Expert Assessment of the Maturity Model for Data Spaces

submitted in partial fulfillment for the degree of master of science

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1 MATURITY MODEL ASSESSMENT

Table 1: Guidelines for Completing Maturity Model

No.	Guideline	Description	Helpful Documentation
1	Understanding the Purpose	This questionnaire helps assess the organizational, legal, and governance maturity of a data space. Your responses will help identify strengths and areas for improvement.	n/a
2	Anonymity	You may choose to remain anonymous. If so, use a pseudonym or abbreviation that is recognizable to the researcher but unidentifiable to others.	n/a
3	Model Structure Overview	The model contains 8 building blocks, each made up of several concepts and dimensions. Each is assessed using scaled questions (1–5) that reflect maturity levels from Initial to Optimized.	Model Overview, Assessment Sheet
4	Maturity Levels	The model uses a 5-level scale: Initial (1), Repeatable (2), Defined (3), Managed (4), and Optimized (5). Rate each question based on the current state of your data space, choosing the score that best describes the least mature applicable aspect.	Maturity Level Descriptions, Assessment Sheet
5	Scope Clarification	Answer questions for all dimensions that are relevant to your data space. If a question does not apply to your context, leave it blank and note "Not Applicable" where possible. Please avoid skipping questions solely due to perceived low maturity.	Scope Form, Concept Description: Tables 11, 12, 13, 14, 15, 16, 17, and 18, Maturity Model: Tables 3, 4, 5, 6, 7, 8, 9, and 10
6	Completing the Questionnaire	For each question, read the description carefully and select the score that best fits your data space. Aim for an honest and accurate reflection rather than an idealized state. Use the accompanying documentation if clarification is needed.	Questionnaire Form, Traceability Table
7	Reviewing Your Input	After completing the questionnaire, review your responses to ensure consistency and accuracy. You may revise any answers before submission.	Assessment Summary Sheet
8	Submitting Responses	Submit your completed questionnaire through the provided digital form or as instructed. You may retain a copy of your responses for your records.	Assessment Tool
9	Result Interpretation	The results will be analyzed by the researcher to identify maturity gaps and strengths across the eight building blocks. You will receive a visual summary and personalized feedback (if applicable).	n/a
10	Feedback	You are encouraged to provide feedback on the questionnaire's clarity, usability, and completeness. Use the comment section at the end or the formal Expert Evaluation Form.	Expert Evaluation Form

Table 2: Generic Maturity Level Descriptions for the Maturity Model

Level	Title	Description
Level 1	**Initial**	This dimension is in creation and/or in an undeveloped state. The processes described by this dimension are ad hoc or non-existent, responsibilities are unclear, and compliance or governance mechanisms are either missing or ineffective. There is no formal structure, documentation, or oversight existent/documented. This dimension is no prioritized within the data space.
Level 2	**Repeatable**	This level indicates that some basic structures and responsibilities are in place, mostly informal or inconsistently applied. The processes may be partially documented but lack standardization. Legal, organizational, or governance efforts are reactive and driven by immediate operational needs. The priority of this dimension is low and there is no regularly pursued improvement.
Level 3	**Defined**	The dimension is formalized and aligned with accepted industry practices. Policies, roles, and responsibilities are clearly defined and documented. Legal and governance frameworks are systematically implemented. The dimension is treated as a functional part of the data space and periodic reviews may occur.
Level 4	**Managed**	The dimension is strategically embedded into data space operations. There is evidence of active monitoring, structured reviews, and targeted improvements. Legal and governance mechanisms are proactively enforced. Performance is measured, and there is cross-stakeholder coordination. The dimension is a recognized priority.
Level 5	**Optimized**	The dimension is continuously improved based on data-driven insights, KPIs, and best practices. Processes are automated where feasible, aligned with advanced standards, and demonstrate leadership within the data ecosystem. Governance, legal compliance, and organizational readiness are highly mature, adaptive, and future-focused.

Q	Concept	Dimension	Assessment Question	Scale/Scoring	Source Text
1	Value Propositions	Clarity and Stakeholder Coverage	How clearly are value propositions defined and tailored to address the needs of all participant segments?	1: Vague, no/few segment(s). 2: Basic, some segments. 3: Clear, most segments. 4: Tailored, reviewed. 5: Data-driven, emerging segments.	"A value proposition describes how an offering creates value for a user" and "Value propositions to federation service providers…"
2	Value Propositions	Implementation Effectiveness	How effectively are value propositions delivered through standardized interfaces or services?	1: No delivery. 2: Basic mechanisms. 3: Standardized delivery. 4: Metric-tracked. 5: Integrated, improved.	"An important part of a data space's offering... is a high level of standardisation of interfaces"
3	Multi-sidedness	Segment Engagement and Incentive Alignment	How actively do all participant segments engage in the data space, supported by well-structured incentives?	1: Minimal, no incentives. 2: Some participation, basic incentives. 3: Active, defined incentives. 4: Balanced, tailored incentives. 5: High, optimized incentives.	"Serves interaction between different types of users" and "Actors require appropriate incentives."
4	Multi-sidedness	Network Effect Realization	To what extent are same-side and cross-side network effects observed and leveraged in the data space?	1: No effects. 2: Limited effects. 3: Clear effects. 4: Measured effects. 5: Strong effects drive growth.	"Increased attraction from an established user base is referred to as network effects."
5	Collaborative Business Model	Co-creation Process	How formalized is the process for co-creating the business model with participants?	1: Ad-hoc. 2: Informal. 3: Structured. 4: Monitored. 5: Continuously improved.	"The development of the data space's business model... guided by the co-creation method"
6	Collaborative Business Model	Stakeholder Alignment	To what extent do participants agree and align on shared objectives and incentives for the data space?	1: No agreement. 2: Partial agreement. 3: Clear agreement. 4: Assessed alignment. 5: Dynamic alignment.	"The business model should consider... objectives and business models of the participants"
7	Collaborative Business Model	Ecosystem Integration	How well does the data space's business model integrate with participants' individual business models?	1: No integration. 2: Limited. 3: Supports most models. 4: Monitored integration. 5: Seamless integration.	"The data space business model depends on the viability of individual business models"
8	Governance Authority Responsibilities	Role Formalization and Decision-Making Process	How structured is the governance authority's process for monitoring the business model and making business model decisions?	1: Ad-hoc. 2: Informal. 3: Formalized. 4: Inclusive, monitored. 5: Optimized, data-driven.	"The governance authority is responsible for ensuring... rules are clear"; "The governance authority is responsible for overseeing its operation..."
9	Governance Authority Responsibilities	Monitoring	Is there a documented process for the governance authority to monitor the business model based on performance metrics?	1: No process. 2: Informal. 3: Documented, reactive. 4: Systematic, metric-driven. 5: Continuous, automated.	"Its business model should be continuously aligned with developments within its ecosystem"
10	Governance Authority Responsibilities	Adaptation	Is there a documented process for the governance to adapt the business model based on performance metrics?	1: No process. 2: Informal. 3: Documented, reactive. 4: Systematic, metric-driven. 5: Continuous, automated.	"Its business model should be continuously aligned with developments within its ecosystem"
11	Dynamic Capabilities	Environmental Monitoring	How systematically does the data space monitor internal and external developments affecting the business model?	1: No monitoring. 2: Ad-hoc. 3: Systematic. 4: Informs decisions. 5: Predictive, data-driven.	"This includes monitoring developments in both its external environment and internal performance"
12	Dynamic Capabilities	Adaptation Process	How formalized is the process for redesigning and implementing business model changes?	1: Ad-hoc. 2: Informal. 3: Formalized. 4: Measured, refined. 5: Scalable, agile.	"Developing changes to the business model and governance to guide... implementation"
13	Dynamic Capabilities	Scalability	How capable is the data space of scaling its business model and supporting operations to enable growth?	1: No scalability. 2: Limited. 3: Moderate. 4: Monitored expansions. 5: Highly scalable.	"How will growth ambitions be realized?"
14	Revenue and Cost Management	Revenue Model Diversity	How diverse and stable are the data space's revenue streams (e.g., fees, subsidies)?	1: Single, unstable. 2: Few streams. 3: Multiple streams. 4: Diversified, monitored. 5: Stable, growth-supporting.	"Income may originate from multiple sources, including public funding and participant fees"
15	Revenue and Cost Management	Cost Transparency and Management	Are the data space's operational and governance costs documented and actively managed?	1: Unclear, unmanaged. 2: Basic documentation. 3: Documented, managed. 4: Transparent, optimized. 5: Fully optimized, metric-driven.	"What costs are associated with data space operations, and how are they managed?"
16	Revenue and Cost Management	Financial Sustainability	To what extent do revenues cover costs to ensure long-term financial sustainability?	1: Deficit. 2: Partial coverage. 3: Break-even. 4: Surplus, reinvested. 5: Surplus, growth-driving.	"The revenues and costs must align with the data space's profit and growth strategies"

