

MapStore

create, save and share maps and mashups

Ing. Alejandro Díaz, GeoSolutions



Outline

- **About GeoSolutions**
- **MapStore**
 - **Introduction**
 - **Demo**
 - **Standards**
 - **Architecture**
 - **Tools**
 - **Implementations**

GeoSolutions

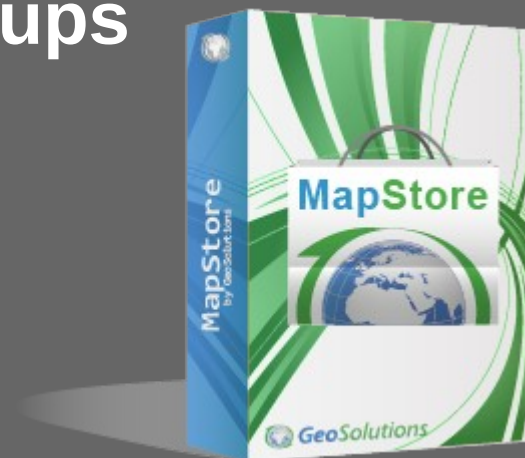
- Founded in Italy in late 2006
- Expertise
 - Image Processing, GeoSpatial Data Fusion
 - Java, Java Enterprise, C++, Python
 - JPEG2000, JPIP, Advanced 2D visualization
- Supporting/Developing FOSS4G projects
 - GeoTools, GeoServer
 - GeoNetwork, GeoBatch, MapStore
 - ImageIO-Ext and more: <https://github.com/geosolutions-it>
- Focus on Consultancy
 - agencies, large private companies, etc...



MapStore Intro

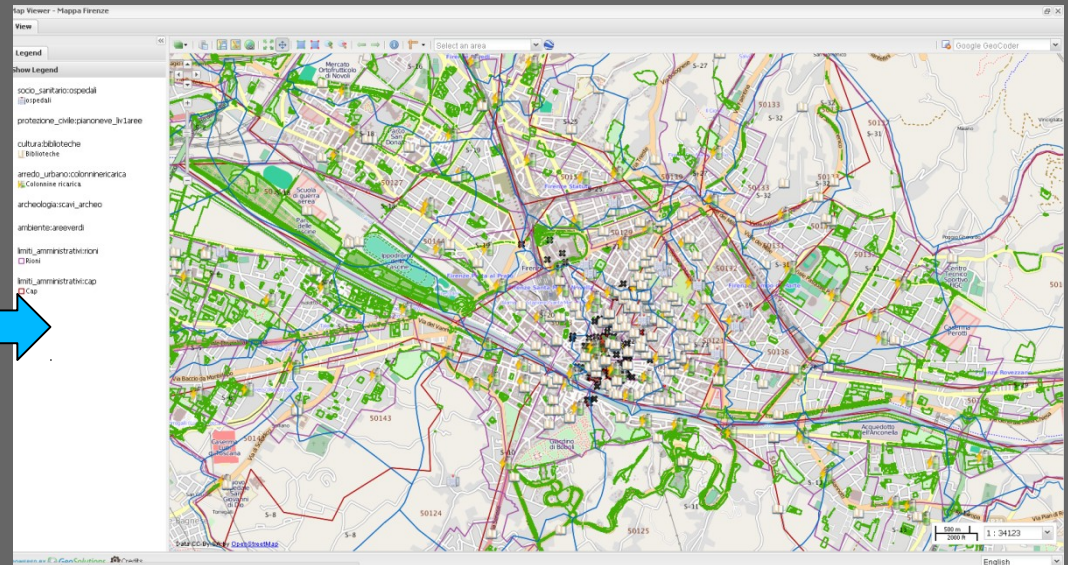
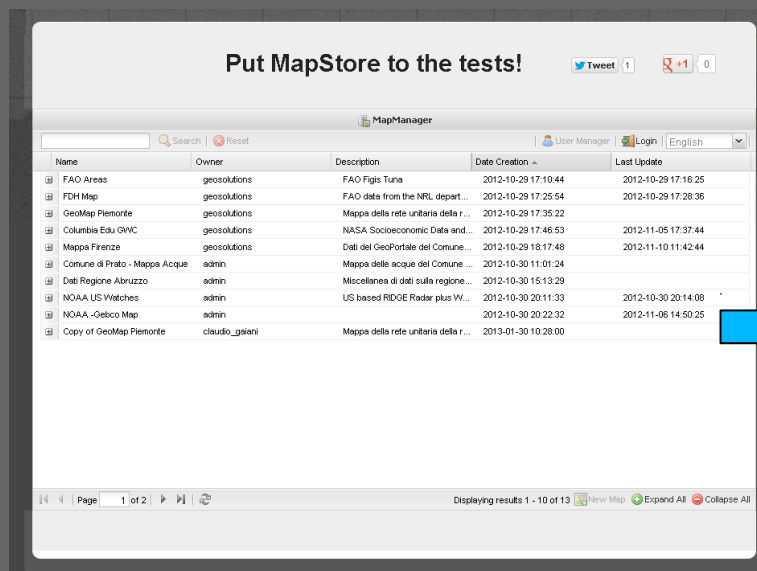
Introduction

- Create and manage **maps** and **mashups**
- The **Map** is the key resource
 - Definition of data sources (e.g. WMS)
 - Definition and Layout of widgets
- Main features
 - Map Creation → you can create personal maps
 - Map Browsing → you can navigate existing maps
 - Map Sharing → you can share maps
 - Map Security → you can define access rights
- Entirely Open source → GNU General Public License
- <https://github.com/geosolutions-it/mapstore>



Try the Demo

- Download the Demo (<http://goo.gl/cmpWO>)
- Read the Quick Start Guide:
 - <https://github.com/geosolutions-it/mapstore/wiki/Quick-Start-Guide>
- Start creating and sharing your maps
- Not for production use !!!



Standards Supported

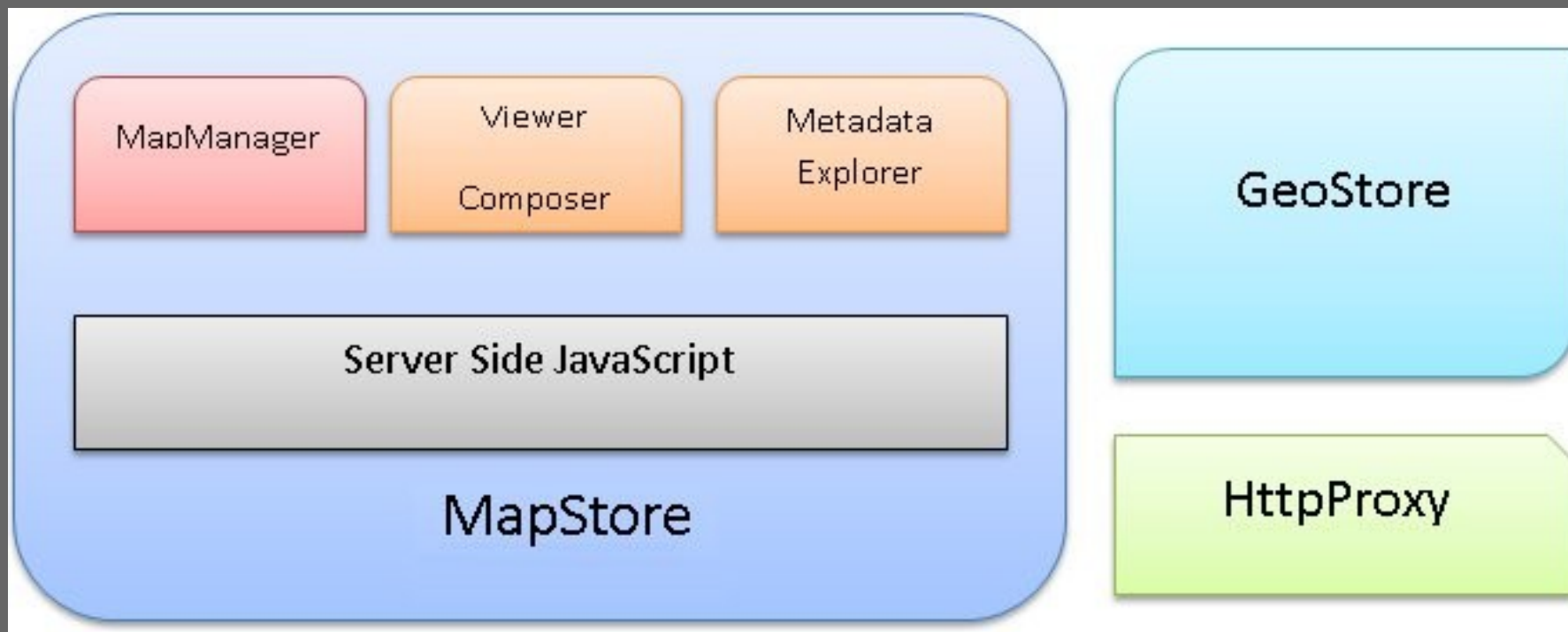
- We believe in standards, whether **internationally recognized**
 - WMS : 1.1.1, 1.3.0
 - WFS: 1.0.0, 1.1.0
 - WPS: 1.0.0
 - WMTS: 1.0.0
 - TMS: 1.0.0
 - CSW: 2.0.2
 - KML: XXX
- Or **de-facto**
 - GeoJSON
 - GeoRSS

Thanks OpenLayers



Overall Architecture

- Each and every component is Open Source!
- Check our github page <https://github.com/geosolutions-it>
- Modular and extensible
 - Optional Components → **Lego-like approach**



Components

- **MapManager**
 - allow users to create, delete and search maps
- **MapComposer**
 - a powerful and intuitive frontend to allow users to create maps
- **MapView**
 - the maps viewer, a standard webgis with tools like embed-link, marker's injection, geocoder, reverse geocoder, etc ...
- **MetadataExplorer**
 - an independent component that can perform searches on OGC Catalog Services (CSW).
- **These components are entirely Open source under the GNU General Public License** (did we already say that?)

Components - GeoStore

- **GeoStore**
 - <https://github.com/geosolutions-it/geostore>
 - Java Enterprise application for storing, searching and retrieving data on the fly → **Simple Document Object Store**
 - REST interfaces, maps as resources
 - Flexible and modular infrastructure in order to create, manage, navigate and search map definitions
 - Integrates the authentication and authorization management as per Role Based Access Control (RBAC) paradigm
 - As a standard storage mechanism GeoStore uses a DBMS: H2, Oracle and PostgreSQL
 - GeoStore is entirely Open source under the GNU General Public License

Components – Http-Proxy

- **Http-Proxy**
 - forward HTTP proxy to make cross origin calls to external servers
 - Support for white list, black list, regex request filtering, throughput throttling and so on (**not just a black hole!**)
 - Open Source under the GNU General Public License
 - <https://github.com/geosolutions-it/http-proxy>
- **Server side JavaScript (Ringo based)**
 - Build functionalities
 - Dependencies management
 - Debug and tests tools

MapStore – Basic Libraries

- We rely on **proven** and **well-known** Open Source tools & libs

OpenLayers

ExtJs

Proj4Js

Gxp

GeoExplorer

GeoExt

Spring

Hibernate

- Many plugins and specific tools available

MapStore Widgets & Functionalities

MapManager

- Administer
 - Maps
 - Users
 - Secured Access
- Discover & Share Maps
 - Social Networks Integr...
 - Embed Link
- Interact with GeoStore

Name	Owner	Description	Date Creation	Last Update
Treviso	admin	Treviso data from CSW	2012-10-25 16:08:34	2012-10-26 16:56:29
Tessuto Urbanizzato Bolzano	geosolutions	Tessuto Urbanizzato del comun...	2012-10-29 16:15:01	
FAO Areas	geosolutions	FAO Figis Tuna	2012-10-29 17:10:44	2012-10-29 17:16:25
Description: FAO Figis Tuna				
FDH Map	geosolutions	FAO data from the NRL depart...	2012-10-29 17:25:54	2012-10-29 17:28:36
GeoMap Piemonte	geosolutions	Mappa della rete unitaria della r...	2012-10-29 17:35:22	
Description: Mappa della rete unitaria della regione Piemonte				
Columbia Edu GWC	geosolutions	NASA Socioeconomic Data and...	2012-10-29 17:46:53	2012-11-05 17:37:44
Description: NASA Socioeconomic Data and Applications Center (SEDAC) – Hosted by CIESIN at Columbia University				
Mappa Firenze	geosolutions	Dati del GeoPortale del Comune...	2012-10-29 18:17:48	2013-02-26 12:48:25
Comune di Prato - Mappa Acque	admin	Mappa delle acque del Comune ...	2012-10-30 11:01:24	
Dati Regione Abruzzo	admin	Miscellanea di dati sulla regione...	2012-10-30 15:13:29	

User Manager

Name	Role
admin	ADMIN
ahmedhosman	USER
alerbundi	USER
alexckp	USER
andrefi	USER

Page 1 of 9 | Displaying results 1 - 5 of 41

Add user

Name:

