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Is NSDI Dead ?

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Mapisso, İzmir

outline

- What NSDI has brought ?
- What Open data brings
- Comparison
- What to do

our earlier work and motivation

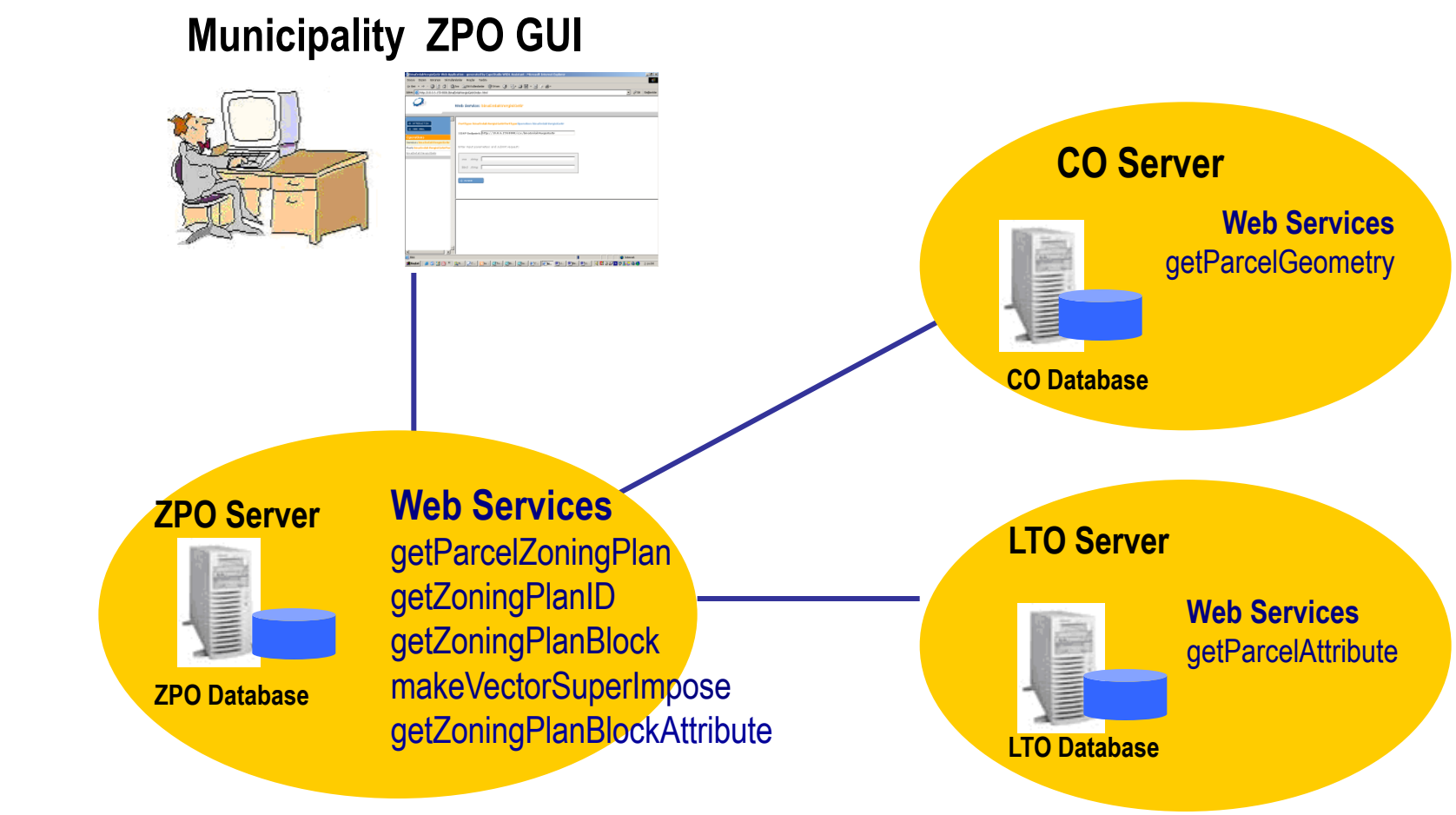
- **I proposed NSDI for Turkey in 1995 ..**

- **Around 2000s…**
- With the vision that, **NSDIs** may be implemented using «SOA/WSs», We implemented «e-municipality web services. to show the potentials of **services oriented architectures (SOA)**

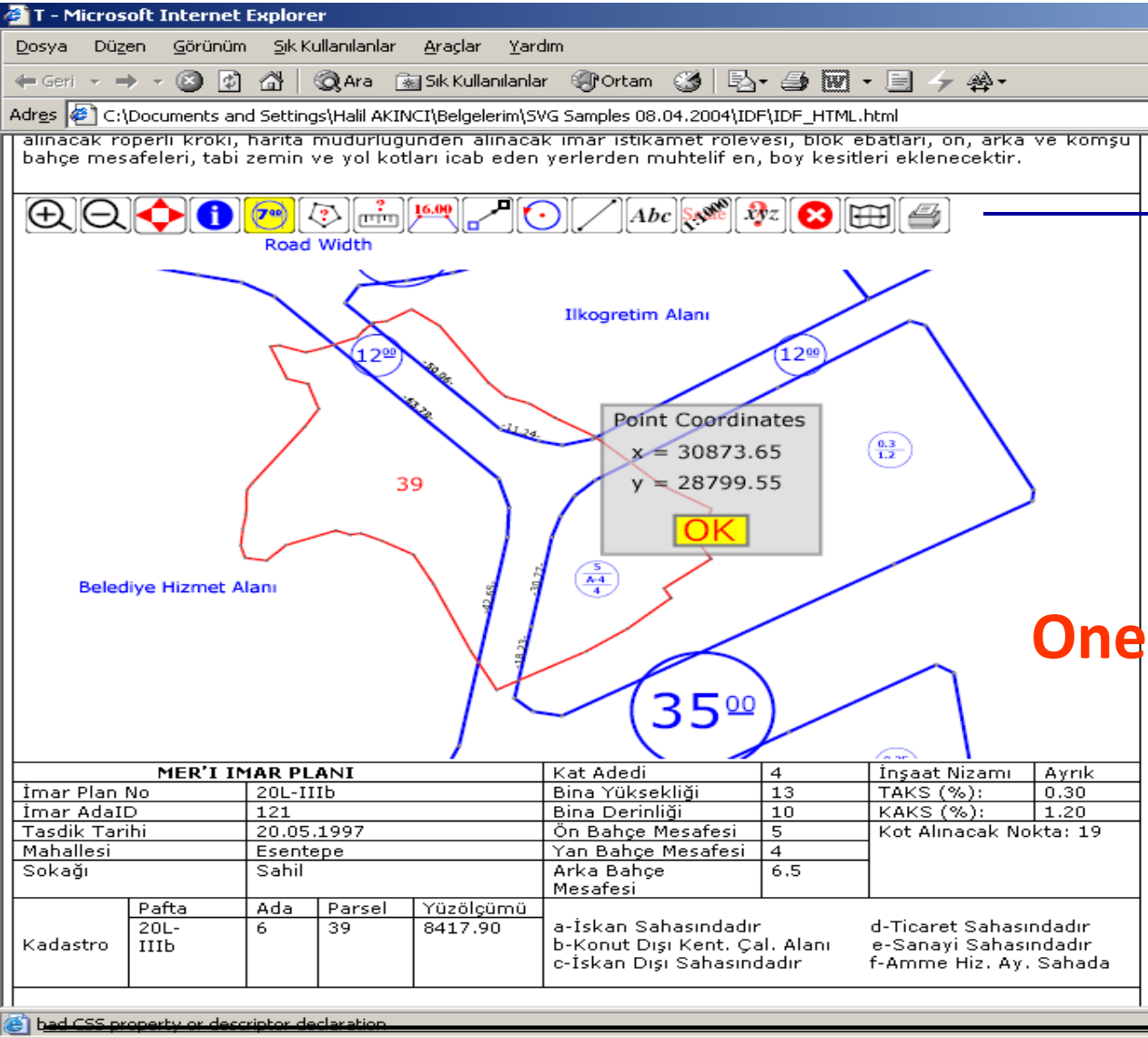
- We have **designed** and **implemented** a number of Web Services for the **Trabzon Municipality** in Turkey. -

- Our services were **non-OGC,** but **W3C** (World Wide Web Consortium) type of web services (W3C)

E-municipality web services



E-municipality web services - “thick – clients”



SVG toolbar

2003….

One of the very first

earlier work ….

