DATA SPACES SUPPORT CENTRE

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Maturity assessment report

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Executive summary

This report presents the findings of the maturity assessment of EU funded data space initiatives, conducted by the Data Spaces Support Centre (DSSC) using the DSSC Maturity Model. These data space initiatives aim to make data available and exchangeable in a trustworthy manner, fostering innovation and competitiveness in the EU data economy. The purpose of this assessment is to evaluate the functional capabilities of data space initiatives funded under the Digital Europe Programme and Horizon Europe. It also aims to inform stakeholders on progress toward a trusted and interoperable European data-sharing environment. The data space initiatives targeted span 13 strategic sectors. The Data Spaces Support Centre (DSSC) plays a crucial role in coordinating these data space initiatives and providing necessary support and advice.

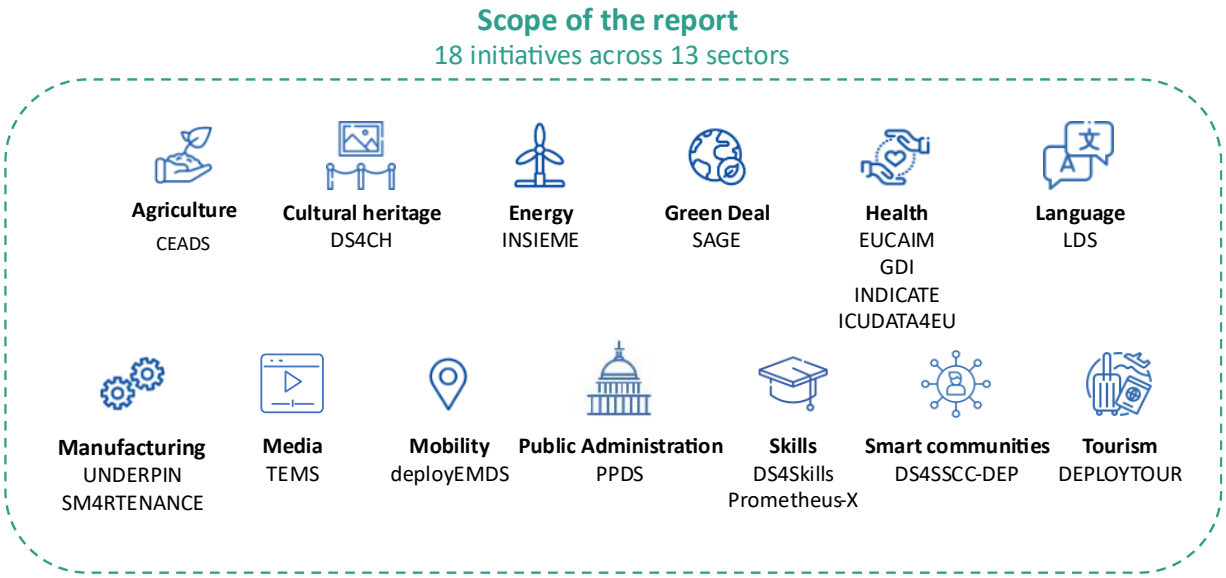

Figure 1: Data space initiatives in the scope of the report

The DSSC Maturity Model translates the principles of the DSSC Blueprint into measurable indicators and development stages. It combines quantitative scoring, expressed as percentage-based scores per indicator and dimension, with qualitative stage-specific criteria that define lifecycle stages from exploratory to scaling. The objective of the assessment is to provide data space initiatives with a consolidated view of their current maturity, highlight common strengths and gaps, and support progress towards a trusted and interoperable European data-sharing environment.

The indicators cover the following:

- **Business** aspects such as business model and use case development, data space offerings, and the role of intermediaries or operators.
- **Governance and legal** aspects including organisational structure and governance authority, participation management, regulatory compliance, and contractual frameworks.

- **Technical** aspects covering data interoperability, sovereignty and trust, enforcement of access and usage policies, data and service descriptions, publication and discovery mechanisms, and value creation services.
- **Operational** aspects such as participation levels and transaction volumes.

Overall, the results show that data space initiatives are making tangible progress, particularly in use case development and selected technical capabilities. Many data space initiatives have already initiated or operationalised use cases, demonstrating a strong focus on practical deployment and value creation. Use case development is the most advanced area overall, with an average score of 67%, confirming its central role in current development efforts.

At the same time, progress is uneven across capability areas. Governance and legal aspects, such as organisational form, governance authority, and contractual frameworks, are still under development for many data space initiatives. Trust related technical mechanisms, including identity management and trust frameworks, also show lower maturity compared to other technical capabilities. These elements are essential to support enforceable governance and automation, and they influence the pace at which data space initiatives can formally progress through the development lifecycle stages.

Most initiatives are therefore classified in the preparatory development stage under the maturity model's stage-specific criteria, even where advanced technical development and use case deployment are already in place. This reflects differences in development speed across capability areas rather than a lack of progress. The operational dimension shows the lowest maturity overall, indicating that systematic monitoring of participation levels and transaction volumes is typically addressed at later lifecycle stages.

Based on the assessment, data space initiatives are encouraged to focus their next development steps on:

- Definition, documentation and implementation of governance aspects, including rulebooks, governance authorities, and participation processes;
- Strengthening trust and compliance mechanisms, such as identity management, trust frameworks, and access and usage policy enforcement;
- Consolidating business models through revenue and funding strategies and validation through pilots;
- Preparing for operationalisation by defining monitoring frameworks for participation and transaction volumes early.

By addressing these areas while maintaining momentum in use case development, data space initiatives can support a transition towards implementation, operation, and scaling. Closing gaps in governance, trust, and operational readiness will be essential to realise the EU's vision of a sovereign, trusted, and interoperable data economy.

List of acronyms

Acronym	Definition
API	Application Programming Interface
CEDS	Common European Data Spaces
DCAT	Data Catalog Vocabulary
DCP	Decentralised Claim Protocol
DGA	Data Governance Act
DSI	Data Space Initiative
DSSC	Data Spaces Support Centre
JSON	JavaScript Object Notation
JTC	Joint Technical Committee
ODRL	Open Digital Rights Language
OID4VC	OpenID for Verifiable Credentials
OWL	Web Ontology Language
PID	Persistent Identifier
PROV-O	Provenance Ontology
RDF	Resource Description Framework
SKOS	Simple Knowledge Organisation System
UML	Unified Modelling Language
VIAF	Virtual International Authority File
W3C	World Wide Web Consortium
XML	Extensible Markup Language

Glossary

Term	Definition[1]
Business Model	A description of the way an organisation creates, delivers, and captures value. Such a description typically includes for whom value is created (customer) and what the value proposition is. Typically, a tool called business model canvas is used to describe or design a business model, but alternatives that are more suitable for specific situations, such as data spaces, are available.
Catalogue	A functional component to provision and discover offerings of data and services in a data space.
Contractual Framework	The set of legally binding agreements that regulates the relationship between data space participants and the data space (institutional agreements), transactions between data space participants (data-sharing agreements) and the provision of services (service agreements) within the context of a single data space.
Data Intermediation Service	A service that is legally defined in the Data Governance Act and enforced by national agencies. An operator in a data space may qualify as a data intermediation service provider, depending on the scope of the services. DGA definition (simplified): 'Data intermediation service' means a service which aims to establish commercial relationships for the purposes of data sharing between an undetermined number of data subjects and data holders on the one hand and data users on the other through technical, legal or other means, including for the purpose of exercising the rights of data subjects in relation to personal data.(DGA Article 2 (11))
Data Model	A structured representation of data elements and relationships used to facilitate semantic interoperability within and across domains, encompassing vocabularies, ontologies, application profiles and schema specifications for annotating and

[1] Based on the definitions in the DSSC glossary: https://dssc.eu/space/Glossary/176553985/DSSC+Glossary+%7C+Version+2.0+%7C+September+2023

	describing data sets and services. These abstraction levels may not need to be hierarchical; they can exist independently.
Data product	Data sharing units, packaging data and metadata, and any associated license terms.
Data space	Interoperable framework, based on common governance principles, standards, practices and enabling services, that enables trusted data transactions between participants.
Data space governance authority	The body of a particular data space, consisting of participants that is committed to the governance framework for the data space, and is responsible for developing, maintaining, operating and enforcing the governance framework.
Data space governance framework	The structured set of principles, processes, standards, protocols, rules and practices that guide and regulate the governance, management and operations within a data space to ensure effective and responsible leadership, control, and oversight. It defines the functionalities the data space provides and the associated data space roles, including the data space governance authority and participants.
Data space participant	A party committed to the governance framework of a particular data space and having a set of rights and obligations stemming from this framework.
Data Space Registry	Public or private registry where the lists of valid and revoked trust anchors, trust service providers, trusted data sources and notaries, together with the schemas for data space credentials, are stored.
Data space rulebook	The documentation of the data space governance framework for operational use.
Data space use case	A specific setting in which two or more participants use a data space to create value (business, societal or environmental) from data sharing.
Data transaction	A structured interaction between data space participants for the purpose of providing and obtaining/using a data product. An end-to-end data transaction consists of various phases, such as contract negotiation, execution, usage, etc.

Development Cycle	The sequence of stages that a data space initiative passes through during its progress and growth. In each stage, the initiative has different needs and challenges, and when progressing through the stages, it evolves regarding knowledge, skills and capabilities.
Exploratory Stage	The stage in the development cycle in which a data space initiative starts. Typically, in this stage, a group of people or organisations starts to explore the potential and viability of a data space. The exploratory activities may include, among others, identifying and attracting interested stakeholders, collecting requirements, discussing use cases or reviewing existing conventions or standards.
Implementation Stage	The stage in the development cycle that starts when a data space initiative has a sufficiently detailed project plan, milestones and resources (funding and other) for developing its governance framework and infrastructure in the context of a data space pilot. It is typical for this stage that the parties involved in the pilot and the value created for each are also clearly identified.
Interoperability	The ability of participants to seamlessly access and/or exchange data within a data space. Intra-data space interoperability addresses the governance, business and technical frameworks (including the data space protocol and the data models) for individual data space instances.
Meta-standard	A standard designed to define or annotate data models within a particular domain or across multiple domains. These meta-standards provide a framework or guidelines for creating and annotating other standards (data models), ensuring consistency, interoperability, and compatibility.
Offering Description	A text that specifies the terms, conditions and other specifications, according to which an offering will be provided and can be consumed.
Ontology	A data model that defines knowledge within and across domains by modelling information objects and their relationships, often expressed in open metamodel standards like OWL, RDF, or UML.

Operational Stage	The stage in the development cycle that starts when a data space initiative has a tested implementation of infrastructure(s) and governance framework, and the first use case becomes operational (data flowing between data providers and data recipients and use case providing the intended value).
Preparatory Stage	The stage in the development cycle that starts when a data space initiative has a critical mass of committed stakeholders and there is an agreement to move forward with the initiative and proceed towards creating a data space. It is typical for this stage that such partners jointly develop use cases and prepare to implement the data space.
Provenance	The place of origin or earliest known history of something. Usually it is the backwards-looking direction of a data value chain which is also referred to as provenance tracking
Reference Datasets	Reference data, such as code lists and authority tables, means data that are used to characterise or relate to other data. Such a reference data defines the permissible values to be used in a specific field for example as metadata. Reference data vocabularies are fundamental building blocks of most information systems. Using common interoperable reference data is essential for achieving interoperability.
Scaling Stage	The stage in the development cycle that starts when a data space initiative has been proven to consistently and organically gain new participants and embrace new use cases. In this stage, the data space can realistically be expected to be financially and operationally sustainable, respond to market changes, and grow over time.
Services	Functionalities for implementing data space capabilities, offered to participants of data spaces. Technical (software) components are needed to implement these services.
Smart Contract	A computer program used for the automated execution of an agreement or part thereof, using a sequence of electronic data records and ensuring their integrity and the accuracy of their chronological ordering (Art 2(39) Data Act)
Trigger	An element, criteria or an event that has occurred in a particular context of a data space, that signals that a particular legal framework must or should be applied.

Trust Anchor	Trust Anchors are bodies, parties, i.e., Conformity Assessment Bodies or technical means accredited by the data space governance authority to be parties eligible to issue attestations about specific claims.
Trust Framework	A composition of policies, rules, standards, and procedures designed for trust decisions in data spaces based on assurances. Trust framework is part of the data space governance framework.
Value Creation Service	Any service aimed to create value out of the data shared in the data space
Vocabulary	A data model that contains basic concepts and relationships expressed as terms and definitions within a domain or across domains, typically described in a meta-standard like SKOS.
Vocabulary Service	A technical component providing facilities for publishing, editing, browsing and maintaining vocabularies and related documentation.

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Document history

Version number	Description	Author	Date
1.1	Version for publication excluding the annex with individual data space results	Capgemini Invent	03/02/2026
1.0	Final version of the report for submission to the European Commission	Capgemini Invent	26/01/2026
0.9	Full draft of the report for DSSC project steering board review	Capgemini Invent	08/01/2026
0.1	Preliminary findings shared with the European Commission	Capgemini Invent	27/11/2025

1 Introduction

The development of Common European Data Spaces is a key enabler of the EU's vision for a trusted and sovereign data economy and the cornerstone of the European Union's data strategy, aimed at fostering a trusted and interoperable data-sharing environment across sectors. Data spaces are "interoperable frameworks based on common governance principles, standards, practices and enabling services, that enable trusted data transactions between participants2". The Data Act provides the legislative foundation for this transformation, promoting fair access to and use of data while ensuring that data holders and users can operate within a harmonised legal framework.

In support of this, the European Commission's standardisation request has mobilised key stakeholders to define common methodologies and frameworks that underpin the operationalisation of data spaces. One of the central standardisation efforts is being led by CEN-CENELEC Joint Technical Committee 25 (JTC 25), which focuses on data, services, and systems interoperability. Within JTC 25, the working item JT025003: "Maturity assessment of Common European Data Spaces"[3] is of particular relevance to data space initiatives (DSIs). This initiative aims to establish a standardised maturity assessment model that enables data space initiatives to evaluate their progress, identify gaps, and benchmark their development against a common European framework.

The **DSSC Maturity Model** was developed to assess the functional capabilities of data space initiatives. The model translates the principles of the DSSC Blueprint Version 2.0 (March 2025) into measurable indicators and development stages, providing a structured approach for evaluating readiness across four dimensions: business, governance and legal, technical, and operational.

This report presents the results of the maturity assessment conducted among EU-funded data space initiatives, using the DSSC Maturity Model and its associated assessment methodology. The assessment was carried out through a structured survey, with responses collected from 14 out of 18 targeted initiatives. The purpose of this report is threefold:

- To provide aggregated insights into the current maturity of EU-funded data spaces, highlighting trends and patterns across the four dimensions.
- To enable stakeholders to identify common strengths and areas for improvement.
- To increase transparency, offering a consolidated view of progress towards a trusted and interoperable European data-sharing environment.

[2] DSSC Glossary: https://dssc.eu/space/BVE2/1071251781/1+Key+Concept+Definitions

[3] https://standards.cencenelec.eu/ords/f?p=205:110:::::FSP_PROJECT,FSP_LANG_ID:81130,25&cs=1DF8B5F978CCEA72981CC1D5BABDBCAF1

This report presents general results only, aggregated across all participating initiatives. These include percentage distributions of responses per indicator and dimension, as well as observations on overall maturity trends. Detailed assessments for each data space initiative are provided to the participants, including development lifecycle stage, suggested focus areas for advancement, radar charts, and descriptions of key strengths and opportunities for improvement.

By sharing these results, this report aims to inform ongoing efforts to operationalise data spaces and accelerate their development in line with European objectives.

2 Methodology

This chapter summarises the methodology used for the maturity assessment presented in this report. The underlying maturity model, indicators, and development cycle stages are defined in the **DSSC Maturity Model**, which is aligned with the DSSC Blueprint V2.0 and published by the Data Spaces Support Centre (DSSC). This report focuses on the application of that model and refers readers to the official documentation for a detailed description of the maturity model itself.

2.1 Reference maturity model

The assessment is based on the **DSSC Maturity Model**, which translates the principles of the DSSC Blueprint into measurable indicators and development cycle stages for data space initiatives. The model defines four core dimensions (business, governance and legal, technical, and operational) and combines quantitative indicator scoring with qualitative, stage-specific criteria for lifecycle progression.

A detailed description of the maturity model, including indicator definitions, scoring logic, and development cycle stages, is publicly available on the DSSC website and is not repeated in this report[4].

2.2 Assessment approach

The maturity assessment was conducted through a structured self-assessment survey completed by participating data space initiatives. The survey is aligned with the **DSSC Maturity Model** and covers the business, governance and legal, technical, and operational dimensions.

Responses were scored according to the predefined scoring logic of the **DSSC maturity model** and aggregated at indicator and dimension level. All results presented in the main body of this report are anonymised and aggregated to enable comparative analysis and peer learning, while avoiding initiative level performance ranking.

Two complementary outputs result from this approach: quantitative maturity scores, expressed as percentages, and qualitative lifecycle stage classifications based on stage-specific criteria. This report focuses on aggregated findings across the data space initiatives, while detailed results for individual data space initiatives are shared with the participants.

[4] DSSC Maturity Model. **https://assets.dssc.eu/rsc/papers/DSSC%20Maturity%20Model.pdf**

2.3 Visualisation of results

For quantitative analysis, indicator level scores are aggregated across data space initiatives and visualised using radar charts and box-and-whisker plots.

The dimension level percentages are visualised using radar charts, offering an overview of maturity across the key dimensions. This supports comparison across data space initiatives, without aggregating into a single overall score.

For the aggregated results on an indicator level, box and whiskers plots are used as visual representation of the distribution of the scores. These summarise data and provide a deeper insight into the distributional characteristics of the groups of scores. The figure below provides a legend of key characteristics that can be read from the plots.

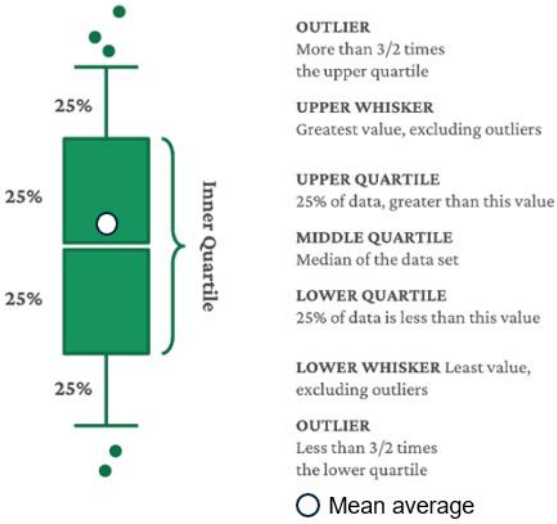

Figure 2: Box and whisker plot legend[5]

2.4 Development cycle stages

The DSSC development cycle stages describe the typical progression of a data space initiative from exploratory to scaling stages. Each stage is defined by a set of qualitative criteria reflecting the maturity required across the business, governance and legal, technical, and operational dimensions.

[5] Source: own modifications based on https://www.codetechnology.com/blog/what-are-box-whisker-plots/

These stage-specific criteria, presented in Table 1, provide a practical reference for assessing maturity and identifying what needs to be in place before transitioning to the next development stage.

Rather than relying on numeric thresholds, qualitative descriptors are used (e.g. planned/defined, documented, implemented) to assess readiness. This approach allows flexibility and accommodates the diverse contexts of data space initiatives.

