



EUROPEAN DATA SPACES

Scientific evidence supporting
the establishment of data
spaces

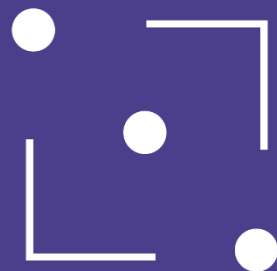
Marco Minghini

Digital Economy Unit,
Joint Research Centre (JRC)

*Workshop on Tourism Data sharing,
governance and integration*
28 September 2023



Anticipate



Integrate



Impact

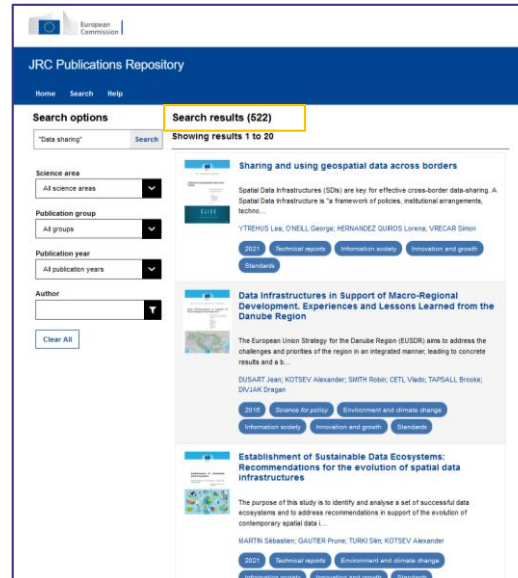
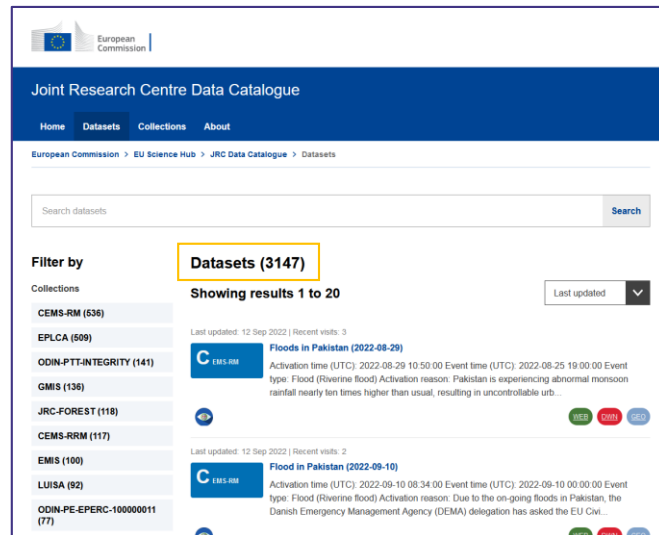
JRC mission

As the science and knowledge service of the European Commission our mission is to support EU policies with independent evidence throughout the whole policy cycle.

We are **independent, policy neutral** + work for **30 EC policy departments**.

Why the JRC?

- JRC is a **provider** and **consumer** of data space data
- Own **data assets**
 - Science for policy mandate
 - 3000+ datasets
 - 500+ publications on data sharing
 - Own Big Data infrastructure (BDAP)
- Corporate data-sharing culture incl. dedicated DG data strategy
- Prominent role in standardisation initiatives
- Coordinating Member State working groups