Password:

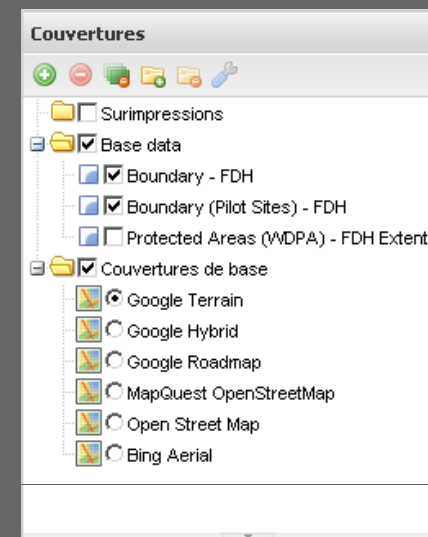
Confirm Password:

Role:

LayerManager & Info Pop-Ups

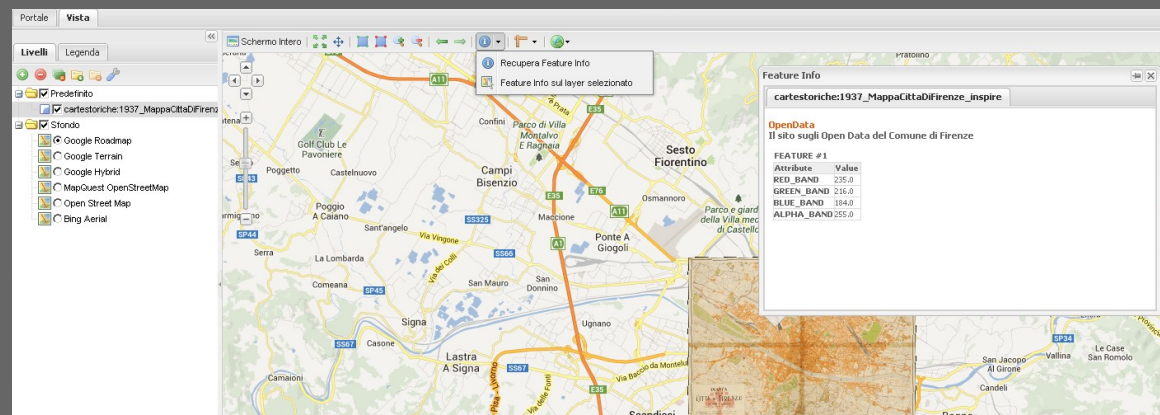
- **LayerManager**

- Manage Layers with order
- Manager Groups with Order
- Drag&Drop
- Manage Base Layers



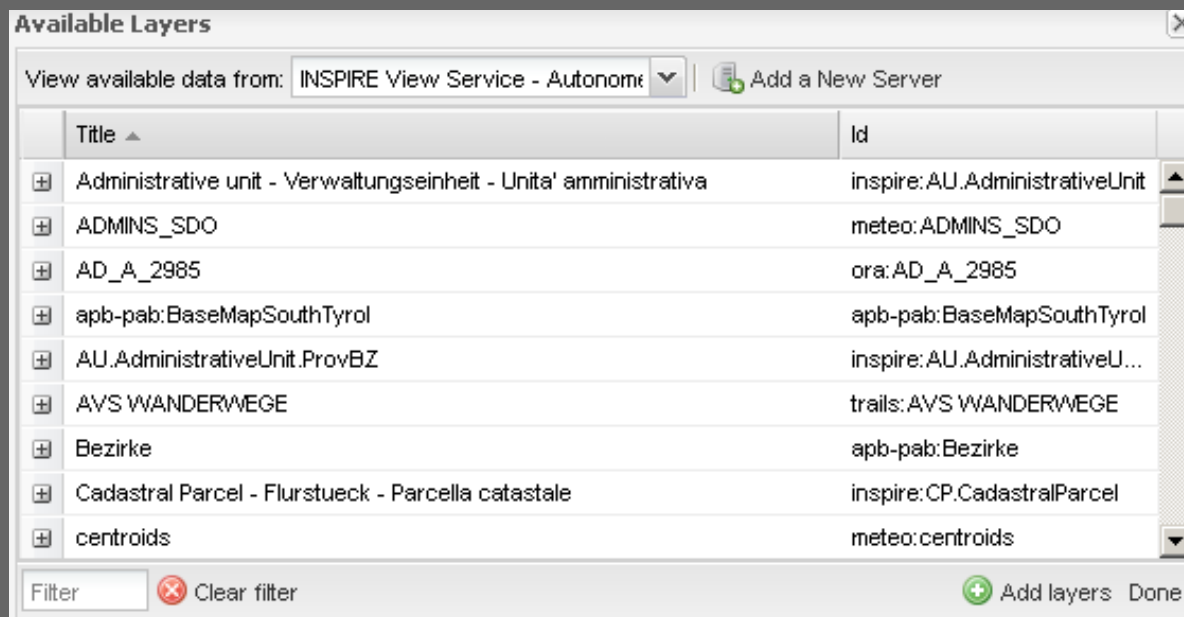
- **FeatureInfo Support**

- Selected Layer (no click)
- MultiLayer (click based)
- Attributes Selection (from config)
- *Paging*



WMS Layer Manager

- Add content from public sources like **Google Maps**, **OpenStreetMap**, **MapQuest**
- Add content from OGC WMS and WMTS servers
- Servers can be preconfigured or added on the fly!



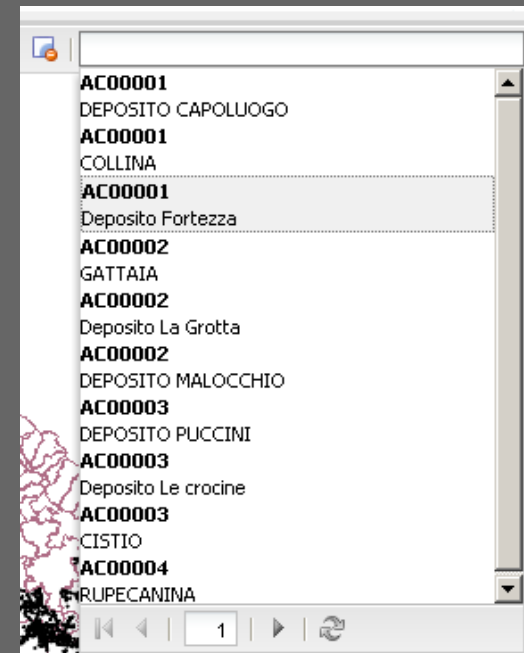
MapStore Widgets & Functionalities

- WFS search tool

- Interact with a WFS service to provide search functionalities

- With paging!**

- Map/Context Switcher

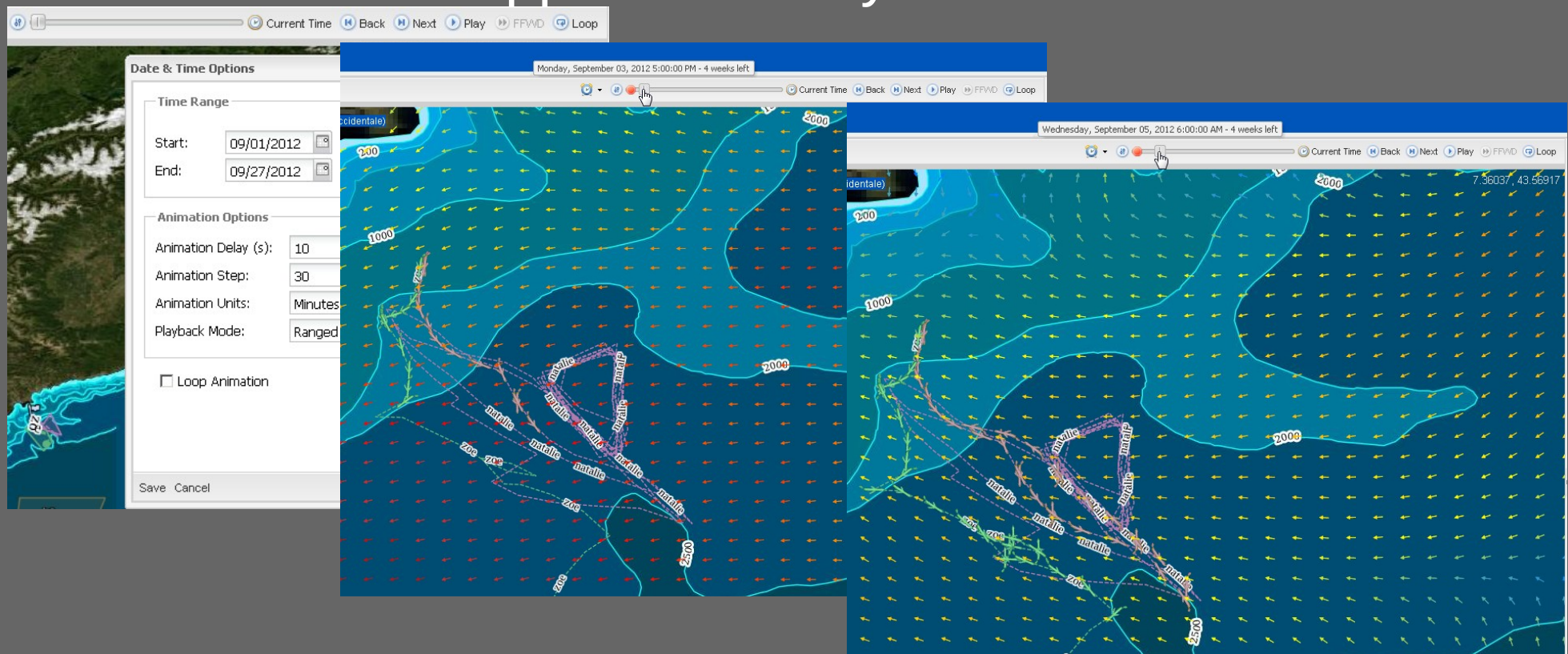


- define different contexts of map giving the possibility to simply switch from one to another.

MapStore Widgets & Functionalities

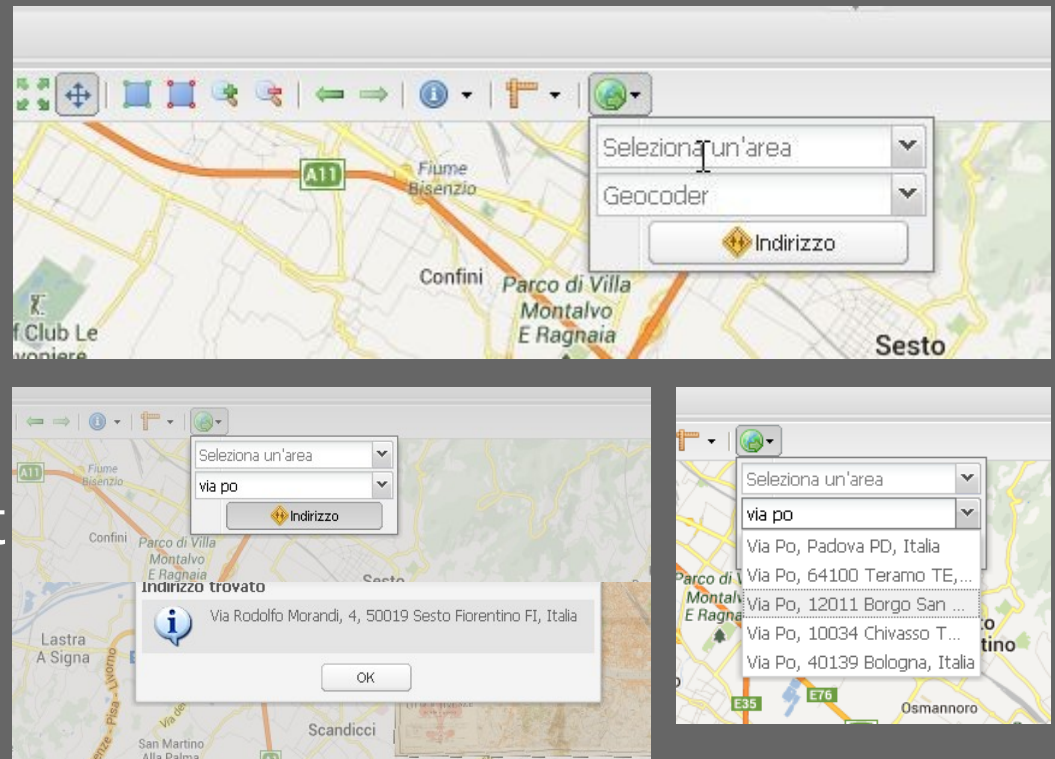
- Time Animation**

Allows to manage temporal animations if the time dimension is supported from your WMS.



