



Action 1.1 Towards a Digital Ecosystem for the Environment and Sustainability

Content

1. Ex-ante policy development pathways for the EGDDS legal instrument(s) - a technical perspective
2. JRC study of interoperability provisions for environmental data sharing
3. JRC Knowledge base on Common European Data Spaces
4. Guidelines on the validation and use of GPKG for END e-reporting



Ex-ante policy development pathways for the EGDDS legal instrument(s)

A perspective from the JRC

Jordi Escriu, Marco Minghini, Alexander Kotsev

Context & Disclaimers



- JRC prepared an ex ante perspective on the possible future(s) of the legal framework
- Overall objective: contribute to the debate around the different policy options led by ENV
- Focus is put on the technical and governance aspects
- This represents the opinion of the authors and is not an official position of the European Commission

<https://europa.eu/!Hyf3mf>

The image shows the cover of a 'Science for Policy Brief' from the European Commission. The title is 'Beyond INSPIRE. Perspectives on the legal foundation of the European Green Deal Data Space'. It features a blue header with the European Commission logo and the text 'SCIENCE FOR POLICY BRIEF'. Below the title is a 'HIGHLIGHTS' section with three bullet points. The main text area is titled 'What is the problem?' and discusses the need for a legal framework for environmental data sharing. It mentions the 'European Strategy for Data' and the 'Interoperable Europe Act'. A list of bullet points follows, detailing issues like outdated legal frameworks, complex technical requirements, and the need for new legal instruments. The footer includes the JRC logo and the text '© European Union 2023 - JRC135958'.

European Commission
SCIENCE FOR POLICY BRIEF

Beyond INSPIRE. Perspectives on the legal foundation of the European Green Deal Data Space

HIGHLIGHTS

- This brief provides an initial reflection of the Joint Research Centre of the European Commission on the possible legal interventions that can facilitate the establishment of the common European Green Deal Data Space and modernise environmental data sharing practices in the EU beyond the implementation of the INSPIRE Directive.
- It is compiled to feed into the debate around the possible future(s) of environmental data sharing that is inclusive and well aligned with the initiatives of the 'A Europe Fit for the Digital Age' and 'A European Green Deal' 2019-2024 European Commission priorities.
- The views expressed here represent the perspective of the authors and are not to be considered as an official position of the European Commission.

What is the problem?

Data about the environment are **needed** in support of a broad spectrum of use cases and applications, ultimately benefitting citizens, business and environmental policymaking. Multiple **obstacles** shall be overcome to effectively leverage available data, which are currently underused due to a complex set of intertwined reasons as described in [1]. Those include:

- Outdated provider-centric legal framework with a strong focus on the public sector as the main user and provider of the data;
- Complex technical requirements that are enforced without an easily and objectively quantifiable benefit;
- Different trends and infrastructures being used on the national level in parallel to the ones put in place for complying to the requirements on the EU level;
- Novel technological developments and inclusion of new actors in the data economy (such as data intermediaries) that are not fully utilised.

At the same time, **rapidly emerging technologies** [2] and **new legal instruments** that will have a strong impact on data sharing, in particular the [Data Act](#), [Data Governance Act](#)

(DGA), Implementing Act on high-value datasets, all defined under the [European Strategy for Data](#), as well as the [Interoperable Europe Act](#), are being developed or already entered into force. Organised in a horizontal legal framework, those instruments provide multiple opportunities for the better utilisation of existing data. Those however would need to be tailored to the specificities of environmental data and the associated use cases.

With the objective to contribute to the debate around the possible future(s) of environmental data sharing in the EU, this policy brief prepared by the Joint Research Centre (JRC) of the European Commission provides an overview of several different **policy development pathways** characterised by a different level of ambition. Three overarching **principles** have guided the authors in conceptualising the different pathways:

- First, focus is put on the reuse of data that can bring societal, economic and environmental benefits and go beyond the current scope of the [INSPIRE](#) and the [Public Access to Environmental Information](#) Directives, which are both subject to a possible revision within the context of EC's [GreenData4All initiative](#).

