



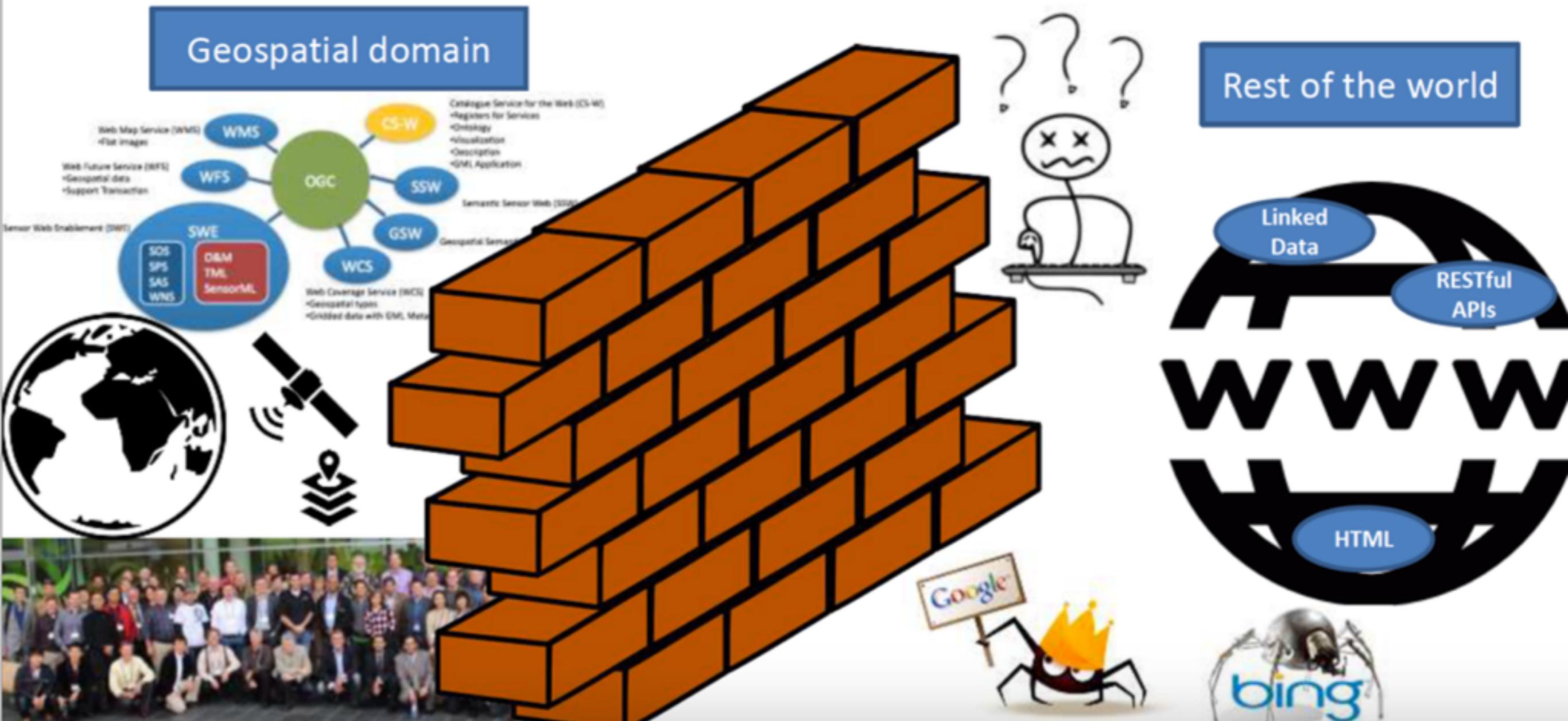
INTEGRATING THE SPATIAL WEB WITH LINKED OPEN DATA USING GEODCAT-AP

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GEONOVUM TESTBED

SPATIAL DATA ON THE WEB



Data on the Web best practices

[Best Practice 1:](#) Provide metadata

[Best Practice 2:](#) Provide descriptive metadata

[Best Practice 3:](#) Provide locale parameters metadata

[Best Practice 4:](#) Provide structural metadata

[Best Practice 5:](#) Provide data license information

[Best Practice 6:](#) Provide data provenance information

[Best Practice 7:](#) Provide data quality information

[Best Practice 8:](#) Provide a version indicator

[Best Practice 9:](#) Provide version history

[Best Practice 10:](#) Use persistent URIs as identifiers of datasets

[Best Practice 11:](#) Use persistent URIs as identifiers within datasets

[Best Practice 12:](#) Assign URIs to dataset versions and series

[Best Practice 13:](#) Use machine-readable standardized data formats

[Best Practice 14:](#) Provide data in multiple formats

