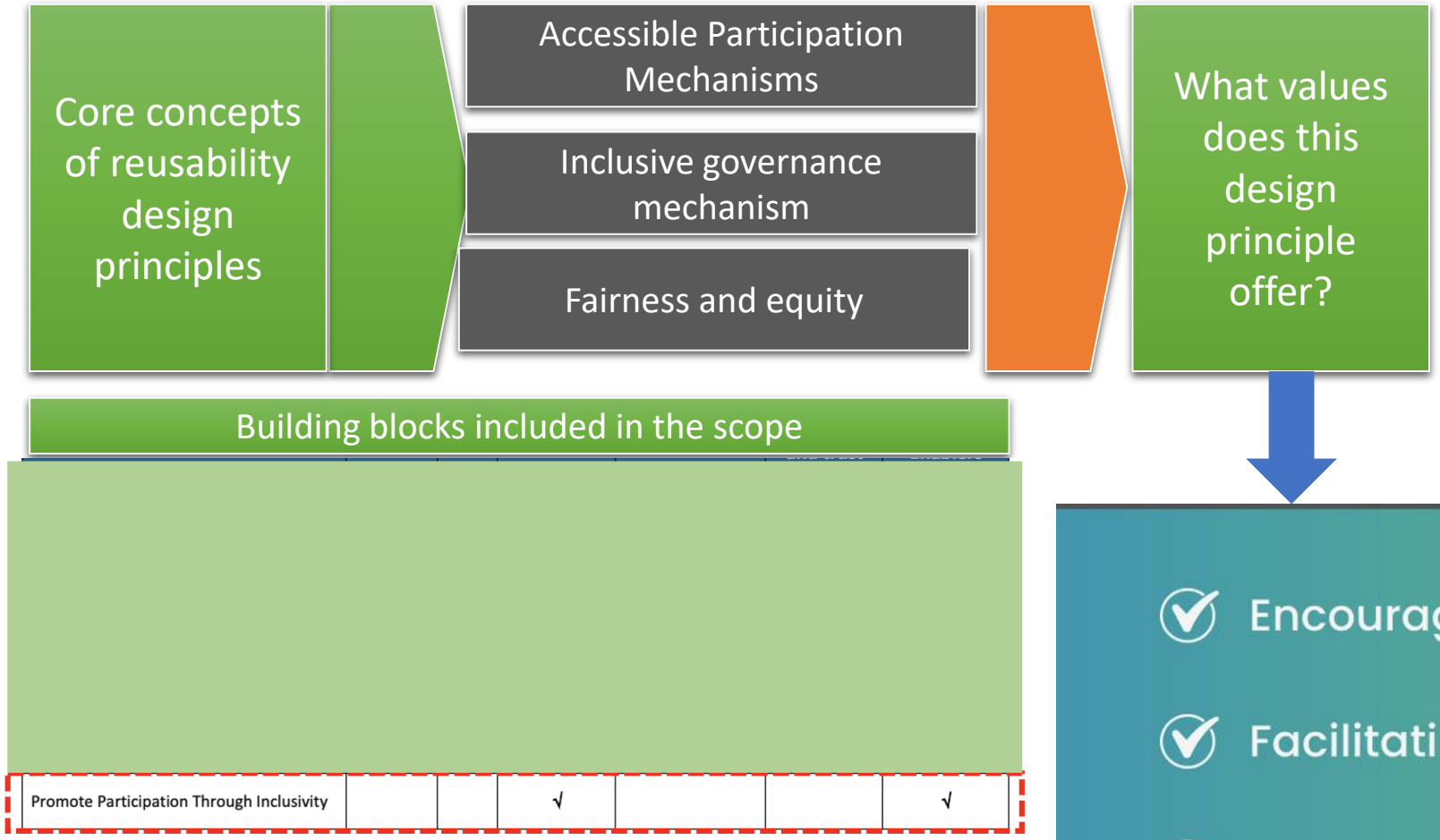
DP12 – Promote Participation Through Inclusivity



