

International Workshop on
Supporting Future Earth with
Global Geo-information

June 9-10, 2015 Beijing, China

Virtual globes for slow tourism promotion: the Via Regina case study

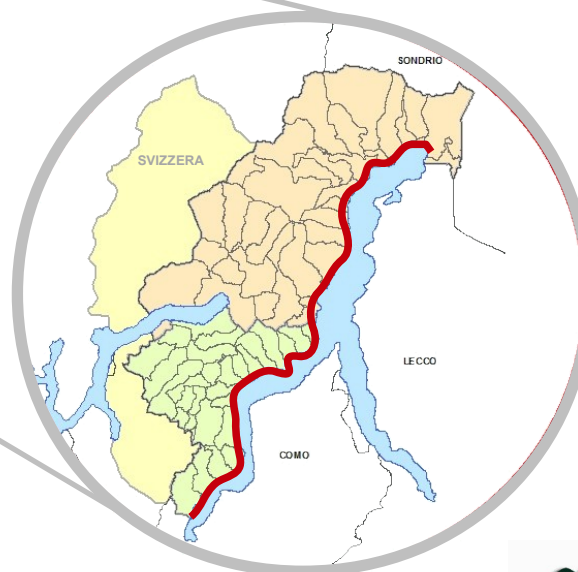
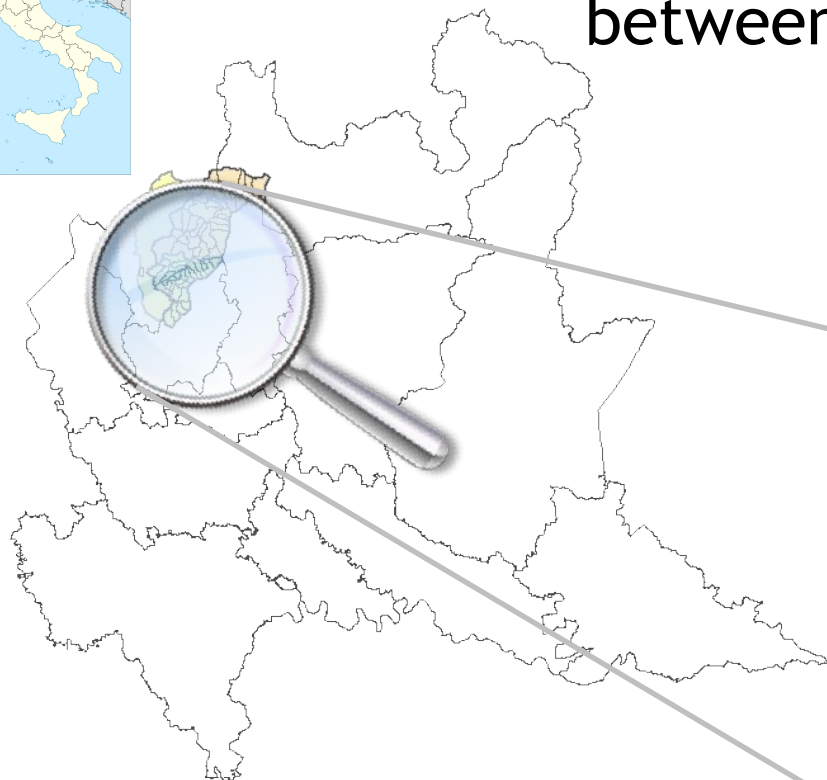
Maria Antonia Brovelli, Marco Minghini and Giorgio Zamboni

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

Via Regina

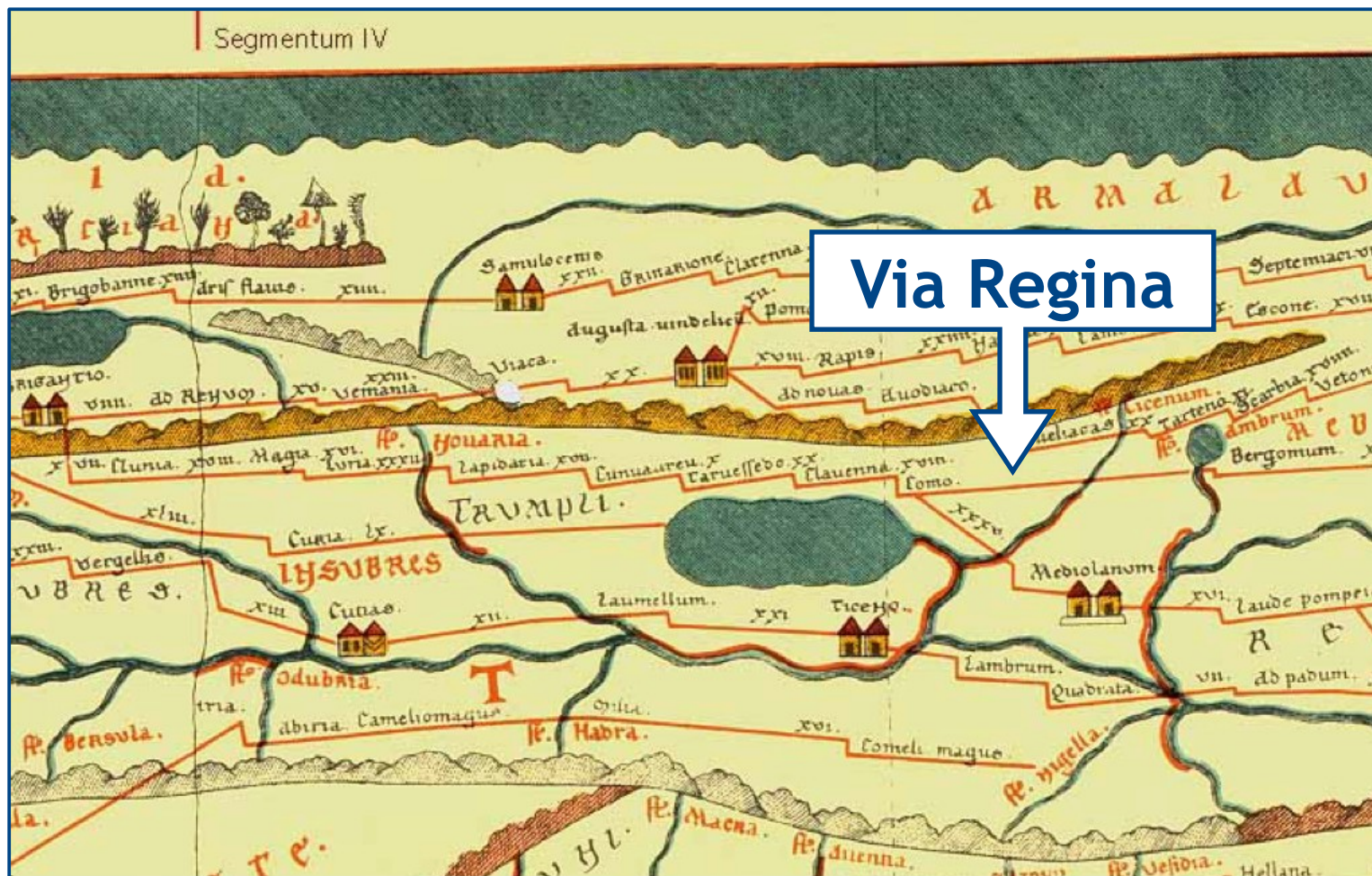
❖ Via Regina defines a **cross-border area** between Italy and Switzerland

