Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Federal Office of Topography swisstopo
Geoinformation coordination and steering

wissen wohin
savoir où
sapere dove
knowing where

swisstopo

Linked Data @swisstopo

Pasquale Di Donato

Linked Data Seminar - December 2, 2016 Amsterdam

swisstopo

- Federal Office of Topography of Switzerland;
- Legal mandate for developing, coordinating, and operating the Federal Spatial Data Infrastructure:
  - Geoinformation Act of 5th October 2007:
    - … enable the easy exchange and wide use of the geodata.
- map.geo.admin.ch is the main and well-known component of the FSDI:
  - Serving more than 500 information layers
  - Yearly average of 2M unique visitors.
  - Build on top of a stack of geoservices (OGC and REST-API)

- Discussion about Linked Data started early 2016
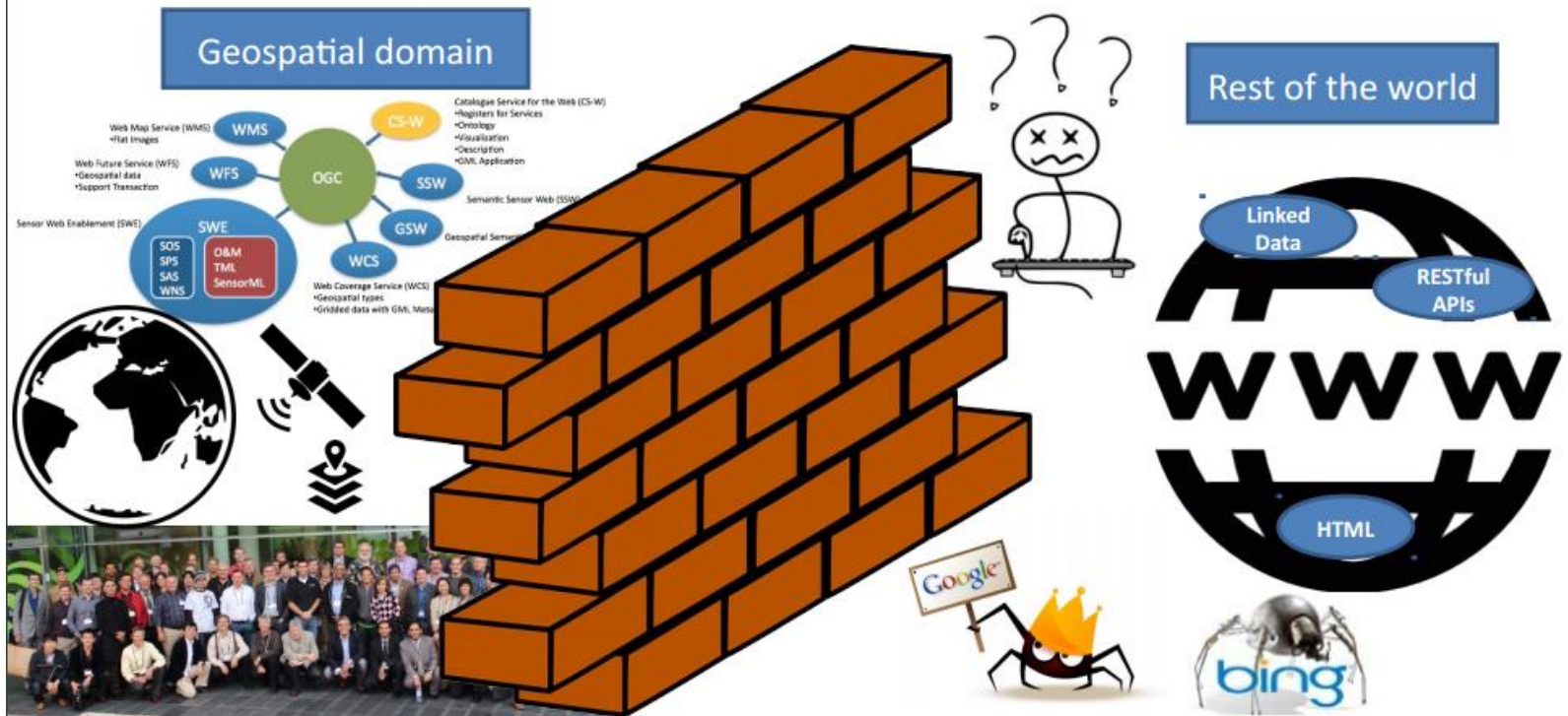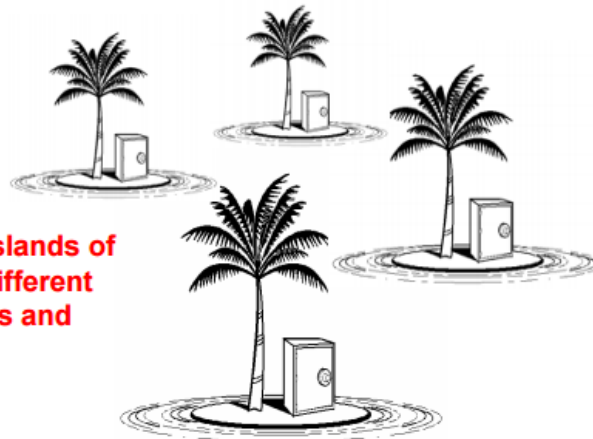
INSPIRE is needed….

