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MapStore

create, save and share maps and mashups

Ing. Alejandro Díaz, GeoSolutions

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Outline

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

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- 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…

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MapStore Intro

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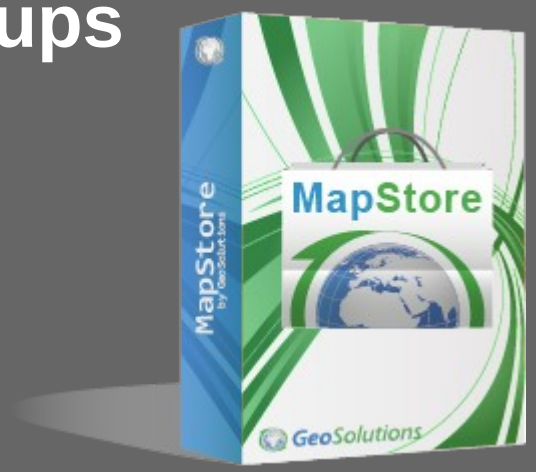
Introduction

- 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



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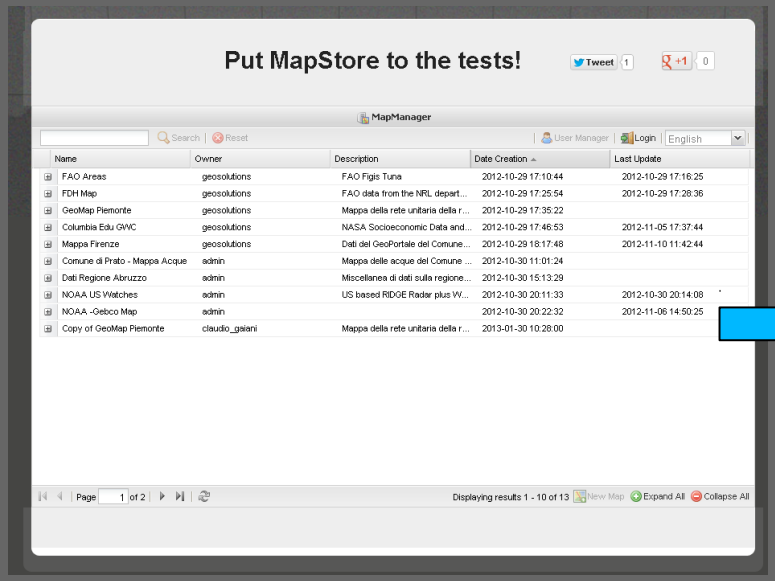
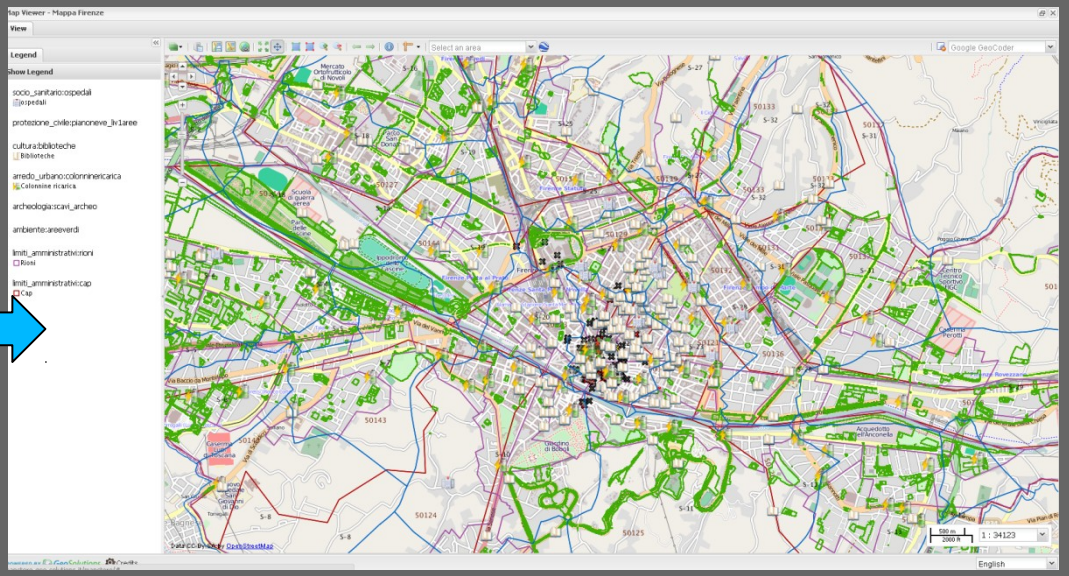
Try the Demo

- 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 !!!





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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
☺

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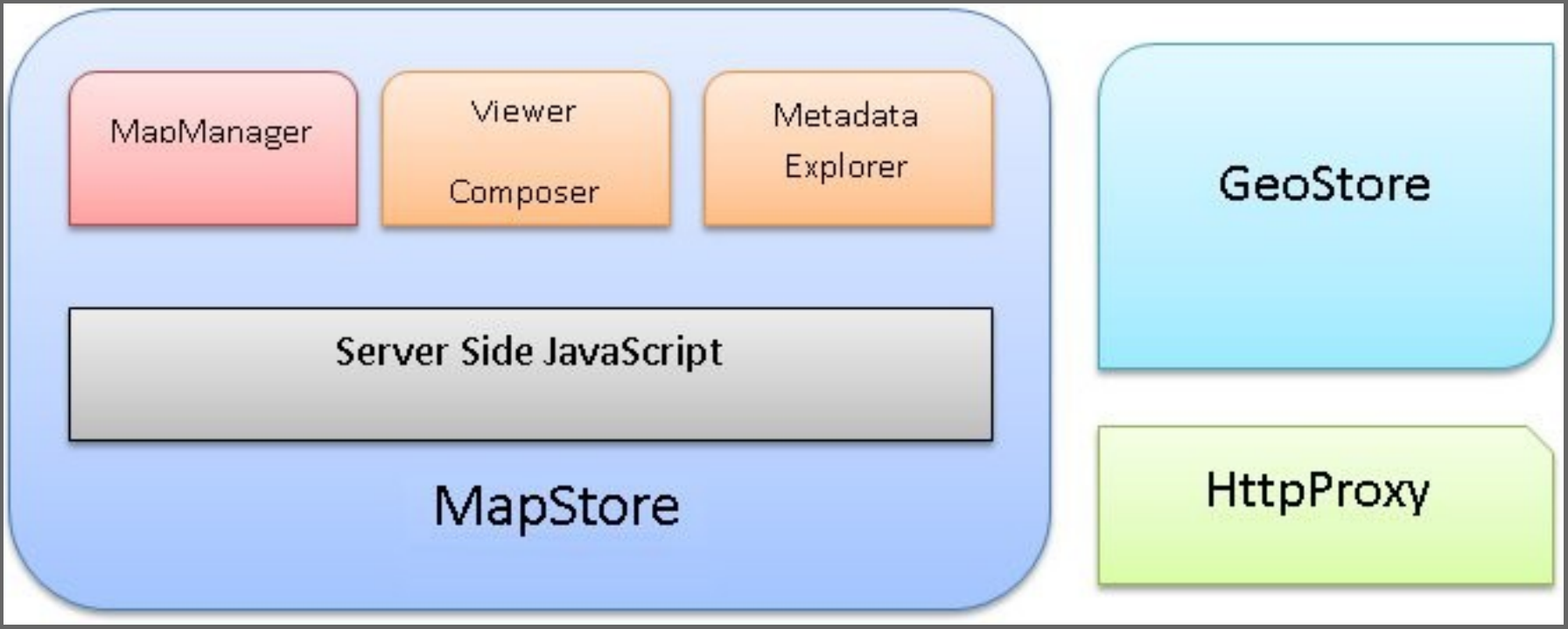
Overall Architecture

