



Trentino government linked open geodata: **a case study**

Pavel Shvaiko, Informatica Trentina

Feroz Farazi, University of Trento

Vincenzo Maltese, University of Trento

Alexander Ivanyukovich, Trient Consulting Group

Veronica Rizzi, University of Trento

Daniela Ferrari, Segreteria SIAT, PAT

Giuliana Ucelli, Segreteria SIAT, PAT

Trentino landscape



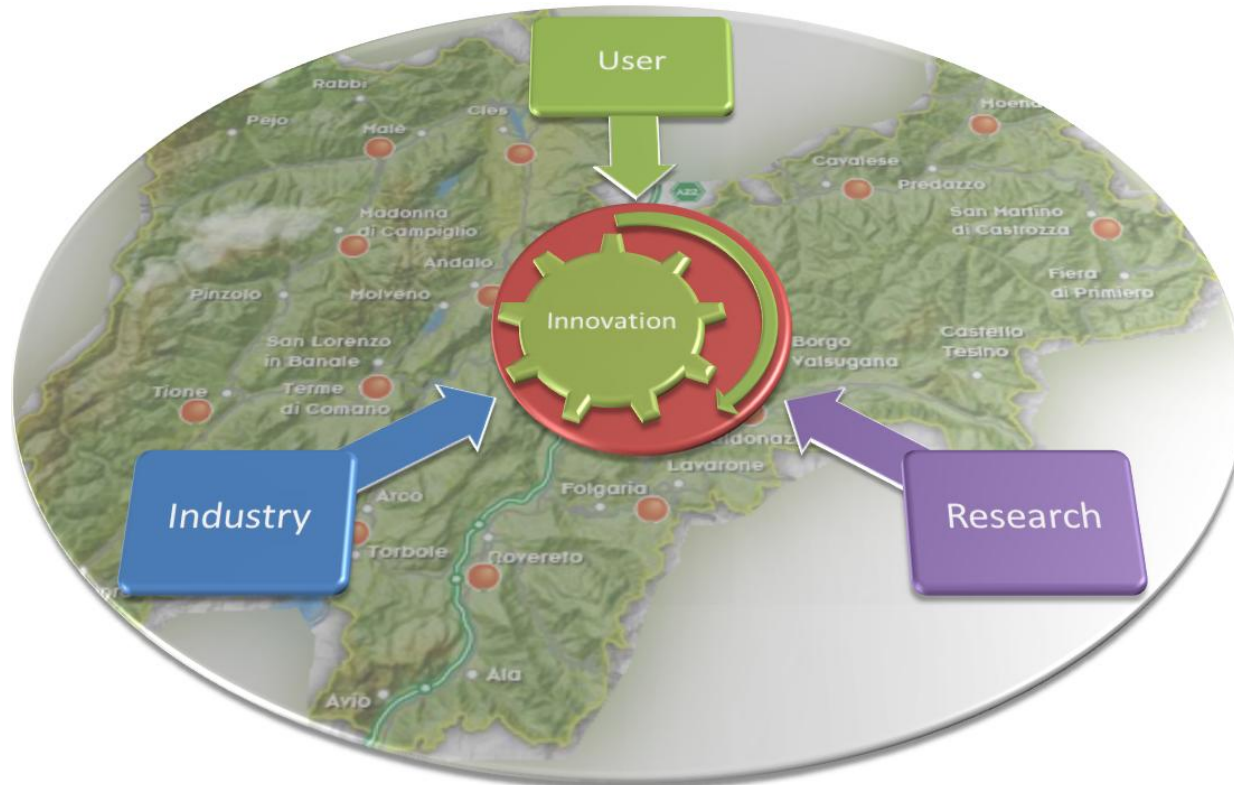
Sources:
• Courtesy of Autonomous Province of Trento
• World Wide Web

Outline

- The application setting
 - Semantic geo-catalogue
 - Linked open government data
- Case study
 - Publishing Pipeline
 - Lessons learned
- Conclusions

Application domain: eGovernment

By **eGovernment** we mean an area of application for ICT to modernize public administration by optimizing the work of various public institutions and by providing citizens and businesses with better (e.g., more efficient) services as well as with the new services (that did not exist before).



Semantic geo-catalogue

- The geo-catalogue offers a standard mechanism to classify, describe and search (also at the conceptual level) information on geo-data and geo-services
- This is a web-based instrument that extends the existing portfolio of services of the Trentino geo-portal

GeoNetwork
OpenSource



Guidelines: european, national, local

- European level: The **INSPIRE** Directive aims at creating the framework for sharing of spatial information
- National level: *DigitPA* produced the so-called **Repertorio Nazionale Dati Territoriali**
- Local level: various PAT deliberations orienting the development and evolution of SIAT towards INSPIRE



