Bundesamt
für Eich- und
Vermessungswesen

Aktuelles aus Europa: Geoinformation/Daten-Ökosystem Europa

Markus Jobst

Agenda

- Ein gemeinsames Ökosystem und Wissensinfrastruktur
- Evaluierung von INSPIRE
- Herangehensweise der EK
- Aktuelle Aktivitäten

- Resümee

Ein Geoinformations-Ökosystem

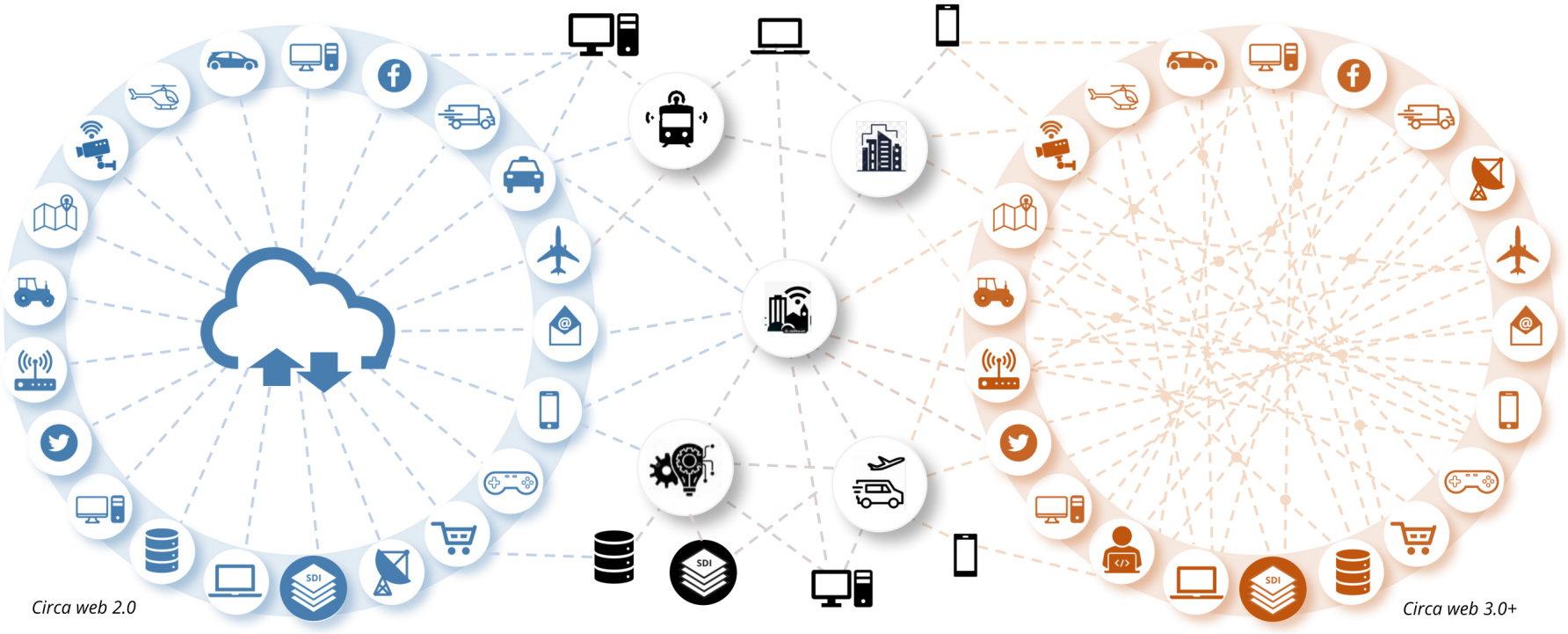
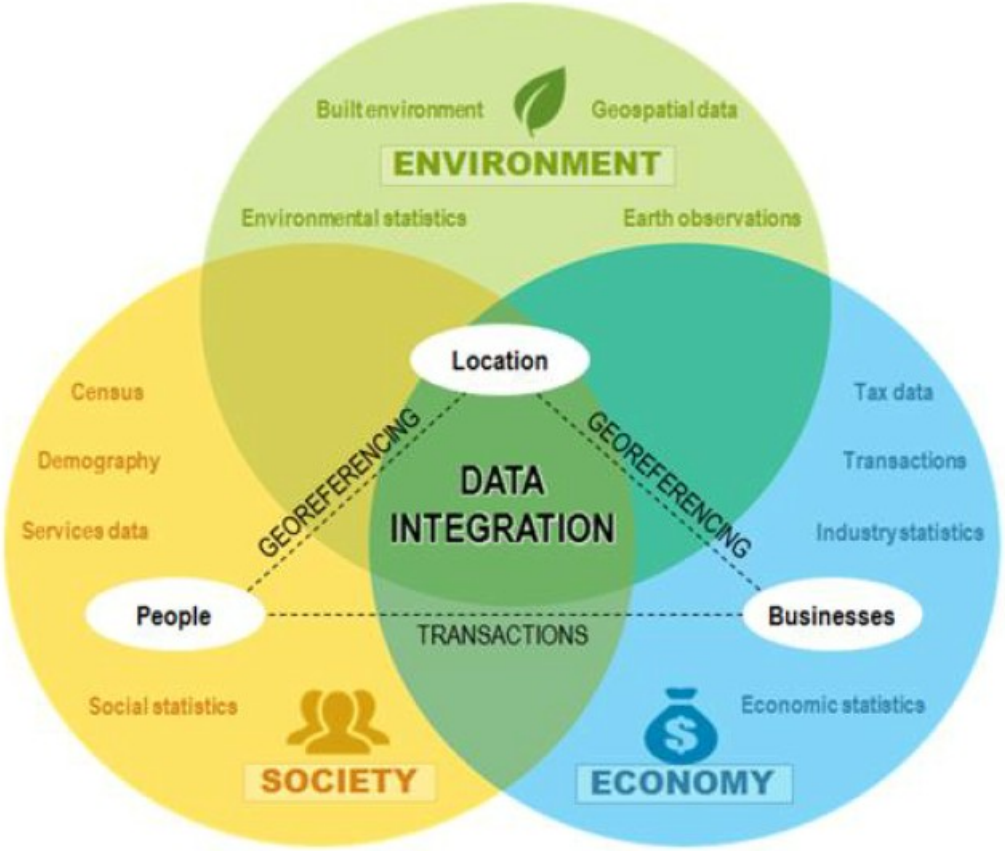


Figure 3. The future geospatial information ecosystem comprising SDIs, SoS and the Geoverse.