[Best Practice 15:](#) Reuse vocabularies, preferably standardized ones

[Best Practice 16:](#) Choose the right formalization level

[Best Practice 17:](#) Provide bulk download

[Best Practice 18:](#) Provide Subsets for Large Datasets

[Best Practice 19:](#) Use content negotiation for serving data available in multiple formats

[Best Practice 20:](#) Provide real-time access

[Best Practice 21:](#) Provide data up to date

[Best Practice 22:](#) Provide an explanation for data that is not available

[Best Practice 23:](#) Make data available through an API

[Best Practice 24:](#) Use Web Standards as the foundation of APIs

[Best Practice 25:](#) Provide complete documentation for your API

[Best Practice 26:](#) Avoid Breaking Changes to Your API

[Best Practice 27:](#) Preserve identifiers

[Best Practice 28:](#) Assess dataset coverage

[Best Practice 29:](#) Gather feedback from data consumers

[Best Practice 30:](#) Make feedback available

[Best Practice 31:](#) Enrich data by generating new data

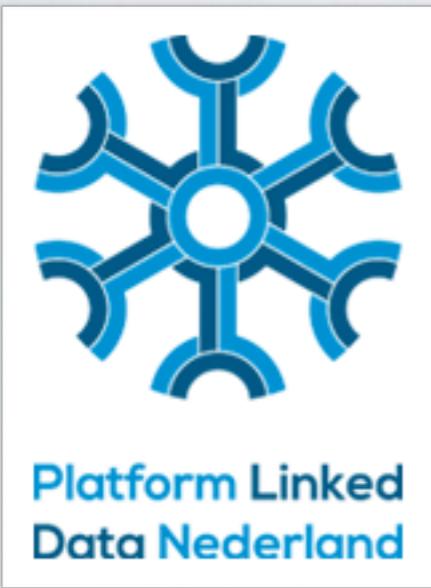
[Best Practice 32:](#) Provide Complementary Presentations

