Deployment of common European data spaces

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Data sharing models

Current situation

One to one sector-specific data sharing based on contractual agreements.

Taking shape

Data sharing infrastructures with centralized data hosting, and/or data marketplaces to enable discovery and reduce transaction costs where data is not held in a central repository.

Data space

Links are created between data space participants. Federated data is stored in a distributed manner with tools to enable discovery, access, and analysis across industries, companies, and entities.
A data space can be defined as a federated data ecosystem based on shared policies and rules. The users of such data spaces are enabled to access data in a secure, transparent, trusted, easy and unified fashion.

Data holders are in control of who can have access to their data, for which purpose and under which conditions it can be used.

From a technical perspective, a data space can be seen as a data integration concept which does not require common database schemas and physical data integration, but is rather based on distributed data stores and integration on an “as needed” basis.
Data Space Fundamentals

Role Interactions

- Data Provider
- Data Intermediary
- Data User

Activities

- Data source
  - Publish
  - Search for
- Participant
  - Register
  - Identify
  - Authorize

- Data exchange
  - Request
  - Perform
  - Log
- Data use
  - Constrain
  - Perform

Legend: — Payload data; — Metadata.
Evolution of data spaces

Legend:
Roles: Participant (Data Provider | Data User); Data intermediary.
Data Exchanges: — Payload data incl. metadata between participants; ——— Metadata between participant and federator; ———— Metadata between federators.
Ecosystems: ☐ Closed; ☐ Open.
Design principles for common European data spaces

- **Promote tools** to control, pool, access, use and share all types of data in a fair, reasonable and non-discriminatory manner.

- **Respect of EU rules and values**
  - Comply with applicable EU legal framework, and put in place adequate measures to prevent unauthorised access to data.
  - Open to all actors (organisations/individuals) that respect EU rules and values and comply with data space rules.

- **Openness**
  - Open to all actors (organisations/individuals) that respect EU rules and values and comply with data space rules.

- **Data access and control**
  - Put in place an appropriate governance structure (mechanisms) to ensure fair, transparent, proportionate and non-discriminatory access to, sharing and use of data.

- **Governance**

- **Interconnection and interoperability**
  - Develop on international standards, INSPIRE, FAIR principles to progressively lead to single EU data space.

- **Technical data infrastructure**
  - Encourage actors to use common technical data infrastructure (including sector-specific framework and cybersecurity- and data protection-by-design principles).
The EC’s role in supporting the creation of data spaces

Bring stakeholders together with a common EU data policy, promote use of data space guidelines

Support the Commission in:
- **Issuing guidelines** to facilitate the development of the common European data spaces
- Identifying the relevant standards and interoperability requirements for cross-sector data sharing

Unlock the potential of the EU’s industrial data (IoT data), ensure fairness in the allocation of data value among the actors of the data economy

Increase trust in data sharing (neutral data intermediaries, i.e. the orchestrators of the data spaces)

Facilitate interoperability of data, data sharing mechanisms and services (incl. data spaces) between sectors

Research on new technologies for the development of common European data spaces (notably HORIZON EUROPE in collaboration with ADRA partnership)

Deploy common European data spaces in strategic sectors/domains (notably DIGITAL)

European Data Innovation Board (EDIB)

Work with stakeholders

Data Governance Act

Data Act

Offer a technical solution smart middleware Simpl

Funding

Help developing data spaces and pooling existing data infrastructures (cloud federation)
Common European data spaces

- Driven by stakeholders
- Rich pool of data of varying degree of openness
- Sectoral data governance (contracts, licenses, access rights, usage rights)
- Technical tools for data pooling and sharing

Data Spaces Support Centre
- Coordinating the development of data spaces
- Assuring common standards and interoperability

Technical infrastructure for data spaces
- Edge & cloud Services
- Smart Middleware solutions (Simpl)
- Marketplace
- High-Performance Computing
- AI on demand platform
- AI Testing and Experimentation Facilities

High Value Datasets from public sector
Data spaces common elements

**User**
*Individual, company, public bodies, or complete ecosystems of organisations (e.g. data hub, data marketplaces)*

**Data Space**

**Specific Services, Market Specific Solutions**

**Data Sharing Common Elements**

**Data Sharing Common Elements**

**Edge and Cloud Infrastructure**

**Governance**
- Cooperation agreement
- Operational (e.g. SLA)
- Continuity model

**Interoperability**
- Data models and formats
- Data exchange API
- Provenance and traceability

**Trust**
- Identity management
- Access and usage control
- Trusted exchange

**Data Value**
- Metadata and discovery
- Publication & marketplace services
- Data usage accounting

- Separation of duties
- Business agreements
  - Accounting schemes
  - Charging schemes
  - Smart contracts
  - Sustainability
- Operational/Organisational
  - Rulebooks
  - SLAs
  - Governance bodies
  - Incident management
  - Maintenance
Data Spaces and Infrastructure in DIGITAL

- Bring together stakeholders.
- Identify the data infrastructure needs

- European Data Spaces Technical Framework
- Data Spaces Support Centre Coordination and governance
- Sectoral Data Spaces

- Build the data spaces
- Middleware solutions
- Edge and cloud services

- Marketplace
Data Spaces in DIGITAL

<table>
<thead>
<tr>
<th>Green Deal</th>
<th>Smart communities</th>
<th>Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>Health - Genomics</td>
<td>Health Cancer Images</td>
</tr>
<tr>
<td>Skills</td>
<td>Manufacturing</td>
<td>Public Procurements</td>
</tr>
<tr>
<td>Law Enforcement</td>
<td>Financial</td>
<td>Tourism</td>
</tr>
<tr>
<td>Language</td>
<td>Cultural Heritage</td>
<td>Media</td>
</tr>
</tbody>
</table>
Create a network of stakeholders
- Closely work with CSAs and projects funded under the Digital Europe Programme

Identify common requirements:
- Support the work of the European Data Innovation Board (DGA)

Create a platform for knowledge exchange:
- Support the deployment of data spaces
Thank you