Table 3: Assessment Framework for Data Space Business Models

Q	Concept	Dimension	Assessment Question	Scale/Scoring	Source Text
1	Use Case Identification and Monitoring	Process Formalization and Screening	How formalized and consistent is the process for identifying and screening use case scenarios for market potential and alignment with data space objectives?	1: Ad-hoc, no screening. 2: Informal, basic screening. 3: Defined, consistent screening. 4: Structured, strategic screening. 5: Automated, data-driven screening.	"Identifying and monitoring use case scenarios… Screening the best ideas… market potential."
2	Use Case Identification and Monitoring	Stakeholder Engagement	To what extent are stakeholders (e.g., participants, other data spaces) engaged in generating use case ideas?	1: Limited to internal team. 2: Some participants. 3: Most participants. 4: Ecosystem-wide collaboration. 5: Includes other data spaces.	"Potential sources for ideas… needs of participants… other data spaces."
3	Use Case Scenario Refinement	Process Structure	How standardized is the process for refining use case scenarios, including the use of templates?	1: No templates, ad-hoc. 2: Basic templates. 3: Standardized process. 4: Structured, monitored templates. 5: Fully integrated, automated tools.	"Refining… using templates like the Data Cooperation Canvas."
4	Use Case Scenario Refinement	Collaboration Effectiveness	How effectively do participants collaborate during the co-creation of use case scenarios?	1: No co-creation. 2: Limited collaboration. 3: Defined co-creation. 4: Scalable co-creation. 5: Dynamic, cross-ecosystem co-creation.	"Orchestrates the co-creation efforts across participants."
5	Use Case Scenario Refinement	Compliance Integration	To what extent are regulatory, business, and security requirements integrated into the refinement process?	1: No consideration. 2: Basic compliance. 3: Defined integration. 4: Monitored compliance. 5: Proactive, automated audits.	"Business case, regulation, contractual issues, interoperability, and security."
6	Use Case Scenario Refinement	Reusability of Components	How modular are the data products and services designed during use case refinement to support multiple use cases?	1: No modularity. 2: Limited modularity. 3: Modular for some use cases. 4: Reusable within ecosystem. 5: Reusable across data spaces.	"Data products and value creation services… modular."
7	Use Case Implementation	Infrastructure Readiness	How ready is the data space infrastructure to support the implementation of use cases?	1: No infrastructure. 2: Basic infrastructure. 3: Supports some use cases. 4: Interoperable within ecosystem. 5: Interoperable across data spaces.	"Data space infrastructure sets the boundaries."
8	Use Case Implementation	Participant Commitment	How formalized are the agreements and commitments from participants for use case implementation?	1: No agreements. 2: Informal agreements. 3: Defined contracts. 4: Monitored contracts. 5: Dynamic, real-time contracts.	"Necessary contracts for the use case need to have been made."
9	Use Case Implementation	Implementation Strategy and Participant Involvement	How structured is the strategy for implementing and improving use cases, with active participant involvement?	1: Ad-hoc, no involvement. 2: Informal, limited involvement. 3: Defined, some involvement. 4: Structured, ecosystem-wide involvement. 5: Optimized, agile with dynamic co-creation.	"Stepwise implementation… Done in collaboration with all the essential participants."
10	Continuous Improvement	Performance Analysis	How robust are the methods for analyzing the performance of operational use cases?	1: No measurement. 2: Basic metrics. 3: Defined analysis. 4: Monitored, data-driven analysis. 5: Predictive analytics.	"Continuously analyzing the performance of use cases."
11	Continuous Improvement	Change Management	How structured is the process for managing changes to operational use cases?	1: No process. 2: Informal process. 3: Defined process. 4: Structured, prioritized roadmap. 5: Automated, optimized roadmap.	"Manage carefully the changes made… roadmap made."
12	Continuous Improvement	Performance Analysis	How systematically are lessons from abandoned use cases documented and used to inform future development?	1: No documentation. 2: Informal notes. 3: Defined documentation. 4: Systematic knowledge base. 5: Automated knowledge base.	"Which ones were abandoned and for which reason."
13	Use Case Orchestration	Role Definition	How clearly defined are the responsibilities for coordinating use case development and implementation?	1: No defined responsibilities. 2: Informal coordination. 3: Defined responsibilities. 4: Clear, monitored roles. 5: Optimized, cross-data-space coordination.	"Use case orchestrator… accountable for a specific use case."
14	Use Case Orchestration	Support Mechanisms	What level of support (e.g., tools, templates, training) is provided for coordinating use case development?	1: No support. 2: Basic resources. 3: Standardized tools/templates. 4: Comprehensive, monitored support. 5: Automated, integrated systems.	"Data space should offer tools and support to the orchestrator."
15	Use Case Orchestration	Scalability	How capable is the coordination mechanism in managing multiple or complex use cases?	1: Single, simple use case. 2: Limited to few use cases. 3: Manages multiple use cases. 4: Scalable, complex use cases. 5: Cross-data-space scalability.	"Need for orchestration is increased… complex use cases."
16	Use Case Orchestration	Scalability	To what extent are cross-data-space collaborations for use case development facilitated?	1: No collaboration. 2: Limited engagement. 3: Planned collaboration. 4: Active collaboration. 5: Seamless cross-data-space orchestration.	"Collaboration possibilities in other data spaces."

