



**POLITECNICO**  
MILANO 1863



Geobeyond

**TEDOC**  
SERVIZIO TESI  
E DOCUMENTAZIONE

**ARCHIVES  
AND LIBRARY SYSTEM**

# Open Geoportal lands to Europe: use cases and improvements from GeoData@Polimi

Marcella Samakovlija, Francesco Bartoli



# Which was the problem?

At Politecnico di Milano we have a large collection of maps

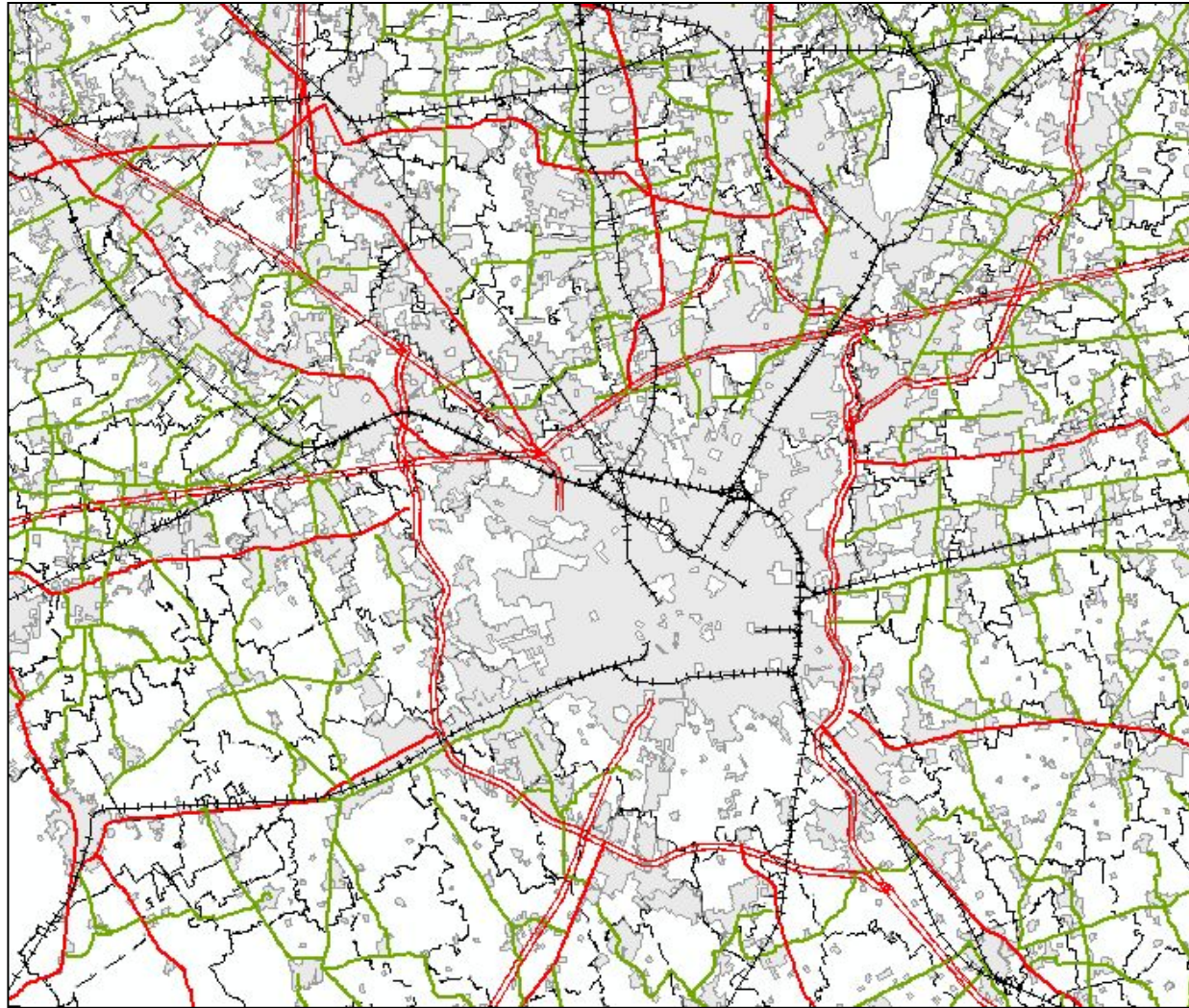
- Raster
- Vector
- Paper
- Historical
- Actual
- Orthoimagery