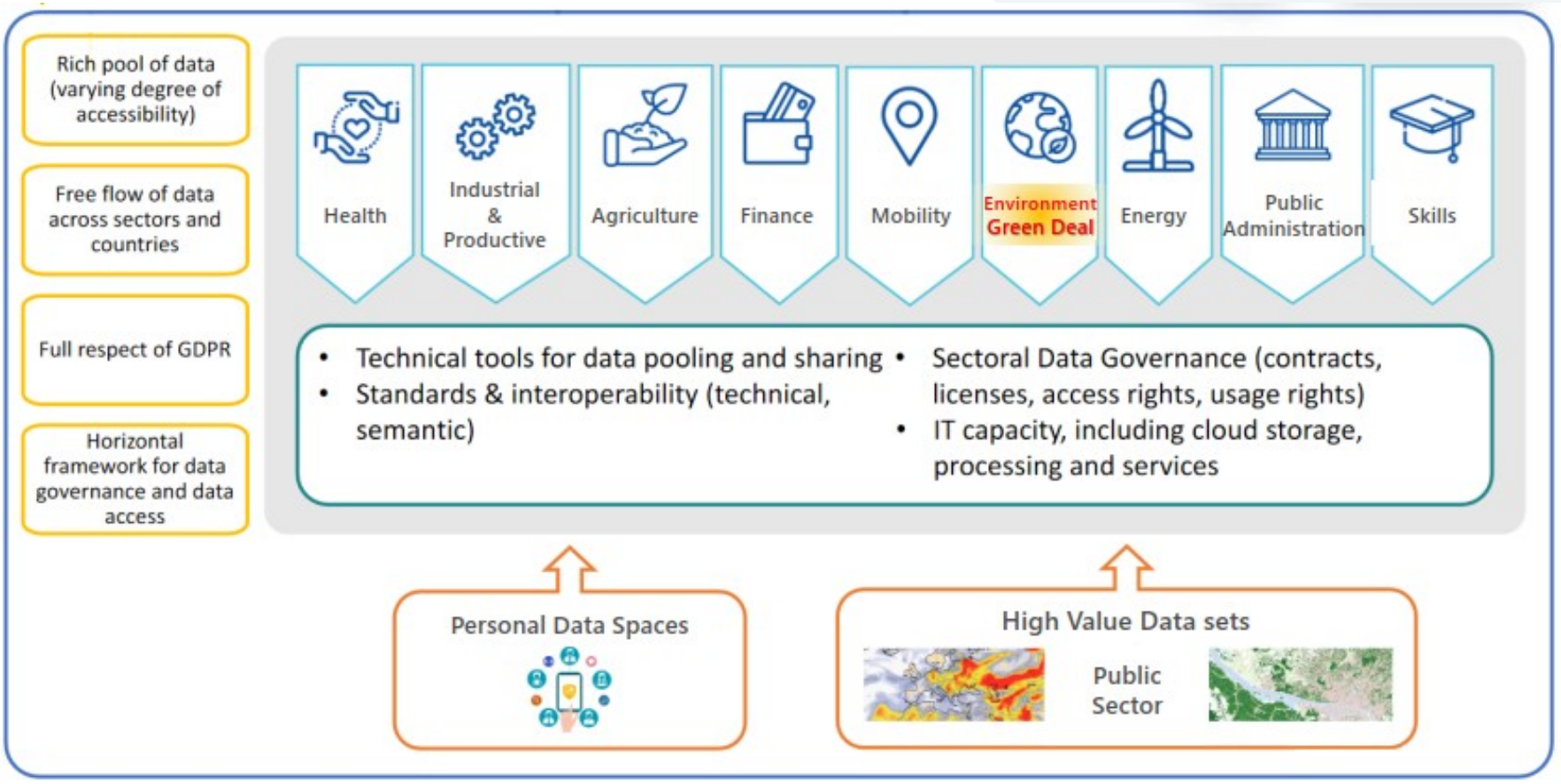
https://ggim.un.org/meetings/GGIM-committee/12th-Session/documents/Future_Geospatial_Information_Ecosystem_Discussion_Paper_July2022.pdf

Ein Geoinformations-Ökosystem



Location as a link between society, the economy and the environment,
The Global Statistical Geospatial Framework,
Departement of Economic and Social Affairs,
UN Statistics Division, New York, 2019

Ein Geoinformations-Ökosystem



Jordi Escriu, EC-JRC, Unlocking the full potential of European data, at The role of geospatial in address major challenges facing Europe, EUROGI Conference, 21.11.2024

Strategie für Europa

- Ziel
  - European Single Market für Daten
- Herausforderungen
  - Datenverfügbarkeit, Interoperabilität, kompatible Qualitäten
  - Nachhaltige **Steuerung** und stabile **Infrastrukturen**
  - Skills, Infrastruktur- und Daten**kompetenz**
  - Cyber-Sicherheit
- Einrichtung von
  - Einem **gemeinsamen** Europäischen Datenraum
  - Sektorale Datenräume
  - **Strategie für eine europäische Datenunion (EK 2024-2029)**

EUROPEAN
COMMISSION

Brussels, 19.2.2020
COM(2020) 66 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A European strategy for data

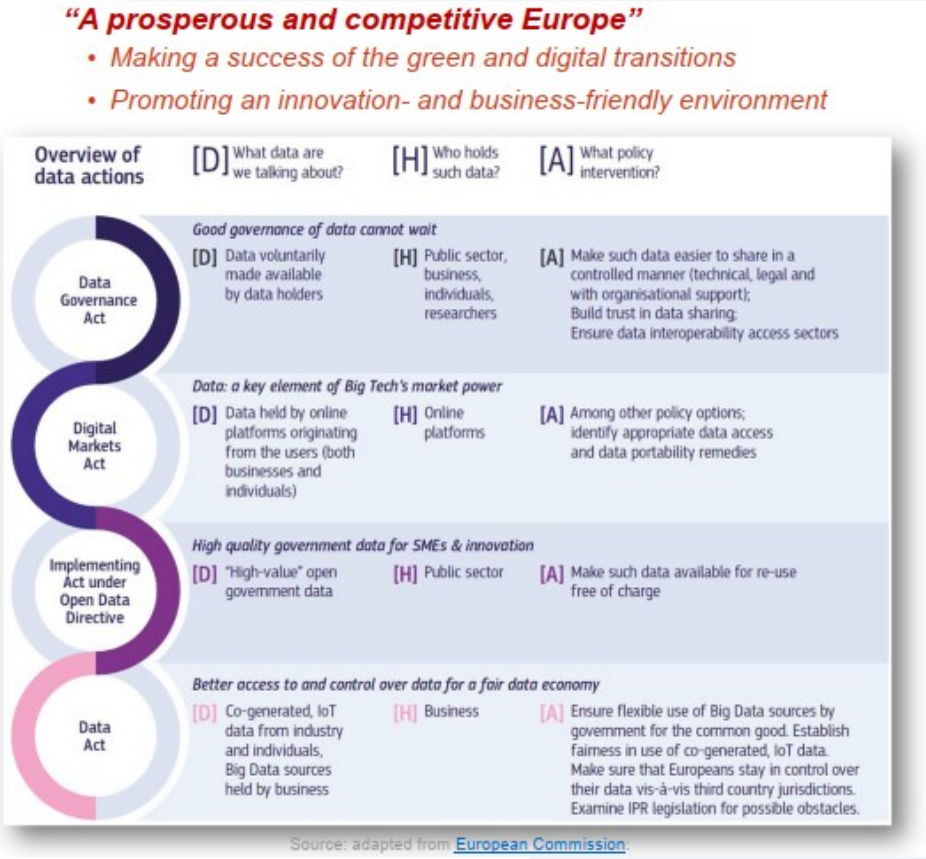
https://digital-strategy.ec.europa.eu/en/policies/strategy-data