Table 4: Assessment Framework Use Case Development

Q	Concept	Dimension	Assessment Question	Scale/Scoring	Source Text
1	Data Products	Formalization	To what extent are data products documented using standardized and machine-readable metadata formats?	1: Not documented. 2: Basic documentation. 3: Standardized metadata. 4: Machine-readable metadata. 5: Leading standards.	"Data products comply with a data product specification... described using metadata"; "FAIR principles."
2	Data Products	Quality Assurance and Incentives	How consistently are quality assurance processes applied to data products, with incentives to encourage high-quality offerings?	1: No processes or incentives. 2: Informal processes, no incentives. 3: Defined processes, basic incentives. 4: Monitored processes, scalable incentives. 5: Metrics-driven processes, effective incentives.	"Quality assurance, evaluation and validation of the data product"; "Incentivizing... participants to invest in developing... data products."
3	Data Products	Accessibility	How accessible are data products to participants via catalogues and delivery options (e.g., APIs, web interfaces)?	1: Not accessible. 2: Limited access. 3: Basic catalogue access. 4: Seamless access. 5: Adaptive, cross-ecosystem access.	"Offered to participants in a consumable form... via catalogue"; "Delivery options (e.g., APIs)."
4	Data Products	Accessibility	To what extent are data products designed and structured to support reuse across multiple use cases?	1: No reuse. 2: Limited reuse. 3: Reuse in some use cases. 4: Optimized within ecosystem. 5: Cross-use-case value across data spaces.	"Data products containing the same data can be delivered to multiple use cases."
5	Services	Formalization	To what extent are services documented using standardized and machine-readable metadata formats and published in a catalogue?	1: No documentation. 2: Basic documentation. 3: Standardized metadata. 4: Discoverable in catalogues. 5: Fully standardized, cross-ecosystem.	"Services... described properly using metadata and offered through a catalogue."
6	Offering Strategy	Planning and Use Case Alignment	Is there a documented strategy for prioritizing offerings that align with current and emerging use cases?	1: No strategy or alignment. 2: Informal strategy, limited alignment. 3: Defined strategy, some alignment. 4: Goal-aligned strategy, strong alignment. 5: Dynamic strategy, cross-use-case synergies.	"Develop and maintain a strategy... Identification and onboarding"; "Serve existing and future use cases."
7	Governance Rules	Rule Development	Are governance rules for data products and services formally defined (e.g., quality, licensing)?	1: No rules. 2: Informal rules. 3: Defined rules. 4: Comprehensive rules. 5: Benchmark-setting rules.	"Responsibility of the governance authority to set rules."
8	Governance Rules	Rule Development	How well do governance rules ensure data product compliance with privacy and security standards?	1: No consideration. 2: Basic compliance. 3: Defined compliance. 4: Monitored compliance. 5: Leading privacy/security compliance.	"Ensure... security, privacy, interoperability, and ethical considerations."
9	Governance Rules	Enforcement	How consistently are governance rules enforced across offerings?	1: No enforcement. 2: Informal enforcement. 3: Defined enforcement. 4: Consistent enforcement. 5: Automated, transparent enforcement.	"Enforcement of the governance rules."
10	Governance Rules	Adaptability	How adaptable are governance rules to changing needs or regulations?	1: Static. 2: Rarely updated. 3: Periodically updated. 4: Proactively updated. 5: Dynamically optimized.	"Maintaining... these rules."
11	Participant Support	Tooling and Guidance	To what extent are tools or processes provided to support participants in creating data products?	1: No tools. 2: Basic tools. 3: Standardized tools. 4: Comprehensive tools. 5: Innovative, cross-ecosystem tools.	"Provide tools and processes to lower the barrier."
12	Participant Support	Engagement	How engaged are participants in developing and offering data products?	1: No engagement. 2: Limited engagement. 3: Moderate engagement. 4: Collaborative engagement. 5: Active, cross-ecosystem community.	"Support its participants in creating data products."
13	Participant Support	Capacity Building	To what extent do training and advisory services enhance participants' ability to produce high-quality data products?	1: No support. 2: Basic guidance. 3: Standardized training/advisory. 4: Comprehensive, scalable programs. 5: Innovative, tailored programs.	"Improve the utility of the data... foster synergies."

Table 5: Assessment Framework Data Space Offering

Q	Concept	Dimension	Assessment Question	Scale/Scoring	Source Text
Q1	Service Provision	Governance and Service Formalization	To what extent are the roles, services, and responsibilities of intermediaries/operators formally defined in the governance framework and contracts?	1: Ad-hoc, undefined. 2: Basic, inconsistently applied. 3: Moderately defined. 4: Fully standardized. 5: Dynamically updated across frameworks.	"The governance framework… should include information regarding all service providers"; "Service level agreements and performance metrics… provide clear mappings."
Q2	Service Provision	Accessibility	How effectively do intermediaries/-operators provide accessible, user-friendly onboarding for diverse participants?	1: High barriers, manual. 2: Basic onboarding. 3: Structured support. 4: Broad access, intuitive. 5: Universal access, fully automated.	"Improve data space accessibility and usability for different participants."
Q3	Service Provision	Scalability	To what extent do intermediary/operator services scale with participant and transaction volume?	1: No scalability. 2: Limited, bottlenecks. 3: Moderate, manual scaling. 4: High scalability, some automation. 5: Cloud-based, exponential scaling.	"Contribute to their scalability."
Q4	Business and Revenue Models	Transparency and Economic Growth	How transparent and aligned are the business models of intermediaries/-operators with the data space's objectives, and to what extent do they drive ecosystem growth?	1: Undocumented, no growth. 2: Poorly documented, minimal incentives. 3: Moderate transparency, some attraction. 4: Transparent, strong value creation. 5: Fully aligned, measurable growth.	"Business model characteristics describe how service providers contribute to the overall economics…"; "Agency intermediaries are directly incentivised to acquire new customers…"
Q5	Governance Framework Integration	Compliance and Enforcement	How effectively does the data space governance body enforce intermediary/operator compliance with governance requirements and relevant regulations (e.g., GDPR, DGA)?	1: No enforcement or compliance. 2: Ad-hoc or reactive approach. 3: Periodic audits or partial alignment. 4: Regular certifications and proactive measures. 5: Automated enforcement, full regulatory alignment.	"Auditing requirement or possibility: e.g., DSGA may have right to audit service providers"; "Intermediaries and operators are subject to broader legal frameworks…"
Q6	Governance Framework Integration	Neutrality	How effectively is neutrality enforced for intermediaries/operators to prevent conflicts of interest (e.g., bundling enabling and value creation services)?	1: Frequent conflicts, no mechanisms. 2: High risk, minimal enforcement. 3: Moderate neutrality, basic policies. 4: Strong neutrality, certifications. 5: Strict neutrality, robust enforcement.	"Bundling allowance: e.g., whether the service provider must provide exclusively some specific service in order to maintain its neutrality."
Q7	Interoperability and Collaboration	Technical Integration	To what extent do intermediaries/-operators implement technical standards for interoperability within and across data spaces?	1: No standards adherence. 2: Minimal compliance. 3: Moderate, partial gaps. 4: Full adherence, consistent. 5: Seamless, cross-space leadership.	"Collaboration between intermediaries… requires technical integration planning…"; "Collaboration between operators to facilitate interoperability between data spaces."
Q8	Interoperability and Collaboration	Collaboration Scope	To what extent do intermediaries/-operators collaborate or provide interchangeable services to support seamless provisioning?	1: No collaboration. 2: Limited, high friction. 3: Moderate collaboration. 4: Strong collaboration, fungibility. 5: Optimized, interoperable ecosystem.	"Providers can compete… but must always be fungible."
Q9	Service Provider Responsibilities	Transparency and Monitoring	How transparently do intermediaries/operators report and undergo audits to demonstrate governance and regulatory compliance?	1: No audits or systems. 2: Ad-hoc/manual reporting. 3: Periodic reports, basic compliance. 4: Standardized reporting, regular audits. 5: Automated, cross-framework auditing.	"Implement monitoring and reporting systems that can track and demonstrate compliance."; "Define transparency and audit requirements… provide standardised reporting templates."
Q10	Service Provider Responsibilities	Continuity and Portability	To what extent are incident response plans, exit strategies, and data portability processes defined and integrated for intermediaries/operators?	1: No plans or provisions. 2: Basic definitions, not integrated. 3: Moderate definition, partial integration. 4: Standardized and multi-framework aligned. 5: Fully integrated, automated and seamless.	"Develop integrated incident response procedures that account for multi-framework obligations."; "Establish clear guidelines for managing exits… standard procedures for data portability."
Q11	Risk Management	Process and Diversification	To what extent are risk management processes and provider diversification strategies implemented to mitigate dependency risks?	1: No risk strategy. 2: Minimal planning, high dependency. 3: Moderate processes, some diversification. 4: Structured plans, multiple providers. 5: Comprehensive, proactive risk mitigation.	"Designing data spaces with multiple operators and intermediaries to distribute vendor dependency risks."; "Risks… such as vendor lock-in…"