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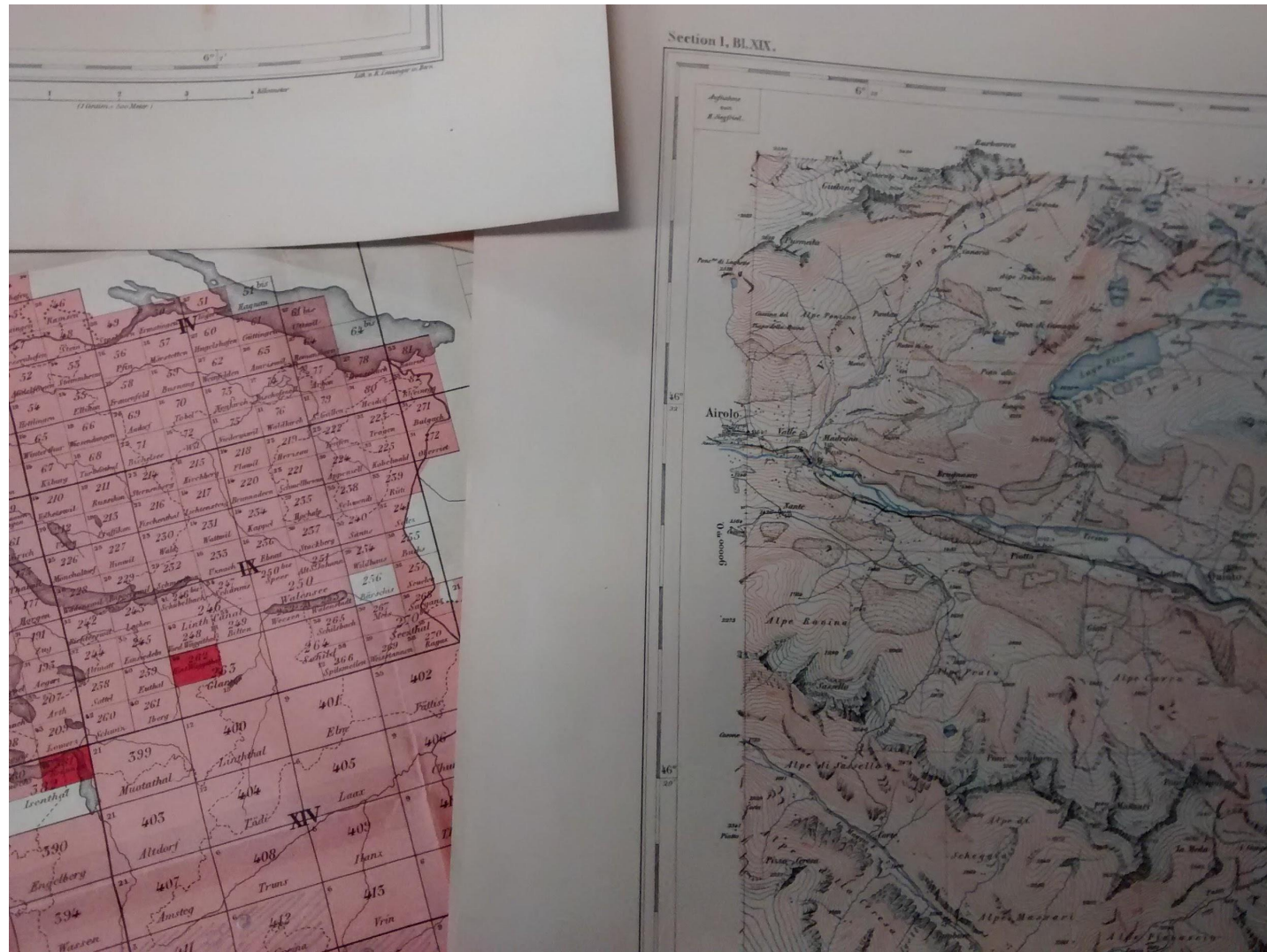
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# How can a student reach these documents?

- **Library catalogue**
- **Discovery tools**

The search through the library catalogue has always been very difficult mostly because each cartographic series consists of numerous map sheets and the user, without an appropriate geographic reference, is not able to identify which is the sheet that represents the portion of land of his interest.

