

European Strategy for data

Shaping Europe's digital future – EU Data Spaces



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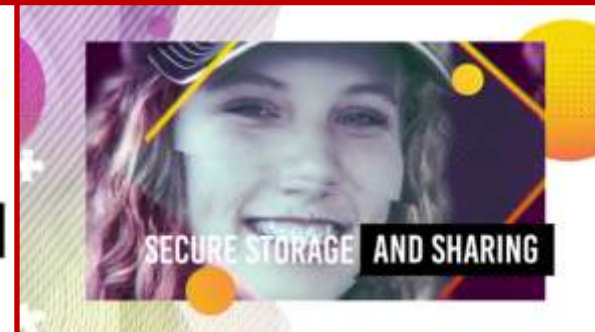
*Jordi Escriu
European Commission
Joint Research Centre
Digital Economy Unit (T.1)*



*European Core Data and Services for European Data Spaces
GeoE3-Project, Location Innovation Hub, EuroGeographics, EuroSDR
Workshop, 18th April 2023*

A new context is ahead

New European digital society



Push for new commitments

European Commission priorities 2019-2024

- The **twin green & digital transition** is at the top of the policy agenda.



A European Green Deal

Europe aims to be the first climate-neutral continent by becoming a modern, resource-efficient economy.



A Europe fit for the digital age

The EU's digital strategy will empower people with a new generation of technologies.



An economy that works for people

The EU must create a more attractive investment environment, and growth that creates quality jobs, especially for young people and small businesses.



A stronger Europe in the world

The EU will strengthen its voice in the world by championing multilateralism and a rules-based global order.



Promoting our European way of life

Europe must protect the rule of law if it is to stand up for justice and the EU's core values.



A new push for European democracy

We need to give Europeans a bigger say and protect our democracy from external interference such as disinformation and online hate messages.

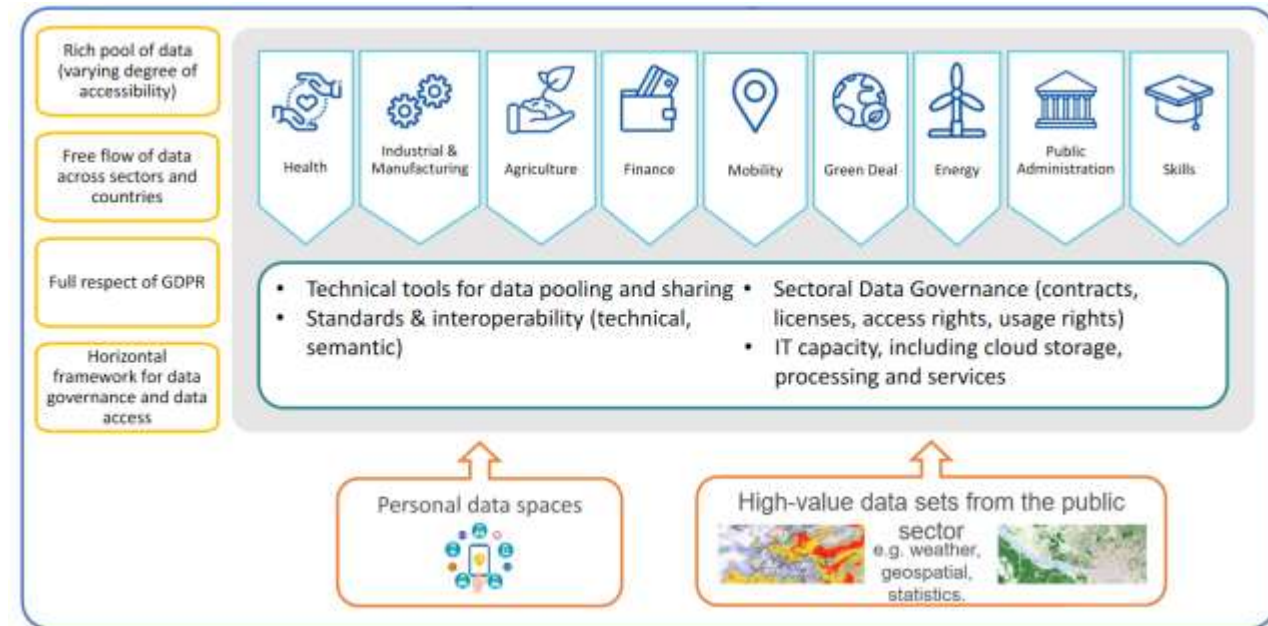
New policy context

European Strategy for Data

- Aims to create a European single market for data.
- Highlights the problems to address:
 - Data availability, interoperability, quality.
 - Governance & infrastructures.
 - Skills & data literacy.
 - Cybersecurity.
- Envisages the establishment of:
 - A common European data space.
 - Sectoral data spaces.