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



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Components

- **MapManager**
  - allow users to create, delete and search maps
- **MapComposer**
  - a powerful and intuitive frontend to allow users to create maps
- **MapViewer**
  - the maps viewer, a standard webgis with tools like embed-link, marker's injection, geocoder, reverse geocoder, etc ...
- **MetadataExplorer**
  - an indipendent 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?)**

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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

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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

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MapStore – Basic Libraries

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

- Many plugins and specific tools available

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MapStore Widgets & Functionalities

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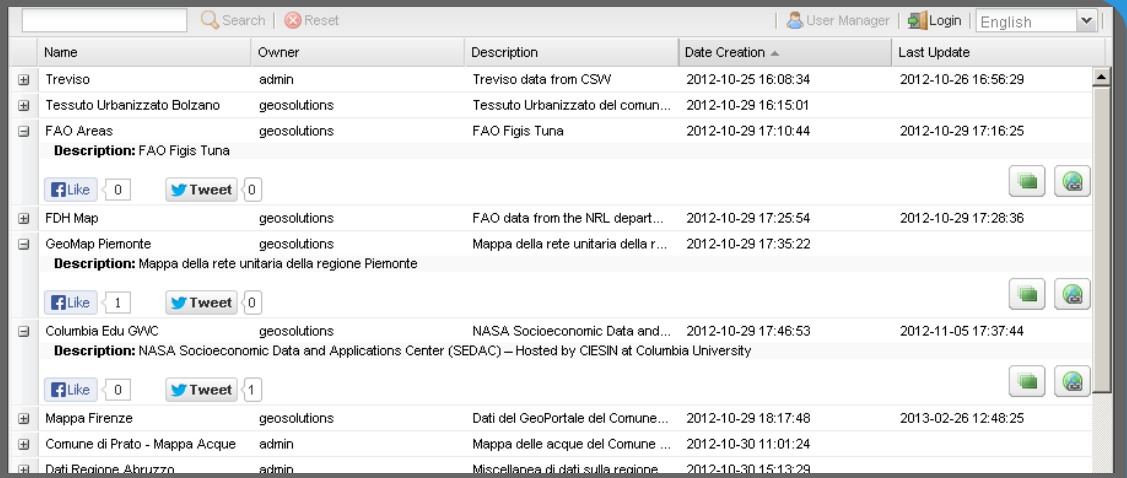
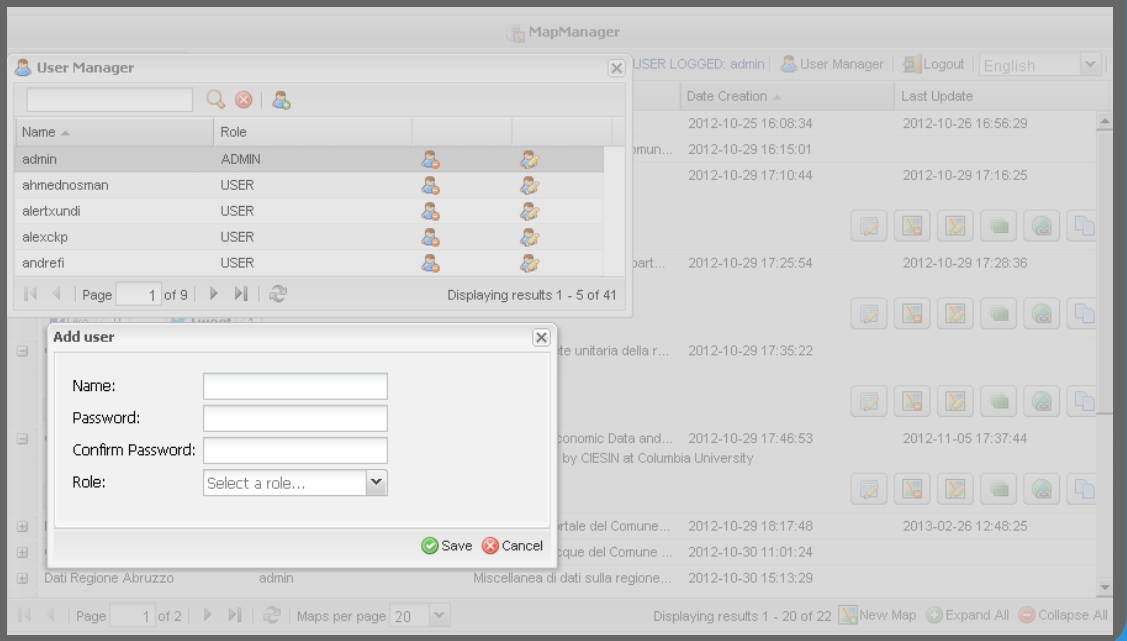
MapManager

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





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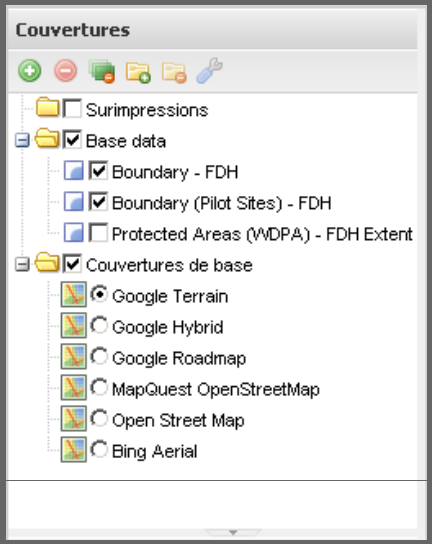
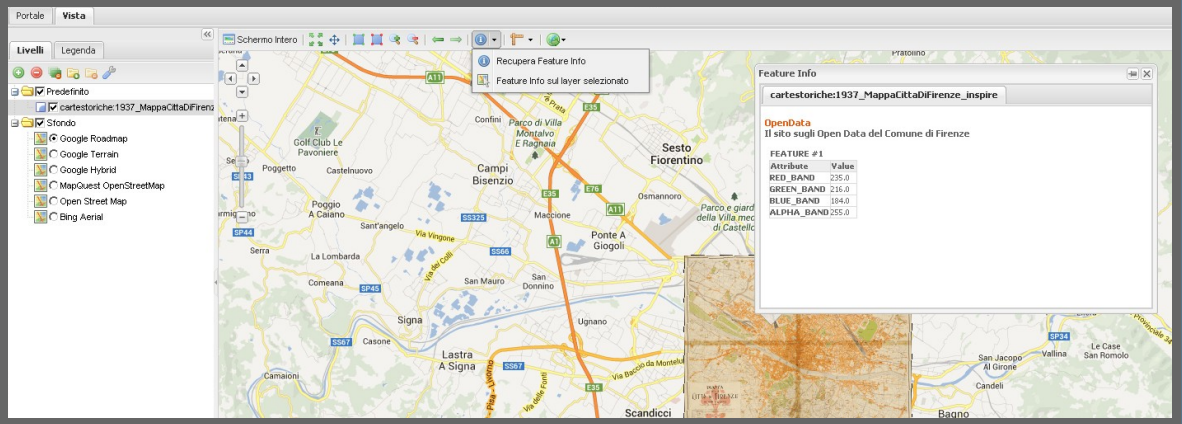
LayerManager & Info Pop-Ups