These tools are not efficient to reach cartographic documents

This problem is not due to a particular lack of those tools, but it rather depends on the specific characteristics of cartography



**the best search method is place**





# Critical points

- **Search:** for the user it is difficult to find the cartographic resources needed
- **Delivery:** difficulty in delivery of digital geodata: an automatic download is not possible and the user has to come to our office to get the files
- **Survey:** difficulty in producing statistical evaluations about resources use: any use survey has to be made by hand
- **Catalogue:** need to find a unique method to catalogue and manage all kind of cartographic resources both digital and paper, raster and vector



# The technical choice - Why OGP?

**VIEWER GEOGRAFICO**  
Geoportale Della Lombardia  
K:539.623.271 Y:5.075.215.189 - Scala: 1:1.000.000 - Sistema di riferimento: UTM32 WGS84

**Legenda**

**Graphics Layer**  
GraphicsLayer645

**Stato avanzamento CTR**  
Stato aggiornamento sezioni CTR

- Sezione CTR non aggiornata dai Database Topogr
- Sezione CTR parzialmente aggiornata dai Databasi
- Sezione CTR completamente aggiornata dai Datab

Regione Lombardia | CHI SIAMO | DOCUMENTI | NEWS | SERVIZI | CATEGORIE | RICERCA | CANALI TEMATICI | LINK | HOME | Geoportale

Geoportale della Lombardia > Servizi > Download Dati

## Download Dati Geografici

Il mondo reale può essere rappresentato in raster.

**Dati vettoriali:** sono costituiti da elementi in cui ciascuno è associato a un punto. I dati vettoriali permettono di rappresentare i dati in modo preciso, in relazione alla precisione del dato.

**Dati Raster:** permettono di rappresentare i dati in modo approssimativo, in relazione alla dimensione del pixel. La dimensione del pixel è correlata alla precisione del dato.

Il servizio download offre all'utente la possibilità di scaricare i dati in formato raster. È possibile scaricare 5 livelli per ogni dato.

IT Lombardia - Servizio download dati geografici - Google Chrome  
www.cartografia.regione.lombardia.it/it/regist/download/

**Servizio download Dati Geografici**

**Tipo dati geografici**

Vettoriali  Sezioni CTR  Altri raster

**Gruppo**

SELEZIONA

**Elenco layer disponibili**

SELEZIONA

**Formato dati**

SELEZIONA

**Sistema di coordinate**

SELEZIONA

**Indirizzo e-mail**

**Elenco layer selezionati**

**Area di interesse**

Tutta la regione  Area personalizzata

Descrizione area selezionata

INVIA RICHIESTA

**Maps Online**

Search Collections Blog About

Instant Search Results

- Ducato ovest, Territorio di Milano 1830-1850 - Schick, Peter I
- Brescia episcopatus Mediolan[en] ducatus 1830 - Heinen Horden
- Brescia episcopatus Mediolan[en] ducatus 1789 - s.a.
- Territorio di Pavia, Lodi, Novara, Tortona, Alessandria & altri vicini dello stato di Milano 1831-1850 - Tomes Tomkinson
- Ducato, Ovest Territorio di Milano 1830-1850 - Magli, Fabio**
- Territorio di Pavia, Lodi, Novara, Tortona, Alessandria et altri vicini dello Stato di Milano 1830-1850 - Schick, Peter I
- Il fiume Ticino, del lago maggiore final Po 1730-1750 -

**Istituto Geografico Militare**  
Catalogo Prodotti

Latitudine: 45°14'38" Longitudine: 13°57'32"

Regione: "qualsiasi" Comune: "qualsiasi" Copertura: "qualsiasi"

Provincia: "qualsiasi" Nome: "qualsiasi" Cerca Info Tecniche

**Prodotto**

- rie 25v (Tavolette)
- rie 25
- rie 50 e 50/L
- rie 100/V e 100/L
- Mondo (JOG), serie 250/G
- rie 250 "Regioni"
- rie 500
- rie Milione
- FM
- ogrografia
- 325
- sfondo

Clicca sulla mappa per cercare i prodotti.