Table 1: Stage-specific criteria for development cycle progression

EVALUATION CRITERIA			DEVELOPMENT CYCLE STAGES			
Dimension	**Category**	**Questions and sub-questions**	**Exploratory → Preparatory**	**Preparatory → Implementation**	**Implementation → Operational**	**Operational → Scaling**
Business	**Business model development**	***Q1. To what extent has your data space defined and operationalised the following aspects of its business model?***				
		Q1.1 Objectives, growth and profit goals are documented	Partially		Fully	
		Q1.2 Value propositions for data provider, data consumers, intermediaries (if applicable) are articulated and documented	Partially			
		Q1.5 The business model has been tested or validated through stakeholder feedback, pilots, or real-world use			Partially	Fully
	Use case development	***Q2. To what extent has your data space developed and operationalised use cases?***				
		Q2.1 Have you identified specific use cases?	Yes			
		Q2.2 If yes, have you assessed whether the use cases are in line with the needs and parameters of the business model?	Yes			
		Q2.3 If yes, have the use cases been documented and has implementation for at least one of them been initiated?		Yes		
		Q2.4 If yes, are any of the use cases currently operational?			Yes	
		Q2.5 If yes, do you have a process to continuously improve, to expand or to identify improvement opportunities for use cases?				Yes
Governance and legal	**Organisational form and governance authority**	***Q5. To what extent has your data space defined and operationalised the following elements of the governance framework?***				
		Q5.1 The data space has chosen an organisational form. (e.g. legal personality, profit vs non-profit status, place of establishment, level of involvement of the members in the management and operation of the data space)	Partially		Fully	
		Q5.2 The data space has decided on the form (e.g. legal entity, committee, consortium) of the governance authority.			Fully	
		Q5.3 Has the data space decided on the composition of the governance authority (who is part of it and how are they selected?).		Partially	Fully	
		Q5.4 The roles and responsibilities of the governance authority in managing and operating the data space have been specified.		Partially	Fully	
		Q5.5 The data space has a rulebook (bylaws, terms of use or similar) that operationalises the governance framework. (including rules and policies applicable to all data space participants)		Partially	Fully	

EVALUATION CRITERIA			DEVELOPMENT CYCLE STAGES			
Dimension	Category	Questions and sub-questions	Exploratory → Preparatory	Preparatory → Implementation	Implementation → Operational	Operational → Scaling
		Q5.6 The data space has established processes through which the governance authority should perform their duties (including mechanisms for monitoring, review, and continuous improvement).			Fully	
		Q5.7 The governance framework been reviewed and adapted based on operational experience, if applicable.			Partially	Fully
	Participation Management	***Q6. To what extent have the following participation management aspects been defined and implemented in your data space?***				
		Q6.1 Roles and responsibilities of participants		Defined but not yet implemented	Fully defined and implemented	
		Q6.2 Onboarding processes (e.g. joining rules, identity verification, attestation; technical onboarding; data protection policies; etc.)		Defined but not yet implemented	Fully defined and implemented	
		Q6.3 Offboarding processes (e.g. exit procedures, data transfer and deletion protocols; verification of compliance; offboarding support, periodic framework reviews)		Defined but not yet implemented	Fully defined and implemented	
	Regulatory compliance	***Q7. Does your data space have mechanisms in place to monitor compliance with all relevant regulations and legal requirements?***				
		Q7.1 Have you identified triggers or events within your data space that prompt a review of regulatory compliance?		Yes		
		Q7.4 Have you implemented measures to ensure compliance with the identified legal and regulatory frameworks?			Yes	
	Contractual framework	***Q8. Does the data space have a contractual framework in place, including the following elements?***				
		Q8.1 Institutional agreements (i.e., Founding agreements; General Terms and Conditions for participation)			Yes	
		Q8.2 Data sharing agreements (legal basis for data transactions)			Yes	
		Q8.3 Service agreements (all agreements for the provision of services to the data space – e.g. data-related services, agreements for the provision of trust framework services, and agreements for the management of identities.)			Yes	
Technical	**Data interoperability (data models)**	***Q9. To what extent has your data space implemented the following capabilities related to data models?***				
		Q9.1 Your data space has defined and adopted (a) shared and agreed data model(s) across various abstraction layers (vocabulary, ontology, application profile and data schema) used consistently across participants.		Planned or defined, but not yet	Fully implemented	

EVALUATION CRITERIA			DEVELOPMENT CYCLE STAGES			
Dimension	Category	Questions and sub-questions	Exploratory → Preparatory	Preparatory → Implementation	Implementation → Operational	Operational → Scaling
				adopted/implemented		
		Q9.2 The data model(s) in your dataspace is/are stored and published in a vocabulary service to enable discoverability throughout a data space.			Fully implemented	
		Q9.3 The data model(s) is/are based on a formal schema, or metamodel standards that enable semantic interoperability (such as SKOS, RDF, OWL, UML, JSON Schema, XML Schema etc).			Fully implemented	
		Q9.4 Your data space uses reference datasets for consistency.			Fully implemented	
		Q9.5 Processes and responsibilities for maintaining and evolving the data model(s) over time are established (such as documented governance, issue management and maintenance, user support etc).			Fully implemented	
		Q9.6 The data model(s) and datasets used are expressed in DCAT to allow discoverability across data spaces.			Fully implemented	
	Data interoperability (data exchange)	***Q10. To what extent are standardised data exchange protocols implemented in your data space?***				
		Q10.1 A common protocol has been defined and implemented in your data space for data exchange, covering both the control plane and the data plane.		Planned or defined, but not yet implemented	Fully implemented	
		Q10.2 Standardised APIs are available in your data space that allow participants to query, create, update, and delete data.			Fully implemented	
		Q10.3 Your data space can exchange data with participants in other data spaces as part of a federation.				Fully implemented
	Data sovereignty and trust (identity management)	***Q12. To what extent has your data space implemented identity and attestation management functions?***				
		Q12.1 The data space rulebook is provided in a structured, machine-readable format to enable automated compliance checks and interoperability across data spaces.			Fully implemented	
		Q12.2 Identity and attestation mechanisms are implemented using standardised approaches, including W3C Verifiable Credentials.		Planned or defined, but not yet implemented	Fully implemented	

EVALUATION CRITERIA			DEVELOPMENT CYCLE STAGES			
Dimension	**Category**	**Questions and sub-questions**	**Exploratory → Preparatory**	**Preparatory → Implementation**	**Implementation → Operational**	**Operational → Scaling**
		Q12.3 The data space leverages credential exchange protocols such as the Decentralized Claim Protocol (DCP) and OID4VC, enabling participants to share verifiable credentials securely while maintaining data sovereignty.			Fully implemented	
	Data sovereignty and trust (trust framework)	***Q13. To what extent has your data space implemented mechanisms and infrastructure to enable trust through accredited entities and registry-based trust management?***				
		Q13.1 The data space adopts/implements clear guidelines for establishing trust anchors and other entities (e.g., trust service providers, conformity assessment bodies) that are accredited to issue attestations on identities or other attributes.		Planned or defined, but not yet implemented/adopted	Fully implemented/adopted	
		Q13.2 The data space governance is technically enforced through a trust framework, which defines, together with the rules, semantic models for trusted information exchange, processes for compliance verification and technical standards for interoperability.		Planned or defined, but not yet implemented/adopted	Fully implemented/adopted	
		Q13.3 Every participant and service within the data space can be systematically verified against the data space rulebook's requirements, ensuring adherence to governance standards.		Planned or defined, but not yet implemented/adopted	Fully implemented/adopted	
		Q13.4 The data space offers mechanisms (via the data space registry) to store the rulebook, lists of accredited trust anchors (including revoked ones), and the schemas used to assess compliance.		Planned or defined, but not yet implemented/adopted	Fully implemented/adopted	
	Data sovereignty and trust (access and usage policies enforcement)	***Q14. To what extent has your data space implemented mechanisms to enable and enforce access and usage policies?***				
		Q14.1 Access and usage policies are defined, transformed into machine-readable formats, and implemented using policy engines.		Planned or partially implemented	Fully implemented	
		Q14.2 Machine-readable policies are negotiated and enforced during data access and usage.		Planned or partially implemented	Fully implemented	
		Q14.3 Data transactions are monitored and logged to verify compliance with access and usage policies and provide enforcement evidence.		Planned or partially implemented	Fully implemented	
Operational	**Participation**	***Q18. What is the current and projected participation in your data space?***				

EVALUATION CRITERIA			DEVELOPMENT CYCLE STAGES			
Dimension	Category	Questions and sub-questions	Exploratory → Preparatory	Preparatory → Implementation	Implementation → Operational	Operational → Scaling
		Q18.1 Does your data space actively monitor the level of participation (number of data providers and consumers)?			Yes	
		Q18.2 If yes, what is the current number of data providers and data consumers?				Growth in participation
		Q18.3 What is the expected number of potential participants to join within one year?				
	Volume of activity	***Q19. What is the current and projected volume of activity in your data space?***				
		Q19.1 You are currently tracking and monitoring transaction volumes over time (logging and analysing data exchange activity - e.g. number and volume of transactions). Implementation could involve logs, analytics dashboards, transaction registries, billing systems.		Monitoring framework has been planned or defined, but not yet active	Yes	
		Q19.2 What was the number of transactions in the past year?				Growth in participation
		Q19.3 What is the expected number of transactions in the next year?				
		Q19.4 What was the volume of transactions in the past year?				Growth in participation

2.5 Scope of the assessment

For this maturity assessment report we have targeted a total of 18 data space initiatives in 13 sectors. Two main criteria were used to select them: a) data space **recognised as data space initiative** by the European Commission by the time of the survey launch and b) data spaces **having received EU funding dedicated to data space initiatives** through the DIGITAL and/or the Horizon 2020/Horizon Europe programmes. The data space initiatives targeted and analysed in this report are listed below:

Table 2: List of data spaces in scope

Sector	Name of data space	Acronym	Predecessor project	Replied to the survey
Agriculture	Common European Agriculture Data Space	CEADS	AgriDataSpace	Yes
Cultural heritage	Common European data space for cultural heritage	DS4CH	Europeana DSI-4 (2018-2022), Europeana DSI-3 (2017/2018), Europeana DSI-2 (2016/2017), Europeana DSI (2015/2016)	Yes
Energy	Energy Data Spaces	INSIEME	-	No
Green Deal	Data Space for Green Deal	SAGE	GREAT: Preparatory Action for the Green Deal Data Space; multiple other HE funded projects (including AD4GD)	Yes
Health	Health Data Space - cancer images	EUCAIM	AI4HI cluster (Chaimeleon, Incisive, EUCANIMAGE, Primage, Procancer-I)	Yes
	Health Data Space - genomics data	GDI	B1MG	Yes
	Intensive Care Unit Data for Europe	ICUDATA4EU	-	No
	Federated Infrastructure for ICU Data across Europe	INDICATE	-	Yes
Language	Language Data Space	LDS	ELRC, ELG, META-SHARE, ELRC-SHARE	Yes
Manufacturing	Data Space for Manufacturing	SM4RTANCE	Eu Data Sp4ce	Yes
		UNDERPIN	-	Yes

Media	Data Space for Media	TEMS	-	Yes
Mobility	Data Space for Mobility	deployEMDS	PrepDSpace4Mobility	Yes
Public administration	Public Procurement Data Space	PPDS	-	No
Skills	Data Space for Skills	DS4Skills	DS4SKILLS	Yes
	Prometheus-X	Prometheus-X	-	No
Smart communities	Data Space for Smart Communities	DS4SSCC-DEP	DS4SSCC	Yes
Tourism	Tourism Data Space	DeployTOUR	DATES	Yes

3 Business maturity results

The business dimension of the DSSC maturity model assesses the capabilities that enable data spaces to establish a viable and sustainable foundation for value creation. It reflects how data space initiatives define their business objectives, translate them into actionable use cases, manage data offerings, and, where relevant, manage intermediaries and operators. These elements are essential for ensuring that data spaces can deliver value to participants and maintain financial and operational viability over time.

Across the fourteen initiatives assessed, the average overall maturity for the business dimension is 52%, with scores ranging from 7% to 93%, indicating significant variability in readiness. The radar chart in Figure 3 provides an overview of the relative performance of the four indicators within this dimension. Use case development stands out as the most advanced area, followed by data space offering, while business model development and intermediaries and operators show lower maturity levels.

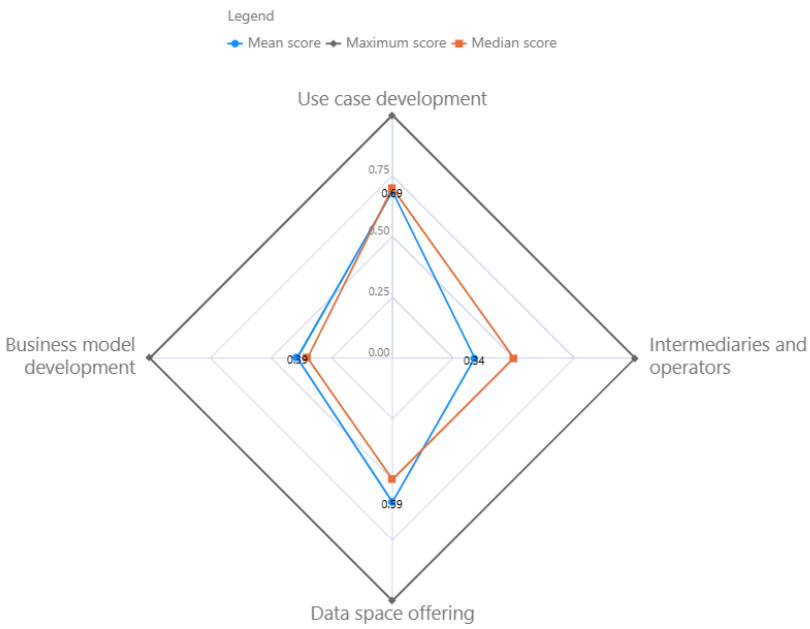

Figure 3: Radar chart for business dimension indicators

The following sections present an analysis of the results for each indicator, combining aggregated results, score distributions, and insights into strengths and areas for improvement.

3.1 Business model development

The business model development indicator assesses the extent to which data space initiatives have defined and operationalised key elements of their business model, as outlined in the **DSSC Blueprint V2.0 business model building block**. This includes documenting objectives, articulating value propositions, defining revenue and funding mechanisms, establishing monitoring strategies, and validating the model through stakeholder feedback or pilots.

Across the fourteen initiatives surveyed, the average maturity score for the business dimension is 39%, with individual scores ranging from 0% to 100%. A score of 100% reflects full implementation of all indicators, whereas 0% indicates that none of the elements are in place. The distribution of overall scores is illustrated in Figure 4, which presents a box plot showing the variability among initiatives. The mean score is 1.96 and the median is 1.75 on a scale from 0 to 5, highlighting that most initiatives cluster at the lower end of the maturity scale, with only one initiative achieving full implementation.

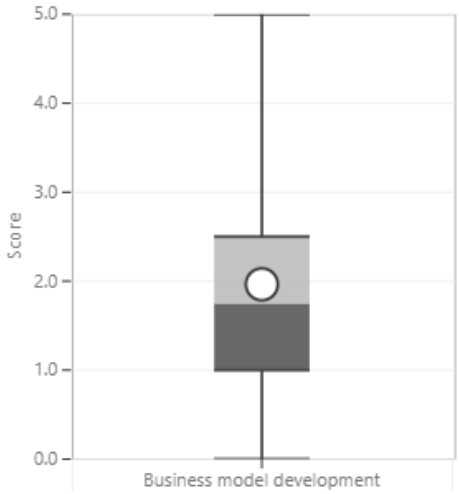

Figure 4: Box plot for business model development scores. Mean=1.96, Median=1.75

Figure 5 presents a stacked bar chart summarising responses for each sub-indicator. The analysis shows that objectives and growth goals are documented by most initiatives, although often only partially. Value propositions for data providers, consumers, and intermediaries are generally articulated, but again rarely fully implemented. Revenue generation and funding mechanisms remain a significant gap, with half of the initiatives reporting no documentation in this area. Monitoring strategies and validation through pilots or stakeholder feedback are the least mature elements, with more than half of initiatives indicating that these practices are not yet in place.

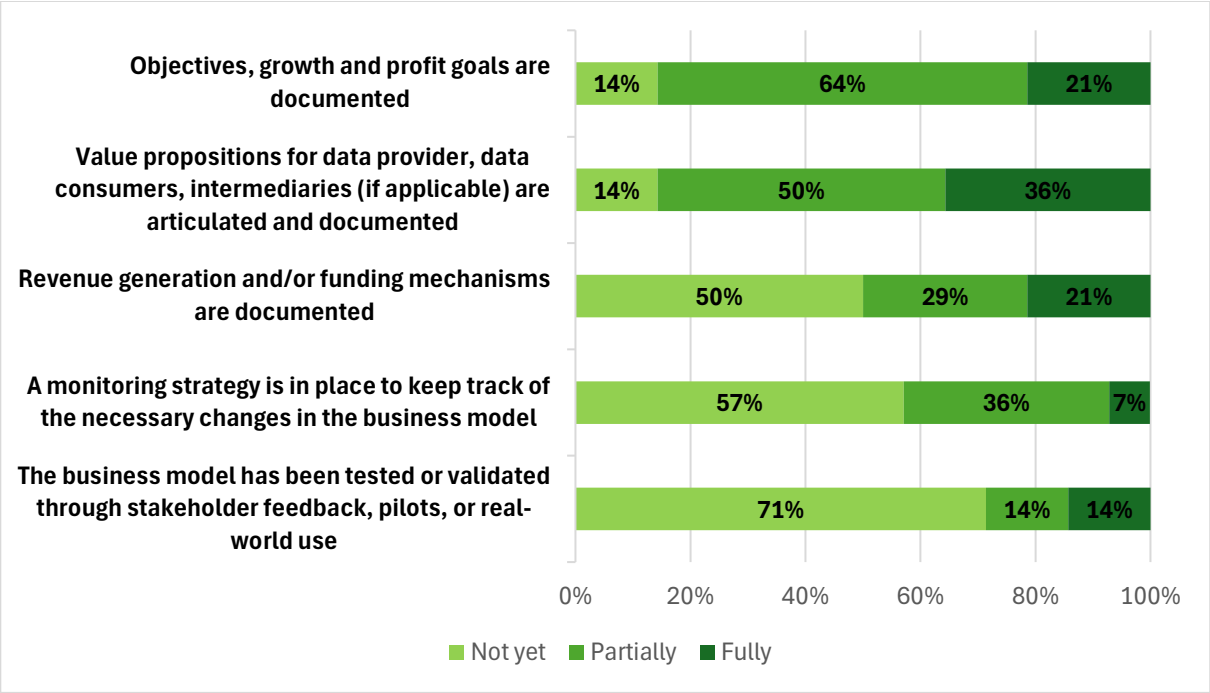

Figure 5: Extent to which data space initiatives defined and operationalised aspects of their business model

These results indicate that while many data space initiatives have begun to define the foundational aspects of their business models, such as objectives and value propositions, fully implemented and validated models remain uncommon at this stage. The limited attention to revenue and funding mechanisms, combined with the absence of monitoring strategies and validation through pilots or stakeholder feedback, suggest that most data space initiatives are not yet equipped to ensure financial sustainability. Progress in these areas is essential for moving beyond early development stages. Establishing clear revenue and funding strategies, implementing mechanisms to monitor and refine the business model, and validating assumptions through real-world testing will strengthen resilience and support the transition toward operational maturity and scaling.

3.2 Use case development

The use case development indicator assesses the extent to which data space initiatives have identified, aligned, documented, implemented, operationalised, and continuously improved use cases, as outlined in the **DSSC Blueprint V2.0 use case development building block**.

Across the fourteen initiatives assessed, the average maturity score for this indicator is 67%, with individual scores ranging from 0% to 100%. A score of 100% signifies full implementation of all sub-indicators, while 0% indicates that none are in place. The overall distribution is shown in Figure 6. The mean score is 3.43 and the median is 3.5 on a scale from 0 to 5, suggesting that most initiatives have progressed beyond initial definition into implementation of use cases.

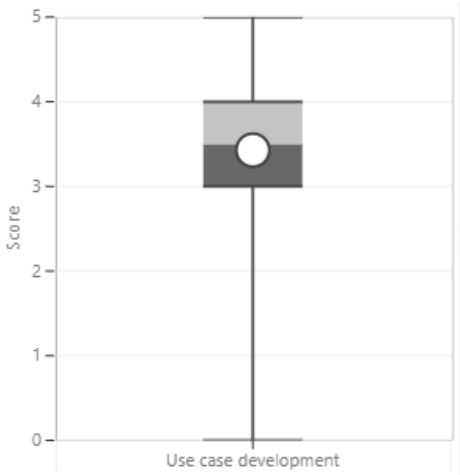

Figure 6: Box plot for use case development scores. Mean=3.43, Median=3.5

Figure 7 presents a stacked bar chart summarising responses for each sub-indicator. The analysis shows that the majority of data space initiatives identified specific use cases (93%), and most of these have been assessed whether the use cases are in line with business needs (77%). Documentation and initiation of implementation are reported at a similar level (77%). Nearly half of the initiatives (46%) report having operational use cases, and a majority 69% have processes in place for continuous improvement and expansion.