- **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*



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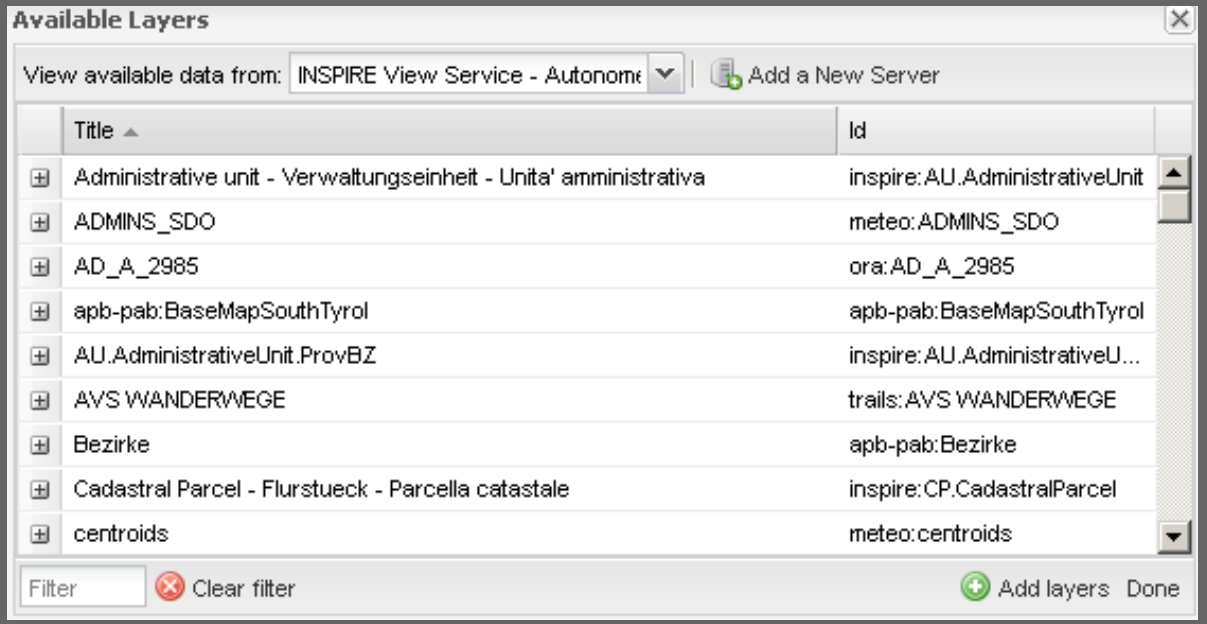
WMS Layer Manager

- 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!



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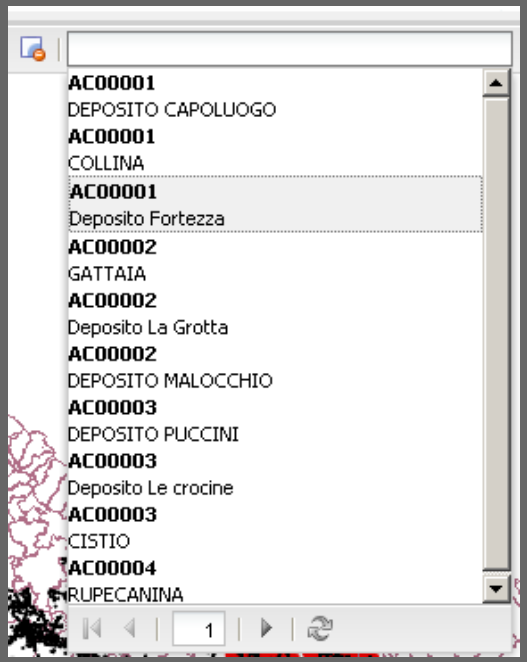
MapStore Widgets & Functionalities

- **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.

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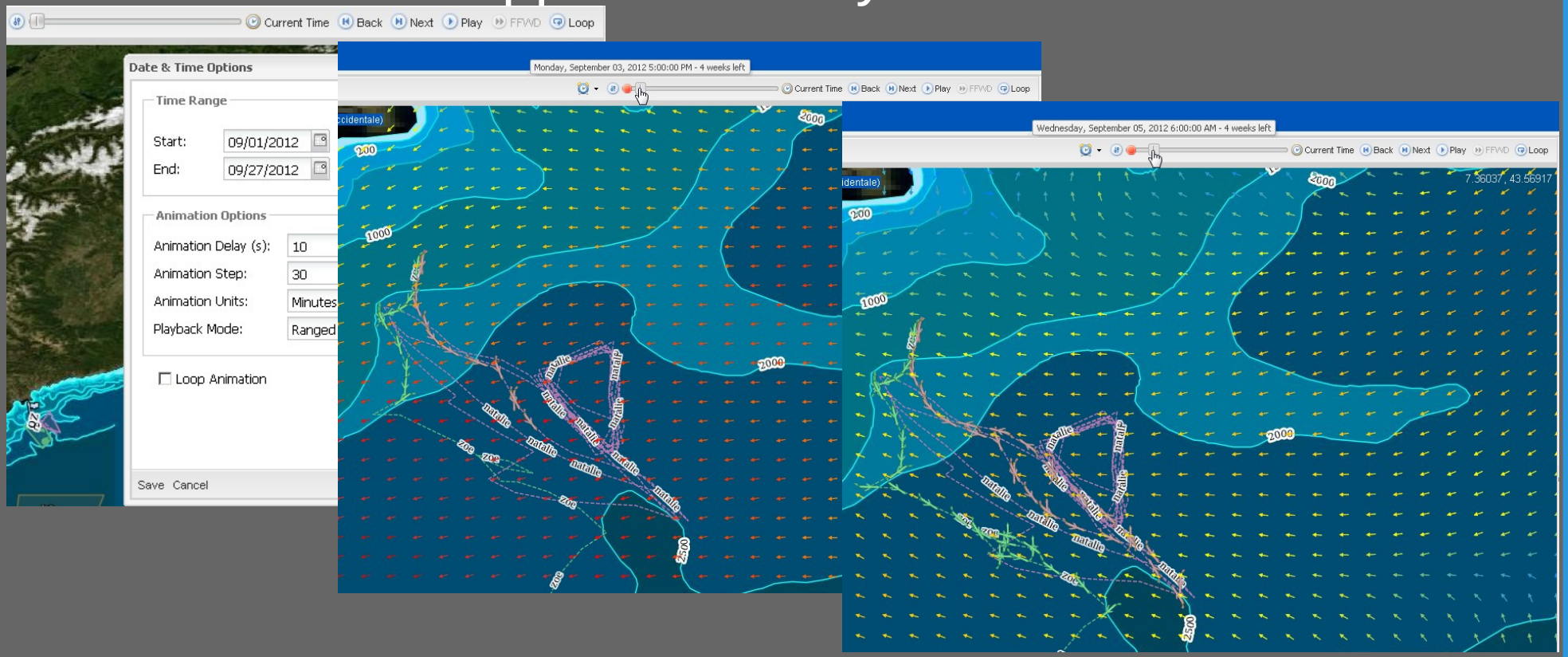
MapStore Widgets & Functionalities

- **Time Animation**

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



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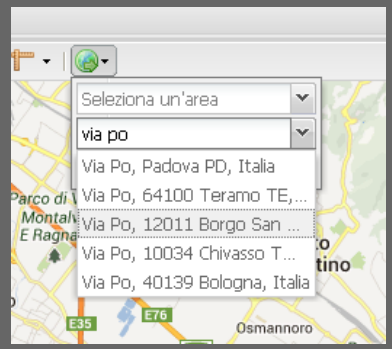
GeoLocation Tools

