

# TRANSGUARDI

sul programmi Interreg e sullo stato di avanzamento  
del progetto "I cammini della Regina"

22 gennaio 2015

Canobbio CH-6952

Ore 17.00



## Web Mapping technologies for the valorization of slow tourism: the Via Regina project

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Politecnico di Milano (DICA) – Laboratorio di Geomatica, Polo Territoriale di Como



POLITECNICO  
DI MILANO

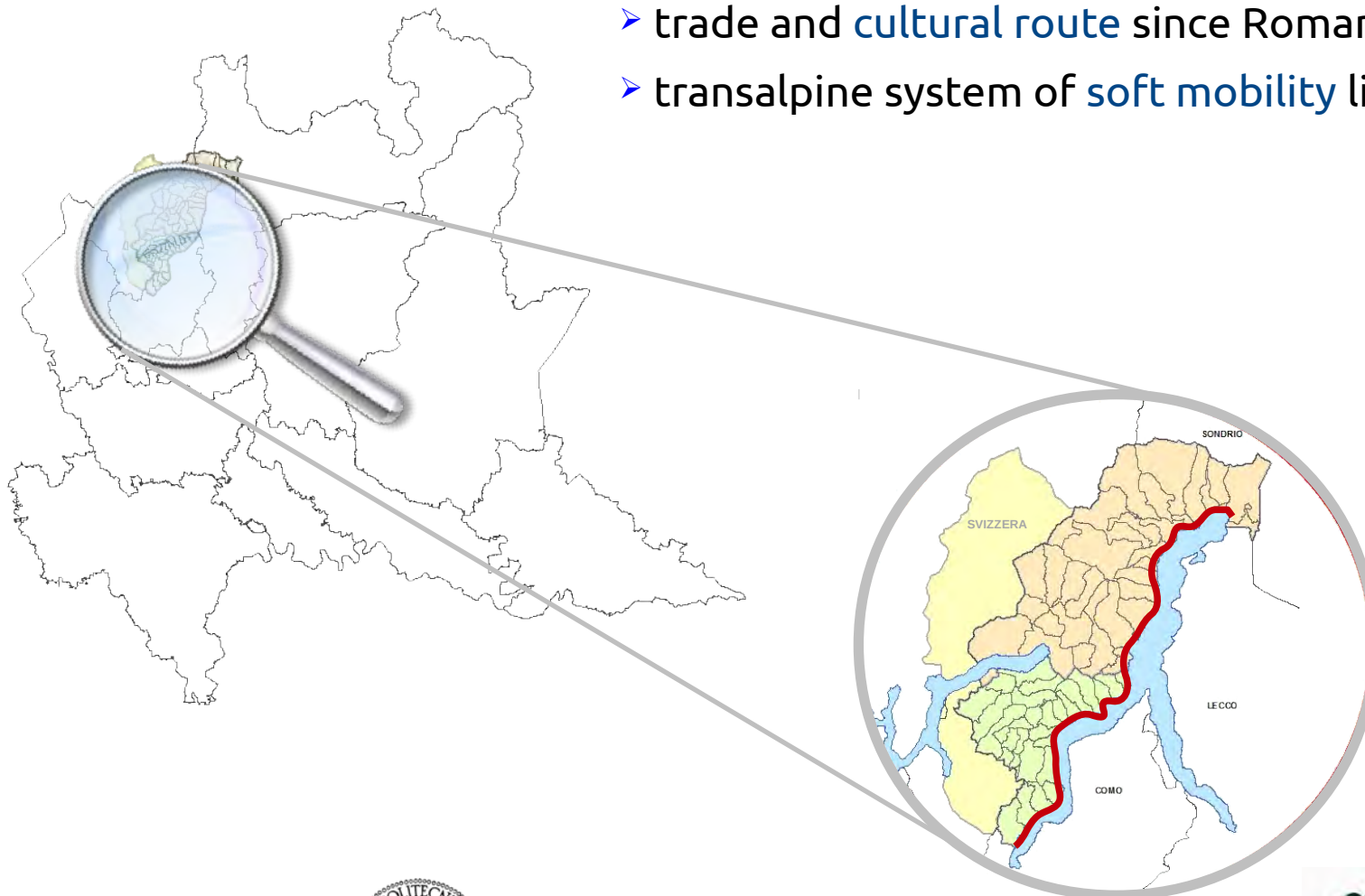


# Via Regina



❖ Via Regina defines a **cross-border area** between Italy and Switzerland

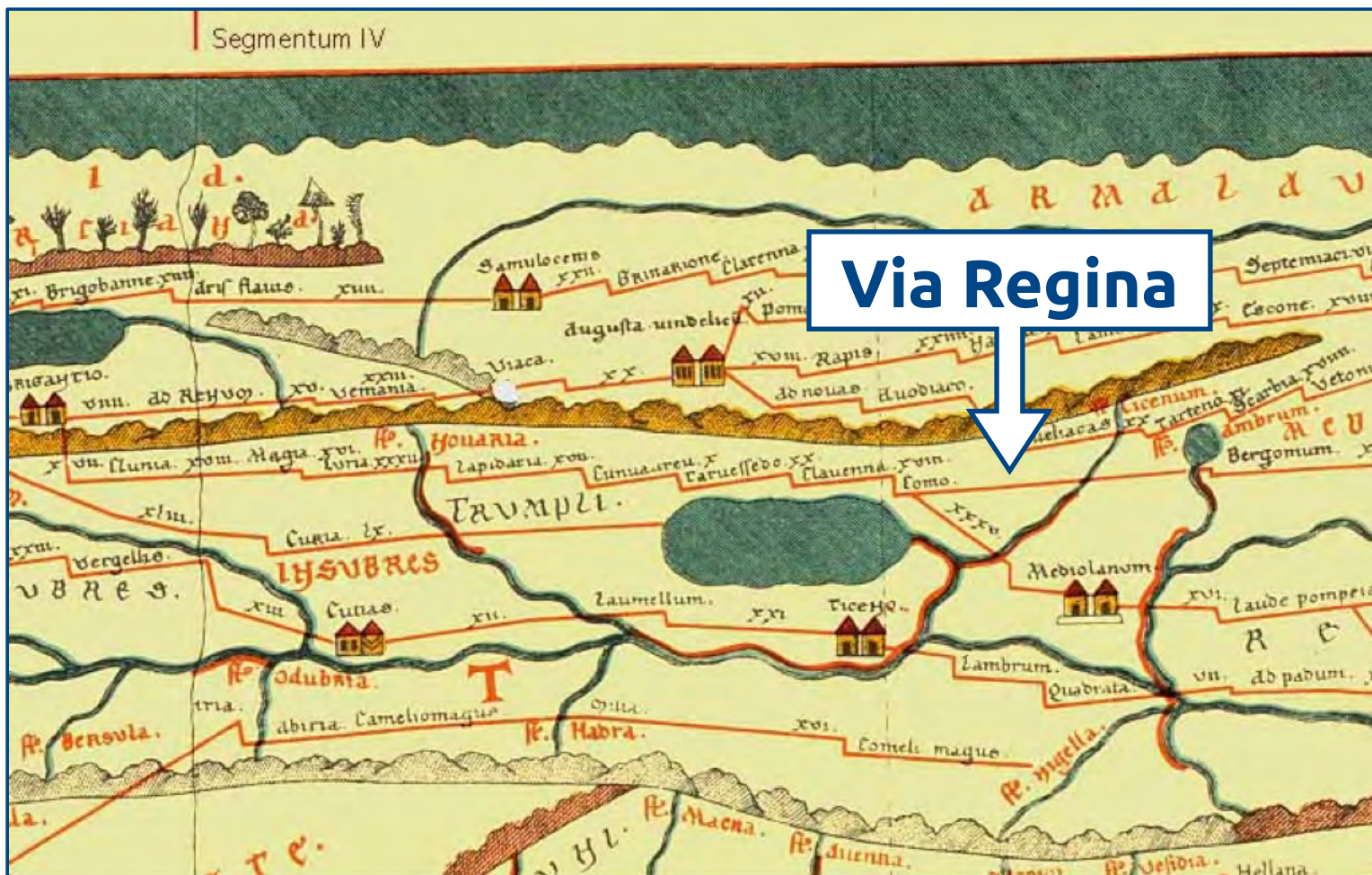
- trade and **cultural route** since Roman times
- transalpine system of **soft mobility** links



# Via Regina



- ❖ Via Regina defines a **cross-border area** between Italy and Switzerland



# Via Regina project



- ❖ “I Cammini della Regina” INTERREG project (Italy/Switzerland)
  - **purpose:** to valorise the cultural heritage of the area and foster slow tourism
  - **beneficiaries:** local communities, administrations, pilgrims, tourists
  - **expertise involved:** cultural heritage, land use and design, geomatics

## ❖ Partners

- universities

POLITECNICO DI MILANO



POLO TERRITORIALE  
DI COMO



Scuola universitaria professionale  
della Svizzera italiana

**SUPSI**

- local administrations



M.V.S  
Museo della Via Spuga  
e della Val San Giacomo



- cultural association



**IUBILANTES**  
ONLUS - organizzazione  
di volontariato culturale

# Via Regina project

❖ “I Cammini della Regina” INTERREG project (Italy/Switzerland)