<https://digital-strategy.ec.europa.eu/en/policies/strategy-data>



New policy context

European Strategy for Data

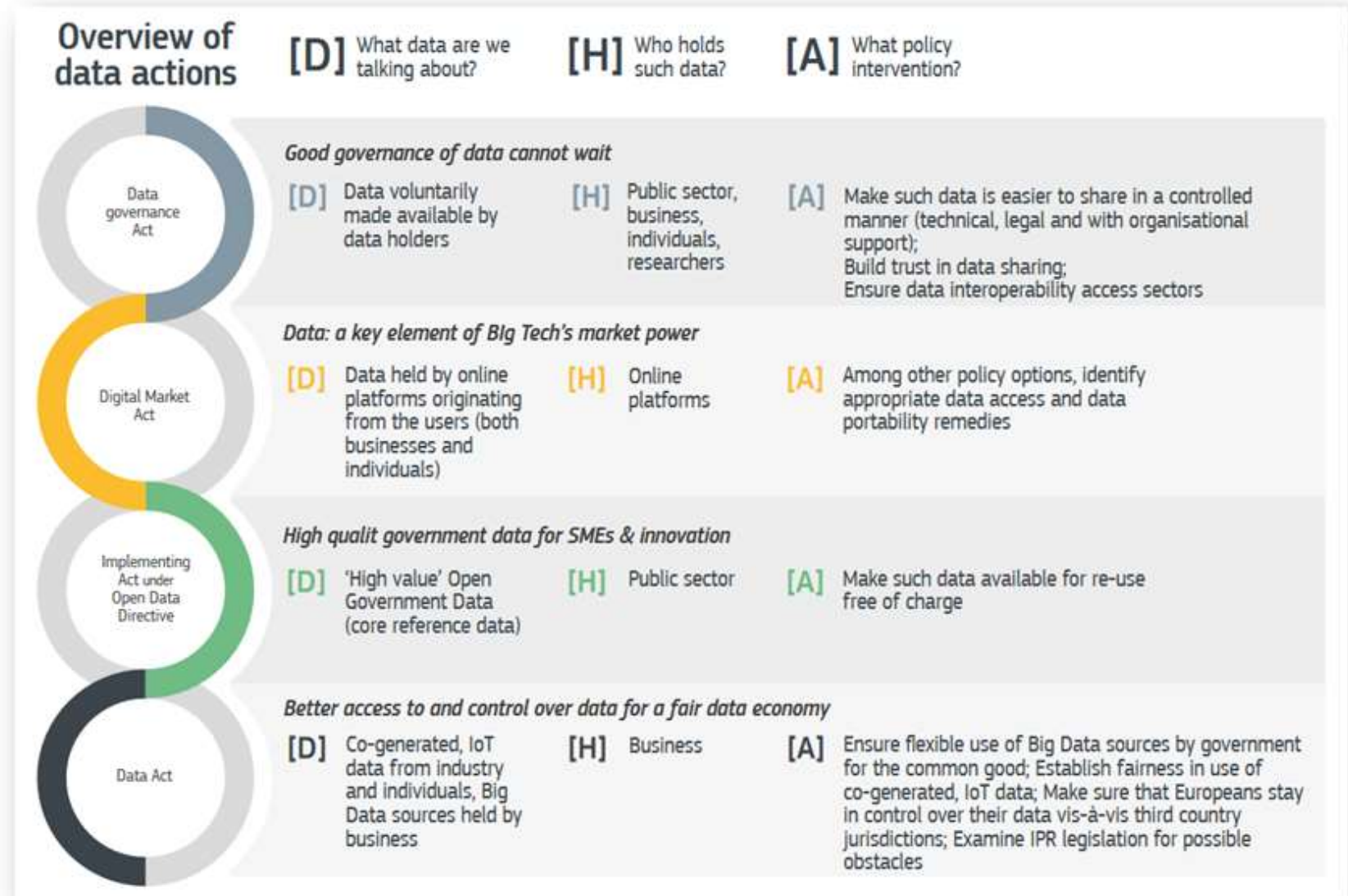
“Europe fit for the Digital Age”