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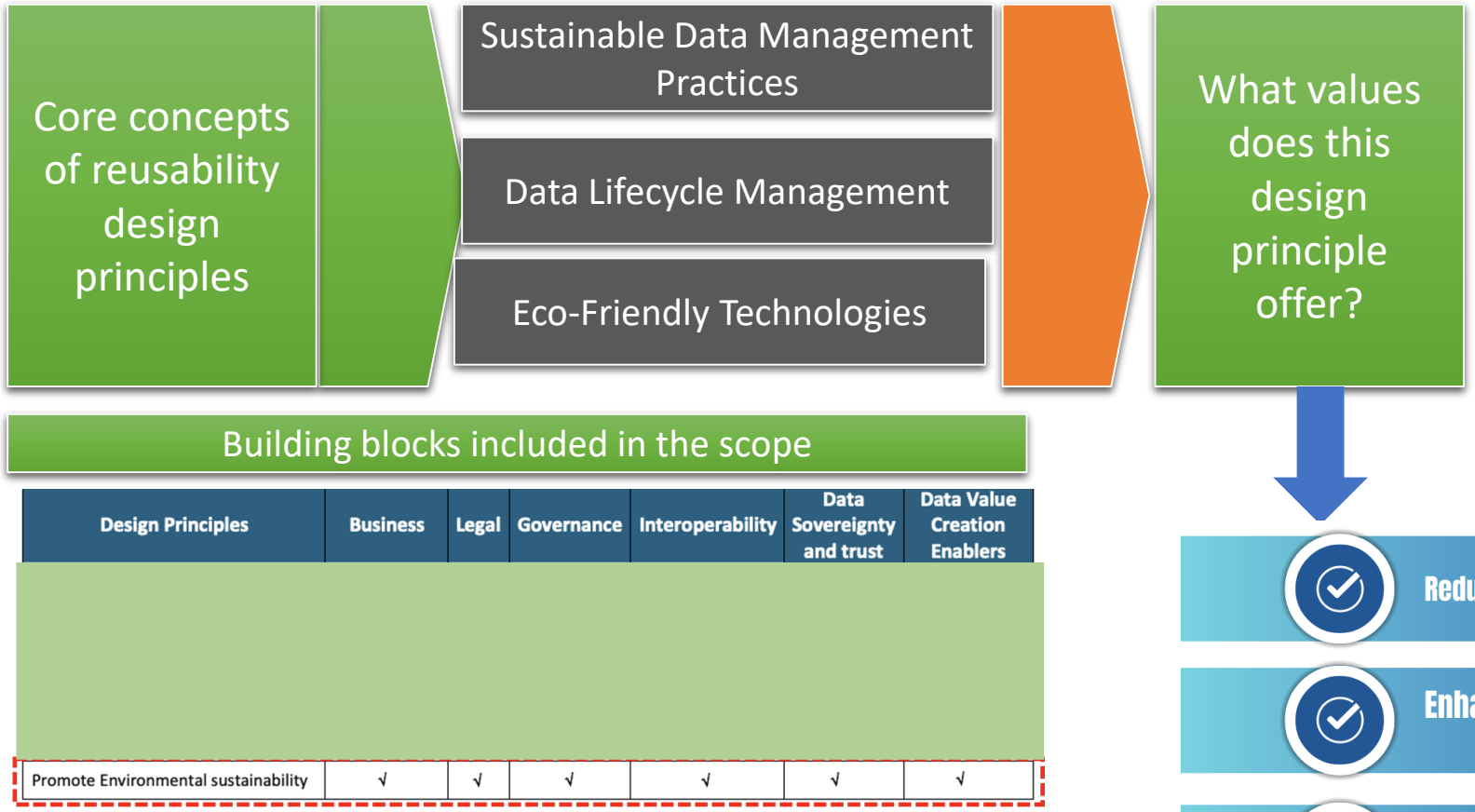
DP13 – Promote Environmental sustainability



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Agenda

DATA SPACES SUPPORT CENTRE

- Introducing Data Space Design Principles
  - What?
  - Why?
  - Scope
- Construction of Design Principles
  - Methodology
  - Template
- Design Principles
  - The ”13” Design Principles
  - Pillar - Specific Design Principles
  - Cross-Pillar Design Principles
- Design Principles in Action

