



We
transform

WeTransform!

Erfahrungen mit unterschiedlichen Umsetzungen von hale connect

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December 2nd, 2021

INSPIRE Wien

- **Ein kurzer Rückblick auf 2021**
- **Neue Funktionen & Roadmap hale studio**
 - Benutzerfreundlichkeit, GeoPackage, Shapefile, ...
 - Modell- und Datentransformationen für alternative Schemas
- **Neue Funktionen & Roadmap hale connect**
 - Neue APIs
 - Skalierung, Aggregation,
- **Allgemeine Weiterentwicklung – von der GDI zu Datenräumen?**
 - Enjoy the ride: Next steps for hale studio and hale connect
 - Co-design the ride: The European Data Spaces Community
 - Questions & Answers
- **Diskussion**

EIN KURZER RÜCKBLICK

- **Umsetzung von INSPIRE schreitet voran**
 - Beispiel: Steigerung des Datenvolumens auf hale connect-Installationen von 0.5TB auf >30TB in zwei Jahren
- **Nutzung der Daten und Dienste nimmt stark zu**
 - Rekordmonat: Mehr als 150 Millionen Zugriffe
- **Es gibt aber immer noch einiges zu tun**
 - ~40% Erreichung der Indices
- **Reifegrad der Lösungen nimmt zu**
- **Neue Technologien werden “zugelassen”**

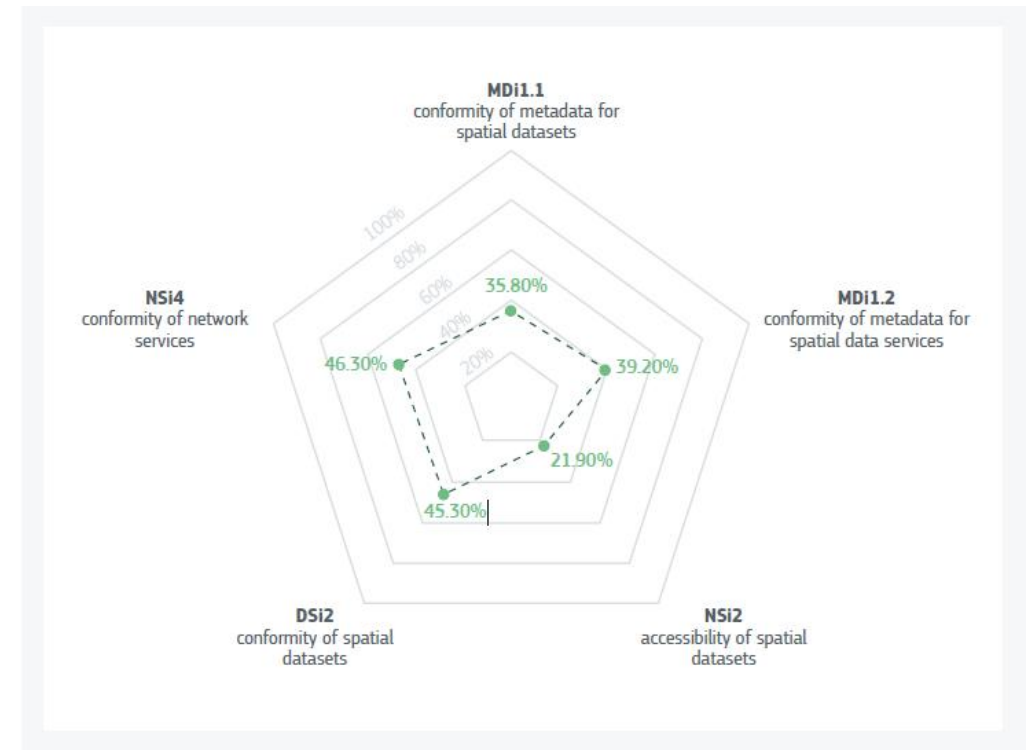


Figure 10. Spider graph representing the mean values of indicators MDi1.1, MDi1.2, NSi2, DSi2 and NSi4

Source: Minghini et al. (2020).