- **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!**

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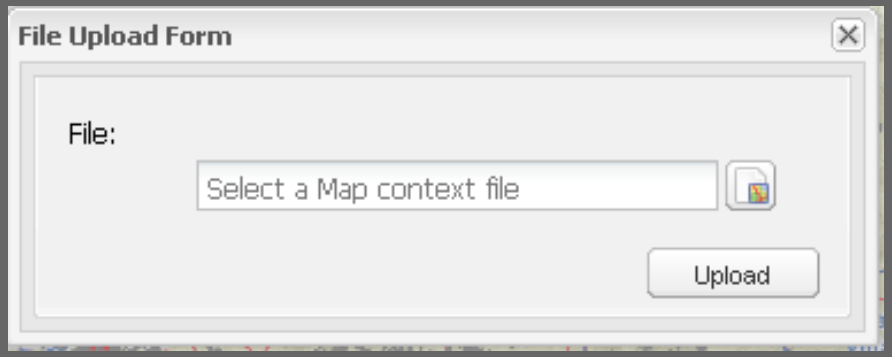
Import & Export

- **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



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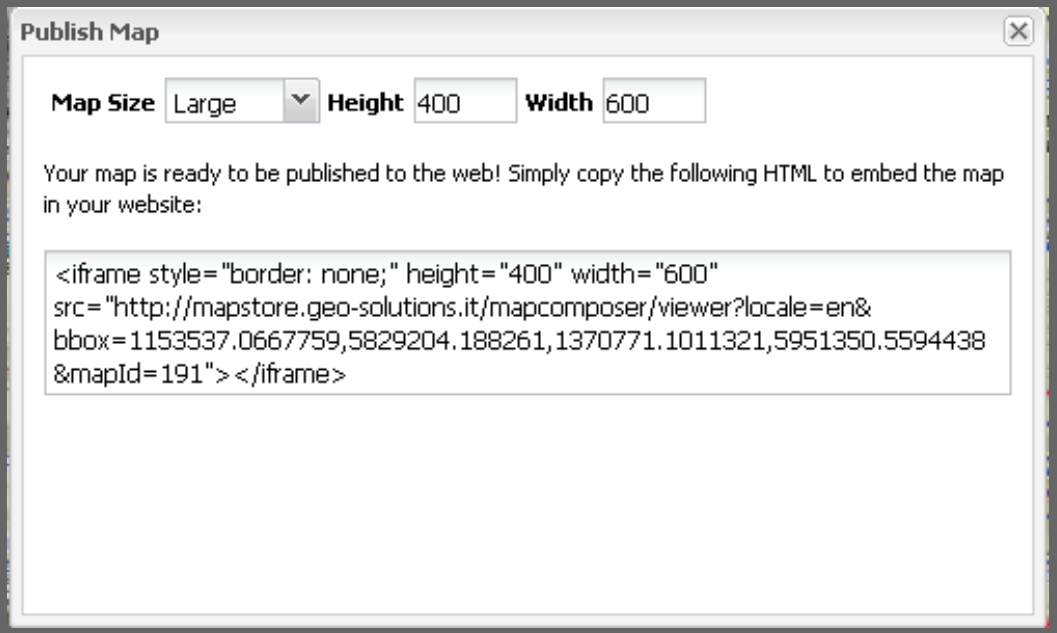
Map Embedding

- **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



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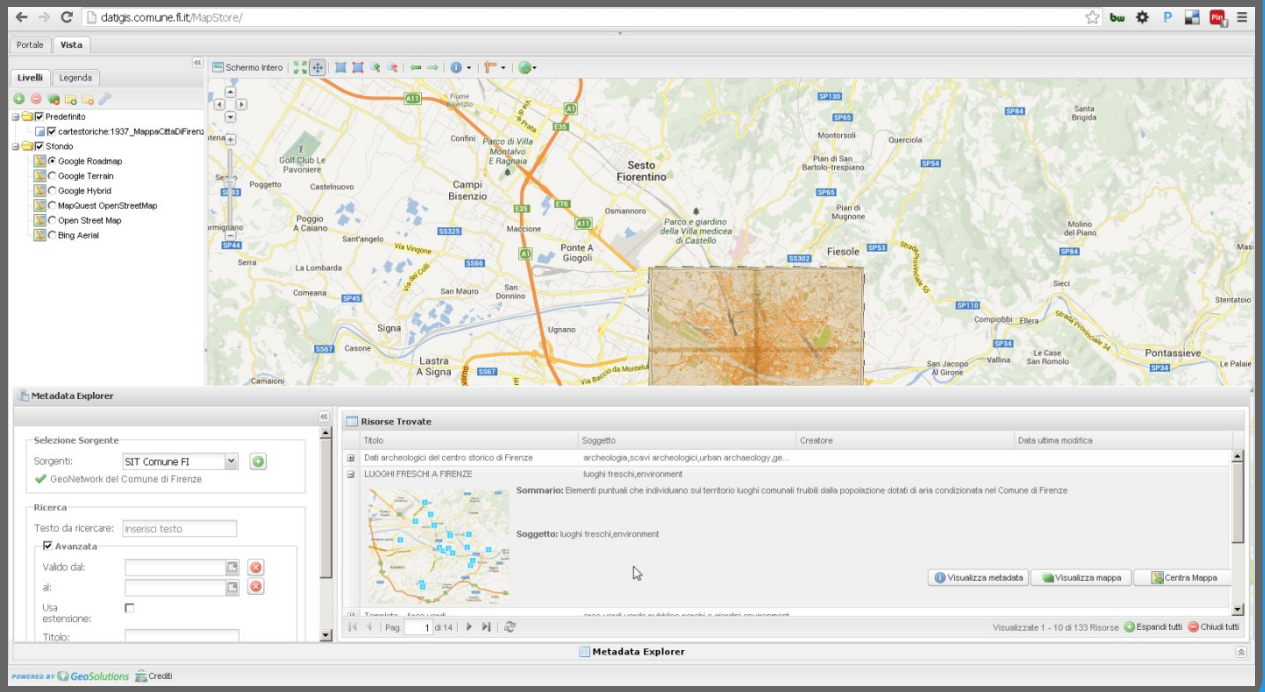
Metadata Explorer

