#SDI.Next: WFS 3.0 The new spatial feature API

Kickoff WFS 3.0 Werkweek

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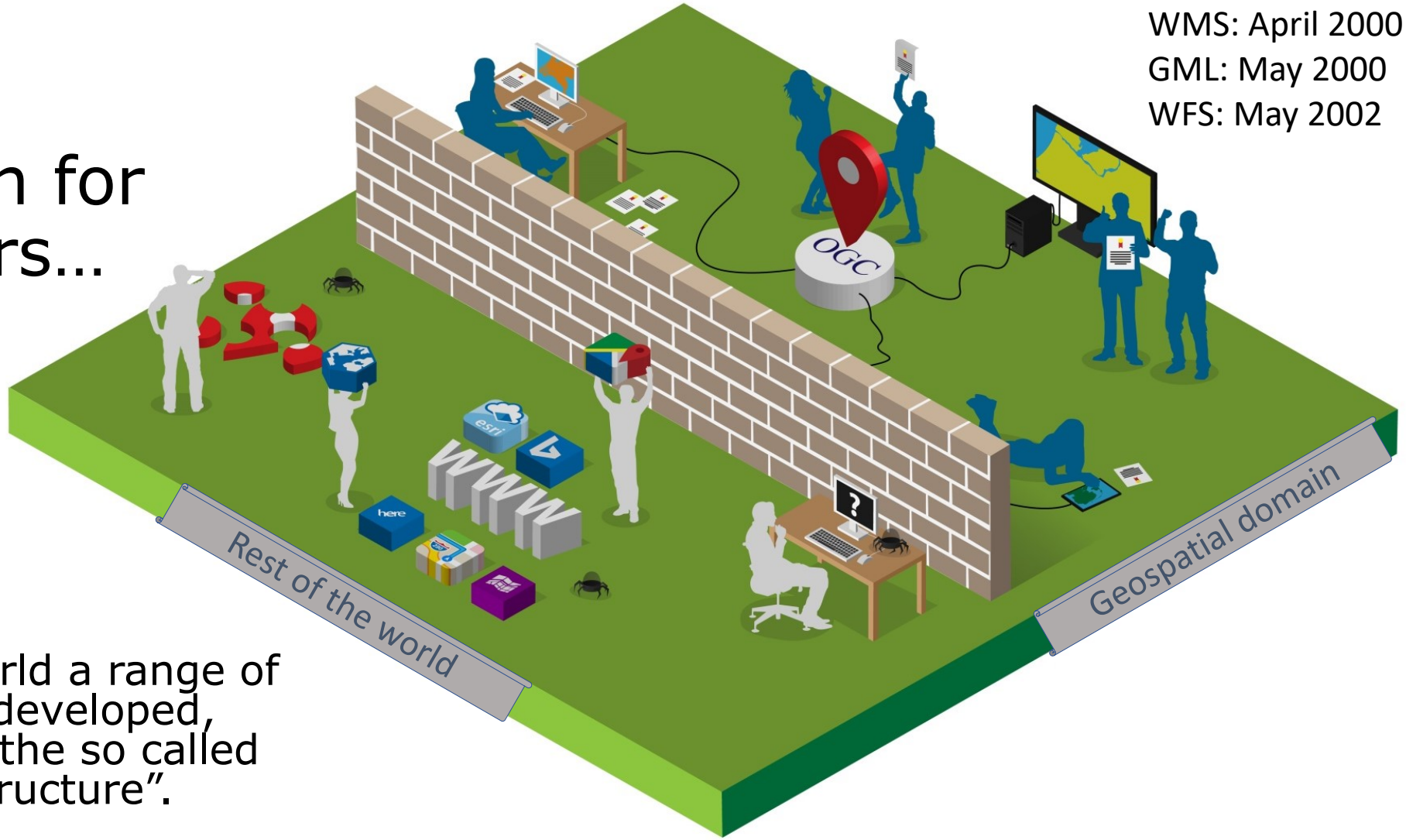
#DataToBuildOn