NEUE FUNKTIONEN hale»studio 4.1.0

→ Formate

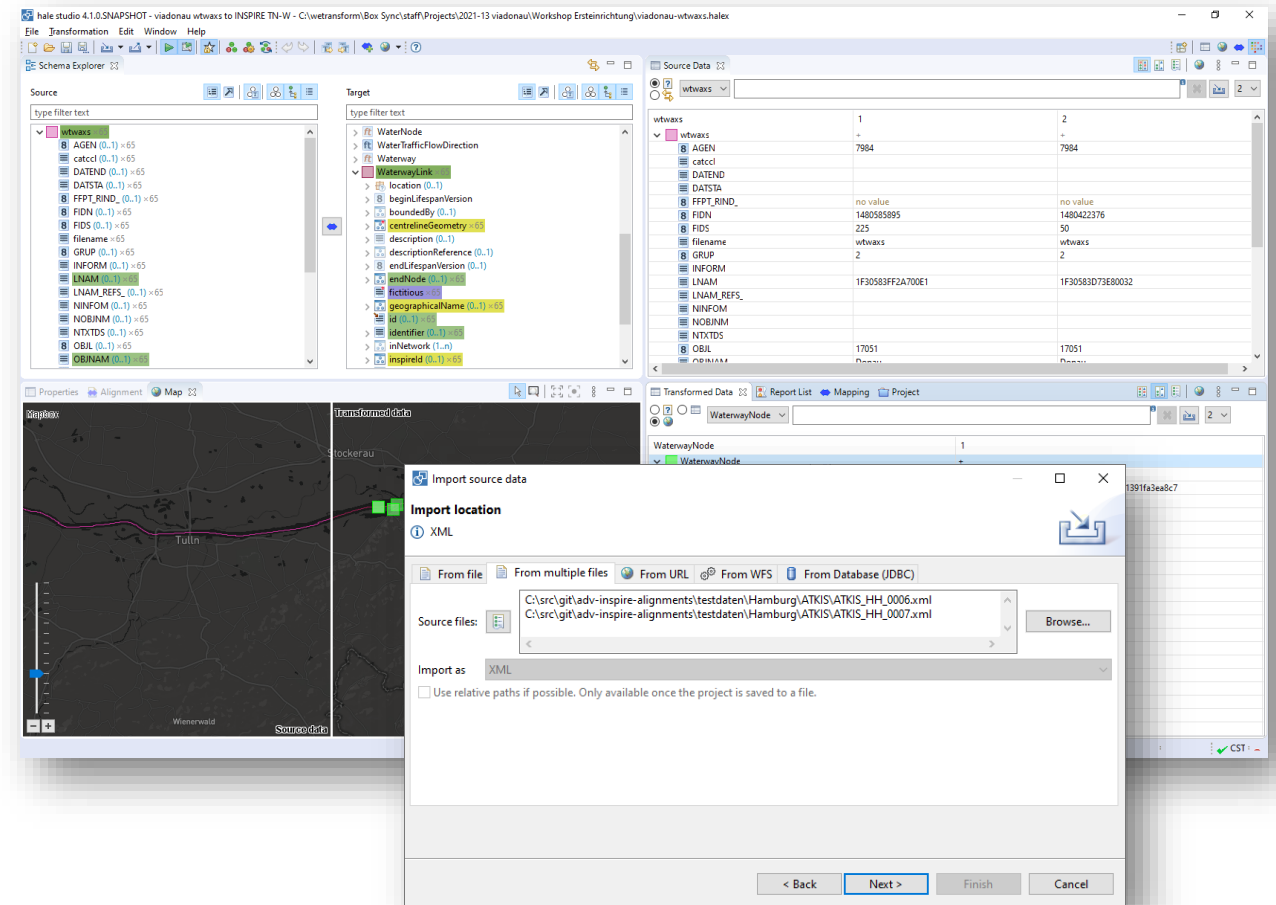
- Verbesserungen GeoPackage
- END-Presets
- Shapefile-Writer