1. Data Governance

2. Digital Market

3. Open Data

4. Data Act



New policy context

Data Governance Act



Entered into force
on 23 June 2022

- Data Scope
 - Data voluntarily made available by stakeholders.
- Main actors involved
 - Public sector + Private sector (Business) + Individuals + Researchers
- Policy intervention
 - Make such data easy to share in a controlled manner (technical, legal and with organisational support), while ensuring data interoperability across sectors and Member States.
 - Build trust in data sharing.
- Expected results.
 - Facilitate data sharing by strengthening mechanisms to increase data availability and overcome technical obstacles to the reuse of data.
 - Development of common European data spaces in strategic domains in key sectors or domains.
 - Create wealth for society. Provide control to citizens and trust in companies.

<https://digital-strategy.ec.europa.eu/en/policies/data-governance-act>

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022R0868>

New policy context

Digital Markets Act



Proposed by EC on
15 December 2020

Entered into force on
1 November 2022

- Data Scope
 - Data held by online platforms originated by the users (from both businesses and individuals).
- Main actors involved
 - (Large) Online platforms (qualifying as 'gatekeepers') - important gateways between business users and consumers.
- Policy intervention
 - Identify appropriate data access and portability remedies.
- Expected results
 - Assure fair practices by companies that act as gatekeepers in the online platform economy.

https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en

<https://eur-lex.europa.eu/legal-content/en/TXT/?uri=COM%3A2020%3A842%3AFIN>

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R1925&from=EN>

New policy context

Open Data Act



- Data Scope
 - ‘High Value’ Open data from Government.
- Main actors involved
 - Public sector.
- Policy intervention
 - Make such data available for re-use free of charge.
- Expected results
 - Increased data availability and access, especially in the scope of the High Value Dataset categories: geospatial, earth observation and environment, meteorological, statistics, companies and company ownership, mobility.
 - Reduce heterogeneity in licensing by setting a common European approach for the licensing of the data, reusing existing licensing frameworks, e.g. Creative Commons.

Open Data Directive entered into force on
16 July 2019

Implementing Act on High Value Datasets
https://eur-lex.europa.eu/eli/reg_impl/2023/138/oj

Adopted on 21 December 2022

Published on 20 January 2023
(Official Journal of the EU)

<https://digital-strategy.ec.europa.eu/en/policies/legislation-open-data>

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L1024&from=EN>

New policy context > Open Data Act

Implementing Act on High-value datasets

- High-value datasets (HVD)
 - Datasets the **re-use** of which is associated with important **socio-economic benefits**.
- To be made available:
 - For **free**, under **open access** licenses (CC BY 4.0 or less restrictive).
 - In **machine-readable formats**, via **APIs** and (when relevant) as a bulk download.
- Thematic categories of HVD
 - Geospatial*
 - Earth observation and environment*
 - Meteorological*
 - Statistics*
 - Companies and company ownership*
 - Mobility*
- The Implementing Act defines:
 - The **list of High-value datasets** for each thematic category.
 - The **requirements** for their provision: key attributes, granularity, formats, license, etc.

New policy context

Data Act



Proposed by EC on
23 February 2022

- Data Scope
 - Co-generated, IoT data from industry and individuals.
 - Big Data sources held by business.
- Main actors involved
 - Private sector (Business).
- Policy intervention
 - Ensure flexible use of Big-Data sources by government for the public good.
 - Establish fairness use of Co-generated, IoT data.
 - Make sure that Europeans stay in control over their data vis-à-vis third country jurisdictions.
 - Examine Intellectual Property Rights (IPR) legislation for possible obstacles.
- Expected results
 - Making more data available for innovative use in line with EU rules and values.
 - Harmonised rules on fair access to and use of data, preserving incentives to invest in data generation.