SDI.Next

GEO

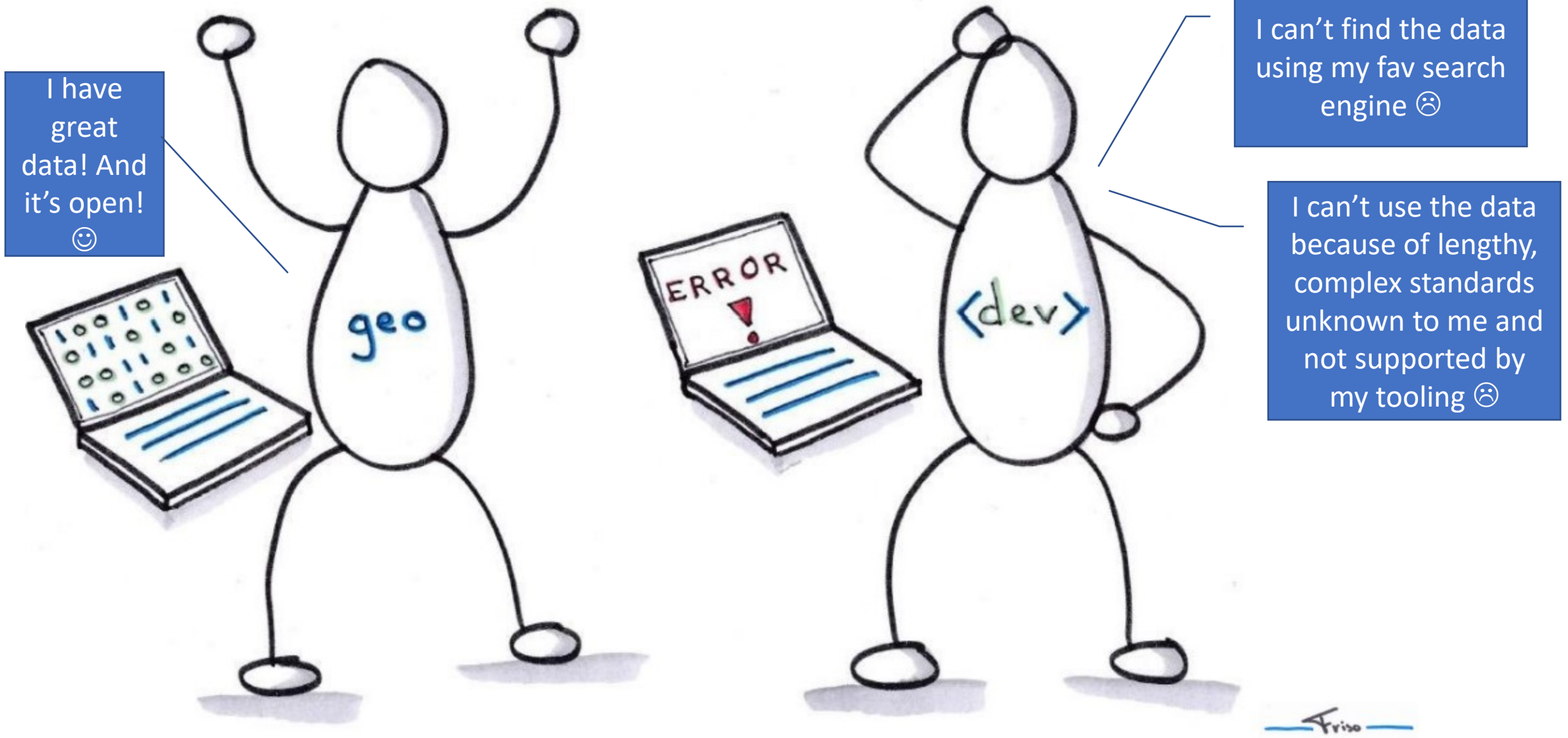
Geospatial standardization for almost 20 years…

WMS: April 2000
GML: May 2000
WFS: May 2002



In the Geospatial world a range of standards has been developed, forming the basis of the so called “Spatial Data Infrastructure”.