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



Via Regina

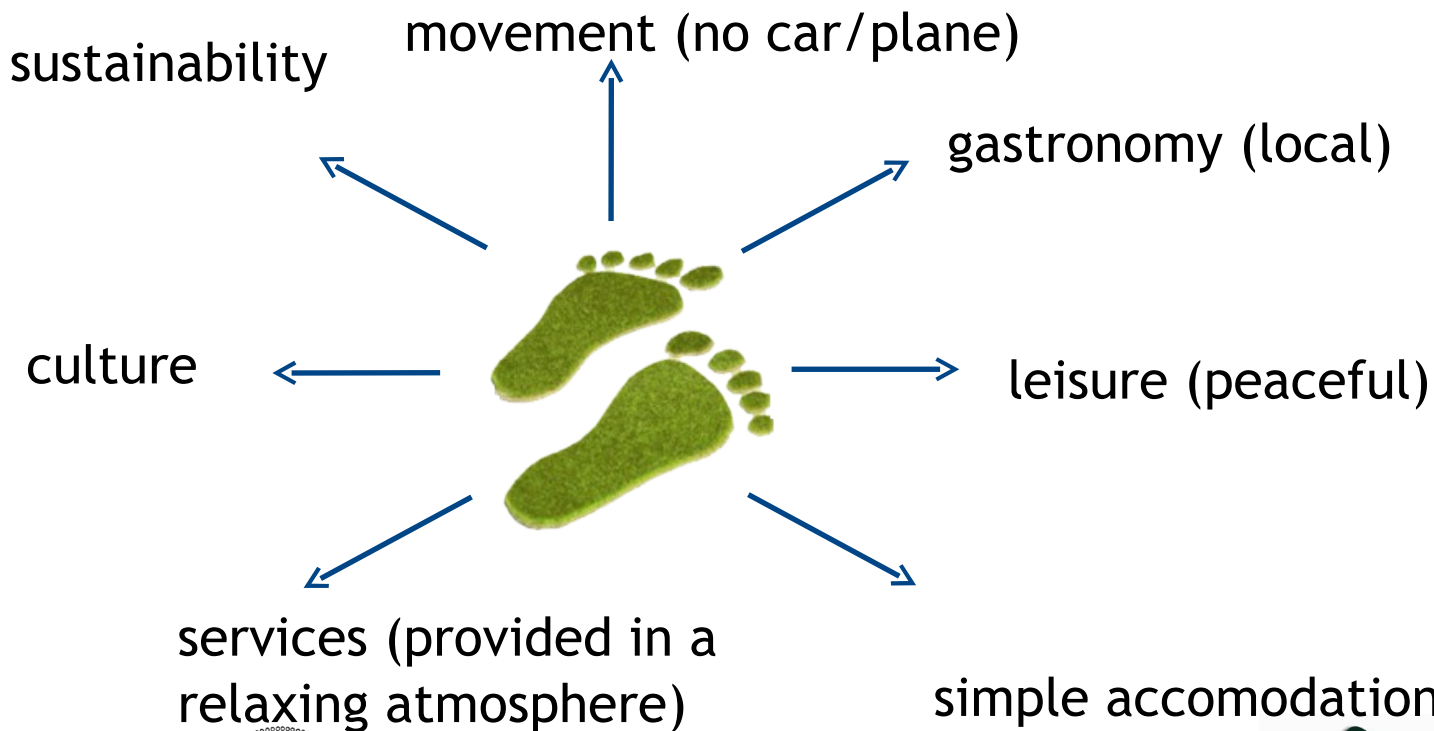
- ❖ Via Regina defines a **cross-border area** between Italy and Switzerland



Slow tourism at a glance



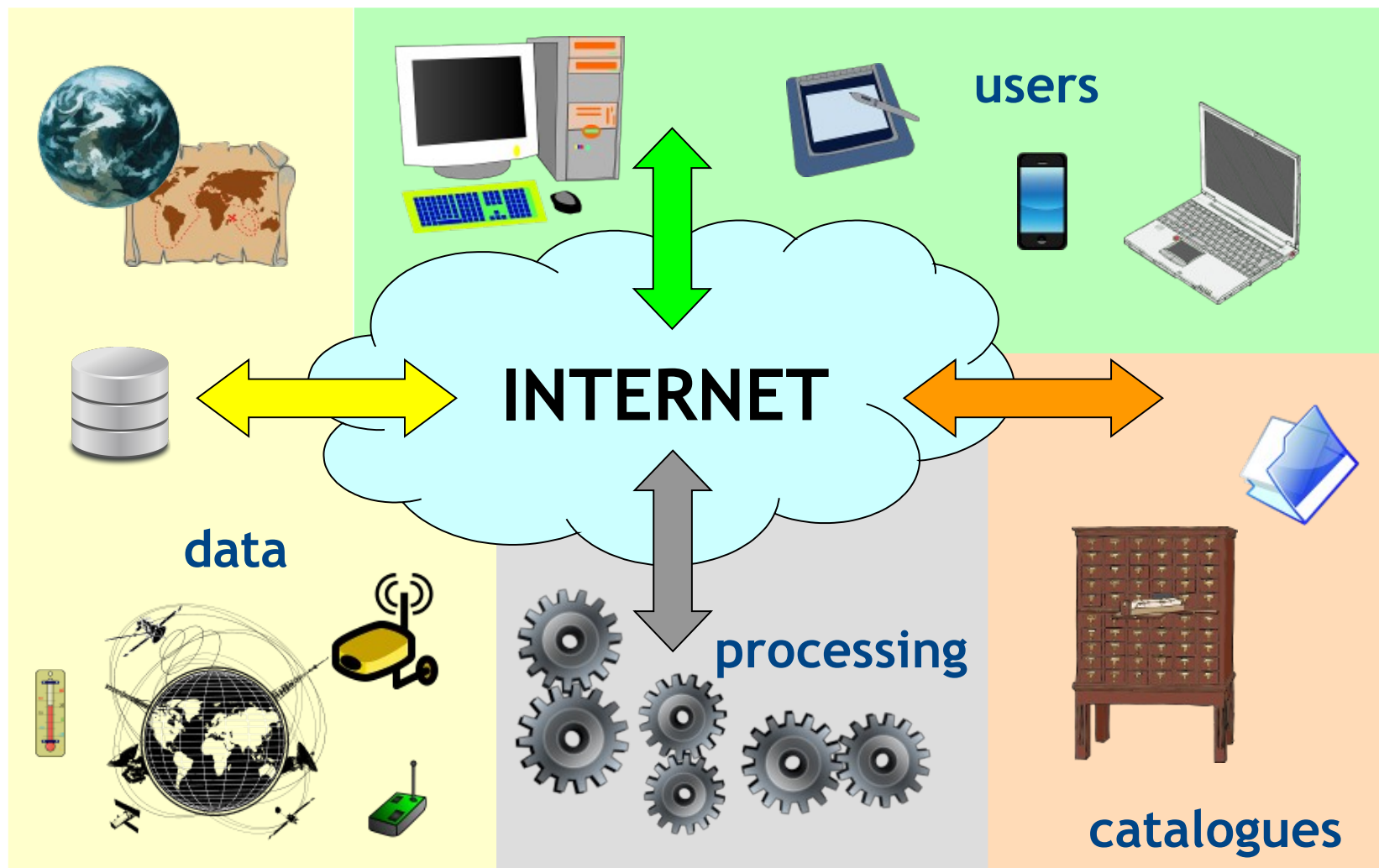
- ❖ A special case of **sustainable tourism** focused on:
 - **environmental friendliness**
 - **rediscovery of local traditions and cultural knowledge**