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Joint Research Centre

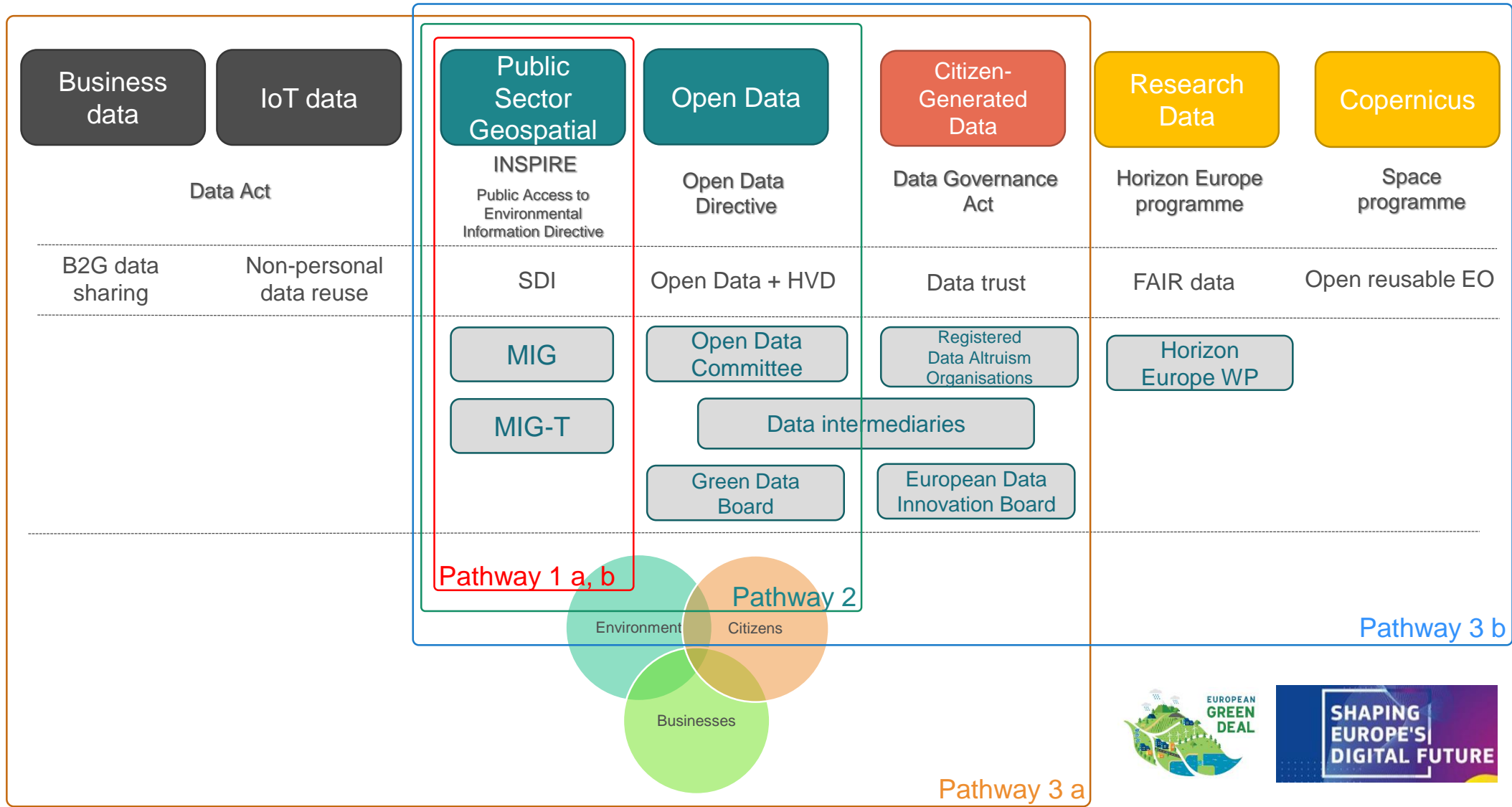
What is the problem



- Multiple **obstacles** shall be overcome to effectively leverage available data
 - Legal framework that needs to be modernised
 - Complex technical requirements
 - Parallel implementations on the national level
 - Rapidly evolving technological landscape
 - Many opportunities created by the horizontal legislation defined by the European Strategy for data
 - Data Act, Data Governance Act, HVD implementing provisions