<https://digital-strategy.ec.europa.eu/en/policies/data-act>

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A68%3AFIN>

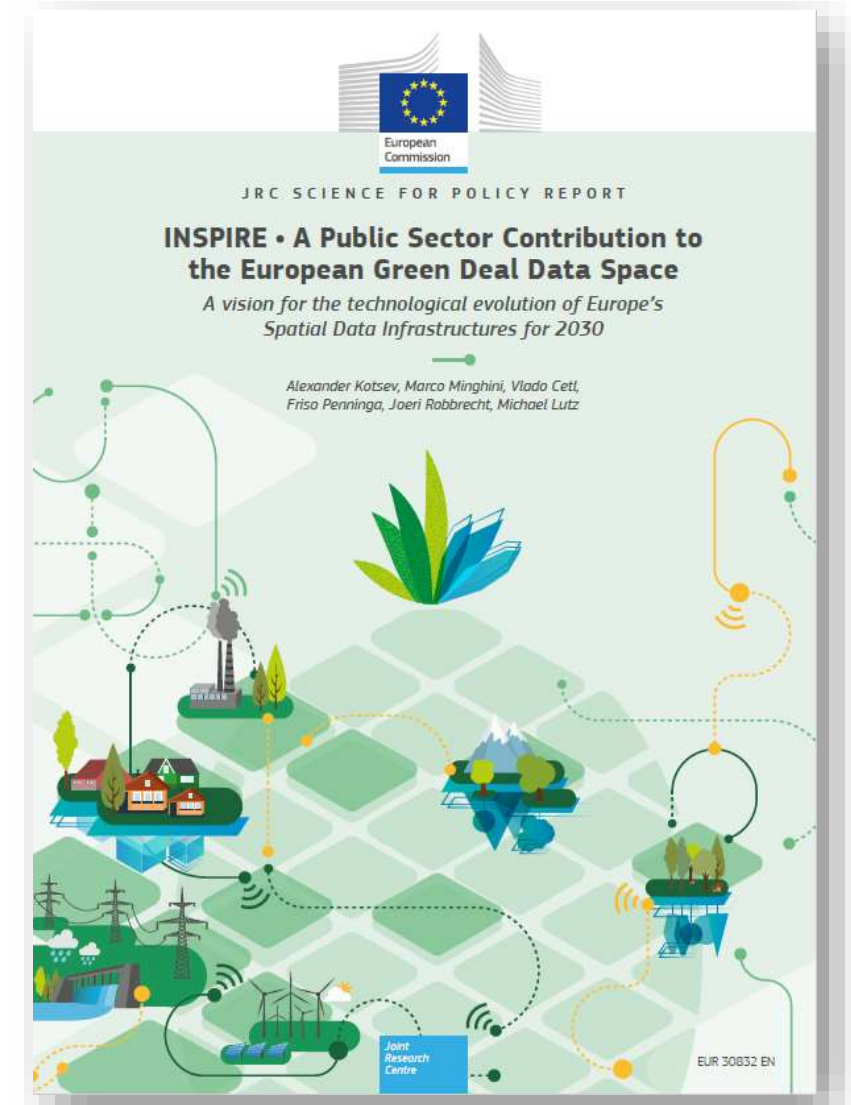
INSPIRE & new policy context

JRC Science for Policy Report

- **INSPIRE - A Public Sector Contribution to the European Green Deal Data Space**

<https://publications.jrc.ec.europa.eu/repository/handle/JRC126319>

- **Evolution to a data ecosystem** (Green Deal Data Space).
- Broadening the scope:
 - New sectors: public, private/businesses, academia.
 - New communities: developers, users.
- Widening the range of applications and use cases.
- Making INSPIRE framework more simple, flexible and agile.
- Lowering the knowledge entry-level for implementing and/or using data.
- Reusing well-adopted standards and technologies.



Prepared by JRC, Geonovum and DG ENV



Defining now the future!