Needs

- **Better information** needed to support policies
- Improvement of existing **information flows**
- **Differentiation across regions** to be considered
- Revision of approach to reporting and monitoring, moving to concept of **sharing of information**

Situation in Europe

- **Data policy restrictions**
  - pricing, copyright, access rights, licensing policy
- **Lack of co-ordination**
  - across boarders and between levels of government
- **Lack of standards**
  - incompatible information and information systems
- **Existing data not re-usable**
  - fragmentation of information, redundancy, inability to integrate

EU has islands of data of different standards and quality...

July 2004 - EC Proposal COM(2004) 516 for a Directive establishing an infrastructure for spatial information in the Community – INSPIRE
Political Agreement 21 November 2006
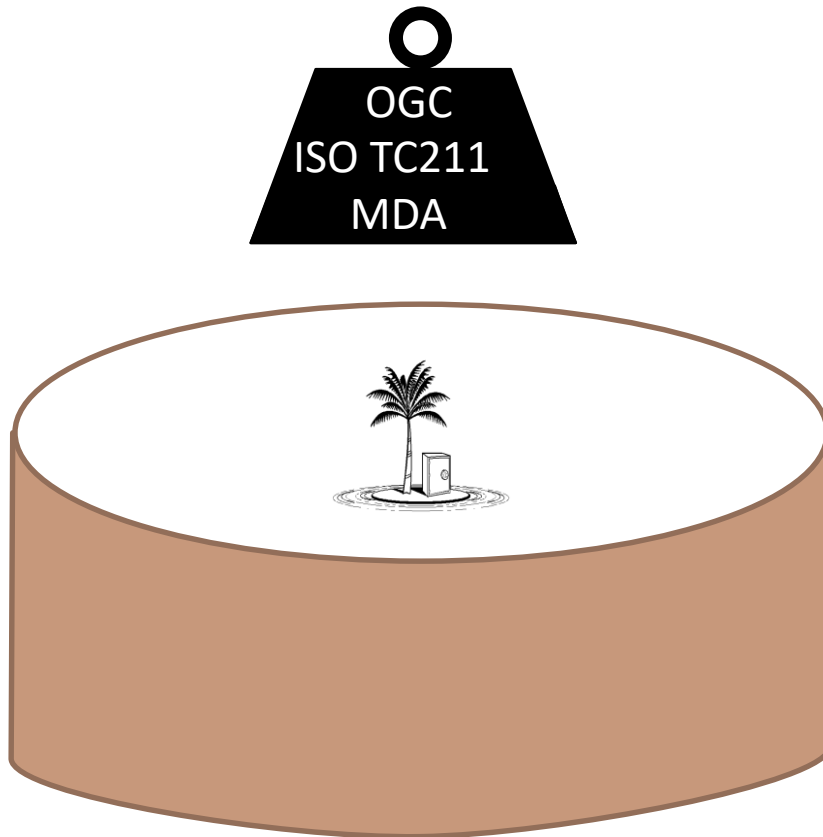**Entry into Force 15 May 2007**