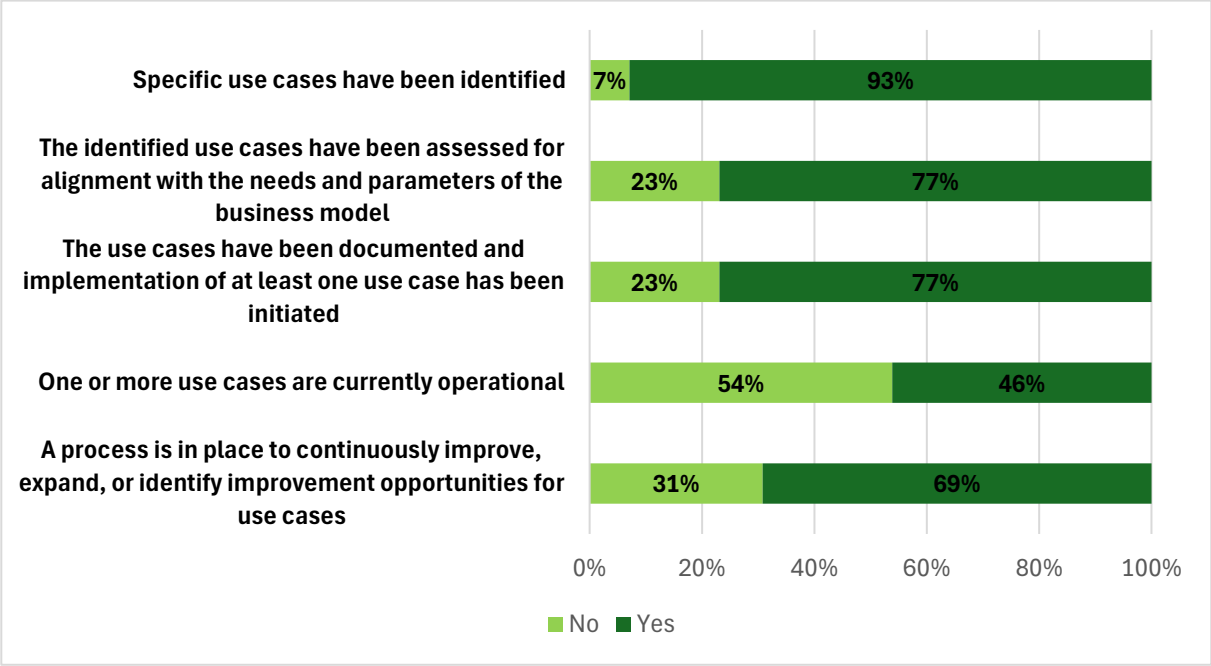

Figure 7: Extent to which data space initiatives developed and operationalised use cases

These results suggest that use case development is a strong area of maturity for many data space initiatives. The majority have moved beyond identification to implementation, and nearly half of the data space initiatives have operational use cases. Continued focus on scaling and refining the

use cases will help data space initiatives deliver tangible value and strengthen their business models.

3.3 Data space offering

The data space offering indicator evaluates the extent to which data space initiatives have identified and aligned data products and services with use cases, established governance mechanisms for managing offerings, and provided support for participants, as outlined in the **DSSC Blueprint V2.0 data space offering building block**.

The average maturity score for the data space offering indicator across assessed initiatives is 61%, with individual scores ranging from 0% to 100%. A score of 100% reflects full implementation of all sub-indicators, while 0% means none are in place. Figure 8 illustrates the score distribution. The mean score is 1.82 and the median is 1.5 on a scale from 0 to 3, indicating that most data space initiatives have partially implemented these capabilities.

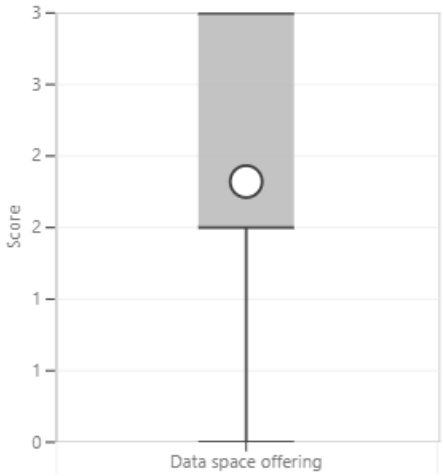

Figure 8: Box plot for data space offering scores. Mean=1.82, Median=1.5

Figure 9 indicates that most data space initiatives have made progress in defining their data space offerings and its governance structures. It reveals that 43% of the data space initiatives have fully identified and aligned their offerings with current or future use cases, while 50% have partially implemented this capability. Governance mechanisms for onboarding, managing, and maintaining offerings are fully implemented by 29% of the data space initiatives, partially in place for 57%, and 14% not having addressed this area. Support for participants in developing and offering high-quality data products, such as templates and quality criteria, is somewhat less advanced with 36% having this fully in place, 43% report partially having implemented support, and 21% have not

yet started to implement support to participants on data products.

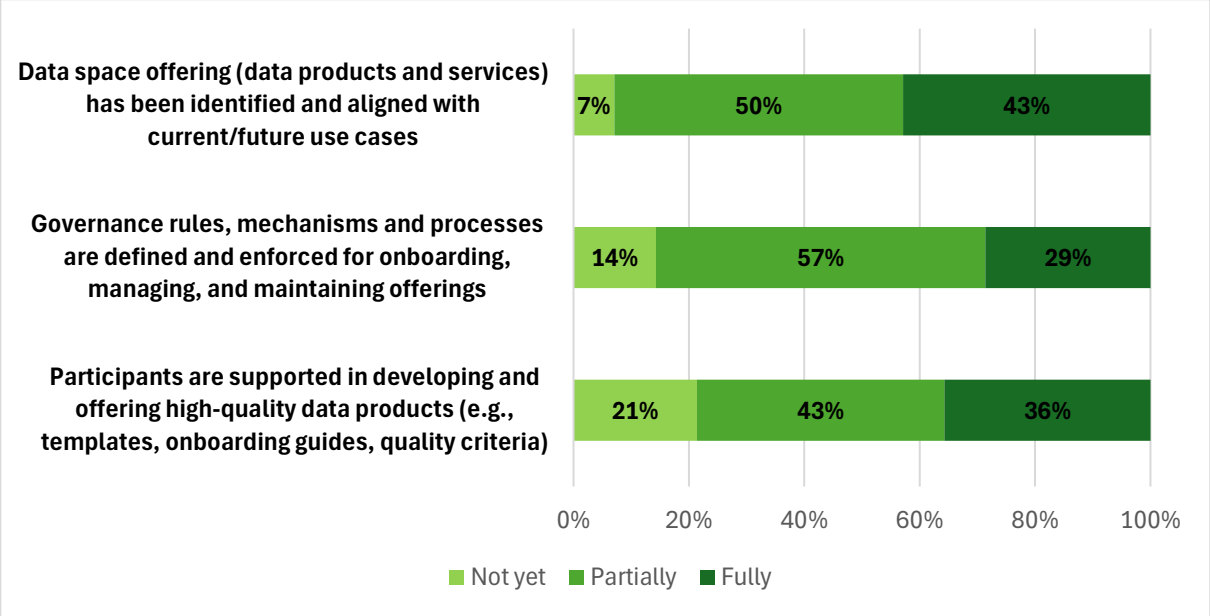

Figure 9: Extent to which data space initiatives developed a strategy and governance approach for its data space offering

Overall, while foundational elements are largely established, there is still room for improvement in governance enforcement and participant support to ensure consistent quality and scalability.

3.4 Intermediaries and operators

The intermediaries and operators indicator evaluates whether initiatives have defined roles, service types, and procurement models for intermediaries/operators and established governance mechanisms to manage them, as outlined in the **DSSC Blueprint V2.0 intermediaries and operators building block**.

The average maturity score for the intermediaries and operators indicator across the assessed data space initiatives is 34%, with individual scores ranging from 0% to 50%. A score of 50% indicates that half of the sub-indicators have been implemented. Figure 10 shows the distribution of the scores for this indicator. The mean score is 0.68 and the median is 1 on a scale from 0 to 2, reflecting early stage planning.

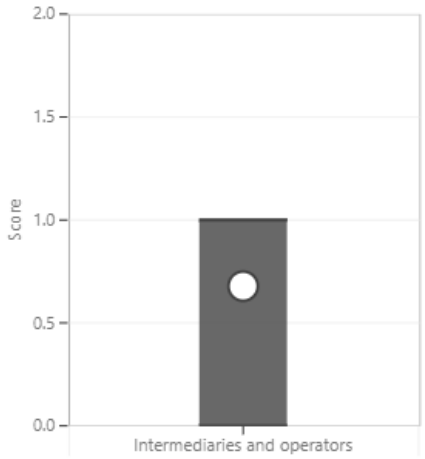

Figure 10: Box plot for intermediaries and operators scores. Mean=0.68, Median=1

The bar chart in Figure 11 indicates that no data space initiative has fully defined intermediary/operator roles. However, 64% report partial definition, and 71% have partially defined governance mechanisms to manage intermediaries/operators. 29% indicate that intermediaries/operators are not applicable to their model.

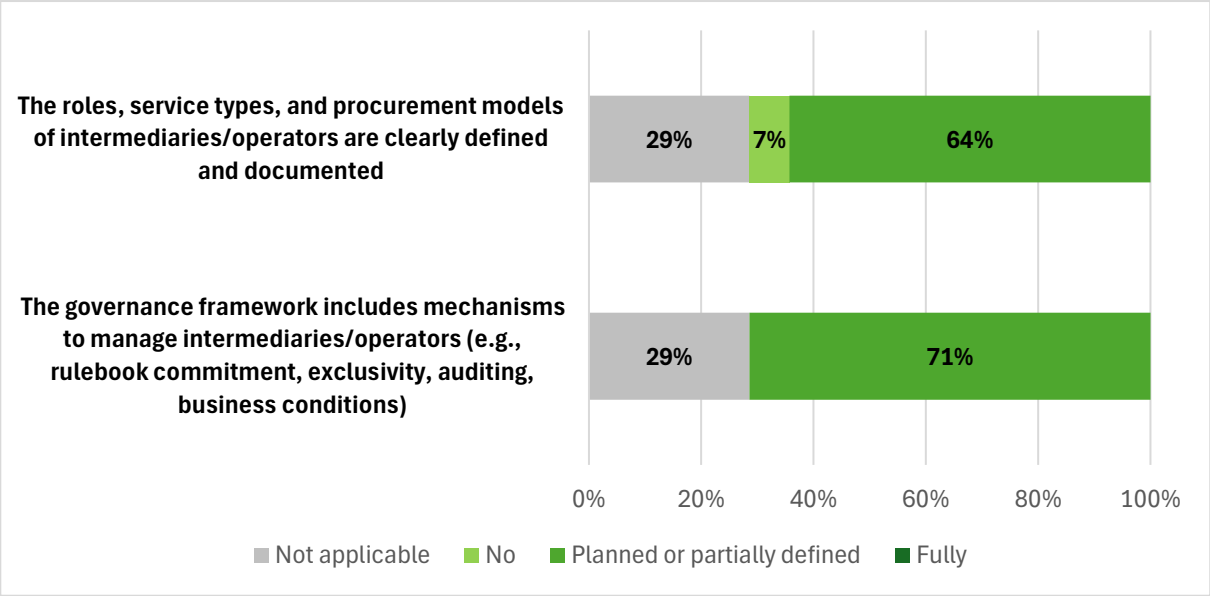

Figure 11: Extent to which data space initiatives defined the roles and service models of intermediaries and operators, and established governance mechanisms to manage them

These results suggest that intermediaries and operators are still emerging components. Data space initiatives remain largely in the planning stage for this indicator, with none having fully defined roles, service models, or governance mechanisms. To progress, the focus should shift from planning to implementation where relevant to ensure accountability and service quality.

4 Legal/governance maturity results

The governance and legal dimension of the DSSC maturity model evaluates the structures and mechanisms that ensure trust, accountability, and compliance within data space initiatives. It includes four indicators, which are organisational form and governance authority, participation management, regulatory compliance, and contractual framework. Together, these elements provide the foundation for transparent decision-making, secure participation, and legal certainty across the data space ecosystem.

Across the fourteen initiatives assessed, the average overall maturity for this dimension is 42%, with scores ranging from 5% to 87%, reflecting considerable variability in readiness. The radar chart in Figure 12 provides a visual overview of the relative performance of the four indicators. Regulatory compliance emerges as the most advanced area, indicating strong progress in identifying and applying relevant legal frameworks. Participation management follows, suggesting that many initiatives have begun formalising roles and onboarding processes. In contrast, organisational form and governance authority and contractual framework show lower maturity, highlighting gaps in governance structures and enforceable agreements.

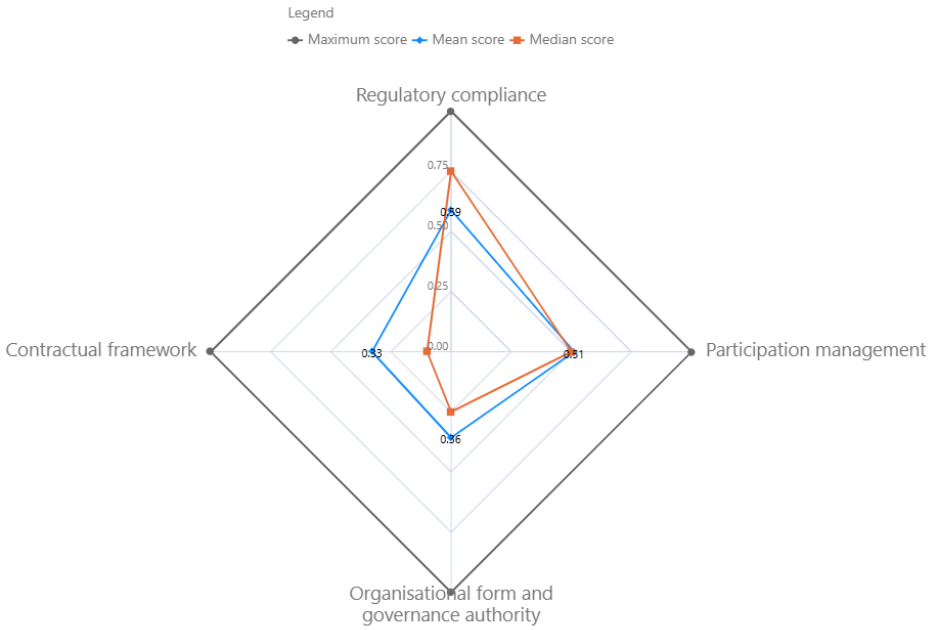

Figure 12: Radar chart governance and legal dimension indicators

The following sections present an analysis of the results for each indicator, combining aggregated results, score distributions, and insights into strengths and areas for improvement.

4.1 Organisational form and governance authority

The organisational form and governance authority indicator evaluates whether initiatives have formalised their organisational structure, governance authority, roles and responsibilities, rulebook, and governance processes, as outlined in the **DSSC Blueprint V2.0 organisational form and governance authority building block**.

The average maturity score for the organisational form and governance authority indicator is 36%, with individual scores ranging from 0% to 93%. A score of 93% represents near-complete implementation of all sub-indicators, while 0% indicates that none of the elements are in place. Figure 13 illustrates the distribution of these scores. The mean score is 2.5 and the median is 1.75 on a 0 to 7 scale, indicating partial establishment of several elements overall.

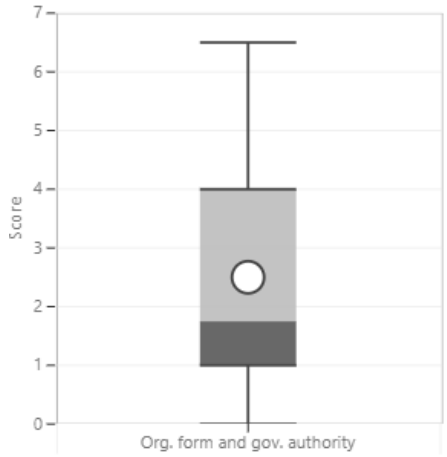

Figure 13: Box plot for organisational form and governance authority scores. Mean=2.5, Median=1.75

The breakdown of responses, shown in Figure 14, provides further insight. Organisational form is fully defined in 21.4% of the data space initiatives and partially defined in 42.9%. The form of the governance authority is fully decided in 35.7%, while half of the data space initiatives have not yet addressed this element. The composition of the governance authority and specification of roles and responsibilities are often partially addressed (43% and 57%). A rulebook is fully in place for just 14% of the initiatives and partially for 50% of them. Review and adaptation of the governance framework based on operational experience, a later stage capability, remains largely unaddressed (71% not yet).

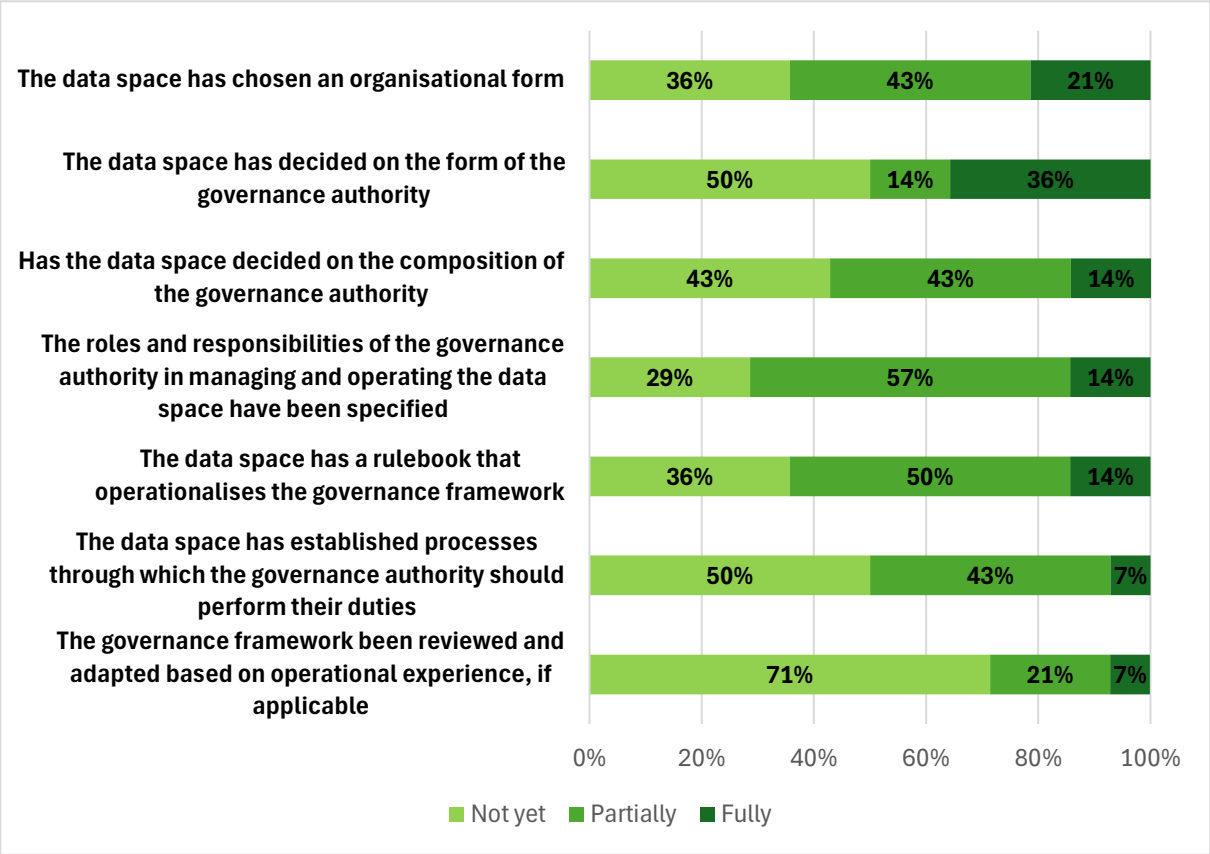

Figure 14: Extent to which data space initiatives defined and operationalised the following elements of the governance framework

Governance structures in data spaces are still maturing, with most elements either not started or partially implemented. Foundational steps, such as choosing an organisational form and defining the governance authority, are more mature than advanced steps like operational adaptation. These results suggest that while many data space initiatives are actively formalising governance structures, critical gaps remain in operationalising processes and ensuring adaptability. Moving forward, data space initiatives should prioritise completing rulebooks, implementing governance execution mechanisms, and introducing review cycles to maintain trust and accountability as data spaces scale.

4.2 Participation management

The participation management indicator assesses the extent to which initiatives have defined and implemented participant roles and responsibilities, and established onboarding and offboarding processes, as outlined in the **DSSC Blueprint V2.0 participation management building block**. Onboarding typically includes joining rules, identity verification, attestation, technical onboarding steps, and adherence to data protection policies. Offboarding involves exit procedures, secure data

transfer or deletion protocols, compliance checks, and support for participants leaving the data space.

The average maturity score across the fourteen initiatives is 50%, with individual scores ranging from 0% to 100%. A score of 100% reflects full implementation of all sub-indicators, while 0% means none are in place. Figure 15Figure 8 illustrates the score distribution. The mean score is 1.54 and the median is 1.5 on a scale from 0 to 3, indicating that most data space initiatives have partially implemented participation management elements.