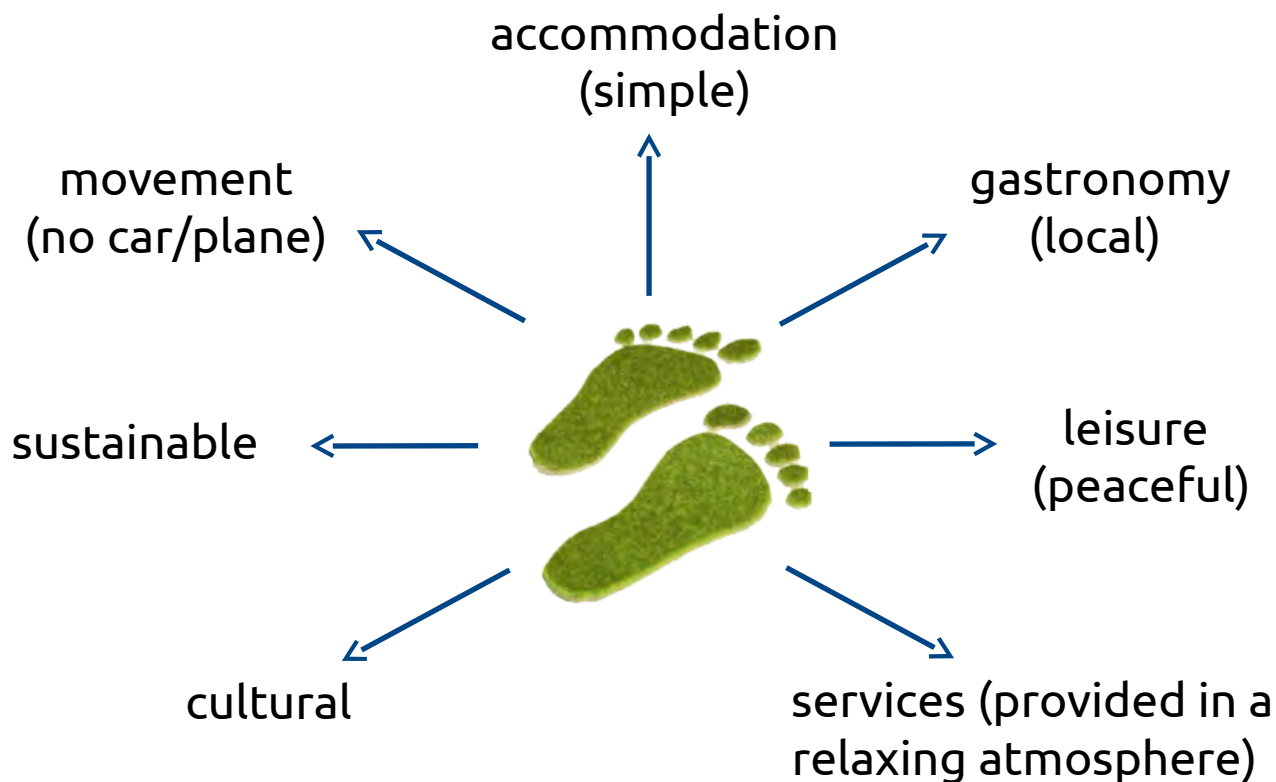


<http://www.viaregina.eu>

# Slow tourism at a glance



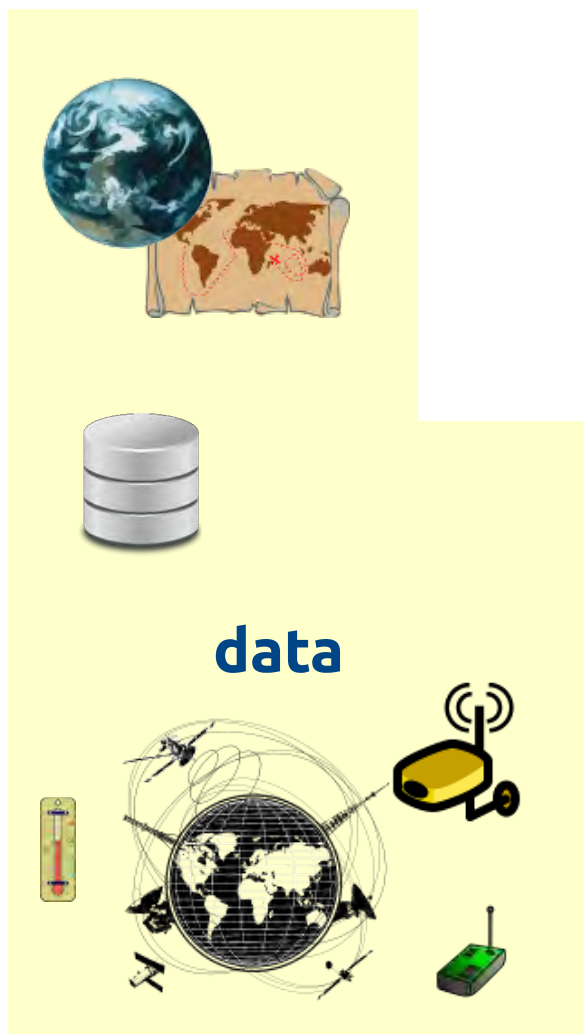
- ❖ A special case of sustainable tourism focused on:
  - environmental friendliness
  - rediscovery of local traditions and cultural knowledge