Great! However…

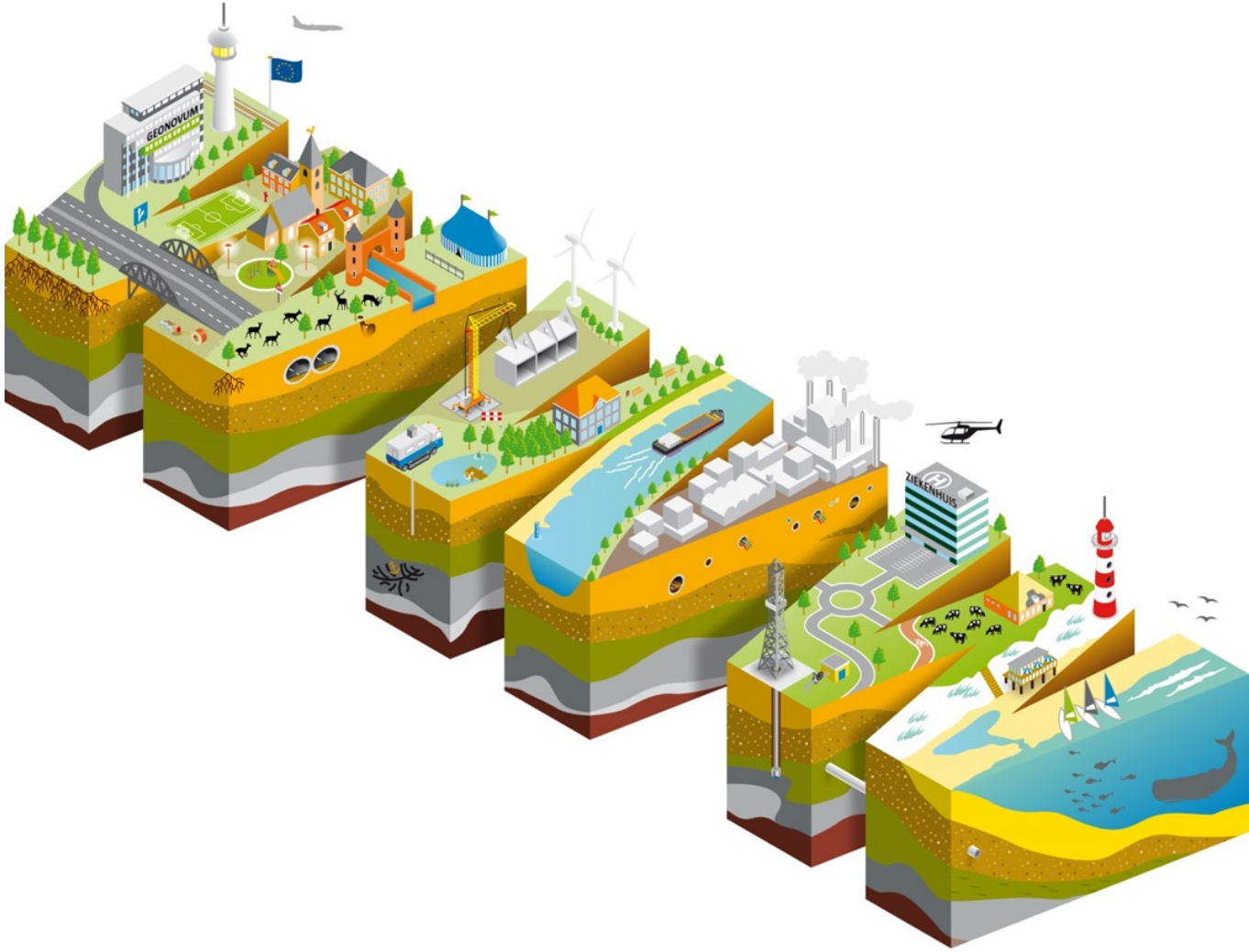

I have great data! And it's open! ☺
geo
ERROR
!
<dev>
I can't find the data using my fav search engine ☹
I can't use the data because of lengthy, complex standards unknown to me and not supported by my tooling ☹
Friso