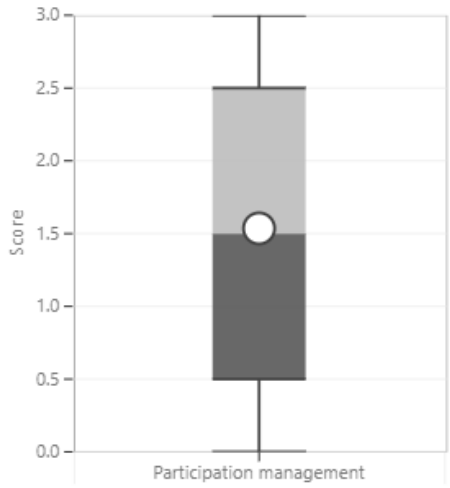

Figure 15: Box plot for participation management scores. Mean=1.54, Median=1.5

The breakdown of responses, shown in Figure 16, highlight that roles and responsibilities are fully implemented in 29% of the data space initiatives and defined but not yet implemented in 50%. Onboarding processes, such as joining rules and identity verification, are fully implemented in 29%, with 36% defined but not yet implemented. Offboarding processes lag behind compared to the other participation management elements, with only 21% fully implemented and 43% not yet defined.

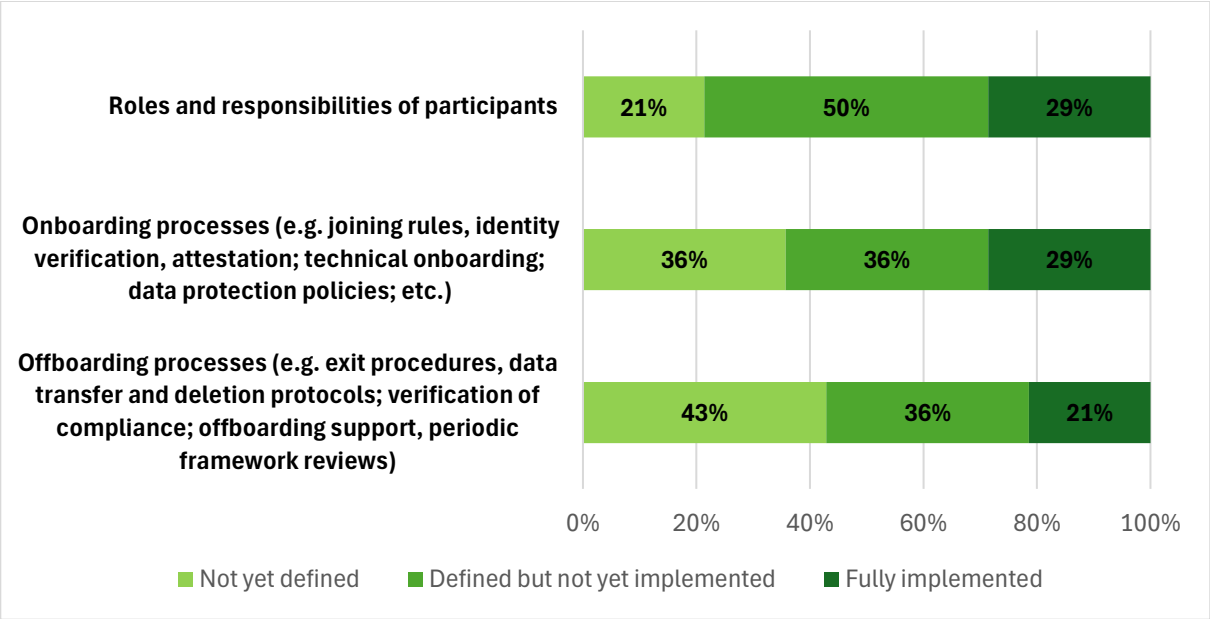

Figure 16: Extent to which data space initiatives have the following participation management aspects defined and implemented

These findings indicate that while data space initiatives are progressing toward structured participant lifecycle management, offboarding remains a critical area for improvement. Strengthening onboarding and offboarding processes will enhance trust and compliance, ensuring that data space initiatives can manage participant transitions effectively and securely.

4.3 Regulatory compliance

The regulatory compliance indicator evaluates whether data space initiatives have identified compliance triggers, conducted recurring reviews, analysed applicable legal frameworks, and implemented measures to ensure compliance, as outlined in the **DSSC Blueprint V2.0 regulatory building block**. Compliance triggers refer to specific events or conditions, such as changes in data type, participant roles, or domain context, that signal the need to apply or review legal requirements. Recurring reviews ensure that compliance remains up to date as regulations evolve. Implementation measures include documented processes, technical enforcement mechanisms, and monitoring systems to verify adherence.

The overall maturity level for this indicator is relatively high compared to other governance elements. The average maturity score for the regulatory compliance indicator across the data space initiatives is 61%, with individual scores ranging from 0% to 100%. A score of 100% reflects full implementation of all sub-indicators, while 0% means none are in place. Figure 17 illustrates the score distribution. The initiatives have a mean score of 2.43 and a median of 3 on a scale of 0 to 4, indicating that most initiatives have adopted multiple compliance elements.

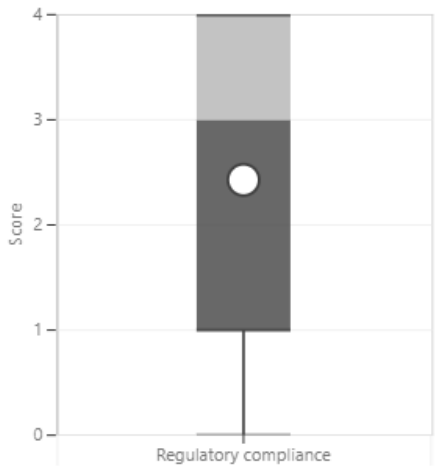

Figure 17: Box plot for regulatory compliance scores. Mean=2.43, Median=3

The breakdown of responses, shown in Figure 18, reveals that 93% of the data space initiatives have identified and analysed applicable EU and sector-specific legislation. Compliance triggers are identified in 57%, and recurring reviews are conducted by 43%. Half of the initiatives have implemented measures to ensure compliance with identified frameworks.

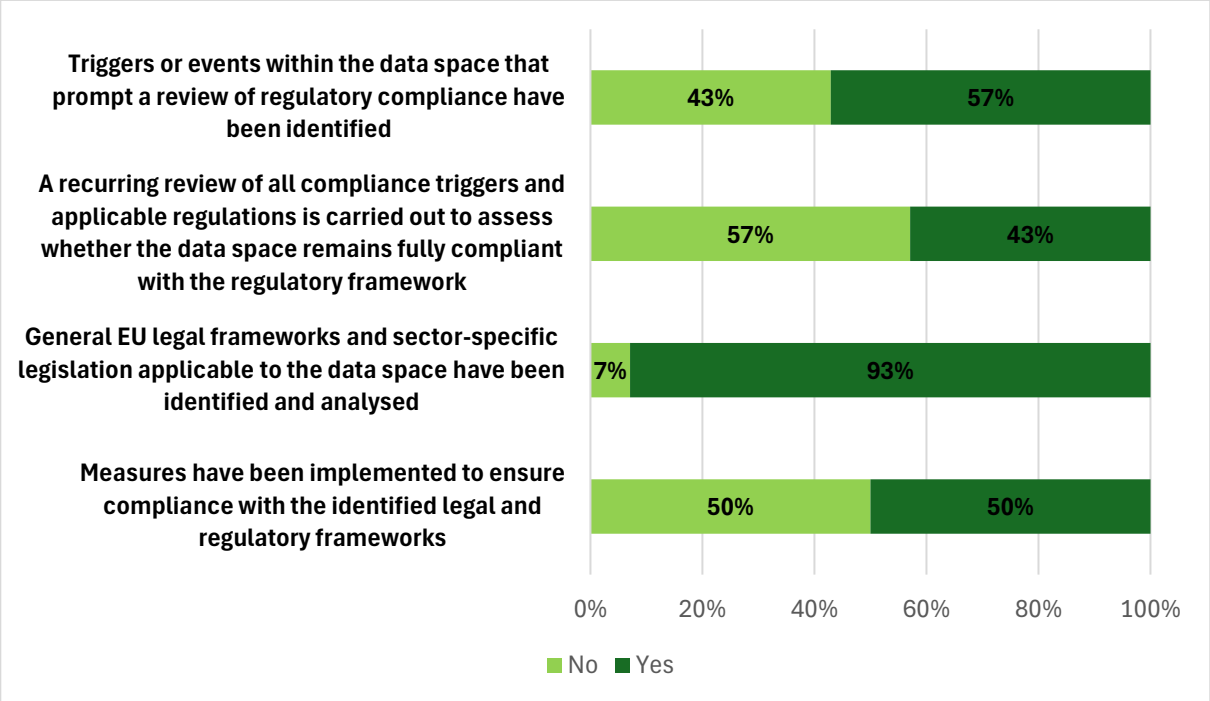

Figure 18: Extent to which data space initiatives have mechanisms in place to monitor compliance with all relevant regulations and legal requirements

These results demonstrate strong progress in legal awareness and documentation, but recurring review and full implementation of compliance measures remain uneven. Establishing systematic compliance audits, automating enforcement where possible, and closing implementation gaps will be essential to avoid regulatory risks.

4.4 Contractual framework

The contractual framework indicator evaluates whether initiatives have established institutional agreements, data sharing agreements, service agreements, jurisdictional assessments, and enforcement mechanisms, as outlined in the **DSSC Blueprint V2.0 contractual framework building block**. Institutional agreements typically include founding agreements and general terms and conditions for participation. Data sharing agreements define the legal basis for transactions among participants, while service agreements cover the provision of technical and trust services. Jurisdictional assessments clarify applicable law and courts for dispute resolution. Enforcement mechanisms may include smart contracts or other automated compliance tools to ensure obligations are met.

The overall maturity level for this indicator is low. Across the analysed data space initiatives, the average maturity score is 33%, with individual scores ranging from 0% to 100%. The distribution of scores is shown in Figure 19, which presents a box plot illustrating variability. The mean score is 1.54 and the median is 0.5 on a scale from 0 to 5, indicating that most data space initiatives are at an early stage of contractual formalisation.

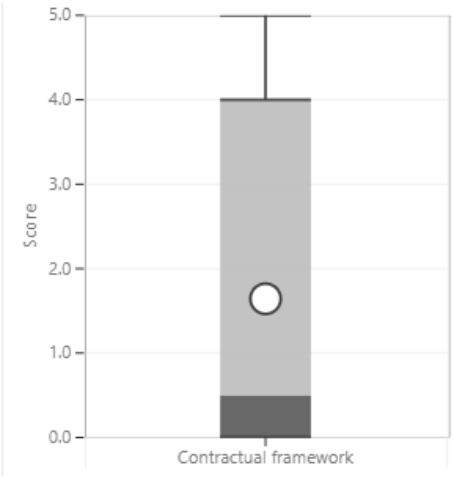

Figure 19: Box plot for regulatory compliance scores. Mean=1.54, Median=0.5

Figure 20 indicates that institutional and data sharing agreements are in place in 43% of the data space initiatives, while service agreements are less common (29%). Jurisdictional assessments have been conducted in 43%, and enforcement through smart contracts is rare (7%). This suggests that while foundational agreements are emerging, operational enforceability and clarity on legal jurisdiction remain underdeveloped.

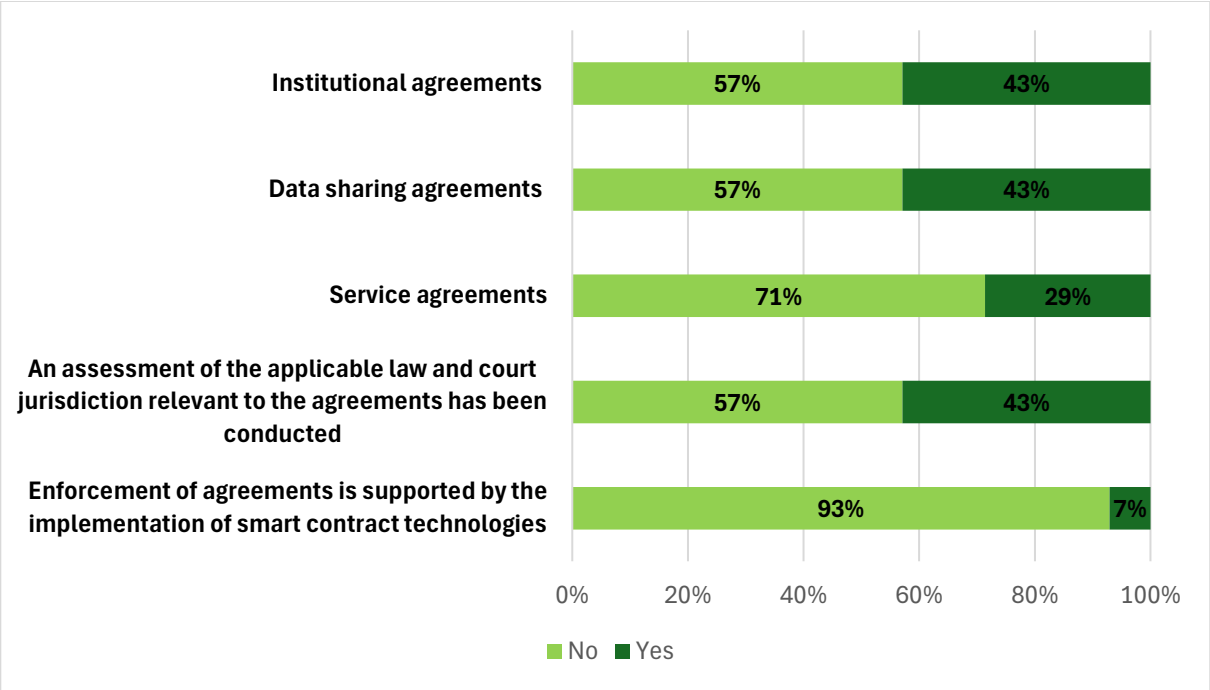

Figure 20: Extent to which data space initiatives have a contractual framework in place

These findings highlight the need to strengthen contractual frameworks, particularly service-level agreements and enforcement mechanisms, to ensure operational clarity and legal certainty. For data space initiatives that are operational or close to implementation, completing foundational agreements, conducting jurisdictional assessments for cross-border operations, and exploring automation for enforcement are recommended.

5 Technical maturity results

The technical dimension of the DSSC maturity model assesses the capabilities that enable interoperability, trust, and value creation within data spaces. It brings together indicators that reflect three core areas, which are data interoperability, data sovereignty and trust, and data value creation enablers. These areas encompass the mechanisms required to ensure that data spaces can exchange information securely, enforce governance rules, and provide participants with accessible and high-quality data products and services.

Across the fourteen initiatives assessed, the average overall maturity for the technical dimension is 45%, with scores ranging from 2% to 74%, highlighting substantial variability in readiness. The radar chart in Figure 21 provides an overview of the relative performance of the nine indicators within this dimension. Indicators related to data description and publication capabilities show the highest maturity, reflecting progress in enabling discoverability and standardised metadata practices. Data models also demonstrate moderate maturity, while data exchange protocols and provenance mechanisms are slightly less mature. Capabilities linked to trust, such as identity management and trust frameworks, remain less developed, and value creation services represent the weakest area overall.

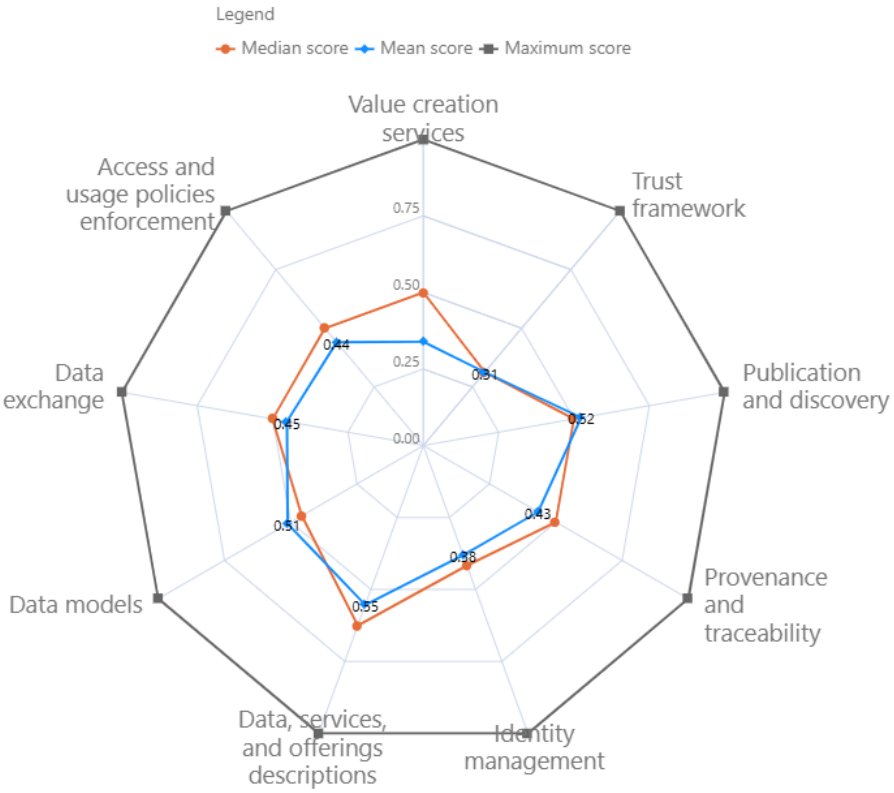

Figure 21: Radar chart technical dimension indicators

The following sections present an analysis of the results for each indicator, combining aggregated results, score distributions, and insights into strengths and areas for improvement.

5.1 Data interoperability

5.1.1 Data models

The data models indicator assesses the extent to which data space initiatives have implemented capabilities that enable semantic interoperability and consistent data representation, as outlined in the **DSSC Blueprint V2.0 data models building block**. This includes defining and adopting shared data models across abstraction layers, ensuring discoverability through vocabulary services, applying formal schema standards, using reference datasets, establishing governance for maintenance, and expressing models in open standards such as DCAT.

Across the fourteen initiatives surveyed, the average maturity score for this indicator is 51%, with individual scores ranging from 8% to 100%. A score of 100% reflects full implementation of all sub-indicators, whereas 8% indicates that only minimal progress has been made. The distribution of overall scores is shown in Figure 22, which presents a box plot illustrating the variability among initiatives. The mean score is 3.07 and the median is 2.75 on a scale of 0 to 6, indicating that most initiatives are positioned around mid-level maturity, with one initiative achieving full implementation.

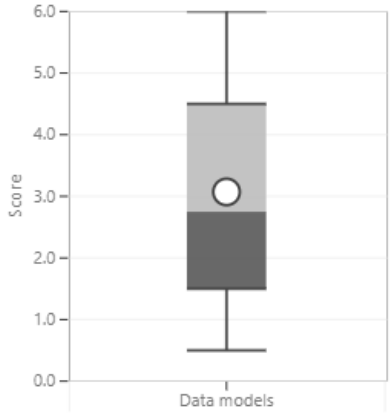

Figure 22: Box plot for data models scores. Mean=3.07, Median=2.75

Further details are provided in Figure 23, which displays a stacked bar chart summarising responses for each sub-indicator. The analysis shows that most initiatives have defined and adopted shared data models across abstraction layers, although often only partially. Formal schema standards such as SKOS, RDF, OWL, UML, and JSON Schema are widely applied, with almost half of the data space initiatives reporting full implementation. However, the use of reference datasets for consistency is limited, with half of the initiatives indicating that this capability is not yet in place. Processes for maintaining and evolving data models over time are also underdeveloped, with 42.9% of data space initiatives reporting no such mechanisms planned or defined. Expression of data models in DCAT to allow discoverability across data spaces are

moderately implemented, with 11 initiatives reporting that they are either planned/defined or fully implemented.