GeoLocation Tools

- **Jump-To-Area Tool**
- **Dynamic GeoCoder**
- **Reverse Geocoder**
 - using a different service depending on the current map background
- **Google and Nominatim services currently supported.**
- **Beware of license implications!**

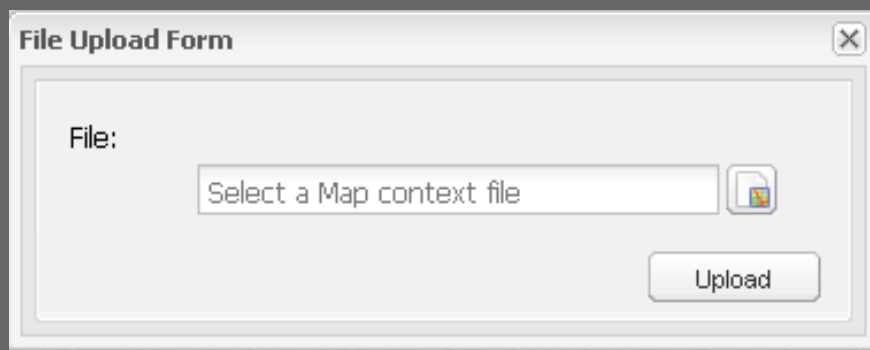


Import & Export

- **KML Importer/Exporter** to import/export vector features or simple images inside the map using the KML format



- **Map Import/Export** to export a map context in a file and then reimport it later



Map Embedding

- **Embed Link** embedding functionalities to publish a map in a web site
- Three simple steps:
 - Create your map
 - Share it with the world
 - Have people embed it in their own sites
- **Maps as resources!**
 - Share maps not layers
 - Define meaningful content



Publish Map

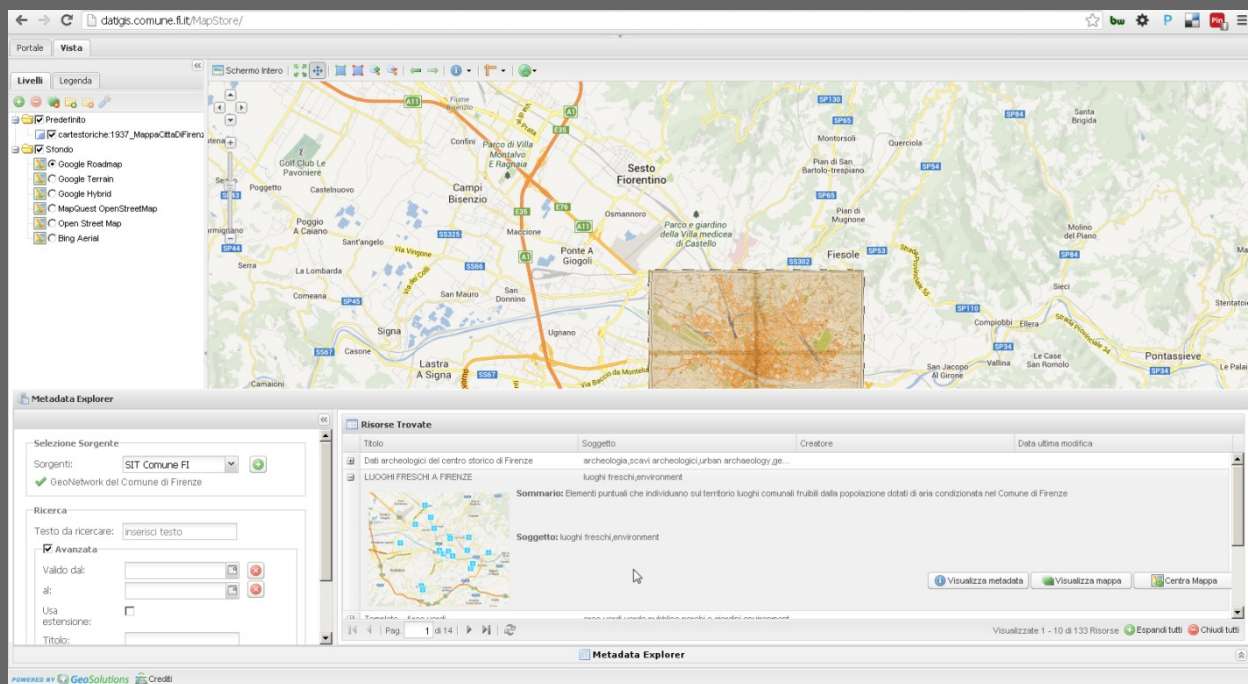
Map Size Height Width

Your map is ready to be published to the web! Simply copy the following HTML to embed the map in your website:


```
<iframe style="border: none;" height="400" width="600"
src="http://mapstore.geo-solutions.it/mapcomposer/viewer?locale=en&
bbox=1153537.0667759,5829204.188261,1370771.1011321,5951350.5594438
&mapId=191"></iframe>
```

Metadata Explorer


- **Metadata Explorer** to interact with Catalog Service for the Web (CSW)
 - Search and discover content
 - Inspect metadata
 - Add to map
- Basic Search using keywords
- Advanced Search
- Google like interface
- Add CSW on the fly




GeoNetwork Integration



OpenData
I dati aperti del Comune di Firenze




Search & View



Portale Vista

Home Amministrazione Info Aiuto

COSA?

DOVE? 


Ambito:

Sottoambito:

- Altre risorse di informazione
- Applicazioni
- Archivi
- Atti di conferenze
- Audio/Video
- Casi di studio
- Datasets
- Fotografie
- Mappe e grafici
- Risorse interattive

TROVA MAPPE INTERATTIVE DATI GIS IMMAGINI SATELLITARI E APPICAZIONI DELATIVE

Risultati aggregati c

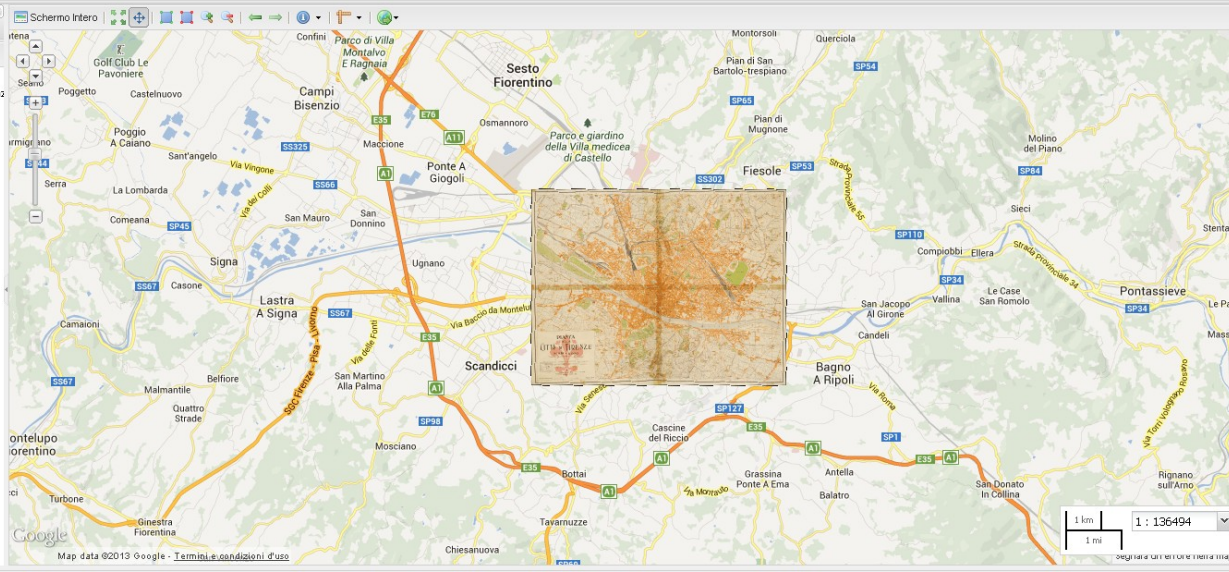


OpenData
I dati aperti del Comune di Firenze

Portale Vista

Livelli **Legenda**


- Predefinito
- caratteristiche:1937_MappaCittaDiFiren
- Storico
- Google Roadmap
- Google Terrain
- MapQuest OpenStreetMap
- Open Street Map
- Bing Aerial



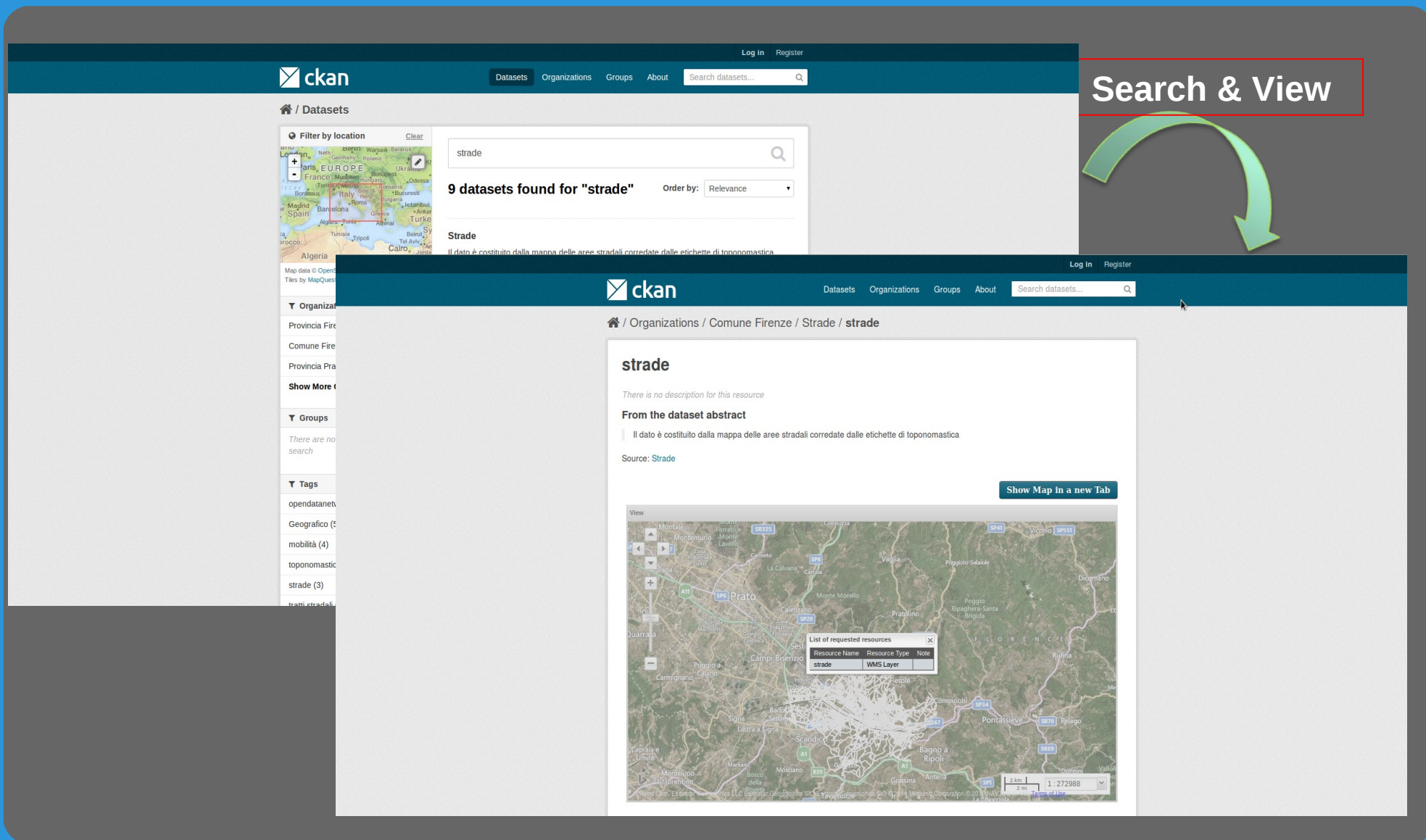
Map data ©2013 Google - Termini e condizioni d'uso

Metadata Explorer

Search for Layer



CKAN Integration



The image displays two screenshots of the CKAN (Canada Knowledge Network) website, illustrating the process of searching for and viewing a dataset.

Top Screenshot (Search & View): The CKAN homepage is shown with the search bar at the top. A search for "strade" is performed, resulting in "9 datasets found for 'strade'". The search results are ordered by Relevance. A red box highlights the "Search & View" text, and a green arrow points from this text to the bottom screenshot.

Bottom Screenshot (Dataset View): The dataset "strade" is viewed. The page shows the dataset title "strade" and a description: "Il dato è costituito dalla mappa delle aree stradali corredate dalle etichette di toponomastica". The source is listed as "Strade". A map is displayed, showing the geographical distribution of the dataset. A "Show Map in a new Tab" button is visible. A small table titled "List of requested resources" is overlaid on the map, showing the resource name "strade" and the resource type "WMS Layer".

