WeTransform!

INSPIRE implementations across Europe

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June 30th, 2022

2. INSPIRE ESPUS Konferenciu

wetransform in a Nutshell

Who are we and for whom do we work?

- Based in Darmstadt, Germany
- Mission: Building Green Data Ecosystems
- More than 120 customers, over 4,000 users
- hale»studio: OS software for data transformation
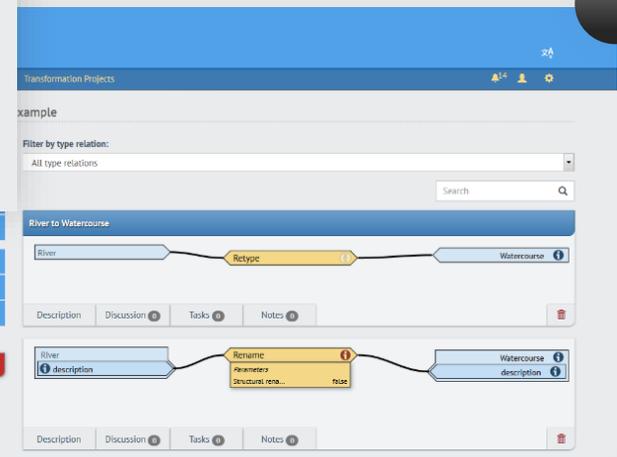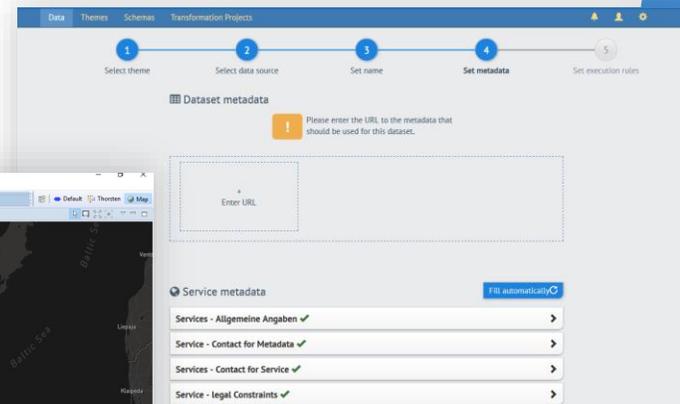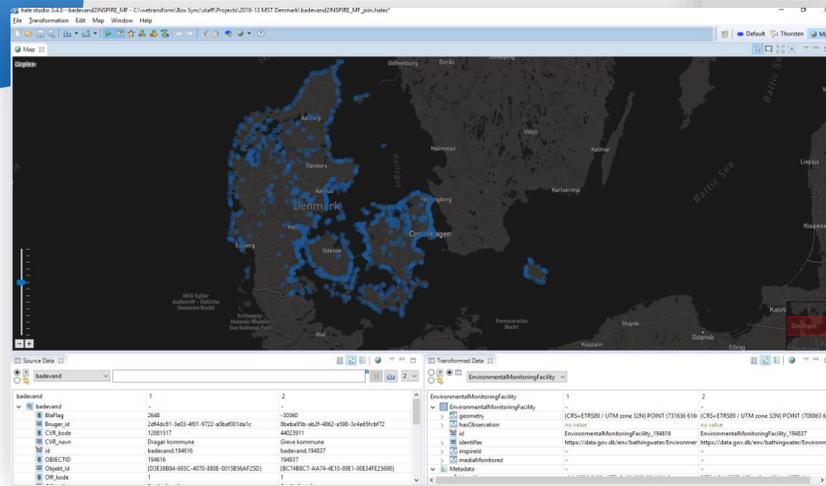- hale»connect: Integrated & automated (INSPIRE) data platform

Simon   Thorsten   John   Claudia   Livia   Kapil   Flaminia

Akshat   Johanna   Kate   Florian   Franziska   Christopher   Satish

INSPIRE AS A SERVICE – SINCE 2015

1.200+ organisations, 90.000+ INSPIRE Network Services

Key Benefits

Fully Automated Publishing and Simple Harmonisation reduce effort by 80 to 95%

Continuous Maintenance and High Availability Guarantee Compliance

New APIs, Models, Sharing Rules and Formats can be automatically added

INSPIRE DEPLOYMENTS AT SCALE

Public Cloud x2:

- Shared Cluster (AWS FRA)
- No customisation
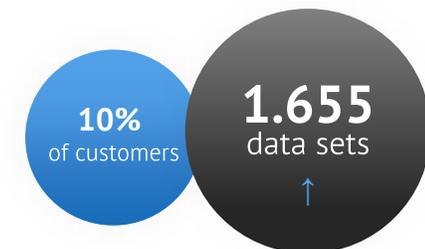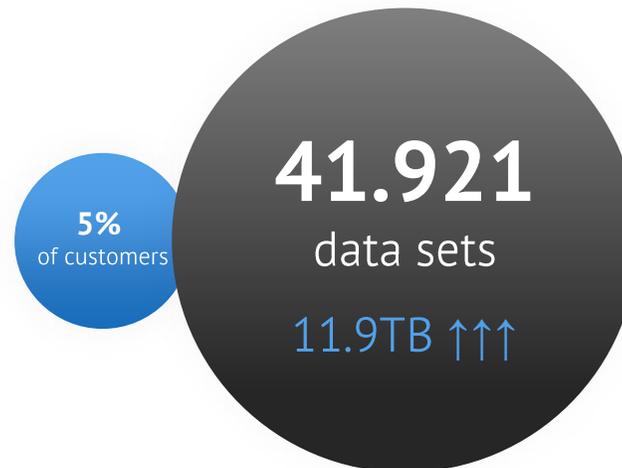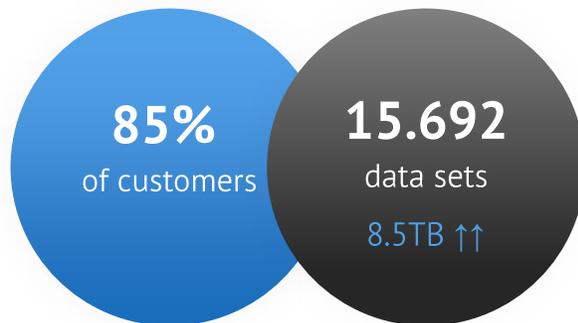- Hosting and Management by wetransform with INSPIRE SLA

Private Cloud x3:

- Exclusive Server or Cluster
- Customisation possible
- Management by wetransform with INSPIRE SLA

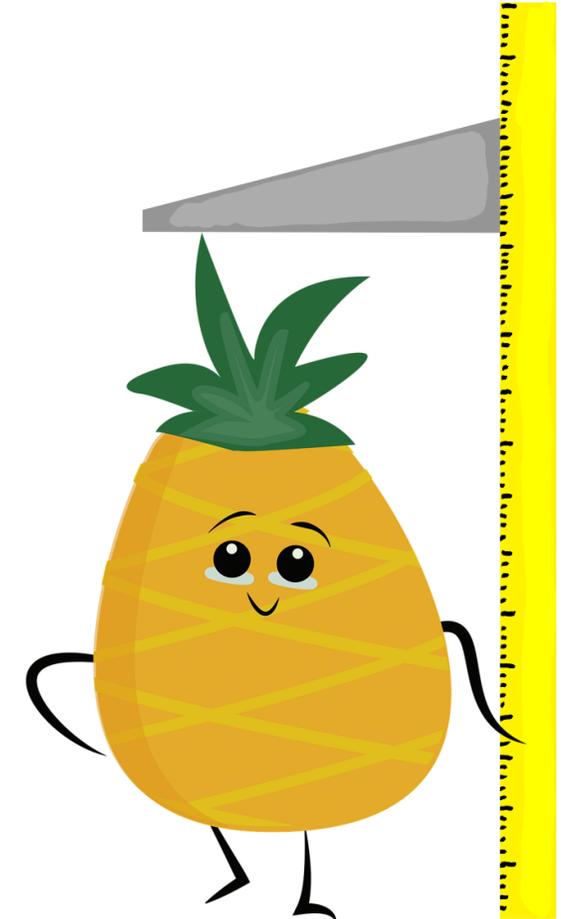## On Premise x8:

- Customer Datacenter
- Customisation possible
- Hosting and Management by customer
- Maintenance by Wetransform