[Best Practice 33:](#) Provide Feedback to the Original Publisher

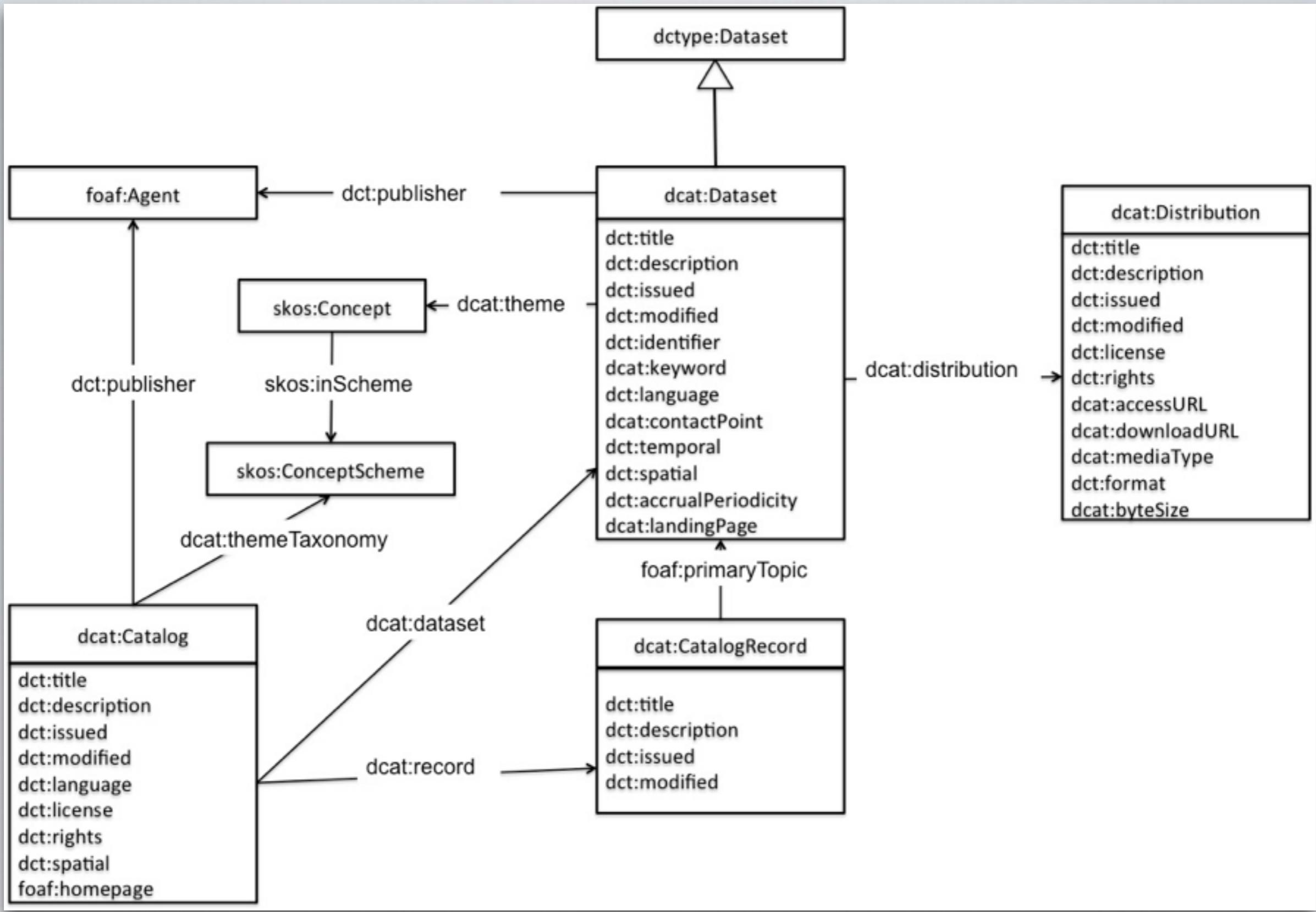
[Best Practice 34:](#) Follow Licensing Terms

[Best Practice 35:](#) Cite the Original Publication

Geo-Dcat space



Spatial	Open Data	Linked Data	Search Engines
iso19115	DCAT	VOID	<u>schema.org/Dataset</u>
ISO codelists	Eurovoc	DBpedia	Google knowledge graph



DCAT > DCAT-AP > Geo-DCAT-ap



iso-19139-to-dcat-ap.xsl

Challenge of a single URL with content negotiation

dcat as rdf+xml / json-ld
schema.org as xhtml+RDFa
iso19139 as text+xml
void as text+turtle

unique URI for each output schema?

Protocols



DCAT is a linked data vocab, sparql as protocol?

DCAT as an output schema for CSW?

Several Open data Catalogs provide custom API's



Conversion challenges

Create your metadata with conversion in mind

Landing Page
Download URL
Access URL

iso19139 has MD_DigitalTransferOptions/onLine



Annual precipitation for 1991–2010

Publisher

[Joint Research Centre »](#)

Description

Map shows the observed average annual precipitation between 1990–2010 obtained by interpolation of the meteorological observations available at JRC. The resolution of the map is 5x5km.

eurovoc domains

[Science](#)

Resources

 [DOWNLOAD](#)

Yr_Prec – NB: A GIS client is required to access and use this distribution.

Licence:

[Legal Notice](#)