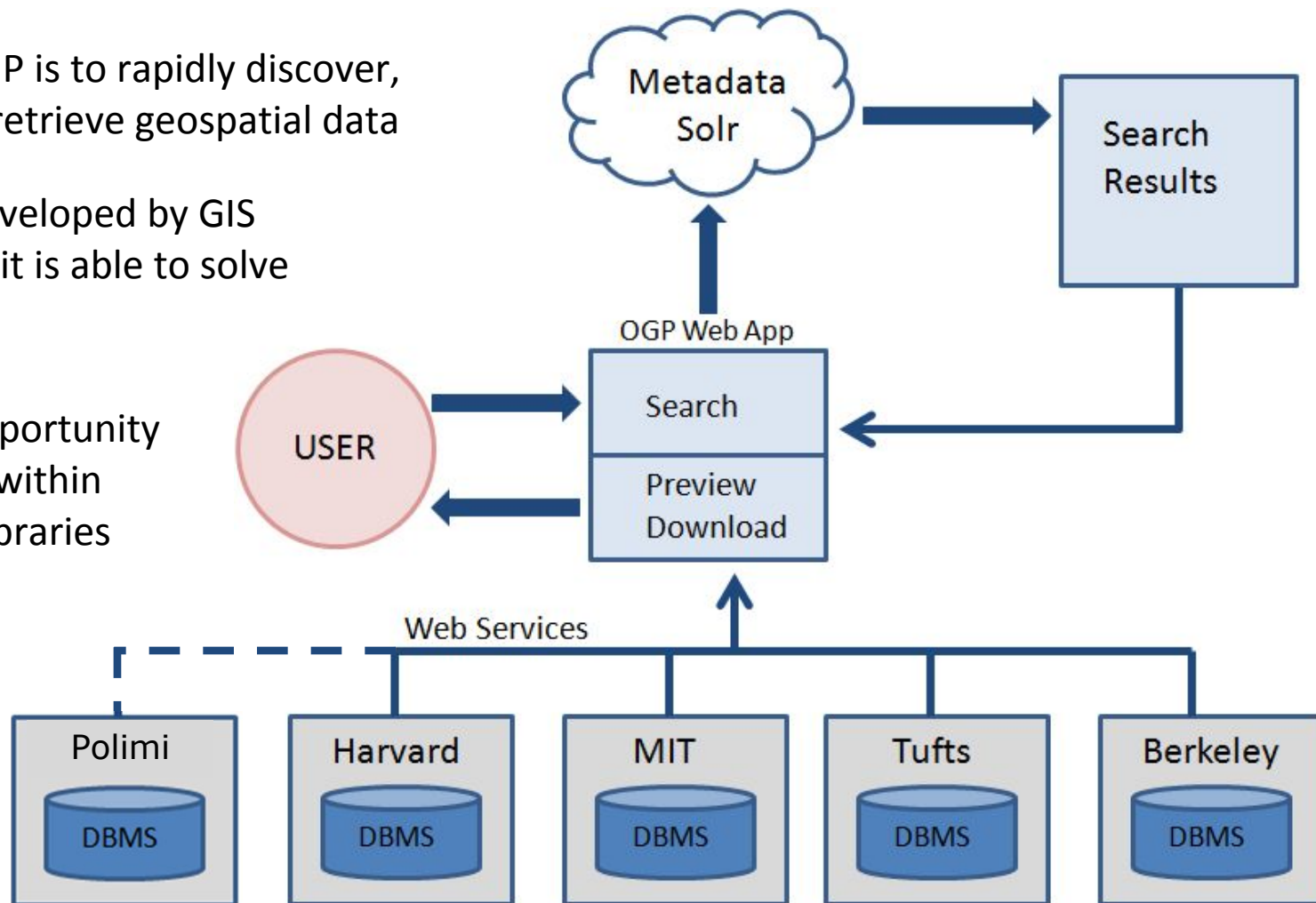


# Open Geoportal

The aim of OGP is to rapidly discover, preview, and retrieve geospatial data

It has been developed by GIS librarians and it is able to solve library issues

It gives the opportunity to share data within multiple geolibraries




Open Geoportal - Technical Introduction by Chris Barnett, Steve McDonald

[http://opengeoportal.org/wp-content/uploads/2013/10/Steve\\_McDonald\\_Chris\\_Barnett\\_OGPTechnicalIntroduction.pdf](http://opengeoportal.org/wp-content/uploads/2013/10/Steve_McDonald_Chris_Barnett_OGPTechnicalIntroduction.pdf)



# Upload data using OGP Ingest

 **OpenGeoportal** Ingest ogpAdmin ▾

INGEST ACTIONS

- Preprocess
- Metadata
- Upload Metadata**
- Ingest Records from Remote Solr Instance
- Ingest Records from Remote Solr Instance By LayerId
- Delete Solr Layers

## Metadata Ingest

Use this page to ingest FGDC metadata files into GeoServer (Local layers only) and Solr.