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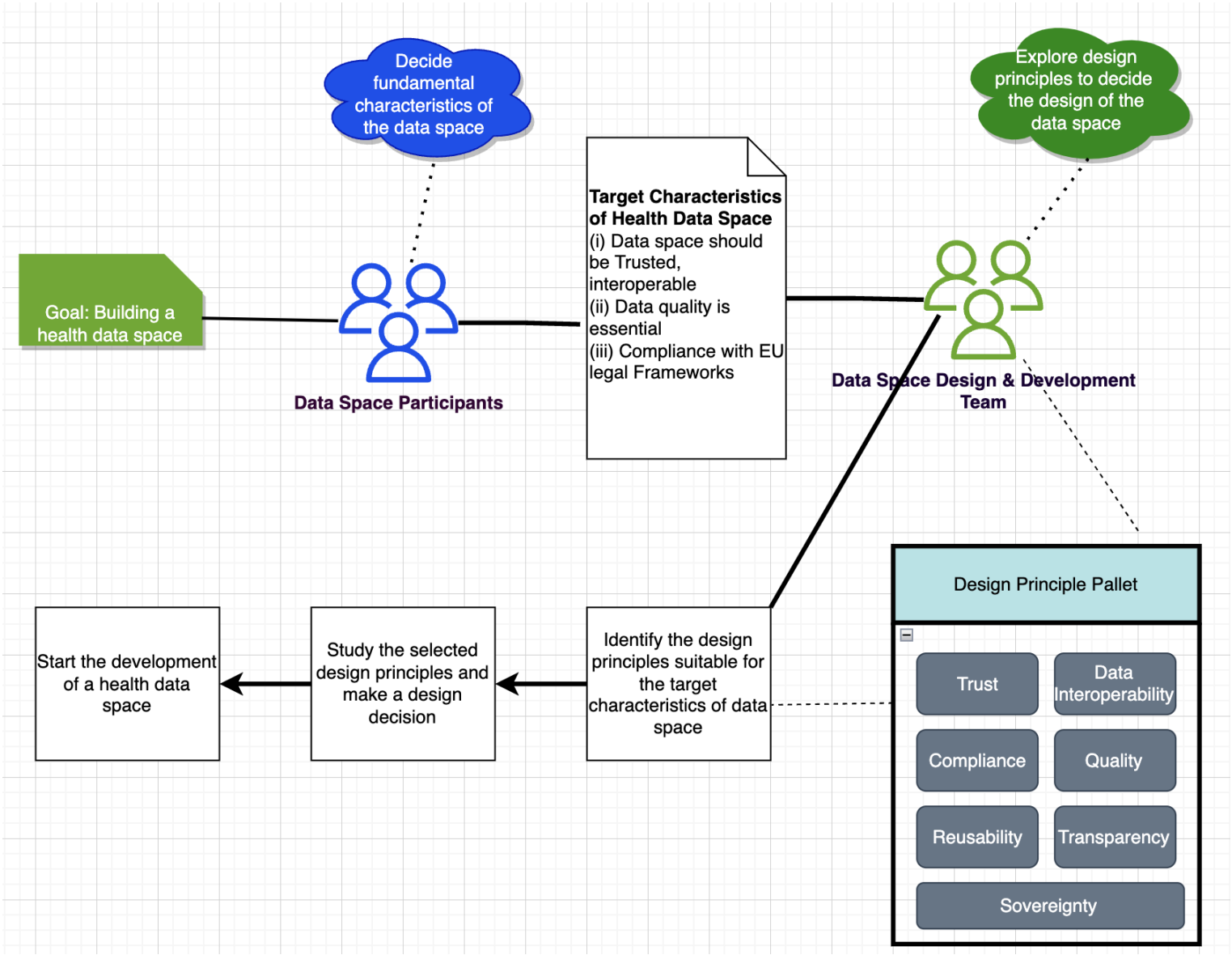
Design Principles in Action



Connect, use and contribute

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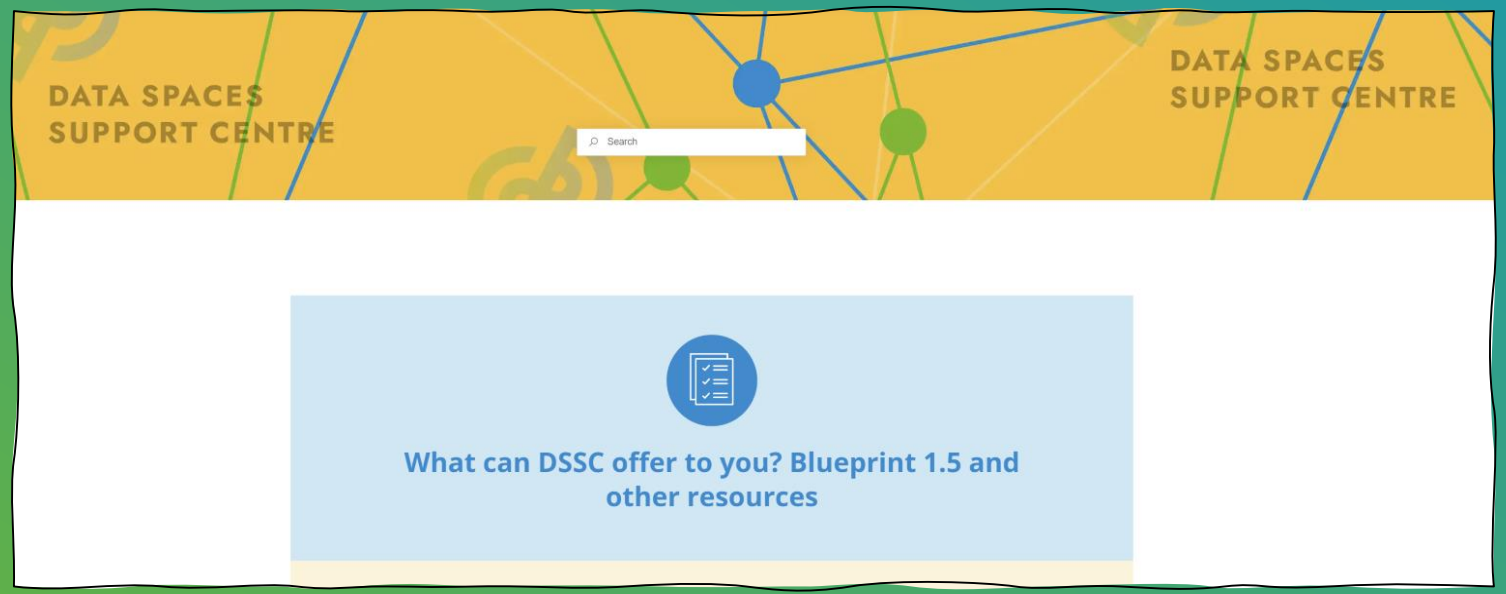
Use the DSSC Blueprint to develop or enhance the rulebook of your own dataspace