- **“Developing Web services for “e-municipality” (**for the municipality of Trabzon)

  Necati Şahin - M.Sc. Thesis, KTU, **2003**

- **“Can SDIs be implemented with Web services? Current status and future trends”**

  Halil AKINCI - Ph.d., Thesis, KTU**, 2006**

- **“Design and development of Cadastral Web services”**

  Hasan T. Bostancı - Ph.d., Thesis, KTU, **2010**

«NSDI requires a transition of State organizations. A transition from the «current state» to a «SOA-compatible state »

More phds…

- Systems theory and NSDI methodology ……. ……..is now transformed it into a phd about **National Open data strategy lately…..** **Ongoing**

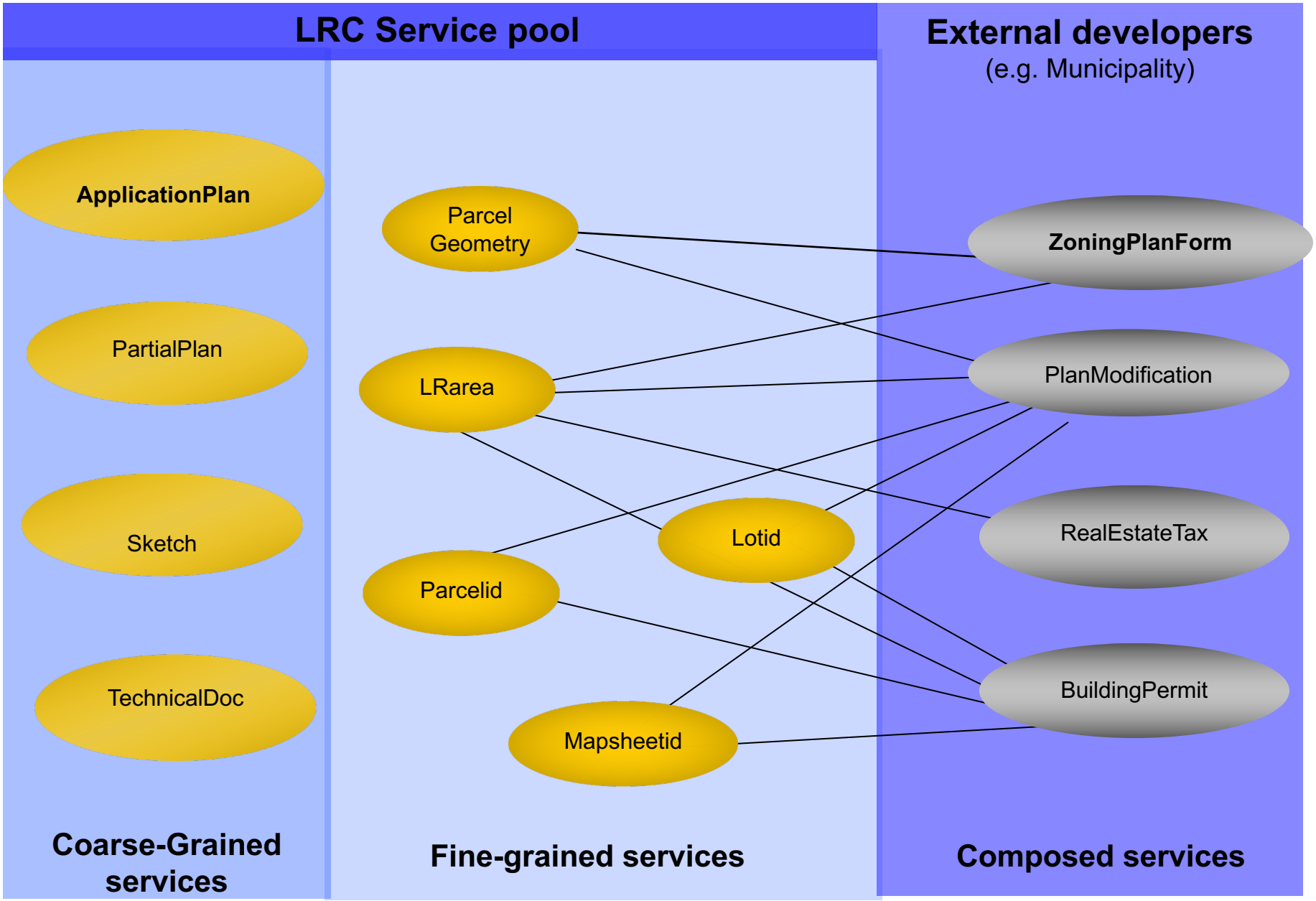
- Semantic annotation of institutional data and services – completed

General Command of Mapping Project ongoing -- **«How to Open and link GCM data?»**

- Semantic service composition –-completed--**«Show me land slide areas in Trabzon» - Just like what I do in «Siri»**

- Ontology–based **geospatial data quality checking—-**

Fine – coarse - , and composed services

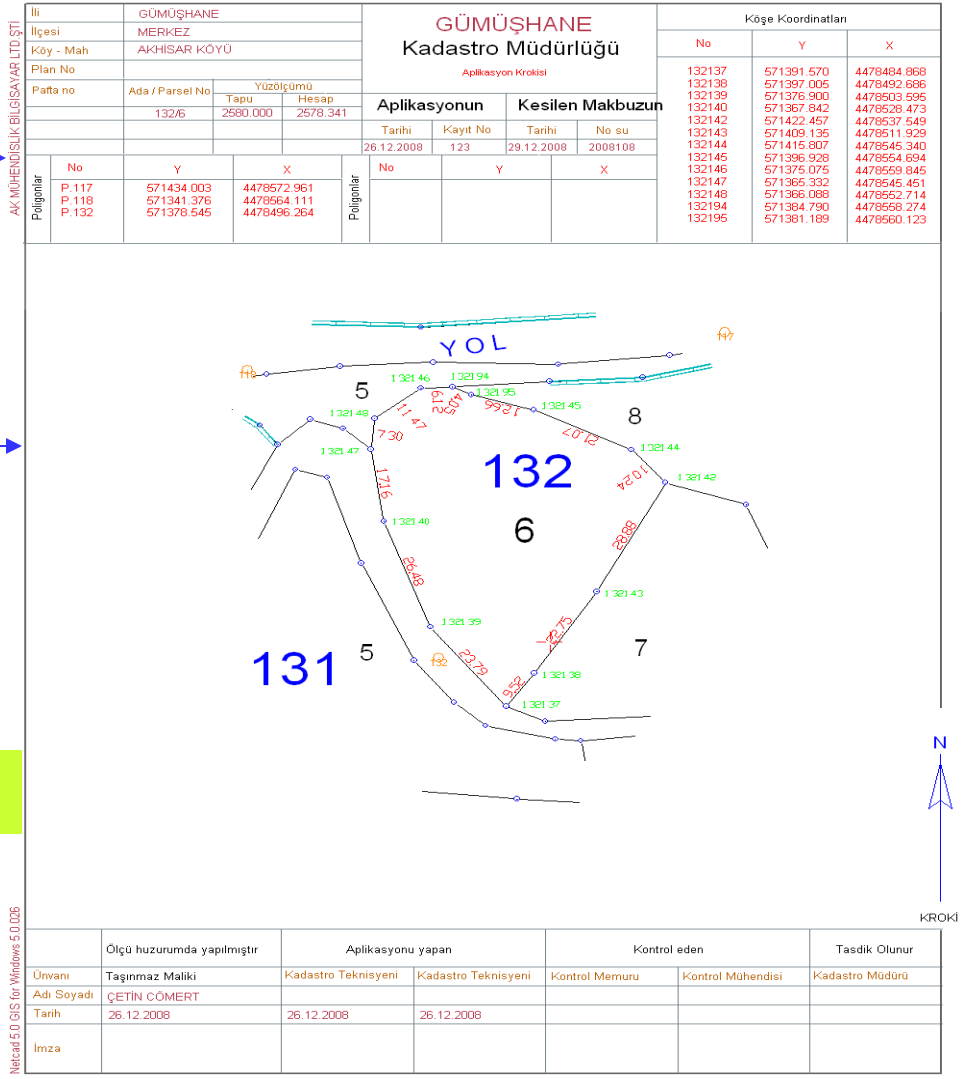


“ApplicationPlan”