**Institution (select one)**

Polimi ▾

**Ingest to GeoServer and Solr**  Ingest to GeoServer only  Ingest to Solr only  Ingest the blob to solr and ftp

**Note:** This option only applies to local layers. Ingest will not attempt to configure GeoServer for remote layers.

**Required fields**

Title  Publisher  Originator  Abstract  Data Type

Theme Keywords  Place Keywords  Content Date  Bounds  Access

**Note:** If you require a field, Solr ingest will fail for a data layer if the metadata does not contain a valid value. If you do not require the field, a warning will still be produced for invalid values.

**Select XML metadata file(s) or zipped directory of XML metadata files**



# Advanced integration with GeoServer

```
$ curl -u admin:geoserver -XPOST -H  
"Content-type: application/json" -d @import.json  
"http://localhost:8080/geoserver/rest/imports"
```

OGP Ingest is now able to exploiting the REST API of the GeoServer Importer plugin in order to automate the ingestion of raster and vector data

```
$ curl -u admin:geoserver -XPUT -H "Content-type:  
application/json" -d @target.json  
"http://localhost:8080/geoserver/rest/imports/14/tasks/0/  
target"
```

```
{  
  "import": {  
    "targetStore": {  
      "dataStore": {  
        "name": "postgis"  
      }  
    }  
  },  
  "targetWorkspace": {  
    "workspace": {  
      "name": "public"  
    }  
  }  
}
```

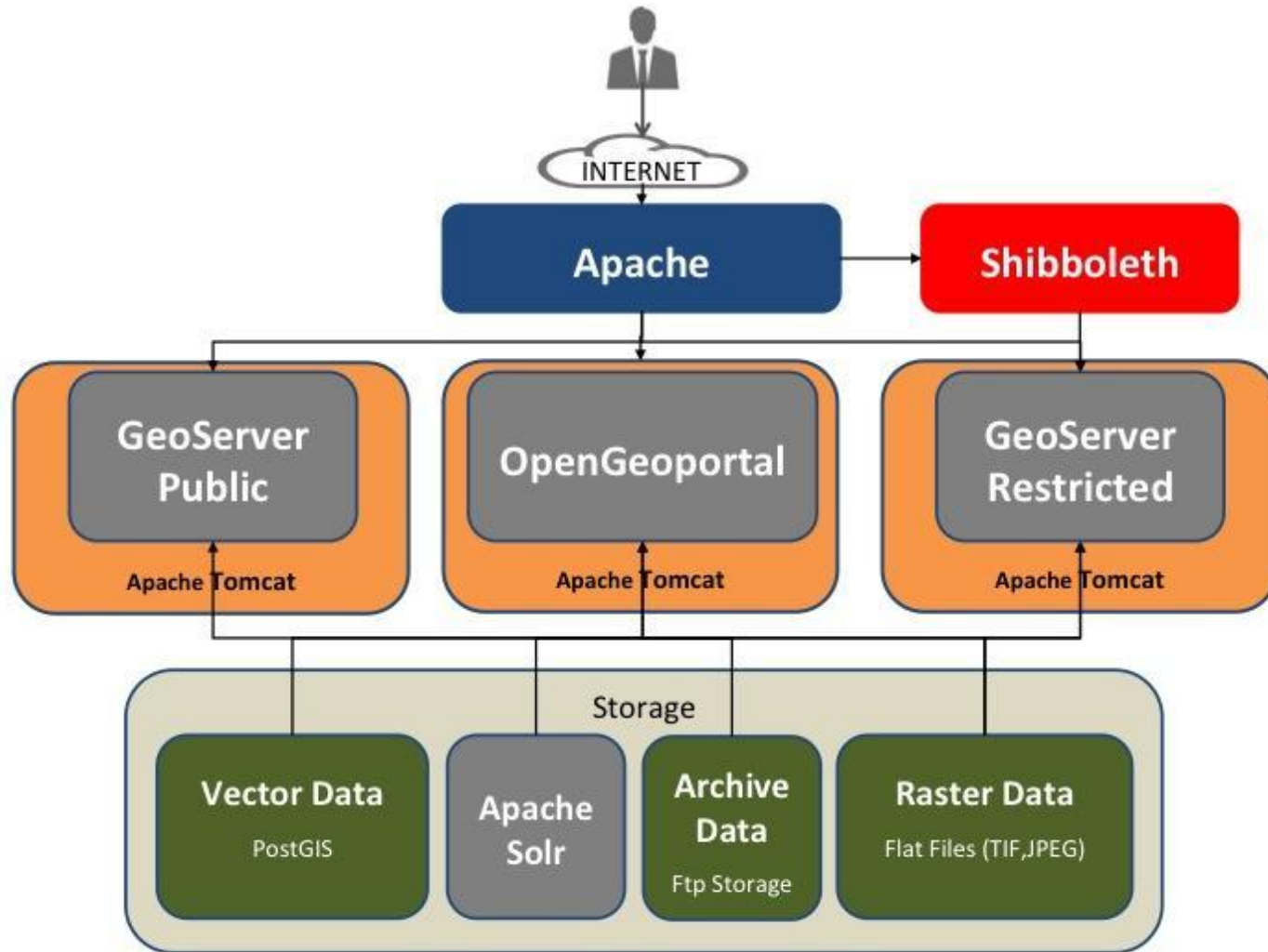


```
{  
  "dataStore": {  
    "name": "postgis"  
  }  
}
```

```
$ curl -u admin:geoserver -XPOST  
"http://localhost:8080/geoserver/rest/imports/14"
```