- **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



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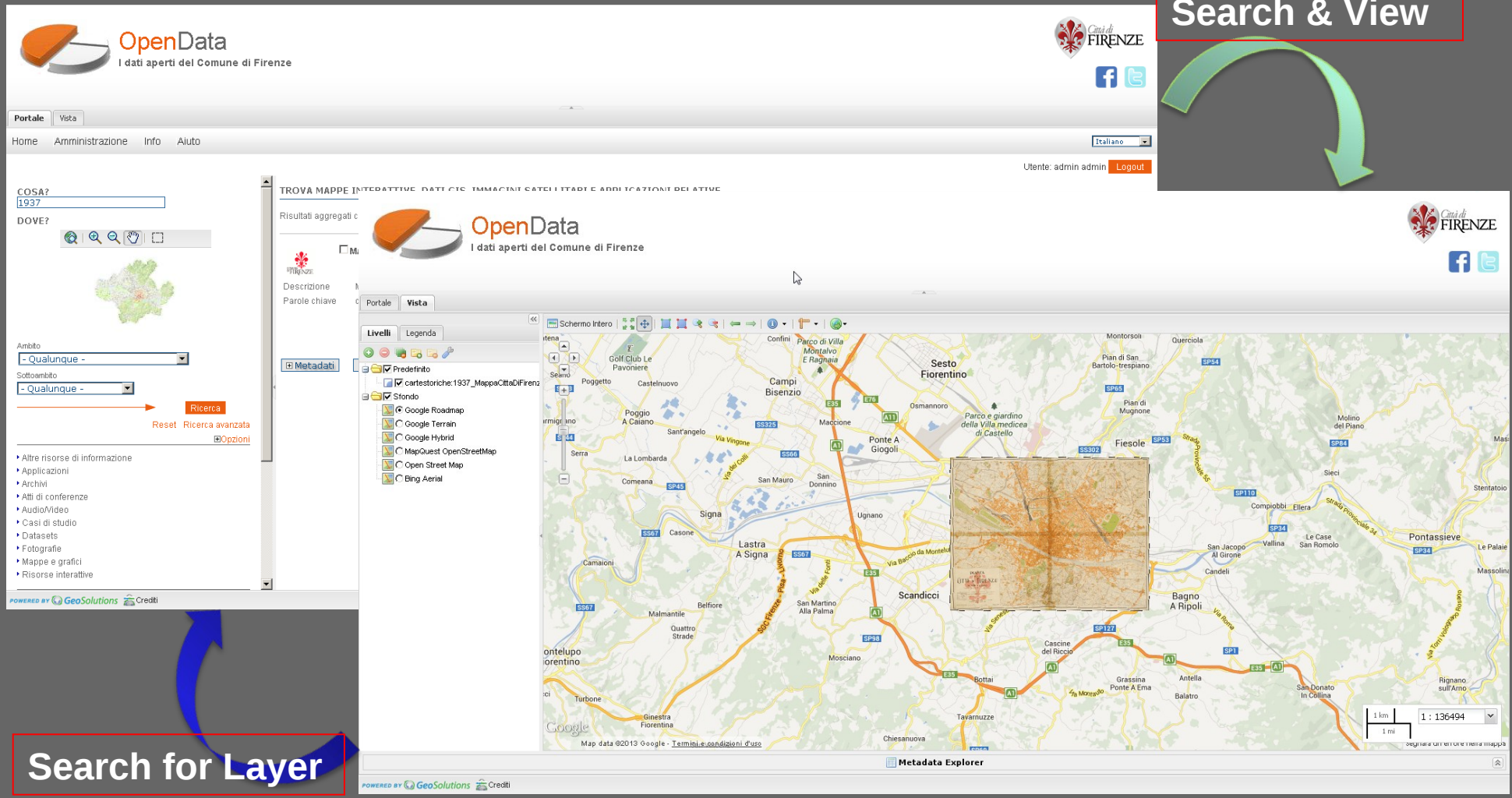
GeoNetwork Integration



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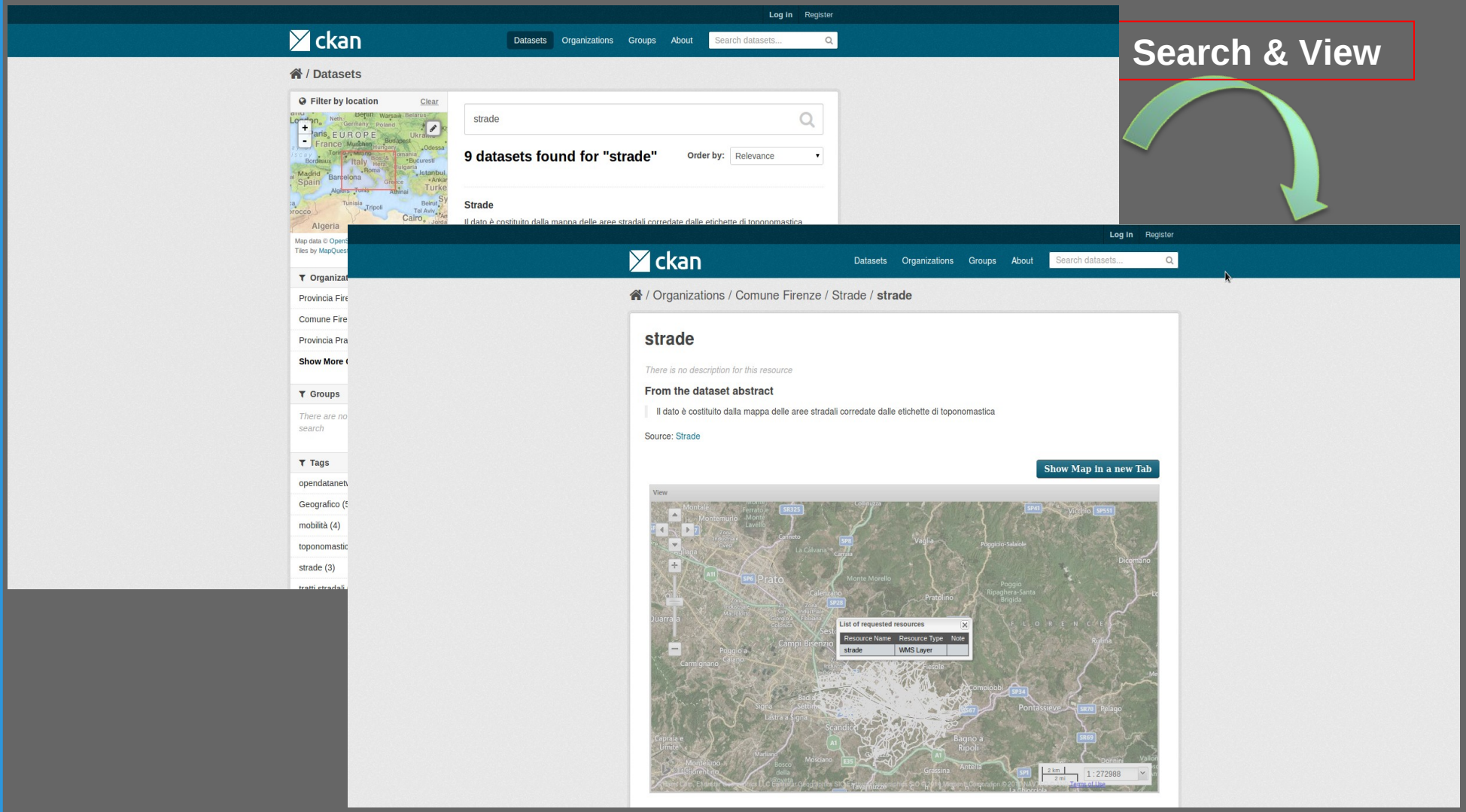
CKAN Integration



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MapStore Widgets & Functionalities

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

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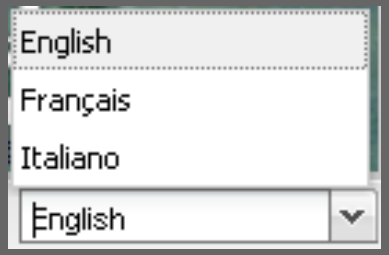
Feature Editor & Internationalization

- **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



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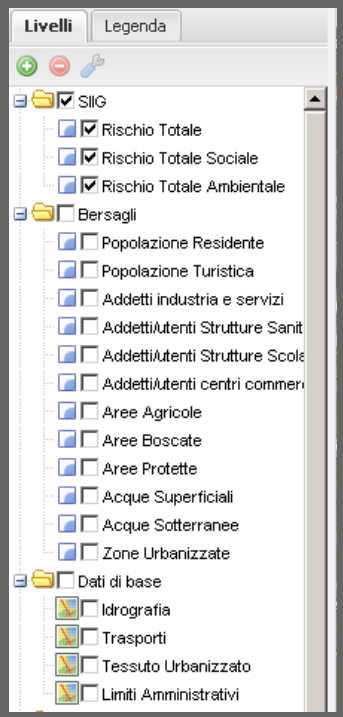
Internationalization