Table 6: Assessment Framework Intermediaries and Operators

Q	Concept	Dimension	Assessment Question	Scale/Scoring	Source Text
Q1	Organizational Form Decision	Decision Process & Adaptability	Is there a documented and adaptable process for deciding and revising the Data Space's organizational form, involving relevant stakeholders?	1: No process. 2: Informal process, limited stakeholders. 3: Documented process for decision or revision, limited stakeholders. 4: Documented, inclusive process for both, not fully proactive. 5: Fully documented, inclusive, proactive process.	"While developing the business model, they also consider the following non-exhaustive list of questions…"; "While the choice of legal form… can be changed later on."
Q2	Organizational Form Decision	Alignment with Business Model	Does the chosen organizational form align with the Data Space's business model and scalability needs?	1: Misaligned. 2: Partial alignment, significant gaps. 3: Moderate alignment. 4: Strong alignment, minor gaps. 5: Optimal alignment.	"Each of those legal forms… needs to be considered in detail depending on the data space business model…"
Q3	Governance Authority Establishment	Structural Definition & Review	To what extent are the governance authority's structure and roles clearly defined, documented, and regularly reviewed?	1: Undefined, not reviewed. 2: Partially defined, not reviewed. 3: Documented, rarely reviewed. 4: Well-defined, periodically reviewed. 5: Fully formalized, proactively reviewed.	"A body is a differentiated structure… e.g., general assembly of members and a management board."; "The members… can decide on the size and composition… depending on the size and needs…"
Q4	Governance Authority Establishment	Specialized Bodies	Does the governance authority include specialized bodies (e.g., committees) for complex tasks as needed?	1: No bodies. 2: Informal bodies. 3: Some bodies, not fully aligned. 4: Formalized bodies, most tasks. 5: Optimized bodies, all tasks.	"They are also more likely to need additional specialised bodies (e.g., working groups or committees)…"
Q5	Governance Authority Establishment	Functional Scope & Effectiveness	To what extent does the governance authority perform core functions and use metrics to evaluate and improve its effectiveness?	1: Minimal functions, no metrics. 2: Limited functions, informal metrics. 3: Core functions, limited metrics. 4: Consistent functions, basic metrics. 5: Comprehensive functions, proactive metrics.	"The role of a governance authority may entail… setting internal rules… ensuring compliance… resolving conflicts…"; "A governance authority also creates mechanisms for continuous improvement…"
Q6	Governance Authority Establishment	Stakeholder Representation	Is there a formal process to ensure balanced stakeholder representation in the governance authority, addressing potential power imbalances?	1: No process. 2: Informal process, no imbalance mitigation. 3: Basic process, limited mitigation. 4: Formal process, most imbalances addressed. 5: Equitable process, robust fairness mechanisms.	"There are no legal requirements for equal… representation… which may lead to power imbalances…"; "It would be important to follow the best practices of corporate governance."
Q7	Governance Framework Development	Rule Completeness & Updates	Does the governance framework include comprehensive, regularly updated internal rules, fully integrating technical specifications?	1: No rules. 2: Incomplete rules, no updates. 3: Basic rules, irregular updates. 4: Comprehensive rules, regular updates. 5: Exhaustive rules, full integration.	"These internal rules can consist of founding agreements… internal policies… technical specifications…"; "Each data space tailors the contents of the rulebook to its own needs…"; "Technical specifications for the data space… constitutes part of internal rules…"
Q8	Governance Framework Development	Governance Procedures	How clearly and comprehensively are governance procedures defined within the governance framework?	1: Undefined/No Governance Framework. 2: Informal, poorly documented. 3: Basic, lacking clarity. 4: Well-defined, minor gaps. 5: Comprehensive, fully integrated.	"Each data space can… draw up… governance procedures (e.g., dispute resolution…)."
Q9	Governance Framework Development	Process Integration & Improvement	Is there a structured, inclusive process for developing and updating internal rules, continuously improved based on stakeholder feedback?	1: No process. 2: Ad-hoc, minimal input. 3: Basic process, limited improvement. 4: Structured, broad input, basic improvement. 5: Proactive, inclusive, continuous improvement.	"All of the mentioned documents should be prepared and discussed by the executive body… or… working groups…"; "Such an approach… allows for more flexibility in the operation…"; "Documents of a more general nature… should be approved or voted on by the decision-making body…"
Q10	Governance Framework Development	Accessibility & Usability	To what extent are internal rules documented in an accessible rulebook, supported by usability tools, and available in human- and machine-readable formats?	1: Inaccessible, no tools/No Rulebook or comparable Document. 2: Minimally accessible, no tools. 3: Accessible, limited tools, human-readable only. 4: Highly accessible, tools, limited machine-readable. 5: Fully accessible, advanced tools, dual formats.	"Once adopted, all data space internal rules are documented in a data space rulebook for operational use."; "The rulebook must be expressed in a human-readable format and, if possible, a machine-readable format."