# Management and download of blob data



# Analysis and re-organization of TeDOC cartographic resources

❖ **digital maps** collections



- check the quality of metadata (if present)
- create metadata template



check **use constraints** for each collections

❖ **paper maps** collection



- use library records as metadata
- how to link library records to Ogp



# About metadata standards

Metadata provide valuable information about the data itself

- ❖ INSPIRE Directive → transnational structure for geospatial information  
the need to catalog information according to specific criteria
- ❖ ISO19139 → European standard
- ❖ FGDC → US standard
- ❖ OGP Metadata Working Group → set of common practices for creating and exchanging geospatial metadata

Elements of the existing metadata to be reviewed:

- keywords
- abstract
- lineage
- purposes
- data format
- use constraints

**bilingual metadata** for all our resources





# From metadata template to specific metadata

The metadata template is filled with the basic info that are the same for all the elements of a specific cartographic collection.

## Compulsory fields:

1. contact information: Responsible Party (owner, publisher, resource provider, point of contact...)
2. series name
3. collective title
4. abstract
5. keywords and thesaurus name
6. lineage
7. use limitations
8. other constraints
9. distribution format

The field “title” has a part in common with all the maps of a specific cartographic series, but it usually contains a specification related to the single map tile (e.g. *Milano Base Map*, tile **E07\_4**) or theme (e.g. *Regional Base Map*, **Hydrography** ) that need to be updated manually



# Bilingual metadata

**Metadata** Download Metadata (XML)

**1980, Lombardia: Carta Tecnica Regionale, foglio B6A4 / 1980, Lombardia: Regional Base Map, tile B6A4**

**Abstract:**

Rappresenta l'intero territorio regionale suddiviso in 708 quadranti. Il contenuto informativo è in scala 1:10.000. La Carta Tecnica Regionale è costituita da: 1) elementi ed entità di tipo geometrico: reticolato chilometrico, coordinate geografiche, punti quotati, curve di livello. Il valore di equidistanza tra le isoipse è di 50 metri per le direttrici, di 10 metri per le intermedie e di 5 metri per quelle ausiliarie, indicate a tratteggio; 2) elementi costitutivi del paesaggio naturale, quali il reticolato idrografico, i laghi, i rilievi, la vegetazione, etc.; 3) elementi costitutivi del paesaggio antropico, quali insediamenti, strade, ferrovie, canali, colture agricole, etc.; 4) limiti amministrativi; 5) toponimi. / It represents the entire territory of the Lombardy Region divided into 708 tiles. The scale is 1:10000. The Regional Base Map is composed by: 1) geometric elements and entities: kilometric grid, geographic coordinates, elevation points, contour lines. The contour interval is 50, 10 and 5 meters respectively for reference, intermediate and auxiliaries lines, represented with dashed lines; 2) elements of the natural landscape such as hydrography, lakes, elevation, vegetation, etc.; 3) elements of the anthropic landscape such as urban settlements, roads, railways, canals, land use, etc.; 4) administrative boundaries; 5) toponyms.