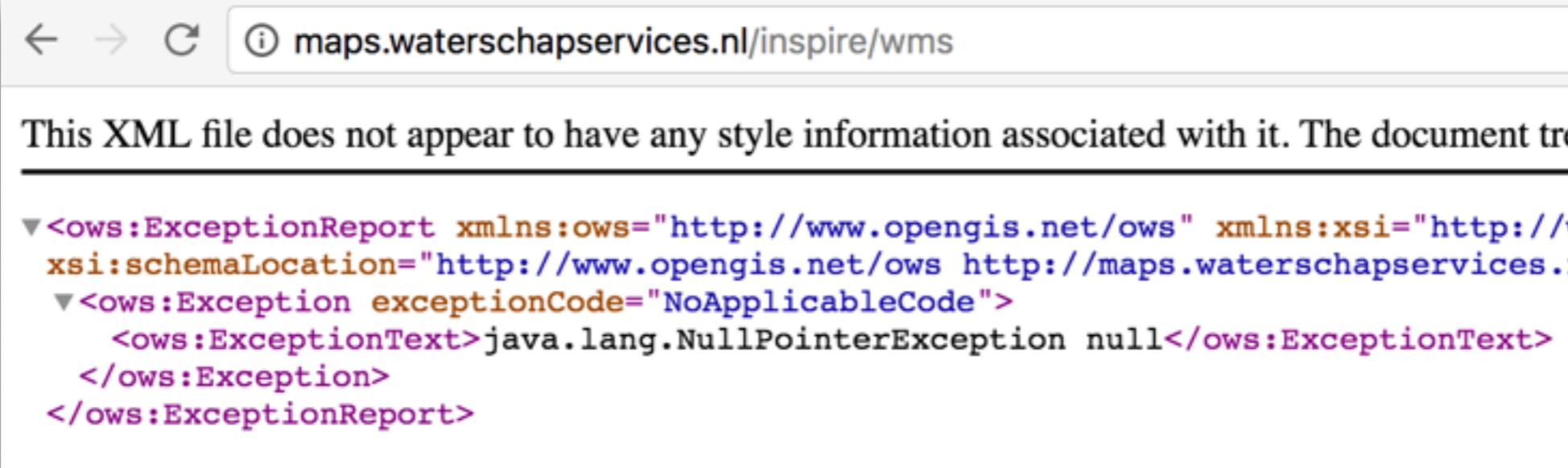
Keywords

[geoscientific information](#)
[hydrography](#)
[water availability](#)

Catalogue record

Added to open-data.europa.eu
2016-03-31

CSW/WFS/WCS/SOS as Access URL



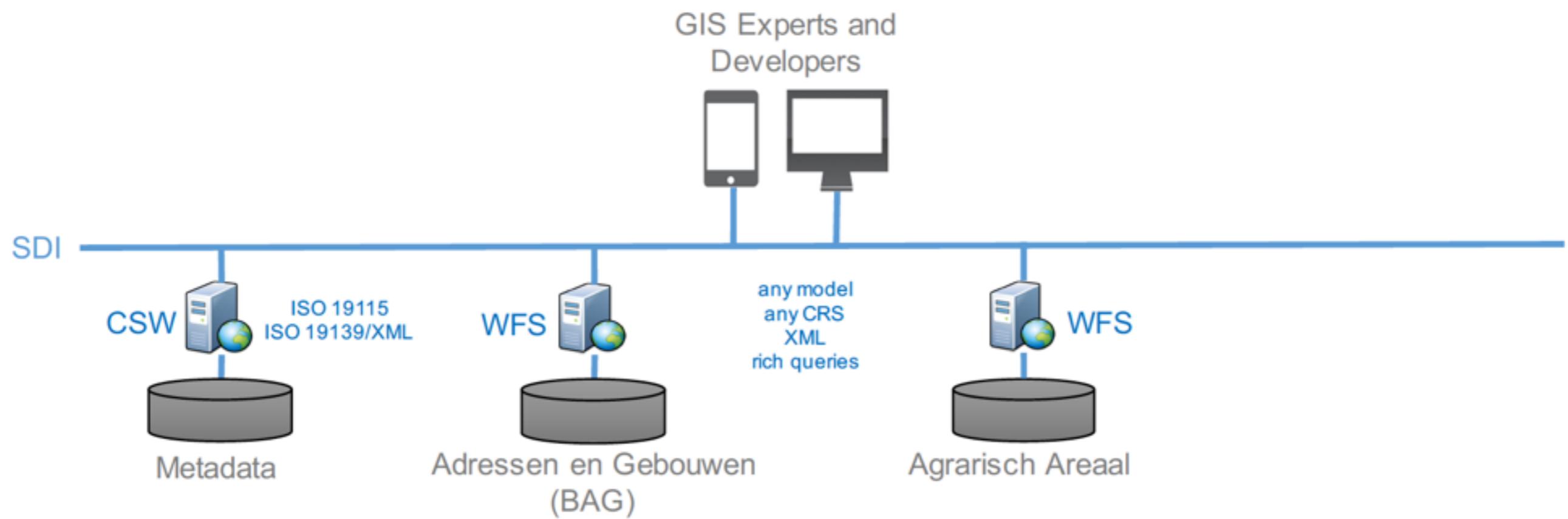
The screenshot shows a browser window with the URL `maps.waterschapsservices.nl/inspire/wms`. The page content is an XML error response:

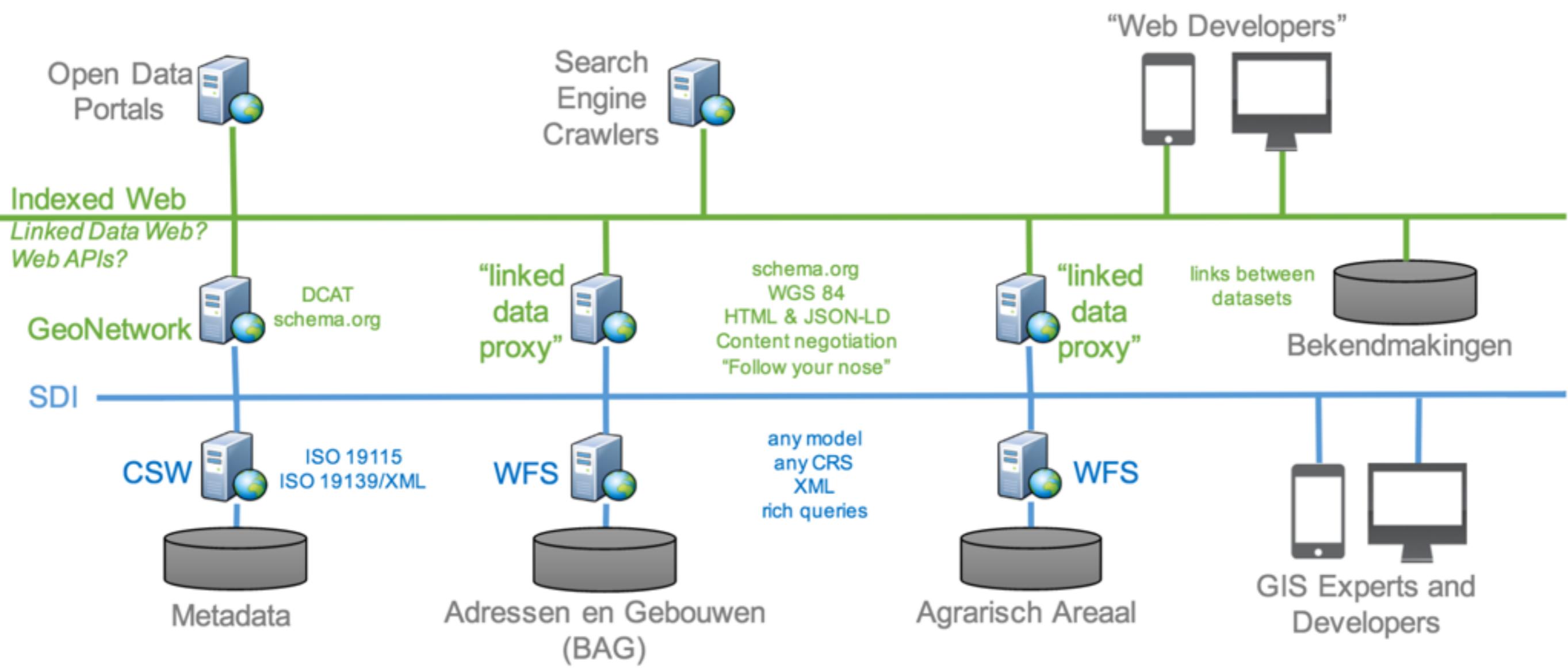
```
<?xml version="1.0" encoding="UTF-8"?>
<ows:ExceptionReport xmlns:ows="http://www.opengis.net/ows" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.opengis.net/ows http://maps.waterschapsservices.nl/inspire/wms">
  <ows:Exception exceptionCode="NoApplicableCode">
    <ows:ExceptionText>java.lang.NullPointerException null</ows:ExceptionText>
  </ows:Exception>
</ows:ExceptionReport>
```

make sure a request to an OGC service at least has
request=GetCapabilities

or as a set of download URL's to full getfeature requests for each
of the formats?