Table 7: Assessment Framework Organizational Form and Governance Authority

Q	Concept	Dimension	Assessment Question	Scale/Scoring	Source Text
Q1	Participant Roles and Responsibilities	Formalization	Are the roles and responsibilities of participants clearly documented in the Data Space rulebook?	1 = No documentation. 2 = Partial documentation, unclear roles. 3 = Documented but static. 4 = Documented with periodic updates. 5 = Documented, dynamically refined with stakeholder input.	"Participants in a data space comprise different entities... documented in the data space's rulebook"
Q2	Participant Roles and Responsibilities	Enforcement	Are mechanisms in place to enforce participant adherence to their responsibilities?	1 = No mechanisms. 2 = Informal warnings only. 3 = Manual enforcement (e.g., certification). 4 = Semi-automated enforcement. 5 = Fully automated enforcement with real-time monitoring.	"Participation management needs to ensure the management of permissions"
Q3	Onboarding Process	Standardization	Is the onboarding process standardized and documented for all participant types?	1 = No standardization. 2 = Ad-hoc process, poorly documented. 3 = Standardized but not fully documented. 4 = Standardized and well-documented. 5 = Fully automated and optimized.	"Efficient onboarding of participants is critical... involves defining General Terms and Conditions"
Q4	Onboarding Process	Efficiency	To what extent is the onboarding process automated and supported to facilitate participant integration into the Data Space?	1 = Manual process, no support provided. 2 = Manual process with minimal support. 3 = Partially automated process with basic support. 4 = Highly automated process with comprehensive support. 5 = Fully automated process with proactive, tailored support.	"Ensures that participants can quickly integrate into the data space"
Q5	Onboarding Process	Compliance Integration	Are legal and technical compliance checks integrated into the onboarding process?	1 = No compliance checks. 2 = Informal checks, manual. 3 = Basic checks, partially integrated. 4 = Comprehensive checks, semi-automated. 5 = Fully automated compliance checks.	"Reviews the applicant's compliance with legal, technical, and operational standards"
Q6	Offboarding Process	Documentation	Are offboarding procedures clearly documented and accessible to participants?	1 = No documentation. 2 = Partial documentation, unclear. 3 = Documented but static. 4 = Documented with periodic updates. 5 = Documented, regularly updated, and accessible.	"Documentation of exit procedures... detailed steps for data transfer, access termination"
Q7	Offboarding Process	Data Handling	Are there robust protocols for secure data transfer or deletion during offboarding?	1 = No protocols. 2 = Informal protocols, manual. 3 = Basic protocols, documented. 4 = Comprehensive protocols, semi-automated. 5 = Fully automated and secure protocols.	"Implementing clear protocols for the secure transfer or deletion of data"
Q8	Offboarding Process	Compliance Verification	Does the offboarding process include thorough verification of contractual and compliance obligations?	1 = No verification. 2 = Informal verification, manual. 3 = Basic verification, documented. 4 = Comprehensive verification, semi-automated. 5 = Fully automated verification.	"Verify that all contractual and compliance obligations have been met"
Q9	Compliance and Governance Alignment	Policy Alignment	Do participants align their internal data governance with the Data Space's governance framework, and are they regularly monitored for compliance?	1 = No alignment or monitoring. 2 = Minimal alignment, no monitoring. 3 = Mandatory alignment, periodic monitoring. 4 = Proactive alignment, regular monitoring. 5 = Dynamic alignment, continuous monitoring.	"Internal Data Governance processes need to be implemented and aligned with the overarching Data Governance framework"; "Active monitoring extends beyond initial onboarding, with continuous oversight"
Q10	Compliance and Governance Alignment	Data Quality	Are there mechanisms to ensure data quality and provenance for shared data, aligned with Data Space standards?	1 = No mechanisms. 2 = Informal quality checks. 3 = Basic standards-based checks. 4 = Systematic quality assurance, semi-automated. 5 = Fully automated quality and provenance assurance.	"Management of data quality, observability of data transactions, data provenance"
Q11	Data Transaction Facilitation	Interoperability	Do intermediaries and operators support standardized, interoperable data exchange?	1 = No interoperability support. 2 = Limited, non-standardized support. 3 = Basic standardized support. 4 = Comprehensive, scalable support. 5 = Fully automated, scalable interoperability.	"Facilitate data intermediaries and operators to ensure adherence of interoperability standards"
Q12	Data Transaction Facilitation	Security	Are data transactions secured against unauthorized access or misuse?	1 = No security measures. 2 = Basic security, manual. 3 = Standard security measures. 4 = Advanced security, semi-automated. 5 = Fully automated, advanced security protocols.	"Facilitating secure and compliant data transactions"
Q13	Stakeholder Engagement and Monitoring	Inclusivity	To what extent is participant feedback systematically collected and used to improve participation processes?	1 = No feedback collected. 2 = Ad-hoc feedback, no action. 3 = Periodic feedback collection. 4 = Systematic feedback with improvements. 5 = Data-driven optimization with stakeholder input.	"Understand concerns and needs of external stakeholders"; "Feedback from participants is crucial... enabling data-driven adjustments"

Table 8: Assessment Framework Participant Management

Q	Concept	Dimension	Assessment Question	Scale/Scoring	Source Text
Q1	Triggers	Identification Process	How systematically are triggers identified to determine applicable legal frameworks?	1 = No process; ad-hoc identification. 2 = Informal process, limited scope. 3 = Formal process, manual. 4 = Systematic process, partially automated. 5 = Fully automated, comprehensive trigger identification.	"This process starts with identifying elements, criteria, and/or events in the data space that flag the need... to apply or comply with a particular framework."
Q2	Triggers	Scope Coverage	To what extent are all relevant legal frameworks (EU, national, sectoral) covered by the trigger identification process?	1 = Few frameworks, inconsistent. 2 = Some frameworks, ad-hoc. 3 = Most frameworks, reactive updates. 4 = Comprehensive coverage, periodic updates. 5 = All frameworks, proactive updates.	"The triggers may be classified into different categories, such as: Types of data... Types of data space participants... Types of use cases."
Q3	Data Space Requirements	Formalization	How formalized are the processes to comply with data space-specific legal requirements?	1 = No formal processes. 2 = Informal processes, inconsistent. 3 = Basic documented processes. 4 = Formal, enforced processes. 5 = Fully documented, regularly updated processes.	"The category of data space requirements encompasses legislation that directly regulates data spaces."
Q4	Data Space Requirements	Interoperability Integration	To what extent are general and sectoral interoperability standards integrated into data space operations?	1 = No standards integrated. 2 = Minimal, inconsistent integration. 3 = Partial integration, some standards. 4 = Broad integration, most standards. 5 = Full integration, harmonized standards.	"A key piece of legislation that directly regulates data spaces is the Data Act... to ensure data interoperability."; "According to art. 52 (12) EHDS, Member States and the Commission shall seek to ensure interoperability of HealthData@EU with other relevant common European data spaces..."
Q5	Additional Legal Considerations	Awareness	To what extent are additional legal considerations (e.g., cybersecurity, IP) documented within the data space?	1 = No documentation. 2 = Minimal, incomplete documentation. 3 = Basic documentation, limited access. 4 = Comprehensive documentation, accessible. 5 = Comprehensive, with stakeholder training.	"In addition to the legal frameworks outlined above... it's crucial to consider additional legal aspects stemming from, for instance, cybersecurity legislative frameworks."
Q6	Additional Legal Considerations	Process Integration	To what extent are additional legal considerations (e.g., cybersecurity, IP) integrated into data space workflows and operations?	1 = No integration. 2 = Minimal, ad-hoc integration. 3 = Partial integration, some workflows. 4 = Broad integration, most workflows. 5 = Seamless integration, continuously improved.	"Ensuring robust cybersecurity measures is essential to protect data integrity and privacy..."
Q7	Tools for Compliance	Adoption	How extensively are technical tools (e.g., privacy-enhancing technologies) used to address legal requirements?	1 = No tools used. 2 = Minimal, basic tools. 3 = Moderate use, some tools. 4 = Broad use, multiple tools. 5 = Comprehensive use, advanced tools.	"Such technical tools could vary from tools that assist in identifying relevant requirement to (partially) automating compliance."
Q8	Tools for Compliance	Automation	To what extent are compliance processes and monitoring automated within the data space?	1 = Fully manual processes. 2 = Minimal automation, manual monitoring. 3 = Partial automation, some monitoring. 4 = Broad automation, regular monitoring. 5 = Fully automated, scalable monitoring.	"...continuous compliance monitoring, as well as accountability and transparency in reporting."; "Yet, there is a growing need for automated compliance solutions, which offer greater scalability, efficiency..."
Q9	Governance Authority Role	Policy Establishment	How formalized are the internal policies established by the governance authority for regulatory compliance?	1 = No policies. 2 = Informal policies, inconsistent. 3 = Basic policies, partially enforced. 4 = Formal policies, enforced. 5 = Fully formalized, regularly updated policies.	"It helps to properly define some participant roles and responsibilities, establish internal policies..."
Q10	Governance Authority Role	Monitoring	How rigorous and frequent is the monitoring of regulatory compliance within the data space?	1 = No monitoring. 2 = Ad-hoc monitoring, infrequent. 3 = Regular monitoring, manual. 4 = Rigorous monitoring, semi-automated. 5 = Continuous, automated monitoring.	"...and continuously monitor the regulatory compliance of a data space."
Q11	Governance Authority Role	Responsiveness to Change	How proactive is the governance authority in updating compliance processes based on new legal frameworks?	1 = No updates, reactive. 2 = Minimal updates, delayed. 3 = Regular updates, reactive. 4 = Proactive updates, planned. 5 = Dynamic, anticipatory updates.	"Guiding data space initiatives on organising compliance with relevant legislation and ensuring that regulatory compliance is maintained throughout the lifecycle..."
Q12	Participant Rights and Obligations	Communication	How clearly are participants informed about their legal rights and obligations within the data space?	1 = No communication. 2 = Minimal, unclear communication. 3 = Basic communication, some clarity. 4 = Clear communication, accessible. 5 = Tailored, comprehensive communication.	"It also assists data space participants in understanding their rights and obligations under regulatory frameworks..."
Q13	Participant Rights and Obligations	Support Mechanisms	To what extent are resources or guidance provided to support participants in meeting their legal obligations?	1 = No resources. 2 = Minimal, generic resources. 3 = Basic resources, limited guidance. 4 = Comprehensive resources, some guidance. 5 = Tailored, extensive guidance.	"It also provides guidance on relevant legislation to those interested in setting up or joining a data space..."