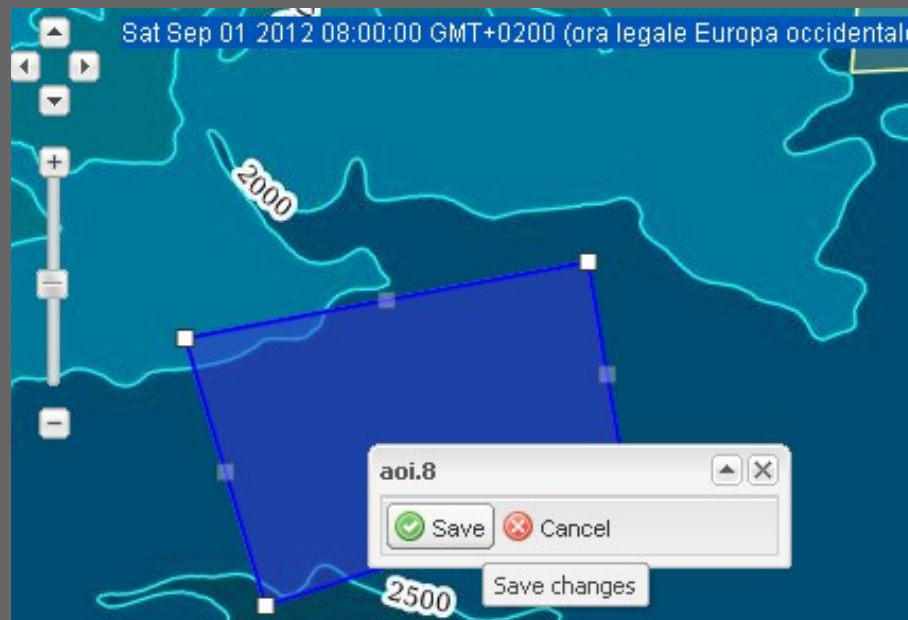
MapStore Widgets & Functionalities

- Google Earth intuitive tool to visualize your data in Google Earth.

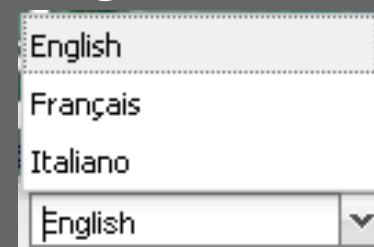


Feature Editor & Internationalization

- **Feature Editor** to edit features attributes and geometry via WFS-T

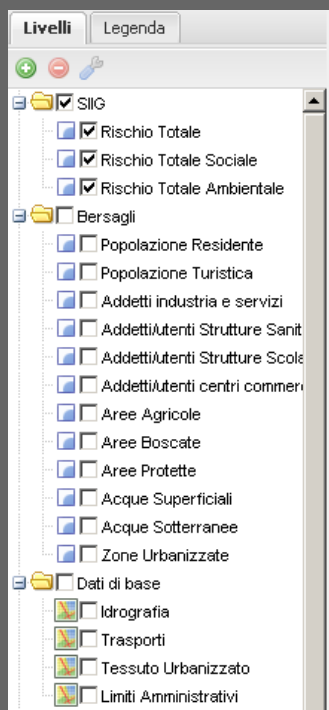


- **Language Switcher** to change language on the fly
 - easy way to define new localizations
 - Italian, English, French, German

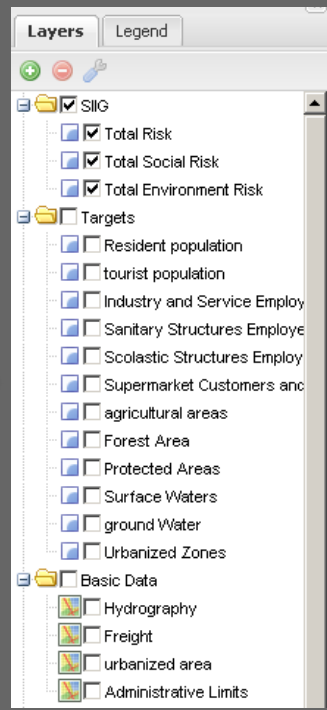


Internationalization

- I18n support through translation files
- TOC I18N support via GeoServer keywords or Identifiers
- Legend localization via extended SLD
- Label Localization (*in progress*)



IT

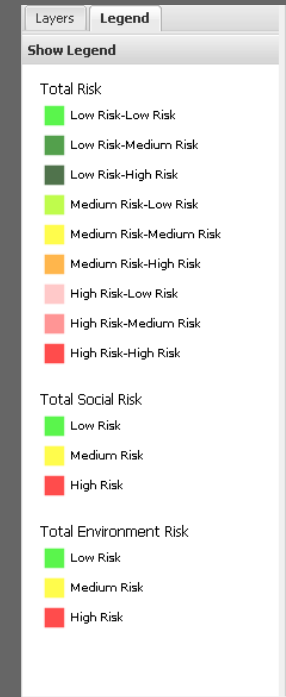


EN

IT

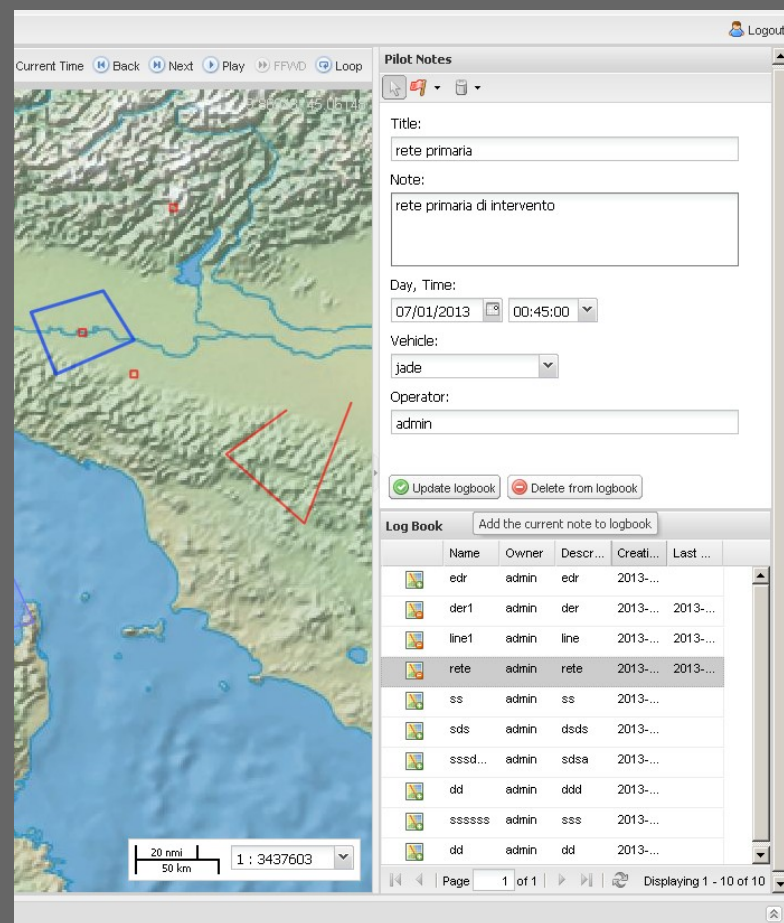
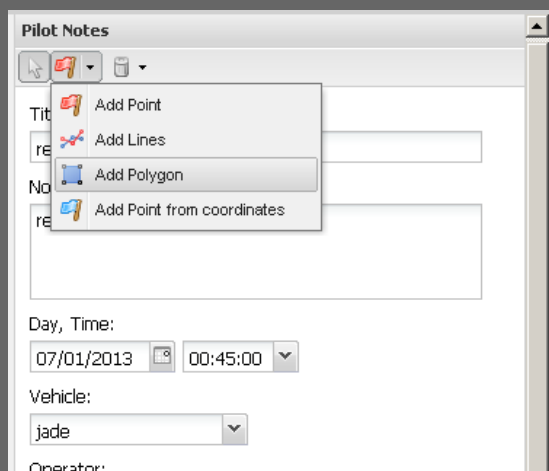


EN



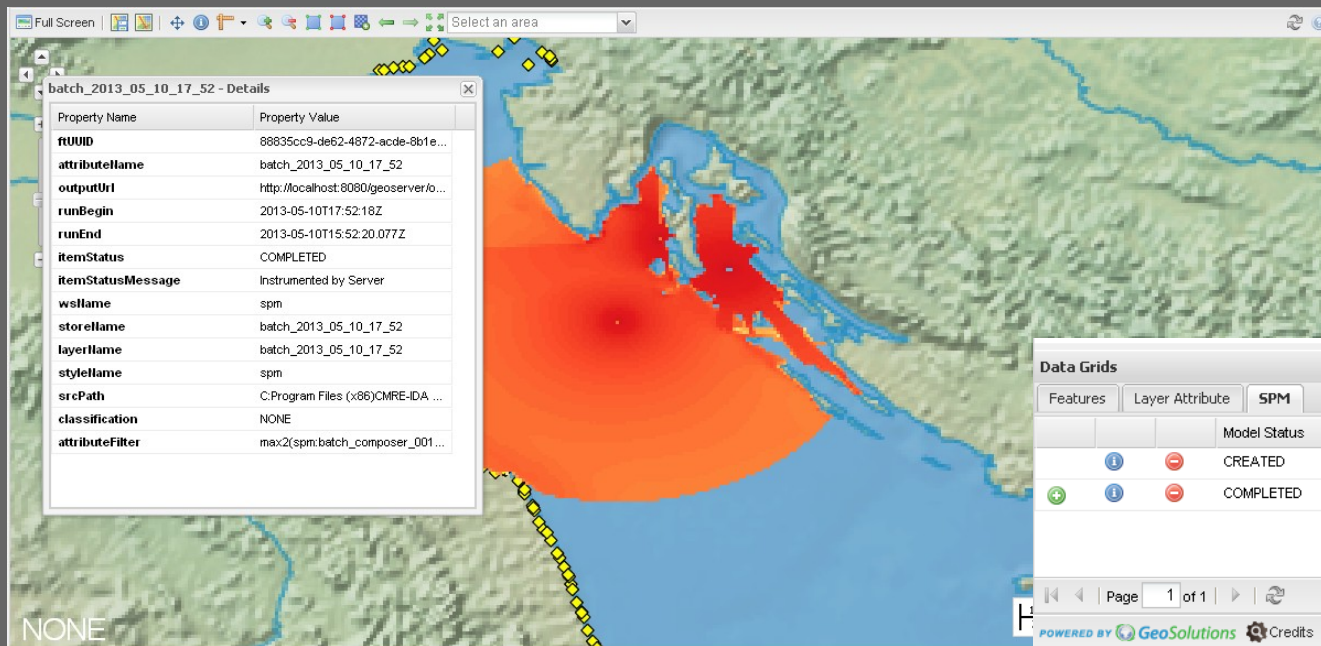
Map Annotations

- Create annotations on maps
 - Shape (line, point, polygon)
 - Date/Time
 - Title
 - Description
- Import/Export in KML



WPS Support

- Tight Integration with GeoServer WPS
- Clip & Ship Services
- Custom GeoProcessing



Control Panel

Search **SPM Create** Layer Attribute Marine mammal DB Habitat

44.63589 14.63848

Season: Spring

Source Depth (m): 12

Source Frequency (kHz): 22

Source Pressure Level (dB): 11

Model Name: batch_003

☐ Advanced Mode

☒ Batch Mode

Composer Runs: ☐

Operation:

Run List (Click Run All to START)

Run Name	
batch_001	Remove
batch_002	Remove

Models Submits

Data Grids

Features Layer Attribute **SPM**

		Model Status	Model Name
		CREATED	batch_002
		COMPLETED	batch_001

Page 1 of 1

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WFS Querying

Visore Mappa - Mobilità

Vista

Legenda

Ricerca

Schermo Intero

Query Panel

Metodo di Selezione

Selezione: Buffer

Buffer

Coordinate: 1262965.56028 5859998.0796267

Intervallo del Buffer: 80

Interrogazione per attributo

Risultato any dei seguenti:

Tipo = 2

DescBesch <> a

aggiungi condizione

Reimposta Interrogazione

Italiano

Printing

Visore Mappa - Mobilità

Vista

Livelli: Ferrovie, Fiumi, Senatori, Parcheggi a pagamento, Parcheggi per div. abili, Parcheggi bus turistici, Distributori Carburanti, Zona 50, Zona 40, Zona 30, Stazione ricarica bici, Pompe per bicicletta, Videocamere ZTL, Ciclabili, Nomi Strade, Grato Stradale, Strade, Zona traffico limitato

Anteprima di stampa

Dimensioni del foglio: A3 Risoluzione: 96 dpi Stampa

Comune di Bolzano - Stadtgemeinde Bozen

☒ Includere la legenda?

☒ Legenda in una pagina separata?