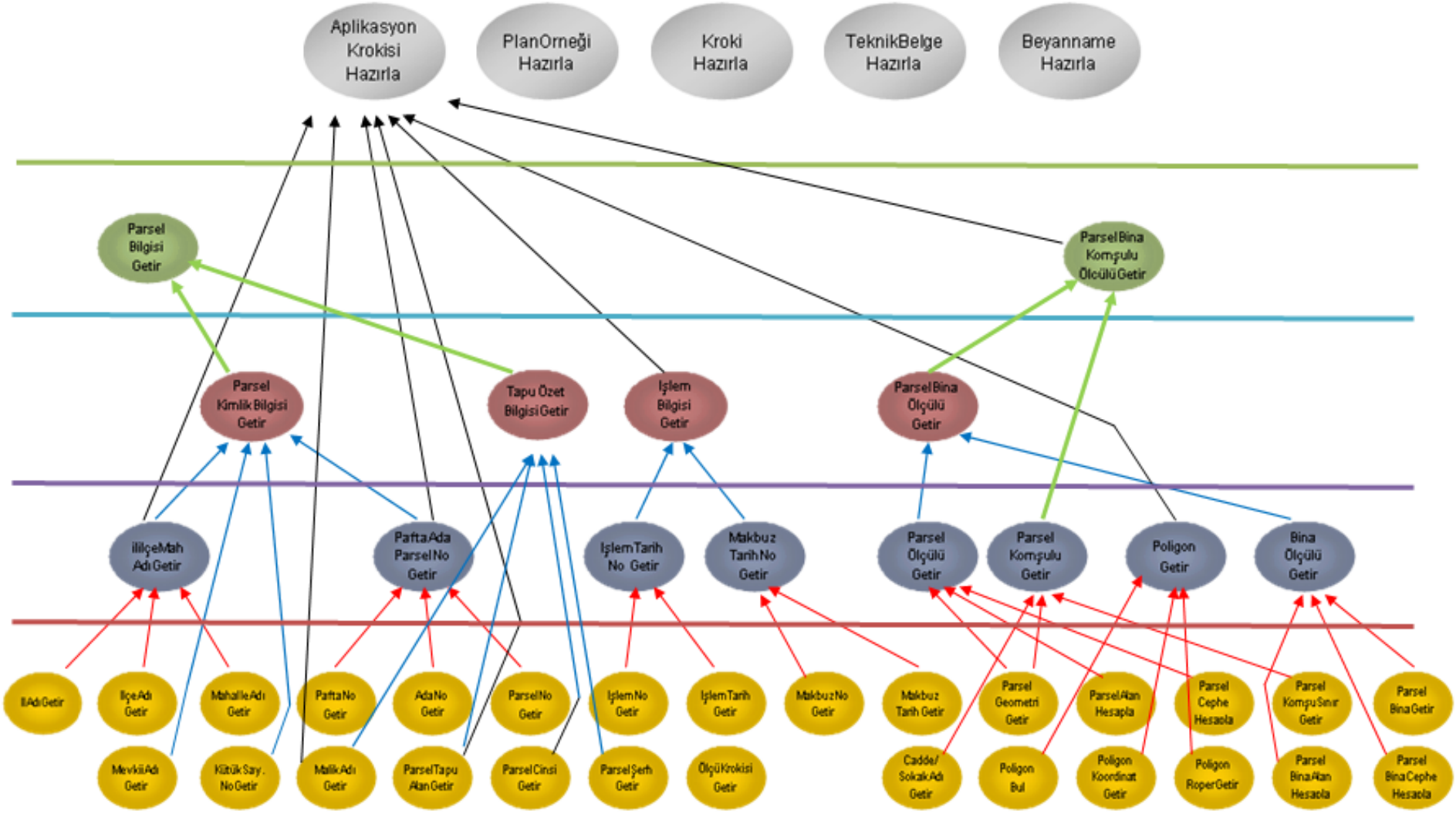
Non-Spatial data →

Spatial data →

ApplicationPlan



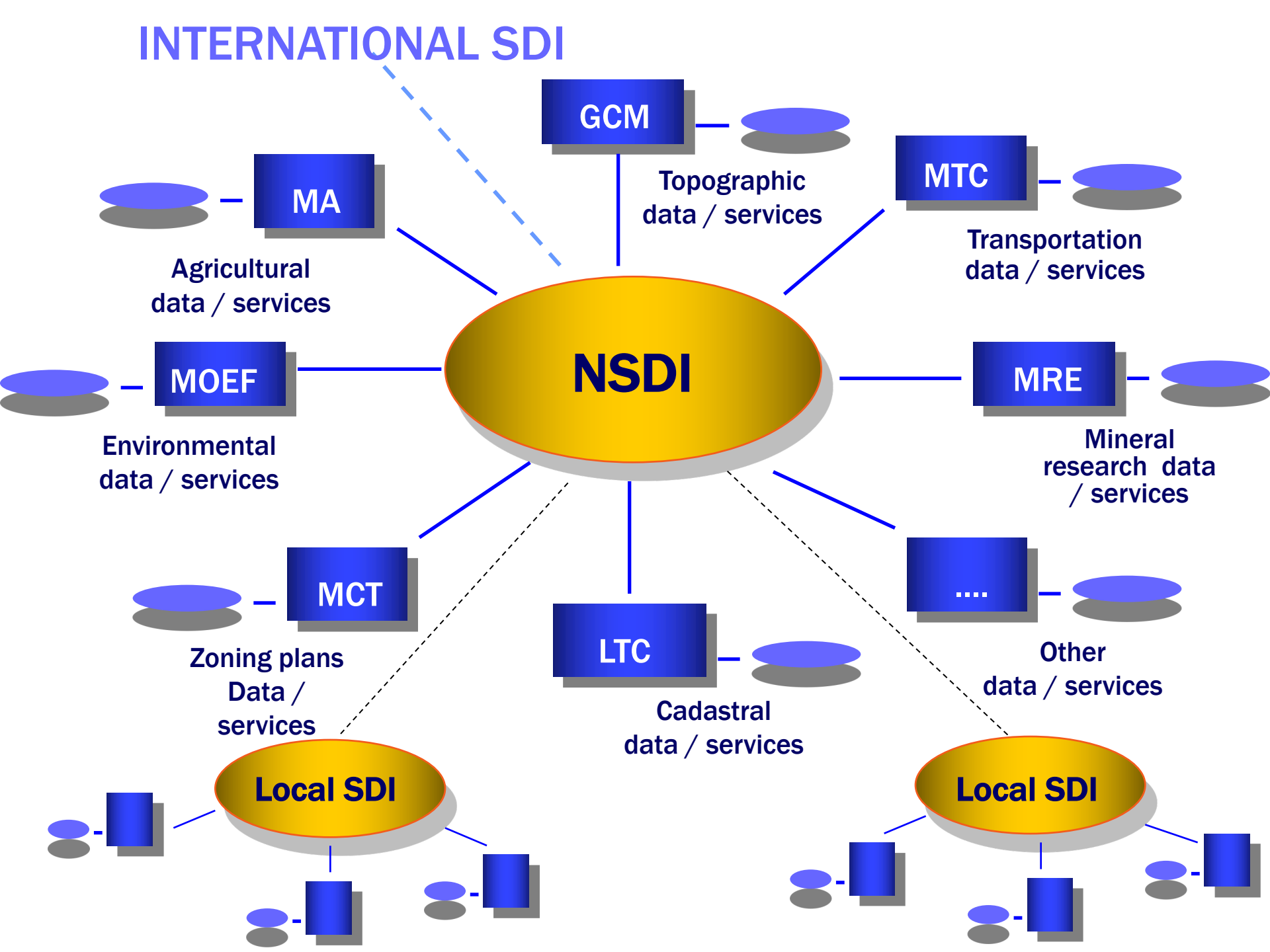
3rd level generalization



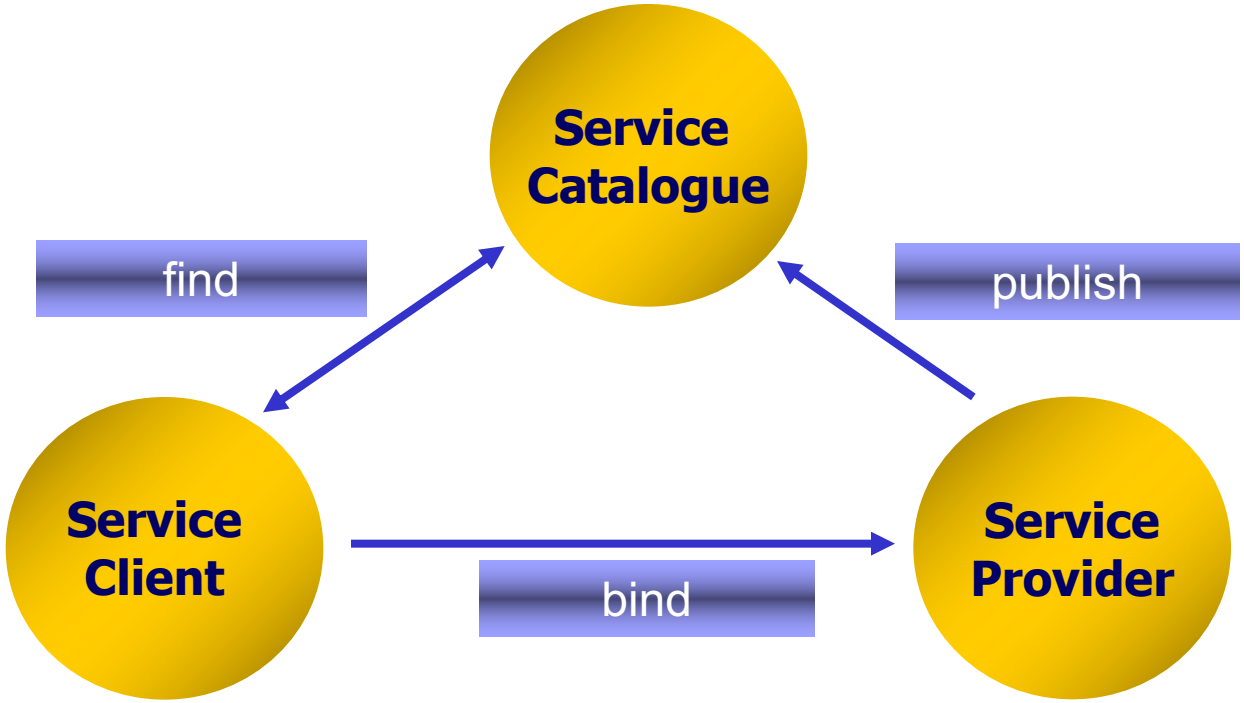
Science (!) vs. technlogy ??