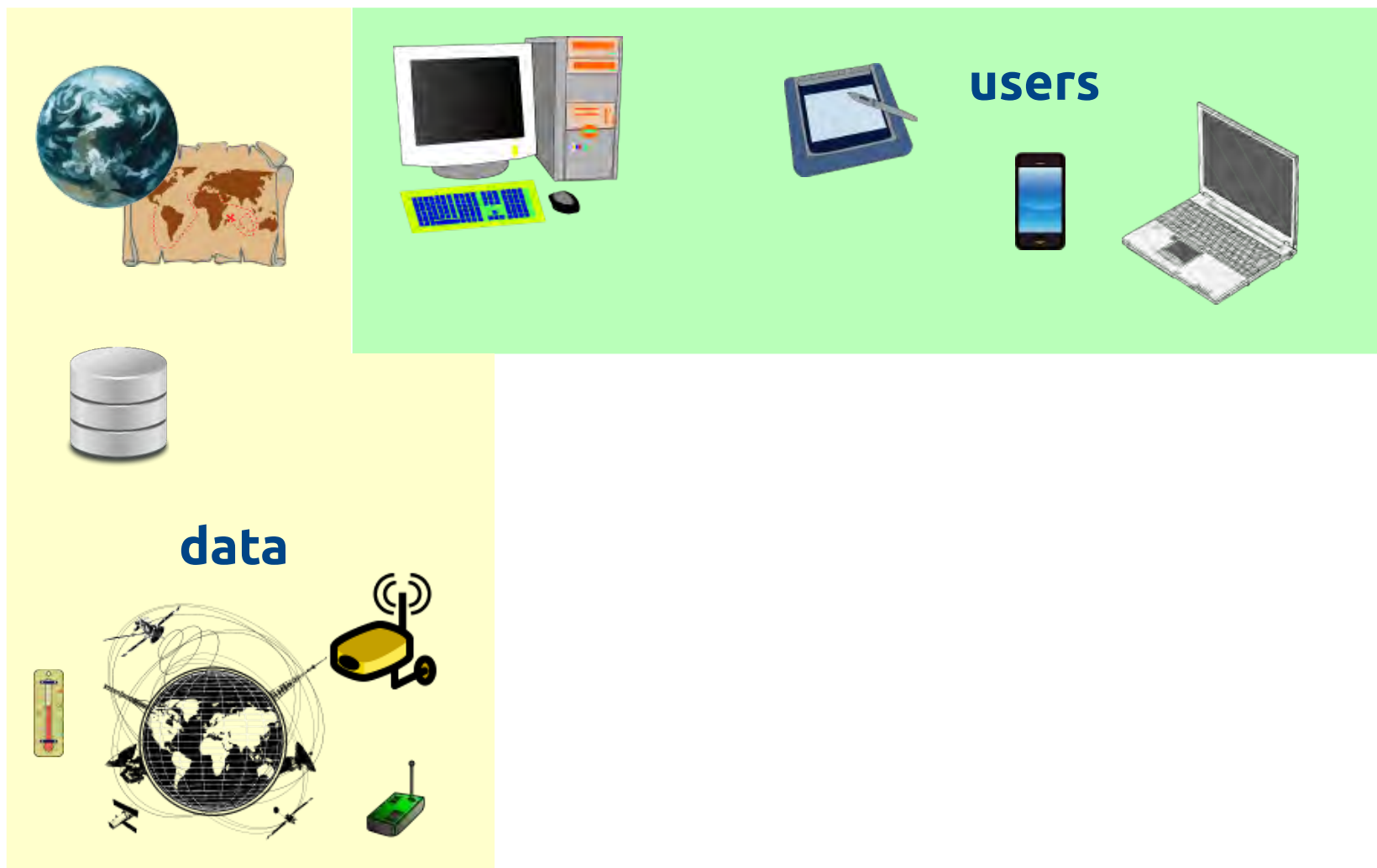
# Geospatial Web



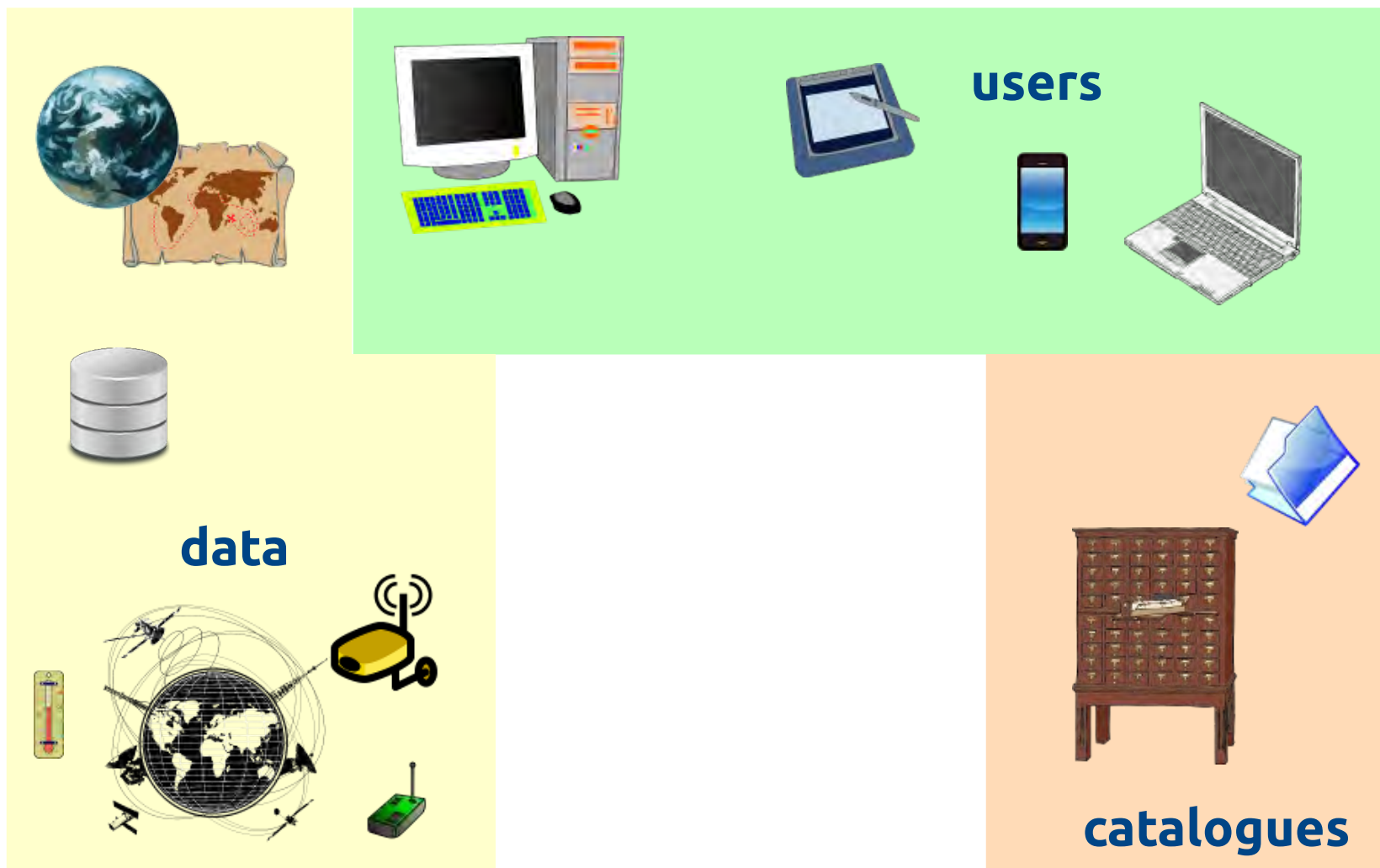
# Geospatial Web



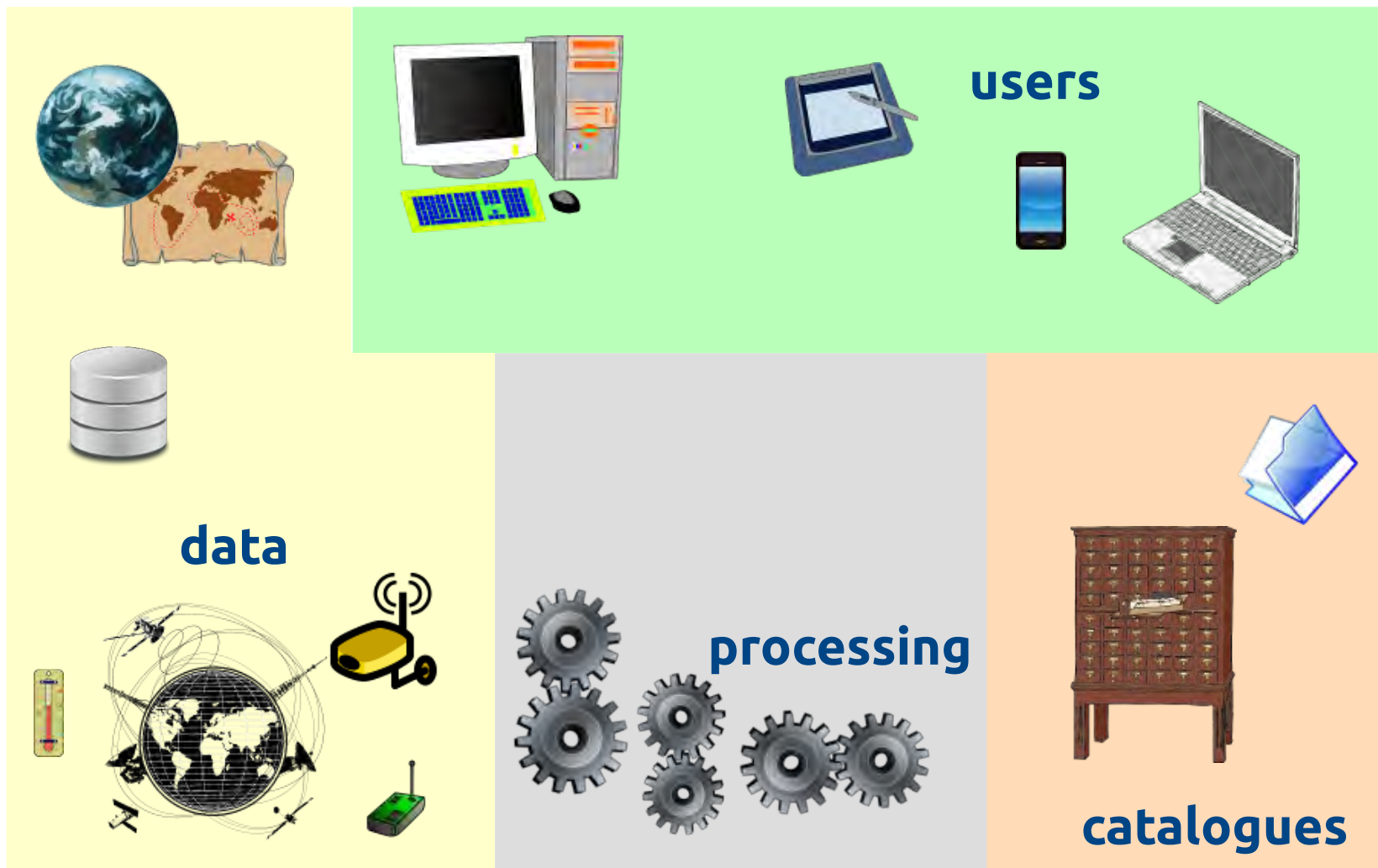
# Geospatial Web



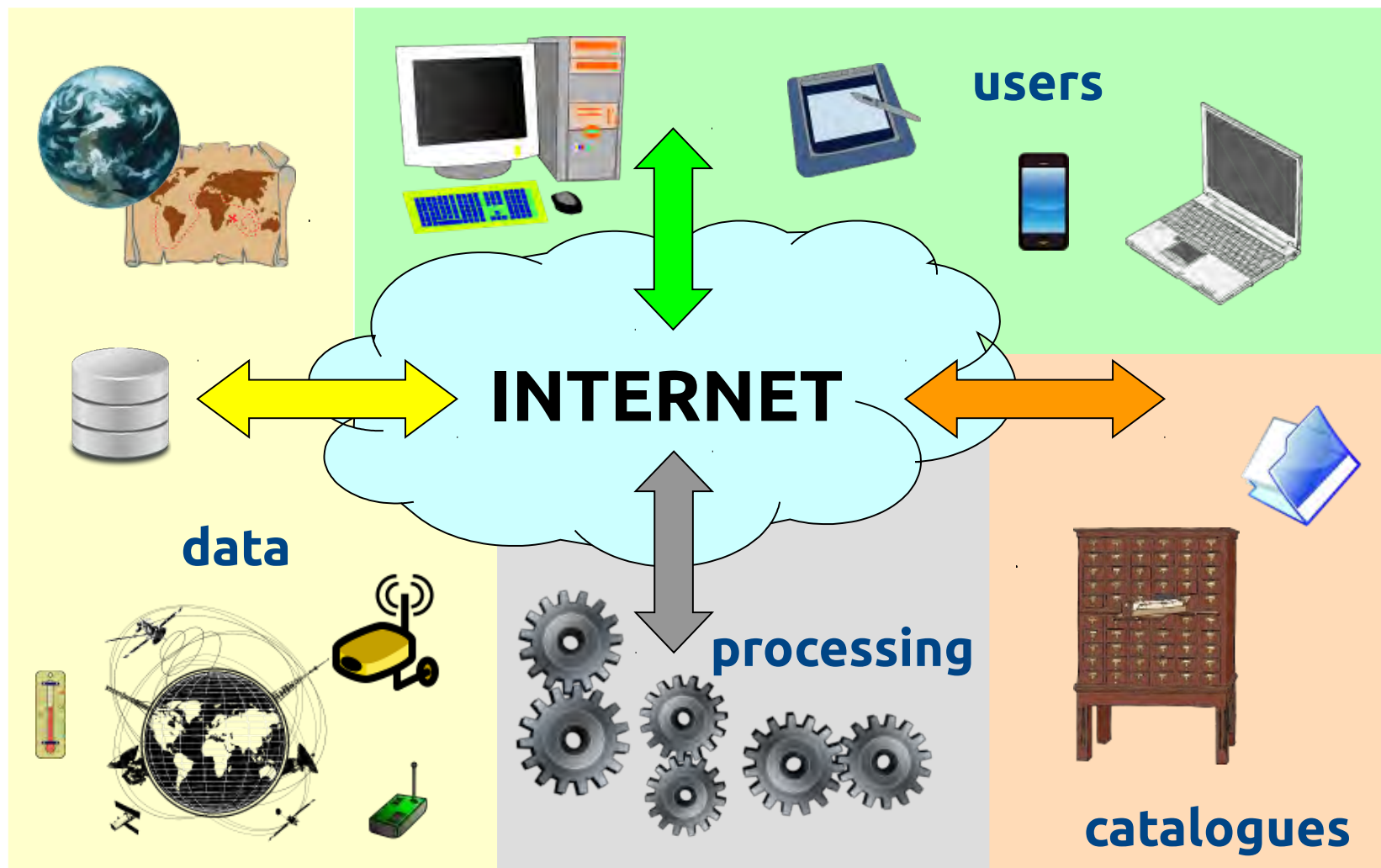
# Geospatial Web



# Geospatial Web



# Geospatial Web



- ❖ Evolution of the 1990s GeoWeb 1.0
- ❖ Interactive tools allowing user participation in spatial data management
- ❖ OGC standards for geospatial interoperability
- ❖ GPS, AJAX and mapping Application Programming Interfaces (APIs)
- ❖ Neogeography (Turner 2006)
  - creation of maps through mash-ups of multiple data sources
- ❖ Volunteered Geographic Information (VGI) (Goodchild 2007)
  - the idea of humans behaving like sensors able to acquire geospatial contents
- ❖ Crowdsourcing (Howe 2006)
  - the act of a mass of users to share a job through an open call
- ❖ Diffusion of mobile devices equipped with sensors (GPS, camera, etc.)
  - users can easily perform real-time collection of georeferenced data

# Web Mapping within the project


- ❖ Crucial for **disseminating knowledge** and **increasing tourism**
- ❖ Responsible partners:
  - Politecnico di Milano – Polo Territoriale di Como (project leader)
  - Scuola Universitaria Professionale della Svizzera Italiana (SUPSI)
- ❖ Planned activities & deliverables:
  - implementation of standard **geoWeb services** for data dissemination
  - creation of a Web platform for remote **data upload and sharing**
  - development of an application for data input from **mobile devices**
  - implementation of **multi-dimensional viewers** (2D & 3D)

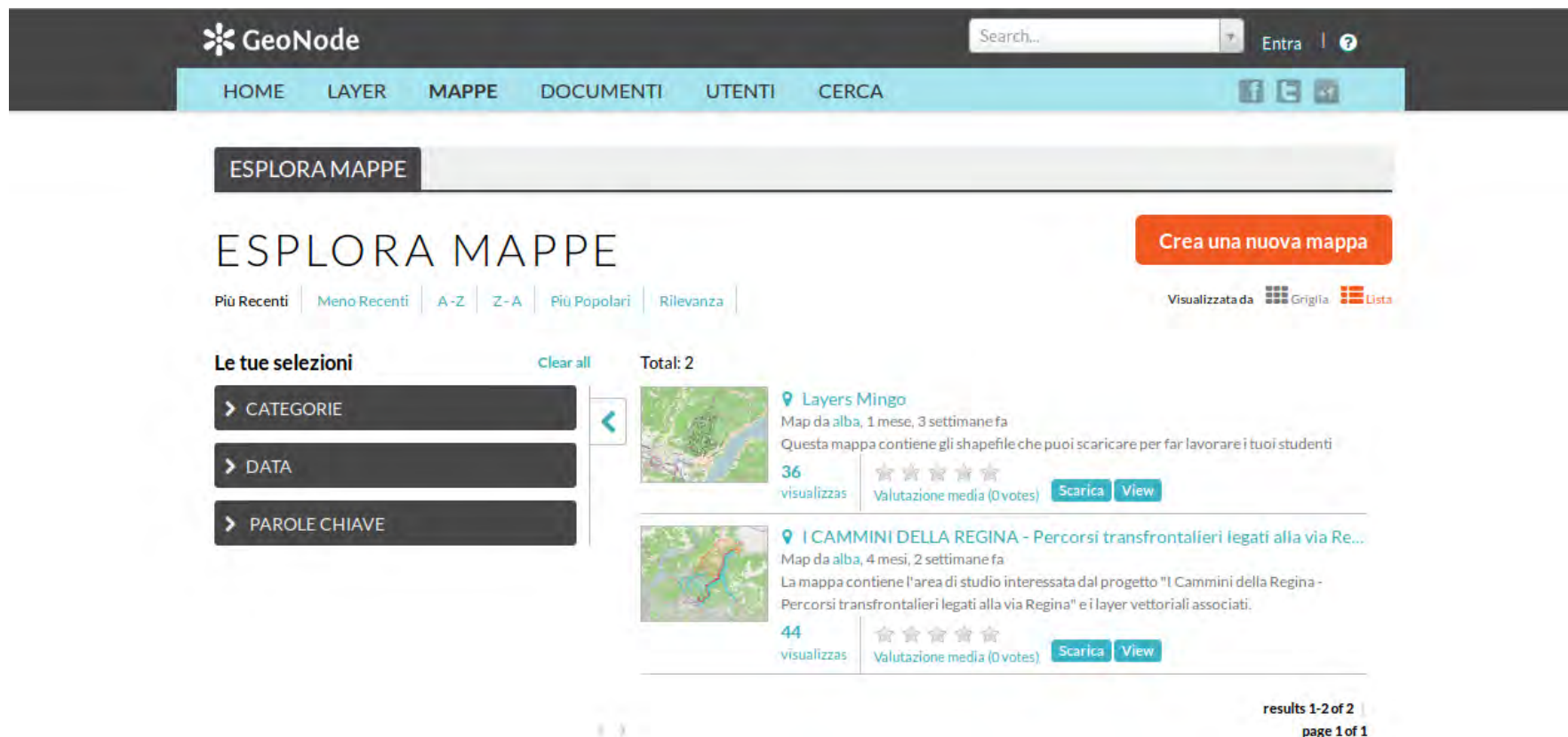
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  - implementation of **multi-dimensional viewers** (2D & 3D)
- ❖ Exploitation of Free and Open Source Software (**FOSS**)