Comune di Bolzano - Stadtgemeinde Bozen

Query Panel

Metodo di Selezione: Selezione: BBOX

Regione di Interesse: EPSG:9009131

Nord: 5860056.60173

Ovest: 1262825.37596 ImpostaFOI Est: 1263105.7446

Sud: 5859939.55753

☒ Interrogazione per attributo

Risultato: any dei seguenti:

FeatureGrid

CSEIDLE	CSEIDID	SS000
FC181F8B	7442	true
07544833	227	true
8A18B388	4155	true
A16F76C1	4843	true
923F7DB4	4392	true
EAB6CCEP	6912	true
B3F9F0BA	5359	true
9644A15F	4517	true
4189B332	1985	true
11F497BD	555	true
830669CE	3946	true

Comune di Bolzano
Stadtgemeinde Bozen

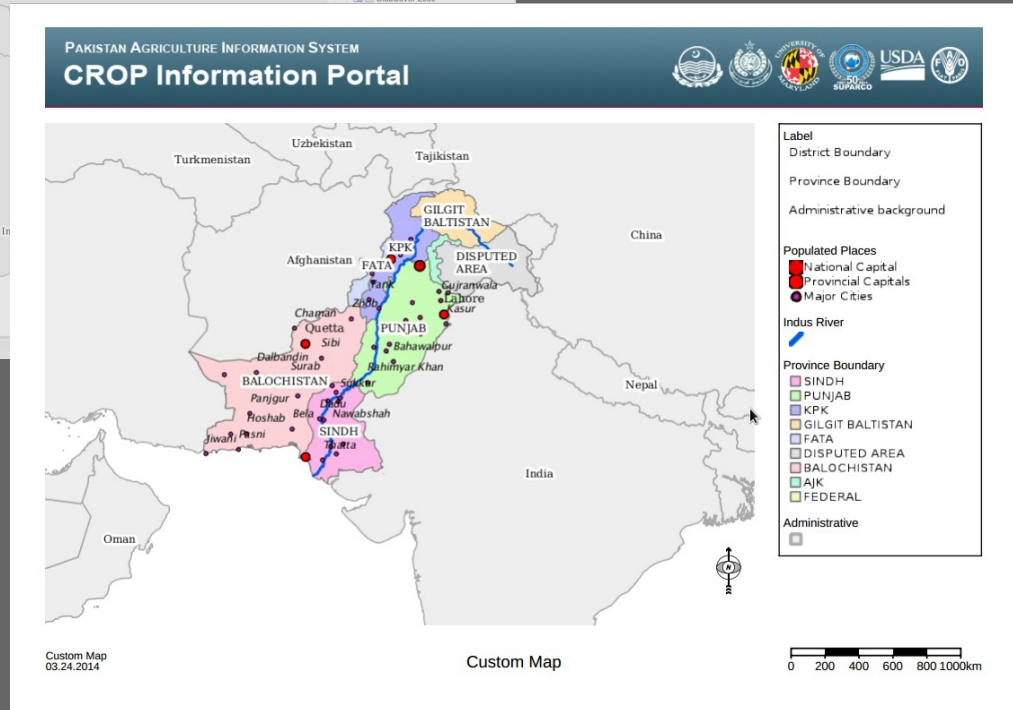
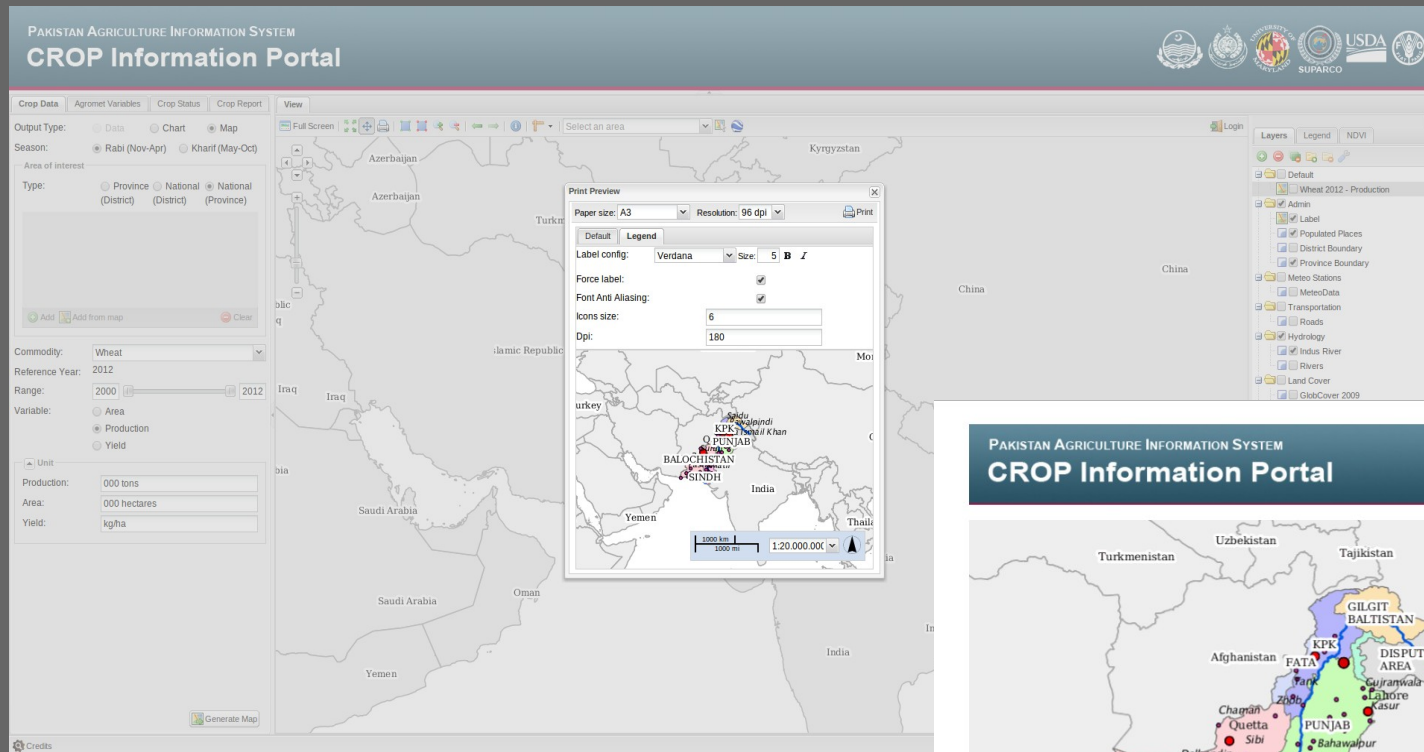


Comune di Bolzano - Stadtgemeinde Bozen
10.11.2013

Comune di Bolzano - Stadtgemeinde Bozen

0 5 10 15 20 25m

Printing

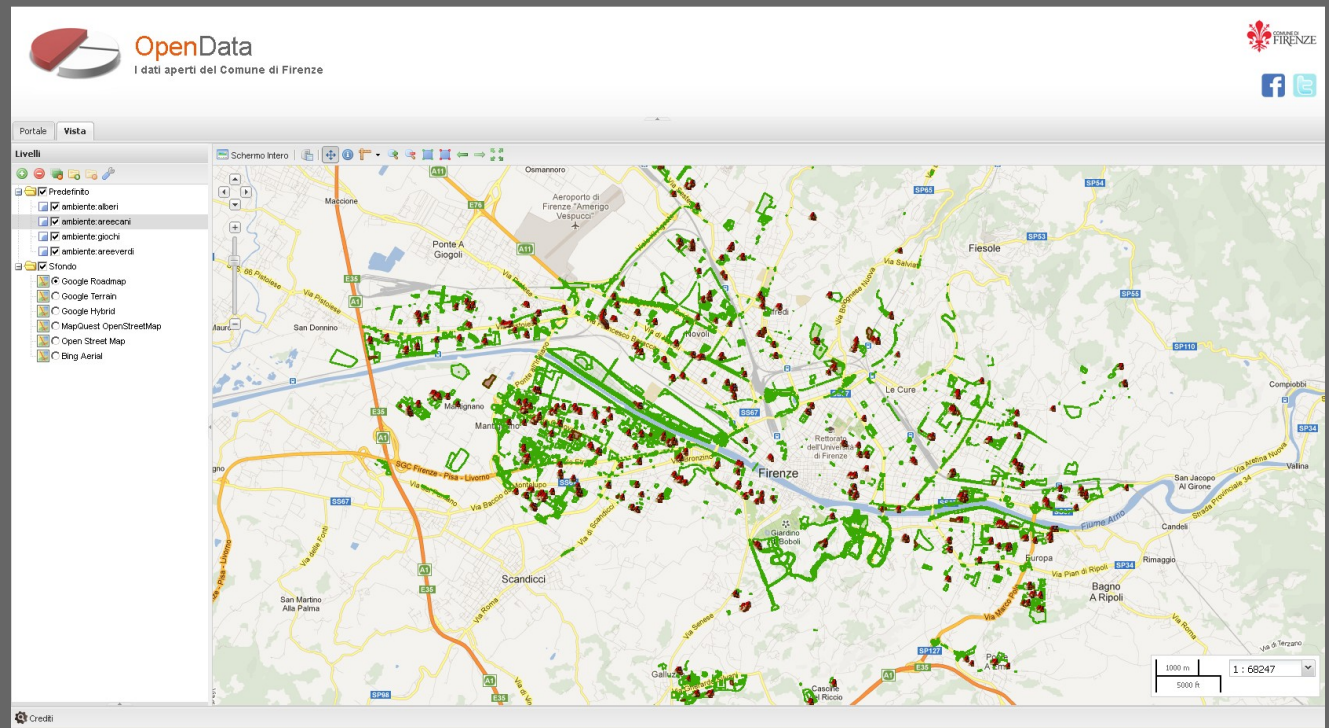


Real World MapStore Use Cases

City Of Florence

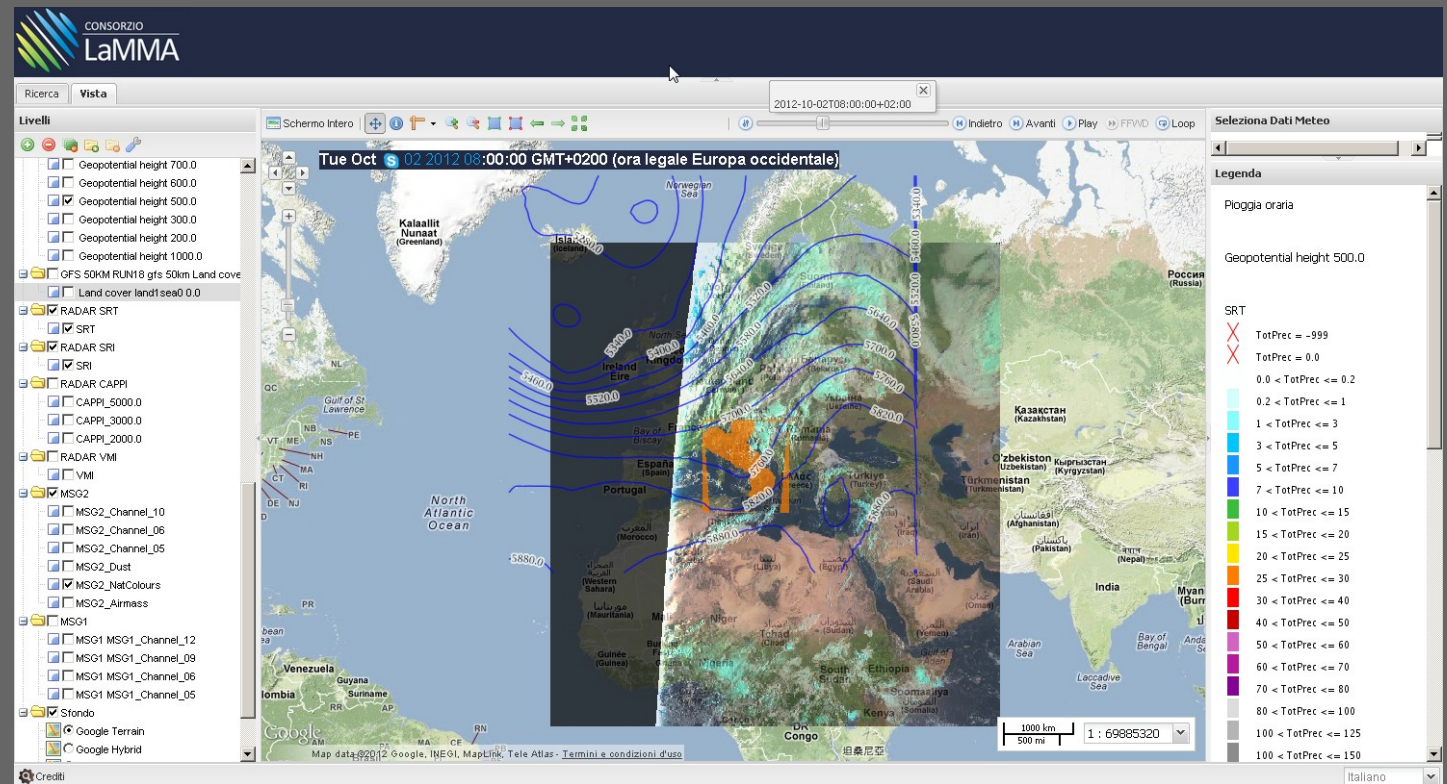
- **City of Florence**

- OpenData GeoPortal
- Tight Integration with GeoNetwork
- Search, Inspect, Add to Map, Go back to search again
- Download Data
- Identify on map