JRC knowledge base on data sharing and use

Objectives

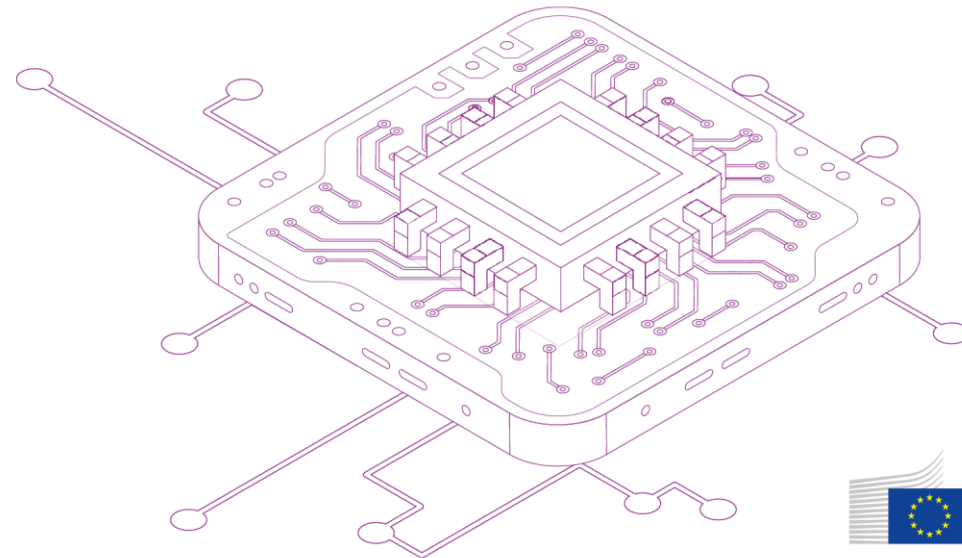
- **Identify, map and expose JRC resources** relevant to common European data spaces
- **Complement** other data space resources and activities

Intended audience

1. Policy **DGs**
2. Data space **stakeholders**
 - Data providers, standardisation bodies, early adopters of technology, user communities

Components

1. Science for Policy report
2. Interactive dashboard
3. How-to's on data sharing





JRC SCIENCE FOR POLICY REPORT

EUROPEAN DATA SPACES

Scientific insights into data
sharing and utilisation at scale

2023

Farrell, Elmeur; Minghini, Marco;
Kotsev, Alexander; Soler-Garrido, Josep;
Tapscott, Brooke; Micheli, Martina;
Posada, Monica; Signorelli, Serena;
Tartaro, Alessio; Bernal, Jaime;
Vespe, Michele; Di Leo, Margherita;
Cerbella-Smilchowski, Bruno;
Smith, Robin; Schade, Sver;
Katarzyna Pogorzelska;
Gabrielli, Lorenzo; De Marchi, Davide

Joint
Research
Centre

JRC Science for Policy report



<https://europa.eu/!RBOXmx>

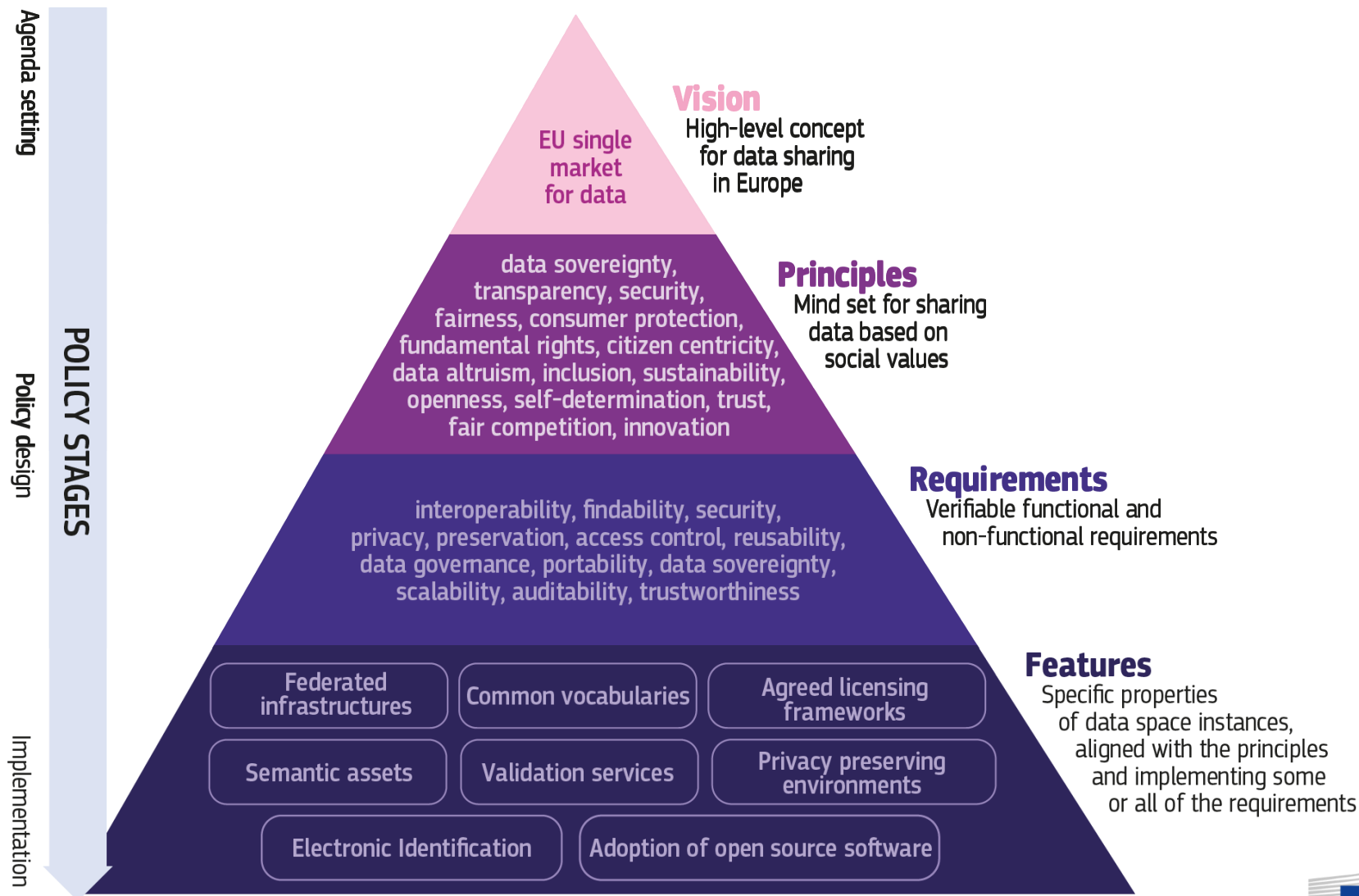
What?