We were too much involved in WSC (Web services Composition semantic one… a phd completed manages it in a semi-automated way)

Mapisso - Emre (my phd student) said ; «…practical World is different »


INTERNATIONAL SDI
GCM
Topographic
data / services
MA
Agricultural
data / services
MTC
Transportation
data / services
NSDI
MOEF
Environmental
data / services
MRE
Mineral
research data
/ services
MCT
Zoning plans
Data /
services
LTC
Cadastral
data / services
....
Other
data / services
Local SDI
Local SDI

Services Oriented Architecture (SOA)



“consensus based interoperability”

What NSDI has Brought ?

- **Standards** for …….
  interoperability

Consensus based

- the definition of **geometry**

  many of them……SDTS, SAIF, ……GML

- the definition of **attributes** --- **application schemas**

  INSPIRE application schemas

- the definition of **metadata**

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- the definition of attributes --- application schemas
  - INSPIRE application schemas
- the definition of metadata

Finding data is

Catalogues (Geoportals) for discovery

- discovery by **metadata**; a «syntactic match» of «**keywords**». It is not easy to find what exactly you are looking for.

could such queries be answered ?

« the **Rivers** in Germany with **sediments of heavy metal** ions (Ni, Zn, Fe) higher than a certain value ». –» «the highest rivers in Europe»

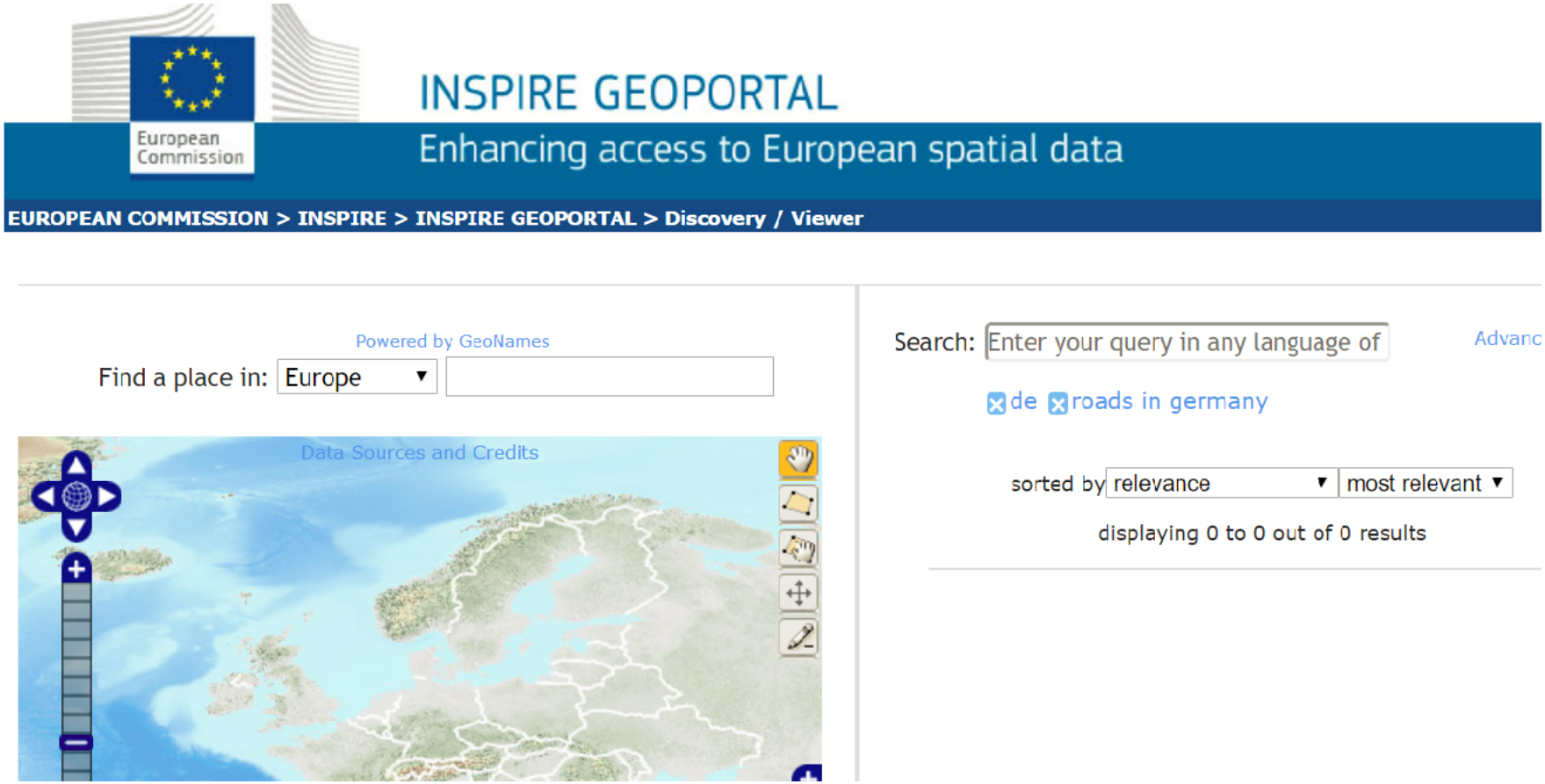
« the **secondary school** with the largest **service (catchment) area** «

\- «the country with largest areas»

« the **buildings** in Istanbul, which **under risk** when there is a **7.0 earthquake**»

« the **land slide** n Bolu

Finding data is di



What NSDI has Brought ?

Application development

- Mostly by **data integration** at the client;.

- Data comes in a «known» application schma (AS),

- translators from AS to client schema can be re-used.

The **reusability** is the king; All the heavy work has been for..

- Schema matching is manual (done by the user).

What Open Data Brings ?

- **Standards** for …….

  interoperability

Consensus based

- the definition of **geometry**

  GML, JSON, GeoJSON, GeoSPARQL

- the definition of **attributes** --- **application schemas**

  INSPIRE application schemas

- the definition of **metadata** - DCAT, CKAN, Profiles

Finding data is still diffi

Open data portals for discovery

by **metadata** and by **full text search** by the advent of **full text search engines** like solr, elasticsearch, etc. . However, it is **not semantic** yet

Queries ?..

« the **Rivers** in Germany with **sediments of heavy metal** ions (Ni, Zn, Fe) higher than a certain value ». –» «the highest rivers in Europe» **- Federated**

« the **secondary school** with the largest **service (catchment) area** «

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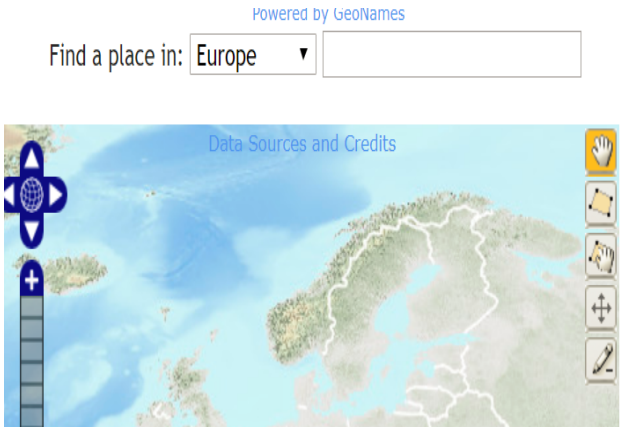
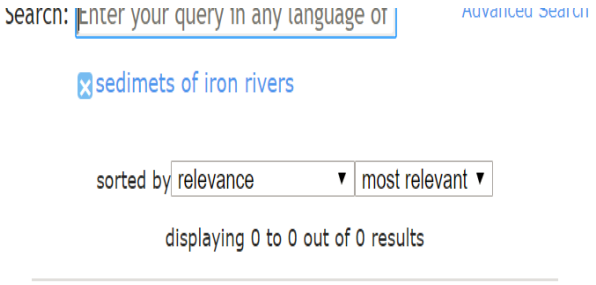
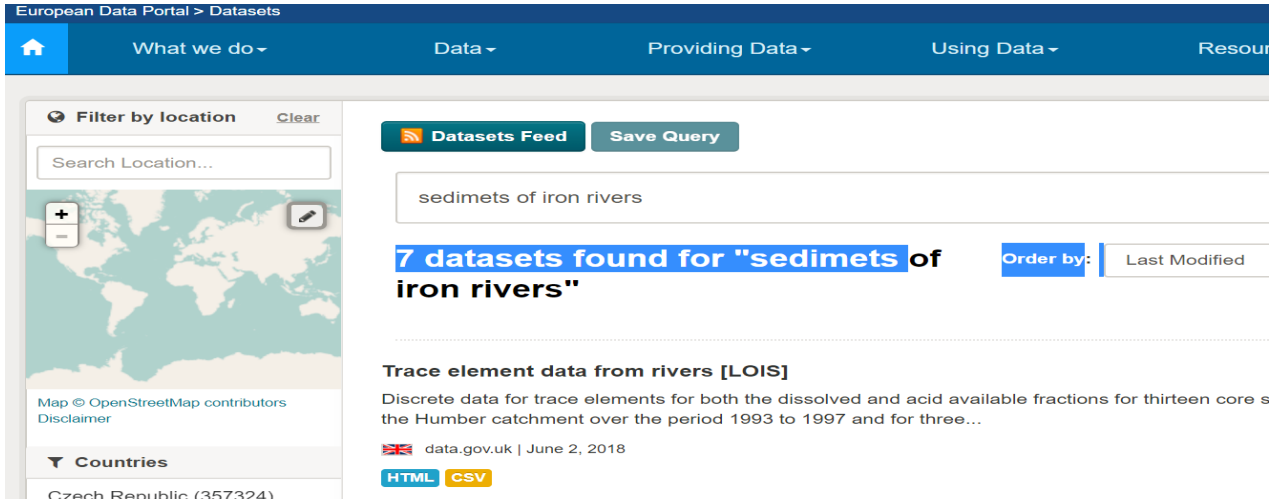
What OD brings?