LaMMA Consortium

- LaMMA Consortium – Weather data portal
 - GeoBatch + GeoNetwork + GeoServer + MapStore
 - Management of TIME and ELEVATION dimensions



LaMMA Consortium

- **Meteosat Data**
 - All channels
 - On the fly generation of false color images
- **Radar Data**
 - Multiple types
 - On the fly optimization
- **Various models at various resolutions**
 - ARW
 - GFS
 - Multiple runs every day
- **Retaining only a limited time window of data**
 - 3 Days of models
 - 1 month of Meteosat and Radar data

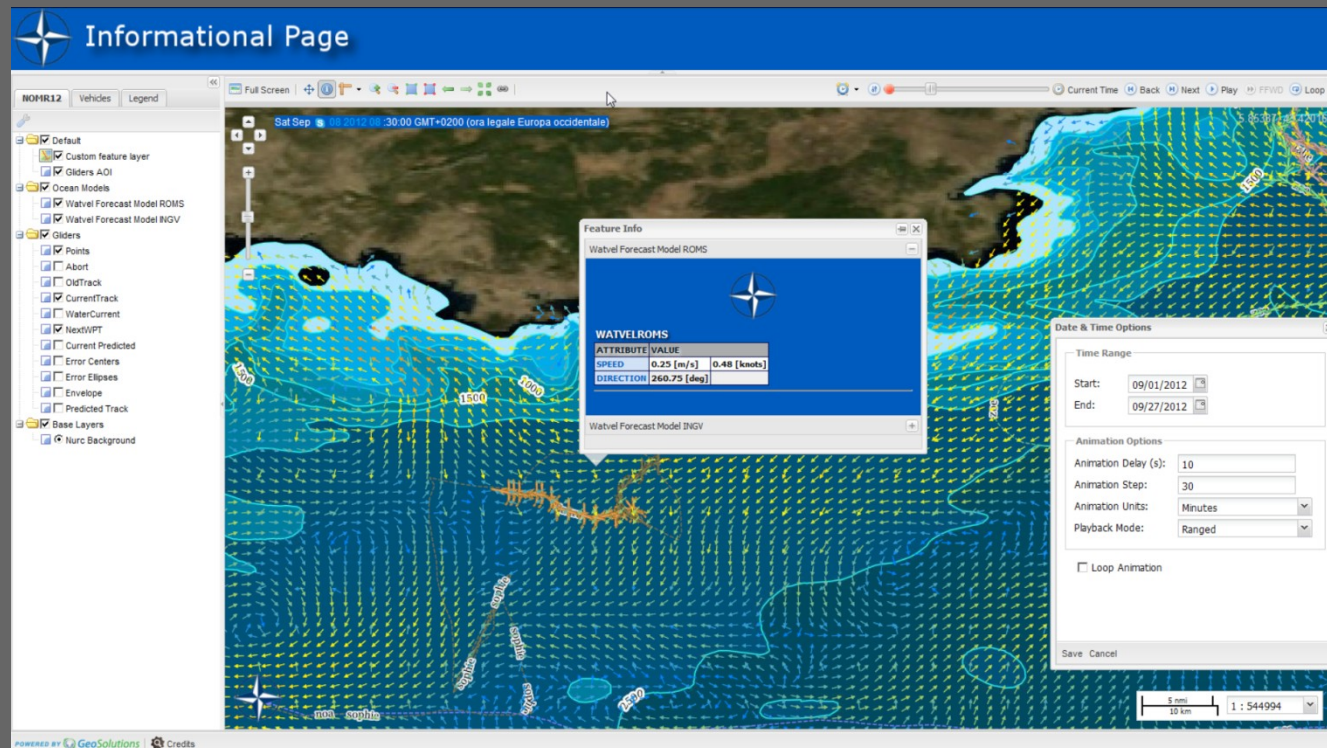
Cultura Italia Portal

- **Cultura Italia**
 - Integrate with OpenCMS & SOLR
 - Inject custom markers and tracks with custom HTML pop-up
 - Mobile Enabled Version
 - Link-back to managed resources



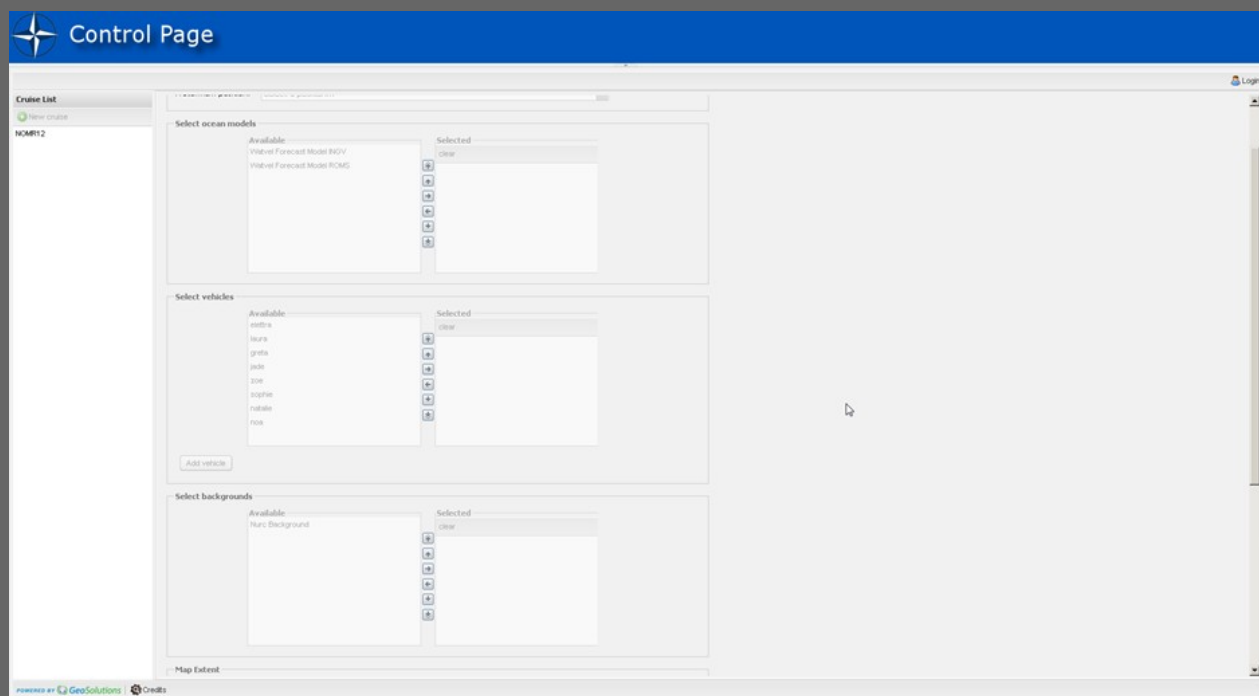
NATO CMRE Gliders Portal

- NATO CMRE Gliders Portal
 - Manage MetOc models
 - Advanced Near-real time visualization of gliders data
 - GeoFencing



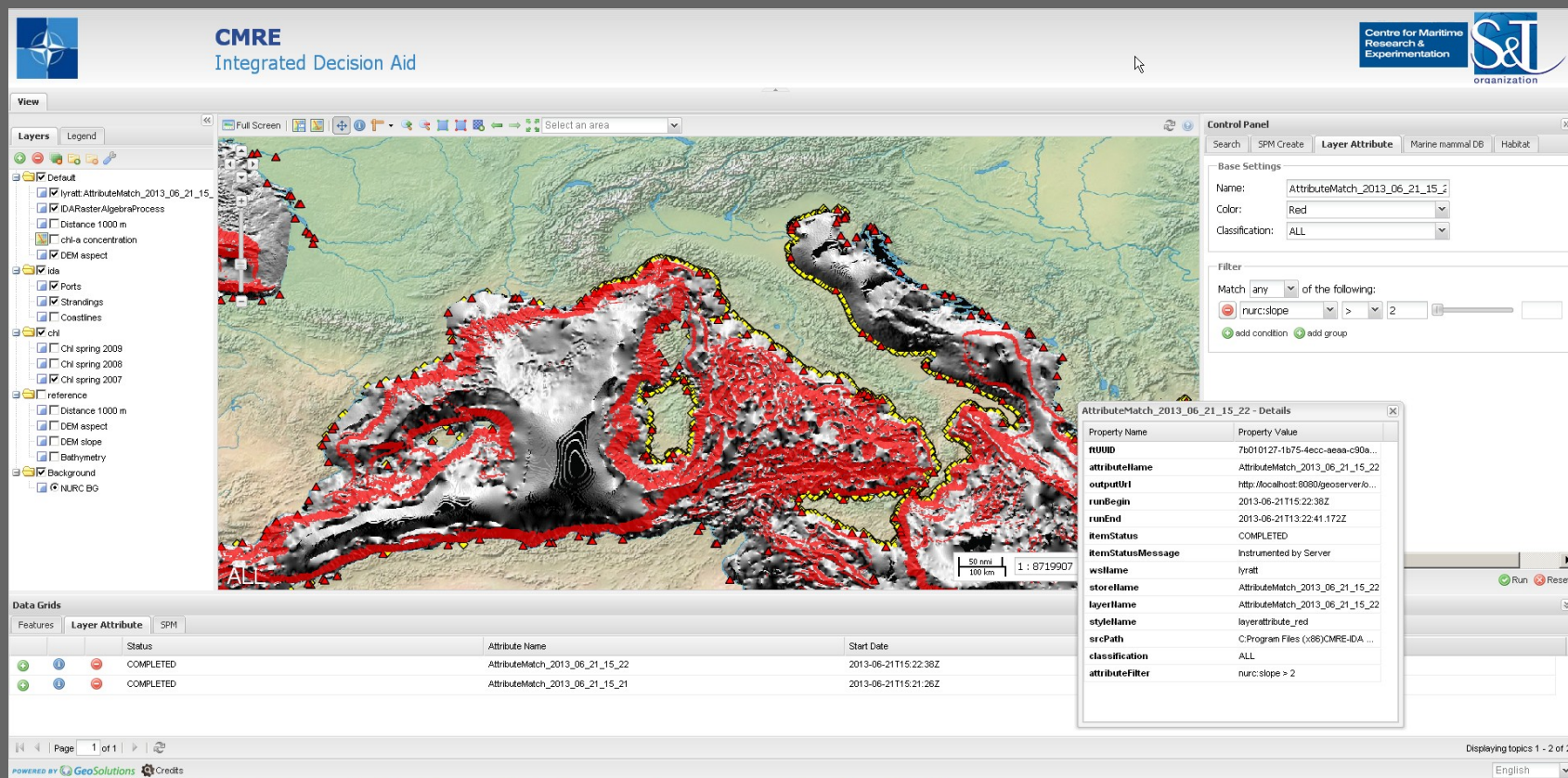
NATO CMRE Gliders Portal

- **Control page**
 - Advanced Map Creation & Administration
 - Enable/Disable tools
 - Fine Grain Selection of BBOX
 - Fine Grain Selection of AOIs
 - Fine Grain Selection of backgrounds
 - Set up of default time animation params