→ Benutzerfreundlichkeit

- Laden mehrerer Datenquellen oder Schemadateien in einem Durchgang
- Löschen einzelner Schemas

→ Fehlerbehebungen

- Aktualisierungen XML-Schemalocations
- MacOS-Support (M1, neuere Versionen, *aber...*)



ROADMAP hale»studio 2022

→ **Formate**

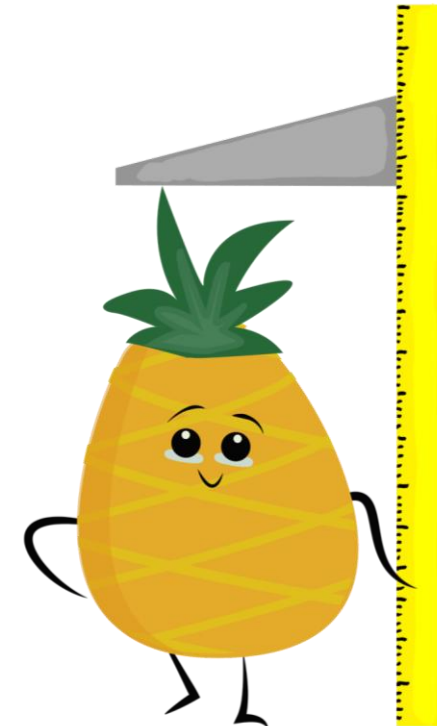
- MySQL Datenbanken (sicher, fast fertig)
- JSON Schema (ziemlich sicher)
- TopoJSON (wahrscheinlich)
- Verbesserung GeoJSON Reader/Writer
- Verbesserung GeoPackage (Views)

→ **Modellbasierte Transformationen**

- Ableitung von Schemata aus anderen Schemata
- Automatisierte Erzeugung von Transformationsprojekten, z.B. XML-Schema <> GeoPackage-Schema