85% of customers

15.692 data sets
8.5TB ↑↑

5% of customers

41.921 data sets
11.9TB ↑↑↑

10% of customers
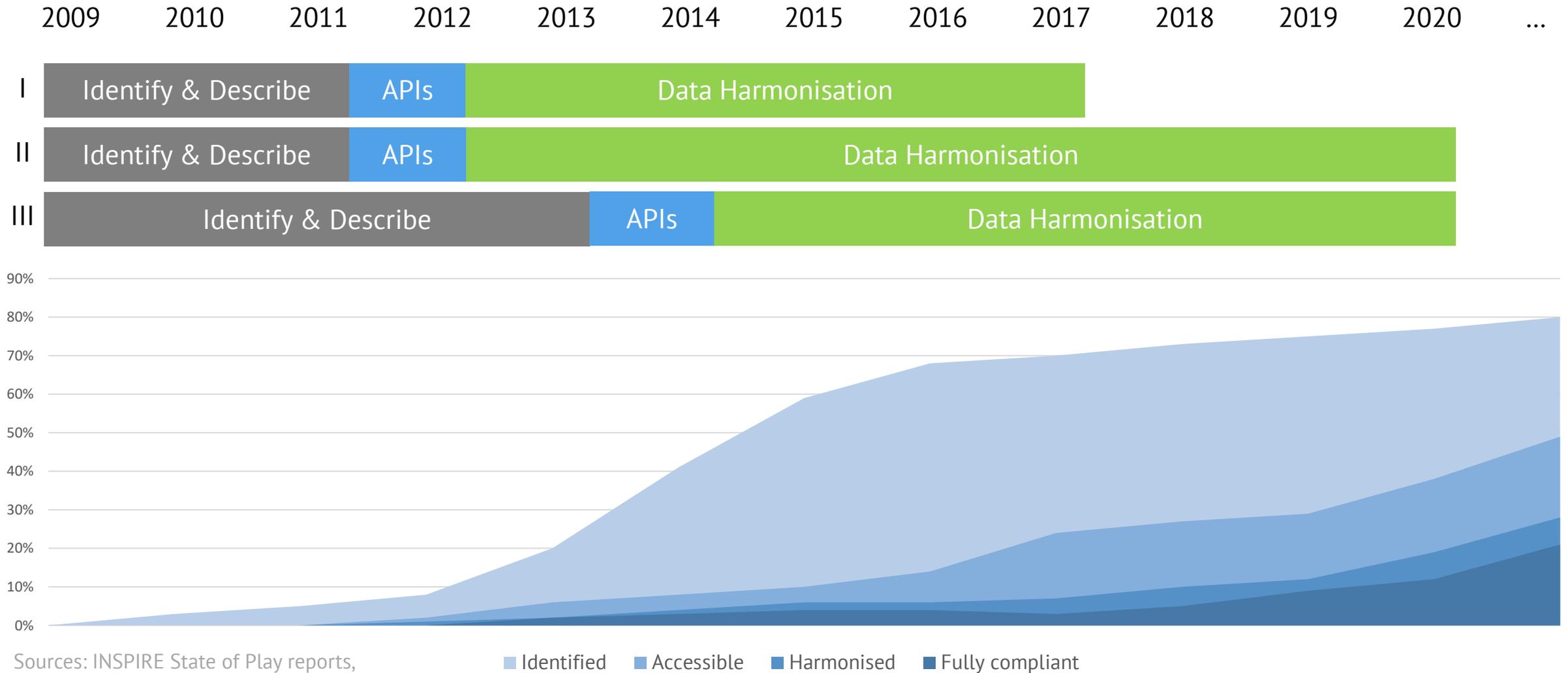
1.655 data sets
↑

AGENDA

→ **The State of INSPIRE Today, and the Way Forward**
- → Implementation State
- → Patterns of Success
- → Challenges

→ **The Future of INSPIRE**
- → Effective Governance
- → Technology Stacks and Maintenance of Technical Specifications

→ **Usage of INSPIRE Resources to Generate Value**
- → Cross-domain Problem Solving
- → Keeping up with the Environment

THE STATE OF INSPIRE TODAY

we
transform

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | ... |

I | Identify & Describe | APIs | Data Harmonisation

II | Identify & Describe | APIs | Data Harmonisation

III | Identify & Describe | APIs | Data Harmonisation

90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

■ Identified   ■ Accessible   ■ Harmonised   ■ Fully compliant

EXAMPLE 1: GDI SÜDHESSEN

Objectives

- Improve data exchange between 250 municipalities in southern Hessen.
- Make it easy to comply with GDI-DE and INSPIRE requirements for non-experts
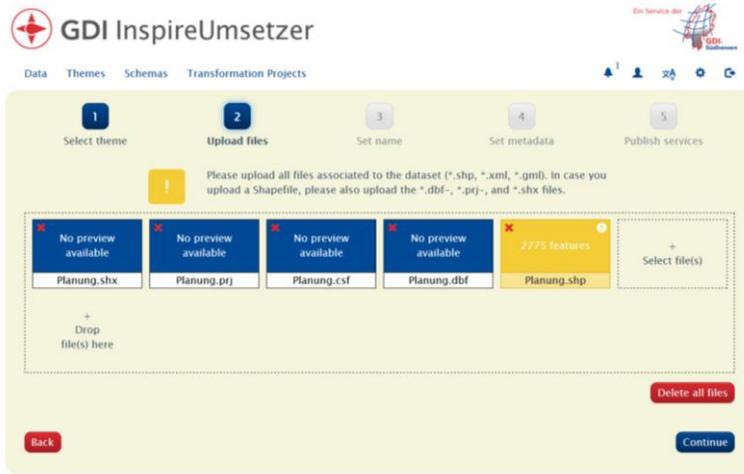
Synergies