Common & Sectoral EU data spaces



Rich pool of data
(varying degree of
accessibility)

Free flow of data
across sectors and
countries

Full respect of GDPR

Horizontal
framework for data
governance and data
access



Health



Industrial
&
Productive



Agriculture



Finance



Mobility



Environment
Green Deal



Energy



Public
Administration



Skills

- Technical tools for data pooling and sharing
- Standards & interoperability (technical, semantic)
- Sectoral Data Governance (contracts, licenses, access rights, usage rights)
- IT capacity, including cloud storage, processing and services

Personal Data Spaces



High Value Data sets



Public
Sector



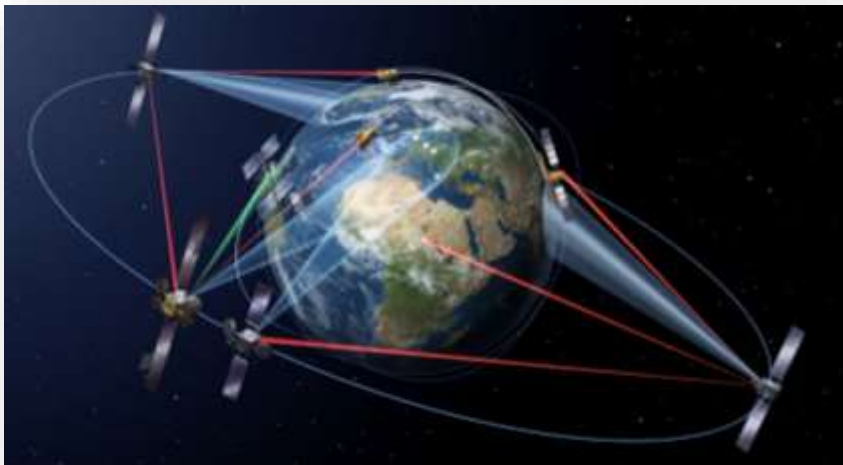
JRC Research on European Data Spaces

Technology trends: New data sources

Internet of Things



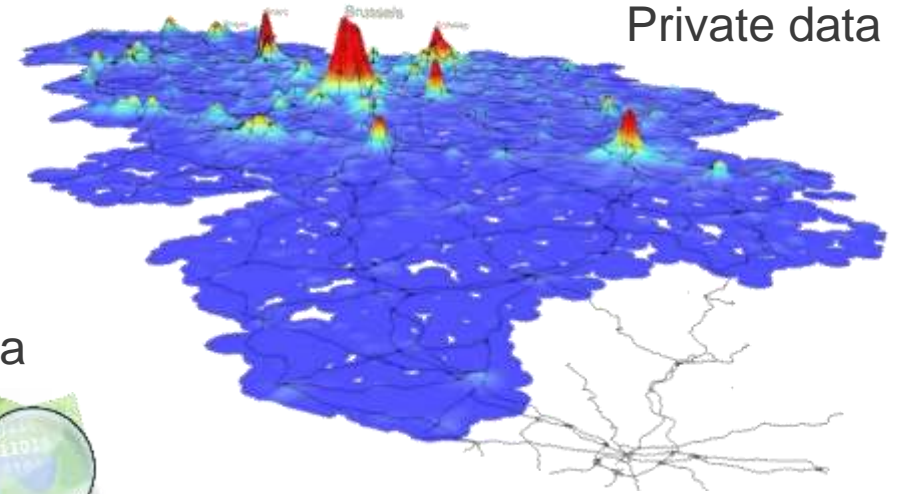
Copernicus



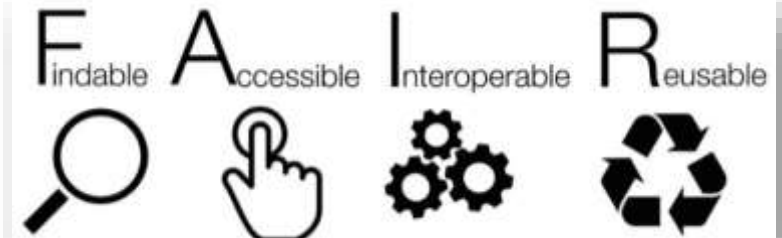
Citizen-generated data



Private data



Open research data



JRC Research on European Data Spaces

Technology trends

- Extensive **use of APIs** – From data collection to data connection.
- **Agile standards.**
- **Mature tools.**
 - Multiple approaches for using & serving data.
 - Powerful ETL instruments.
- **Novel architectures:**
 - Federated cloud
 - edge/fog
 - Solid



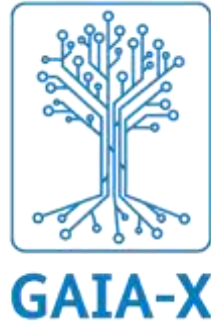
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Analysis of relevant data sharing initiatives



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Analysing technical and non-technical requirements

Key features of a data space

- A secure and privacy-preserving IT infrastructure to pool, access, process, use and share data.
- A data governance mechanism, comprising a set of rules of legislative, administrative and contractual nature that determine the rights and obligations of participants in a transparent manner.
- Data holders are in control of who can access their data and under which conditions it can be used.
- Presence of vast amounts of data that are made available on a voluntary basis and can be reused against remuneration or for free.
- Participation by an open number of organisations.