**Lineage:**

La carta tecnica regionale è stata acquisita in formato digitale tramite scansione, mosaicata e georeferenziata per permetterne un uso nell'ambito dei sistemi informativi geografici. Questa banca dati va considerata come documentazione storica. / The Regional Base Map has been acquired in digital format by scanning and georeferencing the paper maps into a mosaic map which can be used in Geographic Information Systems. This dataset must be considered as historical documentation.

**Purpose:**

Questa base dati è indirizzata a studenti e ricercatori per rappresentazioni e analisi geografiche; può essere utilizzata per visualizzare, interrogare e produrre cartografie o come elemento per effettuare operazioni di overlay mapping con altre basi dati geografici. / This dataset is intended for reaserchers, and students, for reference and mapping purpose, and may be used for basic applications such as viewing, querying, and map output production, or to provide a basemap to support graphical overlays and analysis with other spatial data.

**Keywords:**

Lombardia / Lombardy  
Italia / Italv



# Paper maps and geoportal: which solutions?

Paper maps are registered in the University Library Catalogue



we adopt the library record of each map as metadata



1. update the catalogue providing the coordinates of the bounding box for each paper map
2. MARC.xml export of the maps records
3. ingest MARC.xml directly into Solr index

<https://geodata.polimi.it/opengeoportal/>



# Who has worked on GeoData@Polimi

- Area Sistema Archivistico e Bibliotecario – Servizio Tesi e Documentazione (TeDOC)
- Area Servizi ICT - Servizio Applicazioni Bibliotecarie, per la Ricerca e di Supporto alla Gestione Documentale
- Dipartimento di Ingegneria Civile e Ambientale (DICA)
- Geobeyond s.r.l.



## GeoData@POLITECNICO MILANO 1863

Where:  What:   [Advanced Search](#)

6339 Results

Sort Results Columns Clear Views

Type	Name	Originator	Rep	Meta	View
<input type="checkbox"/>	Switzerland, 1825 (Raster Imag	Harvard Map		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	2006, CT10 Infrastrutture di tras	Regione Lomb	PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	2006, CT10 Ambiti amministrati	Regione Lomb	PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	2006, CT10 Uso del suolo, Lomb	Regione Lomb	PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	2006, CT10 Località significative	Regione Lomb	PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	2006, CT10 Idrografia, Lombard	Regione Lomb	PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	2006, CT10 Infrastrutture tecnol	Regione Lomb	PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	2006, CT10 Altimetria, Lombardi	Regione Lomb	PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Switzerland, ca. 1715 (Image 4	Harvard Map		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Switzerland, ca. 1715 (Image 2	Harvard Map		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Graubünden Region, Switzerlan	Harvard Map		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Switzerland, 1799 (Raster Imag	Harvard Map		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	[Carta d'Italia alla scala di 1:10		PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Valle Visdende F. 13. IV. N.E. le		PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	[Carta d'Italia alla scala di 1:10		PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	[Carta d'Italia alla scala di 1:10		PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	1980-1994, CTR 50000, Lombard	Regione Lomb	PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	1980, CT50, Lombardia: Base D	Regione Lomb	PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Carta Tematica Regionale foglio		PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Carta Tematica Regionale Carta		PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Carta Tematica Regionale Uso e		PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Carta Tematica Regionale Uso e		PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Carta Tematica Regionale Uso e		PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	[Carta d'Italia alla scala di 1:10		PM	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	1980-1994, CTR 50000, Lombard	Regione Lomb	PM	<input type="checkbox"/>	<input type="checkbox"/>

8.98975, 45.35570

Map data ©2017 GeoBasis-DE/BKG (©2009). G. Termini e condizioni d'uso e nella mappa

Powered by OpenGeoportal



## Conclusion and next development

- digitalize and georeferencing historical maps owned by the Libraries (in respect of copyright)
- implement the data on the portal with the federation of other Institutions and Universities (Italian and foreign)
- use the geoportal to spread the georeferenced data produced by our Departments for study and research purposes



# Question and information?

<https://geodata.polimi.it/opengeoportal/>

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