European approach to artificial intelligence

https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence

Strategie für Europa

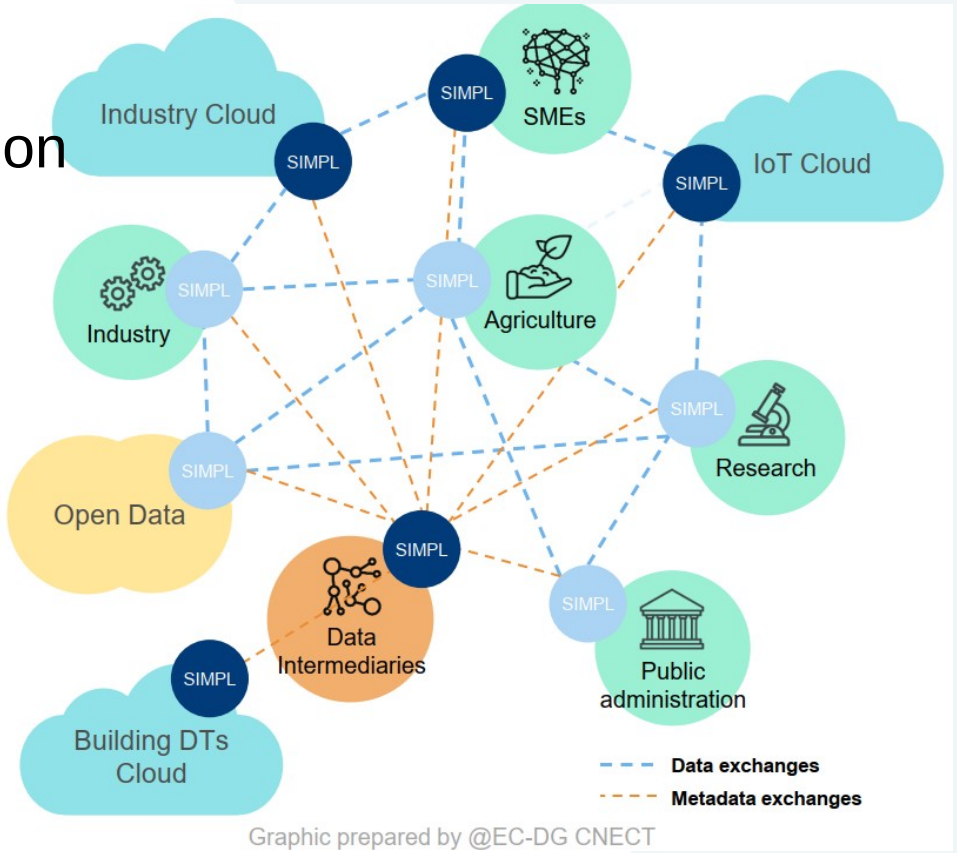
- Data Governance Act
  - Vertrauensvolle Datenaustausch
  - Daten - Interoperabilität
- Digital Markets Act
  - Faire Praktiken durch „Gatekeeper“
  - Produkte/Datenportabilität
- Open Data Act
  - Datenverfügbarkeit und Zugang
  - Lizenzhomogenität
- Data Act
  - Fördern von Datengenerierung
  - Datensouveränität
- AI Act
  - Vertrauenswürdige KI Systeme



*Cloud-Speicher, Data Lakes und **verteilte Systeme** gehören zu den **Technologien**, die dazu beitragen, dass große Datenmengen für KI-Anwendungen zugänglich und verwaltbar sind.*

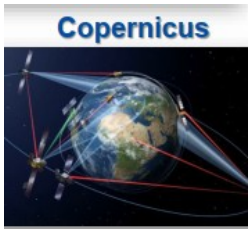
Visionen und Ziele

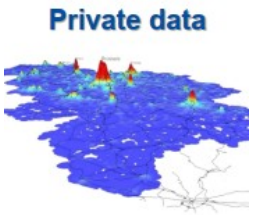
- Reibungslose Steuerung/Vision
- Nachhaltige Technik/Vision
- SIMPL (cloud-to-edge)
- Agiler Austausch zwischen „Businesses & Communities“
- Integration „neuer“ Datenquellen



Graphic prepared by @EC-DG CNECT

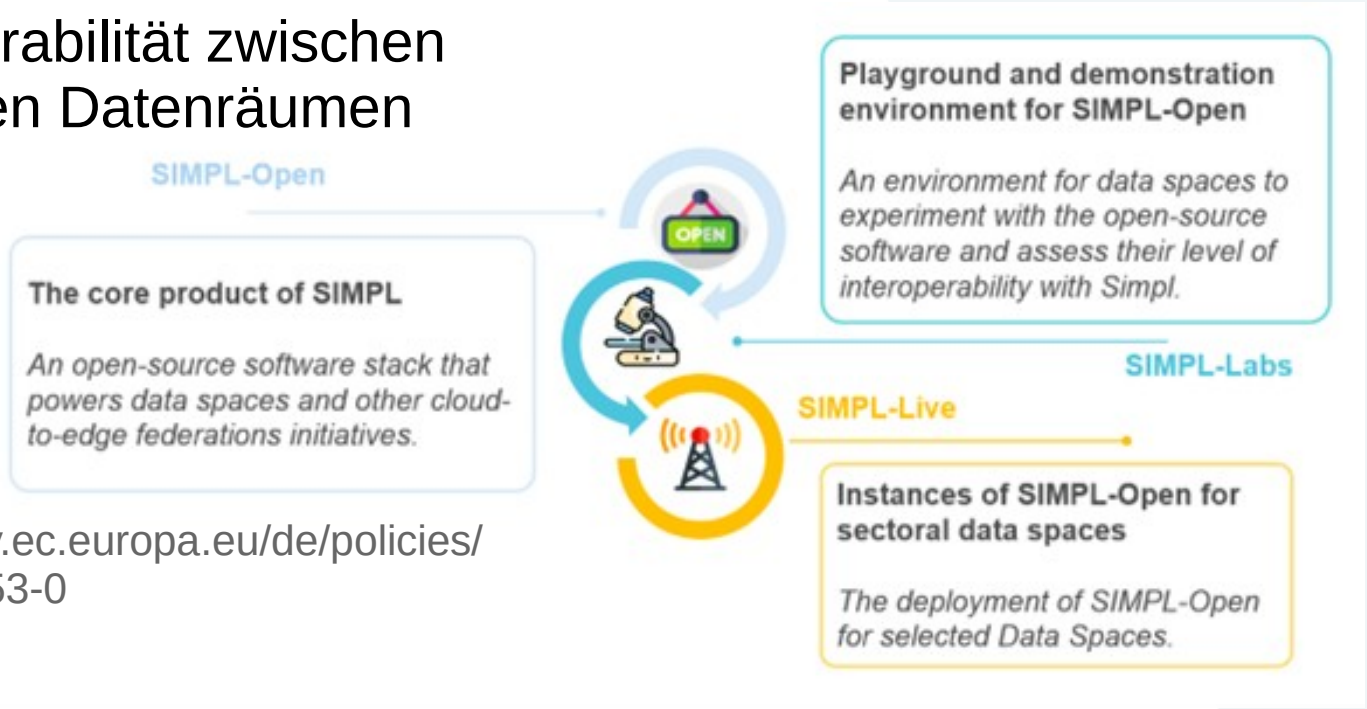
https://commission.europa.eu/about-european-commission/departments-and-executive-agencies/communications-networks-content-and-technology_en