- **Technical data infrastructure:** participants in the creation of common European data spaces will be encouraged to use the common technical infrastructure and building blocks which will allow to efficiently build data spaces in a coordinated manner. The common technical infrastructure should integrate the cybersecurity-by-design and privacy-by-design principles.

Data Transfer & Exchange

Identity, Authentication, Access Control

Data Publication & Discovery

Data Interoperability

Privacy preserving mechanisms

Usage Control Policies

Audit, Logging, Monitoring

Federation, Multi-tier, Portability

Data Processing & Analytics

Transactions Metering & Billing

Data Pooling & Collaboration

Data Storage

- Provide a full cloud stack with foreseeing the subsequent integration of new services and data sources;
- Provide a technical baseline to build on, to avoid effort and overlaps and to ensure a proper alignment of the various implementation approaches;
- Allow state-of-the art data management between cloud and edge, enabling seamless ultra-fast data workload balancing between them, and intelligent data porting between centralised and decentralised data infrastructures;
- Ensure performance and quality of service in the execution of applications across multiple cloud and edge providers;

- Integrate an environmental tracking performance system to ensure services operate in a low power mode;
- Provide secure resource efficient data storage services;
- Be tested in use cases in areas of public interest including the areas of trust services and electronic identity, modernisation of public administration, mobility, as well as industrial data spaces.

Findings



JRC Research on European Data Spaces

EU Data Spaces – Scientific insights into data sharing and utilisation at scale

- Technical Report: **Publication approved** – Soon online!
[ISBN 978-92-76-53522-5 \(online\)](#), [doi:10.2760/400188 \(online\)](#), JRC129900
- Integrates JRC's knowledge base on data sharing - [Easy entry point to data spaces JRC findings](#).
 - Ingredients: JRC research findings from articles, reports.
 - Mapped to the technical and non-technical requirements for data spaces as defined in the European Strategy for Data (2020) and SWD(2022) 45 final.
- Co-created and validated by different services (ENV, SANTE, GROW, DIGIT, JRC, AGRI, CNECT).
- Two products derived from the same knowledge base:
 - Living document (wiki).
 - Interactive component (chatbot, Q&A system).
- Complements the Data Spaces Support Centre and European Innovation Board.