Table 9: Assessment Framework Regulatory Compliance

Q	Concept	Dimension	Assessment Question	Scale/Scoring	Source Text
Q1	Institutional Agreements	Formalization	To what extent is the Founding Agreement documented and legally enforceable?	1 = Not documented, 2 = Informally documented, 3 = Partially formalized, 4 = Formalized, enforceable, 5 = Fully formalized, optimized	"Founding agreement establishes the data space and its governance authority"
Q2	Institutional Agreements	Formalization	To what extent are data protection policies legally embedded and formalized in institutional agreements?	1 = No policies, 2 = Basic policies, 3 = Moderate policies, 4 = Comprehensive policies, 5 = Fully comprehensive, optimized	"Intellectual property policy... data protection policy"
Q3	Institutional Agreements	Formalization	To what extent are the General Terms and Conditions formally embedded and referenced in participation agreements?	1 = Ad hoc, 2 = Inconsistently embedded and referenced, 3 = Partially consistent, 4 = Mostly consistent, 5 = Universally embedded and referenced, updated	"General terms and conditions... make it binding on all data space participants"
Q4	Institutional Agreements	Process Integration	How well are Institutional Agreements integrated into onboarding and governance processes?	1 = Not integrated, 2 = Minimally integrated, 3 = Partially integrated, 4 = Mostly integrated, 5 = Seamlessly integrated	"Admission policy for data space participants... by accepting the terms and conditions"
Q5	Data-Sharing Agreements	Standardization	To what extent are data-sharing agreements standardized, including templates and licenses for data usage?	1 = No standardization, 2 = Minimal standardization, 3 = Partial standardization, 4 = High standardization, 5 = Fully standardized, interoperable	"Data product contract... sets out the terms and conditions"; "Standardised licences model for data usage rights"
Q6	Data-Sharing Agreements	Flexibility	How flexible are data-sharing agreements in balancing data sovereignty and interoperability?	1 = No flexibility, 2 = Minimal flexibility, 3 = Moderate flexibility, 4 = High flexibility, 5 = Optimal balance	"Terms and conditions under which a data product is made available... reflecting data sovereignty"
Q7	Data-Sharing Agreements	Automation	To what extent are automated tools (e.g., smart contracts, EDCs) used to execute and enforce agreements?	1 = No automation, 2 = Limited automation, 3 = Partial automation, 4 = Mostly automated, 5 = Fully automated, compliant	"Smart contracts can help establish trust... automatically enforcing legal obligations"; "Smart contracts... increase efficiency, and reduce costs"
Q8	Services Agreements	Service Coverage	How comprehensively do services agreements cover data-related and enabling services (e.g., identity management)?	1 = No coverage, 2 = Limited coverage, 3 = Moderate coverage, 4 = Comprehensive coverage, 5 = Fully comprehensive, scalable	"Service agreements relate to the provision of services... data-related services"; "Agreements for the provision of trust framework services, and management of identities"
Q9	Services Agreements	Clarity of Roles	How clearly are roles and obligations defined in services agreements?	1 = Unclear, 2 = Vaguely defined, 3 = Moderately clear, 4 = Mostly clear, 5 = Explicitly defined	"Agreements for services related to data... define roles and obligations"
Q10	Services Agreements	Scalability	How scalable are services agreements to support growing data space operations?	1 = Not scalable, 2 = Minimally scalable, 3 = Moderately scalable, 4 = Highly scalable, 5 = Fully scalable, future-proof	"Enabling services to data spaces... aimed at enabling functionalities"
Q11	Legal Interoperability and Scalability	Harmonization	To what extent are legal terms (e.g., jurisdiction, applicable law) harmonized across agreements?	1 = No harmonization, 2 = Minimal harmonization, 3 = Partial harmonization, 4 = High harmonization, 5 = Fully harmonized	"Harmonise matters of jurisdiction and applicable law across all agreements"
Q12	Legal Interoperability and Scalability	Interoperability	How well do agreements align with other data spaces or ecosystems?	1 = No alignment, 2 = Minimal alignment, 3 = Partial alignment, 4 = High alignment, 5 = Fully interoperable, cross-ecosystem	"Promotes awareness... to enable interoperable, automated, and scalable agreements"
Q13	Regulatory Compliance Integration	Compliance Coverage	How comprehensively and proactively do agreements address and adapt to mandatory regulatory requirements (e.g., GDPR, Data Act)?	1 = No compliance, 2 = Minimal compliance, 3 = Moderate compliance, 4 = Comprehensive compliance, 5 = Fully compliant, proactively updated	"Agreements must comply with the existing legislation to ensure validity"; "Regulatory framework defines which agreements and clauses are mandatory"
Q14	Regulatory Compliance Integration	Enforcement & Dispute Resolution	How robust are the mechanisms for dispute resolution and enforcement in the agreements?	1: No mechanisms. 2: Basic mechanisms. 3: Moderate mechanisms. 4: Comprehensive mechanisms. 5: Fully comprehensive, automated.	"Added question based on Catena-X validation"