Geospatial Web



Geospatial Web



Data upload & sharing



- ❖ **Authoritative data:** based on the geospatial Web collaborative platform <http://viaregina.como.polimi.it>



The screenshot shows the GeoNode web interface. At the top, there's a navigation bar with 'HOME', 'LAYER', 'MAPPE', 'DOCUMENTI', 'UTENTI', and 'CERCA'. Below this is a search bar and a 'Crea una nuova mappa' button. The main content area is titled 'ESPLORA MAPPE' and includes filters for 'Più Recenti', 'Meno Recenti', 'A-Z', 'Z-A', 'Più Popolari', and 'Rilevanza'. On the left, there's a sidebar for 'Le tue selezioni' with buttons for 'CATEGORIE', 'DATA', and 'PAROLE CHIAVE'. The main list shows two maps: 'Layers Mingo' and 'I CAMMINI DELLA REGINA - Percorsi transfrontalieri legati alla via Re...'. Each map entry includes a thumbnail, title, description, number of visualizations, average rating, and buttons for 'Scarica' and 'View'.

- ❖ **Open crowdsourced data:** OpenStreetMap

- ❖ **Open data:** GLOBLAND30



GLOBLAND30



Mobile data collection

❖ Allows **everyone** to report **interesting elements** using an Android device

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



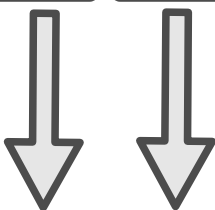
Mobile data collection

- ❖ Based on the suite of tools



- management of mobile data collection through a set of related applications

FORM CREATION



FORM STORAGE

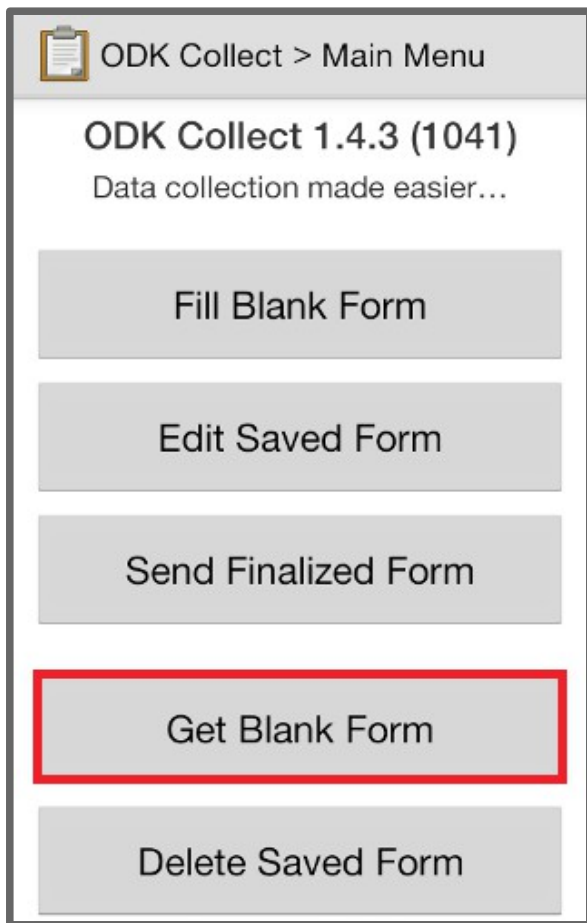
FORM COMPILATION



We are now
Implementing
a crossplatform
App



❖ Form download



ODK Collect > Main Menu

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

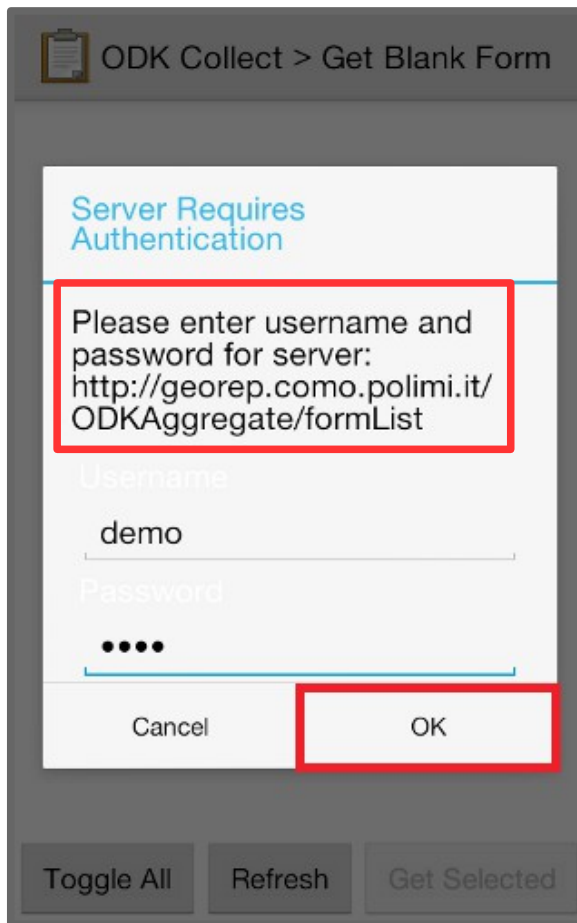
Fill Blank Form

Edit Saved Form

Send Finalized Form

Get Blank Form

Delete Saved Form



ODK Collect > Get Blank Form

Server Requires Authentication

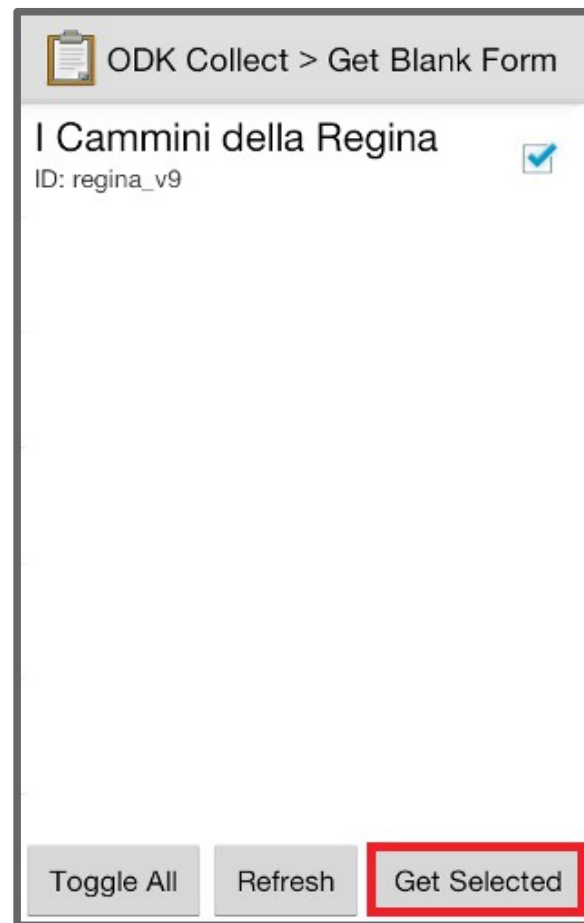
Please enter username and password for server:
<http://georep.como.polimi.it/ODKAggregate/formList>

Username
demo

Password
....

Cancel OK

Toggle All Refresh Get Selected



ODK Collect > Get Blank Form

I Cammini della Regina ☒

ID: regina_v9

Toggle All Refresh Get Selected

INSTRUCTIONS

http://www.viaregina.eu/files/documenti/2014/istruzioni_eng.pdf

❖ 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
30	31	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	6	7	8	9	10

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

❖ Historical and cultural elements

➤ Museum

- x ethnographic
- x thematic
- x gallery
- x collections

➤ Religious building

- x church
- x oratory
- x sanctuary
- x chapel
- x via crucis
- x fresco
- x abbey

➤ Civil building

- x historical building