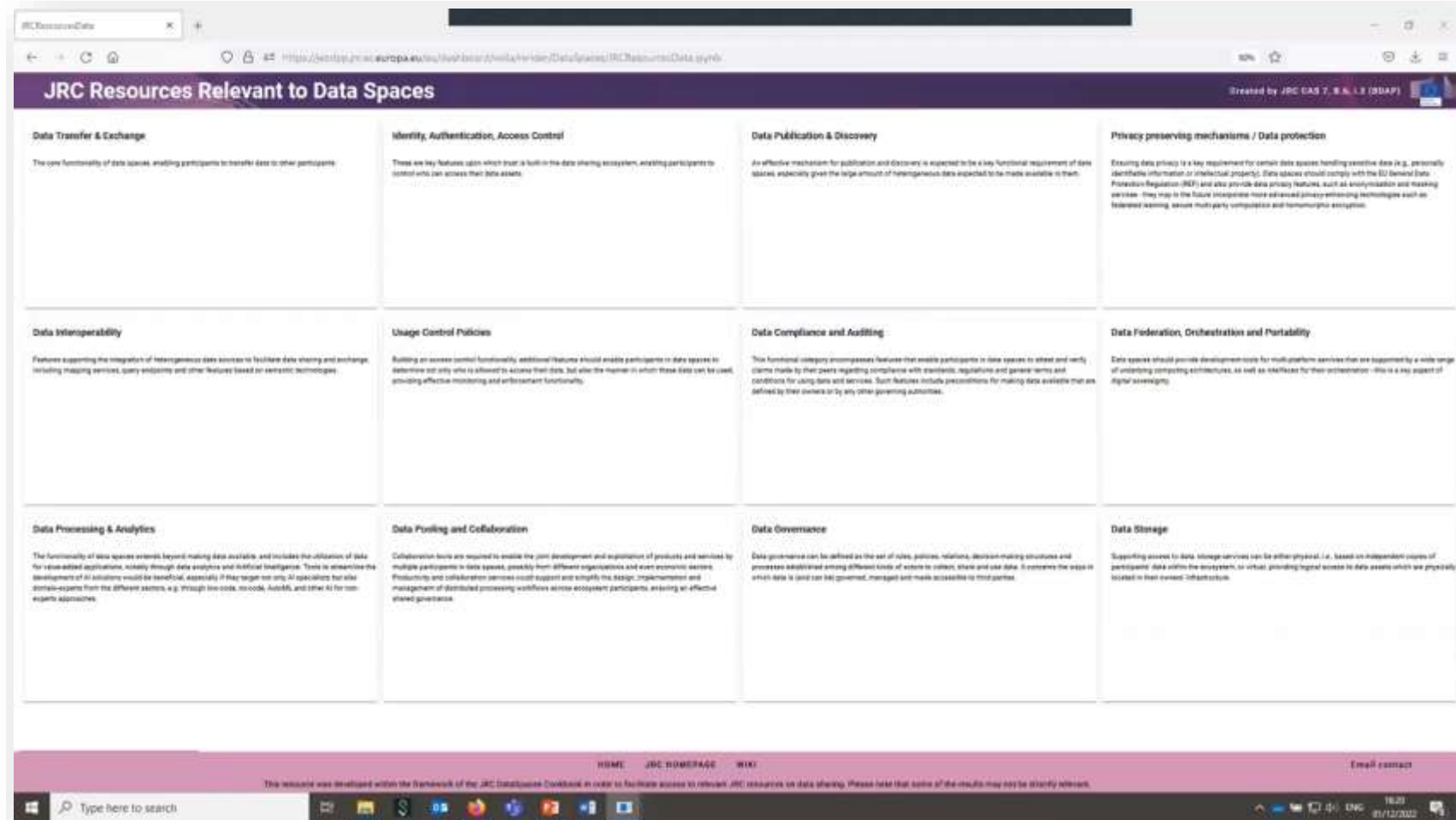
JRC Research on European Data Spaces

EU Data Spaces – Scientific insights into data sharing and utilisation at scale

- **Dashboard:**

JRC resources mapped to the requirements for Data Spaces

Interactive
browsing



- **JRC resources on Data Spaces**

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

Problem statement

A common challenge associated with the existing and sharing data, especially when different providers are involved is related with the appropriate use of terms, explicit means and other digital assets. This is further complicated if different national languages are used, and the data are intended to be shared over the web.

Example

The INSPIRE Directive gives us a clear European Union spatial data infrastructure for the purposes of EU environmental policies and policies or activities which in any form or in part are the environment. The INSPIRE infrastructure involves a number of levels, which require clear descriptions and the possibility to be referenced through unique identifiers. Examples for such terms include INSPIRE themes, data sets and applications whereas the INSPIRE Register provides a set of access point to a number of centrally managed registers, which contain descriptions of these themes (including names, definitions and other relevant information) in different languages and assign unique and persistent identifiers to them. The content of the registers are based on the INSPIRE Directive, implementing Rules and Technical Guidelines.

Name: 0000 000 00 00 0000 00 0000 000000000000 00 00 00 00 00 00
 Mail: 0000 000 00 00 0000 00 0000 000000000000 00 00 00 00 00 00





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EUROPEAN COMMISSION

March 2023



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 non-mutually exclusive nature of data (meaning that at a technological level, data is in theory usable by multiple actors simultaneously), many key actors may lack reasons to do because there are no direct reasons to ensure there is an incentive basis. Primary reasons and fears of losing competitive advantages, are some of the most common concerns cited by those who would be willing to voluntary share their data. Against this background, data spaces offer a protected environment to exchange data for the public interest.