Policy development pathways (ex-ante)

- Different level of ambition and integration between INSPIRE and the horizontal legal instruments
- Each pathway has its specific advantages and disadvantages
- Guiding Principles
 1. focus is put on the reuse of data that can bring societal, economic and environmental benefits and go beyond the current scope of INSPIRE
 2. the EU legal framework should effectively contribute to establishing and sustaining an ecosystem of actors around data-driven innovation
 3. Legal framework should align existing and new (digital and green) legal frameworks in a future-proof manner.





Study of interoperability provisions for environmental data sharing

Expert contract

- Title:

Evaluation of prospective interoperability provisions for environmental data sharing and reuse within the common European Green Deal data space

- Timeline:

Started in **June 2023** – Duration: **8 Months** (~ end by January 2024)

- Expert awarded:

Thorsten Reitz (wetransform - <https://wetransform.to>)



Objective



- **Identify approaches, challenges, and opportunities** for setting the most-targeted and appropriate **interoperability provisions** for environmental data sharing and reuse.
- Applicable to the European **Green Deal Data Space**.
- To be considered as **input for the GreenData4All** initiative.
Update of the existing legal framework for environmental data sharing in EU, with a potential revision of the [INSPIRE \(Directive 2007/2/EC\)](#) and [Public Access to Environmental Information \(Directive 2003/4/EC\)](#) Directives.
- Scope: Discovery, access and reuse of data in the environmental sector.
- Context: EU Strategy for Data.

Tasks - Deliverables and schedule



	Timing	Reference	Deliverable
	M1 Jun 2023	KO	Kick-off meeting with JRC
Task 1. Identification and analysis of current interoperability provisions on environmental data sharing	M3 Aug 2023	D1	Identification and analysis of current interoperability provisions on environmental data sharing
Task 2. Recommended interoperability provisions for the Green Deal data space	M6 Nov 2023	D2	Recommended interoperability provisions for the Green Deal data space
Task 3. Validation workshop	M7 Dec 2023	D3	Validation workshop
Task 4. Prospective interoperability provisions for the Green Deal data space and outreach	M8 Jan 2024	D4	Prospective interoperability provisions for the Green Deal data space and outreach

Expected outcomes



- **Critical analysis** of the **interoperability rules** governing the sharing of environmental data based on the **legal framework currently in force** in the EU.
 - State-of-the-art (emerging trends, modern standards and technology).
 - Existing practices and previous experience (MS implementations).
- **Identification** of **main barriers, bottlenecks, challenges and opportunities** for improving and further achieving the **interoperability** objectives in the future societal and policy context.
- Summary of **lessons learned** and, where necessary, **pragmatic suggestions** for setting **prospective approaches for achieving the interoperability** in the Green Deal data space (scenarios with different level of ambition).