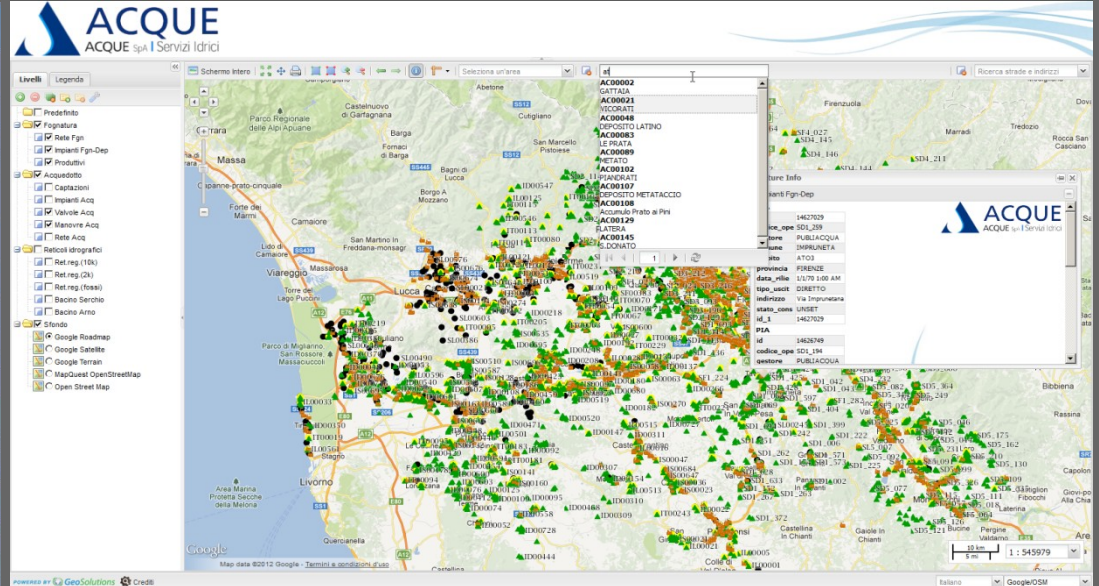
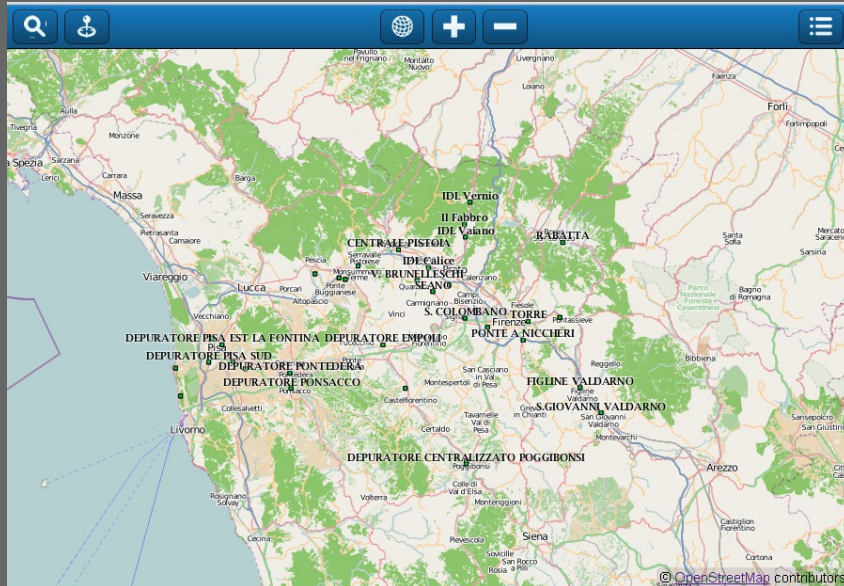
NATO CMRE IDA Tool

- NATO CMRE IDA Tool
 - Decision Support Tool
 - Tight Integration with WPS (Octave and Raster Algebra Processes)



Acque S.P.A. GeoPortal

- Acque S.P.A
 - WFS search functionality at work (tell me where X is)
 - Map/Context switch to use different CRS (900913 VS 3003)
 - Mobile prototype available (HTML 5)

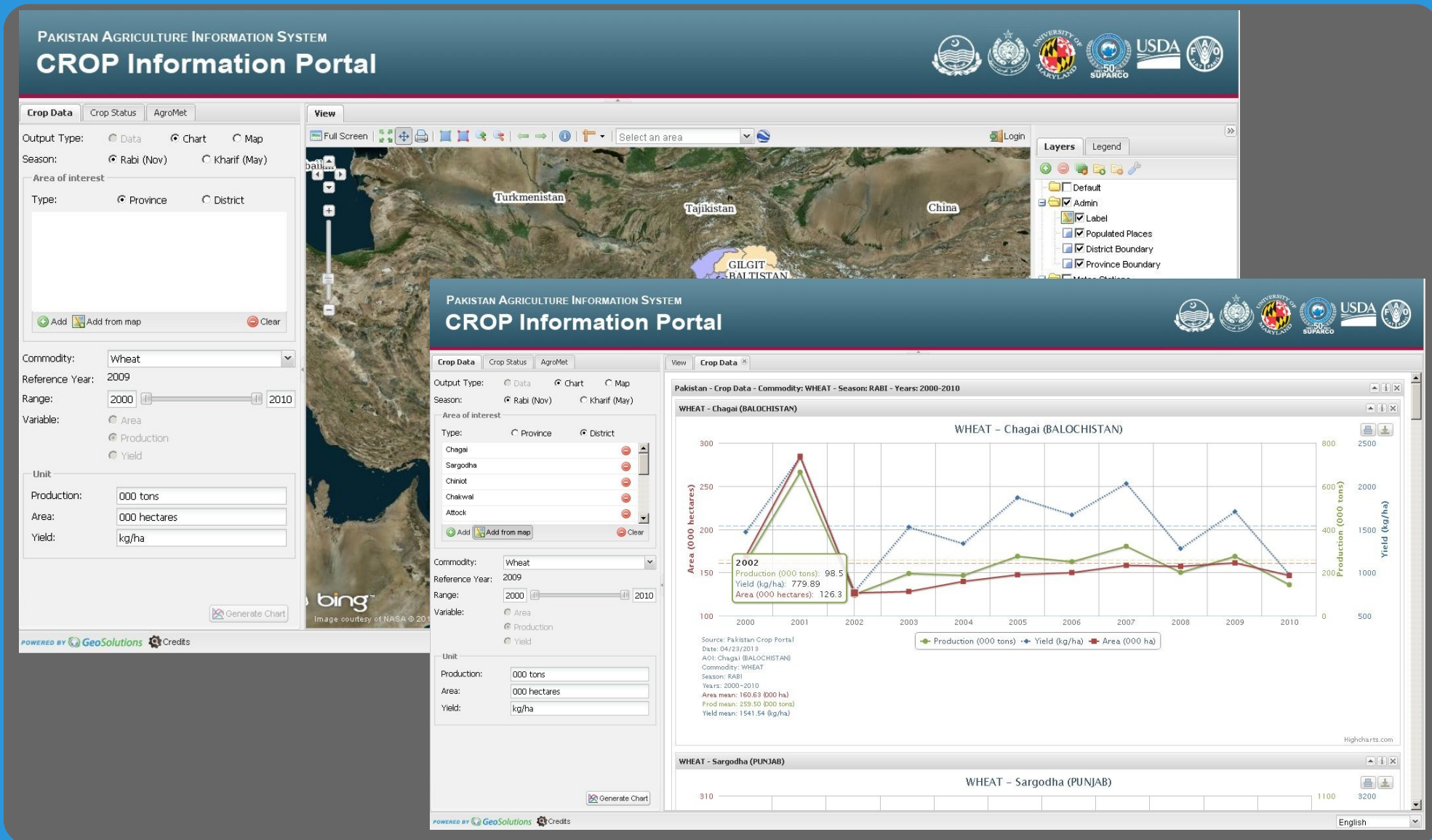


FAO - Fouta Djallon Highlands Atlas

The screenshot displays the 'GÉOportail' web application interface. The top navigation bar includes the 'Programme Régional d'Aménagement Intégré du Massif du Fouta Djallon' logo and the 'Observatoire Régional du Massif du Fouta Djallon' logo, along with logos for UNEP, gef, and FAO. The main interface is divided into several sections:

- Left Sidebar:** Contains a 'GeoNetwork Catalogue' with links to 'Accueil', 'Aide', 'Nom d'utilisateur', and 'Mot de passe'. Below this is a 'Recherche par catégorie' section listing various themes like 'Agriculture', 'Applications informatiques', 'Atmosphère et climat', 'Base de données', 'Biodiversité et écosystèmes', 'Cartes de base', 'Cartes numériques', 'Couverture / utilisation des terres', 'Dangers naturels et catastrophe', 'Documents', 'Dégradation de l'environnement', 'Foresterie / végétation', 'Imagerie satellite', 'Indicateurs socio-économiques', 'Lieux et infrastructures', 'Limites', 'Ressources en eaux', 'Ressources en sol', 'Ressources multimédia', 'Secteur protégée', and 'Élévation'. At the bottom of the sidebar are 'Derniers ajouts' and a 'GeoRSS' feed.
- Top Search Bar:** Features a 'Recherche de données' section with tabs for 'tous', 'matricielle', 'vectorielle', 'interactive', and 'téléchargeable'. It includes a 'Text libre' search field, a 'Titre' field, and a 'Dù ?' dropdown menu. An 'Options' section allows users to select the 'Nombre de résultats par page' (set to 10) and the 'Type de présentation' (set to 'Complexe').
- Main Map Area:** Displays a map of the Fouta Djallon region, showing the borders of Senegal, The Gambia, Guinea-Bissau, Guinea, and Sierra Leone. The map includes various geographical features, roads, and place names. A legend in the bottom left corner identifies 'Boundary - FDH' (red line) and 'Boundary (Pilot Sites) - FDH' (green square). The map is powered by GeoSolutions and includes a scale bar (100 km, 50 mi) and a scale of 1:4367832.

FAO – NRL Crop Monitoring



EU Wiz Project

The screenshot displays the WIZ una scelta comune web application. The interface includes a header with the logo and navigation links. A sidebar on the left contains search filters and a list of resources. The main area features a map of Tuscany, Italy, with numerous blue square markers indicating specific locations. A legend and map controls are visible on the left side of the map area.

WIZ una scelta comune

Portale Vista

Home|Info|Aiuto

Nome Utente **admin** Password ********* Italiano Login

COSA?

DOVE?

Ambito: **- Qualunque -**

Sottoambito: **- Qualunque -**

Ricerca

Reset Ricerca avanzata Opzioni

Altre risorse di informazione

- Applicazioni
- Archivi
- Atti di conferenze
- Audio/Video
- Casi di studio
- Datasets
- Fotografie
- Mappe e grafici
- Risorse interattive

GeoRSS

- Progetto WIZ Acque SpA - captazioni da laghi - serbatoi
- Progetto WIZ Acque SpA - impianti di pompaggio
- Progetto WIZ Acque SpA - rete stradale
- Progetto WIZ Acque SpA - punti quotati

POWERED BY GeoSolutions Credits

TROVA MAPPE INTERATTIVE, DATI GIS, IMMAGINI SATELLITARI E APPLICAZIONI RELATIVE

GLI OBIETTIVI DI GEONETWORK SONO:

- Migliorare l'accesso e l'uso integrato di dati geografici ed informazioni
- Supporto alle decisioni
- ...

GeoNetwork

E' sta geogr secon

Portale Vista

La ve

Schermo Intero

Seleziona un'area

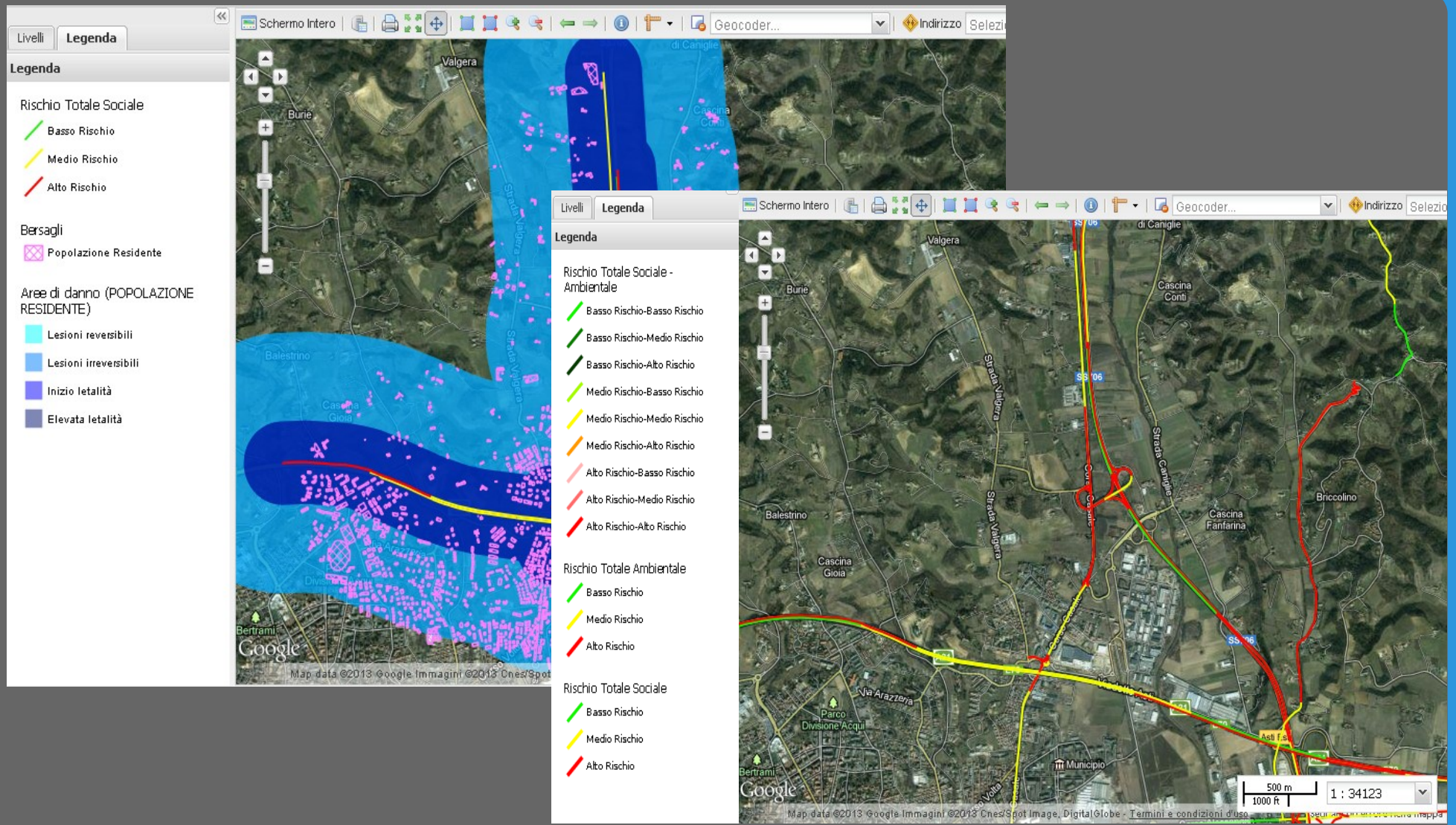
Indirizzo Geocoder...