- Comply with national standards such as ISYBAU, XPlan and international ones such as INSPIRE.
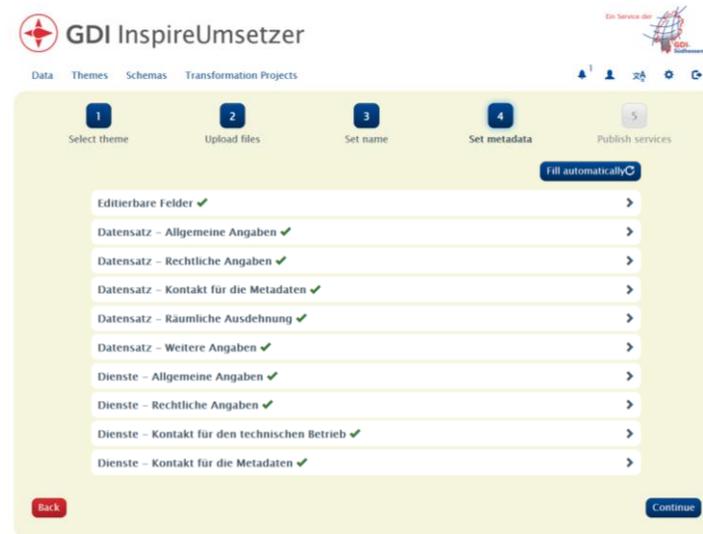
Technologies

- Local, simple data standards
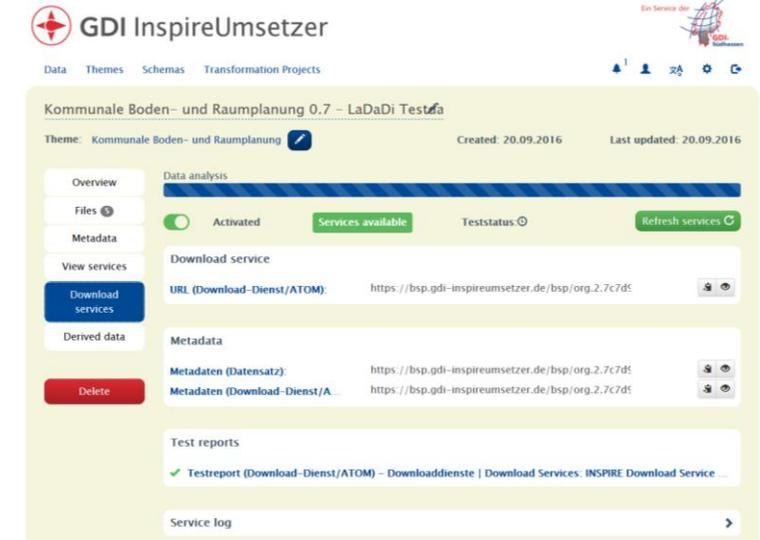- Automate metadata, transformation and publication with hale connect private cloud

EXAMPLE 1: GDI SÜDHESSEN - PROCESS

1. Upload files in simple model

2. Generate Metadata

3. Use Services

EXAMPLE 2: RIVM NL / END
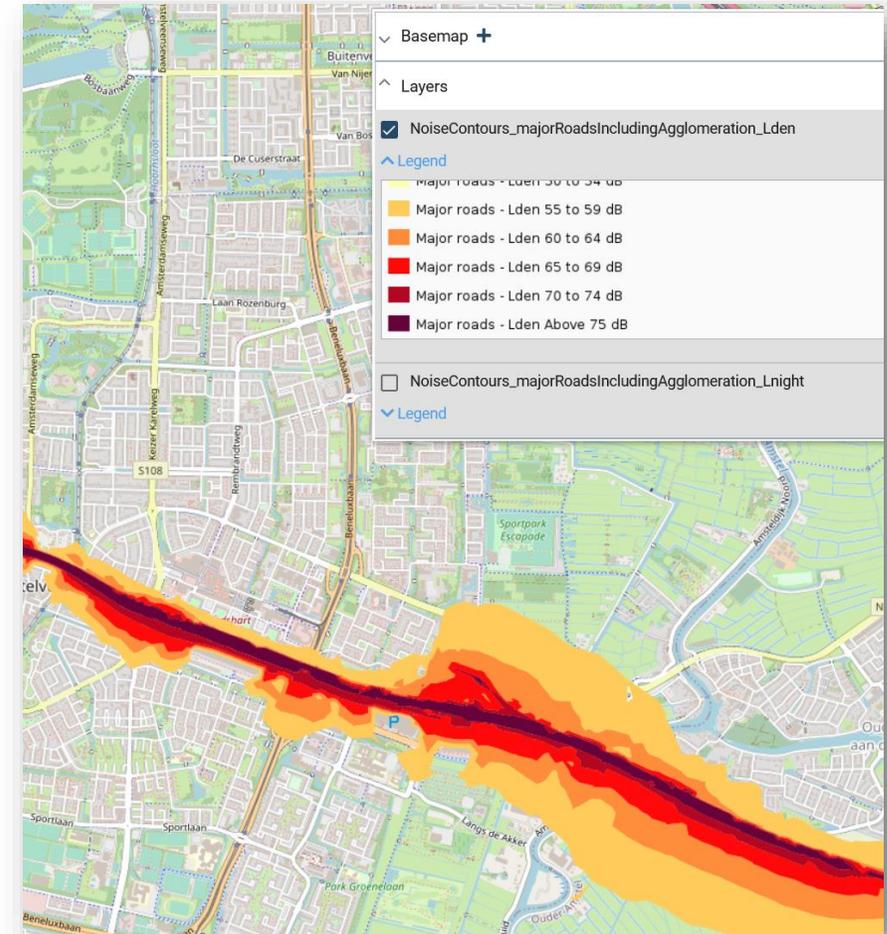
Objectives
- Collect Data for Noise Reporting from 99 constituents
- Be compliant with INSPIRE with the same resources