SIMPL (Cloud-to-Edge federations)

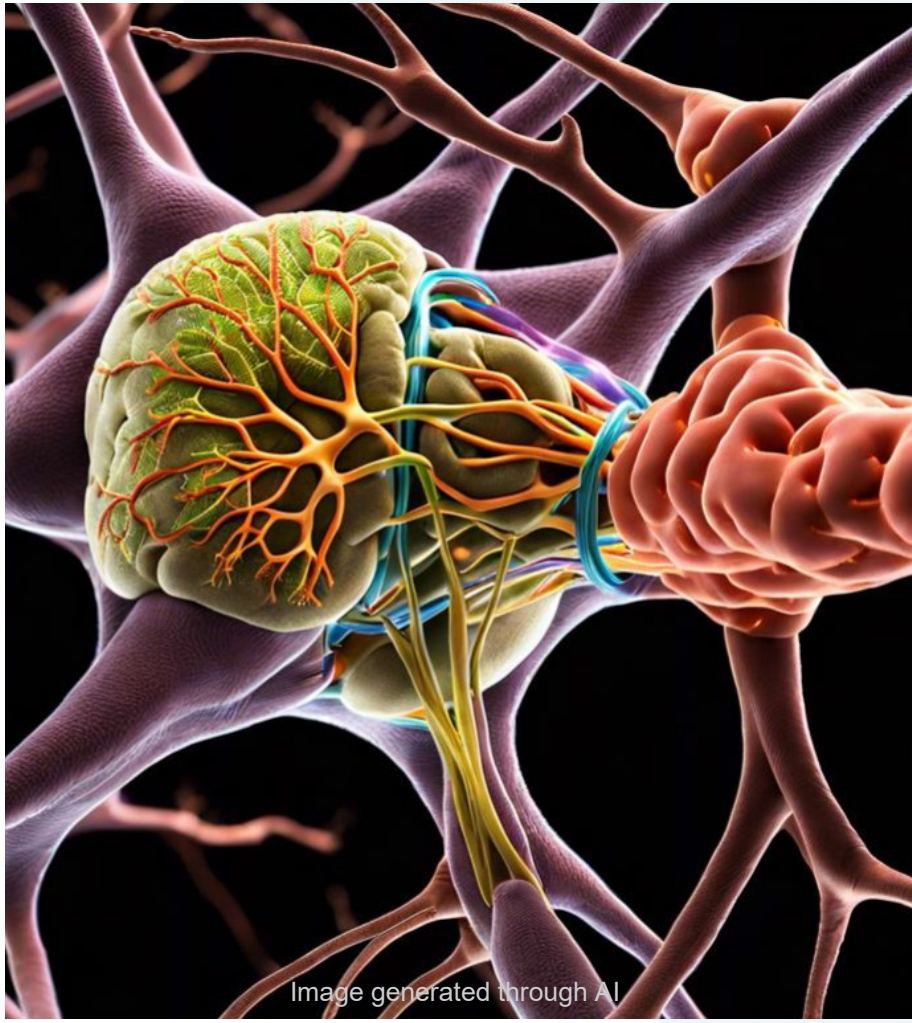
- Simpl ist eine quelloffene, intelligente und sichere **Middleware-Plattform**,
- die den Datenzugriff und
- die Interoperabilität zwischen europäischen Datenräumen unterstützt.



https://digital-strategy.ec.europa.eu/de/policies/simpl#1712822729753-0

Rahmen und zu erreichende Ziele

- Freier Datenfluss
- Vernetzte Sektoren
- Vertrauen und Anreize
- Daten- und Systemsouveränität
- Interoperabilität
- Innovation



Aktuelle Situation

- Beschränkter Datenfluss
- Fehlendes Vertrauen
- Fehlende Anreize
- Dateninteroperabilität und -verfügbarkeit
- Unklare Lizenzen

Evaluierung von INSPIRE

Beweissammlung (evidence collection)

Problemtreiber

Problem drivers related to **missing data / outdated data / siloed data**

- D1: Focus on **data sharing/supply of** broad categories of **data** with **little consideration of data users' needs**; **data categories too broadly** defined making **comparability across the EU difficult**
- D2: **Lack of mechanism** to define evolving user needs for end-use environmental data

Problem drivers related **incompleteness and lack of interoperability**

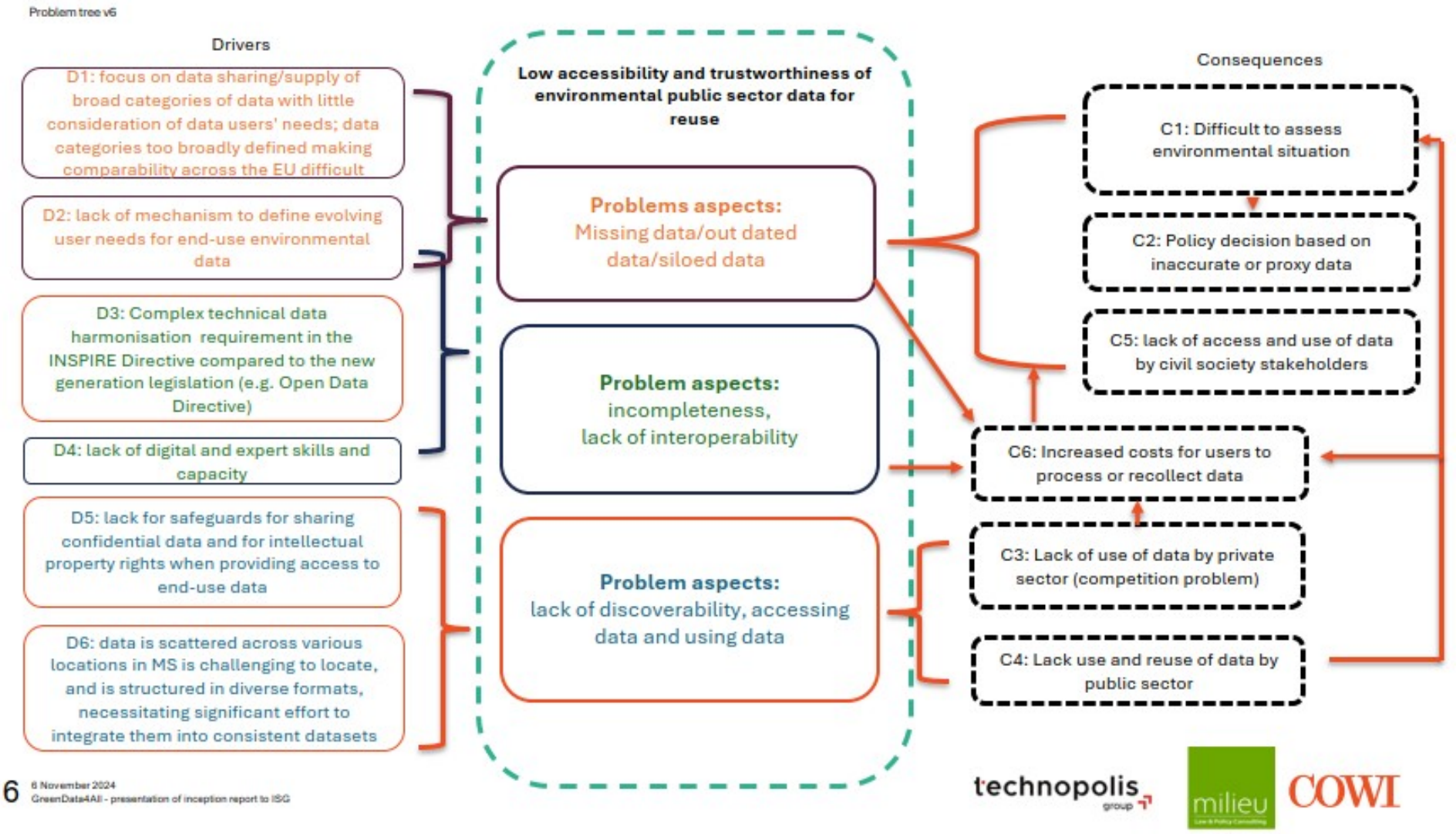
- D2: **Lack of mechanism** to define evolving user needs for end-use environmental data
- D3: **Complex technical data harmonisation** requirement in the INSPIRE Directive compared to the new generation legislation (e.g. Open Data Directive)
- D4: Lack of **digital and expert skills** and capacity