- Scientific **techno-socio-economic perspective**
- Non-binding **recommendations/good practices**
- **Complementary** to other data space resources

How?

- Input by **18 co-authors**
- **Co-creation** and **validation**
 - Within JRC
 - With policy DGs
 - Other stakeholders

Our analytical lens



Dashboard: JRC resources mapped to requirements for European data spaces

JRC Resources Relevant to Data Spaces

Created by S.4, T.1, T.4 BDAP

Data Transfer & Exchange	Identity, Authentication, Access Control	Data Publication & Discovery	Privacy preserving mechanisms / Data protection
Data Interoperability	Usage Control Policies	Data Compliance and Auditing	Data Federation, Orchestration and Portability
Data Processing & Analytics	Data Pooling and Collaboration	Data Governance	Data Storage

Retrieve publications

☒ Related terms

- ☒ data governance
 - ☒ fair data
 - ☒ private sector data
 - ☒ public sector data
 - ☒ data protection impact ...
 - ☒ dpia
 - ☒ data policy
 - ☒ data governance
 - ☒ data management
 - ☒ data security
 - ☒ data sharing
 - ☒ risk governance

INDEX	TITLE	YEAR
1	Event-specific Method for the Quantification of Maize Line MON 88017 Using Real-time PCR - Validation Report, Validated Method and DNA Extraction	2017
2	Forest Fires and Adaptation Options in Europe	2016
3	Assessment of Mixtures - Review of Regulatory Requirements and Guidance	2017
4	Integrating Network Analysis with the Production Function Approach to Study the Spillover Effects of Transport Infrastructure	2016
5	An indicator framework for assessing ecosystem services in support of the EU Biodiversity Strategy to 2020	2016
6	Smart Cities Governance: the need for a holistic approach to assessing urban participatory policy making	2016
7	Urban public transport	2016
8	A knowledge-based approach to estimating the magnitude and spatial patterns of potential threats to soil biodiversity	2016
9	The global Landsat archive: Status, consolidation, and direction	2016
10	Future Internet technologies for environmental applications	2016
11	NORMAN interlaboratory study (ILS) on passive sampling of emerging pollutants;	2016
12	The role of forest certification for biodiversity conservation: Lithuania as a case study	2016
13	Reply to "The new assessment of soil loss by water erosion in Europe. Panagos P. et al., 2015 Environ. Sci. Policy 54, 438–447—A response" by Evans and Boardman [Environ. Sci. Policy 58, 11–15]	2016
14	Behavioural Insights Applied to Policy - European Report 2016	2016
15	Nanomaterials as a potential environmental pollutant: Overview of existing risk assessment methodologies	2016
16	Mapping regional patterns of large forest fires in the Wildland-Urban Interface areas in Europe	2016
17	Stakeholders' engagement beyond the EDP: The working-groups on governance and human resources in Eastern Macedonia and Thrace	2016
18	Institutions on the verge: Working at the science policy interface	2016
19	Covenant of Mayors: Monitoring Indicators	2016
20	Reports of the Scientific, Technical and Economic Committee for Fisheries (STECF) – Merging of the BT1 and BT2 gear categories in the North Sea (STECF-16-02).	2016
21	Next Generation Air Quality Platform: Openness and Interoperability for the Internet of Things	2016