Finding data is still diffic



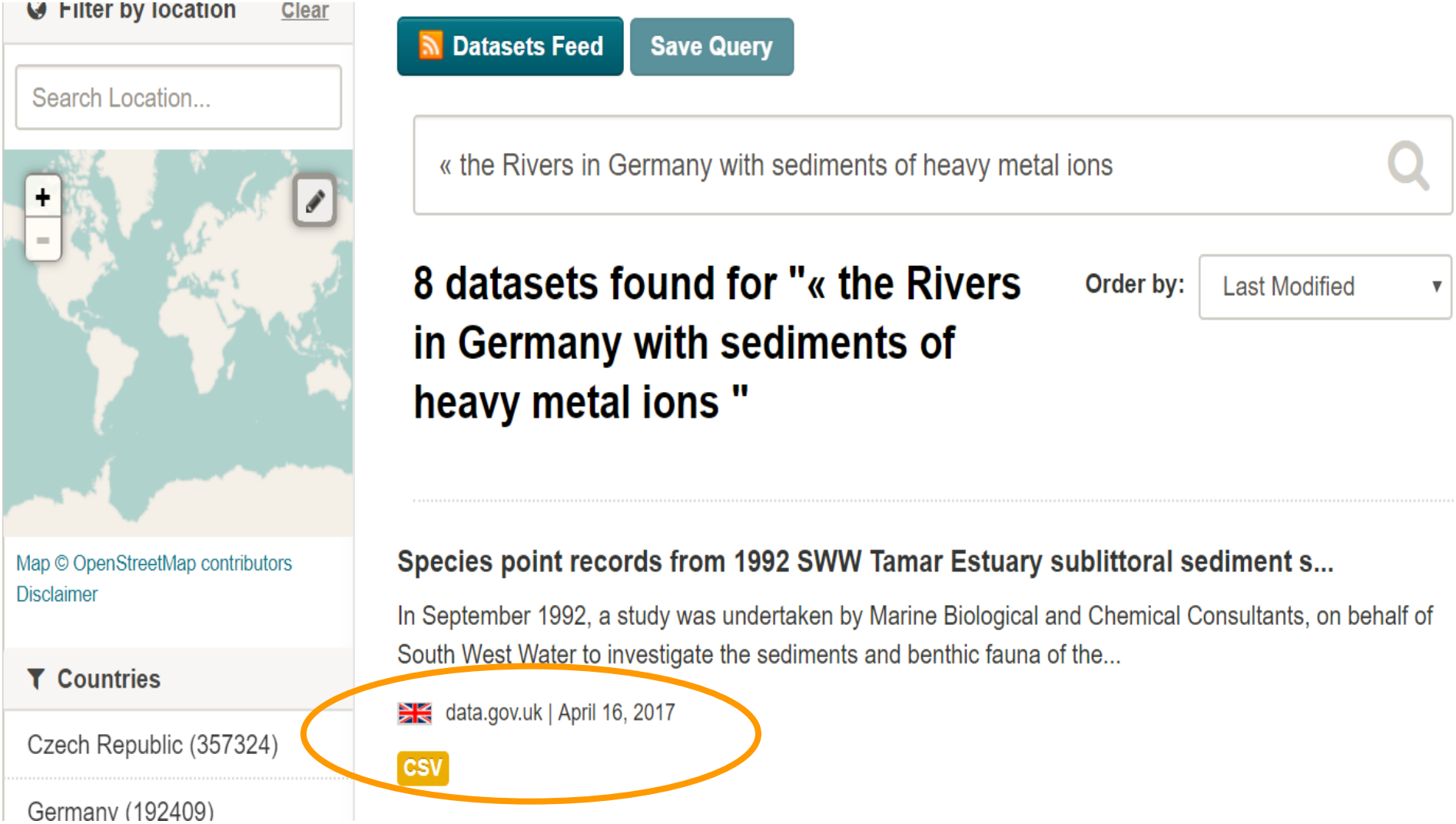


There are also ‘advance search’ option in INSPIRE Geoportal but, semantic search is still a challange…



What OD brings?

Finding data is still



What OD brings?

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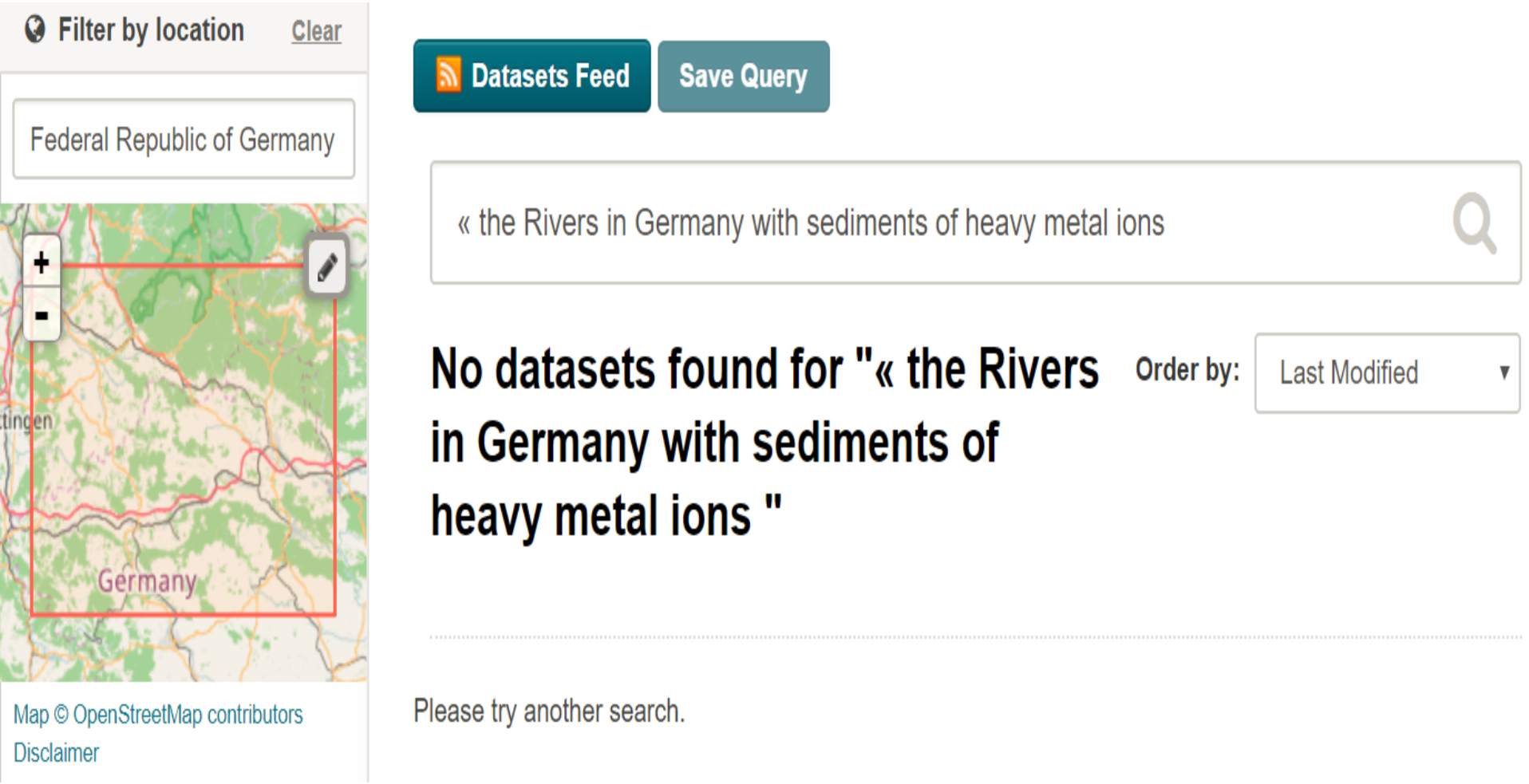