Problem drivers related to lack of discoverability, assessing data and using data

- D5: Lack for **safeguards** for **sharing confidential data** and for **intellectual property rights** when providing **access to end-use data**
- D6: **Data scattered across various locations** in Member States is challenging to locate, and is structured in diverse formats, necessitating significant effort to integrate them into consistent datasets

technopolis group milieu COWI

https://wikis.ec.europa.eu/download/attachments/143438612/PRES1_MIG19_GD4A%20inception%20report%20MIG%20presentation%20281124.pdf?version=1&modificationDate=1732716358106&api=v2



https://wikis.ec.europa.eu/download/attachments/143438612/PRES1_MIG19_GD4A%20inception%20report%20MIG%20presentation%20281124.pdf?version=1&modificationDate=1732716358106&api=v2

Projektion auf 2023

- Impacts on the supply side:
  - Do stakeholders expect that the costs under INSPIRE will continue? Decrease, be constant or increase?

- Impacts on the demand side:
  - Do users expect that more data will become available under the HVD regulation?
  - Do users expect that technological changes will make it easier and less costly to gather the necessary data?
  - Are there Member States initiatives that could increase the availability of data?

https://wikis.ec.europa.eu/download/attachments/143438612/PRES1_MIG19_GD4A%20inception%20report%20MIG%20presentation%20281124.pdf?version=1&modificationDate=1732716358106&api=v2

Geplante/beauftragte Beratungstätigkeiten

Consultation activity	Target group	Tentative timing
Call for evidence	› General public	26 February 2024 - 25 March 2024
Public consultation	› All interested stakeholders	20 November 2024 – 12 February 2025
Targeted surveys	Data providers (INSPIRE, spatial data, open data communities), data intermediaries	December 2024 – February 2025
	Environmental data users	March – May 2025
Interviews and focus groups	Scoping interviews with Commission services / Agencies	August – September 2024
	Interviews or focus groups with specific environmental communities for each use case (incl. data producers and data users such as authorities responsible for specific environmental issues, NGOs/ think tanks/ research institutions active in the relevant environment issues)	Phase 1: February 2025 Phase 2: May 2025
First workshop	All interested stakeholders	March 2025
Second workshop	All interested stakeholders	June - July 2025

https://wikis.ec.europa.eu/download/attachments/143438612/PRES1_MIG19_GD4A%20inception%20report%20MIG%20presentation%20281124.pdf?version=1&modificationDate=1732716358106&api=v2

MIG-T Umfrage zu „good practice“

- 24 Antworten aus 17 Mitgliedstaaten.
  Keine Antworten aus Bulgarien, Kroatien, Zypern, Frankreich, Griechenland, Ungarn, Irland, Italien, Lettland, Polen.
- Input für bewährte Verfahren – 4 Empfehlungen werden auf Grundlage der Umfrageergebnisse vorgeschlagen:
  - HVD-Havesting-Strategie
  - GeoDCAT-AP-Erwartungen
  - HVD-Identifizierung
  - Lizenzen
- Vollständige Umfrageergebnisse auf der MIG-Plattform verfügbar
- Weitere Nachweise werden im GeoDCAT-AP 3.0 Transformationspilotprojekt gesammelt

MIG-T Umfrage zu „good practice“

Recommendation 1: Register catalogues to be harvested.

Recommendation 2: GeoDCAT v3 should allow for expressing all INSPIRE metadata elements.

Recommendation 3: high-value datasets should be identified in metadata by providing the link to the HVD IR and HVD categories provided in EuroVoc.