“Comply or explain” + Contribute!



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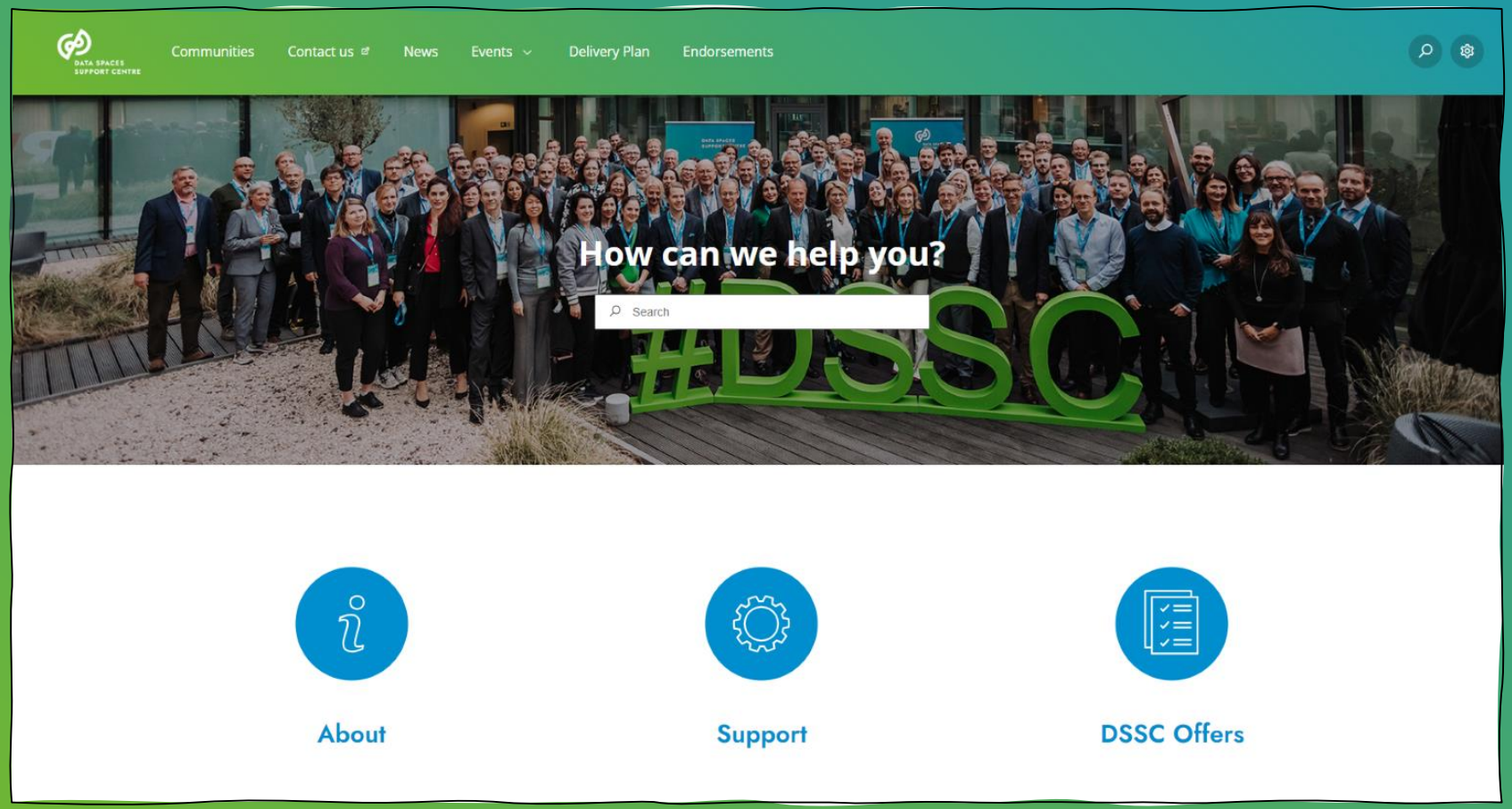

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Q&A

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