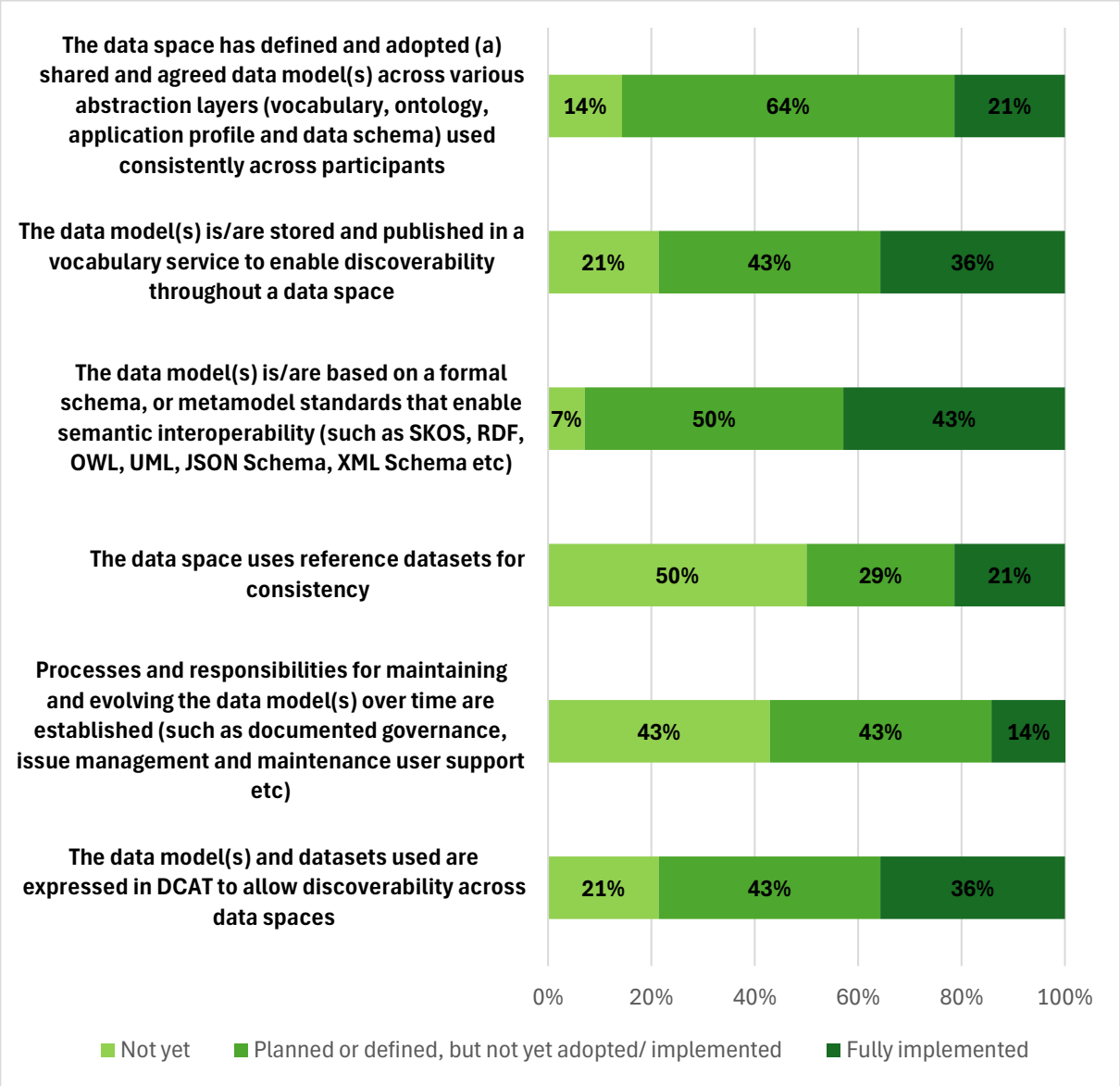

Figure 23: Extent to which data space initiatives have implemented capabilities related to data models

These results suggest that while progress has been made in defining and adopting shared data models and applying formal standards, other capabilities that ensure interoperability and governance remain incomplete. The absence of plans for maintenance processes and limited use of reference datasets pose risks to consistency and scalability. To advance maturity, initiatives could focus on establishing governance mechanisms for model evolution, integrating reference datasets, and ensuring that models are expressed in open standards (DCAT) to support cross data space interoperability, if applicable.

5.1.2 Data exchange

The data exchange indicator evaluates the extent to which data space initiatives have implemented mechanisms for secure and standardised data sharing, as defined in the **DSSC Blueprint V2.0 data exchange building block**. This includes the adoption of common protocols for data exchange covering both the control and data planes, the availability of standardised APIs for data operations, and the capability to exchange data with other data spaces as part of a federation.

The average score across the data space initiatives is 45%, with results ranging from 0% to 83%. This spread reflects significant differences in readiness, with some initiatives having implemented capabilities while others have yet to start. The distribution of scores is shown in Figure 24, which presents a box plot illustrating the variability. The mean score is 1.35 and the median is 1.5 on a scale of 0 to 3, confirming partial readiness with most initiative having moved beyond the initial planning stage but work is still required to achieve operational data exchange capabilities.

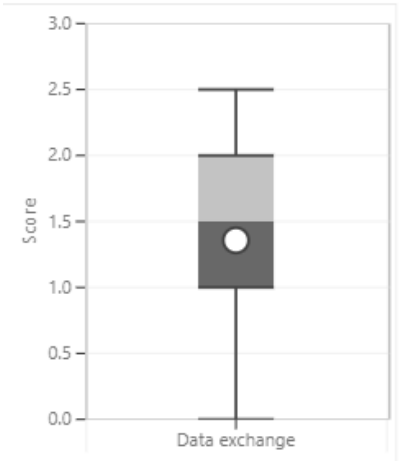

Figure 24: Box plot for data exchange scores. Mean=1.35, Median=1.5

When taking a closer look at the sub-indicators, illustrated in Figure 25, it reveals that defining and implementing a common protocol for data exchange is the most advanced element, with over 1/3 of data space initiatives reporting full implementation and nearly half indicating that protocols are at least defined/planned. Standardised APIs for querying, creating, updating, and deleting data are less mature, with 21% who have fully implemented and half of the initiatives in the planning phase. The capability to exchange data with other data spaces as part of a federation is the least developed at this stage, with one data space initiative reporting full implementation and almost half of the data space initiatives indicating that this functionality is not yet planned for.

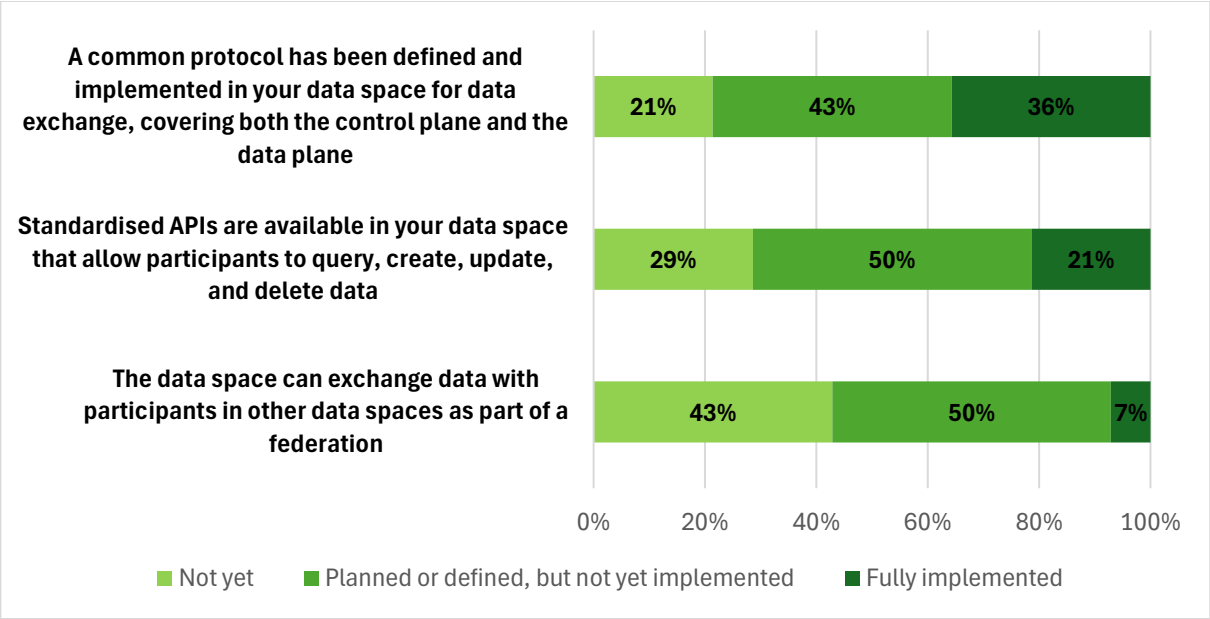

Figure 25: Extent to which data space initiatives have implemented standardised data exchange protocols

These findings suggest that while progress has been made in defining protocols and APIs, actual implementation remains limited, and interoperability across data spaces is still largely aspirational. Moving forward, initiatives could focus on operationalising common protocols and APIs. Enabling federated data exchange is critical for achieving the vision of interconnected data spaces. Strengthening these capabilities will allow data spaces to transition from isolated implementations toward a federated ecosystem.

5.1.3 Provenance and traceability

The provenance and traceability indicator measures the extent to which initiatives have implemented mechanisms to track data usage and enforce contractual compliance, as outlined in the **DSSC Blueprint V2.0 provenance and traceability building block**. This includes capabilities for monitoring the sharing and usage of data, managing data sharing agreements, and applying standardised models or protocols for provenance and traceability.

The average score across the fourteen initiatives is 46%, with results ranging from 0% to 100%. This wide range reflects significant differences in readiness, with some initiatives having implemented all required capabilities while others have yet to begin. The distribution of scores is shown in Figure 26, which presents a box plot illustrating the variability. The mean score is 1.39 and the median is 1.5 on a scale of 0 to 3, suggesting that most initiatives have progressed beyond initial planning but remain far from full implementation.

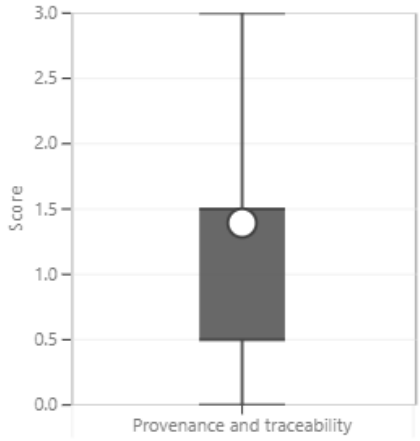

Figure 26: Box plot for provenance and traceability scores. Mean=1.39, Median=1.5

The breakdown of responses by sub-indicator, shown in Figure 27, provides further insights. Mechanisms to track the sharing and usage of data and to monitor and manage data sharing contracts are partially implemented by half of the initiatives, while 21.4% report full implementation. The use of standardised models or protocols for provenance and traceability is even less mature, with 14% fully implemented and the majority still in the planning stage. These results indicate that while awareness of these capabilities is high, operationalisation remains limited.

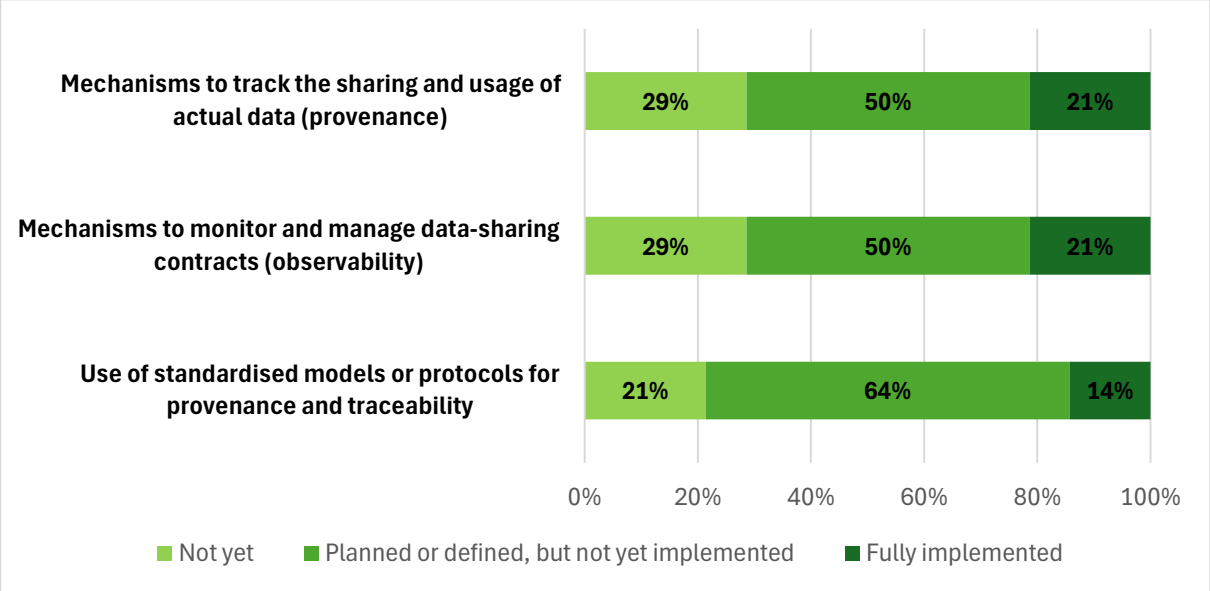

Figure 27: Extent to which data space initiatives have defined or implemented provenance and traceability elements

The results show encouraging progress, as most initiatives have already defined or planned mechanisms for tracking data usage and managing data sharing agreements. This demonstrates strong awareness of the importance of provenance and observability for building trust and accountability. While full implementation is still limited, the fact that the majority of the data space

initiatives are actively working on these capabilities provides a good foundation for future development.

5.2 Data sovereignty and trust

5.2.1 Identity management

The identity management indicator assesses the extent to which initiatives have implemented mechanisms for identity verification and attestation, as well as the technical enablers for secure credential exchange, in line with the **DSSC Blueprint V2.0 identity management building block**. This includes providing the data space rulebook in a structured, machine-readable format, implementing identity and attestation mechanisms using standardised approaches such as W3C Verifiable Credentials, and leveraging credential exchange protocols like the Decentralized Claim Protocol (DCP) and OID4VC to ensure secure and sovereign data sharing.

For this indicator, the overall maturity level is relatively low compared to other technical capabilities. The average score across the data space initiatives is 38%, with results ranging from 0% to 83%. The distribution of scores is shown in Figure 28, which presents a box plot illustrating the variability. The mean score is 1.14 and the median is 1.25 on a scale of 0 to 3, indicating that most initiatives are still in the early stages of implementation, with progress concentrated around planning and partial adoption.

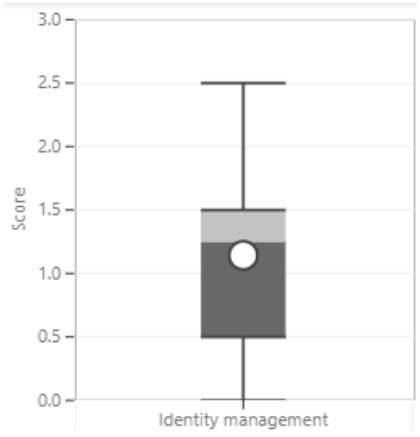

Figure 28: Box plot for identity management scores. Mean=1.14, Median=1.25

Figure 29 provides further insight on the results by sub-indicator. Half of the initiatives have defined plans to provide the rulebook in a machine-readable format, none have fully implemented this capability yet. Identity and attestation mechanisms based on standardised approaches are more advanced, with 21% having fully implemented them, and the majority being in the planning stage. Similarly, credential exchange protocols such as DCP and OID4VC are being considered by many initiatives, with half reporting that these capabilities are planned or defined.

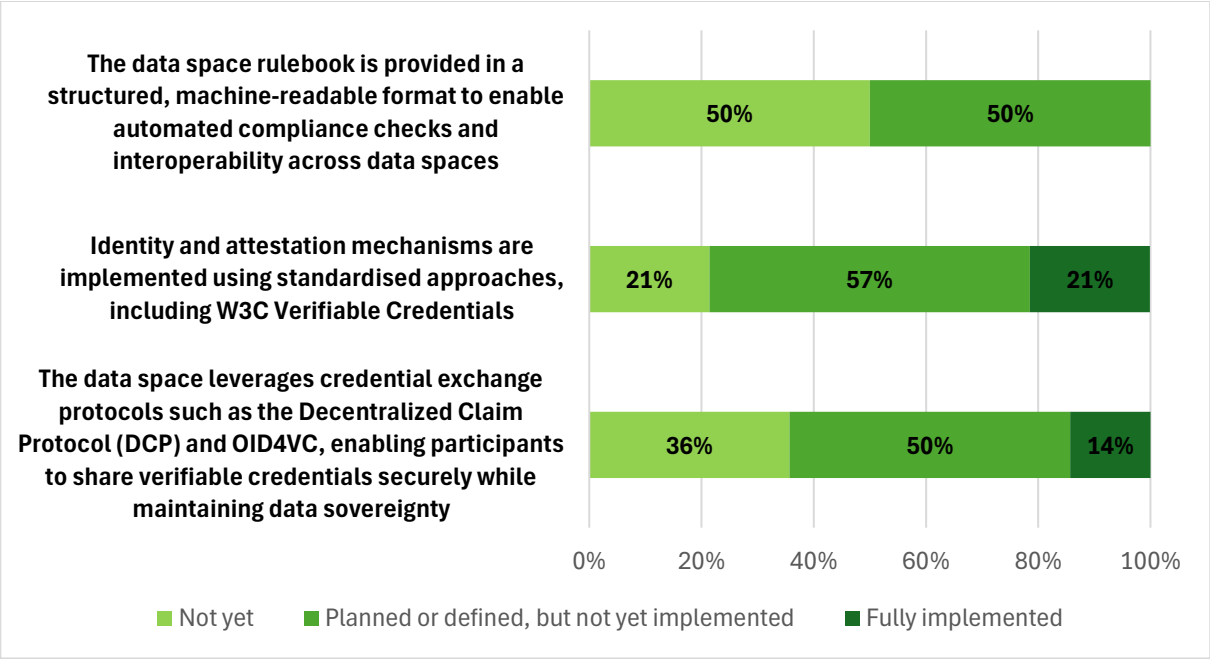

Figure 29: Extent to which data space initiatives have implemented identity and attestation management functions

These results are encouraging, as they demonstrate strong awareness of the importance of identity management and trust mechanisms for enabling secure and interoperable data spaces. While full implementation is still limited, the fact that most initiatives have defined or planned these capabilities provides a solid foundation for progress. Moving from planning to implementation will allow data space initiatives to enforce governance rules automatically and strengthen trust among participants.

5.2.2 Trust framework

The trust framework indicator evaluates the extent to which initiatives have implemented mechanisms to technically enforce governance and establish trust anchors, as outlined in the **DSSC Blueprint V2.0 trust framework building block**. This includes adopting clear guidelines for accredited entities, enforcing governance through a trust framework, enabling systematic verification of participants and services, and providing registry-based mechanisms to store rulebooks and compliance schemas.

For this indicator, the overall maturity level is the lowest compared to other technical capabilities. The average score across the fourteen initiatives is 31%, with results ranging from 0% to 63%. The distribution of scores is shown in Figure 30, which presents a box plot illustrating the variability. The mean score is 1.25 and the median is 1.25on a scale of 0 to 3, indicating that most initiatives are in the early stages of implementation.

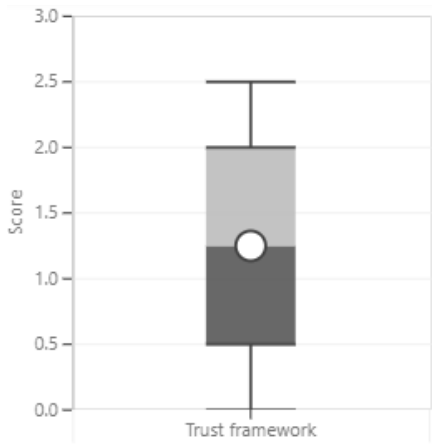

Figure 30: Box plot for trust framework scores. Mean=1.25, Median=1.25

The breakdown of responses by sub-indicator provides further insights, as illustrated in Figure 31. 79% of data space initiatives have defined guidelines for establishing trust anchors and accredited entities, although none have fully implemented this capability yet. Technical enforcement of governance through a trust framework is planned or defined by 43% of the data space initiatives, while 14% report full implementation. Systematic verification of participants and services against rulebook requirements and registry-based mechanisms for storing rulebooks and trust anchors are the least mature elements, with most initiatives still at the planning stage or not yet planned or defined.