INSPIRE Governance - 13th EC GIS Workshop, Porto 4-6/07/07 – slide 11

EC INSPIRE TEAM, 1st INSPIRE Conference Porto 4-6/07/2007

From islands to fortress

Heavyweights approach

OGC
ISO TC211
MDA

Consequences
- Barriers to bring geodata to the wider public
- Non-experts users are lost ☹
  - Data separated from metadata;
  - Data separated from semantics;
  - Access to data is a "several steps" process:
    - search for data in a metadata catalogue
    - *hope* to find a link to a service
    - understand how to interact with such a service

Trying to build a bridge

- Linked Data as a means to bring Geodata to the Web
- If we cannot break the wall, let's at least try to build a bridge
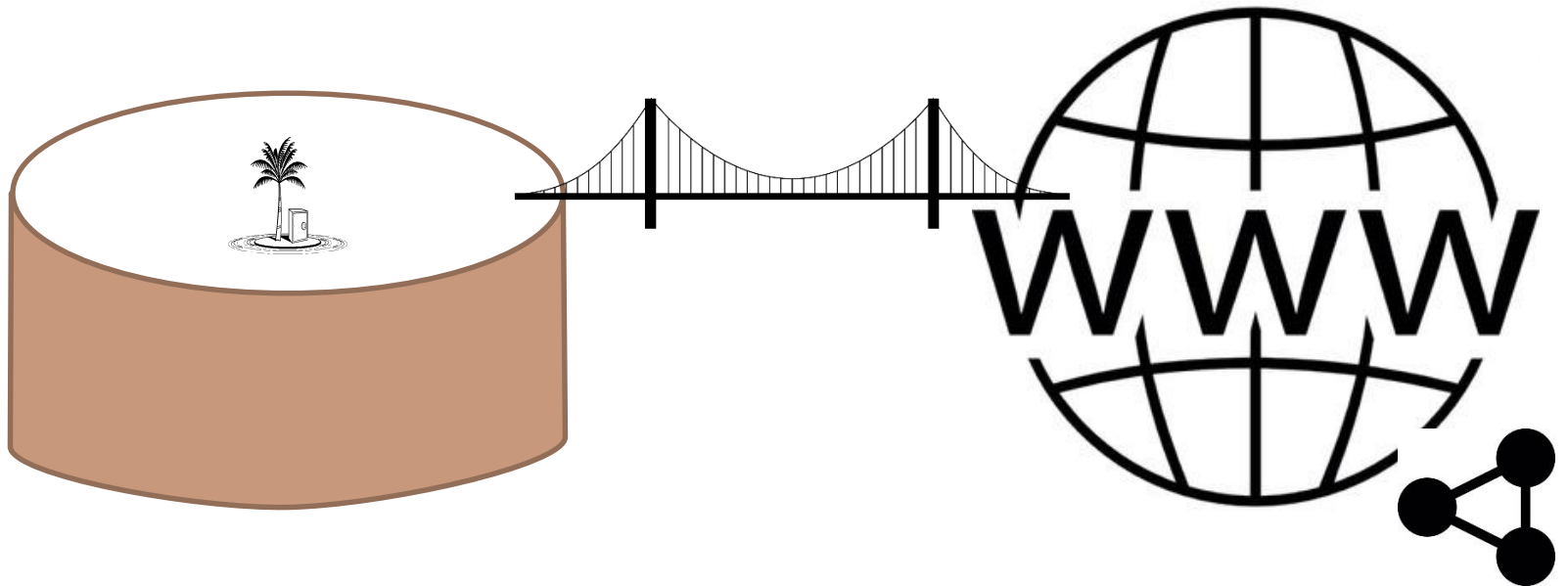
Linked Data @swisstopo: the project

- Project started in July 2016;
- Selected dataset: Administrative Units (Addresses in 2017)
  - Provide yearly-snapshots
- Intended audience: the general public (non-expert users)
  - Improve discoverability
  - Reuse well-known vocabularies
  - WGS84 as CRS
- Main challenges:
  - Building (internal) awareness
  - Building knowledge (how to …)

- Planned GO live: End of January 2017

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Linked Data @swisstopo: the technology

- 2 m4.large EC2 Instances for the test environment
- 2 m4.large EC2 Instances for the prod environment
- Virtuoso Open Source 7.20
- GeoTriples for the RDF serialization [1]
- Trifid-LD: Open source Linked Data Server and Proxy (by Zazuko) [2]
  - Same identifier for the spatial thing and the information resource
  - Trifid-LD does not care about HTTPRange-14: no extra 303 redirect roundtrip.