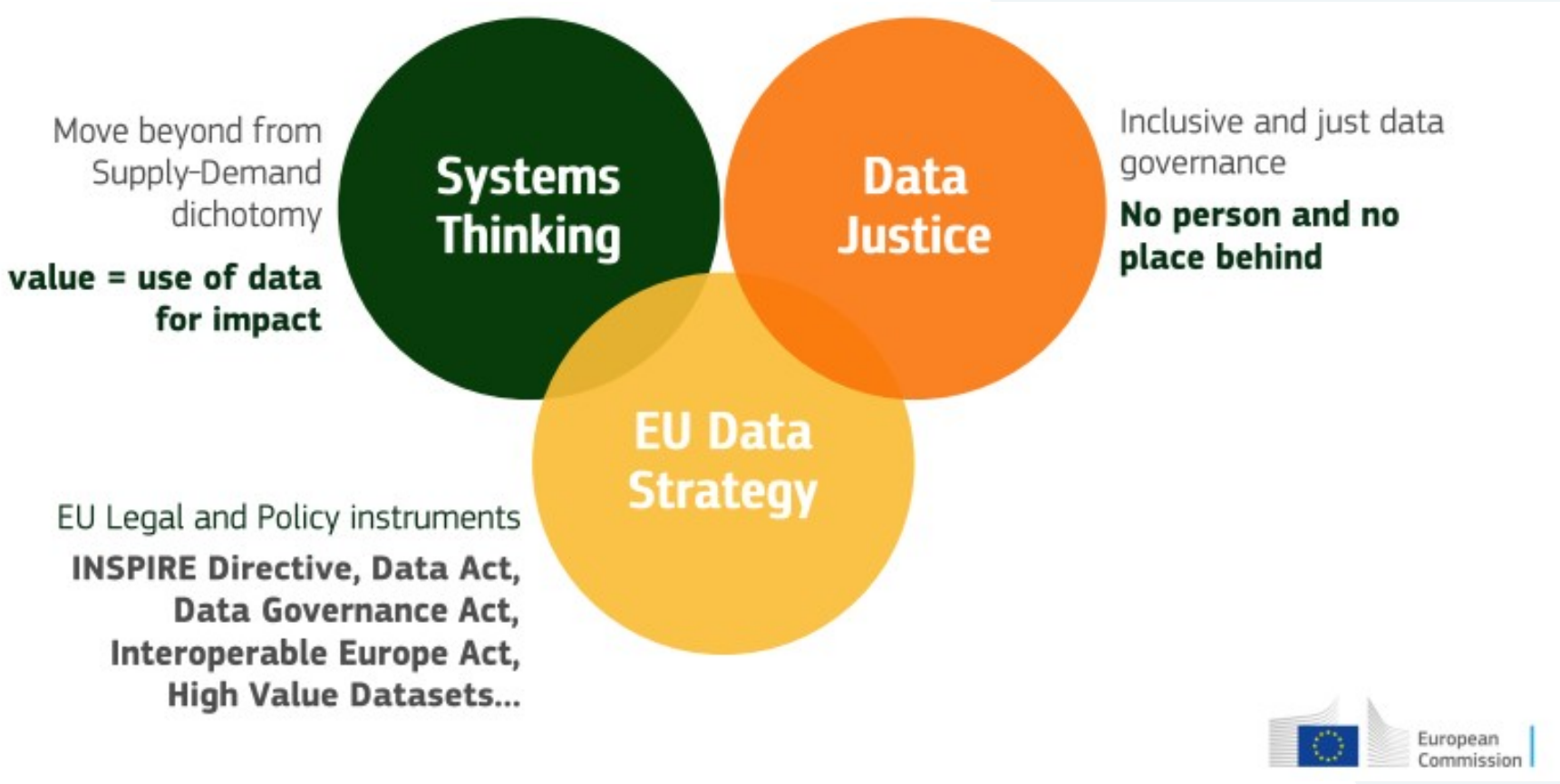
Recommendation 4: Licenses need to be structured and machine readable. Only URI based licenses and access right should be allowed.

European Commission

https://wikis.ec.europa.eu/download/attachments/143438612/PRES8_MIG19_MIWP_Action25_HVD_ENV.pdf?version=1&modificationDate=1732726063471&api=v2

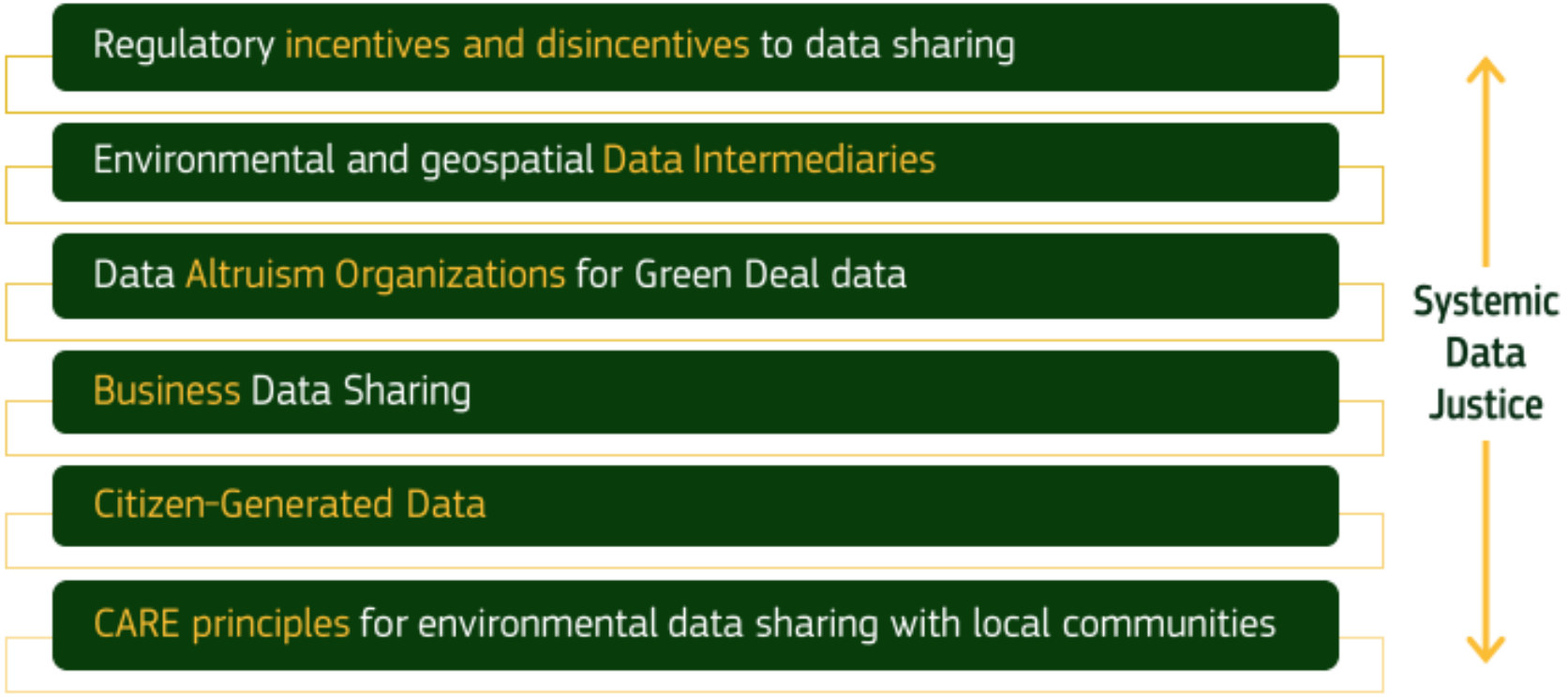
Herangehensweisen zu „INSPIRE-neu“

Herangehensweise



https://wikis.ec.europa.eu/download/attachments/143438612/PRES7_MIG19_MIG%20nov2024_GDDS%20report.pdf?version=1&modificationDate=1732716375646&api=v2

Herangehensweise



https://wikis.ec.europa.eu/download/attachments/143438612/PRES7_MIG19_MIG%20nov2024_GDDS%20report.pdf?version=1&modificationDate=1732716375646&api=v2

CARE Prinzipien

• **Kollektiver Nutzen** (Collective Benefit): Datenökosysteme müssen so gestaltet sein und funktionieren, dass Bürger einen Nutzen aus den Daten ziehen können.

• **Autorität zur Kontrolle** (Authority to Control): Die Rechte und Interessen der Bürger an ihren Daten müssen anerkannt und ihre Befugnis, diese Daten zu kontrollieren, muss gestärkt werden.

• **Verantwortung** (Responsibility): Diejenigen, die mit den Daten arbeiten, sind dafür verantwortlich, mitzuteilen, wie diese Daten verwendet werden, um die Selbstbestimmung der Bürger sowie den kollektiven Nutzen zu unterstützen.