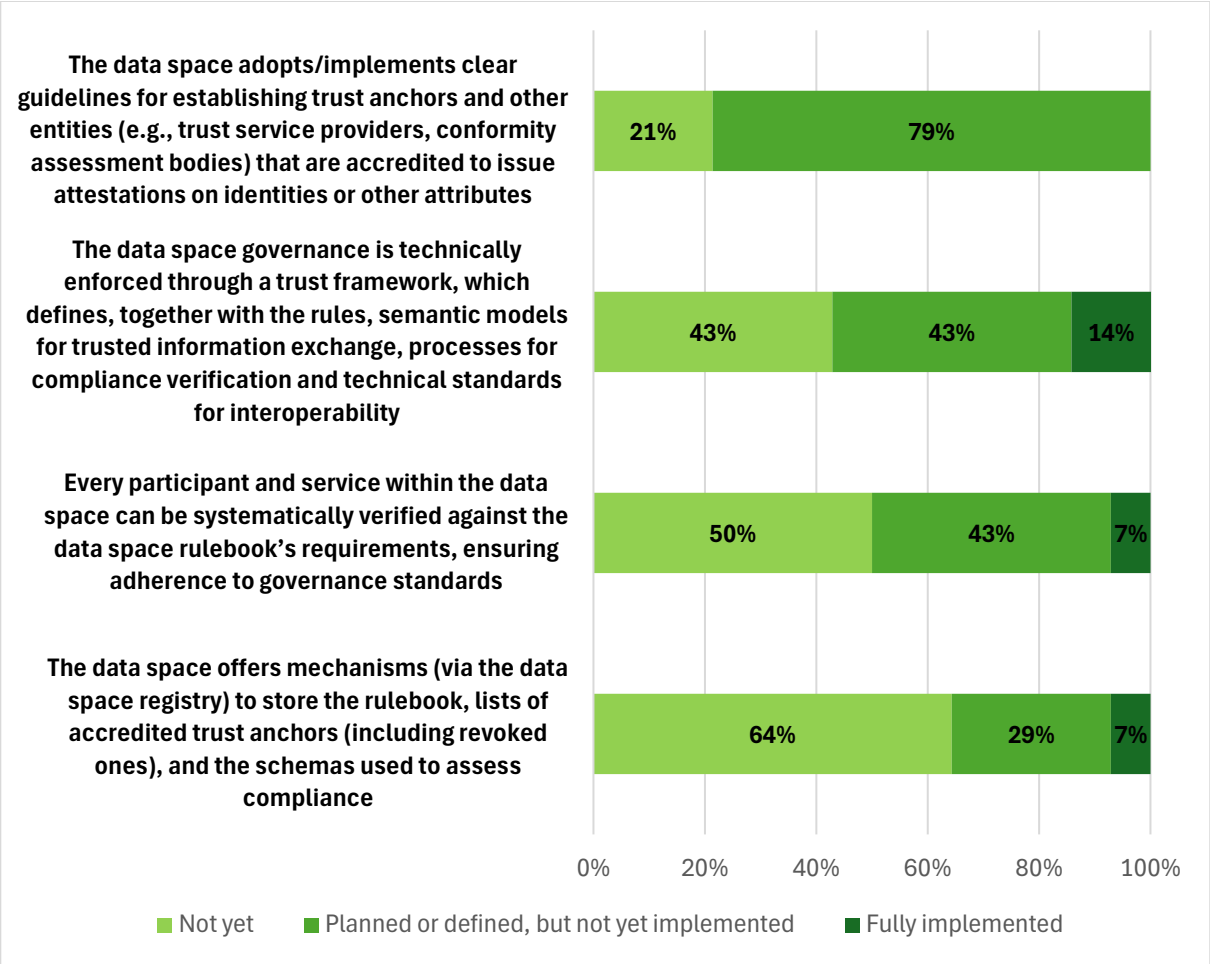

Figure 31: Extent to which data space initiatives have implemented mechanisms and infrastructure to enable trust through accredited entities and registry-based trust management

The results show that while some initiatives have begun planning trust framework capabilities, a significant proportion have not yet defined or planned for these elements. This indicates that trust enforcement mechanisms are not yet a priority for most data space initiatives. The fact that 79% of the data space initiatives have defined guidelines for establishing trust anchors is a positive sign. However, other aspects such as ensuring that every participant and service within the data space can be systematically verified against the rulebook's requirements and offering mechanisms via the data space registry to store the rulebook, lists of accredited trust anchors, and compliance schemas, remain largely unexplored. This diversity in readiness reflects the complexity of implementing trust frameworks and the early stage of development for many initiatives. As awareness continues to grow, moving from planning to implementation will enable data spaces to automate compliance checks, strengthen governance enforcement, and create a trusted environment for participants.

5.2.3 Access and usage policies enforcement

The access and usage policies enforcement indicator assesses the extent to which initiatives have implemented mechanisms to define, negotiate, and enforce data access and usage policies in line with the **DSSC Blueprint V2.0 access and usage policies enforcement building block**. This includes transforming policies into machine-readable formats, implementing policy engines, enabling automated negotiation and enforcement during data transactions, and monitoring compliance through logging and evidence mechanisms.

For this indicator, the average score across the data space initiatives is 44%, with results ranging from 0% to 100%. The distribution of scores is shown in Figure 32, which presents a box plot illustrating the variability. The mean score is 1.32 and the median is 1.5 on a scale of 0 to 4, suggesting that most initiatives have planned or defined these mechanisms, but the majority have not yet implemented them.

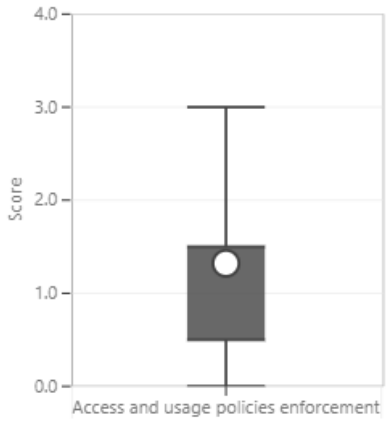

Figure 32: Box plot for access and usage policies enforcement scores. Mean=1.32, Median=1.5

Figure 33 provides further insight on the results by sub-indicator. 64% of data space initiatives have defined or partially implemented access and usage policies in machine-readable formats and the use of policy engines, while 14% have fully implemented them. Similarly, mechanisms for negotiating and enforcing machine-readable policies during data access and usage are planned or partially implemented by 57% of initiatives, while 14% have fully implemented them. Monitoring and logging of data transactions to verify compliance and provide enforcement evidence follows the same pattern, with 57% of the data space initiatives at the planning stage and 14% percent who have fully implemented this mechanism.

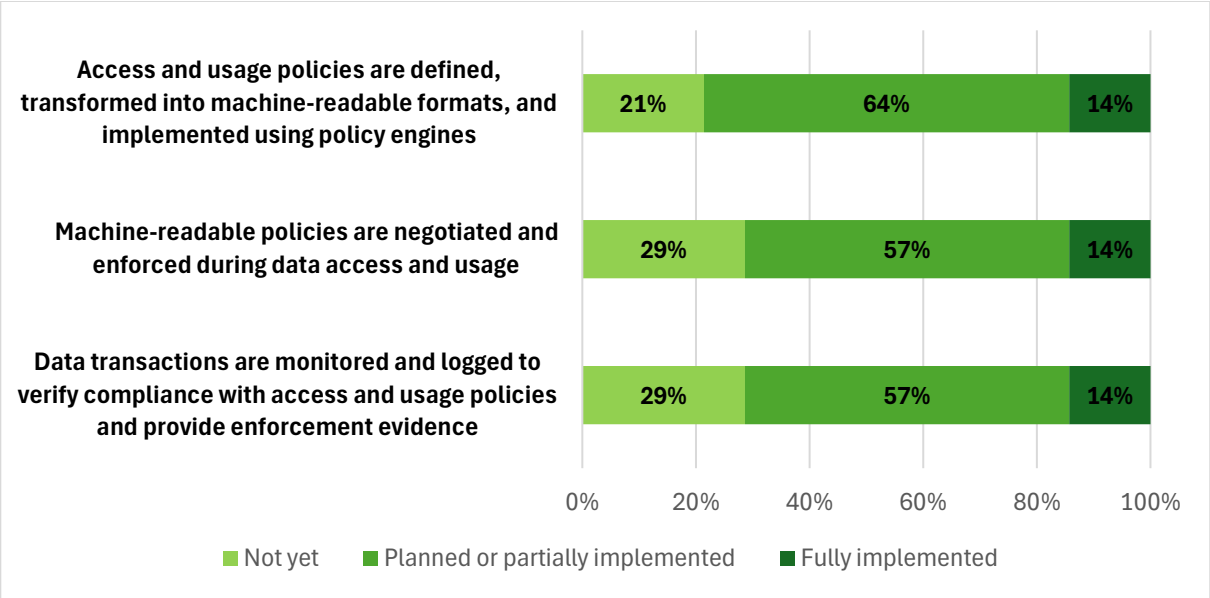

Figure 33: Extent to which data space initiatives have implemented mechanisms to enable and enforce access and usage policies

These results demonstrate strong awareness of the importance of policy enforcement for trusted data sharing. While full implementation is still limited, the fact that most initiatives have defined or partially implemented these capabilities provides a solid foundation for progress. Moving from planning to implementation and operationalisation will enable data space initiatives to automate compliance processes, strengthen governance, and provide verifiable evidence of policy enforcement.

5.3 Data value creation and enablers

5.3.1 Data, service, and offerings descriptions

This indicator assesses the extent to which data space initiatives have implemented mechanisms to make data products and services discoverable and described using standardised, machine-readable formats, as outlined in the **DSSC Blueprint V2.0 data, service, and offerings descriptions building block**. It covers the presence of catalogues or discovery mechanisms, the use of machine-readable metadata, adoption of standard vocabularies such as DCAT v3, and application of policy frameworks like ODRL.

The overall maturity level for this indicator is relatively high compared to other technical capabilities. The average score across the fourteen initiatives is 55%, with results ranging from 0% to 100%. The distribution of scores is shown in Figure 34, which presents a box plot illustrating the variability. The mean score is 2.21 and the median is 2.5 on a scale of 0 to 4, indicating that the majority of data space initiatives have implemented several key capabilities for describing and discovering data offerings, although 43% have not yet adopted machine-readable metadata and standard vocabularies, and 57% have not yet adopted policy frameworks.

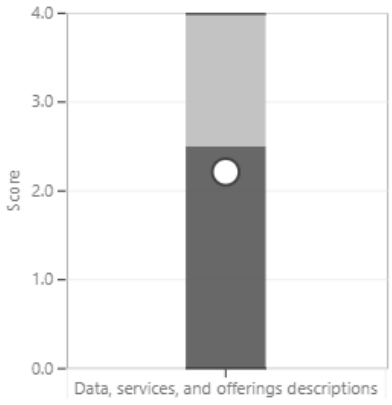

Figure 34: Box plot for data, services, and offerings description scores. Mean=2.21, Median=2.5

Figure 35, provides further insight. A comprehensive and user-friendly catalogue or discovery mechanism is in place for 64% of data space initiatives, and 57% use machine-readable metadata to describe data products, services, licenses, and data licenses. Adoption of standard vocabularies is more varied with 43% reporting using DCAT v3, while 14% use other formats. Similarly, 29% applies ODRL for policy descriptions, with 14% using alternative approaches. Sector-specific practices were noted among those using other formats. For example, DS4CH relies on vocabularies such as the Getty Art & Architecture Thesaurus, VIAF, and UNESCO Thesaurus, while GDDS plans to extend DCAT with additional vocabularies and work on defining a Data Rights Profile aligned with ODRL. In the health sector, EUCAIM reported using Kyverno policies within Kubernetes environments.

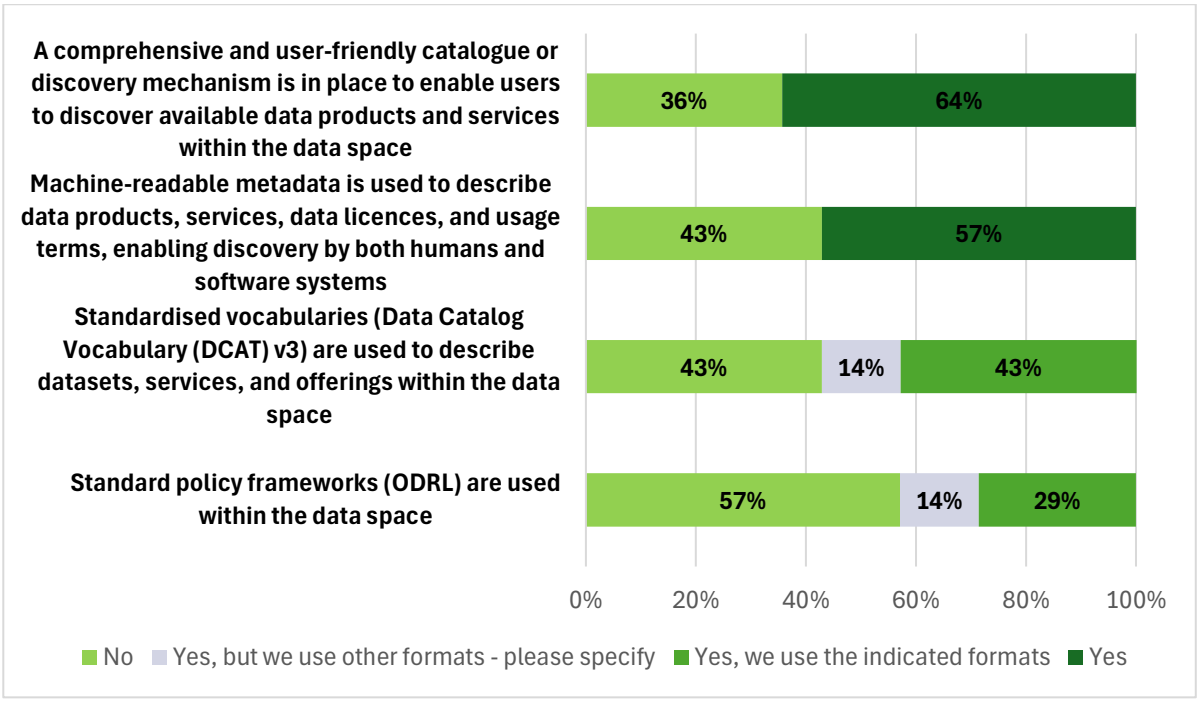

Figure 35: Extent to which data products and services are described using standardised, machine-readable formats

These results demonstrate progress towards enabling discoverability of data offerings. The use of catalogues and machine-readable metadata provides a strong foundation, while sector-specific adaptations highlight the flexibility required to meet domain needs. Moving forward, a broader adoption of DCAT and ODRL would further enhance interoperability across data space initiatives.

5.3.2 Publication and discovery

The publication and discovery indicator evaluates the extent to which data space initiatives have implemented mechanisms that allow participants to publish, update, and remove data or service offerings, as well as discover them through catalogue systems, in line with the **DSSC Blueprint V2.0 publication and discovery building block**. It also considers whether catalogues support access control to manage visibility of offerings.

The average score across the fourteen initiatives is 52%, with results ranging from 0% to 100%. The distribution of scores is shown in Figure 36, which presents a box plot illustrating the variability. The mean score is 1.57 and the median is 1.5 on a scale of 0 to 3, indicating that most data space initiatives have implemented some capabilities but have not yet fully adopted these capabilities.

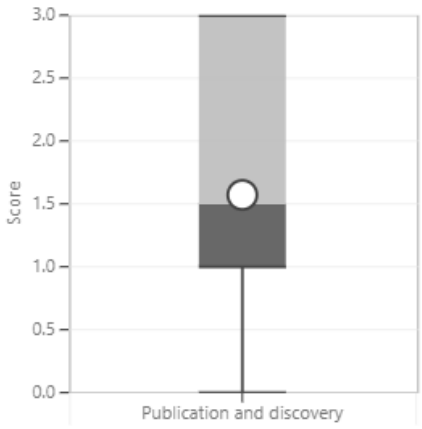

Figure 36: Box plot for publication and discovery scores. Mean=1.57, Median=1.5

Further details are provided in Figure 37. 36% of data space initiatives have fully implemented mechanisms for publishing, updating, and removing offerings via a catalogue system, while another 36% have these capabilities partially implemented. Similarly, 36% report full implementation of search and discovery functions based on metadata, terms, and conditions, with 43% partially implemented. The ability to manage access control within catalogues is less mature, with 29% fully implemented and 35% of the data space initiatives who have not addressed this capability.

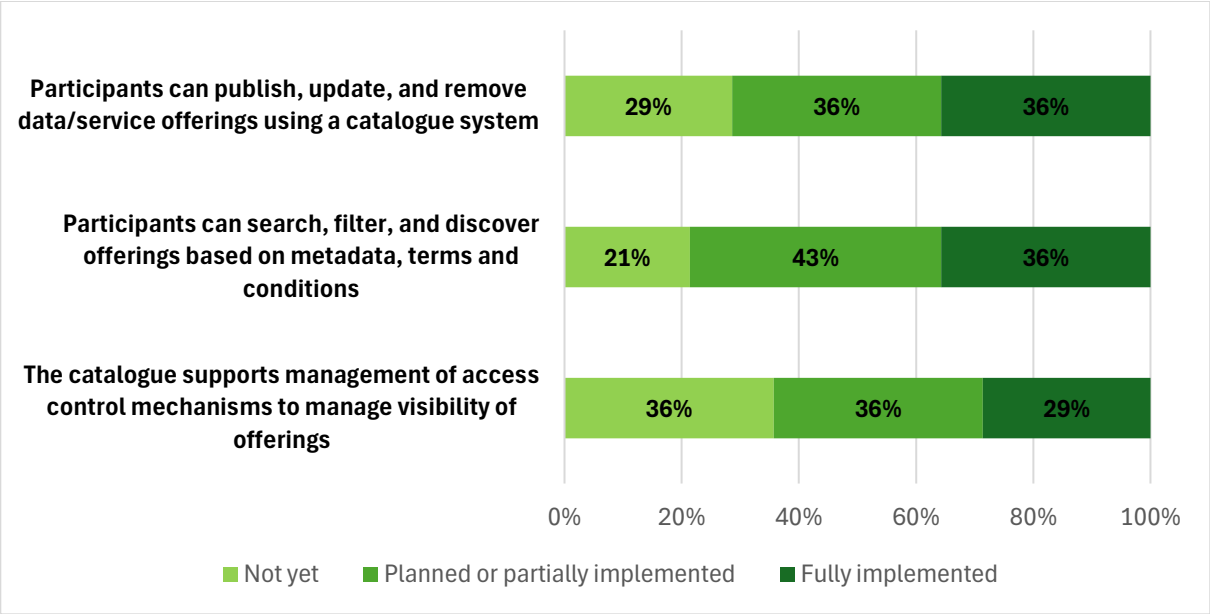

Figure 37: Extent to which data space initiatives have implemented mechanisms for publication and discovery of offerings

Many data space initiatives show progress toward enabling publication and discovery of offerings, particularly in providing catalogue functionality and search capabilities. However, access control remains an area where further development is needed. The fact that most initiatives have at least planned or partially implemented these capabilities provides a strong foundation. Moving from partial to full implementation will enhance usability, transparency, and trust for the management and discoverability of data products and services.

5.3.3 Value creation services

The value creation services indicator assesses the extent to which data space initiatives have implemented capabilities that enable the delivery and management of services beyond basic data exchange, as outlined in the **DSSC Blueprint V2.0 value creation services building block**. This includes having a taxonomy of value creation services (such as core services, data handling services, value-added services, infrastructure integration services, application integration services, and business enablement services) and establishing a service management framework that supports provisioning, delivery, trusted execution, monitoring, scalability, and maintenance.

The overall maturity level for this indicator is low compared to other technical indicators. The average score across the data space initiatives is 34%, with results ranging from 0% to 100%. The distribution of scores is shown in Figure 38, which presents a box plot illustrating the variability. The mean score is 0.68 and the median is 1 on a scale of 0 to 2, indicating that most initiatives are at the planning stage or have partially implemented these capabilities, with a few not having started to plan for these elements.

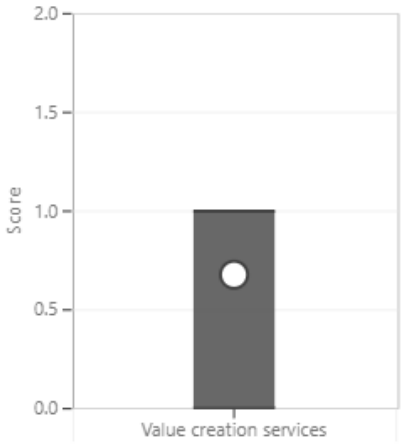

Figure 38: Box plot for value creation services scores. Mean=0.68, Median=1

Figure 39 provides a breakdown of the responses. None of the data space initiatives have fully implemented a taxonomy of value creation services or a service management framework. However, planning is underway in many cases with 71% reporting that a taxonomy is defined or partially implemented, and 64% indicate that a service management framework is planned or partially in place. Around 1/3 of the data space initiatives have not yet addressed these elements.