- x contemporary building
- x traditional building
- x monument

➤ Rural building

- x pasture/shed
- x snow deposit
- x granaio/metato (chestnuts drier building)
- x roccolo (system designed to catch birds)
- x casello/turbino (buildings for the storage of perishable foods)
- x hydraulic structures
- x masseria (farm)

❖ Historical and cultural elements

➤ Archaeological element

- x archaeological element
- x archaeological site
- x element inside a building
- x single element

➤ Military building

- x castle
- x tower
- x defensive wall
- x fort
- x trench
- x redoubt (secondary fort)
- x bunker

➤ Factory

- x furnace
- x trip hammer
- x mill
- x sawmill
- x quarry
- x mine
- x rural factory

❖ Morphological elements

➤ Surface

- x pavement
- x natural material
- x gravel
- x asphalt
- x steps
- x ford

➤ Bounding escarpment

- x rock
- x ground escarpments
- x rock escarpments
- x support walls
- x boundary walls and railings
- x tree-lined avenues

x fence/barrier

x vertical plate

➤ Traffic support and manufactured products

x kilometric stone

x border stone

x stone marker

x isolated tree

x inscription

x fountain

x ancient laundry

x bridge

x rest of bridge

x tomb

x underpass

x tunnel

x panoramic viewpoint

❖ Tourist elements

➤ Accommodation

- x hotel
- x hostel
- x B&B
- x hut/shelter
- x camping
- x private accommodation
- x free accommodation
- x agritourism
- x apartment

➤ Transport

- x bus stop
- x dock/ferry
- x train station
- x funicular and ski lift

➤ Services

- | | |
|-----------------|-------------------------------|
| x pharmacy | x park area |
| x parking | x ATM |
| x school | x info point |
| x public safety | x wifi hotspot |
| x spring | x bike sharing |
| x city hall | x electric car charging point |
| x post office | x hospitals/emergency room |
| x wc | x hiking signs |
| x bank | |

➤ Products

- x wine shop
- x craft
- x food/typical products
- x clothing shop

Mobile data collection



➤ Food Service

- ✗ restaurant
- ✗ crotto (cellar inside a natural curve)
- ✗ bar
- ✗ food shop

❖ Critical elements

➤ Morphological

- ✗ ford
- ✗ landslide

➤ Structural

- ✗ crossing with traffic light
- ✗ crossing without crossing stripes
- ✗ crossing with crossing stripes

❖ Warning


- [whatever kind of warning the user specifies]

❖ 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).

☐ ethnographyc

☒ thematic

☐ gallery

☐ collections

ODK Collect...

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

Museum of Villa Erba

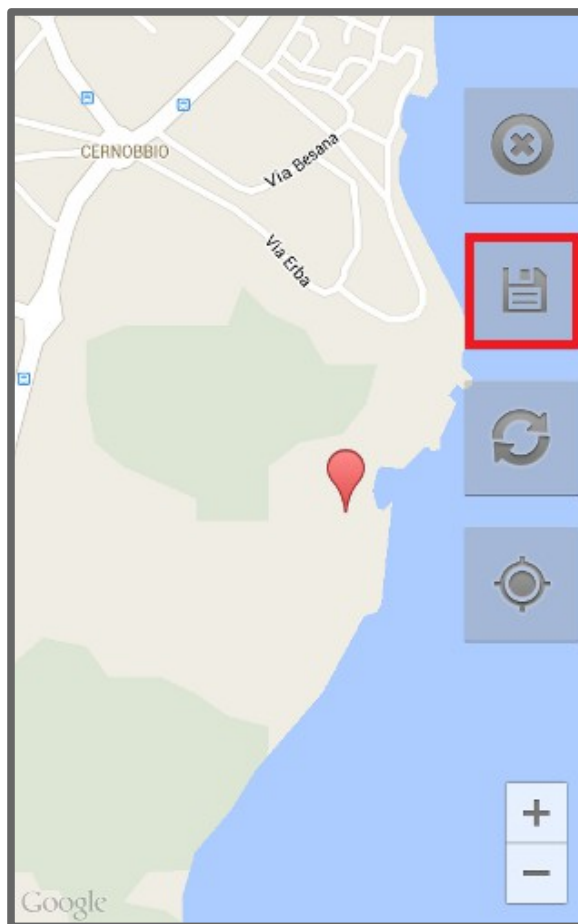
❖ Form compilation

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.