Publications: 1435

Filter by match and by years:

Title

Keywords

Abstract

2016

2023

Occurrences per year:

2019

2020

2022

2017

2016

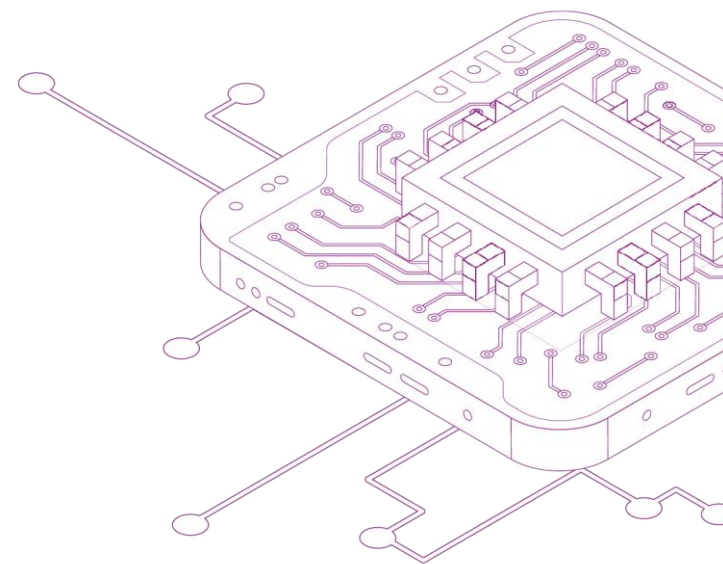
2018

2021

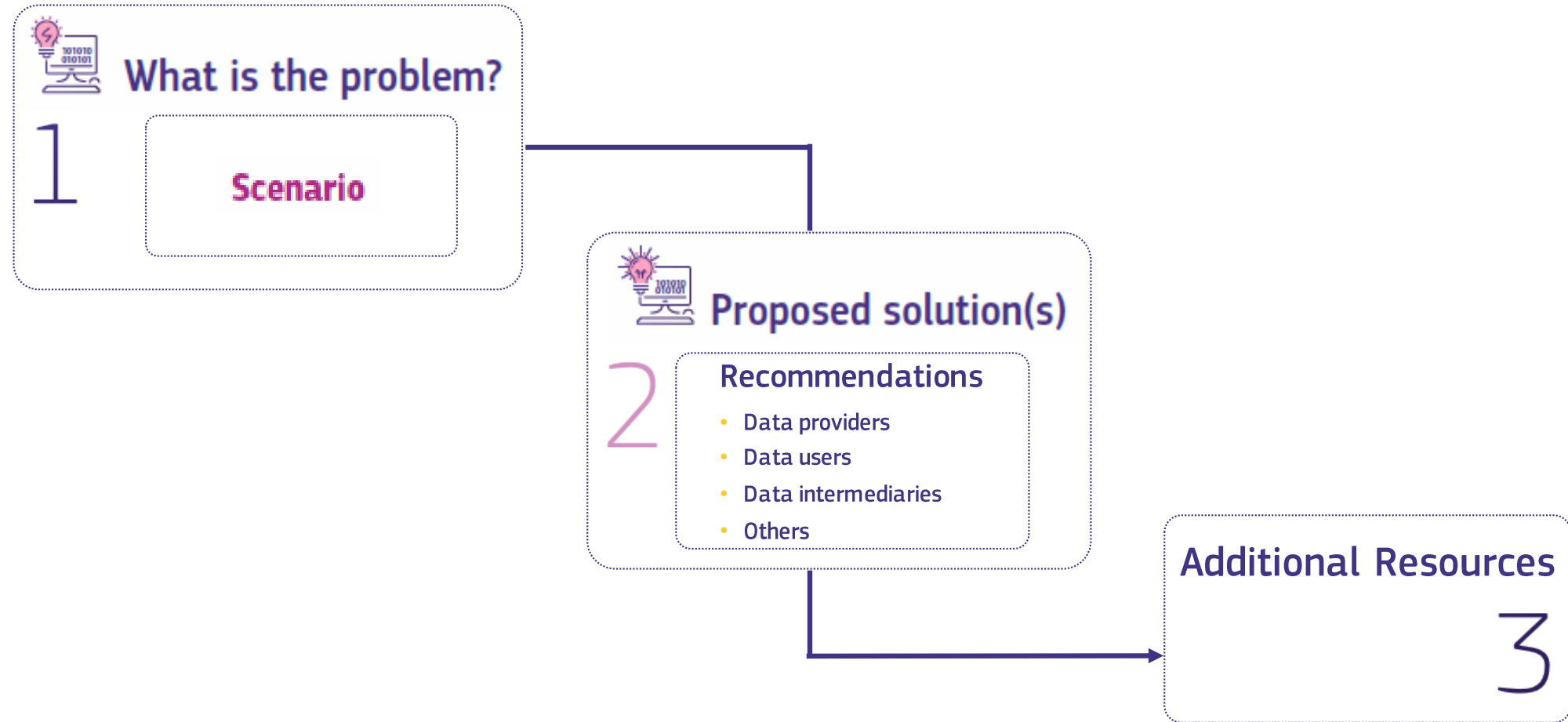
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How-to's on technical and organisational aspects of data sharing