→ **Fehlerbehebungen und anderes**

- Abschluss Migration auf JDK11
- Verbesserungen Joins



NEUE FUNKTIONEN hale»connect 2021.1 bis 2021.6

→ Formate und Schemas

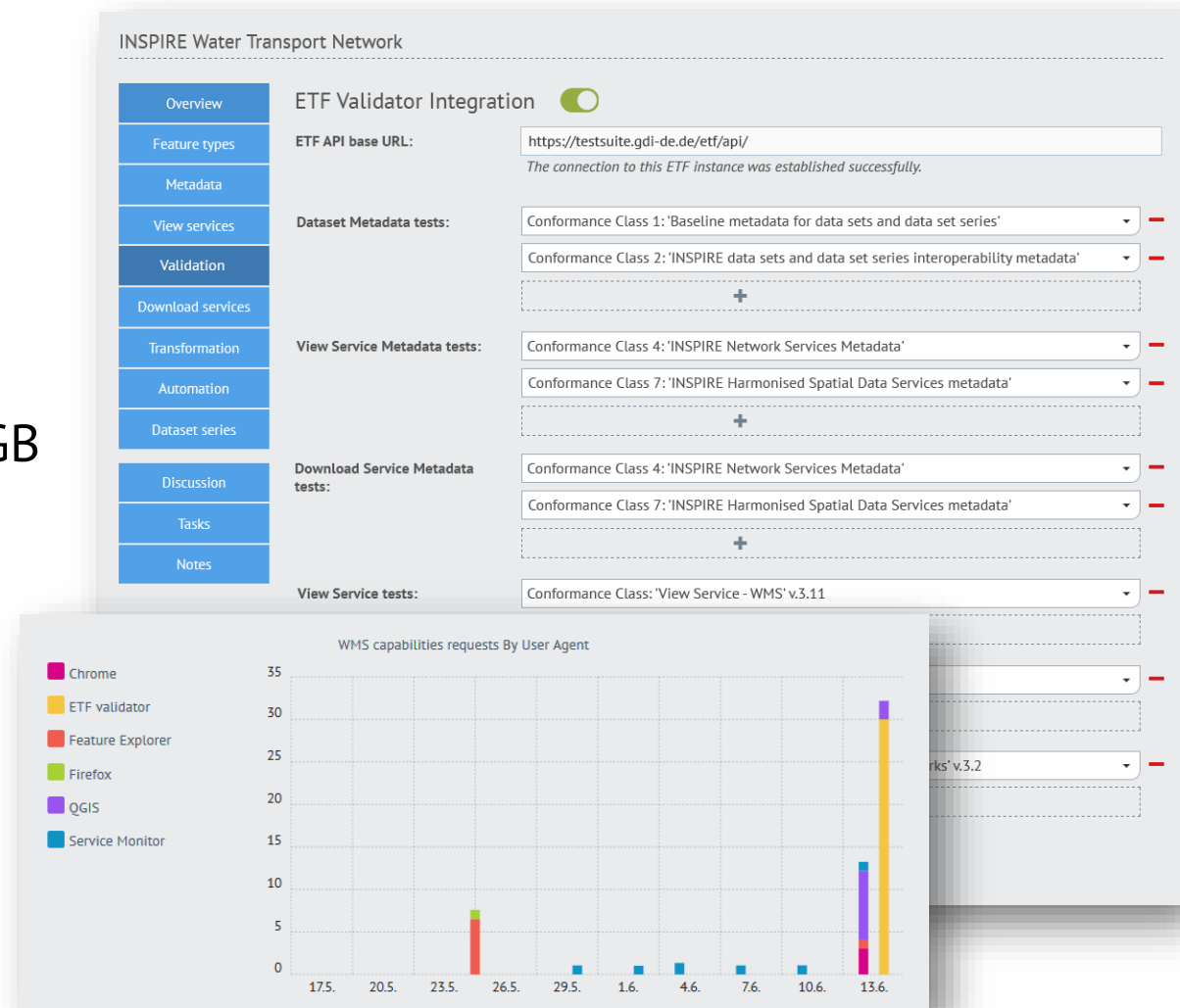
- GeoPackage als Quelle
- NetCDF als Quelle

→ Dienste und Integrationen

- TN-ITS
- Web Coverage Service (closed beta)
- Unterstützung für Datensätze bis 100GB Vektordaten oder 4TB Rasterdaten
- *Integration ETF-Validator (12/2021)*

→ Fehlerbehebungen und anderes

- Nutzungsstatistiken
- Korrekturen Metadaten
- Korrekturen Dienste
 - WMS GetLegendGraphic ☹️