JRC Knowledge base on Common European Data Spaces

JRC knowledge base on data sharing and use

Objectives

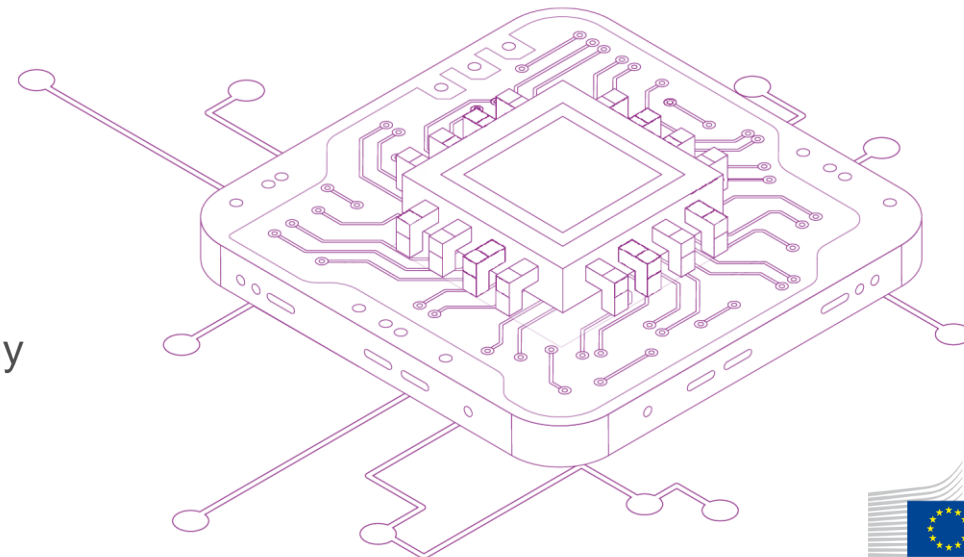
- **Identify, map and expose JRC resources** relevant to common European data spaces
- **Complement** other data space resources and activities

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. Wiki page





JRC SCIENCE FOR POLICY REPORT

EUROPEAN DATA SPACES

Scientific insights into data
sharing and utilisation at scale

2023

Farrell, Eimear; Minghini, Marco;
Kotsev, Alexander; Soler-Garrido, Josep;
Tapsell, Brooke; Micheli, Marina;
Posada, Monica; Signorelli, Serena;
Tartaro, Alessio; Bernat, Jaume;
Vespe, Michele; Di Leo, Margherita;
Cerbelle-Smichowski, Bruno;
Smith, Robin; Schade, Sven;
Katarzyna Pogorzelska;
Gabielli, Lorenzo; De Marchi, Davide



Joint
Research
Center

JRC Science for Policy report

- **What?**
 - Scientific **techno-socio-economic perspective**
 - Non-binding **recommendations/good practices**
 - **Complementary** to other resources on data spaces
- **How?**
 - Input by **18 co-authors**
 - **Co-creation** and **validation**
 - Within JRC
 - With policy DGs
 - Other stakeholders

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1 Introduction

1.1 Policy context: a Europe fit for the digital age

- 1.1.1 What is a common European data space?
- 1.1.2 Principles, requirements and features of a data space
- 1.1.3 Sector- and domain-specific common European data spaces
- 1.1.4 Key actors

1.2 A scientific perspective on setting up, operating and maintaining common European data spaces

- 1.2.1 Scope and intended audience
- 1.2.2 Synergies with other relevant initiatives
- 1.2.3 Components of the report

2 Identification of requirements for common European data spaces

2.1 High-level requirement identification

2.2 Technical perspective

2.3 Governance perspective

- 2.3.1 Goals of Governance: guidance and guardrails
- 2.3.2 Governance: principles, practices and processes
- 2.3.3 Data Governance
- 2.3.4 Governance within and between common European data spaces