	How-to Information Sheets	Data Space Theme
 TECHNICAL	1 How can stakeholders benefit from synthetic data in a data space?	Synthetic data
	2 How to choose the best software stack for a data space?	Software stacks
	3 How to ensure clear access and use conditions for a dataset in a data space?	Licensing
	4 How to ensure that datasets shared by different actors in a data space can be used together?	Interoperability
	5 How to ensure that technical requirements and standards are being followed?	Data validation
	6 How to facilitate the discovery of data in a data space?	Data discoverability
	7 How to select the most appropriate standards for a data space?	Data standards
	8 How to ensure that digital resources and data are uniquely referenced in a data space?	Data registers
	9 How to provide access to data in a data space?	APIs for data access
	10 How to preserve privacy and protect personal data and sensitive business data in a data space?	Privacy enhancing technologies
 ORGANISATIONAL	1 Which actors are providing what types of data in scope of a data space?	Data Actors
	2 How to foster a people-centred approach to data in a data space?	Citizen data
	3 How can business benefit from sharing data in a data space?	Benefits to business in data spaces
	4 How can governments access private sector data of public interest?	Accessing data (B2G)
	5 How can data transparency for AI systems be increased in a data space?	Transparency – AI data in data spaces
	6 How to leverage voluntary data sharing in a data space?	Voluntary data sharing
	7 Which legal aspects should be considered when creating, providing or using novel data-driven solutions in data spaces?	Legal



How-to's structure



An example: How to select the most appropriate standards for a data space?



What is the problem?

1

- Standards are enablers of interoperability
- Often they are chosen blindly without the necessary considerations
- Poor/immature standards that are not supported by clients and communities can do more harm than good

Scenario

- A business company needs to perform machine-learning analyses to evaluate the accessibility of green areas located across districts within a city.
- Collected data show a high degree of fragmentation:
 - data encodings are different, including non-standard formats & standard formats historically used by different communities and following different data models
 - ETL conversion is hard or impossible
 - some standards are new and software tools to retrieve and consume the data do not exist yet



Proposed solution(s)

- Prioritise well-known standards adopted by global communities
- Give preference to standards developed by international SDOs
- Consider the existence of a community behind standards
- Prioritise standards developed in a participative, agile and collaborative way
- Choose mature standards, avoiding standards in draft or not yet published