Synergies
- Apply new reporting approach to get INSPIRE compliance without additional effort

Technologies
- Use Geopackage templates with a relatively simple model
- Automate validation, aggregation, metadata, and publication with hale connect public cloud

EXAMPLE 3: KOMM.ONE

Objectives

- Enable 1.101 municipalities to publish their land use plans compliant with INSPIRE and XPlanGML
- Scale to very large numbers of public and professional users

Synergies

- END, XPlanung, INSPIRE PLU, and others are always covered from one input data set

Technologies

- Apply standard processes and clear handover points to scale to ~70.000 data sets
- Automatically scale cloud deployment as needed

Up to 150M views per month
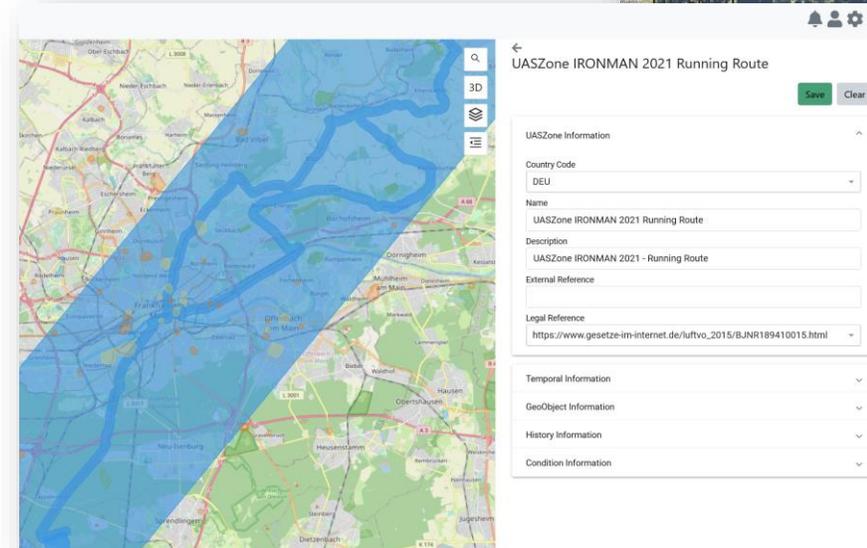
EXAMPLE 4: DFS fAIRport

Objectives

- Provide a unified Dataset of "GeoZones" for UAV Operators in Germany
- Expand data set to include FABs in neighbouring countries

Synergies

- Re-Use INSPIRE data, e.g. protected sites, as input
- Provide data in various standards such as ED-269, INSPIRE, …