• **Ethik** (Ethics): Die Rechte und das Wohlergehen der Bürger sollten in allen Phasen des Datenzyklus und im gesamten Datenökosystem im Vordergrund stehen.

(angelehnt an https://rdm.univie.ac.at/de/forschungsdatenmanagement/fair-und-care-prinzipien/)

Herangehensweise

DCAT-AP for HVDs: metadata in key role

- DCAT-AP – metadata standard
- Useful for: (i) **findability**, (ii) **reporting**: from **February 2025**.
- **DCAT-AP for High Value Datasets** - Guidelines on how to use DCAT-AP for a dataset that is subject to the requirements imposed by the implementing regulation

DCAT-AP High Value Datasets

SEMIC Recommendation

25 October 2024

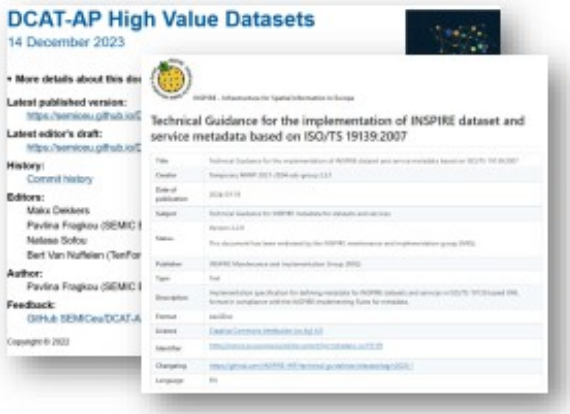
▼ More details about this document

Latest published version:
https://semiceu.github.io/DCAT-AP/releases/3.0.0-hvd

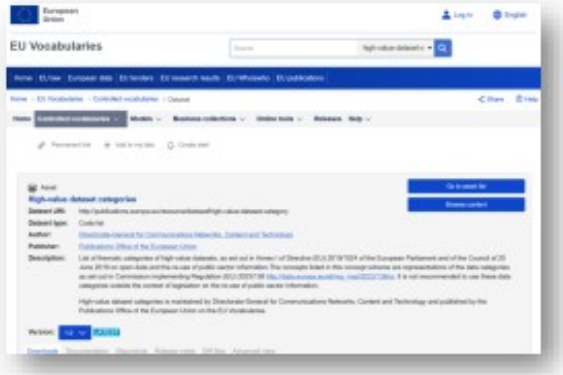
Herangehensweise

Reporting: builds on existing (improved) common practices

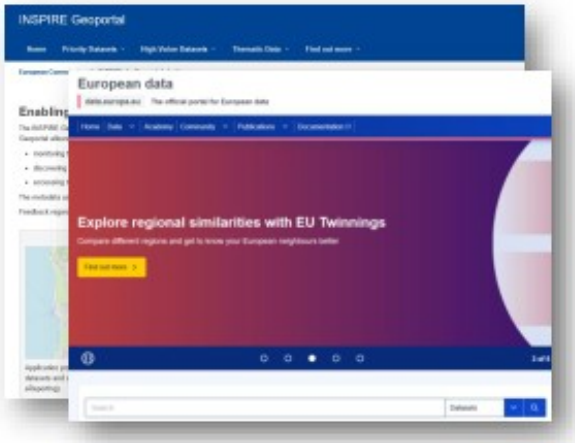
Use existing metadata **standards** and metadata **sharing networks** of data portals



Metadata standards such as DCAT-AP HVD, INSPIRE HVD guidelines



Shared code lists such as HVD categories, licences, …



Harvesting networks and data portals such as data.europa.eu and INSPIRE data portal.

Ongoing activities which are being improved to match the HVD requirements

European Commission

Herangehensweise

Beyond reporting: everyone will benefit from easier findability

- Harmonised metadata from national portals harvested by data.europa.eu
- Data users will be able to search for HVDs either through filters available at data.europa.eu or through SPARQL queries
- The Commission has made available process and tools (SPARQL queries) to be tried and tested by anyone.

NB: As countries are still in the process of denoting high-value datasets on their national portals and making them accessible for harvesting, properly denoted high-value datasets are only gradually becoming available on data.europa.eu.

European Commission

Unterstützung

Specifications
Publication of open and free-to-reuse data models, regularly updated and maintained.

Core Vocs | DCAT-AP | CPSV-AP

Pilots
Developing specific solutions for public administrations to scale up their interoperability maturity.

Modelling support | AI | Wikidata | LDES

Knowledge Hub
Training materials, guidelines and events to foster interoperability and share knowledge of its benefits.

Tools | Webinars | Learning materials

Core Vocabularies

Core Vocabularies are a cornerstone element of semantic interoperability. They provide a standardised approach for describing key concepts such as locations, businesses, organisations and natural persons.

Application Profiles

Application Profiles make use of vocabularies for a detailed set of use cases to define mandatory relations, constraints and relationships.

SEMIC Support Center: https://interoperable-europe.ec.europa.eu/collection/semic-support-centre

Unterstützung

SOME EU AI AND RELATED TOPICS REPORTS AND LEGISLATION SINCE 2018

1. **General Data Protection Regulation (GDPR)** - 2018
2. **Coordinated Plan on Artificial Intelligence** - 2018
3. **Ethics Guidelines for Trustworthy AI** – 2019
4. **Cybersecurity Act** - 2019
5. **White Paper on Artificial Intelligence** - 2020
6. **Report on the safety and liability implications of AI, IoT, and robotics** - 2020
7. **Digital Services Act (DSA)** - 2020
8. **Digital Markets Act (DMA)** - 2020
9. **European AI Strategy** – 2020
10. **EU Strategy for Data** – 2020
11. **Artificial Intelligence Act** – 2021
12. **AI Watch: Estimating AI Investments in the European Union** – 2022
13. **EU AI Act** – 2024
14. **Special report 08/2024: EU Artificial intelligence ambition** – 2024
15. **AI investment: EU and global indicators** – 2024

Bruce McCormack (EUROGI),
HOW GEOSPATIAL CAN HELP ADDRESS EUROPEAN, AND GLOBAL MAJOR CHALLENGS,
EUROGI Conference, Brussels, 21 November 2024

Aktivitäten

ISO & GeoDCAT-AP Pilot
Participants

Strongly advised: partnership and participation of Geospatial and Open Data Representatives

- **Member States**

  Contact points for the national geospatial catalogues, as users of GeoDCAT-AP to transform geospatial metadata.

  - Participants: BE – Flanders, CZ, DK, IT, FI, NL, ES, SK, FR

- **Publications Office of the European Union (OP) / European Data Portal** (data.europa.eu)

  Future receptor of GeoDCAT-AP metadata and transformation re-user.

- **DG DIGIT SEMIC group**

  Point of contact for resolving and contributing to solutions in case potential issues.

- **DG JRC**

  Organiser of the pilot, and provider of scientific & policy knowledge.