DigitPA

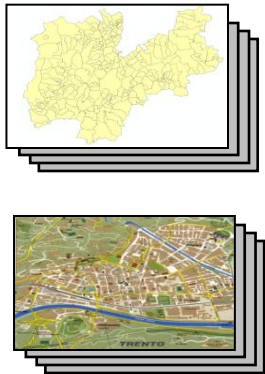


Typical scenario: data view

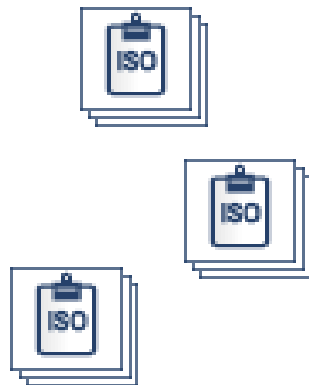


Q: bicycle tracks, Riva del Garda, 2012

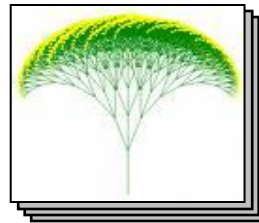
Data



MetaData



Catalog(s)



INSPIRE

- Spatial data themes (34)
 - ● Annex-I (9 themes)
 - ● Annex-II (4 themes)
 - ● Annex-III (21 themes)

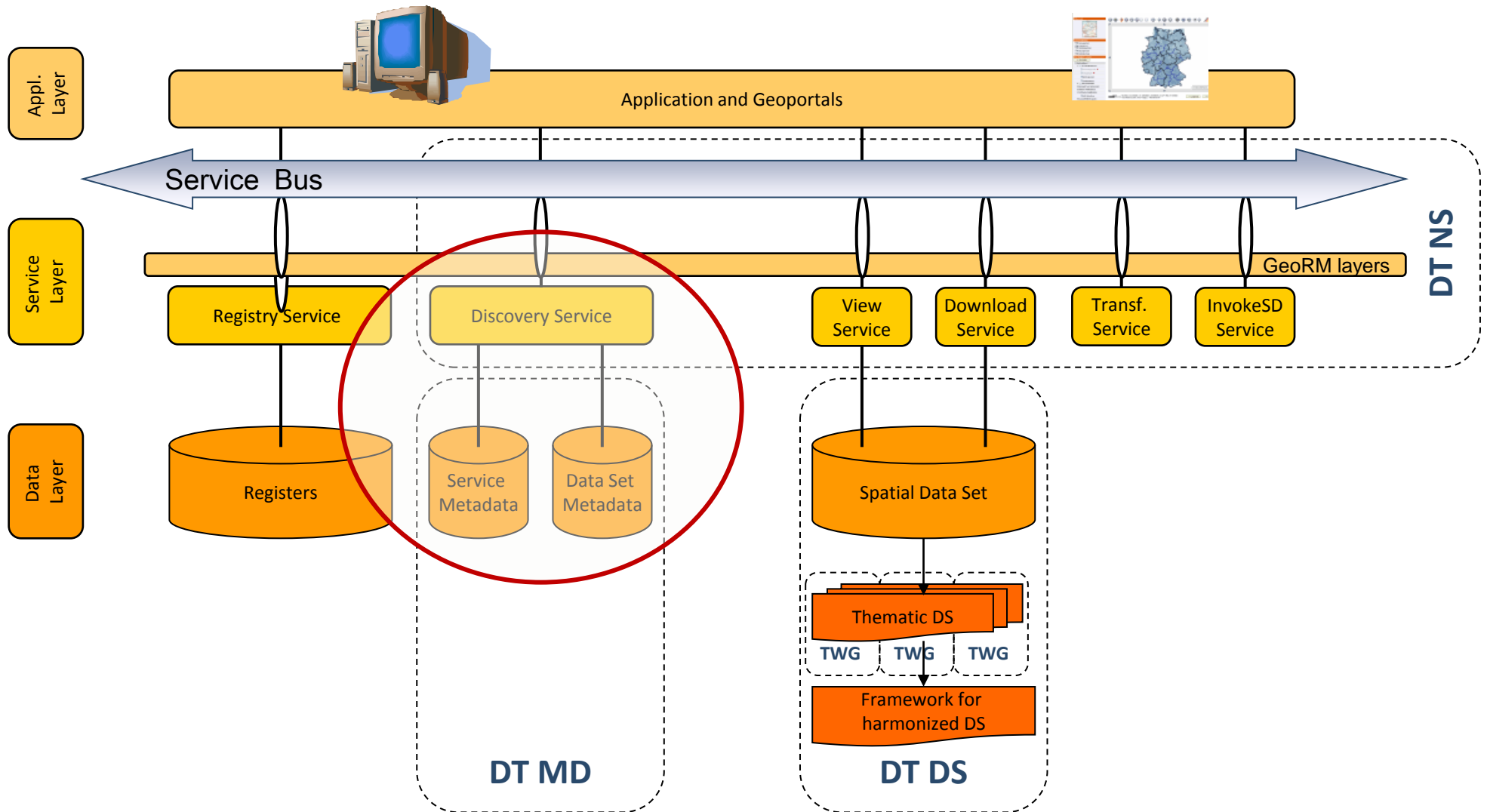
- ISO topic categories (19)
 - ● Environment
 - ● Planning and Cadastre
 - ● ...