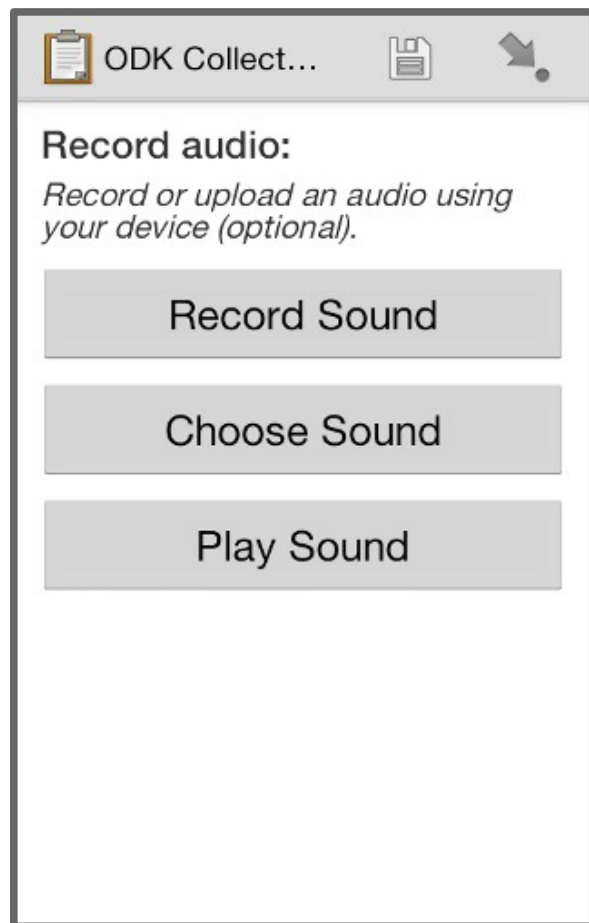
Take Picture

Choose Image



The image shows a screenshot of the ODK Collect form. It has two main sections: 'Position of the element' and 'Picture showing the element'. The 'Picture showing the element' section has two buttons: 'Take Picture' and 'Choose Image'. Below these buttons is a photograph of a large, ornate building with a clock tower, which is the image that was chosen.

❖ Form compilation



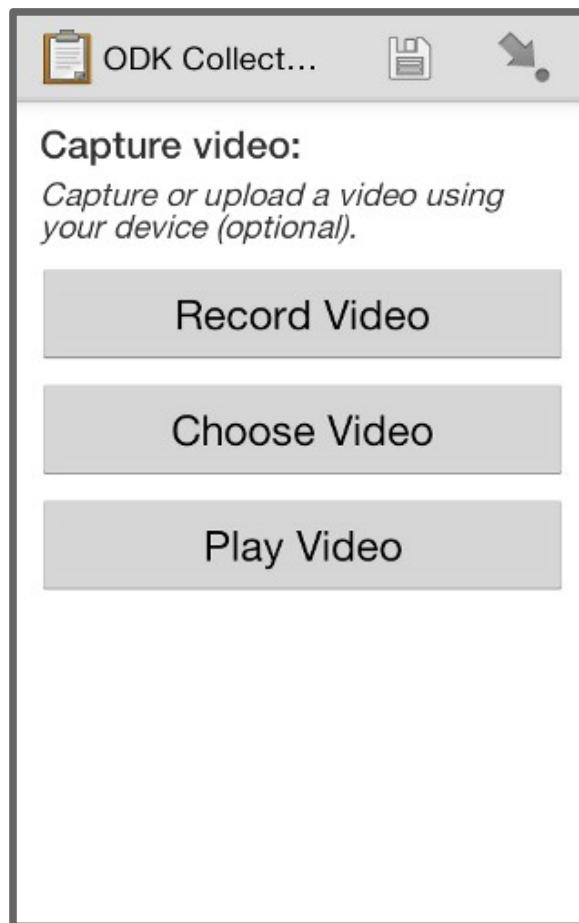
ODK Collect...

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

Record Sound

Choose Sound

Play Sound



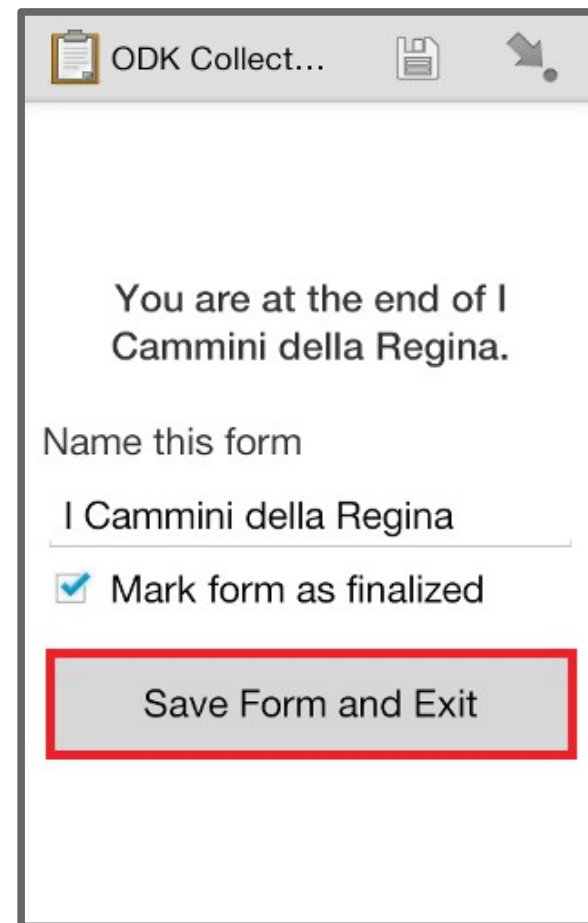
ODK Collect...

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.

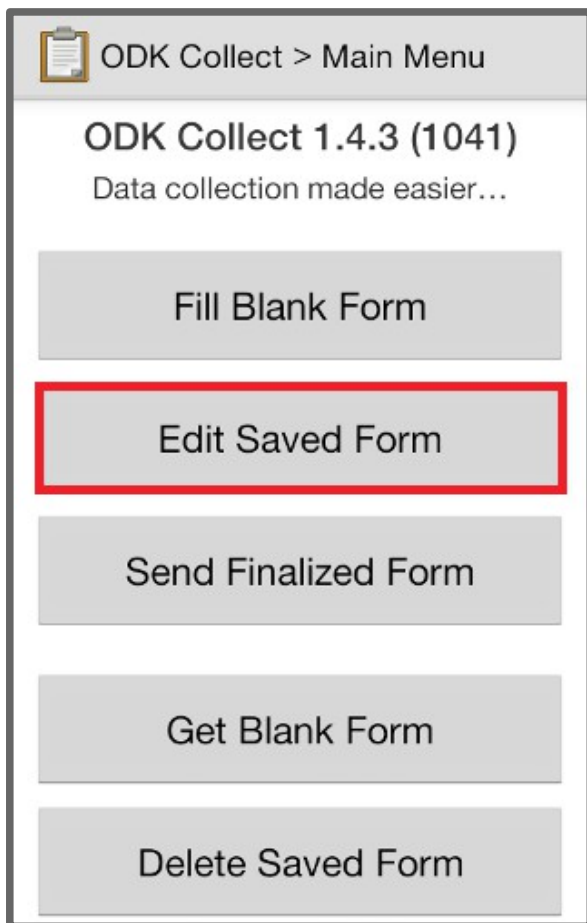
Name this form

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...