> *The Web is the World's most successful vendor neutral distributed information system […]*
>
> *The 'Web of data' ranges from small amounts of data to vast datasets, and either which are open to all or restricted to a few. Data can be consumed by Web pages, downloaded for local processing, or accessed via network APIs that support remote processing [e.g. Web-services]."*

W3C study of practices and tooling for Web data standardisation
https://www.w3.org/2017/12/odi-study/

The aim of SDI.Next is to get the Geospatial standards to use the Web platform's standard tools:

- search engines
- browsers
- HTTP (and HTTPS)
- hypermedia / Web links
- delegation to applications via media types
- openAPI metadata (Swagger)



W3C Working Group Note

Spatial Data on the Web Best Practices

W3C Working Group Note 28 September 2017

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Latest published version:
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- Based on general Data on the Web Best Practices
- Introducing a couple of essential concepts for spatial data on the Web →

Linked data is an approach to publishing data that puts linking at the core of data representation and uses Web linking to “weave data into a global graph”

By identifying spatial things and other resources with URLs we can link data describing those spatial things just the same as Web-pages are linked using hyperlinks

We (both humans and software) can follow those links to find out more information and build an increasingly complete picture of the world around us

This Linked Data approach is well described by the WEB-DATA 5-star scheme:

★ **Linkable**: use stable and discoverable global identifiers

★★ **Parseable**: use standardized data metamodels such as CSV, XML, RDF, or JSON.

★★★ **Understandable**: use well-known or at least well-documented vocabularies/schemas

★★★★ **Linked**: link to other resources whenever possible

★★★★★ **Usable**: label your document with a license

For example

Spatial Thing: “Anything with spatial extent, i
shape, or position, e.g. people, places, bowli
as well as abstract areas like cubes” [W3C_BASIC_GEO