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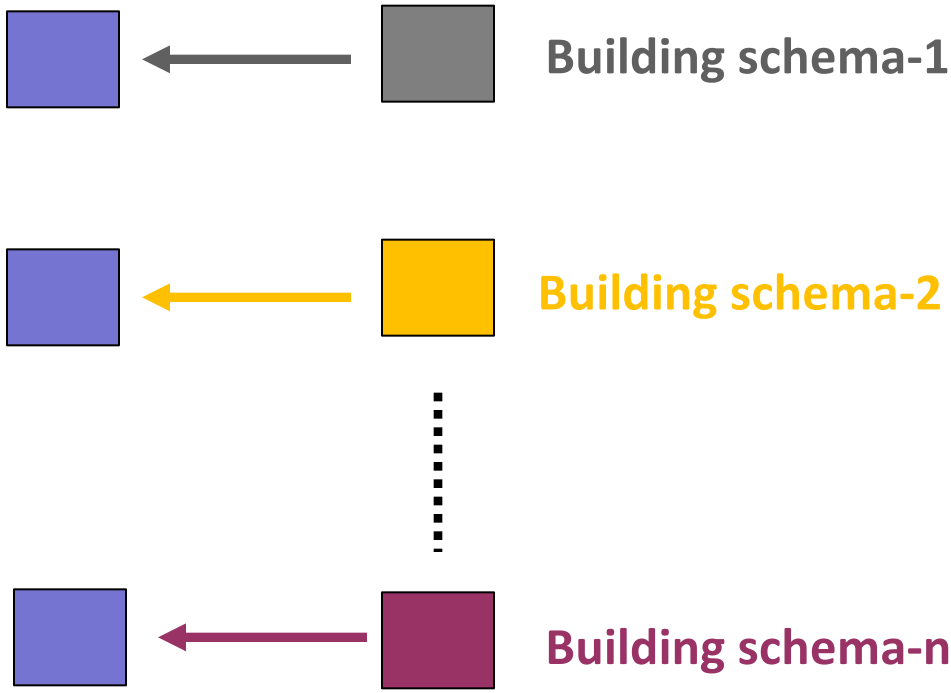
More schemas to be known

Application development



One-way translator

« Let the burden be on the develop

Gains ?

Nevertheless, ammendmend for reusability could be made;

only specifiying the matches between the sche (like XSLT),
translator code generation could be automate

Gains ?

No need to design Application schemas.

-very valuable !

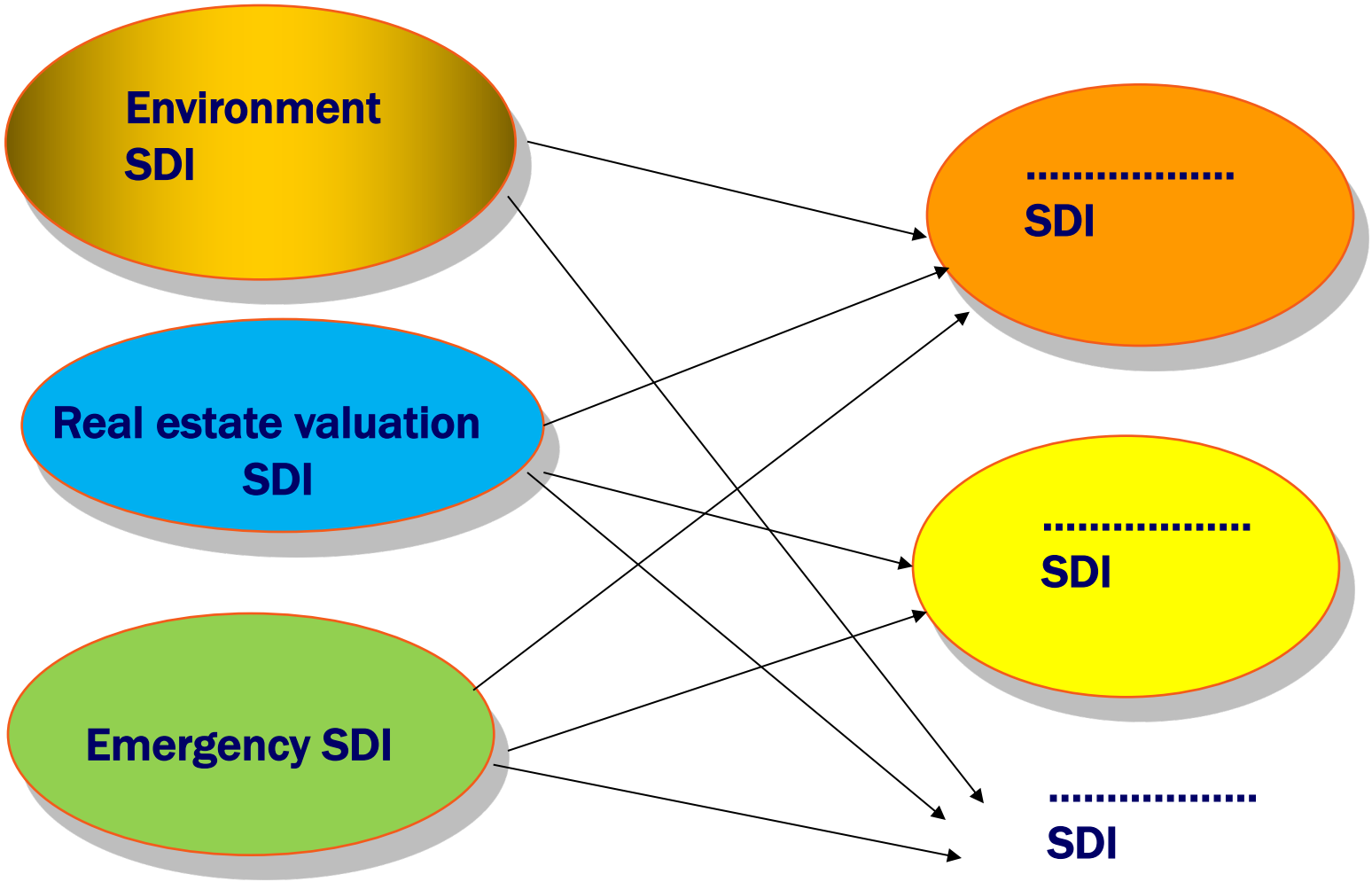
I proposed NSDI for Turkey in 1995. It is still far from being a reality..
One big reason was the lack of technical expertise for the design !...

No risk of application schema coverage of the inform
(e.g. «earthquke risk») required by an application

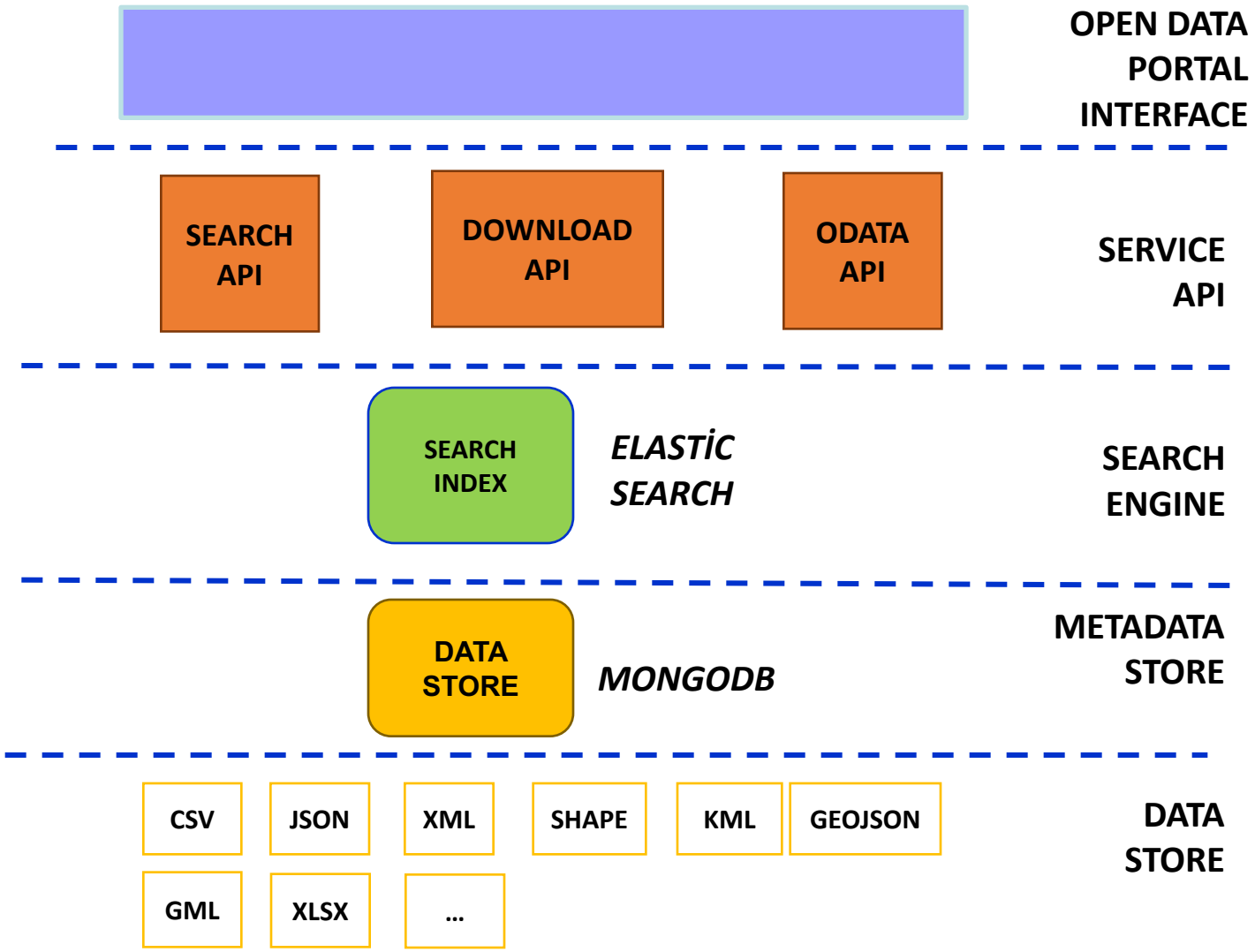
-very valuable !