Table 10: Assessment Framework Contractual Framework

Table 11: Business Building Block Concept Description

Concept	Description	Section from the Blueprint
Value Proposition	Describes and defines the delivery of the value the data space offers to participants, including clarity, tailoring to needs, and effectiveness of delivery mechanisms.	“A value proposition describes how an offering creates value for a user.”; “[...] value propositions to federation service providers [...]” “An important part of a data space’s offering [...] is a high level of standardisation of interfaces.”
Multi-sidedness	Multi-sidedness describes the degree to which a data space enables interaction between distinct participant types, including network network effects and incentive alignment across sides.	“Multisidedness means that a business model serves interaction between different types of users [...]”; “[...] network effects [...]”; “[...] appropriate incentives.”
Collaborative Business Model	A collaborative business model is co-developed with participants and integrates their diverse objectives, pains, gains, and individual business models to enable value creation in a coordinated way.	“The business model of a data space applies to a set of organisations [...] known as a collaborative business model.”; “[...] value is only created together in coherence [...]”; “[...] depends on the viability of individual business models [...].”
Governance Authority Responsibilities	The governance authority takes the role of overseeing formalizing, monitoring, and adapting the business model to ensure alignment with objectives and attractiveness to participants.	"The data space governance authority is responsible for overseeing its operation and ensuring that appropriate measures are taken."; “[...] responsible for monitoring [...] and implementing changes [...].”
Dynamic Capabilities	Dynamic capabilities describe the ability of a data space to monitor internal and external developments and redesign its business model accordingly, ensuring agility, scalability, and long-term relevance.	"A digital multi-sided business model requires a quick response to change in order to thrive."; "[...] referred to as ‘dynamic capability’, meaning the ability to shape and realise desired change."; “[...] includes monitoring developments [...] internal performance and external environment [...].”; “[...] developing changes to the business model and governance [...].”
Revenue and Cost Management	Revenue and Cost Manasgement describes the structure, diversity, and transparency of how the data space generates revenue and manages operational and governance costs to ensure long-term finanical viability.	"The income from the data space may originate from multiple sources, [...]."; “[...] costs are associated with data space operations [...]”; “[...] revenues and costs must align with profit and growth strategies.”

Table 12: Use Case Development Block Concept Description

Concept	Description	Section from the Blueprint
Use Case Identification and Monitoring	This concept describes the process in which ideas for use cases are collected, evaluated, and screened based on alignment with the data space's goals and market potential.	"Collecting ideas for use case scenarios through activities such as observing potential customers' needs and analysing other data spaces and platforms."; "Gathering a library of use case scenarios, monitoring their progress, and screening the best ideas for the refining stage should be carried out centrally."
Use Case Scenario and Refinement	This concept describes that use cases are further detailed and validated with participants using structured approaches, including compliance and co-creation methods.	"When further refining use case scenarios, the different approaches and templates guide the focus to additional issues such as the business case, regulation, contractual issues, interoperability, and security."; "Refining use case scenarios is where you spend more of your time, giving detail to the use case so that you can test its viability. This includes, at the minimum, the purpose and value of the use case, the use case participants, and the necessary data flows."
Use Case Implementation	This concept describes the phase in which the designated use case is put into operation, supported by the necessary infrastructure, contracts, and participant engagement.	"• Implementing use cases is where you take the best ideas and move from the drawing board to putting the ideas into reality."; "Implementing use cases both from organisational and business perspectives (e.g., agreements) and from technical perspectives (e.g., vocabularies, APIs, connectors)."; "[...] implementing stage is whether the overall design and the network are strong enough so that it is justified for the necessary partners to commit to and invest in the implementation work."
Continuous Improvement	This concept describes the ongoing process of monitoring and improving the performance of use cases, managing changes, and learning from successful and abandoned scenarios.	"Continuous improvement process is the overarching process throughout the life cycle of a use case where you analyze its performance, identify improvement opportunities, plan and implement changes."; "Continuous improvement is needed throughout the life cycle of a use case, starting from the first phases of identifying use case scenarios and continuing throughout the operational stage until the use case reaches the end of its life."
Use Case Orchestration	This concept describes the coordination and support mechanism to faciliate and scale use case development, ensuring roles are clear, tools are provided, and cross-space collaboration is enabled.	"In the case of use case orchestration, the joint goal is developing the use case, and the network is the different participants of the use case. The need for orchestration is increased in situations with a high number of parties and the use cases are complex, as well as in situations where the data space needs to develop more use cases to reach a sufficient size."

Table 13: Data Space Offering Building Block Concept Description

Concept	Description	Section from the Blueprint
Data Products	This concept describes the consumable, marketable assets composed of data, metadata, licenses, quality information, delivery mechanisms, and legal usage constraints.	"Data products are assets that provide monetary and/or non-monetary value from data. They should meet consumers' needs and have a clear purpose. Data products are offered to participants in a consumable form to be discovered and consumed by consumers on a self-serve basis. Data products comply with a data product specification. Productising data means transforming data into consumable and marketable data products."
Data Services	Data Services are value-creation tools offered by participants and governance authorities that should be cataloged and described using metadata.	"The participants or the governance authority can also offer services to their participants. Most of these services are likely to be value-creation services, e.g., data visualization, anonymization, data quality assessment and assurance, data processing, and connection-enabling services to external infrastructures or applications."; "The services, similarly to data products, are recommended to be described properly using metadata and offered through a catalogue to the data space participants."
Offering Strategy	This concepts describes prioritizing and onboarding of data products/services, enforcing governance rules, and supporting participants to create quality offerings.	"This building block provides the data space initiatives with an understanding of the offerings from a business perspective. It proposes to develop and maintain a strategy for the data space offering. The elements of a data space offering strategy are the following: [...]."
Governance Rules	This concepts defines standards and responsibilities for data products/service offering, managed by a governance authority to ensure trust, sustainability and compliance.	"These rules ensure the sustainability of the data space by attracting data products with potential business or social value, and ensure that the data products adhere to several principles, such as quality, trustworthiness, security, privacy, interoperability, and ethical considerations. Thus, setting, maintaining and enforcing these rules ultimately lead to increasing the data space participants' trust towards to the data space."
Participant Support	This concept describes the process of assisting participants in creating and maintaining high-quality data products, such as offering tools, templates, and lifecycle governance aligned with reuse and multiple use cases.	"The governance authority of a data space should support its participants in creating data products for a variety of reasons. [...]."