… or even a 5 metre tall orange statue of a m
on the telephone

(Orange Man at Cité Centre de Congrès de Ly

Feature: similar – but is the digital representat
instead of the actual entity

https://www.wikidata.org/wiki/Q57783921

Best Practice 1: Use globally unique persistent HTTP URIs for Spatial Things

https://www.wikidata.org/wiki/Q57783921

HTML page with data
embedded
e.g. schema.org

Best Practice 2: Make your spatial data indexable by search engines

https://www.wikidata.org/wiki/Q57783921

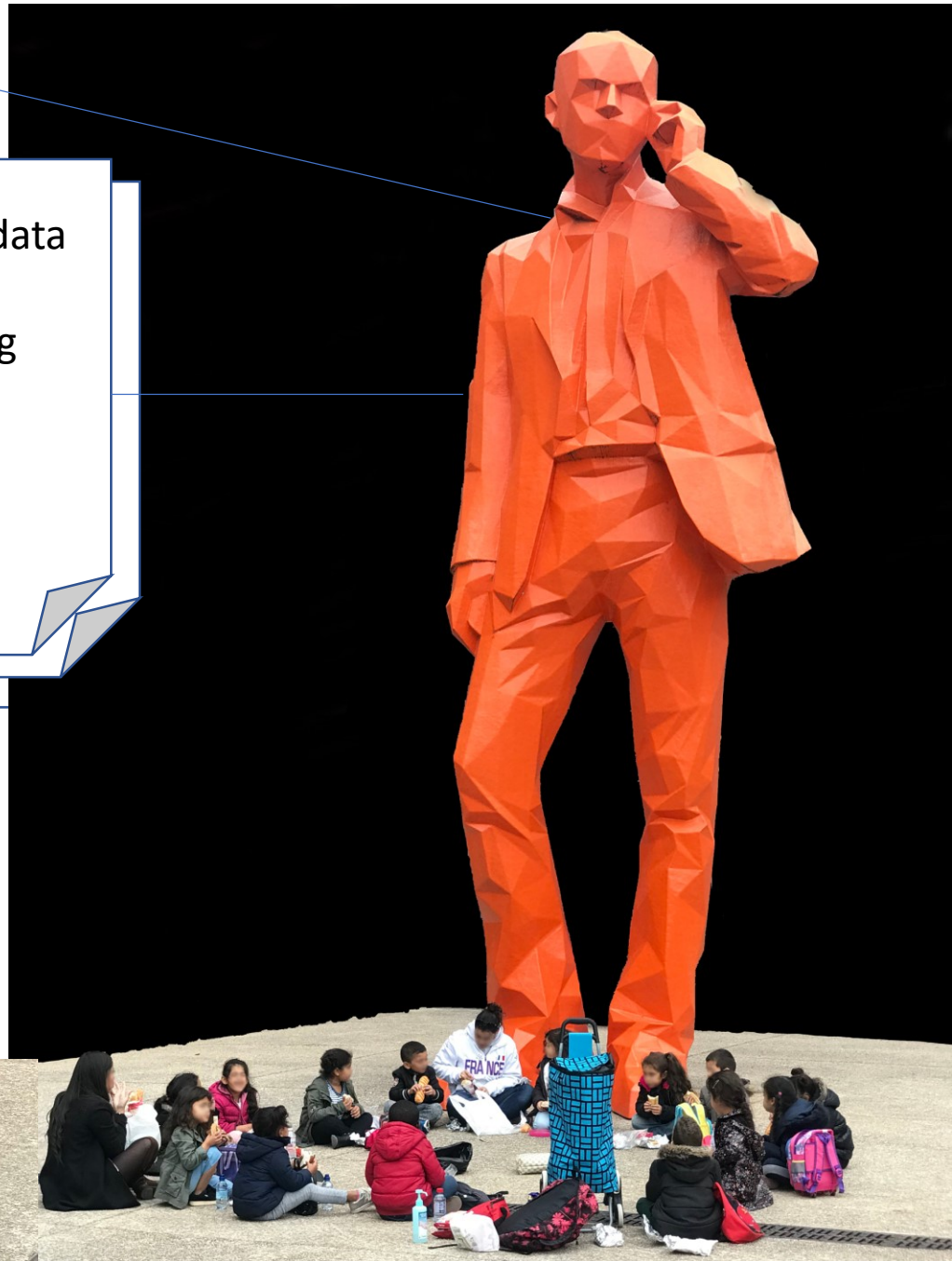
https://www.wikidata.org/wiki/Q456

Resource about City of Lyon

Link to related resource

HTML page with data embedded
e.g. schema.org

Link: next page
Link: prev page



Best Practice 3: Link resources together to create the Web of data

There’s more…

Web principles

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

Spatial aspects

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

Access

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'