Harvesting

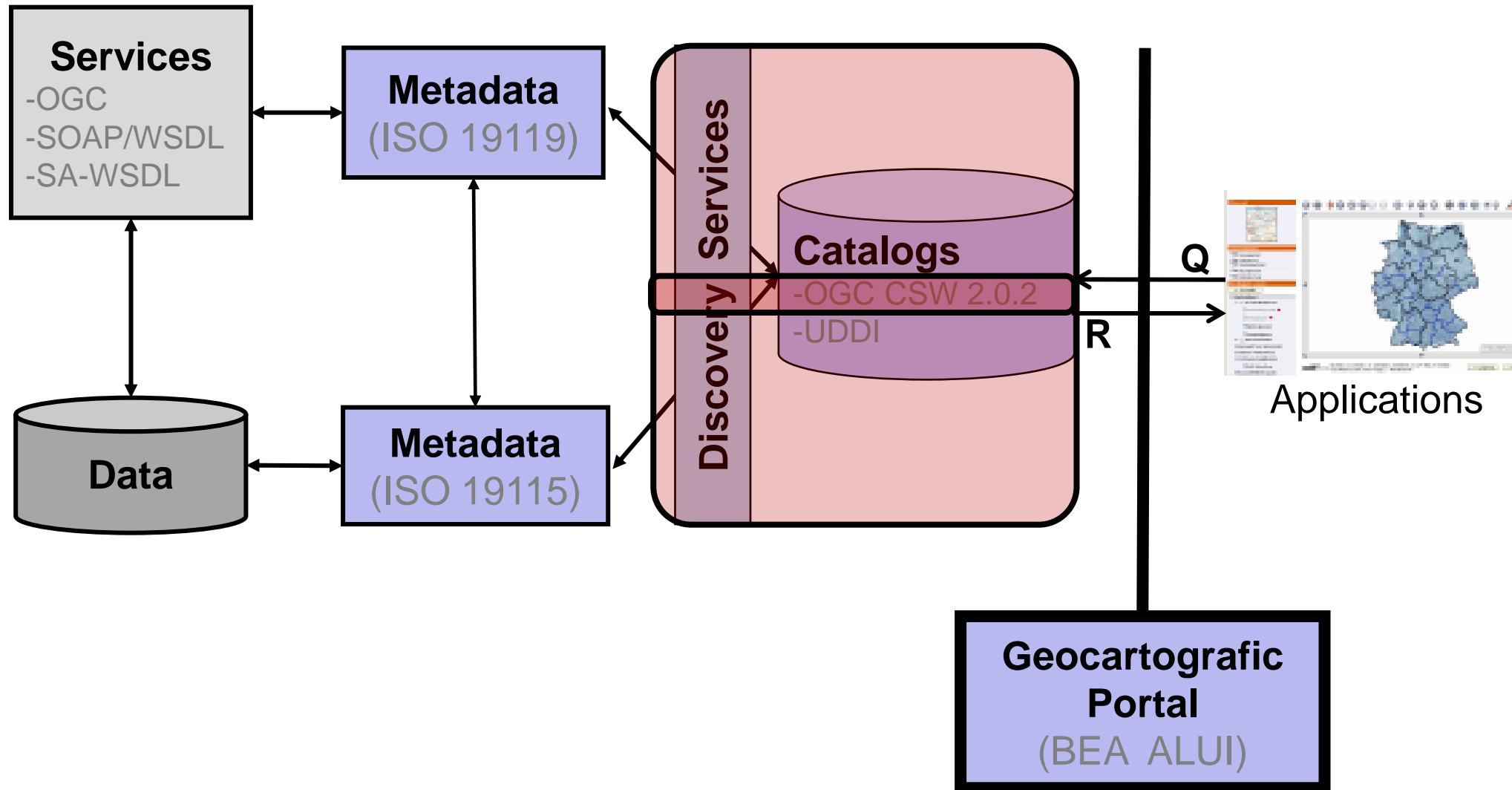
Categorizing

Matching

Architectural view (INSPIRE)