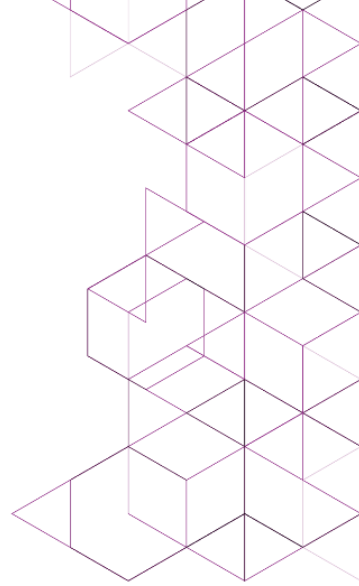
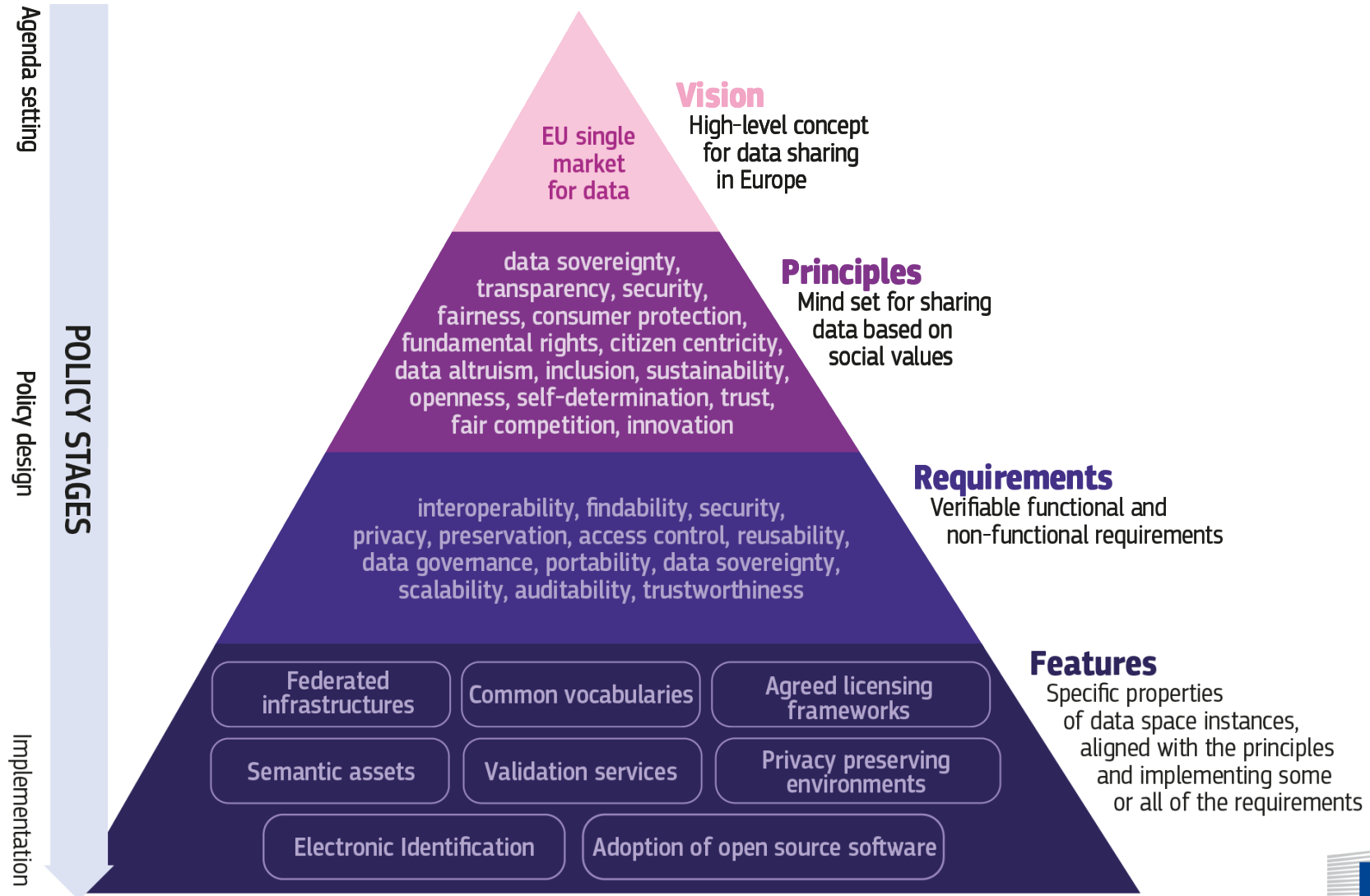
2.4 Relevant data sharing initiatives and component reuse