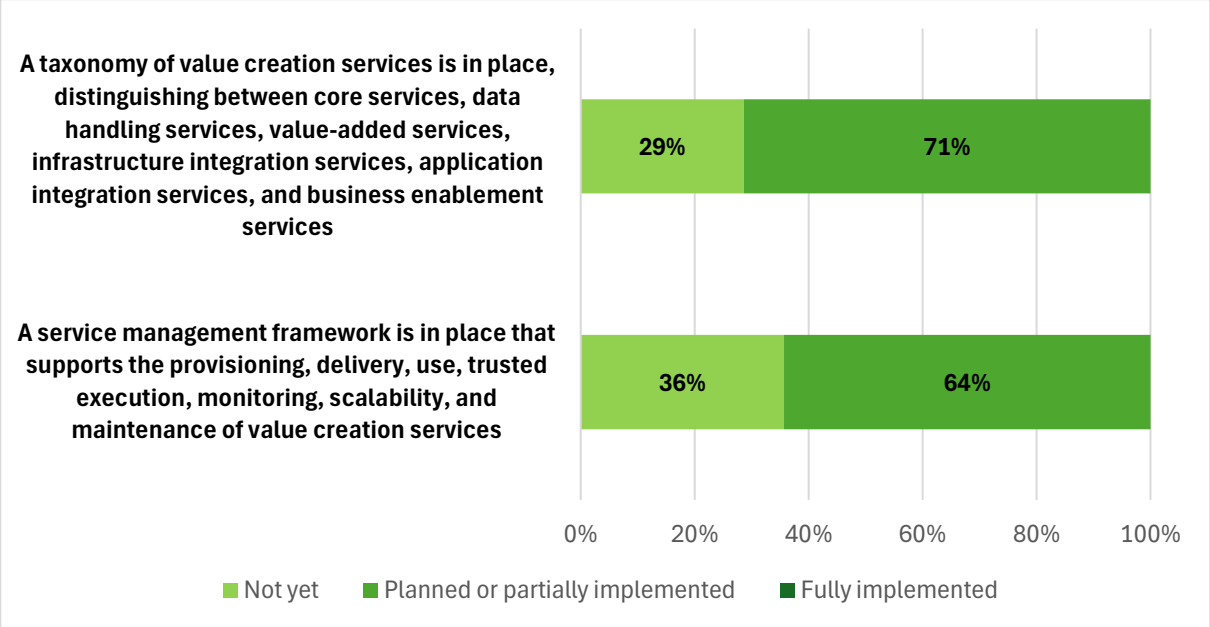

Figure 39: Extent to which data space initiatives have implemented value creation services and supporting capabilities

These results suggest that while full implementation is not yet in place, there is strong awareness of the importance of value creation services. The fact that most data space initiatives have begun planning these capabilities provides a solid foundation for progress. Moving forward, operationalising these plans will allow data spaces to offer richer services, improve participant experience, and support sustainable growth.

6 Operational maturity results

The operational dimension of the DSSC maturity model examines whether data space initiatives have established mechanisms to monitor real-world activity once they become active. This dimension focuses on two key indicators: participation and transaction volumes. The participation indicator considers whether initiatives track the number of data providers and data consumers and monitor its evolution over time, which is essential for understanding engagement and growth. The transaction volume indicator evaluates whether initiatives log and analyse data exchange activity, including the number and volume of transactions. The following sections present an analysis of the results for each indicator.

6.1 Participation

This indicator considers whether initiatives actively monitor the number of data providers and data consumers and track its evolution over time. The aggregated responses show that 36% of the data space initiatives monitor participation, while 64% do not yet do so. These results suggest that monitoring practices are emerging but not yet widespread. The data space initiatives that have introduced participation tracking offer a useful baseline for understanding growth and engagement over time. At the same time, the majority who have not yet adopted these practices are encouraged to plan for monitoring of participation that supports planning and governance once the data space initiative becomes operational.

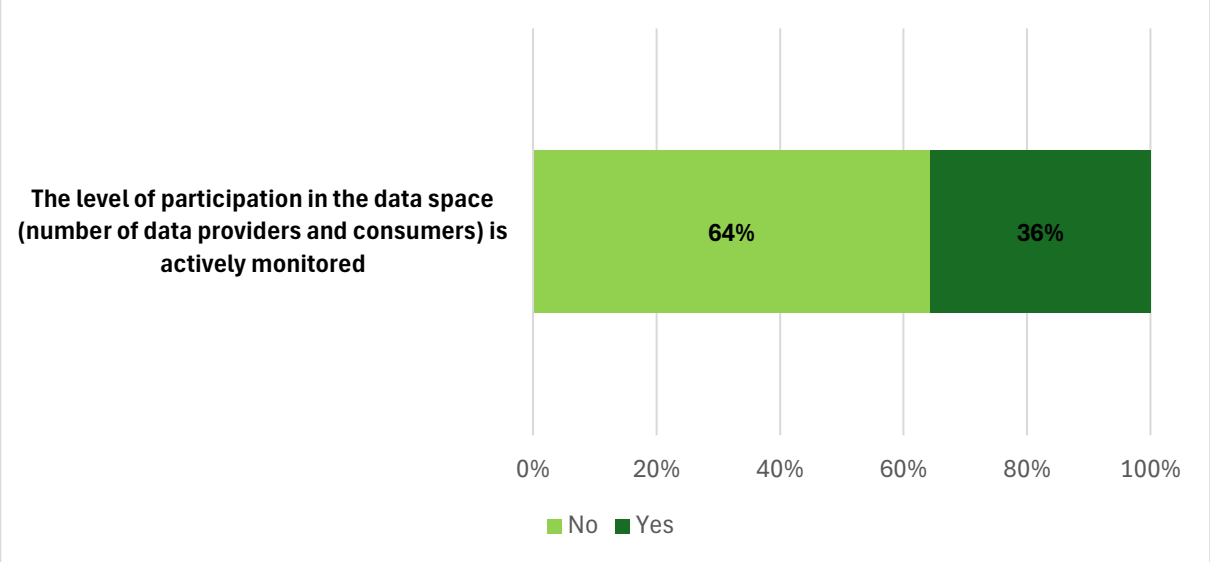

Figure 40: Extent to which data space initiatives actively monitor the level of participation (number of data providers and data consumers)

6.2 Volume of activity

This indicator considers whether initiatives actively track and monitor transaction volumes over time by logging and analysing data exchange activity through the number and volume of data transactions. The analysis shows that currently 14% of the initiatives have implemented active monitoring, while 50% have planned or defined a monitoring framework but have not activated it, and 36% of the data space initiatives have not yet started this activity. It is important to note that transaction monitoring is typically associated with operational lifecycle stages, so the absence of active monitoring in many data space initiatives reflects their current lifecycle stage rather than a lack of progress. However, for the 36% that have not yet planned or defined a monitoring framework, it is recommended to begin this work early. Establishing a clear monitoring strategy during preparatory and implementation stages will ensure readiness for operationalisation.

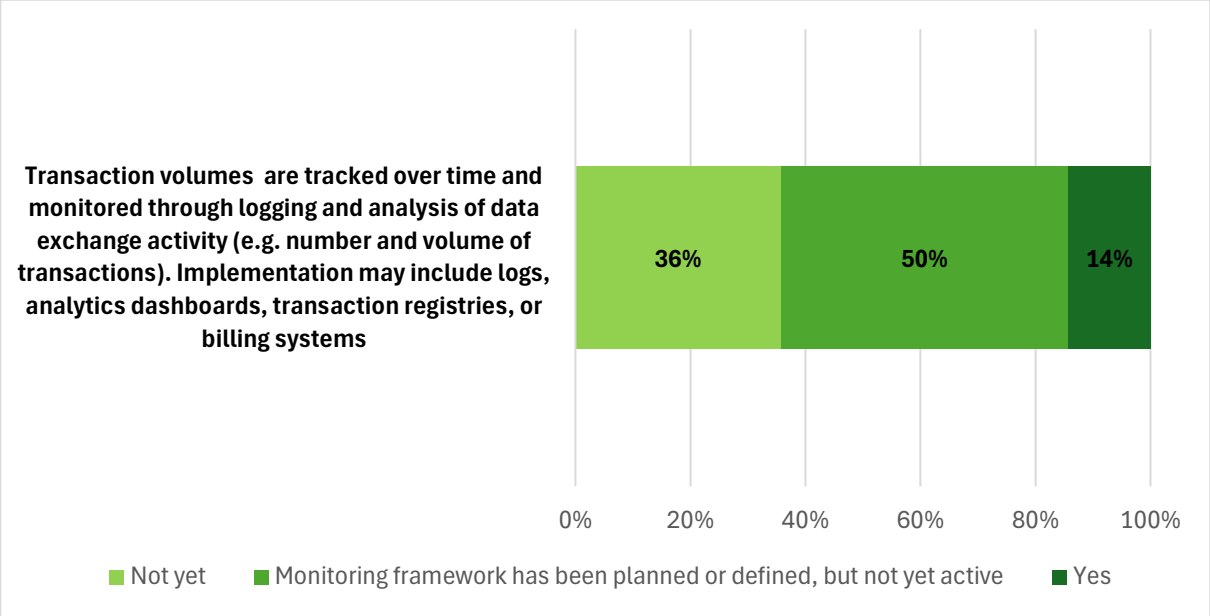

Figure 41: Extent to which data space initiative actively monitor transaction volumes over time

7 Development cycle stage

The lifecycle stages of the data space initiatives were assessed using the DSSC maturity model stage-specific criteria. These criteria define the progression from exploratory to scaling based on qualitative checks across business, governance and legal, technical, and operational dimensions. Each stage requires certain capabilities to be at least “defined” or “implemented” before moving to the next stage.

Applying these criteria, many data space initiatives remain classified as preparatory, even though they are actively implementing or deploying use cases. This reflects a gap between formal maturity requirements as specified in the maturity model and practical progress. Projects may deliver pilots and operational use cases but lack documented governance or technical frameworks required for stage transition.

To provide a balanced view, we present two perspectives:

- Strict DSSC maturity model criteria based classification: ensures consistency and comparability across data space initiatives.
- Use case driven classification: highlights practical use case deployment maturity, acknowledging that several data space initiatives are delivering value despite missing some formal elements for development cycle stage progression.

This dual approach aims to provide context. Missing criteria should be seen as points for improvement, not as indicators of inactivity. The pie charts below illustrate these two perspectives.

7.1 Strict criteria based classification

Figure 42 below shows the distribution of data space initiatives across lifecycle stages based on the stage-specific criteria defined in the DSSC Maturity Model. These criteria require minimum capabilities across business, governance and legal, technical, and operational dimensions to progress from one stage to the next. Under this assessment, many data space initiatives remain in the preparatory stage because they generally do not meet criteria under the organisational form and governance authority and data sovereignty and trust, even if some are actively deploying use cases.

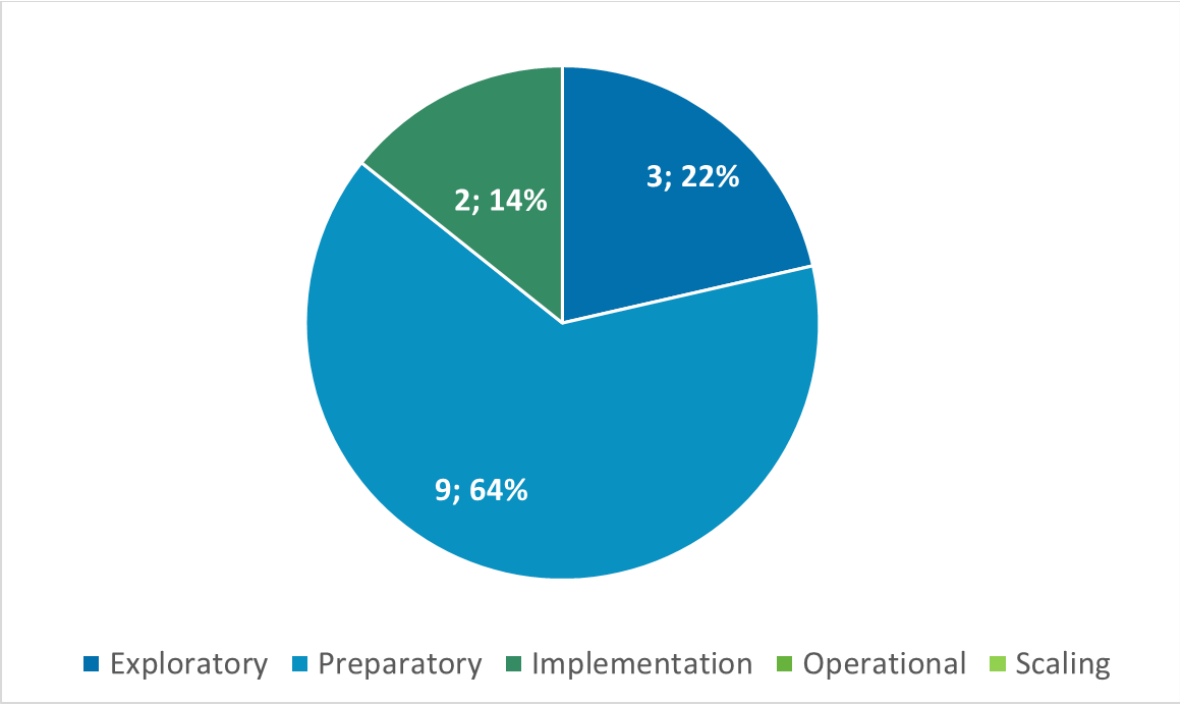

Figure 42: Lifecycle development stage based on stage specific criteria

7.2 Use case driven classification

Figure 43 below provides an alternative perspective based on use case development maturity, where stage progression is primarily determined by the extent to which data space initiatives have developed and operationalised use cases. This approach highlights that the majority of the data space initiatives are delivering use cases/value despite missing some formal criteria that should have been planned or defined at preparatory stage.

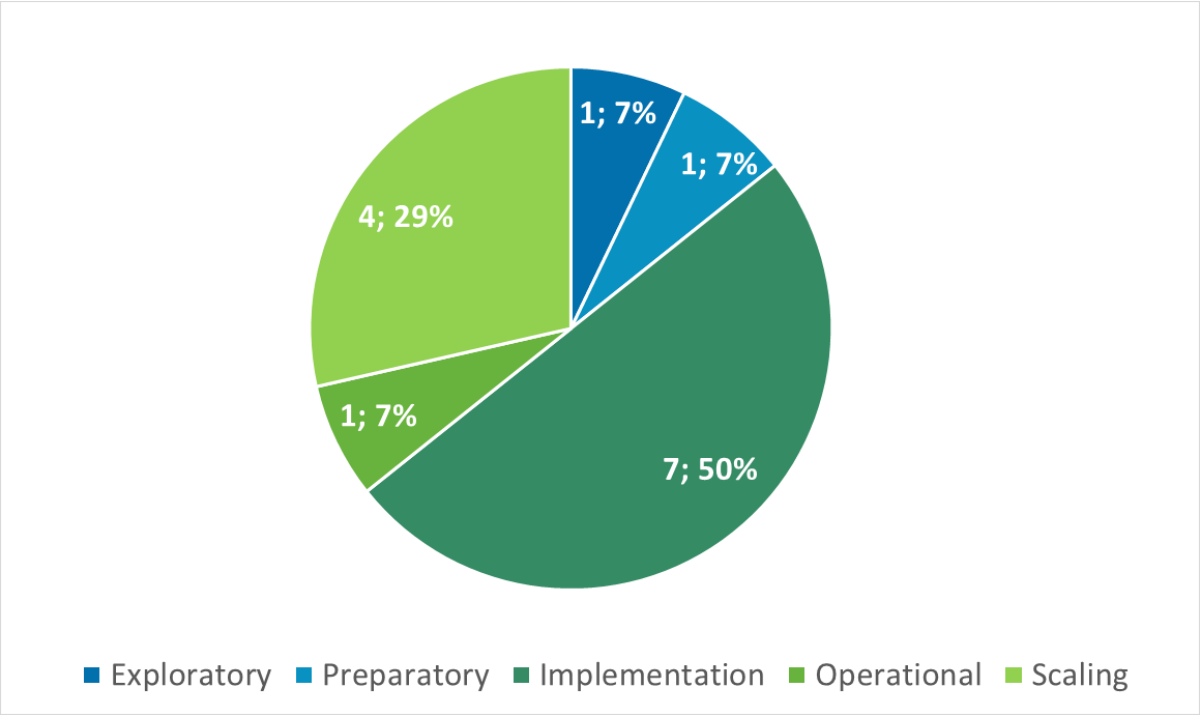

Figure 43: Lifecycle development stages based on use case development classification

7.3 Interpreting the divergence

The divergence between the two lifecycle views should be understood as a characteristic of the current development phase of European funded data space initiatives. Many data space initiatives prioritise experimentation, piloting, and technical delivery, while governance, trust, and contractual mechanisms mature in parallel. The criteria not yet met indicate focus areas for further development rather than a lack of progress.

8 Cross dimensional insights

This chapter provides an analysis across the business, governance and legal, technical, and operational dimensions results. Rather than examining indicators or dimensions in isolation, it highlights common patterns, interdependencies, and structural maturity dynamics observed across the data space initiatives.

8.1 Use case maturity outpaces governance and trust readiness

Across data space initiatives, a consistent pattern emerges. Use case and technical development progress faster than formal governance and trust arrangements. This is reflected in relatively higher maturity levels in the business dimension (particularly for use case development) compared to governance and legal and trust related indicators.

Many data space initiatives have prioritised the development and testing of use cases to validate value propositions and engage stakeholders. In parallel, governance structures, contractual frameworks, and trust mechanisms are often still being defined or partially implemented. The results show that data space initiatives tend to develop certain capabilities, such as use cases and technical foundations, earlier than others, such as governance, contractual, and trust mechanisms. Differences in maturity therefore reflect sequencing effects rather than uneven engagement.

8.2 Governance and contractual maturity as key structural bottlenecks

The governance and legal dimension consistently lag behind business and technical capabilities. While regulatory awareness and compliance analysis are relatively mature, other critical elements, such as organisational form and governance authority and contractual frameworks remain underdeveloped for many data space initiatives.

This gap has direct implications for lifecycle progression. Stage-specific criteria require a minimum level of formalisation across governance and legal aspects before data space initiatives can transition towards implementation or operational stages. Even when technical capabilities and use cases exist, incomplete governance and contractual foundations limit formal lifecycle stage progression.

8.3 Technical foundations are emerging, trust remains a limiting factor

Technical maturity across data space initiatives is uneven. Capabilities related to interoperability (such as data models, metadata, catalogues, and publication mechanisms) show comparatively

higher maturity. These elements provide a solid foundation for future scalability and cross-data-space federation.

In contrast, trust enabling technical capabilities (including identity management, trust frameworks, and access and usage policies enforcement) are less mature. Many data space initiatives have defined or planned these mechanisms but have not yet operationalised them.

This imbalance explains why technical maturity does not automatically translate into lifecycle stage advancement. Without trust frameworks and enforceable governance, technical interoperability alone is insufficient to support automated, large-scale, or cross-domain data exchange.

8.4 Low operational maturity reflects lifecycle timing rather than underperformance

The operational dimension shows the lowest overall maturity across the data space initiatives. Active monitoring of participation levels and transaction volumes and forecasting growth are limited.

This result should be interpreted in the context of the current lifecycle development stages. Operational indicators become relevant once data space initiatives have transitioned into an operational stage. For many data space initiatives still in preparatory or early implementation stages, operational monitoring frameworks are either not yet activated or only partially planned.

Cross-dimensional analysis therefore suggests that low operational scores primarily reflect the current stage of development, rather than lack of ambition or capability.

8.5 Implications for lifecycle progression

The cross-dimensional results explain why many data space initiatives remain formally classified in preparatory stages while showing advanced progress in use case development and technical implementation.

Lifecycle progression is less constrained by innovation or experimentation capacity, and more by formalising governance structures, contractual arrangements, and trust mechanisms. These elements require alignment among multiple stakeholders, legal certainty, and sustained coordination efforts.

The findings underline the importance of maintaining momentum in use case development while progressively operationalising governance and trust capabilities to enable transitions towards implementation, operation, and eventually scaling.

9 Conclusion and recommendations

This chapter presents the overall conclusions of the maturity assessment and outlines priority areas for further development. Building on the findings discussed in previous chapters, it summarises key maturity patterns and translates them into forward-looking recommendations for data space initiatives and the Data Spaces Support Centre (DSSC).

9.1 Key conclusions from the maturity assessment

The maturity assessment provides a consolidated view of the progress made by EU-funded data space initiatives towards achieving a trusted and interoperable European data-sharing environment. Figure 44 provides a consolidated visual overview of the average maturity scores across the four dimensions.