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



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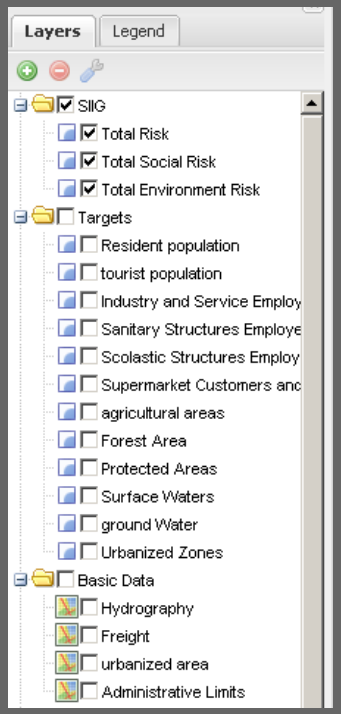

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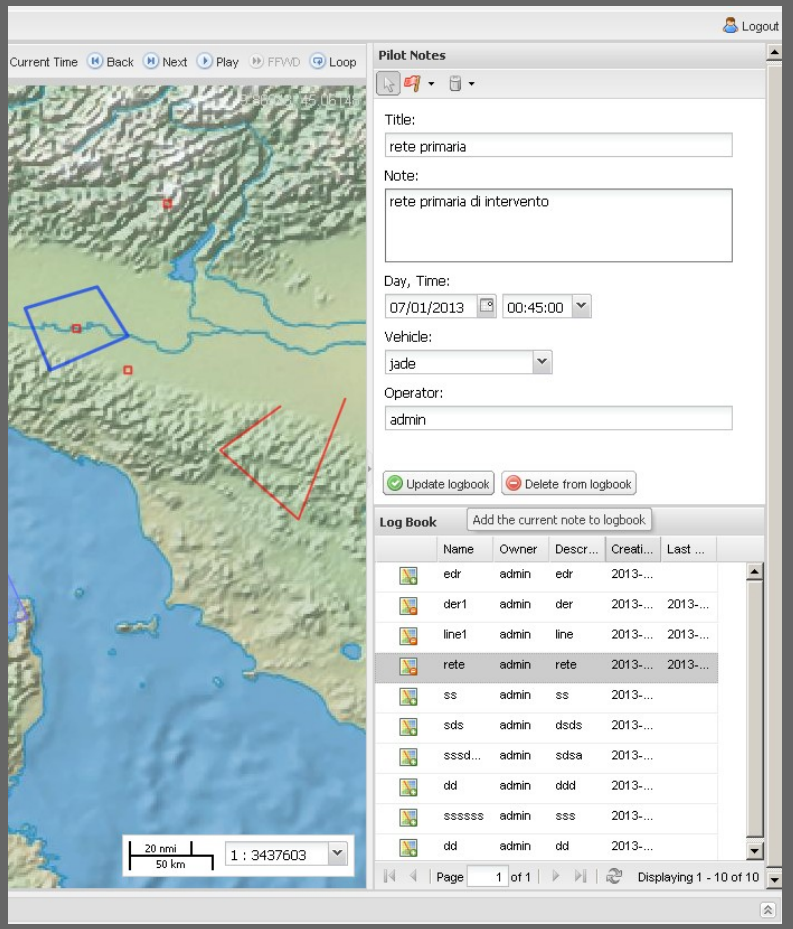
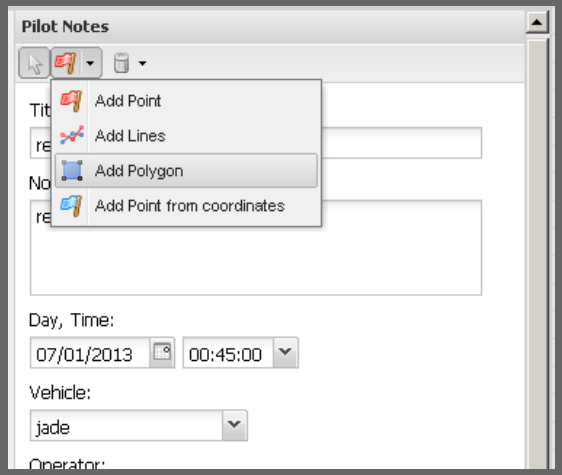
Map Annotations

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





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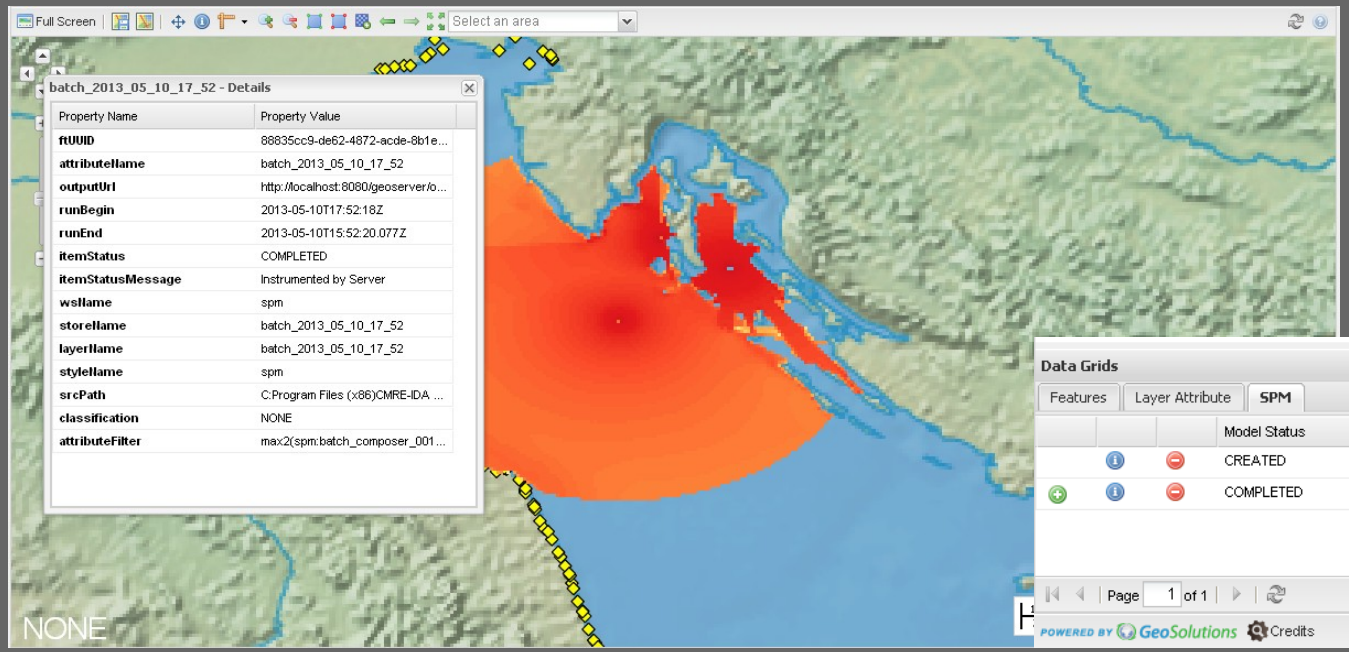
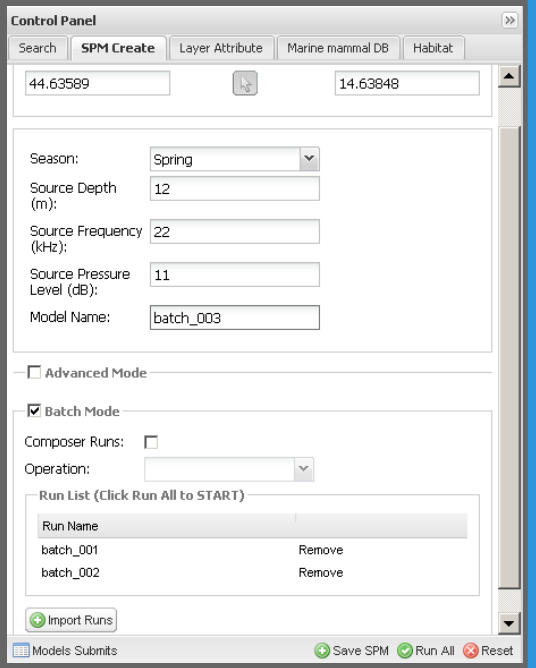
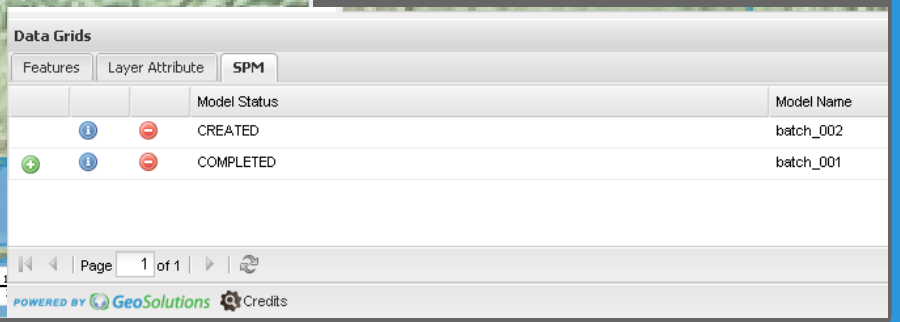
WPS Support