Metadata

Best Practice 13: Include spatial metadata in dataset metadata

Best Practice 14: Describe the positional accuracy of spatial data

Spatial aspects

WFS 3.0: OGC API – Features

Photo by Christian Bowen on Unsplash

Compliant with Spatial Data on the Web Best Practices

2019

Data format: GeoJSON

RESTful –
e.g. `HTTP GET`
instead of
WFS 2.0 `GetFeature`

Created in open process
with developers

… and HTML

WFS 3.0

Content negotiation

WGS84

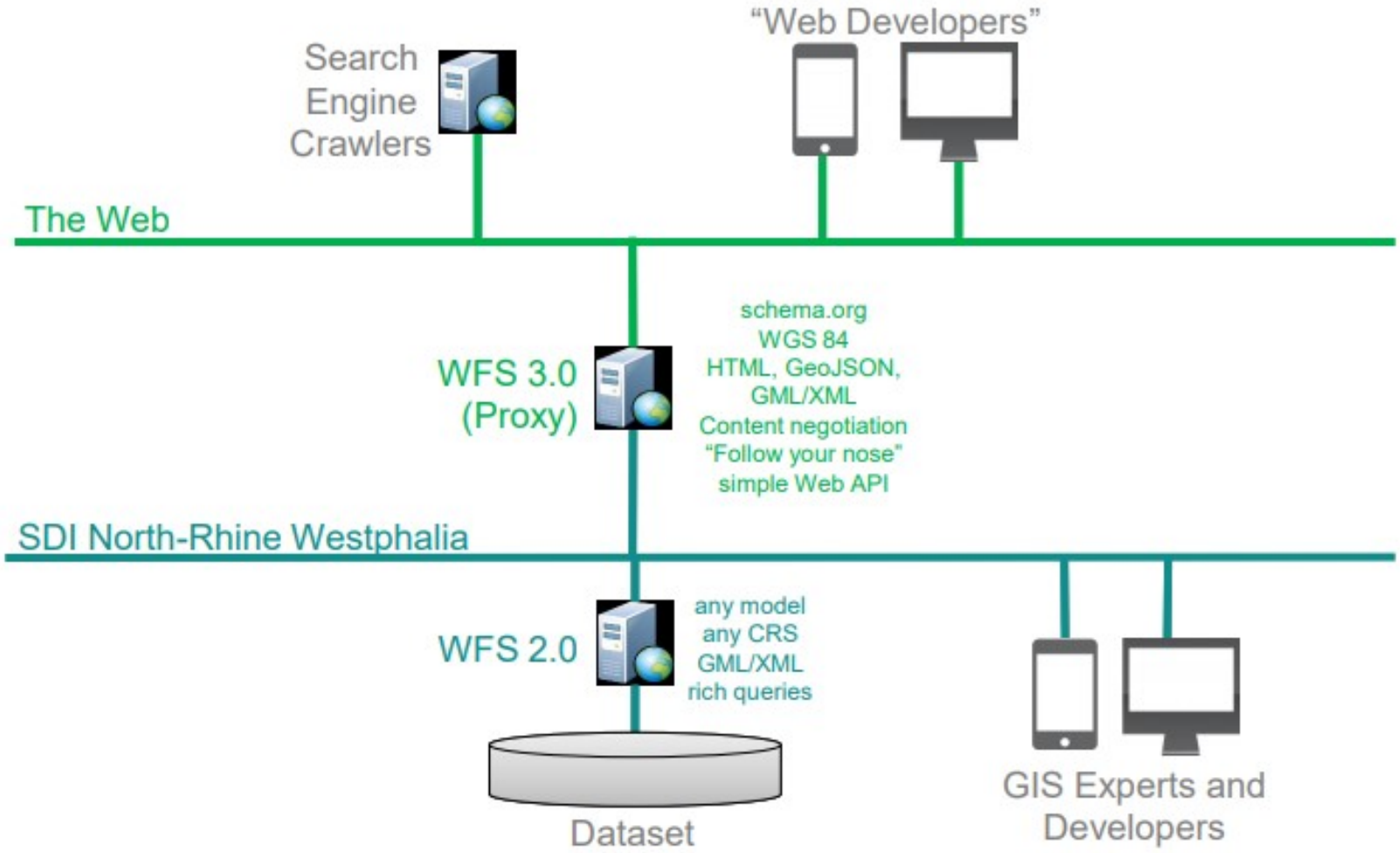
OGC API - Features - Part 1: Core, First Draft Release

WFS 3.0 core (stable draft)
- Requesting datasets (collections)
- Requesting data based on id, bbox, time
- Paging