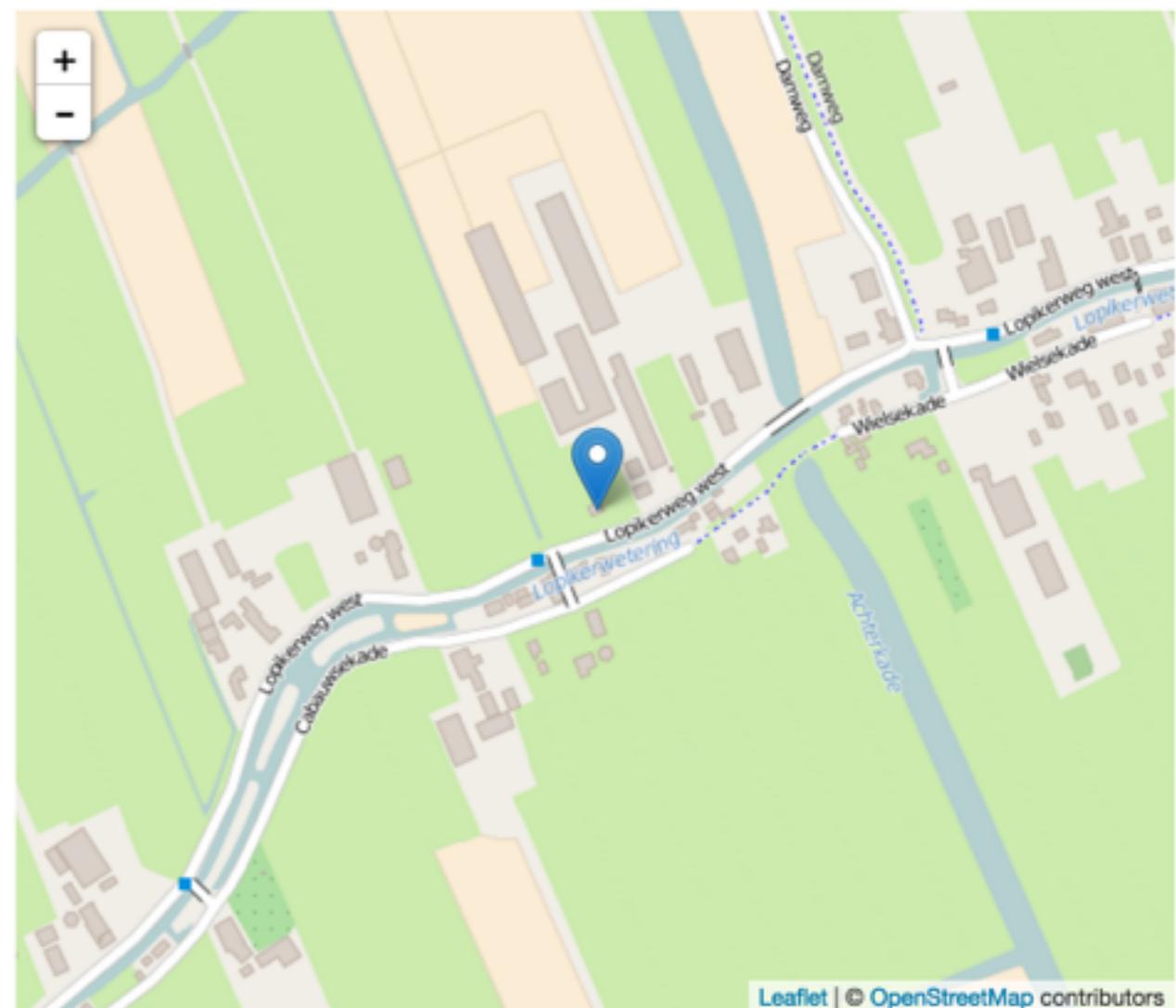
or set up and link to an LDProxy.net approach





Lopik, Lopikerweg west 50

id	inspireadressen.2414293
streetAddress	Lopikerweg west 50
addressLocality	Lopik
postalCode	3411AP
latitude	51.97321237169963
longitude	4.915126563760037