Technologies

- Integrate INSPIRE data sets into internal model using hale studio
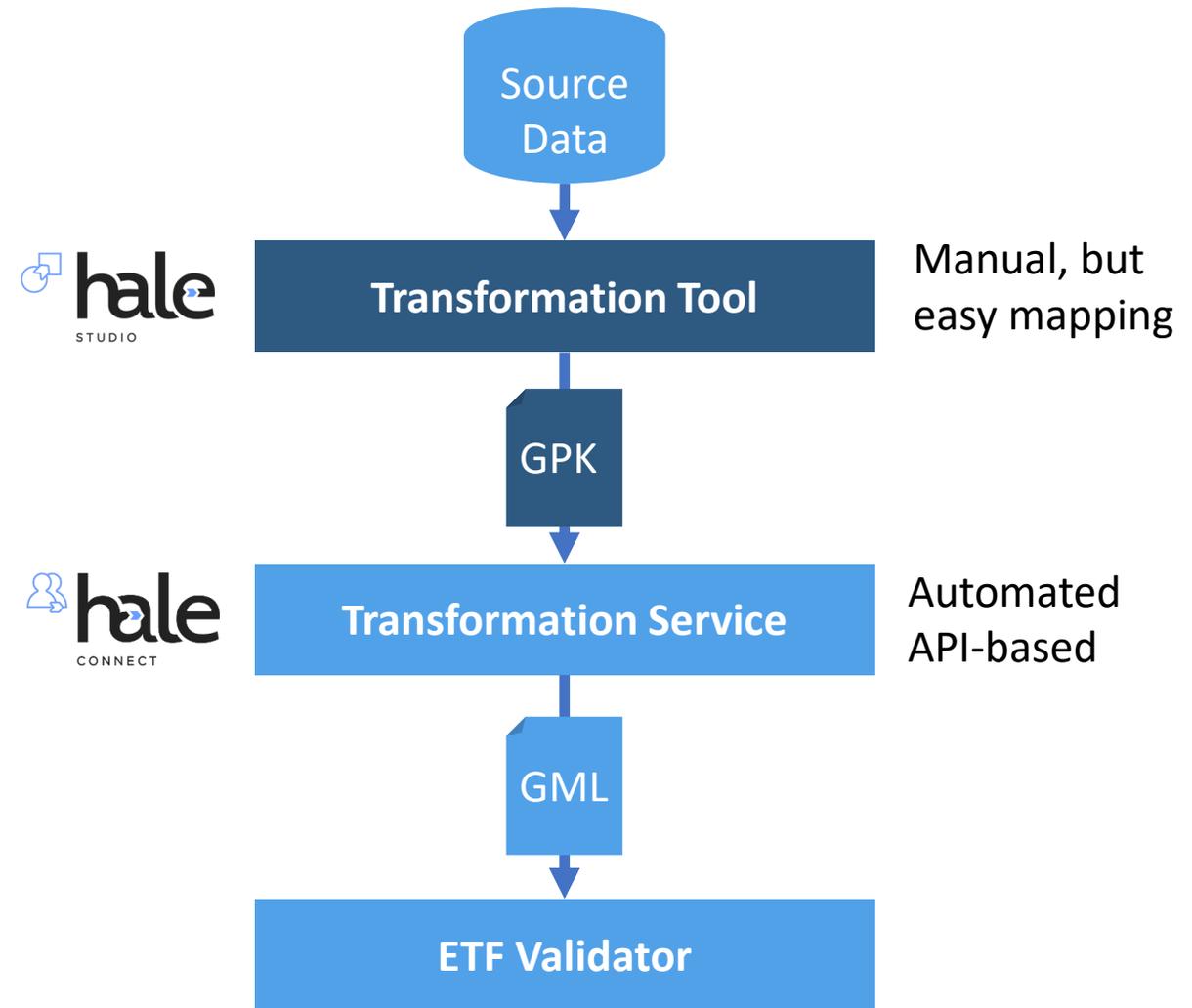- Enable municipalities to collect/edit such data

PATTERNS OF SUCCESS

Strategy

- **Identify synergies** to other reporting obligations and data standards
- **Ensure funding and commitment** for infrastructure, not for a project
- Clear approach to **licensing and usage** of non-open data
- Ensure **effective procurement** processes

Technology

- **Choose** instead of **build**
- Work with **simple data and metadata** profiles
- Adopt standard, **easy to learn processes**
- When possible, go **Cloud First**
- **Automate, automate, automate…**

Source Data

hale STUDIO — **Transformation Tool** — Manual, but easy mapping

GPK

hale CONNECT — **Transformation Service** — Automated API-based

GML

ETF Validator

MORE EFFECTIVE GOVERNANCE

→ Organisational Priorities
- Identify **synergies** and **collaboration potentials**
- Make sure long-term budgets are available for **operating and improving** the infrastructure

→ Data Licensing
- Apply **standard (open) licenses** or formulate clear usage conditions, ideally **machine-readable**.