[1] - https://github.com/LinkedEOData/GeoTriples
[2] - https://github.com/zazukoians/trifid-ld

Linked Data @swisstopo: vocabularies

- schema.org for SEO:
  - Challenge: mixing vocabularies
- Geonames
- Dublin core
- Wikidata
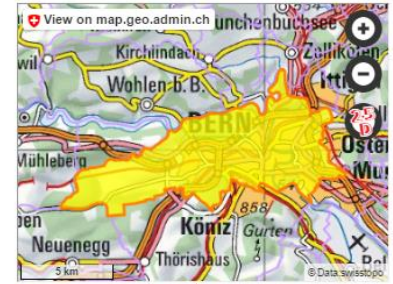- VoID
- GeoSPARQL (geometries as WKT)

Linked Data @swisstopo: dataset versions

Resource: h████████████████████/boundaries/municipalities/351:2016
a http://schema.org/AdministrativeArea http://www.geonames.org/ontology#A.ADM3

rdf:type	s:AdministrativeArea
	----------
	http://www.geonames.org/ontology#A.ADM3
http://dbpedia.org/property/area	5162.0
dct:identifier	351
dct:isVersionOf	http://g██████████████/boundaries/municipalities/351
dct:issued	2016-01-01
dct:valid	2016-01-01/2016-12-31
s:name	Bern
http://www.geonames.org/ontology#parentADM1	http://g██████████████/boundaries/cantons/2:2016
http://www.geonames.org/ontology#parentADM2	http://g██████████████/boundaries/districts/246:2016
http://www.geonames.org/ontology#parentCountry	http://g██████████████/boundaries/countries/CH:2016
http://www.geonames.org/ontology#population	130015
http://www.opengis.net/ont/geosparql#hasGeometry	http://g██████████████/boundaries/municipalities/geometry/351:2016

Linked Data @swisstopo: Link back to the FSDI

Resource: http://[redacted]/boundaries/municipalities/351
a http://www.geonames.org/ontology#A.ADM3 http://schema.org/AdministrativeArea

rdf:type	http://www.geonames.org/ontology#A.ADM3
	s:AdministrativeArea
http://dbpedia.org/property/area	5162.0
dct:hasVersion	http://[redacted]/boundaries/municipalities/351:2016
dct:identifier	351
dct:issued	2016-01-01
s:hasMap	https://map.geo.admin.ch/?ch.swisstopo.swissboundaries3d-gemeinde-flaeche.fill=351
s:name	Bern
s:sameAs	http://api3.geo.admin.ch/rest/services/api/MapServer/ch.swisstopo.swissboundaries3d-gemeinde-flaeche.fill/351?geometryFormat=geojson
http://www.geonames.org/ontology#parentADM1	http://[redacted]/boundaries/cantons/2
http://www.geonames.org/ontology#parentADM2	http://[redacted]/boundaries/districts/246
http://www.geonames.org/ontology#parentCountry	http://[redacted]/boundaries/countries/CH
http://www.geonames.org/ontology#population	130015
http://www.opengis.net/ont/geosparql#hasGeometry	http://[redacted]/boundaries/municipalities/geometry/351:2016

Contacts&Links

- pasquale.didonato@swisstopo.ch
- https://www.swisstopo.admin.ch/en/swisstopo/organisation/cogis.html

- SPARQL-Endpoint will be @ https://sparql.geo.admin.ch/sparql
- Linked Data Frontend will be @ https://ld.geo.admin.ch

- map.geo.admin.ch
- api3.geo.admin.ch