3 Data sharing How-to guides

4 JRC dashboard on European data spaces

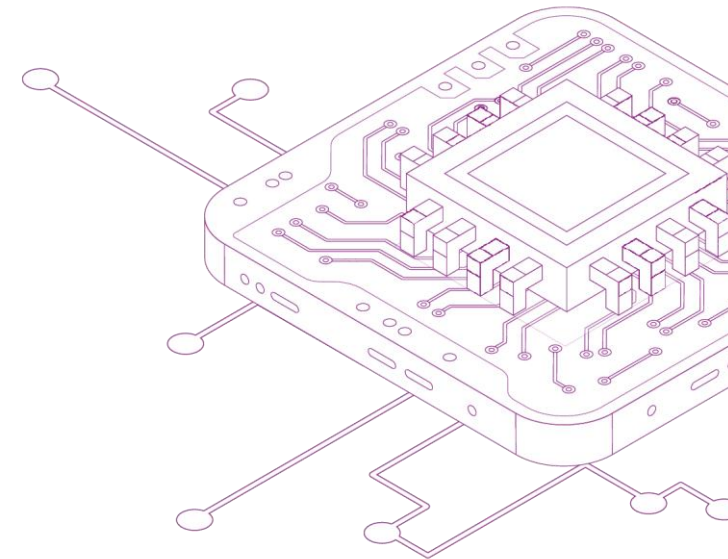
5 Discussion and conclusions

Our analytical lens



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



Sample How-to's on Data Sharing

WHAT IS THE BEST WAY TO ENSURE THAT DIGITAL RESOURCES AND DATA ARE UNIQUELY REFERENCED IN A DATA SPACE?

Problem statement

A common challenge encountered with the encoding and sharing of data, especially when different practices are involved, is to ensure with the appropriate use of terms, codes, names and other digital assets. This is further amplified if different national languages are used, and the data are intended to be shared over the web.

Example

The INSPIRE Directive aims to create a European Union spatial data infrastructure for the purposes of EU environmental policies and policies in activities which have an impact on the environment. The INSPIRE infrastructure involves a number of items, which require clear descriptions and the possibility to be referenced through unique identifiers. Examples for such items include INSPIRE themes, code lists and application schemes. The INSPIRE Registry provides a central access point to a number of geospatial registers, which contain descriptions of these items (including their definitions and other relevant information) in different languages and using unique and persistent identifiers for them. The content of the registers are based on the INSPIRE Directive, implementing Rules and Technical Subdivisions.

Recommendations to stakeholders (indicative)

- Providers**
 - Always provide licensing information together with datasets and APIs
 - Consider changing custom licenses to standard-based ones
 - Adopt machine-readable licenses in order to facilitate the automated use of the data
 - Less restrictive licenses maximise the benefits and opportunities for data reuse
- Data users**
 - Consider licensing information when using datasets and generating new products
- Authorities**
 - Prescribe the use of licenses that would maximise the benefits generated from the reuse of the dataset
 - Explicitly require licensing information when generating data

Contact

Additional resources (JRC)

- INSPIRE Registry
- Feregi A, Lutz M. *Interoperable Registers and Registries in the EU: Perspectives from INSPIRE*. In Conference Proceedings Joint WHO/EC Workshop on Linking Spatial Data, World Web Consortium, 2014. JRC98795

HOW CAN VOLUNTARY DATA SHARING BE LEVERAGED IN A DATA SPACE?

Problem statement

More data sharing is required to deal with today's societal, economic and environmental challenges. But despite the recognised value of data (knowing that at a technological level, data is in fact readily available by multiple entities simultaneously), many key actors may lack access to it because there are intrinsic barriers to securely share it on a voluntary basis. Privacy issues and fears of losing competitive advantage are some of the most common concerns cited by those who would be willing to voluntarily share their data. Against this background, data users offer a protected environment to exchange data for the public interest.

Example

The study of rare diseases would benefit from health data voluntarily released by patients and hospitals. The combination of data from various sources can generate new insights into rare diseases and speed up research in this field. In this context, a trustworthy data intermediary that collects, manages, and distributes the data from the parties involved is needed. Chapter IV of the EU Data Governance Act might provide a solution: data altruism organisations.