# Data upload & sharing


- ❖ Based on the geospatial Web **collaborative** platform  **GeoNode**
  - creation, styling, sharing, visualization, and collaborative use of geospatial data

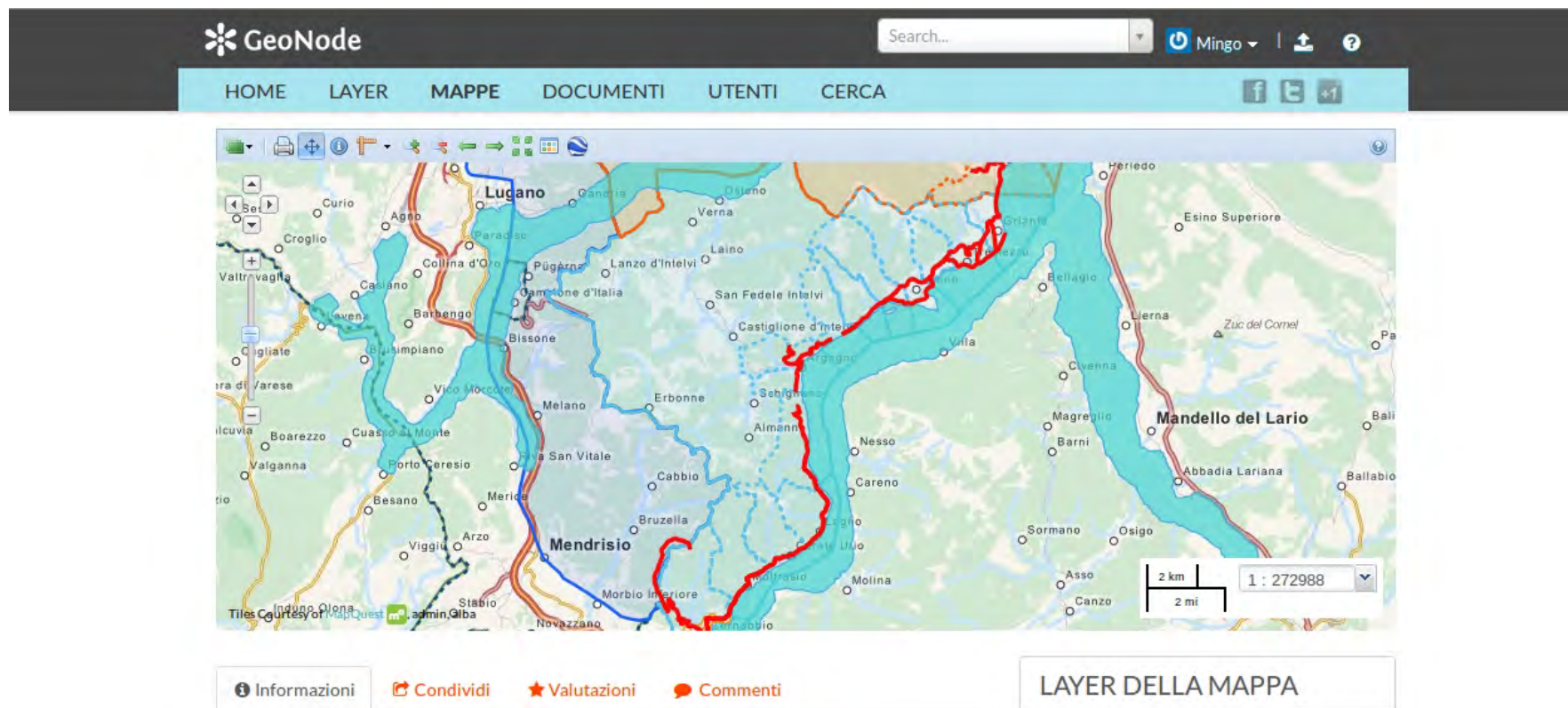


The screenshot shows the GeoNode web interface. At the top is a dark navigation bar with the GeoNode logo, a search bar, and links for 'HOME', 'LAYER', 'MAPPE', 'DOCUMENTI', 'UTENTI', and 'CERCA'. Below this is a light blue bar with social media icons. The main content area is titled 'ESPLORA MAPPE' and includes a 'Crea una nuova mappa' button. It features filters for 'Più Recenti', 'Meno Recenti', 'A-Z', 'Z-A', 'Più Popolari', and 'Rilevanza'. On the left, there are buttons for 'CATEGORIE', 'DATA', and 'PAROLE CHIAVE'. The main list shows two map entries: 'Layers Mingo' and 'I CAMMINI DELLA REGINA - Percorsi transfrontalieri legati alla via Re...'. Each entry includes a map thumbnail, a description, a date, a view count, a rating, and buttons for 'Scarica' and 'View'. At the bottom right, it says 'results 1-2 of 2' and 'page 1 of 1'.

<http://viaregina.como.polimi.it>

# Data upload & sharing

- ❖ Based on the geospatial Web collaborative platform  GeoNode
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<http://viaregina.como.polimi.it>

# Mobile data collection

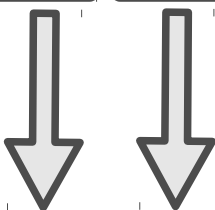
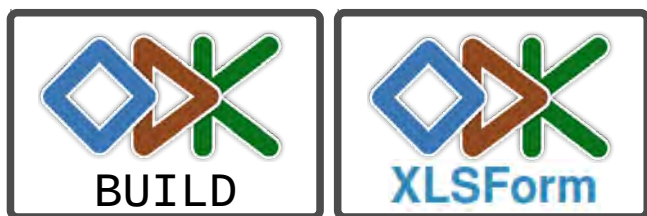
❖ Allows **everyone** to report **interesting elements** using an Android device or directly from a computer

- historical and cultural elements
- morphological elements
- tourist elements
- critical elements
- warnings



- Based on the suite of tools 
  - management of mobile data collection through a set of related applications

## FORM CREATION




## FORM STORAGE

## FORM COMPILATION



## ❖ Form download



ODK Collect > Main Menu

ODK Collect 1.4.3 (1041)  
Data collection made easier...

Fill Blank Form

Edit Saved Form

Send Finalized Form

**Get Blank Form**

Delete Saved Form



ODK Collect > Get Blank Form

Server Requires Authentication

Please enter username and password for server:  
<http://georep.como.polimi.it/ODKAggregate/formList>

demo

....

Cancel **OK**

Toggle All Refresh



ODK Collect > Get Blank Form

I Cammini della Regina 

ID: regina\_v9

Toggle All Refresh **Get Selected**

## ❖ Form compilation



ODK Collect > Main Menu

ODK Collect 1.4.3 (1041)  
Data collection made easier...

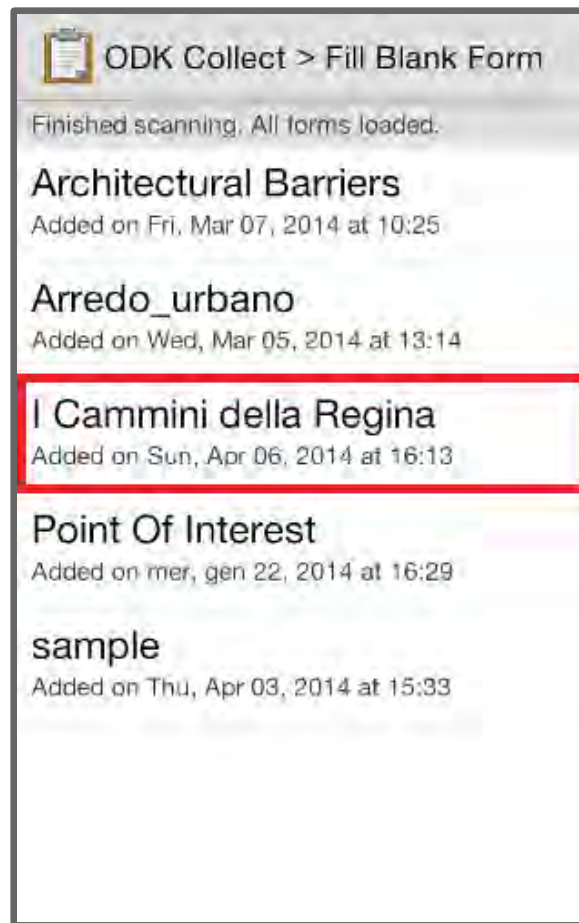
**Fill Blank Form**

Edit Saved Form

Send Finalized Form

Get Blank Form

Delete Saved Form



ODK Collect > Fill Blank Form

Finished scanning. All forms loaded.

**Architectural Barriers**  
Added on Fri, Mar 07, 2014 at 10:25

**Arredo\_urbano**  
Added on Wed, Mar 05, 2014 at 13:14

**I Cammini della Regina**  
Added on Sun, Apr 06, 2014 at 16:13

**Point Of Interest**  
Added on mer, gen 22, 2014 at 16:29

**sample**  
Added on Thu, Apr 03, 2014 at 15:33



ODK Collect...

**I CAMMINI DELLA REGINA**  
percorsi transfrontalieri legati alla Via Regina

You are at the start of I  
Cammini della Regina. Swipe  
the screen as shown below to  
go backward and forward.

backward to previous prompt

forward to next prompt

## ❖ Form compilation



ODK Collect...