Discovery services

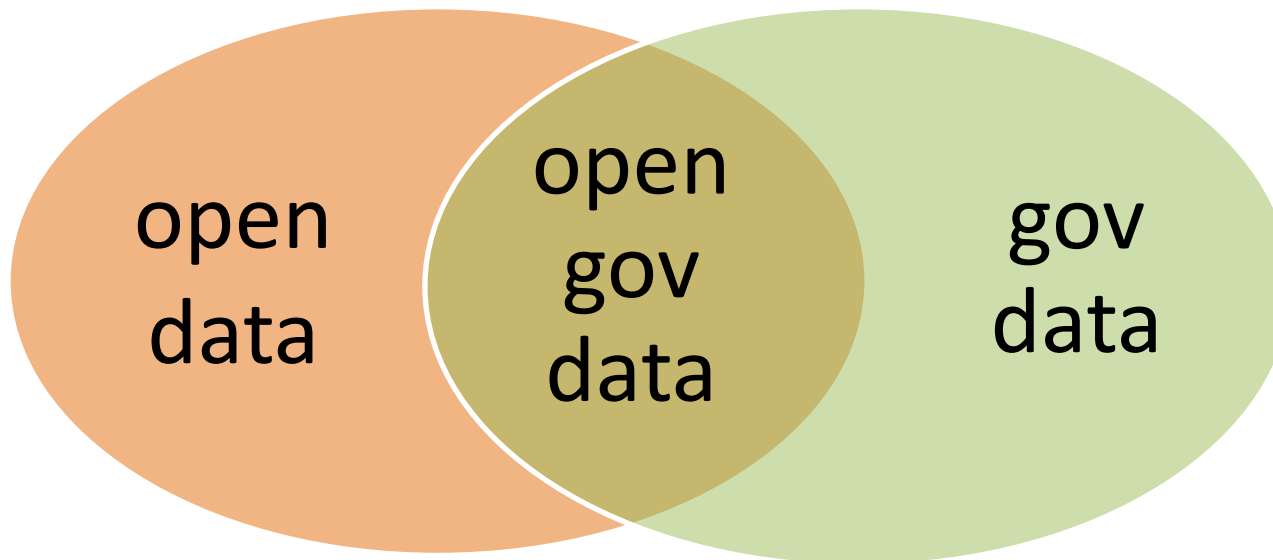


Outline

- The application setting
 - Semantic geo-catalogue
 - Linked open government data
- Case study
 - Publishing Pipeline
 - Lessons learned
- Conclusions

Open Government Data (OGD)

- Data owned by the government authorities
- Making some data available in an open (from both **legal and technical perspectives**) manner



OGD: benefits

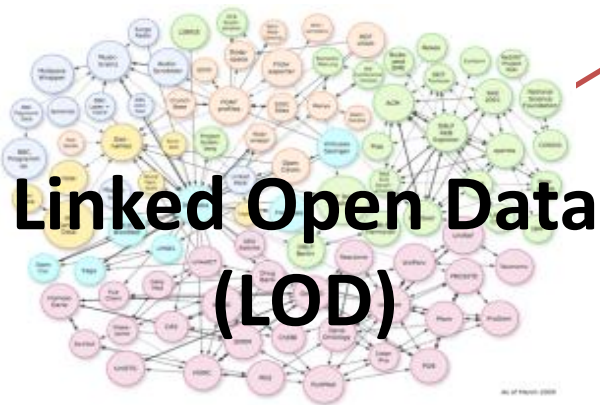
- Increased **transparency** and **simplification** for the public administration
- Potential **economic growth** through data reuse
- Increased **participation of citizens** in public administration

Linked open data



Open data

- Equal access for all
- Licensing
- Transparency
- Changes PA



Linked data

- Easier to find
- Easier to integrate
- Comply with standards

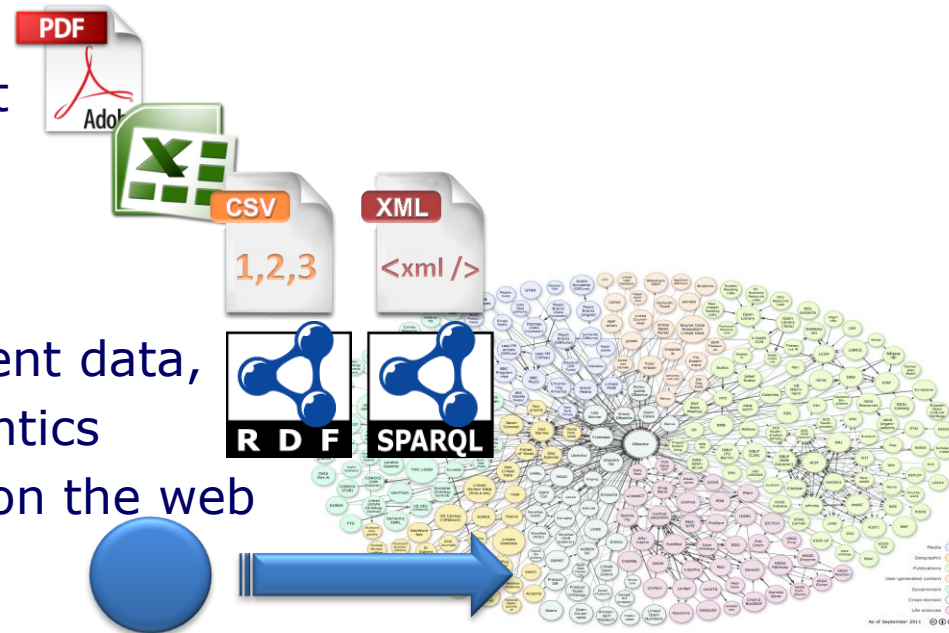
Linked Data

Data publishing principles:

1. Resources are identified by URIs
2. URIs are dereferenceable
3. When a URI is dereferenced, a description of the identified resource should be returned
4. Published web data sets must contain links to other web data sets

Five star rating:

- ★ publish data on the web in any format
- ★ ★ use structured data format
- ★ ★ ★ use non-proprietary format
- ★ ★ ★ ★ use universal format to represent data, that encapsulates both syntax and semantics
- ★ ★ ★ ★ ★ link data to other data sets on the web to provide context



Outline

- The application setting
 - Semantic geo-catalogue
 - Linked open government data
- **Case study**
 - **Publishing Pipeline**
 - **Lessons learned**
- **Conclusions**

Case study: an overview

Context

- Datasets used in the semantic geo-catalogue application
- The datasets consist of both data (shape files) and metadata (xml)

Production of linked open geo-data

- by following Open Government Data paradigm
- by following Linked Open Data paradigm

Goals

- To obtain insights on how the services of PA can be improved
- To create evidence on the expected benefits with reduced costs
- To create a critical mass

Deliberation n195 of 17/02/2012



Authorization to release some core (160) geographic datasets following the OGD paradigm





European Public Sector Information Platform
Europe's One-Stop Shop on Public Sector Information (PSI) Re-use

News Opinions People Themes Reports Events Ask an expert Get in touch!



dati.gov.it
I dati aperti della PA



Governo italiano
Presidenza del Consiglio dei Ministri
Ministero per la pubblica amministrazione e l'innovazione

Home | Cerco i dati | Voglio capire di più | Condivido un dataset | Le App della PA | Notizie

Trentino Launches Geo Data Portal

tags: dataportal geodata Information Standards Italy PSI Re-use Business Public Sector Culture Trentino

Posted by tonzjistra on 21 Feb 2012

The Italian province Trentino has opened an open geo data portal, taking an important step toward open government in the region. Currently registration for access to the data sets is still needed, but apart from that the data is available for everyone for every type of re-use. The data is licensed under Creative Commons 0 license, which is equivalent to putting the data into the public domain. See [Italian press release](#).

The first data sets available are part of the ecological and territorial information from urban planning to the use of public waters, hydrographic information and

The URL for the new geo portal is <http://www.territorio.provincia.tn.it/>



Provincia autonoma di Trento: on line i primi dati geografici

Publicato il: Lun, 20/02/2012 - 12:15

Approvata dalla giunta della Provincia autonoma di Trento, la Provincia autonoma di Trento ha messo on line il Sistema Informativo Ambiente e Territorio (SIAT) (Sistema Informativo Ambiente e Territorio) s

[La Provincia autonoma di Trento compie un importante passo verso l'Open Data](#) | [Spatialite database on OSGeo Live DVD - Spatialite Users](#) | [Google](#)

http://groups.google.com/group/spatialite-users/browse_thread

a.furieri [Vedi profilo](#) Traduci in Italiano

Hi Micha,

the Autonomous Province of Trento [1] has released just last week several interesting geographic Open Data [2] under the CC0 license terms. This one is an absolutely free data license (Public Domain) [3]: so we can safely rearrange and redistribute these datasets in a full legal way with no restrictions at all. Attributing the datasets origin will be surely polite and kind, but isn't strictly required under the very liberal CC0 clauses.

So I've prepared a sample SpatialLite DB [3] containing the following tables:

- Administrative Boundaries (Local Councils) [MultiPolygon]
- Populated Places (footprints) [MultiPolygon]
- Municipal Halls [Point]
- Highways [Linestring]
- Railways [Linestring]



