Search and evaluation of data in an SDI

• Open the geoportal in a web browser

Prior-knowledge about geoportals required, most people search with a search engine
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• Enter search text and potentially structured search criteria
• Browse the metadata records and select a result you want to investigate further

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- Review of the metadata

INSPIRE (ISO 19115) metadata is for GIS specialists, hard to understand for most
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- Follow the link to the “download service”

Prior-knowledge required, what a download service is and what to do with a WFS capabilities XML document
Search and evaluation of data in an SDI

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- Review of the metadata
- Copy the WFS GetCapabilities URL
- Open a WFS client, connect to the WFS and access the data

You need a specific application to access and review the data as the WFS capabilities document does not include links to the data itself – non-specialists will typically do not one and the XML does not help to find one
Search and evaluation of data in an SDI

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- Navigate to search
- Enter search text and potentially structured search criteria
- Browse the metadata records and select a result you want to investigate further
- Review of the metadata
- Copy the WFS GetCapabilities URL
- Open a WFS client, access the data
- Analyse the dataset → Use

Spatial data is often hard to understand for those not familiar with the dataset – additional thematic and technical documentation is needed to understand it – but no links to these documents are available
Searching data: typical expectations

• Enter search criteria for the desired data in the address/search bar of the browser
• Browse through the first results and check, if one of them seems to provide the desired data or refers to it
• Browse through the dataset to determine, if it has the desired information
• If yes, download the complete dataset or study the online API documentation and examples for accessing the data
• Use the data in your application using freely available and well documented libraries and APIs

→ Use the standard tools of the target platform – in this case: the Web search engines, browser, HTTP, delegation to applications using media types, etc.
4. Best Practices Summary

This document contains a variety of best practices related to the publication and usage of spatial data on the Web. First, it continues with several more in-depth introductions on Spatial Things and geometry, coverages, spatial relations, coordinate reference systems, linked data, and Spatial Data Infrastructures. After that, the best practices themselves are described.

The following best practices can be found in this document:

Best Practices Summary:

- **Best Practice 1:** Use globally unique persistent HTTP URIs for Spatial Things
- **Best Practice 2:** Make your spatial data indexable by search engines
- **Best Practice 3:** Link resources together to create the Web of data
- **Best Practice 4:** Use spatial data encodings that match your target audience
- **Best Practice 5:** Provide geometries on the Web in a usable way
- **Best Practice 6:** Provide geometries at the right level of accuracy, precision, and size
- **Best Practice 7:** Choose coordinate reference systems to suit your user's applications
- **Best Practice 8:** State how coordinate values are encoded
- **Best Practice 9:** Describe relative positioning
- **Best Practice 10:** Use appropriate relation types to link Spatial Things
- **Best Practice 11:** Provide information on the changing nature of spatial things
- **Best Practice 12:** Expose spatial data through convenience APIs
- **Best Practice 13:** Include spatial metadata in dataset metadata
- **Best Practice 14:** Describe the positional accuracy of spatial data
W3C Data on the Web Best Practices
What are we trying to do?

• Presence on the Web of data
  ▪ crawlability and linkability, i.e. make each resource hosted by a WFS available via a persistent URI and ensure that all resources can be reached via links from a “landing page” for the data set

• Harmonisation of data discovery
  ▪ classification of the resources using vocabularies supported by the main search engines on the Web
  ▪ discovery of both spatial and non-spatial data by the same search engine

• Data access based on current Web practices
  ▪ representations of data for consumption by humans (HTML), developers (GeoJSON, GML, JSON-LD) and search engine crawlers (HTML with structured data annotations), accessible via HTTP(S)

• Connecting data with other data on the Web
  ▪ establishing and maintaining links between data
Implementing the Best Practices on top of INSPIRE

Key practices implemented in the proxy:

- **Best Practice 1**: Use globally unique persistent HTTP URIs for Spatial Things
- **Best Practice 2**: Make your spatial data indexable by search engines
- **Best Practice 4**: Use spatial data encodings that match your target audience
- **Best Practice 5**: Provide geometries on the Web in a usable way
- **Best Practice 12**: Expose spatial data through 'convenience APIs'
Idproxy

- An open-source tool developed to experiment with implementing the Best Practices

- Originally developed in a testbed by Geonovum
  - [http://geo4web-testbed.github.io/topic4/](http://geo4web-testbed.github.io/topic4/)

- Documentation
A Direct Access Download Service (WFS) via ldproxy

INSPIRE_Downloaddienst_Schutzgebiete_NRW


Feature Types
- Protected Sites

Keywords
- INSPIRE, Download Service, INSPIRE, Download Service, InfMapAccessService, Schutzgebiete

License
- Nutzungsbedingungen: Der Datensatz wird ab 2016 als OpenData unter der "Datensatz: Deutschland Namensnennung 2.0", siehe https://www.gvdata.de/dl-derby-2-0 zur Verfügung gestellt.

Extent
-160, 40 180, 40

WFS
- http://www.umw.nrw.de/inspire_umwelt/inspire_Downloaddienst_Schutzgebiete_NRW/REQUEST=GetCapabilities&SERVICE=WFS&

Provider
- Landesamt für Natur, Umwelt und Verbraucherschutz Nordrhein-Westfalen
  - http://www.lanw.nrw.de
  - Dr. Dirk Hinterlang
  - dirk.hinterlang@lanw.nrw.de
  - +49 (02391) 306-3202
  - Napplinghausen
  - 45659
  - NRW
  - Deutschland
An INSPIRE feature from the WFS via ldproxy

Naturpark Maas-Schwalm-Nette

- ID: psSiteS.2000560
- INSPIRE ID (localId): NTP-011
- INSPIRE ID (namespace): DE.NWI:INFOS
- Legal foundation date: 1995-01-01T00:00:00
- Designation scheme: NationalDesignationType
- Designation: DE05
- Site name: Naturpark Maas-Schwalm-Nette
- Classification: natureConservation
Ongoing developments, challenges

- Simplify deployment
- Configuration via a GUI
- Setting up proxy services for all WFS in a discovery service
- Improving the fault-tolerance against WFS issues
- WFS must support paging, use stable gml:ids
- Indexing of datasets by the search engines
- **More useful HTML and data**
  - translating code values to readable text
  - links to descriptions of attributes, etc.
  - links to nearby things
  - ...
- **API improvements**
  - Support for Swagger / OpenAPI,
  - more query capabilities in the API
  - ...
- Dynamic links to other data
- ...

Spatial Data on the Web tools and guidance for data providers

ELISE initiative
Search an address in Google

An address from an Address WFS is found
HTML with schema.org annotations