Date of report

Aprile 2014

D	L	M	M	G	V	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

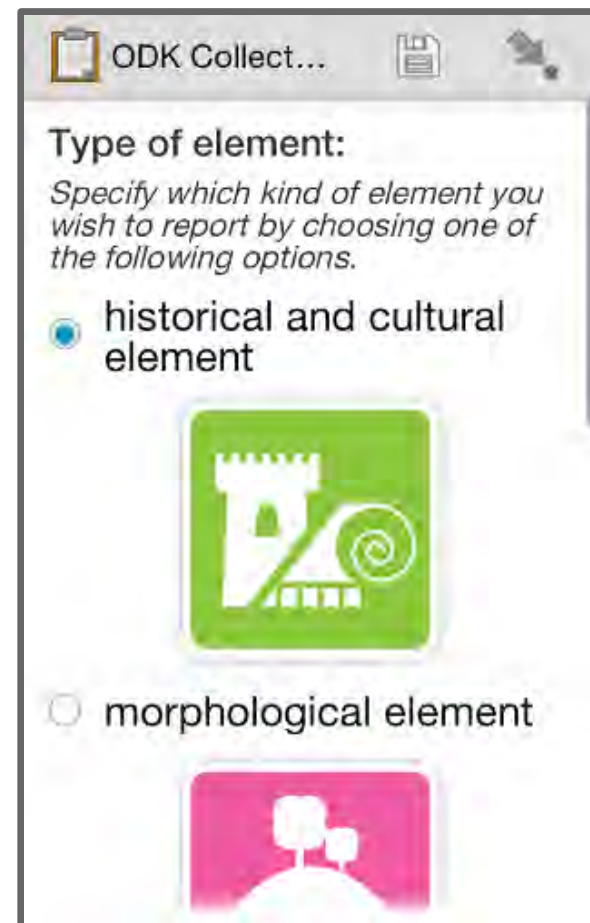


ODK Collect...

Type of user:

*Specify which kind of user you are by choosing one of the following options.*

- ☒ tourist from Italy
- ☐ tourist from abroad
- ☐ citizen of Como province
- ☐ citizen of Ticino Canton



ODK Collect...

Type of element:

*Specify which kind of element you wish to report by choosing one of the following options.*

- ☒ historical and cultural element
- ☐ morphological element

## ❖ Form compilation



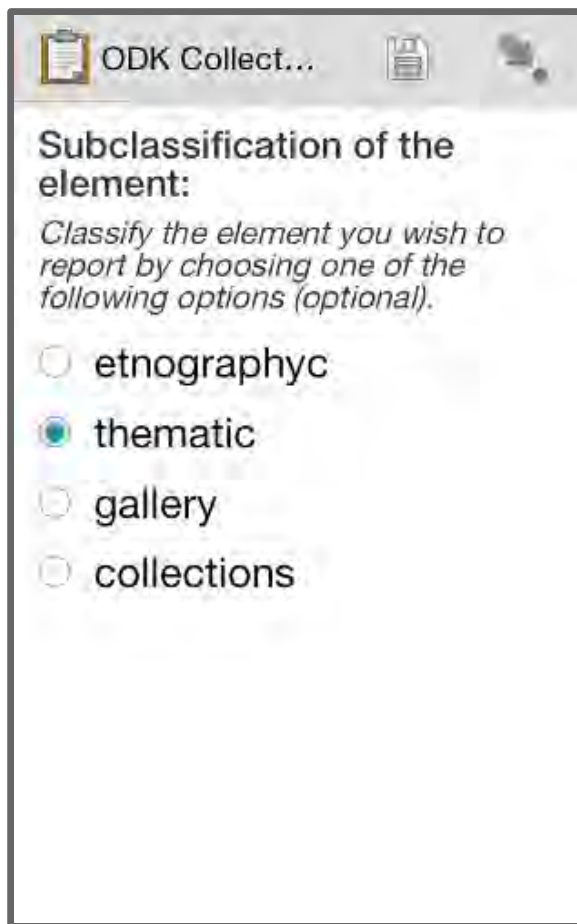
ODK Collect...

**Classification of the element:**  
*Classify the element you wish to report by choosing one of the following options.*

☒ museum



☐ religious building



ODK Collect...

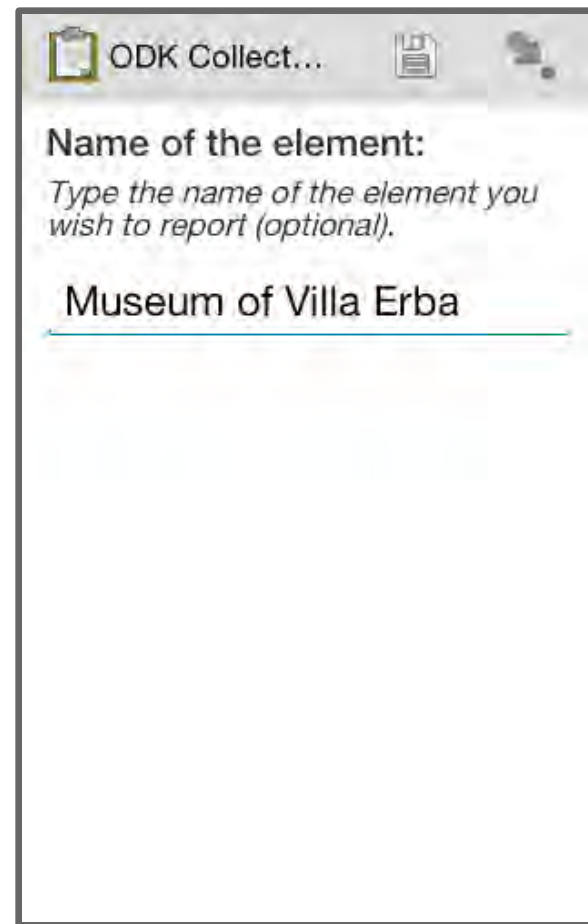
**Subclassification of the element:**  
*Classify the element you wish to report by choosing one of the following options (optional).*

☐ ethnographic

☒ thematic

☐ gallery

☐ collections



ODK Collect...

**Name of the element:**  
*Type the name of the element you wish to report (optional).*

Museum of Villa Erba

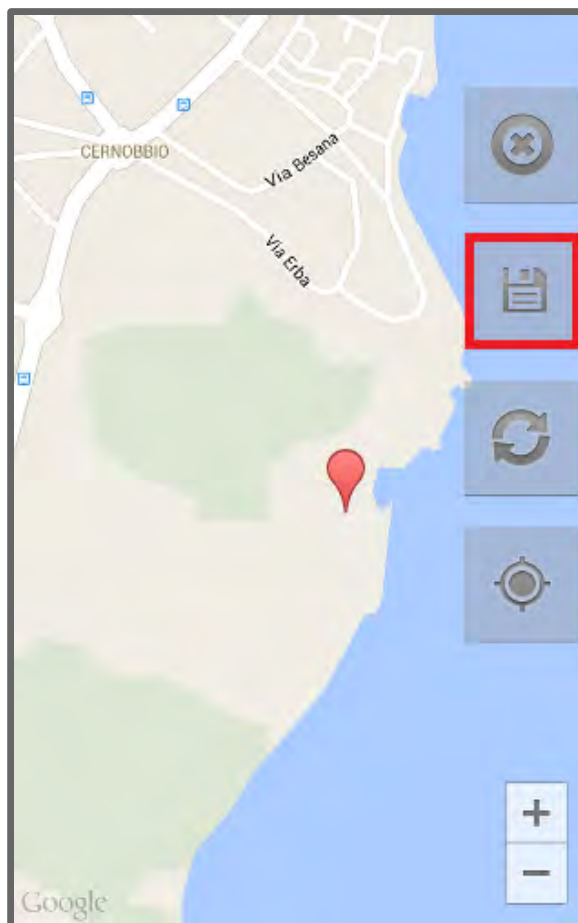
## ❖ Form compilation

ODK Collect...

**Position of the element:**  
*Be sure to be outdoors and check that the device GPS is on. Alternatively, you can also determine the position by connecting to a wi-fi network.*

Replace Location

Latitude: N 45°50'16"  
Longitude: E 9°4'39"  
Altitude: 0m  
Accuracy: 5.5m



ODK Collect...

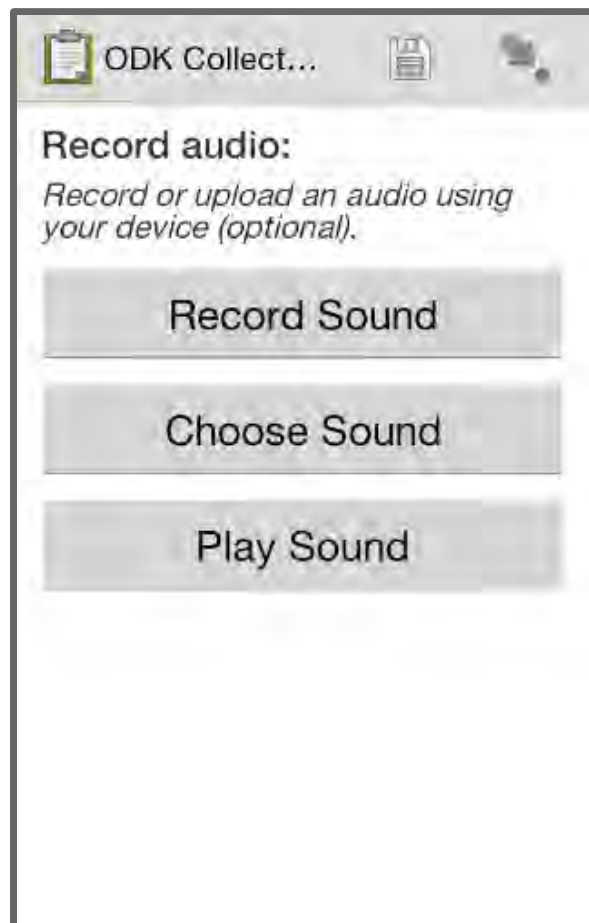
**Picture showing the element:**  
*Take a picture of the element using the device camera or upload a picture available on the device.*

Take Picture

Choose Image



## ❖ Form compilation



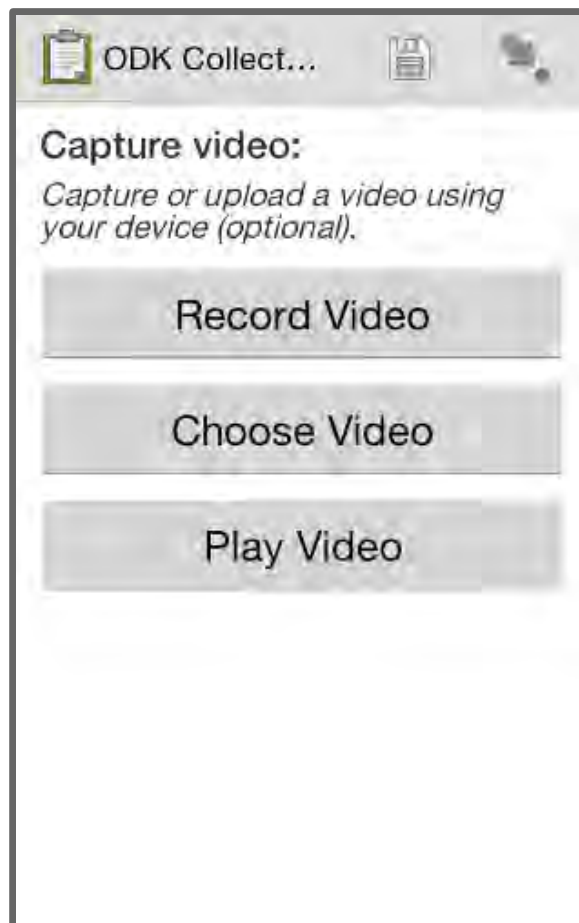
ODK Collect...