Accedi

Notizie Impresa&Territori Norme e Tributi Finanza Commenti&Inchieste Tecnologie

Argomenti del Sole Persone 566 Aziende 483 Le nostre Firme 97 Le Partecipazioni

OpenDataBlog



« Precedente

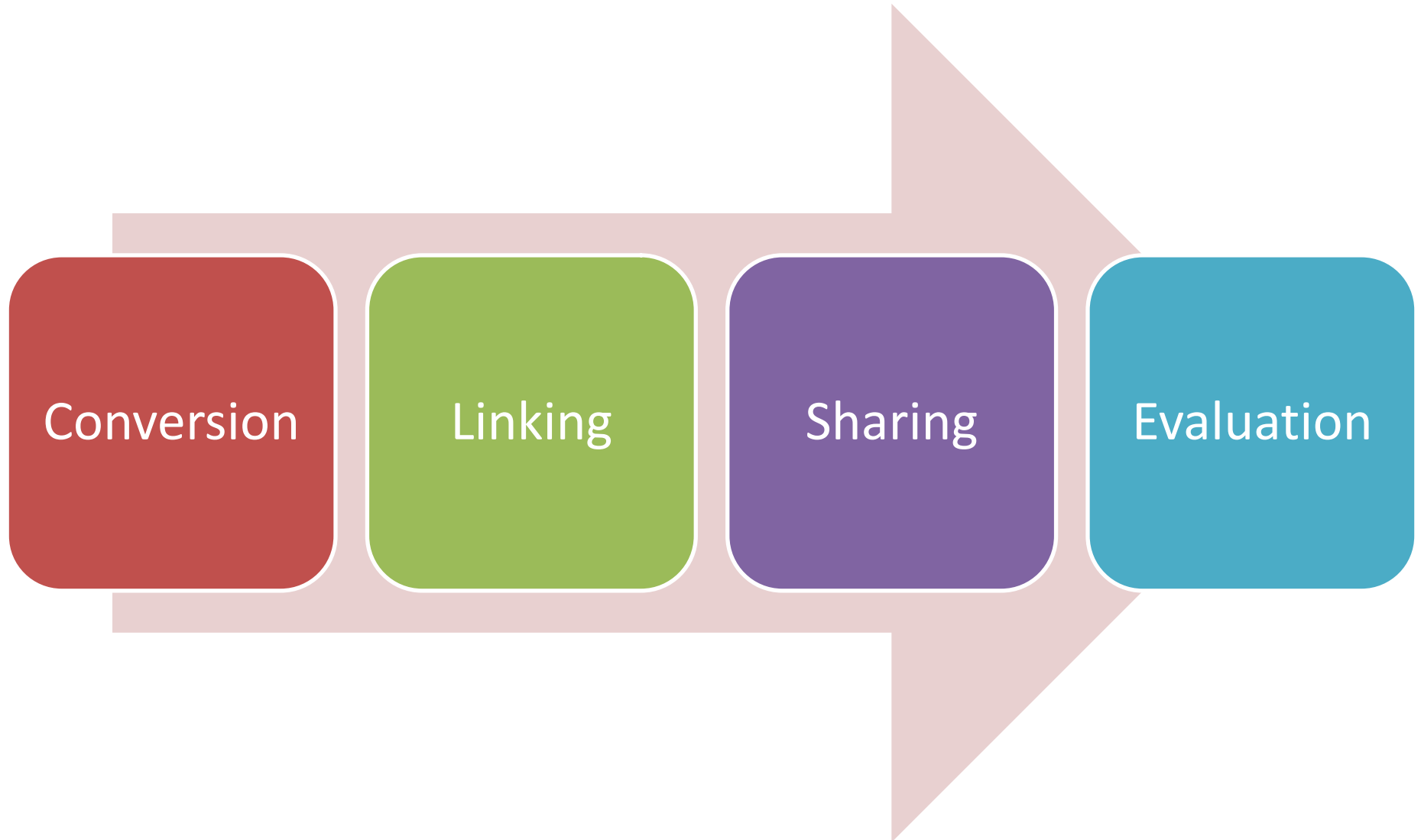
Trentino, la regione digitale

Publicato il mercoledì 22 febbraio 2012 - 17:02

[Mi piace](#) 10 [Tweet](#) 12

Dopo il Piemonte anche il Trentino mette a disposizione i primi dati geografici con licenza aperta e quindi utilizzabili da tutti, cosa che fino a ieri era possibile solo dopo la procedura di autenticazione. La città di Trento inizia così il suo percorso per diventare un sistema amministrativo moderno con l'utilizzo degli open data. Il Trentino persegue inoltre l'obiettivo di costruire città smart con un progetto finanziato dalla Comunità Europea per oltre 4 milioni di euro.

Publishing pipeline

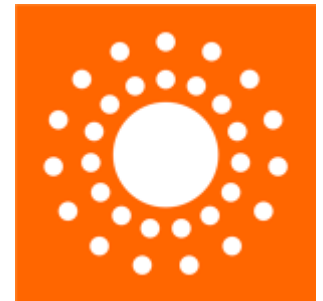


Conversion



Geo-metadata conversion

```
<rdf:Description rdf:about =  
    "http://www.territorio.provincia.tn.it/geodati/p_tn:piste_ciclabili">  
  <dc:language>it</dc:language>  
  <dcmibox:westlimit>10.41</dcmibox:westlimit>  
  <dc:identifier>http://www.naturambiente.provincia.tn.it/</dc:identifier>  
  <dc:format>shp</dc:format>  
  <dc:rights>Dato pubblico</dc:rights>  
  <dc:title>Piste ciclabili</dc:title>  
  <dc:creator>Dipartimento Risorse Forestali e Montane</dc:creator>  
</rdf:Description>
```



Geo-data conversion

```
<rdf:Description rdf:about="http://www.territorio.provincia.tn.it/geodati/resource/piste_ciclabili">  
  <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#Class"/>  
  <owl:sameAs rdf:resource =  
    "http://rdf.freebase.com/ns/guid.9202a8c04000641f8000000000428308"/>  
</rdf:Description>
```