European Commission

https://wikis.ec.europa.eu/download/attachments/143438612/PRES4_MIG19_GeoDCAT-AP_v3.0_pilot-JRC-Jescriu.pdf?version=2&modificationDate=1732813408859&api=v2

Pilot Meetings

Past meetings

- **Pilot Kick-off Meeting** (2 October 2024)

  https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/tree/main/meetings/2024-10-02

- **Second Pilot Meeting** (20 November 2024)

  https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/tree/main/meetings/2024-11-20

Upcoming meetings

- **Third Pilot Meeting** (End January 2025)

  To be scheduled

https://wikis.ec.europa.eu/download/attachments/143438612/PRES4_MIG19_GeoDCAT-AP_v3.0_pilot-JRC-Jescriu.pdf?version=2&modificationDate=1732813408859&api=v2

Pilot Fortschritt Übersicht

TESTING	BE Flanders	DK	ES	FI	NL	SK	JRC	OP
Focus	XSLT & HVD reporting	XSLT	XSLT	XSLT & HVD reporting	SPEC / XSLT	SPEC / XSLT	SPEC / XSLT	XSLT
Resources	GeoNetwork GeoDCAT-AP plugin	Limited INSPIRE md records	~300 md records	~20 md records	NOT REPORTED	~1000 md records	Feedback GeoDCAT-AP 3 Limited INSPIRE-compliant md records	Selected Geo-catalogues
Status	ADVANCED	STARTED	STARTED	ADVANCED	ADVANCED	STARTED	STARTED	STARTED
Tools	GeoNetwork	Saxon	SEMIC PoC API (Previously)	XMLSpy / Command-line tool	Custom Python script	Custom tools	NOT SELECTED	DEU Geo-harvester
First Results	✓	✓	PENDING	✓	✓	✓	PENDING	PENDING
HVD tagging examples	✓	✓	✓	REUSED	✓	✓	N/A	N/A

Detaillierte Berichte unter:
https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/tree/main/meetings/2024-11-20/presentations

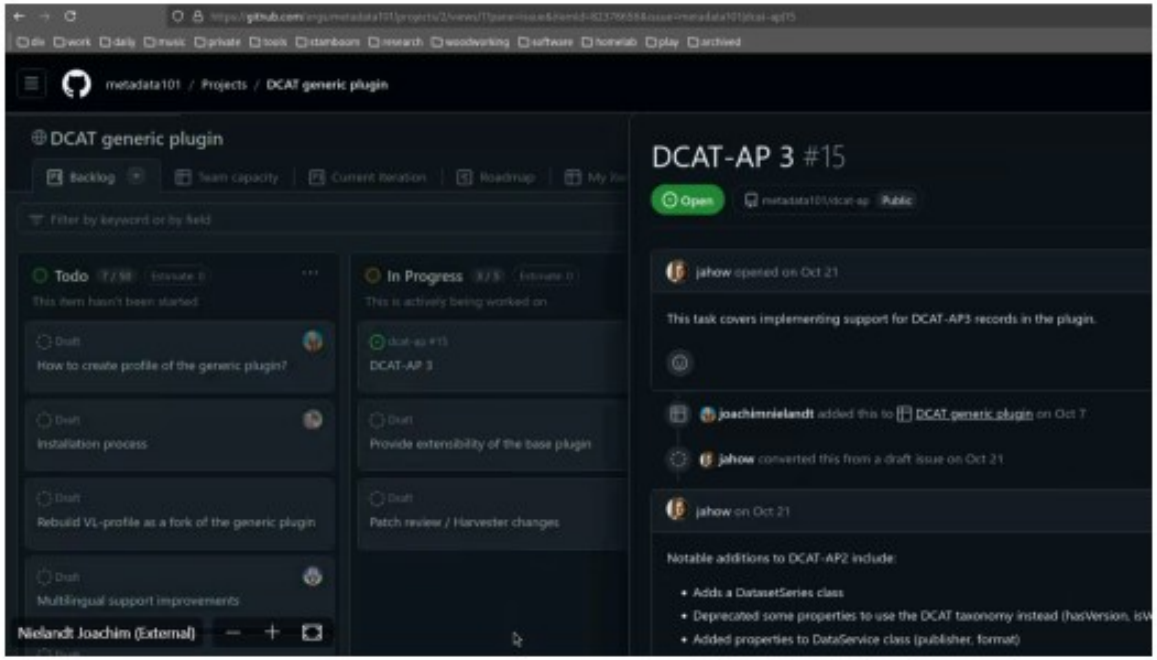
Pilot Fortschritt Highlights

	Looking forward
BE-Flanders	• GeoNetwork ready for GeoDCAT-AP • Concrete encoding examples (e.g. tagging in ISO & DCAT)
DK	• SEMIC PoC API updated to GeoDCAT-AP 3 • Shared tooling • Guidelines for HVD and license tagging
ES	• Concrete encoding examples • SEMIC PoC API updated to GeoDCAT-AP 3 • GeoNetwork support
FI	• Clarification on the role of the service metadata in HVD reporting • XSLT transformation API
NL	• Common basis for transformation approaches (XSLT, tagging, etc.)
SK	• Use-cases for GeoDCAT-AP 3 • EU & National tooling supporting GeoDCAT-AP 3
JRC	• Inventory of related good practices • Identify the best tools available to run the XSLT transformation
OP	• DEU Geo-harvester updated to GeoDCAT-AP 3 • How to filter HVDs in DEU

European Commission

Synergien

‘DCAT-AP schema plug-in integration in GeoNetwork & Testing Pilot GeoDCAT-AP’ WG



Steps

- **Sprint 3** (25-17 Nov. 2024):

  1st good practice candidate proposal, ready for testing.

- **Sprint 4** (09-11 Dec. 2024):

  Final discussions and good practice candidate agreement.

- **80th MIG-T** (13 Dec. 2024):

  Submit proposal for endorsement.

European Commission

INSPIRE GeoDCAT-AP Pilot Repository:
https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/

Zusammenfassend

Resümee

- Es kommt ein neuer **Technologielevel** und neue Fähigkeiten auf uns zu, denn es werden die Grundlagen für Geo-KI geschaffen
- Bedarf an **Steuerung (Governance) und Koordinierung** erhöht sich, z.B durch neue Rollen im gemeinsamen Datenraum (Weiterverarbeiter, Broker, ...)
- Die Methoden der **Service-Orientierten Architektur** sind weiterhin gültig, und damit die INSPIRE Umsetzung und Investitionen
- Die Bewertung der Basis-IT-Infrastruktur, der permanenten CyberSecurity Maßnahmen und der Betriebsaufwand fehlt im „Wunschkatalog“

Verwendete Quellen

- Alle Beiträge des MIG Meetings vom 28.11.2024, zu finden auf https://wikis.ec.europa.eu/display/InspireMIG/19th+INSPIRE+MIG+meeting+on+2024-11-28

- Beiträge der EuroGI Konferenz vom 21.11.2024 mit dem Titel „The role of geospatial in address major challenges facing Europe and EUROGI's 30th anniversary celebration“, zu finden unter https://eurogi.org/the-role-of-geospatial-in-address-major-challenges-facing-europe-and-eurogis-30th-anniversary-celebration/