Example

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

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- Catalina Simionescu B., Duth Brown N. & Martens B. "To proof or to pull back? An economic analysis of health data posting". *JRC Working Papers on Digital Economy* 2021-06, Joint Research Centre (Geweille site)
- European Commission. Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on European data governance (Data Governance Act). 2020.
- Jones, C. I., and Venetis, C. (2020). "Nonrivalry and the Economics of Data." *American Economic Review*, 110 (10) 2819-52.
- Florio M. & Cingola M. Citizen-generated data for public policy. *European Commission*, https://ec.europa.eu/economy_finance/jrc2020/jrc202033

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Scientific support for establishing EU Data Spaces

JRC Research activities under GreenData4All

- Studies in support of the GreenData4All (revision of the INSPIRE Directive) impact assessment, for DG ENV (on-going)
 - Possible role of intermediaries in the Green Deal data space (extending on-going research on intermediaries by JRC for CNECT).
 - Options for including citizen science and user consent data (including data altruism mechanism) in the Green Deal data space, building on top of Data Governance Act and Data Act.
 - Options to review the interoperability provisions/approach under INSPIRE in view of the upcoming Interoperable Europe Act, High Value Datasets Implementing Regulation and data space interoperability provisions in the Data Act.

Building European Data Spaces

Actors: Coordination and Support Actions

- Data Spaces Support Centre (DSSC)

- Main Coordination and Support Action.
- Mission: Coordination of all relevant actions on sectoral data spaces in Europe.

Blueprint

Best practices

Common standards

Support activities

Knowledge transfer

- Sectoral Coordination and Support Actions (CSAs)

- One CSA envisaged for each sectoral data space.
- Mission: Coordination of each specific sectoral data space.

Community of practice

Priority datasets

Stakeholder engagement

Governance & Business models

Roadmap

- European Data Innovation Board (EDIB)


- Consultative and advisory body established in the Data Governance Act.
- To be set up in September 2023.
- Mission: Identification of guidelines for interoperability of common EU data spaces.

European Data Spaces

Data Spaces Support Centre

Main Coordination and Support Action (CSA)



- Aimed to build a strong and innovative data ecosystem in Europe through the development of common data spaces in strategic economic sectors and domains under the EU Data Strategy.
- General CSA ruling the specific and sectoral CSAs on Data Spaces - Mission:
<< The Data Spaces Support Centre will explore the needs of data space initiatives, define common requirements and establish best practices to accelerate the formation of sovereign data spaces as a crucial element of digital transformation in all areas >>
- Funded by  <https://dssc.eu>



European Data Spaces

Great project

Coordination and Support Action (CSA) for shaping the **Green Deal data space**



- www.greatproject.eu

Establishing the foundations of a Minimum Viable Green Deal Data Space.

- Reference blueprint architecture.
- Governance & Business Models.
- Priority list of datasets.



- Funded by

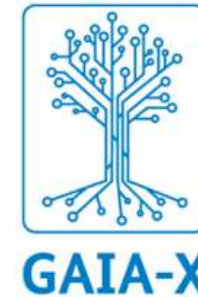


Building European Data Spaces

Cooperation at multiple levels needed



INTERNATIONAL DATA
SPACES ASSOCIATION



Building European Data Spaces

Cooperation > Green Deal data space



**OPEN EARTH
MONITOR**



European Data Spaces

The role of NMCA's



- Data providers play a **crucial role** in EU data spaces:
 - Long **experience producing** and **sharing data** (own business, national SDIs, INSPIRE, EuroGeographics products, Open Data portals).
 - **EU Core data and services** are key to achieve data spaces' ambitions and goals.
 - **Focus on data availability** and **accessibility**. Data intermediaries will support integration and interoperability efforts.
- Approach for integrating NMCA's data in the Common EU data spaces:
 - Gradually **build capacities** and **adopt emerging standards** and **technologies**, mainly those considered for data spaces.
 - Closely **follow-up CSAs** put in place. Consider **collaborating**.
 - **Participate and influence** in relevant actions:
e.g. ISO/TC211 Ad-hoc group on Input to EU Data spaces
 - Apply an **open licensing** framework, when possible.
 - Make **High-value datasets** freely available via standard **APIs**.



Keep in touch



EU Science Hub: ec.europa.eu/jrc



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EU Science, Research and Innovation



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Thank you!



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