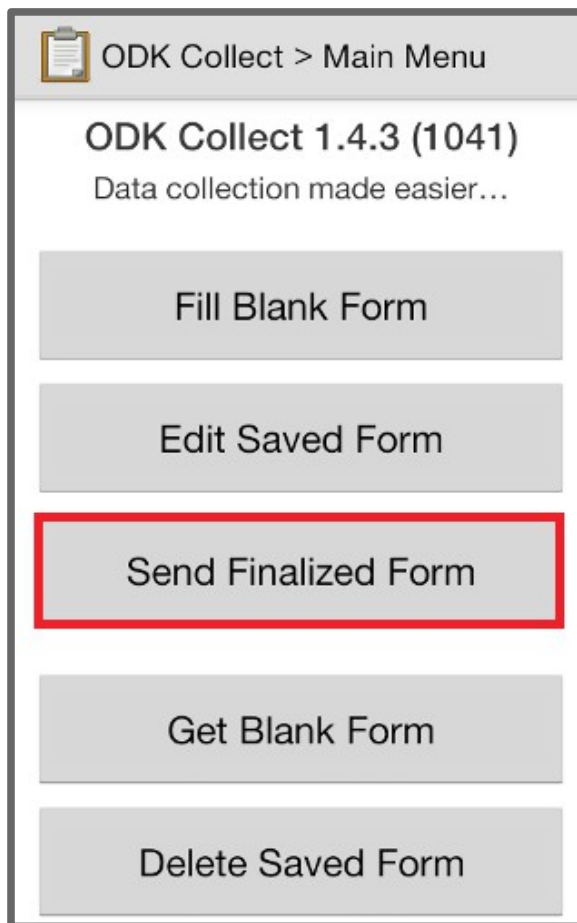
Fill Blank Form

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...

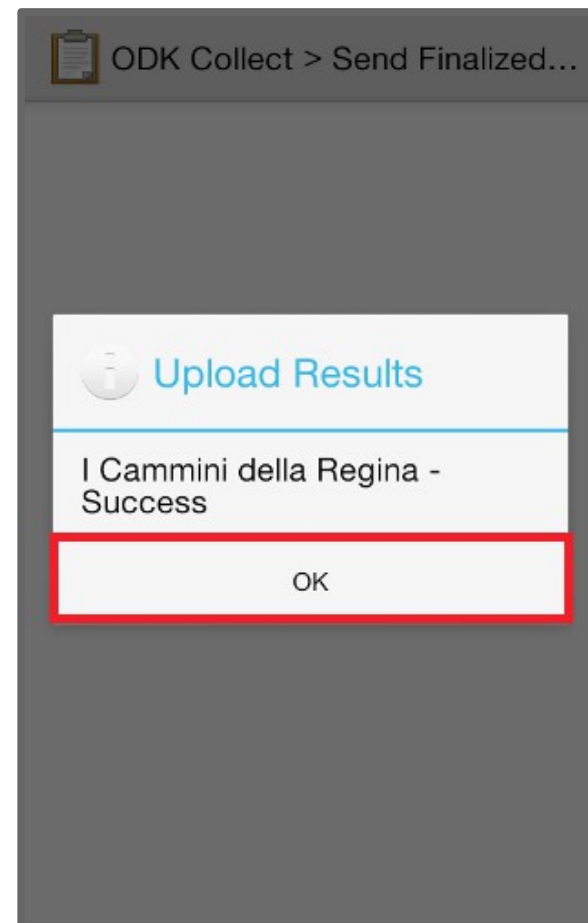
Fill Blank Form

Edit Saved Form

Send Finalized Form

Get Blank Form

Delete Saved Form



ODK Collect > Send Finalized...

Upload Results

I Cammini della Regina -
Success

OK

Mapping parties

SABATO 3 MAGGIO 2014

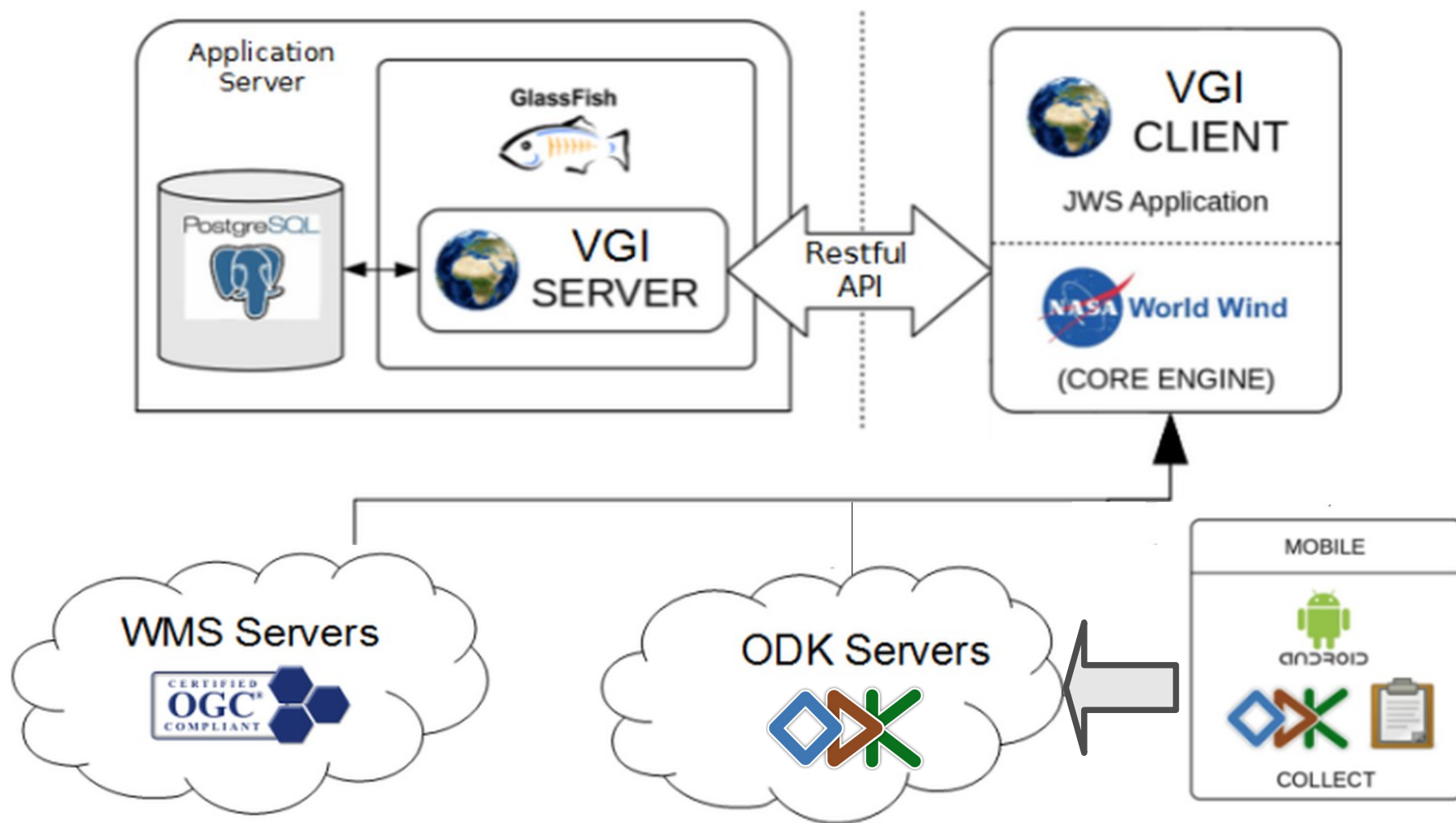
MapParty!