→ From Project to Infrastructure
- Harness new **cloud infrastructures** such as GAIA-X and robust, automated **SaaS** instead of inventing individual solutions again and again.
- Deploy effective and efficient solutions that **support wide ranges of applications** through commitments to open standards

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

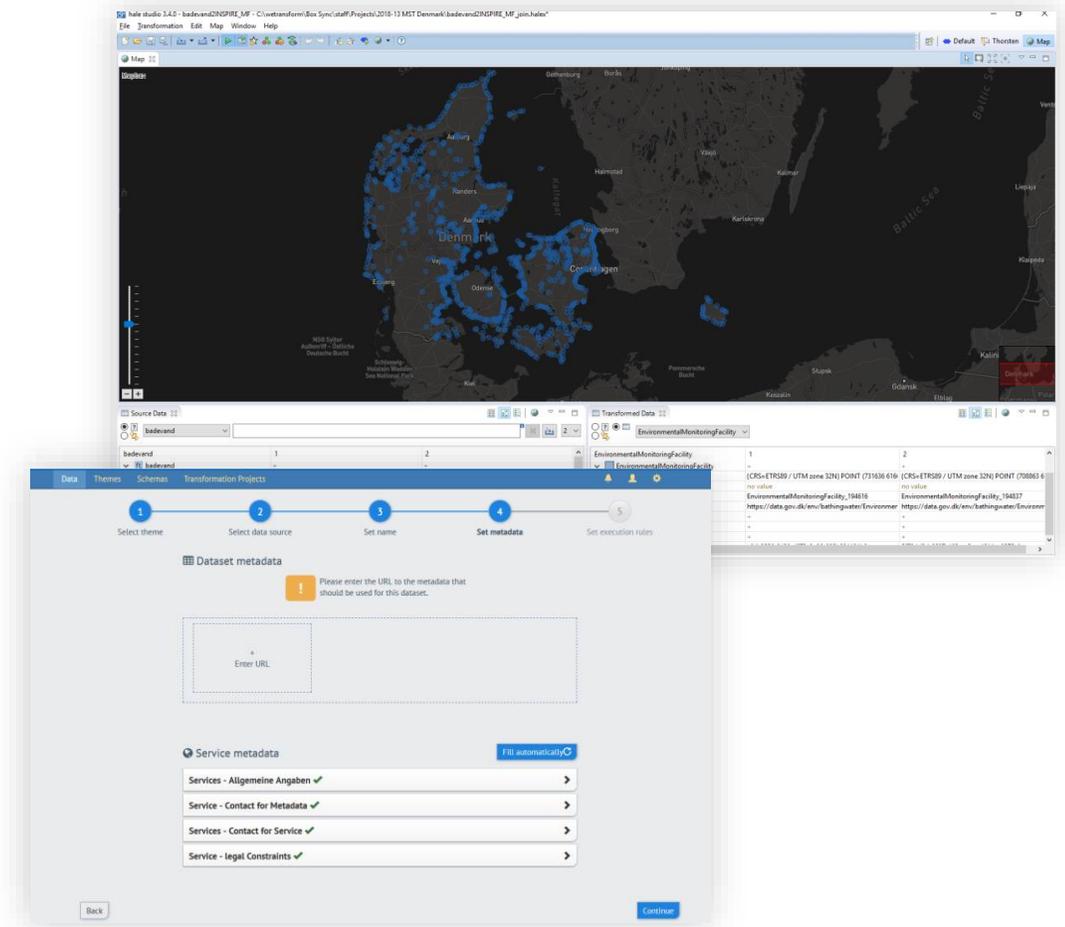**Why do we need Gaia-X and what is the added benefit?**

- **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

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INSPIRE GOOD PRACTICES
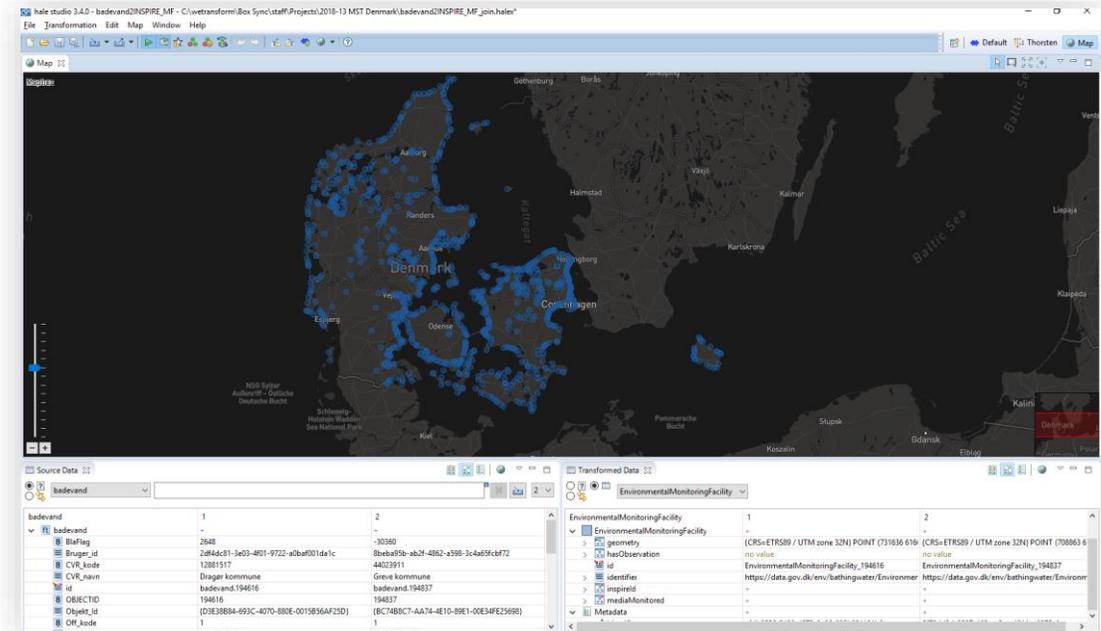
Work with the community to move things ahead