ROADMAP hale»connect 2022

→ Formate und Schemas

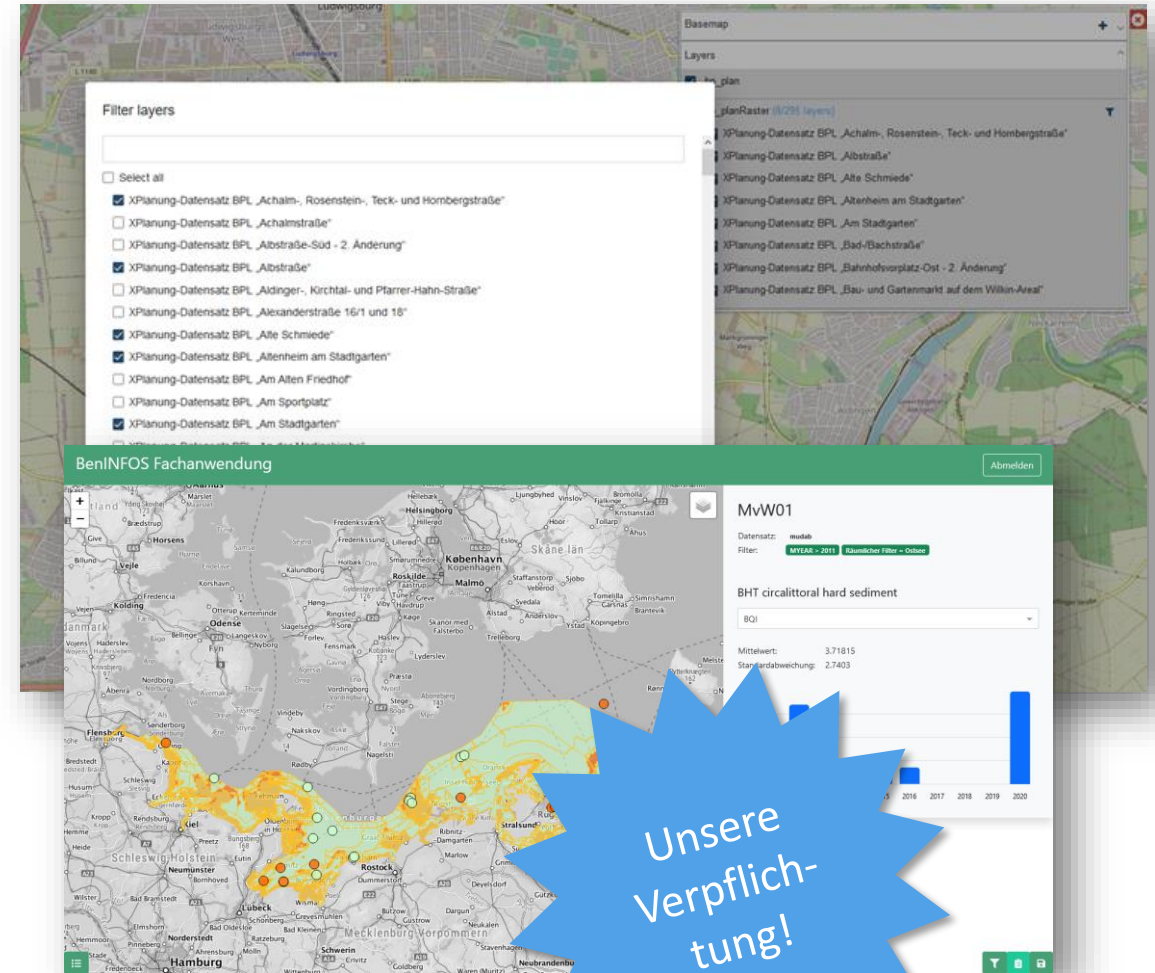
- GeoJSON/TopoJSON
- Modelltransformationen

→ Dienste und Integrationen

- Direkter Archiv-Download (01/2022)
- ...mit GeoPackage (02/2022)
- Feature API (03/2022)
- WCS 2.0 GA (03/2022)
- SAML/Oauth (02/2022)
- *STA? Records? STAC? ...*