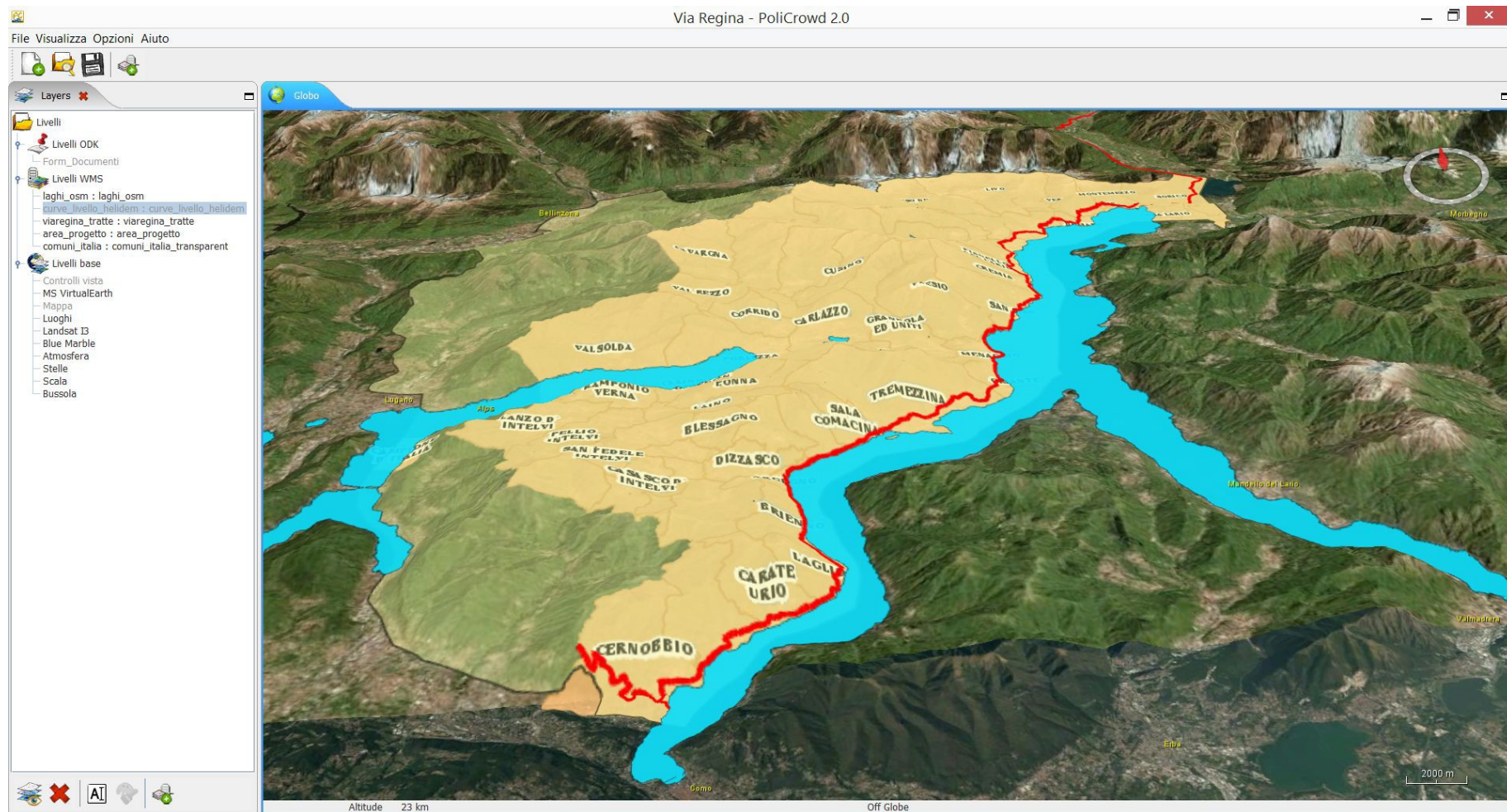
CAMMINARE, OSSERVARE, DISEGNARE, MAPPARE
LUNGO I CAMMINI DELLA REGINA PER UN'ESPERIENZA
CULTURALE, SENSORIALE E GIOCOSA



A 3D social platform: architecture



❖ Connection to WMSs (among them those of the project)



❖ Connection to ODK servers (among them those of the project)

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 T3
 - 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