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







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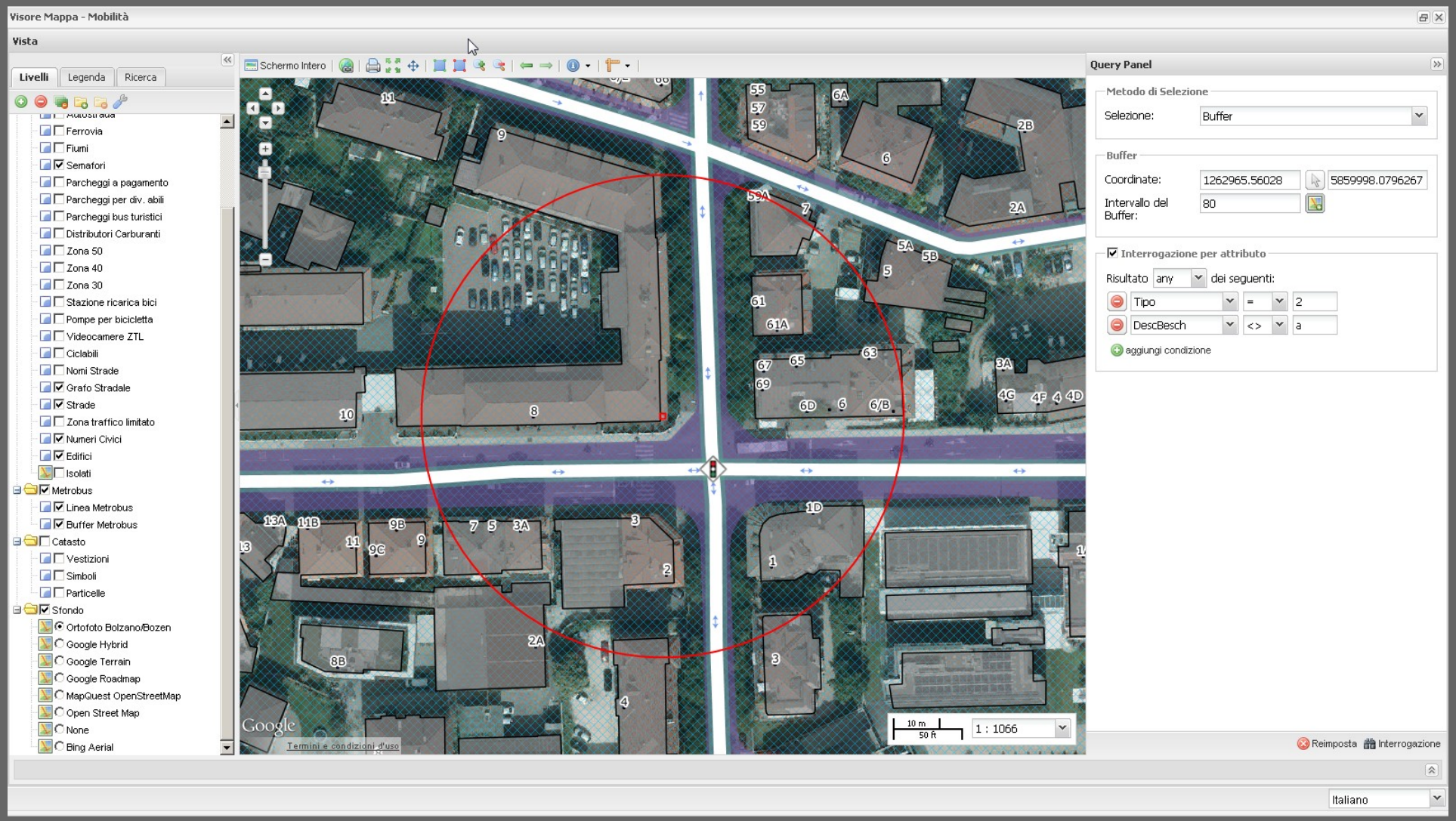
WFS Querying