Several SDIs needed to cover various domains
like environment, emergency, etc. ...

Several SDIs with different contents naturally…

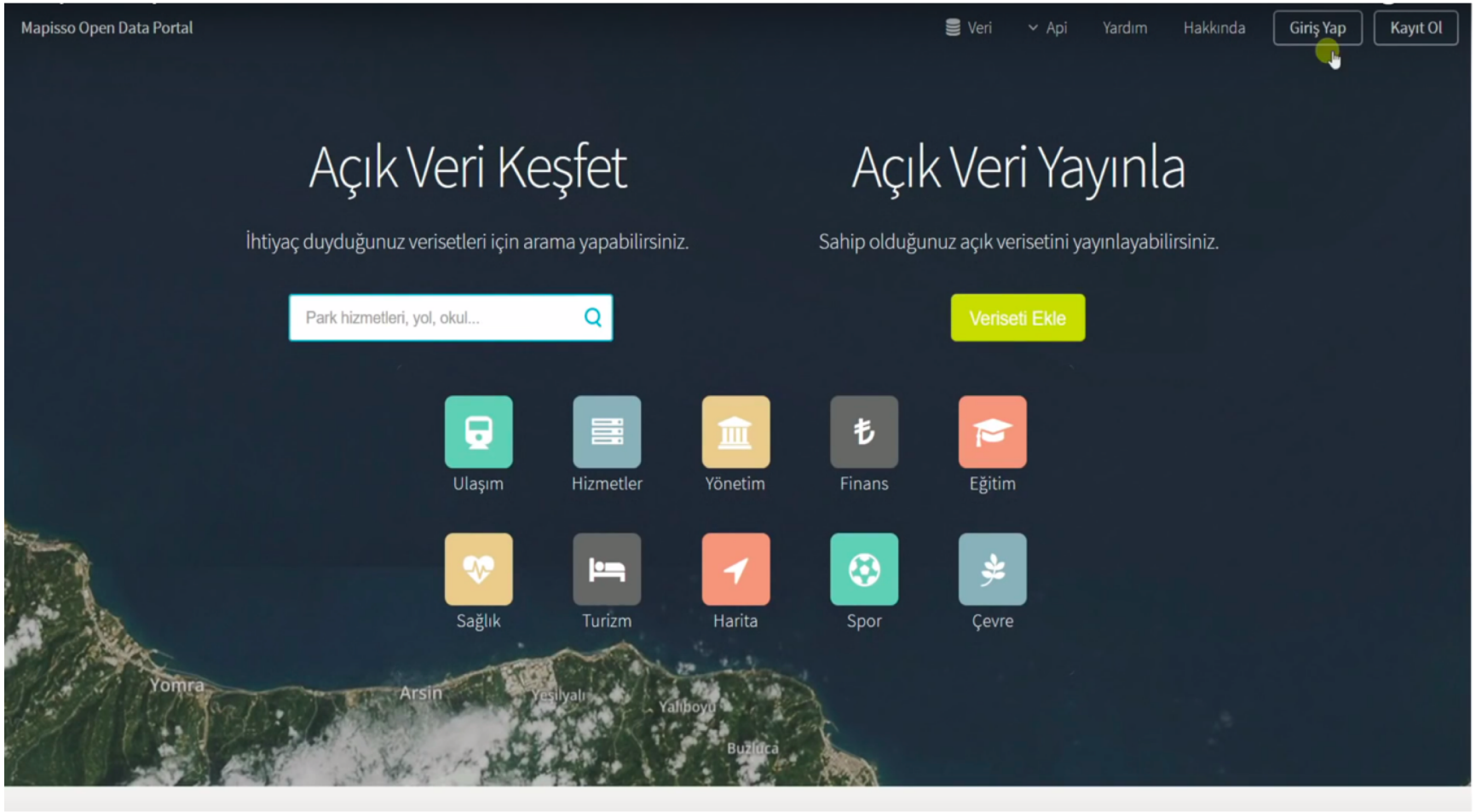


MAPISSO OPEN DATA PORTAL FRAMEWORK



MAPISSO OPEN DATA PORTAL FRAMEWORK

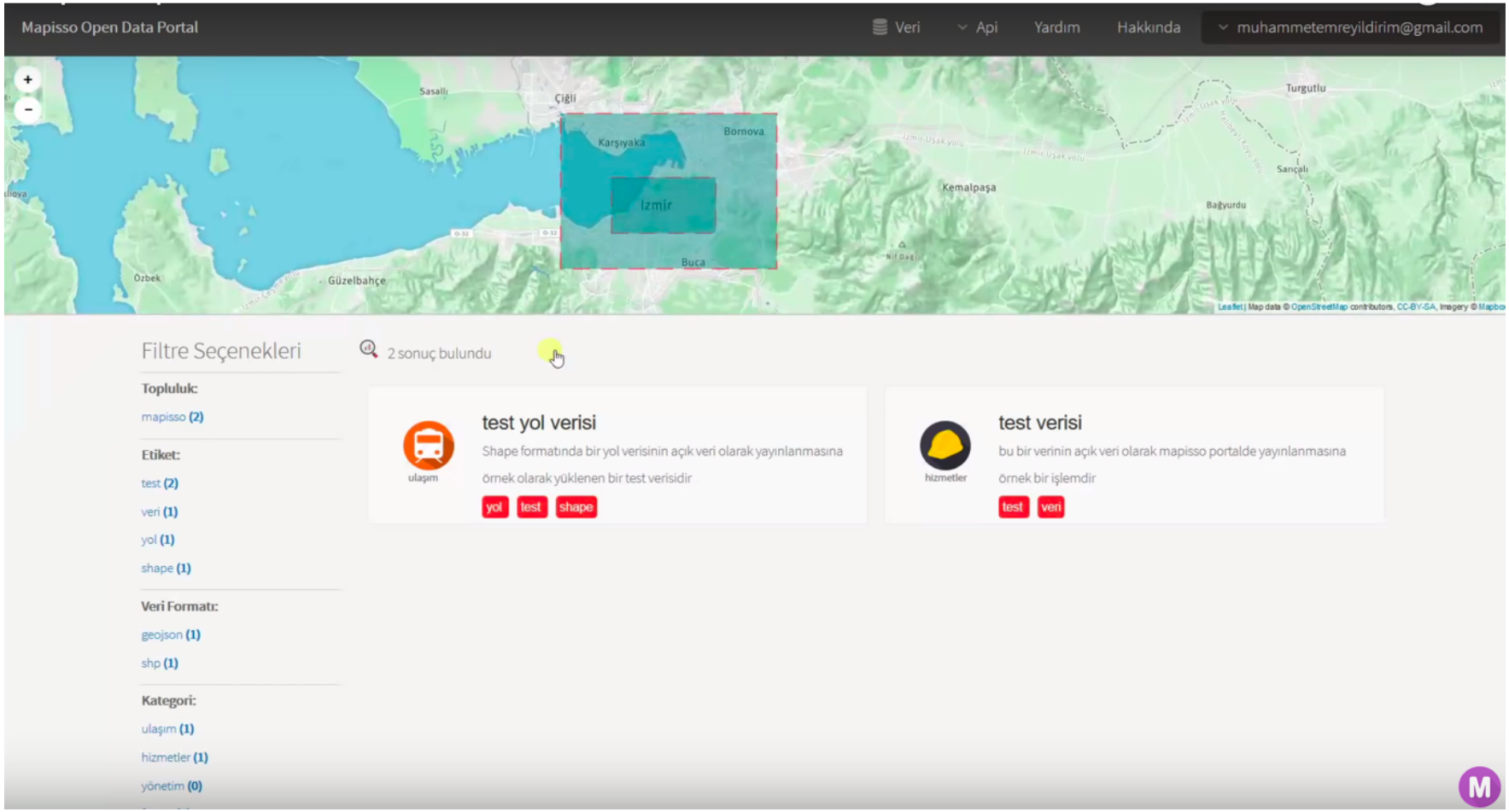
2014



Main page of Mapisso Open Data Portal

MAPISSO OPEN DATA PORTAL FRAMEWORK

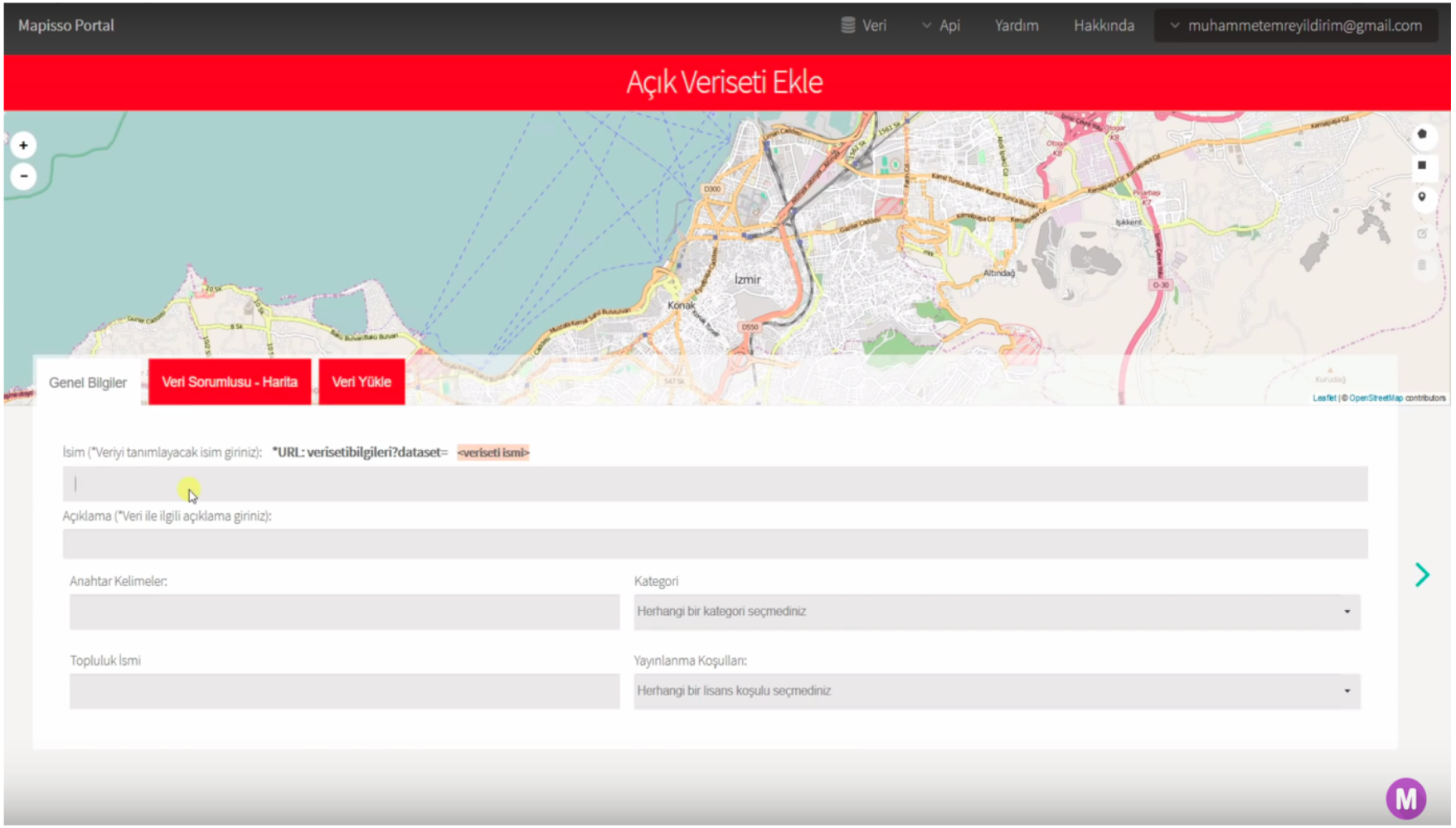
2014



Search page of Mapisso Open Data Portal

MAPISSO OPEN DATA PORTAL FRAMEWORK

2014



Adding Open data of Mapisso Open Data Portal

Çetin Cömert – M. Emre Yıldırım

Is NSDI Dead ?

conclusion

Countries like Turkey, which have not been successful for initiating a NSDI must not bother any more and move directly into an Open Data strategy.

NSDI for them is Dead! Sorry..

For the countries who already have a NSDI, NSDI data must be transformed into linked data.

NSDI for them will be dead soon…

SDI to LOD earlier w

Ordnance survey's work..

Soren Auer -- Geoknow projects, wikipedia to dbpedia work, ….

Linked Open Data in Spatial Data Infrastructures, Marcell Roth & Arne Bröring (52°North, editors), 2013.

H. Patni, C. Henson, and A. Sheth, "Linked Sensor Data", *Collaborative Technologies and Systems (CTS)*, pages 362–370, IEEE, 2010.

K. Page, D. D. Roure, K. Martinez, J. Sadler, and O. Kit, "Linked sensor data: RESTfully serving RDF and GML", *Second Int'l Workshop on SSN2009*, 2009.

C. Keßler, and K. Janowicz, "Linking Sensor Data - Why, to What, and How?", *The 3rd International workshop on Semantic Sensor Networks 2010 (SSN10) in conjunction with the 9th International Semantic Web Conference (ISWC 2010)*, 2010.