Dimension	Mean score	Median score
Business	54.74%	58.33%
Governance and legal	42.67%	35.53%
Operational	17.02%	2.94%
Technical	45.16%	47.58%

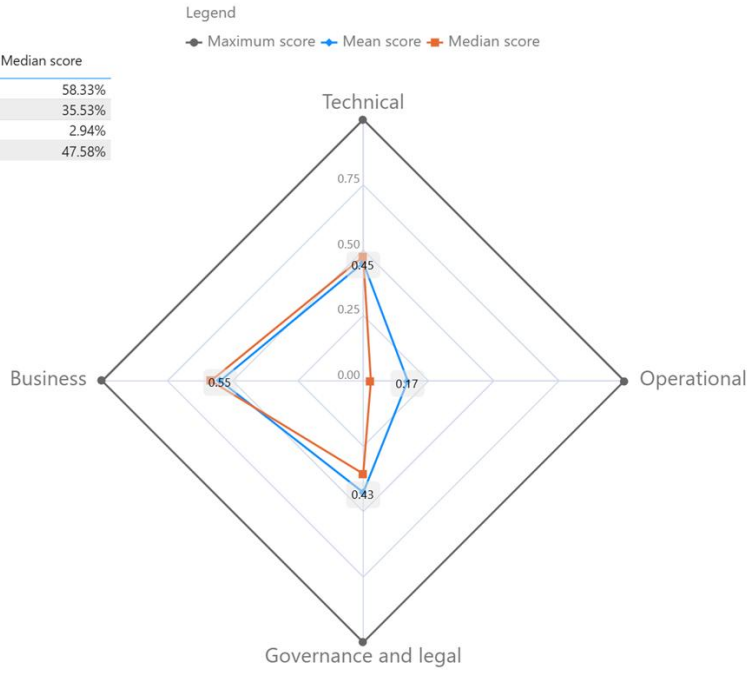

Figure 44: Radar chart illustrating the maturity scores across the four dimensions

Most data space initiatives are classified in the preparatory stage according to stage-specific criteria, even though many have initiated or operationalised use cases. This indicates that practical deployment is well advanced in several data space initiatives, particularly in relation to use case development and selected technical capabilities.

Use case development emerges as the strongest category, with an average score of 67%, confirming that tangible value creation through pilots and early deployments is a priority for most initiatives. Business-related elements connected to use case development and data space offerings are therefore evolving faster than other capability areas.

In contrast, governance and legal capabilities show lower levels of maturity overall. Organisational form and governance authority average 36%, while participation management reaches 50%. These elements remain under development in many data space initiatives and influence the pace at which data space initiatives can formally progress from preparatory to implementation and operational stages, according to the stage specific criteria specified in the DSSC maturity model.

Technical capabilities show mixed results. Capabilities related to data description and discoverability are relatively well developed across the data space initiatives. Trust related technical mechanisms remain among the weakest areas, with identity management averaging 38% and trust frameworks 31%. This highlights the need to further translate governance and compliance requirements into enforceable technical mechanisms that enable automation and scalable data sharing.

The operational dimension shows the lowest maturity overall, with an average score of 17%. This reflects the current lifecycle stage of most data space initiatives, which have not yet reached sustained operational activity. Systematic monitoring of participation levels and transaction volumes is therefore still limited or not yet activated in many cases.

9.2 Priority areas for further development

Based on the aggregated results, several priority areas for further development emerge across dimensions.

Data space initiatives are encouraged to strengthen governance frameworks by completing and operationalising rulebooks, formalising governance authorities, and clearly defining roles, responsibilities, and decision-making processes. Establishing robust onboarding and offboarding procedures will further support trust, accountability, and scalability.

Advancing trust and compliance mechanisms is another key priority. Further implementation of identity management solutions, trust frameworks, and access and usage policy enforcement will enable more secure and automated governance.

In parallel, data space initiatives should continue to consolidate their business models by defining revenue and funding strategies, implementing mechanisms to monitor and adapt the business model over time, and validating assumptions through pilots and real-world use. These steps are essential to support financial and organisational sustainability as data space initiatives mature.

Finally, data space initiatives are encouraged to prepare for operationalisation early by defining monitoring frameworks for participation levels and transaction volumes. Even if full implementation occurs at a later stage, early preparation will improve the ability to measure impact once data space initiatives become operational.

9.3 Implications for DSSC support and next steps for data spaces

The findings of this maturity assessment provide clear indications for where targeted support can accelerate progress. The maturity assessment points to concrete actions that data space initiatives can take to advance towards implementation, operation, and scaling: operationalising governance (rulebooks, authorities, participation lifecycle), strengthening trust and compliance mechanisms (identity, trust framework, policy enforcement), consolidating business models (revenue/funding strategies, monitoring, pilot validation), and preparing operational monitoring (participation and transactions).

As data space initiatives progress towards implementation, operationalisation and scaling, closing remaining gaps in governance maturity, trust mechanisms, and operational readiness will be essential. Repeating the maturity assessment over time will enable data space initiatives to track progress, support benchmarking, and inform continuous refinement of DSSC guidance, contributing to the realisation of the EU's vision for a sovereign and interoperable data economy.

10 Annexes

10.1 Survey questionnaire

Business

Business model development

Q1. To what extent has your data space defined and operationalised the following aspects of its business model? (Matrix)			
Element	**Answers**		
Objectives, growth and profit goals are documented	Fully	Partially	Not yet
Value propositions for data provider, data consumers, intermediaries (if applicable) are articulated and documented	Fully	Partially	Not yet
Revenue generation and/or funding mechanisms are documented	Fully	Partially	Not yet
A monitoring strategy is in place to keep track of the necessary changes in the business model	Fully	Partially	Not yet
The business model has been tested or validated through stakeholder feedback, pilots, or real-world use	Fully	Partially	Not yet
Scoring For each element, points are attributed as follows: Fully (1 point), Partially (0.5 points), Not yet (0 points).			

Use case development

Q2. To what extent has your data space developed and operationalised use cases? (Matrix)		
Element	**Answers**	
Have you identified specific use cases?	Yes	No

If yes, have you assessed whether the use cases are in line with the needs and parameters of the business model?	Yes	No
If yes, have the use cases been documented and has implementation for at least one of them been initiated?	Yes	No
If yes, are any of the use cases currently operational?	Yes	No
If yes, do you have a process to continuously improve, to expand or to identify improvement opportunities for use cases?	Yes	No
Scoring For each element, points are attributed as follows: Yes (1 point), No (0 points).		

Data space offering

Q3. To what extent has your data space developed a strategy and governance approach for its data space offering? (Matrix)			
Element	**Answers**		
Data space offering (data products and services) has been identified and aligned with current/future use cases	Fully	Partially	Not yet
Governance rules, mechanisms and processes are defined and enforced for onboarding, managing, and maintaining offerings	Fully	Partially	Not yet
Participants are supported in developing and offering high-quality data products (e.g., templates, onboarding guides, quality criteria)	Fully	Partially	Not yet
Scoring			

For each element, points are attributed as follows: Fully (1 point), Partially (0.5 points), Not yet (0 points).

Intermediaries and operators

Q4. To what extent has your data space defined the roles and service models of intermediaries and operators, and established governance mechanisms to manage them (if applicable[6])? (Matrix)				
Element	**Answers**			
The roles, service types, and procurement models of intermediaries/operators are clearly defined and documented.	Fully	Planned or partially defined	No	Not applicable
The governance framework includes mechanisms to manage intermediaries/operators (e.g., rulebook commitment, exclusivity, auditing, business conditions)	Fully	Planned or partially defined	No	Not applicable
Scoring For each element, points are attributed as follows: Yes (1 point), Partially (0.5 points), No (0 points). If 'Not applicable', the question is not considered in the readiness assessment.				

[6] If the DSI is not currently using or intending to use operators/intermediaries, please select Not applicable. The question will not be scored in this case.

Governance and legal

Organisational form and governance authority

Q5. To what extent has your data space defined and operationalised the following elements of the governance framework? (Matrix)			
Element	**Answers**		
The data space has chosen an organisational form. (e.g. legal personality, profit vs non-profit status, place of establishment, level of involvement of the members in the management and operation of the data space)	Fully	Partially	No yet
The data space has decided on the form (e.g. legal entity, committee, consortium) of the governance authority.	Fully	Partially	Not yet
Has the data space decided on the composition of the governance authority (who is part of it and how are they selected?).	Fully	Partially	Not yet
The roles and responsibilities of the governance authority in managing and operating the data space have been specified.	Fully	Partially	Not yet
The data space has a rulebook (bylaws, terms of use or similar) that operationalises the governance framework. (including rules and policies applicable to all data space participants)	Fully	Partially	Not yet
The data space has established processes through which the governance authority should perform their duties (including mechanisms for monitoring, review, and continuous improvement).	Fully	Partially	Not yet

The governance framework been reviewed and adapted based on operational experience, if applicable[7].	Fully	Partially	Not yet
Scoring For each element, points are attributed as follows: Fully(1 point), Partially (0.5 point), Not yet (0 points). The last element will only be scored if the DSI is already in operational stage.			

Participation Management

Q6. To what extent have the following participation management aspects been defined and implemented in your data space? (Matrix)			
Element	**Answers**		
Roles and responsibilities of participants	Fully defined and implemented	Defined but not yet implemented	Not yet defined
Onboarding processes (e.g. joining rules, identity verification, attestation; technical onboarding; data protection policies; etc.)	Fully defined and implemented	Defined but not yet implemented	Not yet defined
Offboarding processes (e.g. exit procedures, data transfer and deletion protocols; verification of compliance; offboarding support, periodic framework reviews)	Fully defined and implemented	Defined but not yet implemented	Not yet defined
Scoring For each element, points are attributed as follows: Fully defined and implemented (1 point), Defined but not yet implemented (0.5 points), Not yet defined (0 points).			

[7] This question is only scored if the DSI is already operational, based on other characteristics measured through the model. If the DSI has no operational experience, the question will not be considered.

Regulatory compliance

Q7. Does your data space have mechanisms in place to monitor compliance with all relevant regulations and legal requirements? (Matrix)		
Element	**Answers**	
Have you identified triggers or events within your data space that prompt a review of regulatory compliance? (info box: (triggers= Elements, criteria or events (e.g. data type, nature of participant or domain) that have occurred in a particular context of a data space and signals that a specific legal framework must or should be applied.)	Yes	No
Do you carry out a recurring review of all the triggers and applicable regulations to consider whether the data space is still fully compliant with the regulatory framework?	Yes	No
Have you identified and analysed the general EU legal frameworks and sector-specific legislation applicable to your data space?	Yes	No
Have you implemented measures to ensure compliance with the identified legal and regulatory frameworks?	Yes	No
Scoring For each element, points are attributed as follows: Yes=1 point, No=0 points.		

Contractual framework

Q8. Does the data space have a contractual framework in place, including the following elements? (Matrix)		
Element	**Answers**	
Institutional agreements (i.e., Founding agreements; General Terms and Conditions for participation)	Yes	No
Data sharing agreements (legal basis for data transactions)	Yes	No
Service agreements (all agreements for the provision of services to the data space – e.g. data-related services, agreements for the provision of trust framework services, and agreements for the management of identities.)	Yes	No
Have you done an assessment of the applicable law and which courts have jurisdiction with regards to the agreements?	Yes	No
Is the enforcement of the agreements supported by the implementation of smart contract technologies?	Yes	No
Scoring For each element, points are attributed as follows: Yes (1 point), No (0 points).		

Technical

Data interoperability (data models)

Q9. To what extent has your data space implemented the following capabilities related to data models? (matrix)			
Element	**Answers**		
Your data space has defined and adopted (a) shared and agreed data model(s) across various abstraction layers (vocabulary, ontology, application profile and data schema) used consistently across participants.	Fully implemented	Planned or defined, but not yet adopted/implemented	Not yet
The data model(s) in your dataspace is/are stored and published in a vocabulary service to enable discoverability throughout a data space.	Fully implemented	Planned or defined, but not yet adopted/implemented	Not yet
The data model(s) is/are based on a formal schema, or metamodel standards that enable semantic interoperability (such as SKOS, RDF, OWL, UML, JSON Schema, XML Schema etc).	Fully implemented	Planned or defined, but not yet adopted/implemented	Not yet
Your data space uses reference datasets for consistency.	Fully implemented	Planned or defined, but not yet adopted/implemented	Not yet
Processes and responsibilities for maintaining and evolving the data model(s) over time are established (such as documented governance, issue	Fully implemented	Planned or defined, but not yet adopted/implemented	Not yet

management and maintenance user support etc).			
The data model(s) and datasets used are expressed in DCAT to allow discoverability across data spaces.	Fully implemented	Planned or defined, but not yet adopted/implemented	Not yet
Scoring For each element, points are attributed as follows: Fully (1 point), Planned or defined, but not yet adopted/implemented (0.5 points), Not yet (0 points).			

Data interoperability (data exchange)

Q10. To what extent are standardised data exchange protocols implemented in your data space? (matrix)			
Element	**Answers**		
A common protocol has been defined and implemented in your data space for data exchange, covering both the control plane and the data plane.	Fully	Planned or defined, but not yet implemented	Not yet
Standardised APIs are available in your data space that allow participants to query, create, update, and delete data.	Fully implemented	Planned or defined, but not yet implemented	Not yet
Your data space can exchange data with participants in other data spaces as part of a federation.	Fully implemented	Planned or defined, but not yet implemented	Not yet
Scoring For each element, points are attributed as follows: Yes (1 point), Planned or defined but not yet implemented (0.5 points), No (0 points).			

Data interoperability (provenance and traceability)

Q11. To what extent are the following elements for provenance and traceability defined and/or implemented in your data space? (matrix)			
Element	**Answers**		
Mechanisms to track the sharing and usage of actual data (provenance).	Fully implemented	Planned or defined, but not yet implemented	Not yet
Mechanisms to monitor and manage data-sharing contracts (observability).	Fully implemented	Planned or defined, but not yet implemented	Not yet
Use of standardised models or protocols for provenance and traceability.	Fully implemented	Planned or defined, but not yet implemented	Not yet
Scoring For each element, points are attributed as follows: Fully implemented (1 point), Planned or defined but not yet implemented (0.5 points), Not yet (0 points).			

Data sovereignty and trust (identity management)

Q12. To what extent has your data space implemented identity and attestation management functions? (Matrix)			
Element	**Answers**		
The data space rulebook is provided in a structured, machine-readable format to enable automated compliance checks and interoperability across data spaces.	Fully implemented	Planned or defined, but not yet implemented	Not yet
Identity and attestation mechanisms are implemented using standardised approaches,	Fully implemented	Planned or defined, but not yet implemented	Not yet

including W3C Verifiable Credentials.			
The data space leverages credential exchange protocols such as the Decentralized Claim Protocol (DCP) and OID4VC, enabling participants to share verifiable credentials securely while maintaining data sovereignty.	Fully implemented	Planned or defined, but not yet implemented	Not yet
Scoring For each element, points are attributed as follows: Fully implemented (1 point), Planned or defined but not yet implemented (0.5 points), Not yet (0 points).			

Data sovereignty and trust (trust framework)

Q13. To what extent has your data space implemented mechanisms and infrastructure to enable trust through accredited entities and registry-based trust management? (Matrix)			
Element	**Answers**		
The data space adopts/implements clear guidelines for establishing trust anchors and other entities (e.g., trust service providers, conformity assessment bodies) that are accredited to issue attestations on identities or other attributes.	Fully implemented /adopted	Planned or defined, but not yet adopted/implemented	Not yet
The data space governance is technically enforced through a trust framework, which defines, together with the rules, semantic models for trusted information exchange, processes for compliance verification and	Fully implemented /adopted	Planned or defined, but not yet adopted/implemented	Not yet

technical standards for interoperability.			
Every participant and service within the data space can be systematically verified against the data space rulebook's requirements, ensuring adherence to governance standards.	Fully implemented /adopted	Planned or defined, but not yet adopted/implemented	Not yet
The data space offers mechanisms (via the data space registry) to store the rulebook, lists of accredited trust anchors (including revoked ones), and the schemas used to assess compliance.	Fully implemented /adopted	Planned or defined, but not yet adopted/implemented	Not yet
Scoring For each element, points are attributed as follows: Fully implemented/adopted (1 point), Planned or defined but not yet adopted/implemented (0.5 points), Not yet (0 points).			

Data sovereignty and trust (access and usage policies enforcement)

Q14. To what extent has your data space implemented mechanisms to enable and enforce access and usage policies? (Matrix)			
Element	**Answers**		
Access and usage policies are defined, transformed into machine-readable formats, and implemented using policy engines.	Fully implemented	Planned or partially implemented	Not yet
Machine-readable policies are negotiated and enforced during data access and usage.	Fully implemented	Planned or partially implemented	Not yet

Data transactions are monitored and logged to verify compliance with access and usage policies and provide enforcement evidence.	Fully implemented	Planned or partially implemented	Not yet
Scoring For each element, points are attributed as follows: Fully implemented (1 point), Planned or partially implemented (0.5 points), Not yet (0 points).			

Data value creation enablers (data, services, and offerings descriptions)

Q15. Are your data products and services discoverable and described using standardised, machine-readable formats? (Matrix)			
Element	**Answers**		
Is there a comprehensive and user-friendly catalogue or discovery mechanism in place, so that potential users can discover the available data products and services within your data space? **(or shorter: Is there a user-friendly catalogue or discovery mechanism?)**	Yes	No	
Does your data space use machine-readable metadata (to describe data products, services, data licenses, usage terms) enabling discovery by both humans and software systems?	Yes	No	
Does your data space use standardised vocabularies (e.g. the Data Catalog Vocabulary DCAT v3) to describe datasets, services and offerings?	Yes, we use DCAT v3	Yes, but we use other formats – please specify	No
Does your data space use standard policy frameworks (ODRL)?	Yes, we use ODRL	Yes, but we use other formats – please specify	No

Scoring
For each element, points are attributed as follows: Yes (1 point); Yes, but with other formats (1 point if the formats presented are relevant); No (0 points).

Data value creation enablers (publication and discovery)

Q16. To what extent has your data space implemented mechanisms and infrastructure to enable trust through accredited entities and registry-based trust management? (Matrix)			
Element	**Answers**		
Participants can publish, update, and remove data/service offerings using a catalogue system.	Fully implemented	Planned or partially implemented	Not yet
Participants can search, filter, and discover offerings based on metadata, terms and conditions?	Fully implemented	Planned or partially implemented	Not yet
The catalogue supports management of access control mechanisms to manage visibility of offerings.	Fully implemented	Planned or partially implemented	Not yet
Scoring For each element, points are attributed as follows: Fully implemented (1 point), Planned or partially implemented (0.5 points), Not yet (0 points).			

Data value creation enablers (value creation services)

Q17. To what extent has your data space implemented the following types of value creation services and supporting capabilities? (Matrix)			
Element	**Answers**		
Your data space has a taxonomy of value creation services, distinguishing between core	Fully implemented	Planned or partially implemented	Not yet

services, data handling services, value-added services, infrastructure integration services, application integration services, and business enablement services.			
A service management framework is in place that supports the provisioning, delivery, use, trusted execution, monitoring, scalability, and maintenance of value creation services.	Fully implemented	Planned or partially implemented	Not yet
Scoring For each element, points are attributed as follows: Fully implemented (1 point), Planned or partially implemented (0.5 points), Not yet (0 points).			

Operational indicators

Q18. What is the current and projected participation in your data space?		
Sub-questions	**Answers**	
Does your data space actively monitor the level of participation (number of data providers and consumers)?	Yes	No
If yes, what is the current number of data providers and data consumers?	Numerical box (for providers) Numerical box (for users)	
What is the expected number of potential participants to join within one year?	Numerical box (for providers) Numerical box (for users)	

Scoring
For the questions 18.2+18.3, the scoring will be based on the ratio for each category, users and providers (current/expected) and attributed as follows: If ratio=0 no points, if 1-20% = 1 point, 21-40% = 2 points, 41-60% = 3 points, 61-80% = 4 points, 81-100% = 5 points.

Q19. What is the current and projected volume of activity in your data space?			
Sub-questions	**Answers**		
You are currently tracking and monitoring transaction volumes over time. (logging and analysing data exchange activity - e.g. number and volume of transactions). Implementation could involve logs, analytics dashboards, transaction registries, billing systems.	Yes	Monitoring framework has been planned or defined, but not yet active	Not yet
What was the number of transactions in the past year?	Numerical box		
What is the expected number of transactions in the next year?	Numerical box		
What was the volume of transactions in the past year?	Numerical box		
What is the expected volume of transactions in the next year?	Numerical box		
Scoring			

For the question 19.1: Yes – 1 point; Planned or defined -0.5 points; Not yet – 0 points

For the questions 19.2+19.3, and 19.4+19.5 the scoring will be based on the ratio for each category, number of transactions (current/expected) and attributed as follows: If ratio is 0 = no points, if 1-20% = 1 point, if 21-40% = 2 points, if 41-60% = 3 points, if 61-80% = 4 points, if 81-100% = 5 points.

10.2 Overview of aggregated maturity scores by dimension and indicator

Dimension	Indicators	Average percentage score
Business	Business model development	39%
	Use case development	67%
	Data space offering	61%
	Intermediaries and operators	34%
Overall average dimension percentage score		**52%**
Governance and legal	Organisational form and governance authority	36%
	Participation management	50%
	Regulatory compliance	61%
	Contractual framework	33%
Overall average dimension percentage score		**42%**
Technical	Data models	51%
	Data exchange	45%
	Provenance and traceability	46%
	Identity management	38%
	Trust framework	31%
	Access and usage policies enforcements	44%
	Data, services, and offerings descriptions	55%
	Publication and discovery	52%
	Value creation services	34%
Overall average dimension percentage score		**45%**
Operational	Participation	30%
	Volume of activity	10%
Overall average dimension percentage score		**17%**