Map data ©2013 Google Immagini ©2013 TerraMetrics - Termini e condizioni

10 km 5 mi 1 : 545979 km

Italiano

CSI Piemonte – Destination Project



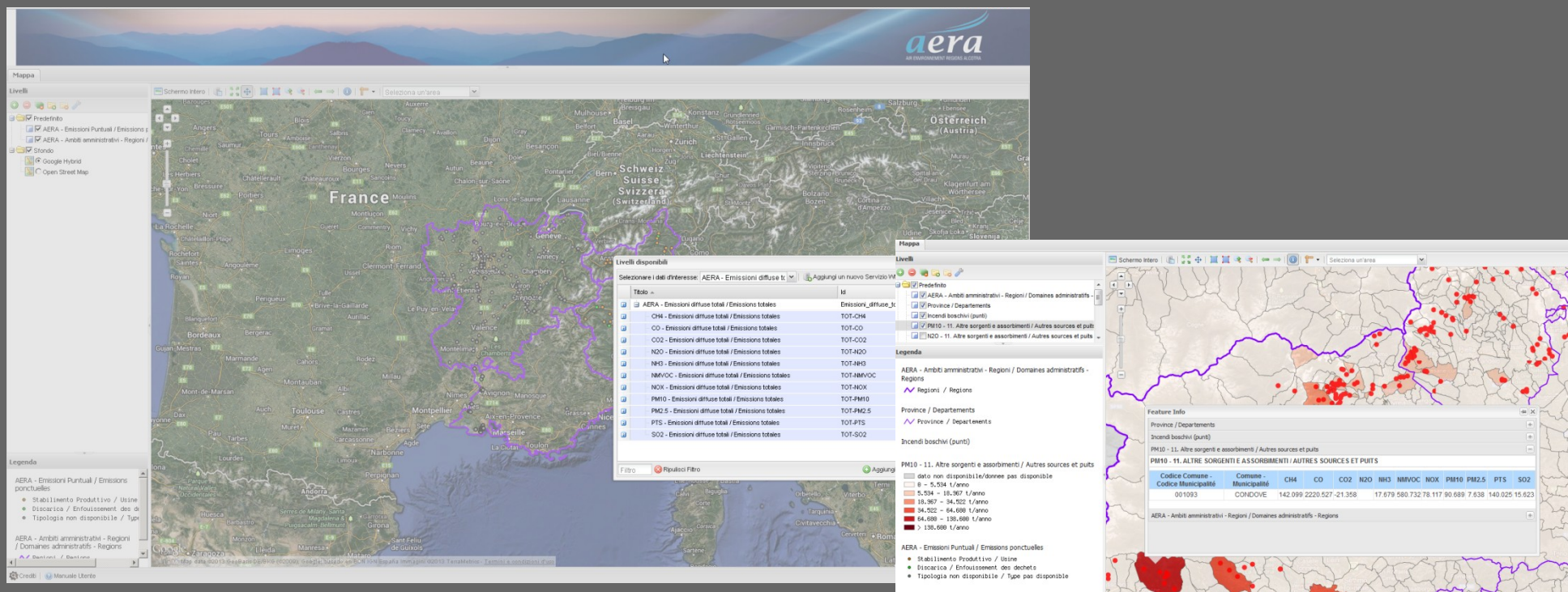
CSI Piemonte – Aera Portal

• CSI Piemonte

- Gather and share information about emissions in the atmosphere
- Integration as GeoNetwork viewer
- Mashing up maps from different sources



**IREA Inventario Regionale
delle Emissioni in Atmosfera**



County of Bozen – GeoPortal Portal

The image displays three overlapping screenshots of the 'eGeo das Geoportal il geoportale' web application.

- Top-left screenshot:** Shows the search interface. It includes a search bar labeled 'COSA?' and 'DOVE?'. Below the search bar is a map of the region. To the right, there is a list of resources categorized by 'Ambito' (Qualunque, Settimanale, Qualunque) and 'Settimanale'. The list includes items like 'Altre risorse di informazione', 'Applicazioni', 'Archivi', 'Atti di conferenza', 'Audio/Video', 'Casi di studio', 'Dataset', 'Fotografie', 'Mappe e grafici', and 'Risorse interattive'. At the bottom, there is a 'GeoRSS' section with a link to 'Template INSPIRE/RNDT dataset - corine_utm'.
- Top-right screenshot:** Shows the main map view. It features a satellite image of the Bozen area. The map is overlaid with a grid and various labels for locations. The 'eGeo das Geoportal il geoportale' logo is visible in the top left corner.
- Bottom-center screenshot:** Shows a 'Download Interattiva' dialog box. It contains a 'Formato' dropdown menu set to 'GeoTIFF'. Below this, there is a 'Notifica Via Email' section with an email address 'omboss1@gmail.com'. The 'Impostazioni Avanzate' section includes a 'Sistema di Riferimento' dropdown set to 'EPSG:25832', a 'Metodo di Selezione' dropdown set to 'Cerchio', a 'Buffer (m)' input field, and a 'Metodo di Ritaglio' dropdown set to 'Intersezione'. At the bottom, there is an 'Esecuzione Processi' section with a table showing the execution status of a process.

RoadMap

Current stable is 1.5

Items in orange are for 1.x (next months)

Items in green are for 2.x (next year)

RoadMap

- **WPS** — working on specific widgets to implement manage interaction with Web Processing Services (WPS)
- **WFS** — working on various improvements for the Query builder plugin for spatial queries management and vector data retrieval
- **SLD Editor** — Integration of a SLD Style Editor as layer tool plugin to enable for the MapComposer and MapViewer components
- **Improve Map Security** — more complex authorization levels (private maps, group maps, etc..)
- **Simplified Mobile Client** — HTML 5
- **Improved Printing** — Visual Composer + Better Legends

RoadMap

- **Map Templates** - create new maps from different templates, each one with specific functionality and fully configurable for your needs
- **Interactive Maps** – maps with informative layers showed as tooltips to the user
- **Documentation** – improve and extend current documentation
- **Editing** – Improved WFS-T Support
- **Various improvements** – Social Link, Marker injection, Map rating
- **Location Services** – Routing and Reverse GeoCoding
- **Native Android Application**

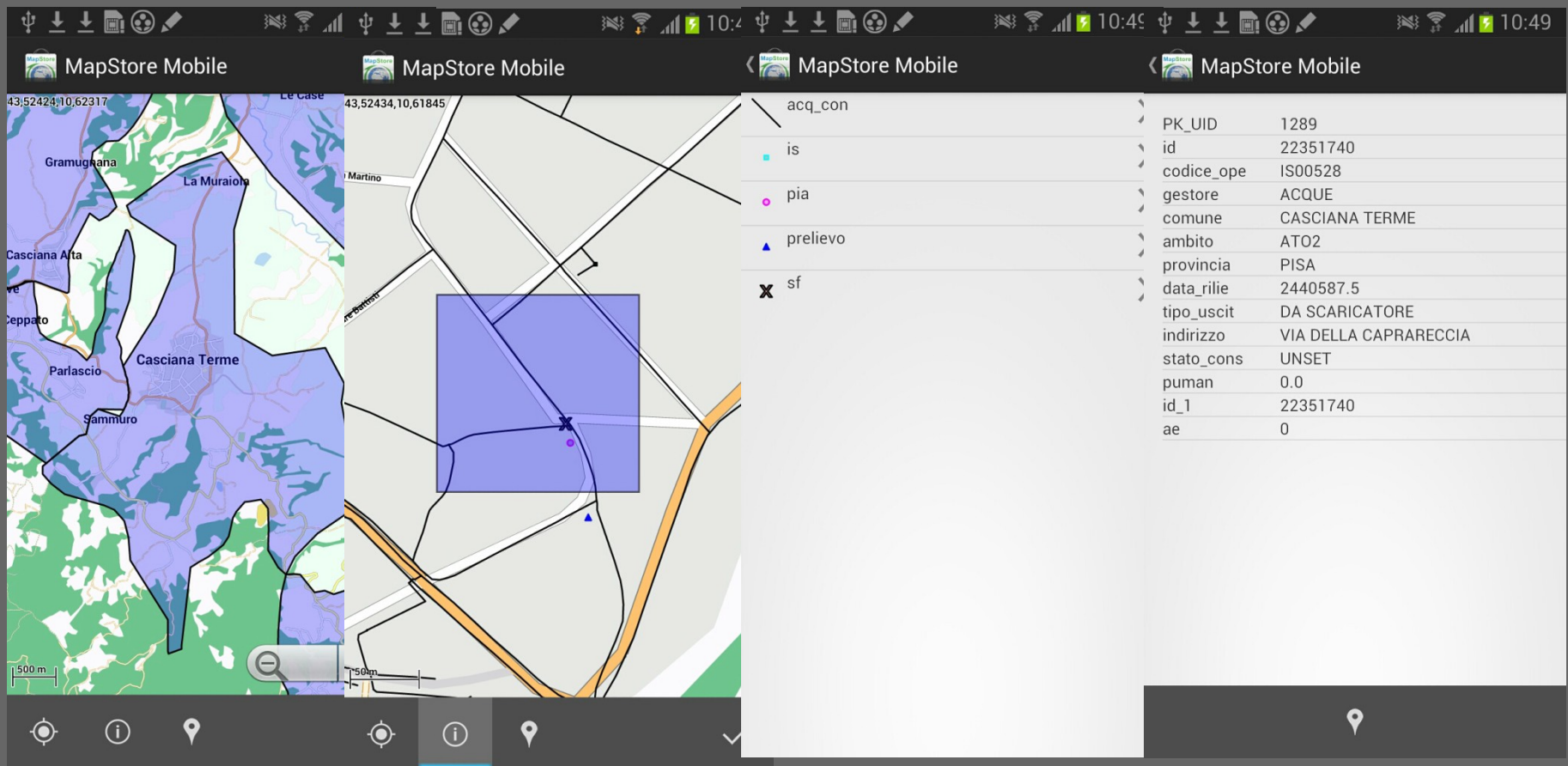
MapStore Mobile

The screenshot displays the MapStore Mobile application interface. The top status bar shows various mobile icons and the time 10:52. The app header includes the MapStore logo and the title 'MapStore Mobile'. Below the header, the interface is divided into three main sections:

- Left Panel (Map View):** Shows a map with a street network. A location is marked with a black 'X' and a purple dot. The coordinates 43,52434,10,61845 are visible at the top left of the map.
- Middle Panel (Impostazioni Mappa):** Contains settings for the map.
 - IMPOSTAZIONI MAPPA:**
 - Dimensione Caratteri:** Selezione la dimensione delle etichette sull mappa.
 - IMPOSTAZIONI GENERALI:**
 - Persistenza cache:** Mantieni le immagini nella cache all'uscita.
 - Memoria esterna:** Imposta le dimensioni della cache.
- Right Panel (Layers):** Lists the layers and their styles.
 - LAYERS:**
 - ☒ Segnalazioni
 - ☒ Sedi Tecniche
 - STILI:**
 - ☒ acq_con
 - ☒ camerett
 - ☒ contator
 - ☒ de
 - ☒ di
 - ☒ enel
 - ☒ fg
 - ☒ fgn_con
 - Tratto:**
 - Colore del tratto: black
 - Spessore del tratto: 3
 - Trasparenza del tratto: 100
 - Riempimento:**
 - Colore del riempimento: red
 - Trasparenza del riempimento: 30
 - Visibilità:**
 - Minimo zoom level: 20
 - Massimo zoom Level: (value not fully visible)

At the bottom left, there is a 'Layers' button and a 'Impostazioni Mappa' button.

MapStore Mobile



The End