→ Data Space – Proof of Concept

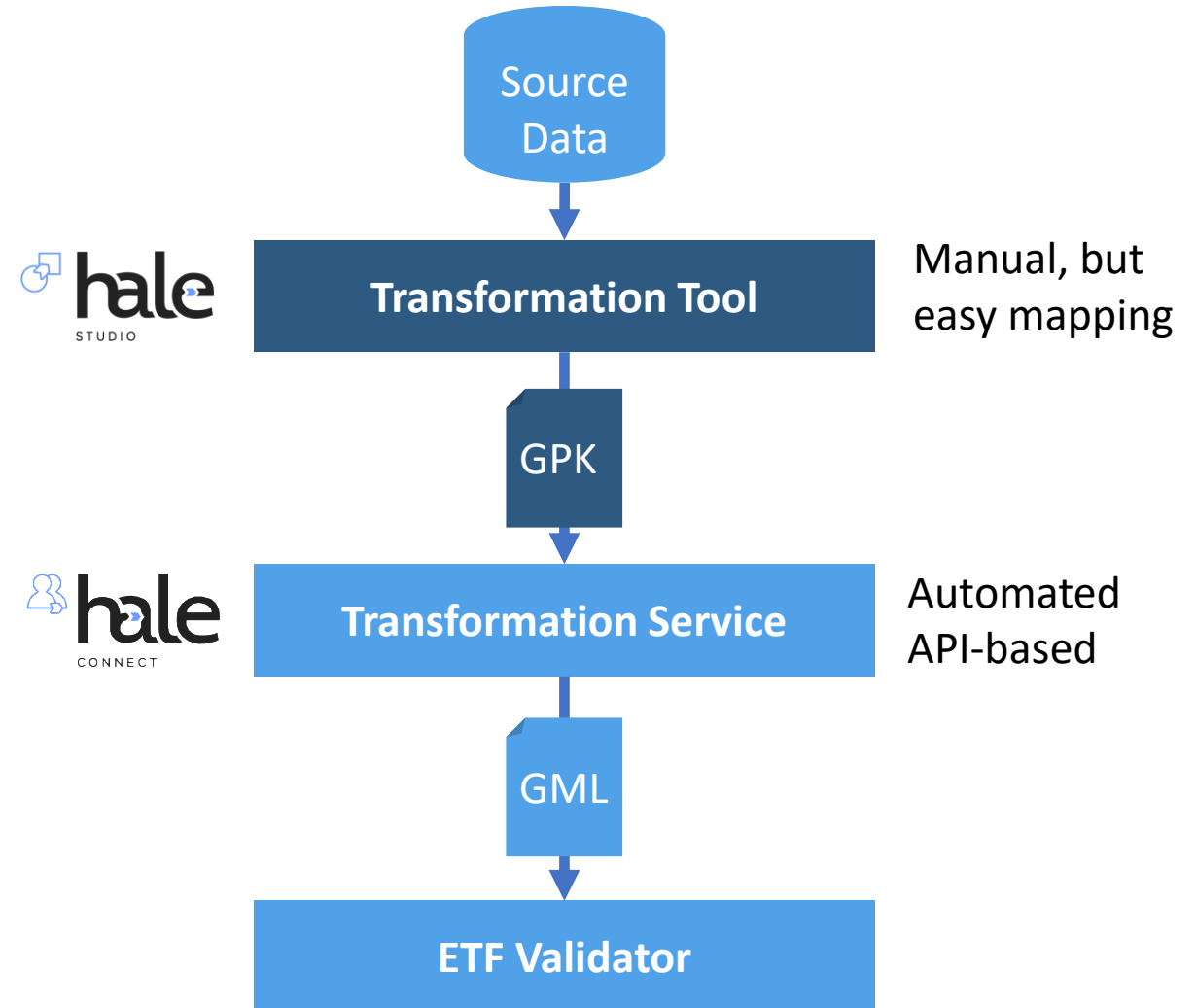
- Konfigurierbare Aggregation von Daten mehrerer Organisationen
- Festlegung Governance-Regeln



ALTERNATIVE FORMATE, MODELLE, COMPLIANCE

Theorie und Praxis

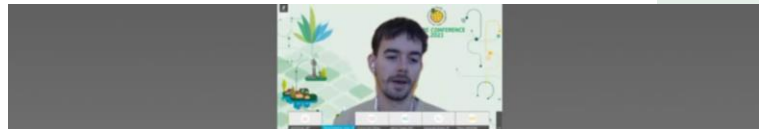
- **Alternative oder zusätzliche Encodings** wie GeoPackage und GeoJSON können Datennutzbarkeit verbessern
- INSPIRE-Compliance kann praktisch durch automatisierte Ableitung vom alternativen Encoding zum Default-Encoding belegt werden
- Eigentliche Tests in ETF werden auf Basis des Default encodings durchgeführt
- **Vereinfachte Schemas vereinfachen auch die Harmonisierung** (für einfache Quelldatensätze)



VON INSPIRE ZU DATA SPACES

“Accessible and interoperable data are at the heart of data-driven innovation.”