Record audio:  
*Record or upload an audio using your device (optional).*

Record Sound

Choose Sound

Play Sound



ODK Collect...

Capture video:  
*Capture or upload a video using your device (optional).*

Record Video

Choose Video

Play Video



ODK Collect...

You are at the end of I Cammini della Regina.

Name this form  
I Cammini della Regina

✔ Mark form as finalized

Save Form and Exit

## ❖ Form compilation



ODK Collect > Main Menu

ODK Collect 1.4.3 (1041)  
Data collection made easier...

Fill Blank Form

**Edit Saved Form**

Send Finalized Form

Get Blank Form

Delete Saved Form



ODK Collect > Main Menu

ODK Collect 1.4.3 (1041)  
Data collection made easier...

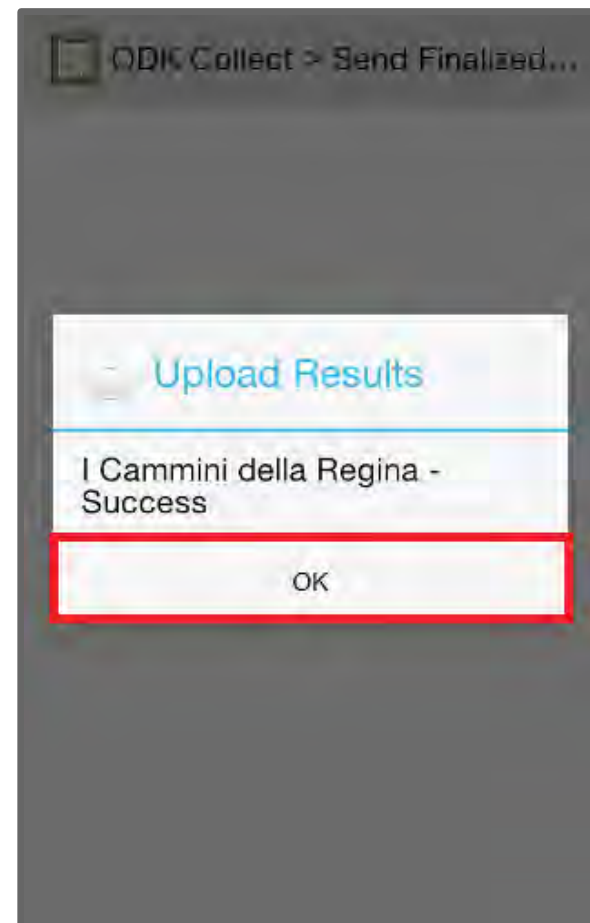
Fill Blank Form

Edit Saved Form

**Send Finalized Form**

Get Blank Form

Delete Saved Form



ODK Collect > Send Finalized...

Upload Results

I Cammini della Regina -  
Success

**OK**

## ❖ Form compilation from computer

**I Cammini della Regina**

**Date of report of the element: \***  
*Insert the current date or the date the report is referred to.*

2014-06-10 

**Type of user: \***  
*Specify which kind of user you are by choosing one of the following options.*

☒ tourist from Italy  
☐ tourist from abroad  
☐ citizen of Como province  
☐ citizen of Ticino Canton

**Type of element: \***  
*Specify which kind of element you wish to report by choosing one of the following options.*

☒ historical and cultural element

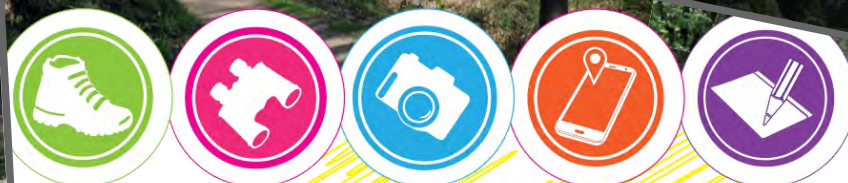
**Required**



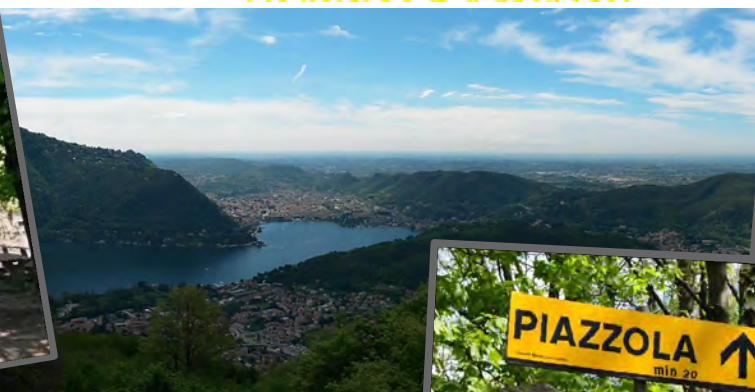
# Mapping parties

SABATO 3 MAGGIO 2014

## MapParty!

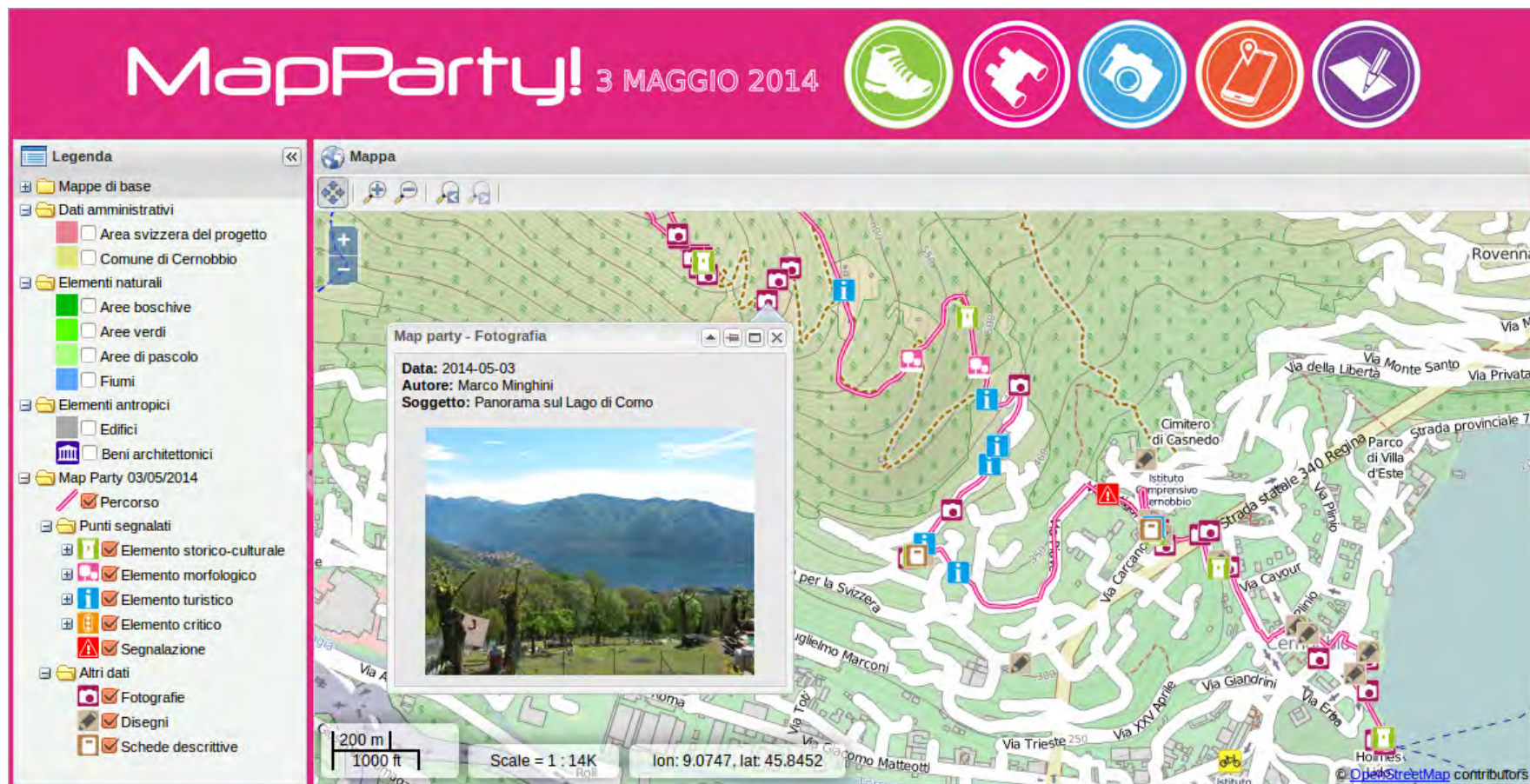


CAMMINARE, OSSERVARE, DISEGNARE, MAPPARE  
LUNGO I CAMMINI DELLA REGINA PER UN'ESPERIENZA  
CULTURALE, SENSORIALE E GIOCOSA