→ 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 (Acadamia, Industry)
    → Subject matter experts
    → Funding and implementing organisations

TOOLS AND PROCESSES

Our Commitment: All changes will be implemented in our platform

→ wetransform distributes development and operations costs across many clients, making hale connect **the most cost-efficient solution** for INSPIRE and Green Deal Data Spaces.

→ hale»studio: General support for alternative encodings (4.1.0) and model transformations (4.2.0+)

→ hale»connect:
  → OGC WCS: Q4/2021 (Beta: RWS, HVBG, AdV, …)
  → TN-ITS: Q4/2021 (Production)
  → OGC API-F: Q1/2022
  → OGC STA: Q2/2022

On Premise   **SAAS**   **Private Cloud**

FROM INSPIRE TODAY TO TOMORROW

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

-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

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
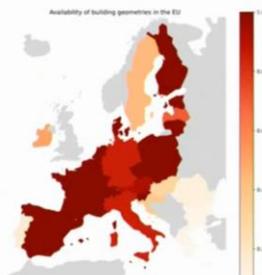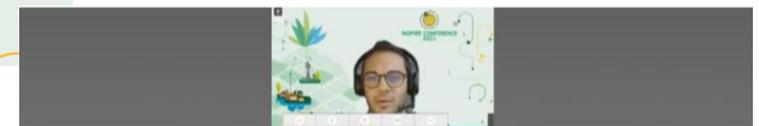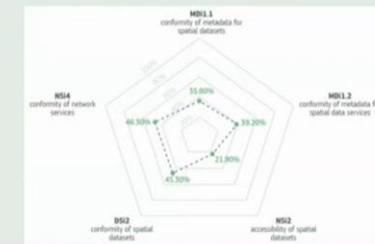 - INSPIRE is the most comprehensive resource

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

-The European Green Deal

Data availability, accessibility & conformity

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

MORE QUESTIONS ARE RISING

Environmental issues are getting attention

How can we reduce soil loss?

How can we improve biodiversity?

How can we reduce noise?

How can we reduce flood impact?

How can forests adapt to climate change?

How can we reduce respiratory disease from air pollution?

DATA-DRIVEN DECISION MAKING

Availability of high-quality data powers the Green Deal

→ We need to understand the **data gaps** that need to be overcome between what INSPIRE already provides and what is needed to solve critical problems

→ We need to make respective data available at scale, in **data spaces** that also include relevant non-open data

→ We need to encourage building standard apps and smart services that can be applied **across the EU**, not just locally, to have much greater impact
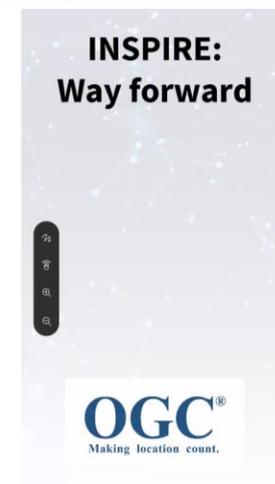
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https://www.gaia-x.eu/faqs

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INSPIRE: Way forward

OGC®
Making location count.

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.

GENERATE VALUE WITH DATA SPACES

Tech keeps pace with environmental change

→ INSPIRE-compliant data is the type of harmonised data that provides great value to **Green Data Spaces**

→ As a trusted environment for sharing and processing data, data spaces can go **beyond open data** and prevent you missing out on valuable insights.

→ Utilising these harmonised data pools can cut up to 80% of **research effort**, for example in Machine Learning & AI projects

→ This enables fast-paced **data-driven** innovation

BUILDING THE FUTURE

INSPIRE lays the foundation, to build Data Spaces we'll need to...

→ Establish working **governance rules** and structures for **data spaces**

→ Re-use the **conceptual data models**

→ Build on top of **established APIs** (WMS, WFS, STA, OAF, ...) from the Geospatial community and from the IDSA/GAIA-X community

"We do have a template for the European Data Spaces, and it is INSPIRE"

Hugo de Groof, DG ENV

The Zen of INSPIRE

Any questions?
Reach out to us!

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