-The European Green Deal



Building government data in the EU - overview

- Disclaimer: not only INSPIRE but open government building data in the EU
- How complete?
 - 80% coverage for footprints
 - low to very low for most attributes
 - INSPIRE is the most comprehensive resource

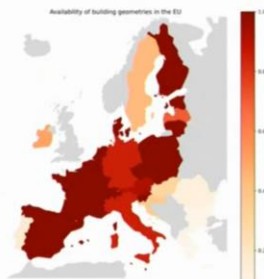


Fig: own

“Digital technologies are a critical enabler for attaining the sustainability goals of the Green deal in many different sectors.”

-The European Green Deal



JRC SCIENCE FOR POLICY REPORT

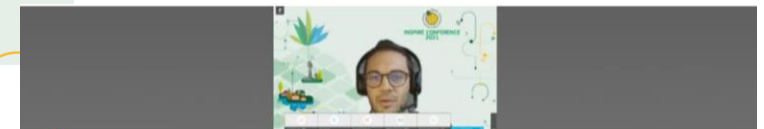
INSPIRE • A Public Sector Contribution to the European Green Deal Data Space

A vision for the technological evolution of Europe's Spatial Data Infrastructures for 2030

Alexander Kotsev, Marco Minghini, Vlado Cetl, Friso Penninga, Joeri Robbrecht, Michael Lutz

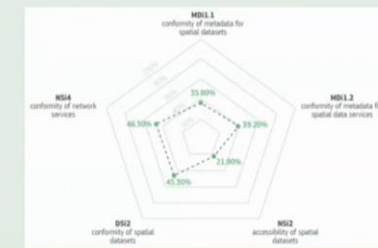
“Data is central to the digital transformation of our societies and economies.”

-JRC Science for Policy Report



Data availability, accessibility & conformity

- INSPIRE implementation still heterogeneous across Member States
- no single country has yet reached full implementation!

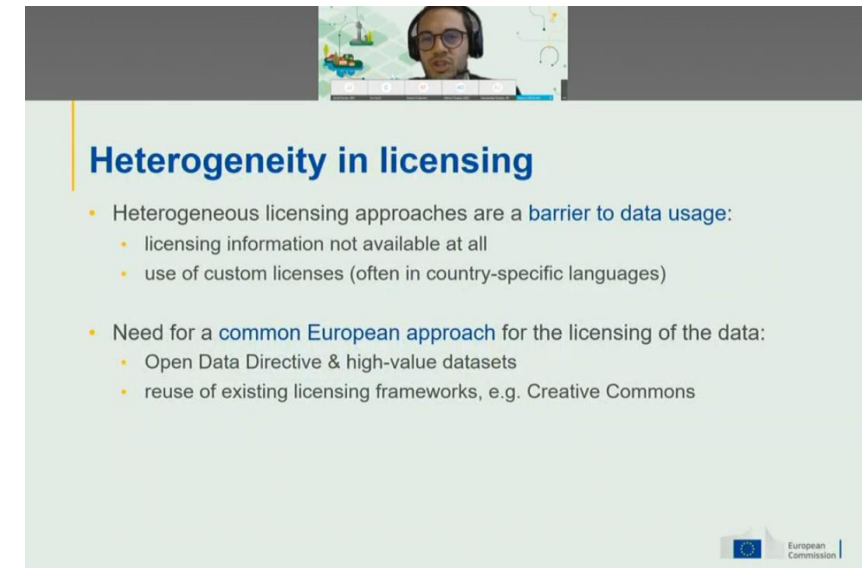


Mean values of indicators MDI1.1, MDI1.2, DS2, NS4 and NS2 calculated in the 2019 INSPIRE Monitoring and Reporting.