Recommendations to stakeholders (indicative)

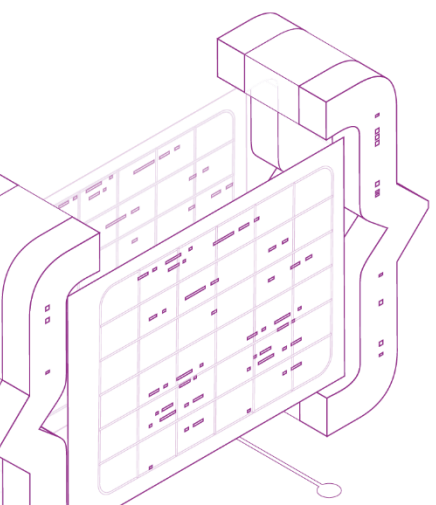
- Providers**
 - Share data on altruistic grounds
 - Collaborate with data altruism organisations
 - Establish a data altruism organisation
- Data users**
 - Credit contributions of data holders to share data on an altruistic basis
- Authorities**
 - Assist and support data altruism organisations
 - Promote collaboration

Contact

Additional resources (JRC)

- Czellar, S. and S. S. (2020). 'The path to a digital world: An overview of health data privacy'. JRC Working Paper on Digital Economy 2020-04, Joint Research Centre (Seville site)
- European Commission Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on European data governance (Data Governance Act), 2020
- James, C. L. and Foray, C. (2020). 'Neutrality and the Economics of Data'. *American Economic Review*, 110 (5), 2819-52
- Feregi A & Lutz M. *Cross-generated data for public policy*. European Commission, Paris, 2020. JRC120213

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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

↓

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

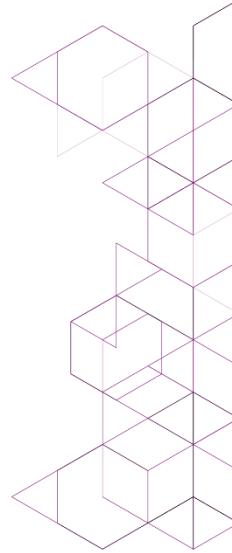
Keywords

Abstract

Occurrences per year:

1
236

Wiki



European Commission > JRC Data Spaces Knowledge Base

1. Introduction

1. Introduction
2. Technical Requirements
3. Governance
4. How To's - Information Sheets
5. JRC Knowledge Base
Contact Us

The Foundation of European Data Spaces

Understand the elements which underlay building a common European data space

Key Actors

Who are stakeholders with data spaces

STAKEHOLDERS OF THE DATA VALUE CHAIN

Under the vision for common European data spaces, relevant stakeholders of the data value chain should be engaged in their creation, maintenance and governance. **These stakeholders may include actors from the private sector, public sector, academia and civil society, as well as individuals.** They may play different roles in the ecosystem, such as **data producers, data users or consumers, data service providers and data intermediaries, as well as technology partners and standardisation bodies.**

By **bringing together different stakeholders, common European data spaces will ensure that more data becomes available** for use in the economy and society, while data control is retained by those businesses, organisations and

Space tools

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KEY ACTORS

Find out who are the key actors within data spaces from civil society to citizens...

Who are they?

PRINCIPLES

Find out what the key principles for sharing data in Europe through the data value chain

Discover more

DEFINITIONS

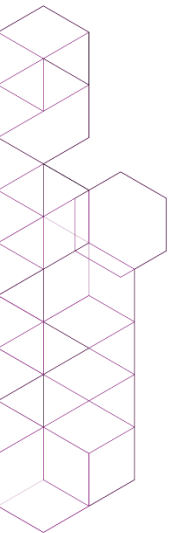
What is the definition of a data space gathered from the supporting policies

Read more

POLICY

Policy and actions serving as input for determining the requirements for data spaces

Learn more





Guidelines on the validation and use of GPKG for END e-reporting

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