Class

```
<rdf:Description rdf:about =  
  "http://www.territorio.provincia.tn.it/geodati/resource/piste_ciclabili/529">  
  <geontology:length rdf:datatype =  
    "http://www.w3.org/2001/XMLSchema#double">1445.8484810675</geontology:length>  
  <rdfs:label xml:lang="it">Mori - torbole</rdfs:label>  
  <rdf:type rdf:resource="http://www.territorio.provincia.tn.it/geodati/resource/piste_ciclabili"/>  
  <rdfs:label xml:lang="it">529</rdfs:label>  
  <geo:geometry rdf:resource =  
    "http://www.territorio.provincia.tn.it/geodati/resource/piste_ciclabili_529"/>  
</rdf:Description>
```

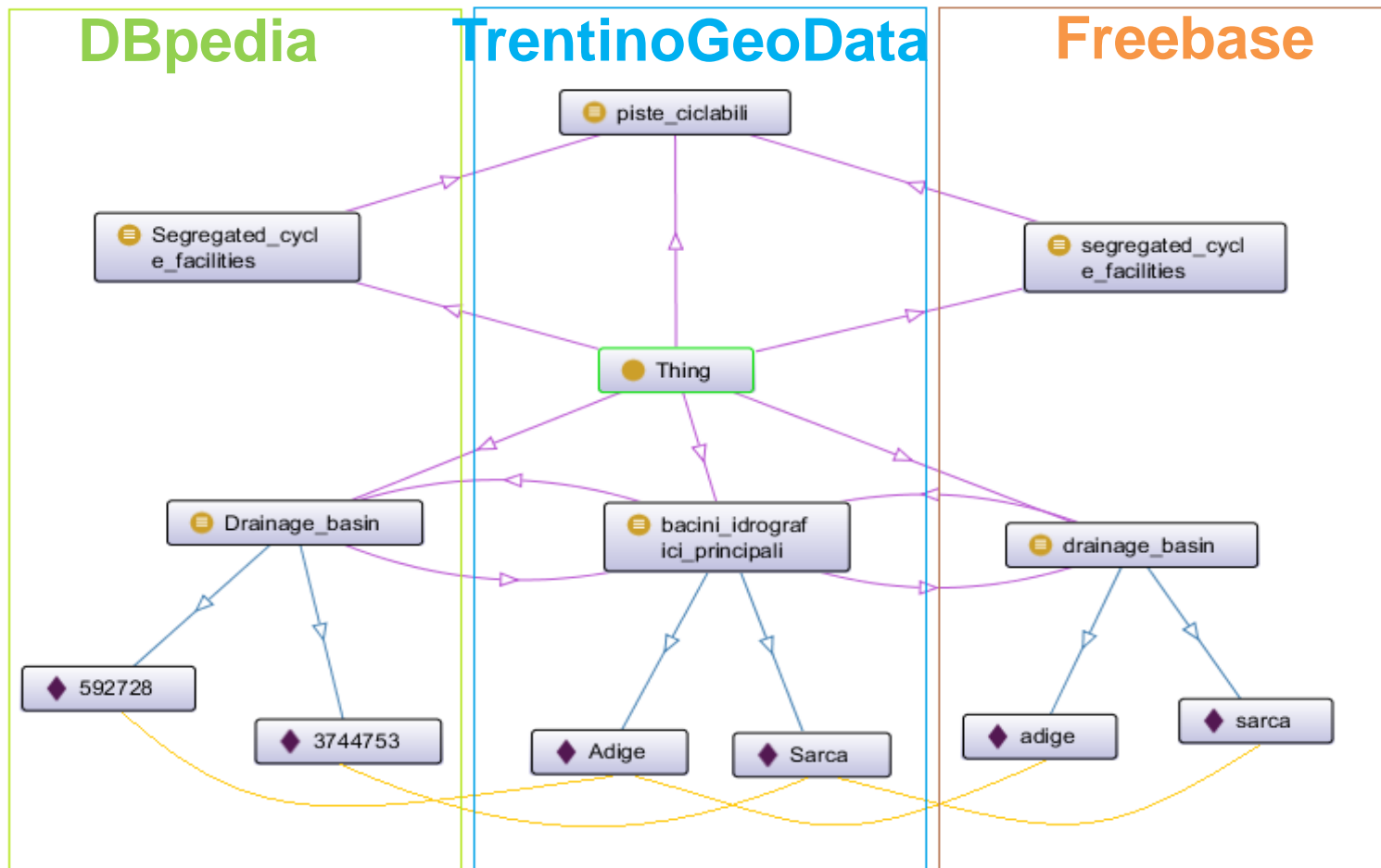
Instance

Geometric
Shape
Polyline

```
<rdf:Description rdf:about =  
  "http://www.territorio.provincia.tn.it/geodati/resource/piste_ciclabili_529">  
  <geontology:polyline>646339.346896746,5082179.74045936  
    ...  
    645575.851739799,5081173.68539361  
</geontology:polyline>  
</rdf:Description>
```