3D viewer

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

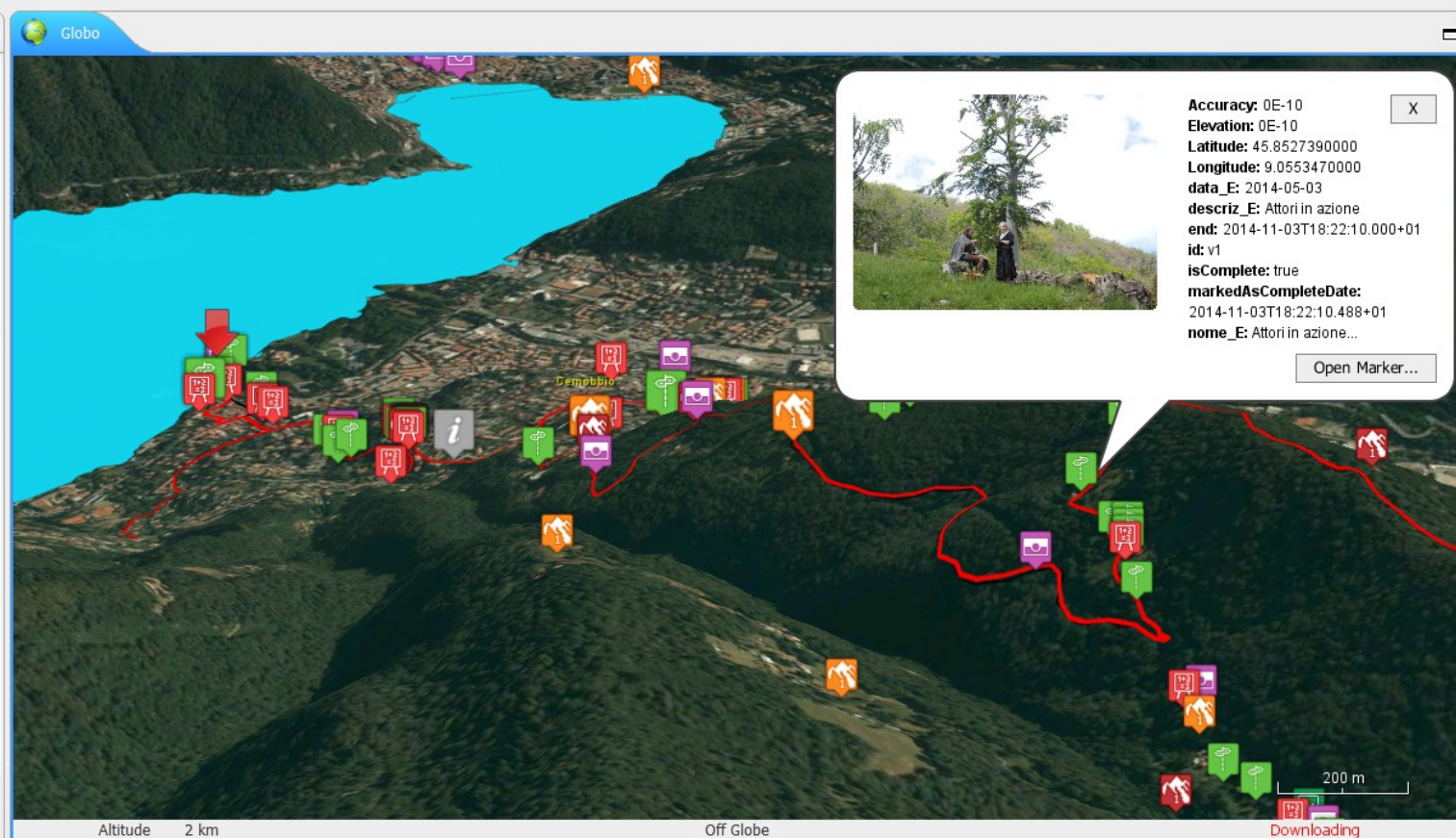
File Visualizza Opzioni Aiuto



Layers

- Livelli
 - Livelli ODK
 - I Cammini della Regina
 - Form_Documenti
 - Livelli WMS
 - laghi_osm : laghi_osm
 - comuni_italia : comuni_italia_transparent
 - viaregina_tratte : viaregina_tratte
 - area_progetto : area_progetto
 - curveLivello_helidem : curveLivello_helidem
 - elevation : elevation
 - Percorso della Via Regina : percorso_regina_2f
 - Livelli base
 - Controlli vista
 - MS VirtualEarth
 - Mappa
 - Luoghi
 - Landsat I3
 - Blue Marble
 - Atmosfera
 - Stelle
 - Scala
 - Bussola

Altitude 2 km Off Globe



Globo

Altitude 1 km Off Globe

Markers

elemento turistico

Accuracy: 8.0000000000
Elevation: 805.7413012501
Latitude: 45.8549619867
Longitude: 9.0635823119
audio_E:
data_E: 2014-04-11
descriz_E:
descriz_S:

Video Audio Immagini Commenti

Via Regina
Data di inserimento: 31 gennaio 2015 9.45
Via Regina

Paesaggio
Data di inserimento: 31 gennaio 2015 9.44
Paesaggio

Torre
Data di inserimento: 31 gennaio 2015 9.44
Torre

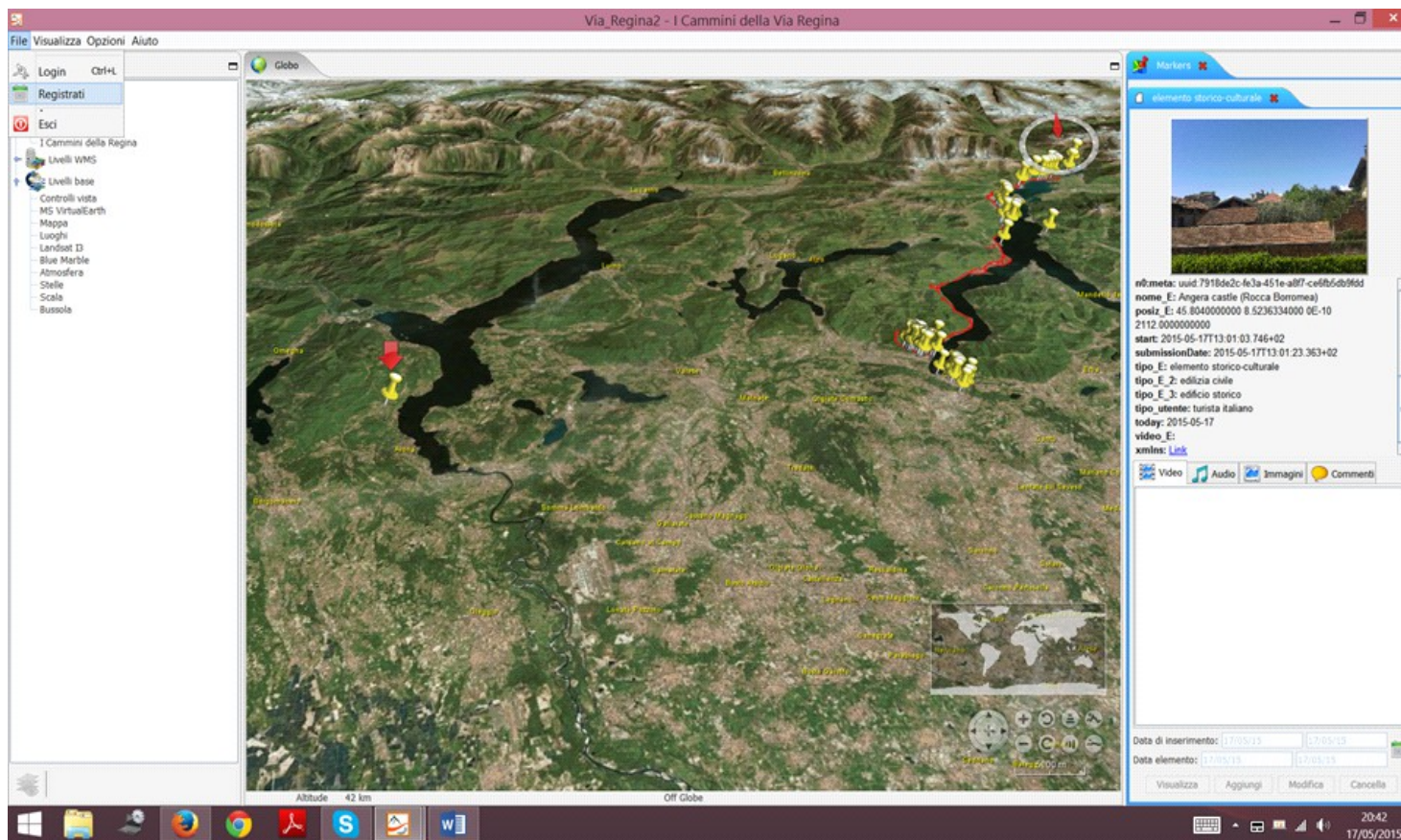
Data di inserimento: 26/04/15 26/04/15
Data elemento: 26/04/15 26/04/15

Visualizza Aggiungi Modifica Cancella

Accessing it with Java Webstart



<http://viaregina2.como.polimi.it/ViaRegina20/>



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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