Recommendations

- Data providers • Data Users • Intermediaries

2

Additional Resources



Open
Geospatial
Consortium



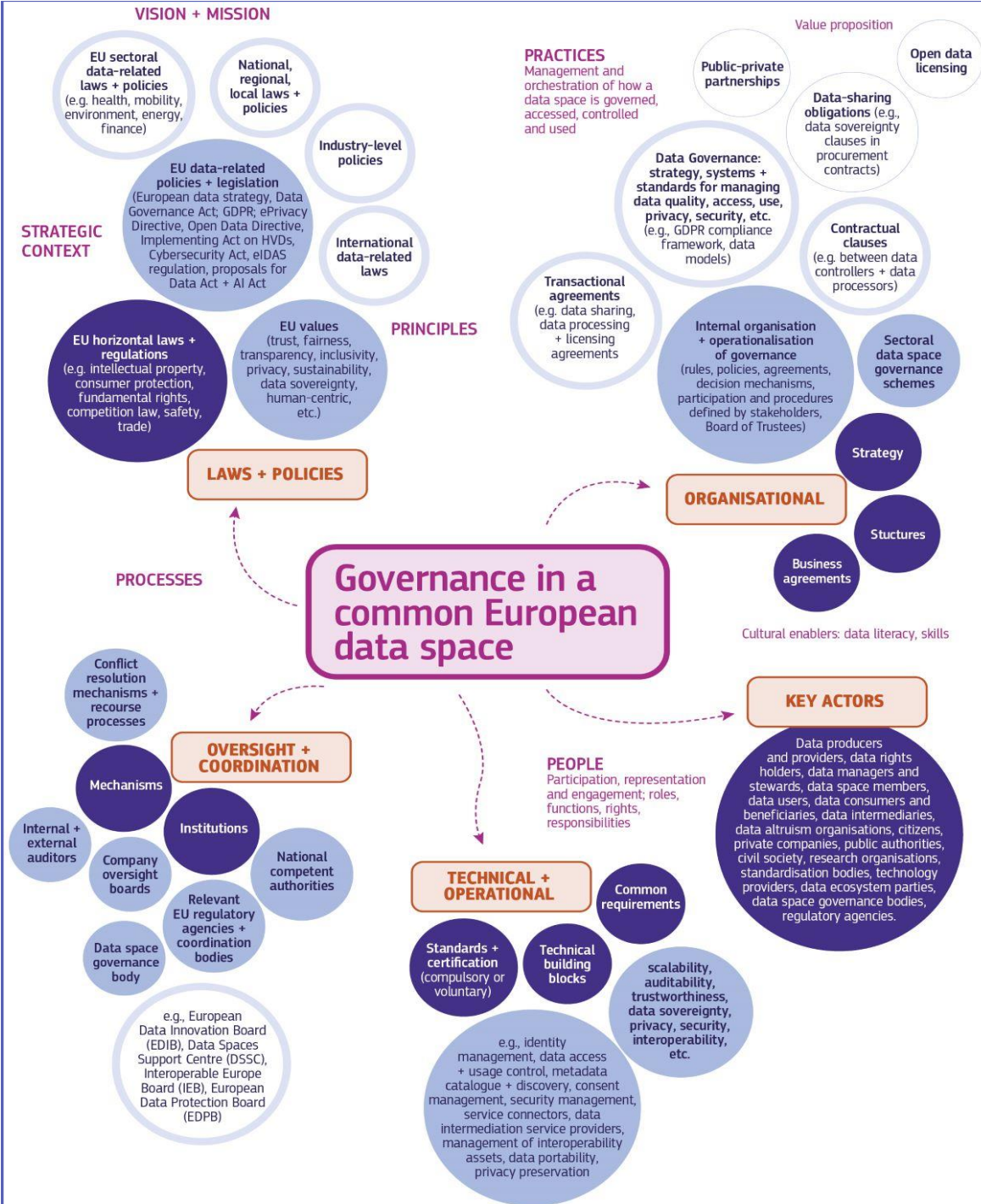
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3



European
Commission



Multi-level considerations on the governance of European data spaces

- Horizontal legal frameworks (*EU, international, national*)
- Sectoral legislation and sectoral data space-related legislation
- Data-related legislation and data governance
- Principles and requirements elicited from EU policy documents
- Individual data space governance frameworks (including organisational aspects)
- Institutional mechanisms

Thank you



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