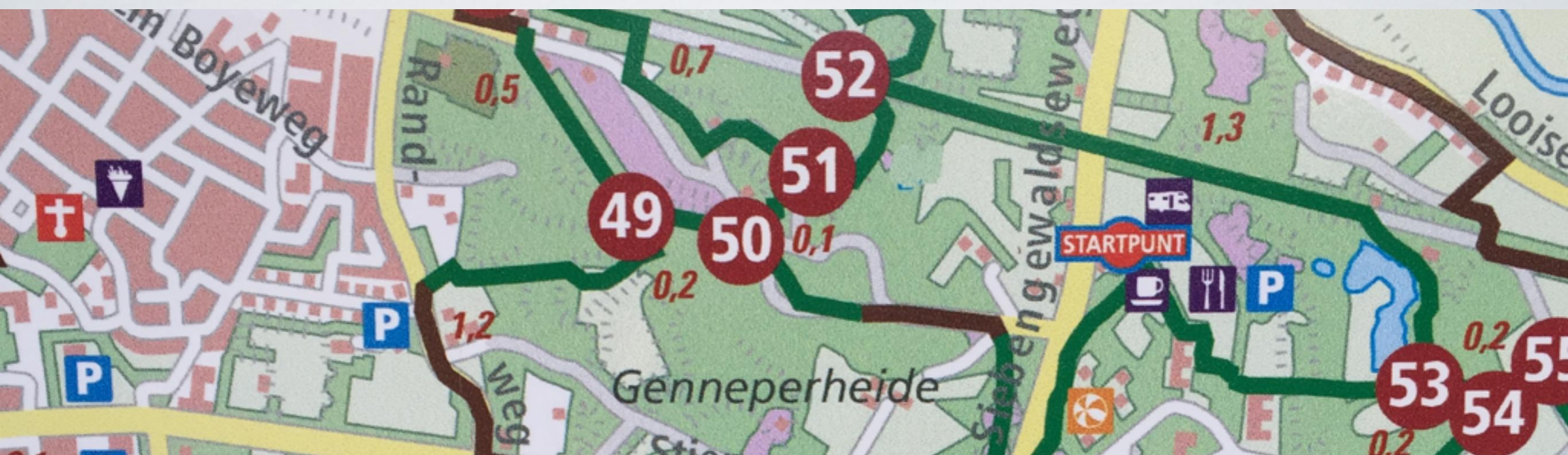
Leaflet | © OpenStreetMap contributors

Identifiers as URI's



Codelist-values
Keywords
Dataset Identifier
Projection information
Data licence

Geometry as identifier



iso19139 allows to set data extent by geographic identifier

An experiment



In scope of Pilot Linked Data Netherlands
Export full national spatial catalog to dcat
Import in [Virtuoso](#)
Query metadata using SPARQL

A next experiment: Geo4Web-Testbed

Main Basket Wardrobe LOD Lab Widgets SPARQL Services About

38.606.408.854 triples and counting!



LOD Laundromat

The LOD Laundromat provides access to all Linked Open Data (LOD) in the world. It does this by crawling the LOD cloud, and converting all its contents in a standards-compliant way (gzipped N-Triples), removing all data stains such as syntax errors, duplicates, and blank nodes.

Expose WFS as RDF using LDProxy

Use laundromat to ingest CSW and WFS data as RDF

Query laundromat api <http://geonovum.triplay.cc>

DCAT and GeoNetwork



First implementation for EEA in 2012

Recently added DCAT as output schema for CSW

Recently added a full catalog export option

ISA-Are3na iso19139 to dcat implementation for Sweden

What's next:

Conversion of DCAT to iso19139/iso19115

Import from CKAN API

DCAT as a metadata schema

Export of DCAT in JSON-LD and Turtle

Wrap up



Define clear use case
Not a single solution to accommodate all
Every conversion results in data-loss
it is not simple (<https://github.com/json-ld/json-ld.org/issues/397>)

Resources

<https://www.w3.org/TR/vocab-dcat>

<https://www.w3.org/TR/void>

<https://www.w3.org/TR/dwbp>

<https://www.w3.org/2015/spatial>

<https://joinup.ec.europa.eu/node/139283>

<http://geoknow.eu>

<http://geo4web-testbed.github.io/topic4>

<https://validator.dcat-editor.com>

http://www.pilod.nl/wiki/Conceptual_Friday_27_maart_2015