# Mapping parties

❖ Cernobbio-Piazzola – May 3, 2014

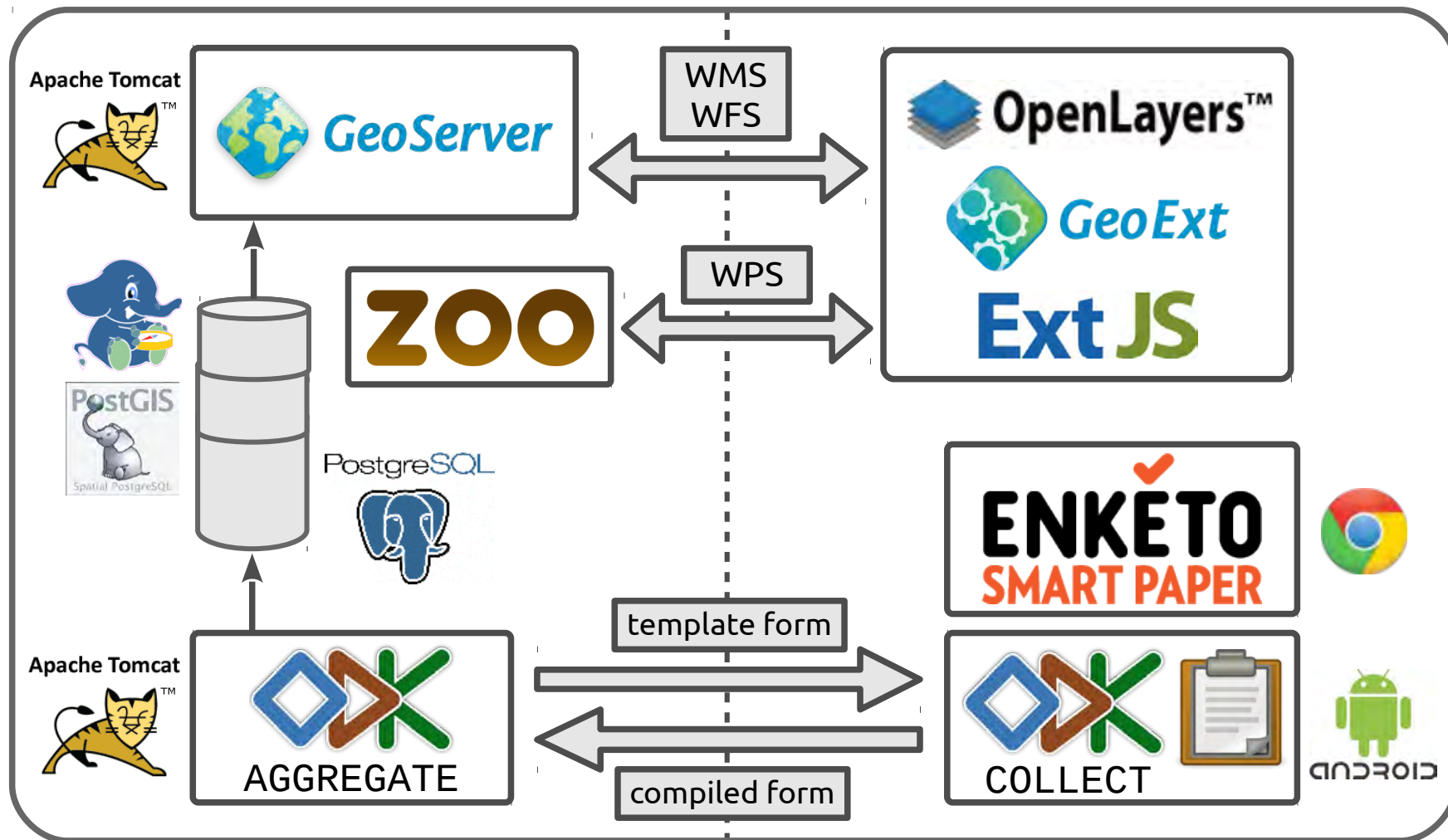


<http://viaregina.como.polimi.it/mapparty>

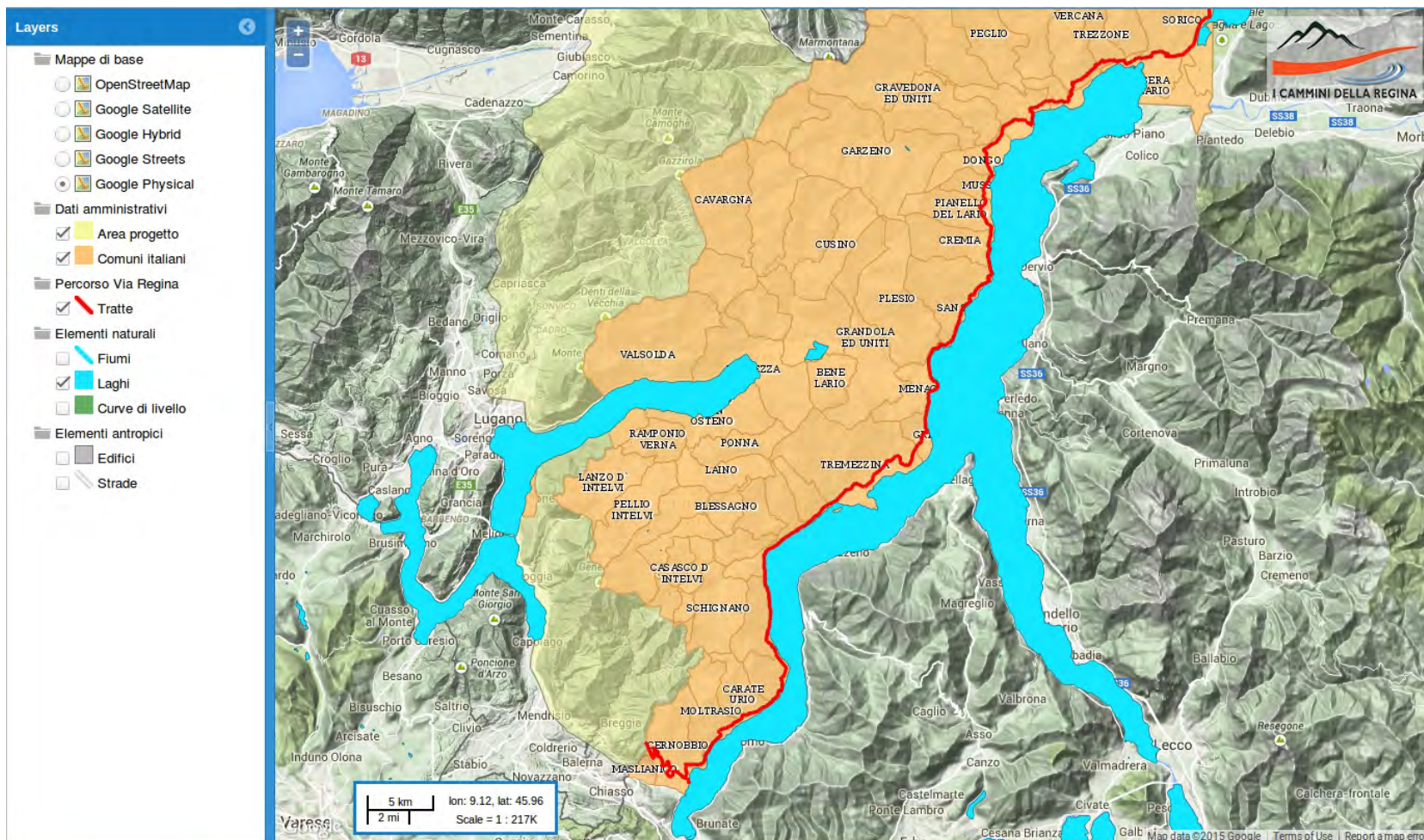
# 2D viewer architecture

SERVER

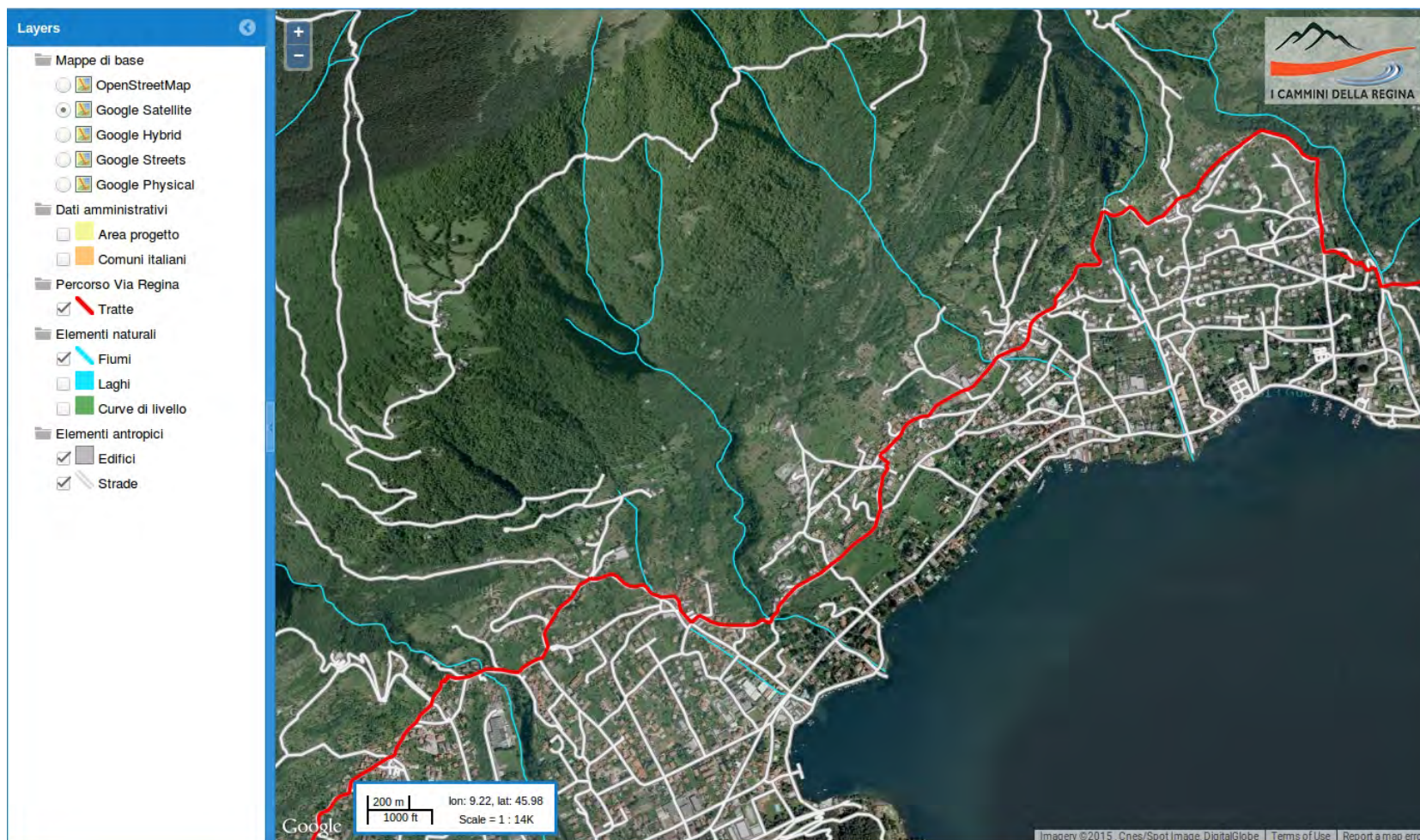
CLIENT



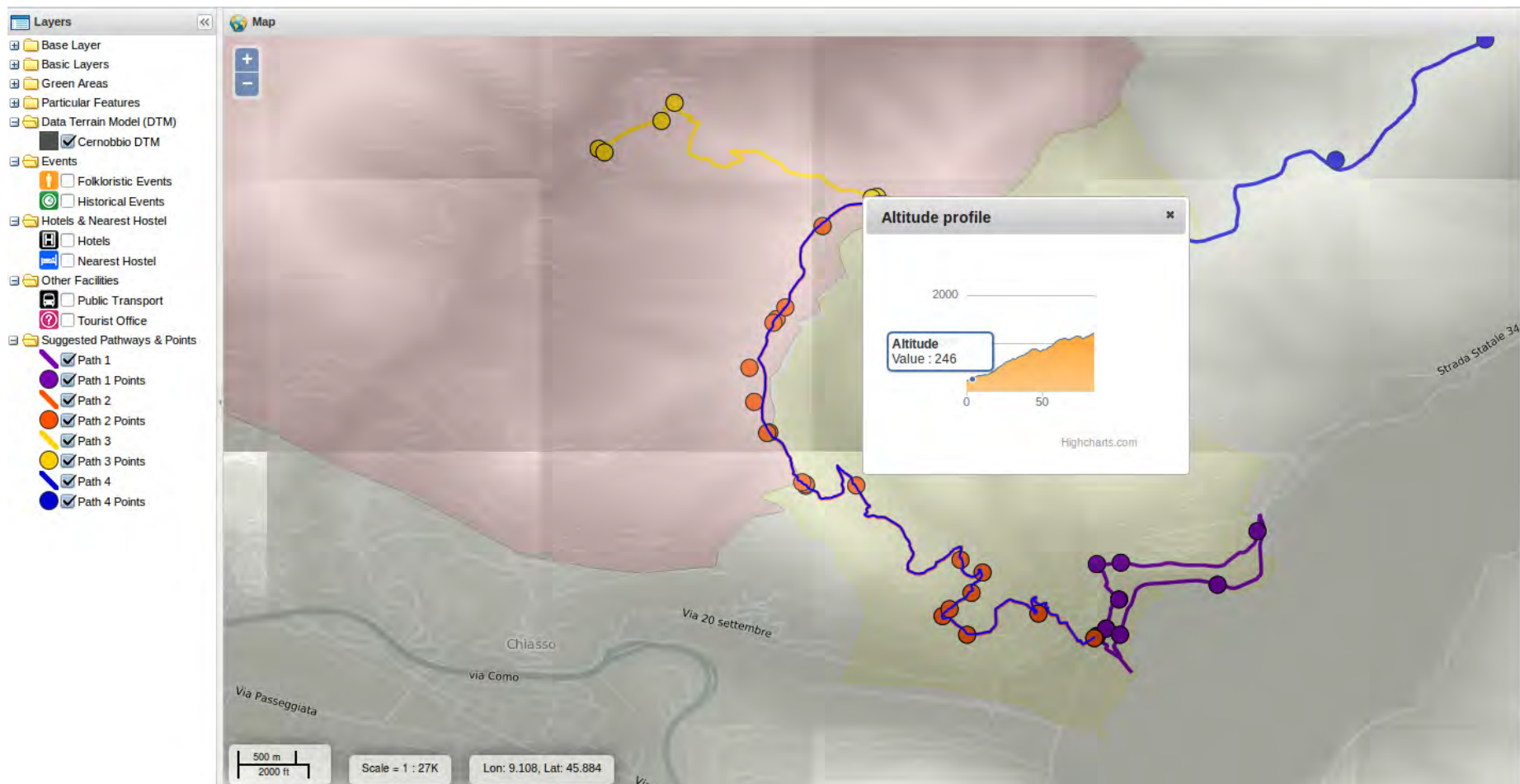
## ❖ Data visualization



## ❖ Data visualization



## ❖ Computation of **terrain profile** through WPS (Web Processing Service)



# 3D viewer

- ❖ Built as a customization of the [PoliCrowd 2.0](#) platform:

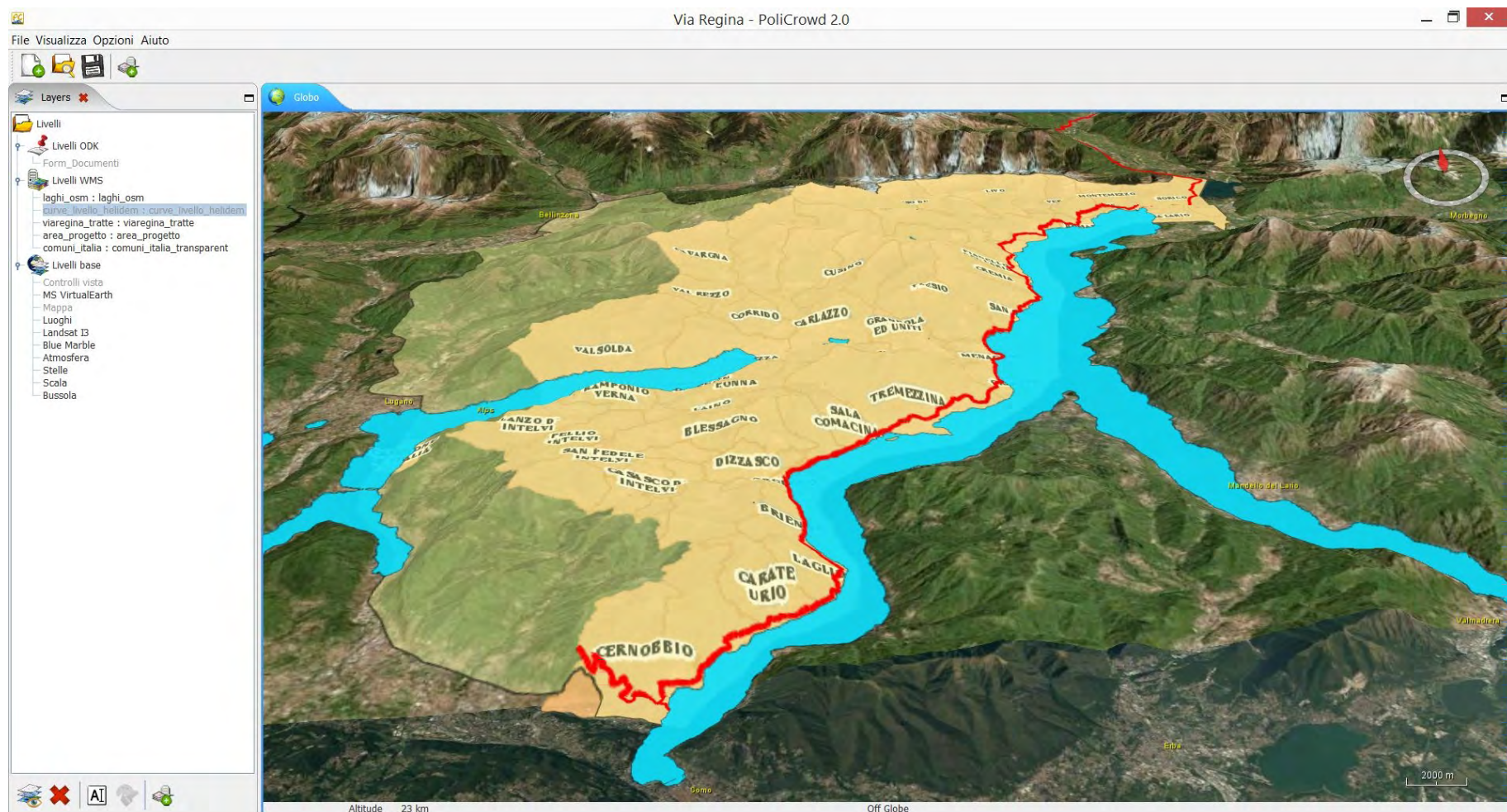


- data [3D visualization](#) on NASA World Wind virtual globe
- connection to [any WMS](#) and [ODK Aggregate server](#)
- participative functionalities: POIs collaborative enrichment & project creation
- customizable data styling & [multimedia](#) support
- support for time dimension ([4D visualization](#))



# 3D viewer

## ❖ Connection to the project **WMS server** & data 3D visualization



## ❖ Connection to the project **ODK server** & customization of the **point style**

Via Regina - PoliCrowd 2.0

File Visualizza Opzioni Aiuto

**Layers**

- Livelli
- Livelli ODK
- Form\_Documenti
- Livelli WMS
- laghi\_osm : laghi\_osm
- curveLivello\_helidem : curveLivello\_helidem
- viaregina\_tratte : viaregina\_tratte
- area\_progetto : area\_progetto
- comuni\_italia : comuni\_italia\_transparent
- Livelli base
- Controlli vista
- MS VirtualEarth
- Mappa
- Luoghi
- Landsat I3
- Blue Marble
- Atmosfera
- Stelle
- Scala
- Bussola

**Globo**

**Markers**

Facciata della Chiesa di Santo Stefano

Accuracy: 0E-10  
Elevation: 0E-10  
Latitude: 45.8444550000  
Longitude: 9.0641540000  
audio\_E:  
data\_E: 2014-05-03  
descriz\_E: Vista sulla città di Como  
deviceid: enketo.org:3SzPsgqR5zLU6p  
end: 2014-11-04T11:33:54.000+01  
fonte\_E: Patrick Horrigan...

Open Marker...

Altitude 1 km Off Globe

Data di inserimento: 20/01/15 20/01/15  
Data elemento: 20/01/15 20/01/15  