Linking

- Links were established to external data sources
- High quality of the **links** were guaranteed through **validating** them **manually**



Sharing

Portale Geocartografico Trentino

S.I.A.T.
Cartografia di base
Interoperabilità - Servizi WMS
Interoperabilità - Servizi WFS
Lidar
Ricerca nel Geo-catalogo
Carta Tecnica Provinciale
Beni librari ed archivistici
Edilizia scolastica
Geologia
Meteotrentino
Minerario
Organizzazione e qualità attività sanitarie
Recupero ambientale e urbanistico aree industriali
Risorse Forestali e Montane
Sistema Informativo Ambientale - APPA
Territorio rurale
Urbanistica e tutela del paesaggio
Utilizzazione Acque Pubbliche
Valutazioni ambientali

[Home](#) [S.I.A.T.](#) [Ricerca nel Geo-catalogo](#)

Ricerca

Ricerca

Ricerca avanzata

Ricerca per contenuto

piste ciclabili

1

Inizia la ricerca

2

Il geo-catalogo permette di classificare, descrivere e ricercare informazioni relative a geo-dati e geo-servizi secondo le specifiche tecniche del Repertorio Nazionale dei Dati Territoriali del DigitPA. I servizi di accesso ai tematismi Open Government Data, con licenza Creative Commons Zero - CCZero e in formato RDF, sono attualmente in fase sperimentale.

Risultati: 1-1 (1)



PISTE CICLABILI



3

Contatto: Dipartimento Risorse Forestali e Montane

Parole chiave: SIAT , piste , ciclabili , RNDT

4

Metadato

Scarica XML

5

DESCRIZIONE

Lo strato informativo rappresenta il reticolo delle piste ciclabili del Trentino

6

Scarica dati



Scarica RDF

7

Evaluation: mash-up example

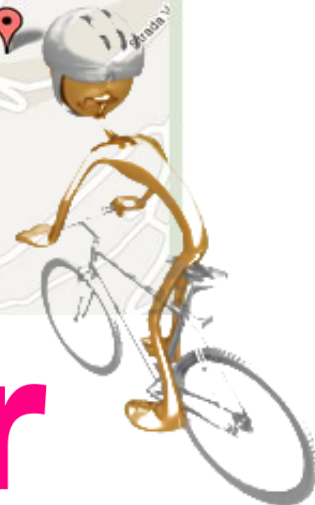
The screenshot displays a web application mash-up. On the left, there are three vertical panels with lists of items:

- Stream:** A list of checkboxes for 'Adige', 'Astico', 'Avisio', 'Brenta', 'Chiese', 'Cismon', 'Cordevole', and 'Cordevole'.
- Bicycle Track:** A list of checkboxes for 'Mori - torbole 505' through 'Mori - torbole 515', all of which are checked.
- Bicycle Track Fountains:** A list of checkboxes for 'Cles - mostizzolo', 'Giudicarie centrali', 'Mori - torbole', 'Piana rotaliana', 'Primiero', 'Riva del garda - varone', 'Sarche - limaro'', and 'Torbole - trento'.

The main map area shows a geographical view with a red highlighted path. A central window displays three Flickr photos. A 'Drinking Water Fountain!' label is placed on the map. A bicycle icon is visible in the bottom right corner of the map area. The map includes standard navigation controls like a compass and zoom buttons.



flickr



Evaluation: regional workshop

- Good participation from PA, industry, and research
- A local start-up company SpazioDati was asked to use the released data sets
- In one week:
 - **TINDES** –a naturalistic index
 - 32 PAT datasets
 - 9 OpenStreetMap datasets



Outline

- The application setting
 - Semantic geo-catalogue
 - Linked open government data
- **Case study**
 - Publishing Pipeline
 - **Lessons learned**
- **Conclusions**

Lessons learned

Conversion. URIs, which patterns to adopt: self-explanatory vs. GUIDs?

Linking. Research tools are still not flexible and precise enough, hence manual process is often preferred

Sharing. Adoption of the CreativeCommonsZero license as well as the use of the geo-portal, being a single point of access for geo-data were well received

Evaluation. A mash-up and workshop indicated that the approach adopted was a useful tactic. Feedback received on what would be useful to have:

- APIs with SLAs to give access to the fresh data to built services on top of it
- Feedback loop with citizens to improve data

Conclusions

- Experimental work on releasing some (40%) core geographic datasets as linked open government data
- Representation language and vocabulary
 - RDF for representing both the data and metadata
 - WGS84 vocabulary for data and Dublin Core for metadata
 - OWL for linking to external sources: DBPedia and Freebase
- **Vertical tactical experimentation** to gain momentum and engagement with the stakeholders. This was a success and it prepared and has **opened the road for a larger transversal initiative**

Thank you for your attention!

Pavel Shvaiko, PhD.

Innovation and Research Manager

TasLab, Informatica Trentina S.p.A.

Trento, Italy

Pavel.Shvaiko@infotn.it