Extensions under development

Uses OpenAPI specification

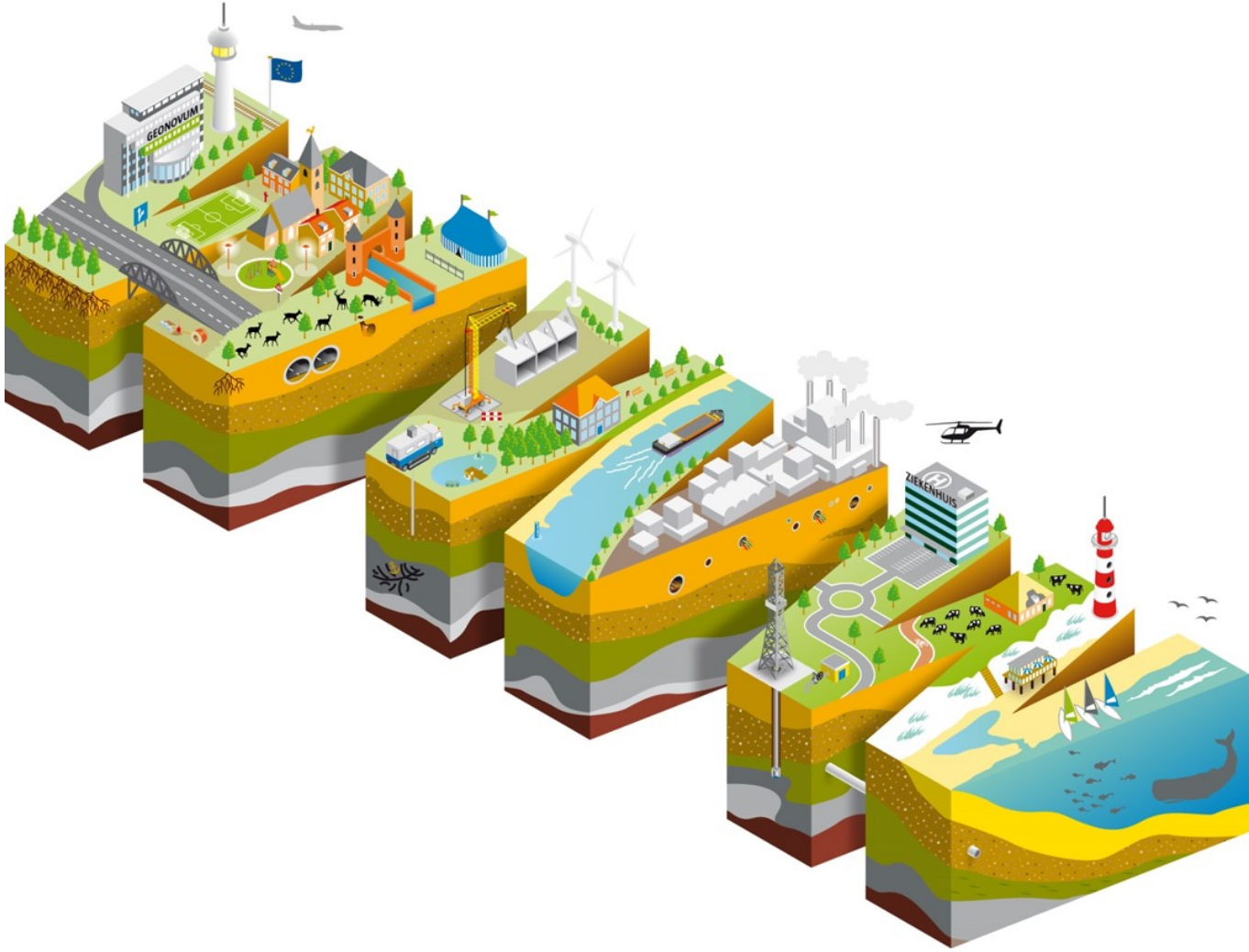
Implementation example in North-Rhine Westphalia



Slide van Clemens Portele

SDI.Next developments

- New encodings – meeting 'lichtere formaten' on May 24, focussing on GeoPackage and GeoJSON
  - Experiments starting in combination with WFS 3.0 experiments
  - GeoPackage will be added to Comply or Explain list of Dutch govt standards
- WFS 3.0 werkweek (this week)
- Vector tiling – session during Open Geodag (Geonovum's networking day) – 2 October 2019
- NEN 3610 Linked Data profile
- Linked Data – Platform Linked Data Nederland (ongoing)
- Kennisplatform API's (ongoing)



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