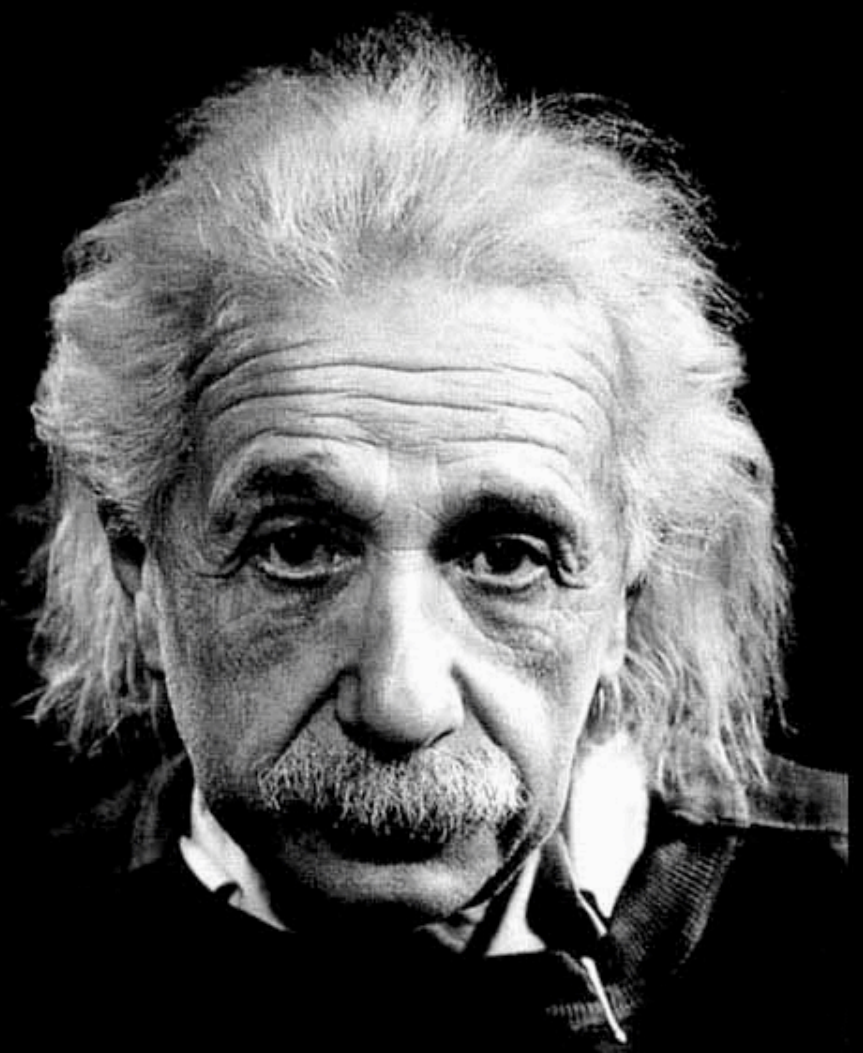
K. Janowicz, A. Bröring, C. Stasch, S. Schade, T. Everding & A. Llaves, "A RESTful Proxy and Data Model for Linked Sensor Data", *International Journal for Digital Earth*, 2011

thank you...

"Everything should be made as simple as possible, but not simpler."

Albert Einstein

1879-1955



There are millions of papers, books etc. Which claim their contribution, but it is really hard to get any useful piece of information out most of them...ÇC

Reserach areas

Scenarıo-based projects ın whıch data/information needs are beyond the base structured data ın SDI. E.g. SDG, REDD

SDI and IoT intersection points must be identified e.g. wıth applıcatıons ın smart cities

How to automate the incorporation of unstructured data into application through data mining, knowledge discovery.

Research on feedıng un(semı) structured Open Data ın Semantic web services composition

Streamlining NSDI curricula within the context of current research agenda.

- Actıon
  - Apply for research fund
  - Apply for capacıty buıldıng projects for Exchange of good practıces and experıences
  - In-depth Conferences and workshops

Vocabularies

- DCAT is an RDF vocabulary designed to facilitate interoperability between data catalogs published on the Web [DCAT, 2014]. DCAT makes extensive use of terms from other vocabularies, in particular Dublin Core.

- CKAN
- Your own (ours is an extension of CKAN)