Visualizza Aggiungi Modifica Cancella

## ❖ Query of the ODK data & point enrichment with multimedia contents

Via Regina - PoliCrowd 2.0

File Visualizza Opzioni Aiuto

Layers

- Livelli
- Livelli ODK
- Form\_Documenti
- Livelli WMS
- laghi\_osm : laghi\_osm
- curveLivello\_helidem : curveLivello\_helidem
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- MS VirtualEarth
- Mappa
- Luoghi
- Landsat I3
- Blue Marble
- Atmosfera
- Stelle
- Scala
- Bussola

Globo

Markers

Vista sulla città di Como

Accuracy: 0E-10  
Elevation: 0E-10  
Latitude: 45.8411740000  
Longitude: 9.0779350000  
audio\_E:  
data\_E: 2014-05-03  
descriz\_E: Facciata della Chiesa del Redentore  
deviceid: enketo.org:3SzPsgqR5zLJ6p  
end: 2014-10-28T16:04:00.000+01  
fonte\_E: Angelica Braccia  
id: v1  
immagine\_E: 2\_mod.jpg  
instanceID:  
uid: 31768144-73d3-4e76-a9e9-aa2f61b560ef  
isComplete: true  
markedAsCompleteDate:...

Open Marker...

Altitude 2 km Lat 45,8561° Lon 9,0623° Elev 802 meters

Video Audio Immagini Commenti

Data di inserimento: 20/01/15 20/01/15  
Data elemento: 20/01/15 20/01/15

Visualizza Aggiungi Modifica Cancella

# Conclusions

- ❖ Web Mapping 2.0 technologies applied to slow tourism
  - upload/sharing of geospatial data (for project partners)
  - report of georeferenced points of interest from mobile (for common citizens)
  - 2D viewer for data visualization, query & processing [work in progress]
  - virtual globe platform for an immersive 3D (4D) visualization [in progress]

# Acknowledgments

- ❖ This research has been funded by the INTERREG “I Cammini della Regina – Percorsi transfrontalieri legati alla Via Regina (The paths of Regina – Crossborder paths departing from Via Regina)” 2007-2013 project.

<http://www.viaregina.eu>

<https://www.facebook.com/viaregina2.0>

<https://twitter.com/viaregina20>

## Thanks for your attention!

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