Table 14: Intermediaries and Operators Building Block Concept Description

Concept	Description	Section from the Blueprint
Service Provision	This concept describes the technical and business services provided by intermediaries and operators to enable trusted data sharing within the data space.	"[...] intermediaries and operators enable data sharing and trusted data transactions to take place. These can be technical services (federation, participant agent, or occasionally value creation services) or business and organisational services.
Governance Framework Integration	This concept describes how intermediaries and operators align with and are regulated by the data space's governance framework.	"The governance framework of a data space is an essential way to manage how intermediaries provide value and how risks are managed. Intermediaries and operators are participants of a data space and as such subject to the governance framework (rulebook) of that data space."
Business and Revenue Models	This concept refers to the financial structures through which intermediaries and operators sustain operations and generate value.	"Business model characteristics describe how service providers contribute to the overall economics of the data space, enable business model or enable business viability of the data space."
Interoperability and Collaboration	This concept describes how intermediaries work with other providers within and across data spaces to enable technical and operational interoperability.	"Intermediary interoperability and collaboration within a data space is an important design aspect when creating and governing resilient and scalable data spaces. The collaboration between intermediaries and operators can be divided into: [...]."
Service Provider Responsibilities	This concept describes the expectations for service providers regarding performance, compliance, transparency, privacy, security, auditing, and support of federation.	"Provide clear mappings between their own service level requirements and common industry standards, and establish mechanisms for recognising compliance certifications from other data spaces to reduce redundant assessments."
Risk Management	This concept describes the addressing of risks and strategies for mitigation.	"4) Finally, using service providers, such as operators and intermediaries, in data spaces necessarily involves challenges and risks. Most risks are similar to those companies face when acquiring services from external providers, such as vendor lock-in, challenges in switching providers, provider sustainability, and compliance. This building block's section 3.3.6. explains how to address the common challenges and risks to be addressed and managed when design decisions are made for data spaces."

Table 15: Organizational Form and Governance Authority Building Block Concept Description

Concept	Description	Section from the Blueprint
Organizational Form Decision	This concept describes the choice of the organizational form that effects how a data space manages assets, contracts, liabilities, governance, and long-term sustainability.	"[...] namely the determination of an organisation's form and the establishment of a data space, the creation of a governance authority and the creation of a data space governance framework."
Governance Authority Establishment	This concept describes the process of creating the body or bodies responsible for developing, implementing, and enforcing the internal rules of the data space.	"The role of a governance authority may entail various functions, such as setting internal rules and policies, ensuring compliance with internal and external rules, and resolving conflicts that may arise. A governance authority also creates mechanisms for continuous improvement of the data space, identity management, access controls and risk mitigation to build trust and quality within the data space. Overall, the governance authority maintains and operationalises the internal rules for the successful operation of the data space."
Governance Framework Development	This concept describes the formulation of a governance framework that entails internal rules, policies, and technical specifications.	"Within the framework of the founding agreement and applicable laws, each data space can and should draw up terms and conditions of use of the data space, internal regulations and policies that govern its day-to-day affairs and operations, and various governance procedures (e.g. dispute resolution, adding or changing technical specifications and others). All of them should be part of the agreement that every data space participant must sign before joining the data space and starting conducting data transactions."

Table 16: Participant Management Building Block Concept Description

Concept	Description	Section from the Blueprint
Participant Roles and Responsibilities	This concept describes types of participants along with their distinct responsibilities.	"The Participation Management building block outlines governance processes for managing participant engagement in data spaces. This includes identifying participants, onboarding, offboarding, and setting rules for data transactions and service provision."
Onboarding Process	This concept describes the structured process through which candidate participants can join the data space, ensuring alignment with data space policies, legal compliance, and technical standards.	"Efficient onboarding of participants is critical for a seamless functioning data space. It ensures that participants can quickly integrate into the data space while adhering to necessary compliance and technical standards."
Offboarding Process	This concept describes the process of structured exists from the data space, ensuring integrity and legal security during participant withdrawal.	"The offboarding process is designed to uphold the integrity and continuity of the data space by addressing issues such as data rights/holdings, data transfer, and termination of access. Exiting the data space requires proof that all contracts made with other participants have been fulfilled and no contractual obligations remain open."
Compliance and Governance Alignment	This concept describes the conformity of participants to internal rules, regulatory frameworks, and the overarching governance framework of the data space.	"Participation management stresses the importance of Regulatory Compliance both at the data space and participant level. This involves complying with legal frameworks such as data protection, privacy, and other relevant legislation outlined in the regulatory compliance building block."
Data Transaction Facilitation	This concept describes the seamless, secure, and policy-compliant data sharing and exchange between participants.	"Data Space Governance Authority is to enable seamless interaction among the participants."
Stakeholder Engagement and Monitoring	This concept describes the active tracking, feedback collection, and transparency efforts for both internal and external stakeholders to ensure that participation remains aligned with evolving expectations and maintains trust within the ecosystem.	"Active monitoring extends beyond initial onboarding, with continuous oversight to ensure participants adhere to data space policies and standards. This ongoing monitoring helps identify areas where the onboarding process can be improved, ensuring that the data space evolves to meet participant needs and emerging challenges. Feedback from participants is crucial in this process, enabling the Data Space Governance Authority to make data-driven adjustments to onboarding procedures, enhancing both security and participant satisfaction."

Table 17: Regulatory Compliance Building Block Concept Description

Concept	Description	Section from the Blueprint
Triggers	This concept describes in the context of data spaces that indicate the applicability of certain legal frameworks.	"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."
Data Space Requirements	This concept refers to the legal requirements that directly regulate the data space.	"The Regulatory Compliance building block encompasses a range of activities designed to ensure compliance with relevant regulatory frameworks. These activities involve understanding the legal requirements for data spaces and ensuring that all elements and functions of the data space comply with the regulatory framework. Regulatory compliance is an ongoing practice throughout the data space lifecycle."
Additional Legal Considerations	This concept includes other relevant legal frameworks that affect data space operations.	"[...] it's crucial to consider additional legal aspects stemming from, for instance, cybersecurity legislative frameworks."
Tools for Compliance	This concept describes technical tools and automated solutions that assist the data space and participants in fulfilling legal obligations.	"Given this complexity and the numerous interconnected decisions within a data space, efficiently addressing certain requirements may warrant using technical tools, aside from the commonly deployed organisational and contractual measures. Such technical tools could vary from tools that assist in identifying relevant requirement to (partially) automating compliance."
Governance Authority Role	This concept describes the governance authorities role in implementing and enforcing legal compliance across the data space.	"Implementing the Regulatory Compliance building block requires the data space governance authority to identify the legal rules relevant to its operation."
Participant Rights and Obligations	This concept emphasizes that participants must understand and comply with rights and obligations arising from applicable regulations.	"Within a data space ecosystem, participants assume distinct roles which may come with a number of general or specific legal requirements."

Table 18: Contractual Framework Building Block Concept Description

Concept	Description	Section from the Blueprint
Institutional Agreements	This concept describes the institutional agreements necessary to lay the legal foundation for a data space.	"Institutional agreements implement the governance of a data space and are an essential component of the Rulebook. They not only provide the general terms and conditions for participation in a data space but also underpin its existence and provide a legal basis for its operations."
Data-Sharing Agreements	This concept describes the agreements taht regulate the exchange and use of data among participants.	"Data-sharing agreements provide the legal basis for the data transactions happening in a data space among data space participants.
Service Agreements	This concept governs the provision of data-related services.	"Services agreements refer to all agreements for the provision of services to data spaces."
Legal Interoperability and Scalability	This concept ensures that agreements across different use cases and participants maintain consistency and compatibility.	"Standardised terms and conditions for data products - the agreement establishes mandatory terms and conditions to be included in the data product contract. It ensures that transactions between data provider and user take place on the basis of common terms and conditions, reducing transaction costs and increasing legal interoperability between transactions."
Regulatory Compliance Integration	This concept describes mandatory legal requirements in the contractual framework.	"There is an interlinkage with Regulatory Compliance. Unless the relevant legislation is respected and reflected in the contractual framework, the agreement's enforceability and validity may be undermined."