EFFEKTIVERE “GOVERNANCE”

Einzelne Projekte → Community-getriebene Infrastruktur

- Prioritäten setzen und Synergien ausnutzen
- Standardisierte, maschinenlesbare Datenlizenzen festlegen
- Good Practices ermöglichen und unterstützen
- Denken in Infrastruktur
 - Neue **Cloud-Infrastrukturen** wie GAIA-X und robuste, automatisierte **SaaS** ermöglichen eine wesentlich schnellere Umsetzung sowie den langfristigen Betrieb und die Wartung.
 - *“wir brauchen keine neuen Versionen”*



Heterogeneity in licensing

- Heterogeneous licensing approaches are a **barrier to data usage**:
 - licensing information not available at all
 - use of custom licenses (often in country-specific languages)
- Need for a **common European approach** for the licensing of the data:
 - Open Data Directive & high-value datasets
 - reuse of existing licensing frameworks, e.g. Creative Commons

European Commission

Why do we need Gaia-X and what is the added benefit?

- **Data availability:** We need a trustworthy, secure and transparent data infrastructure that can be used to exchange and process data. This is the only way we can use the economies of scale created by the availability of large data sets in Europe.
- **Innovation:** We need a digital ecosystem that allows for the development of innovative products and helps European companies and business models scale up and be globally competitive. Gaia-X provides the basis for this.
- **Data sovereignty:** Existing cloud offerings are currently dominated by non-European providers, that are able to rapidly scale their infrastructure, and that hold significant market power and large amounts of capital. At the same time, we are seeing growing international tensions and trade conflicts across the globe. *Europe needs to ensure that it can establish and maintain digital sovereignty permanently.*

<https://www.gaia-x.eu/faqs>

WAS IST NEU AN DATENRÄUMEN?

Verfügbarkeit von Daten für kritische Entscheidungsprozesse verbessern

- Ein Datenraum **aggregiert Daten** verschiedener Eigentümer und beinhaltet vertrauenswürdige **Verarbeitungsdienste**
- Ein Datenraum kann nur dann einen Mehrwert bieten, wenn die **Datenlücke** verstanden wird
- Datenräume können insbesondere **nicht-offene** Daten nutzbar und zugänglich machen
- Datenräume können die Grundlage für **standardisierte Lösungen** sein, und somit wesentliche größere Auswirkungen haben

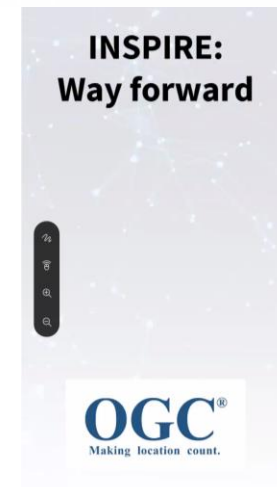
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Seite 3
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Open Standards Evolution

- **Harmonization:** open standards bridge gaps between open source and proprietary environments
- **Technology:** open standards are evolving to embrace current IT trends: alternate encodings, REST services, scalable cloud architectures and disconnected local data packages
- **Community:** active participation in open standards community allows technology to be developed in a more collaborative environment.



Any questions?
Reach out to us!

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The Zen of INSPIRE

DEFINING THE “MYTHICAL BEAST”

Join the Environmental Data Spaces Community

- To make decisions that make sense economically, but also help improve biodiversity and resilience, access to environmental and spatial data will be essential
- With the EDSC, wetransform wants to support the establishment of environmental data ecosystems
- Members of this community include public authorities, industrial, and academic organisations
- Together, we will make environmental data accessible in a data space that ensures data sovereignty
- **Join to define requirements, as a proof of concept validator or proof of concept partner**



INSPIRE GOOD PRACTICES

Work with the community to move things ahead

- Much more responsibility now lies on the community
- Initiatives, Funding, Roadmaps/Timetables
- You want or need a change? Let's work together to make it happen
 - Specification
 - Proof of Implementation
- Good Practice Initiatives need:
 - Expert Technical Support (Academia, Industry)
 - Subject matter experts
 - Funding and implementing organisations