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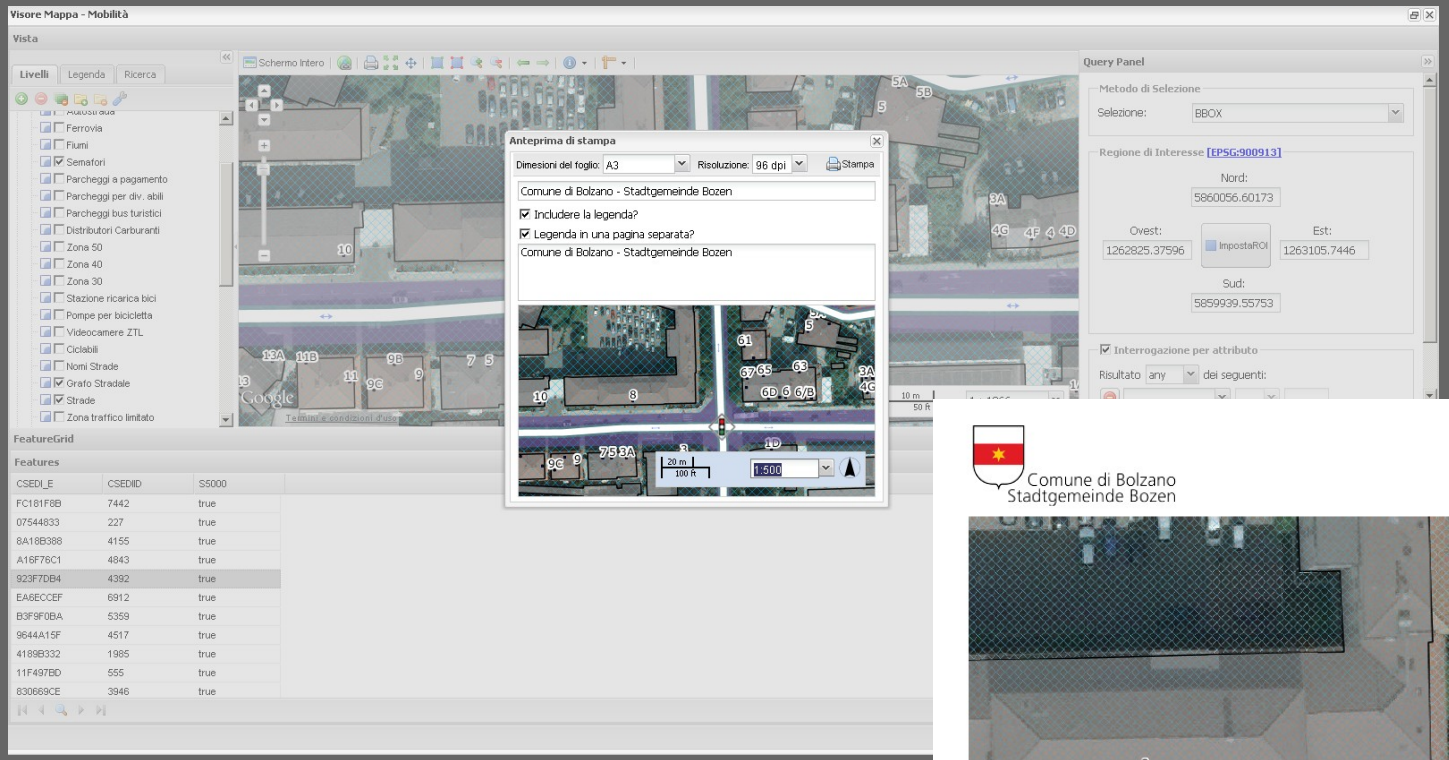
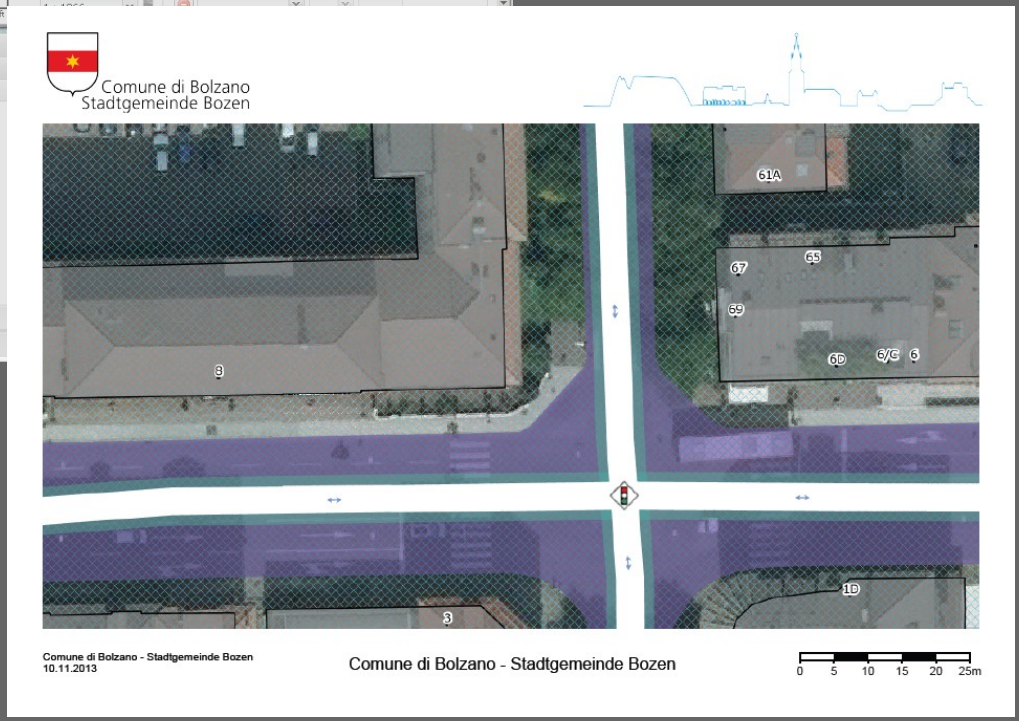
Printing





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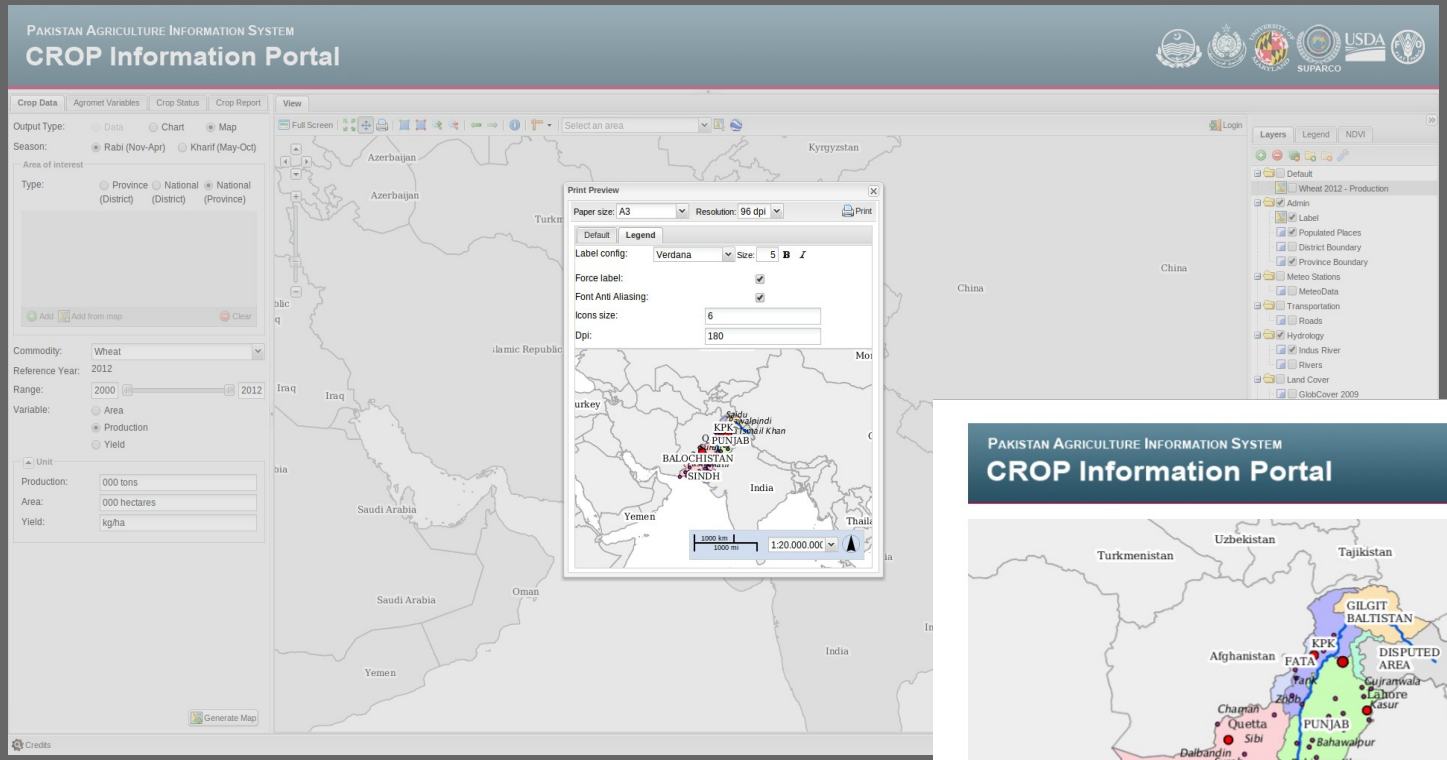
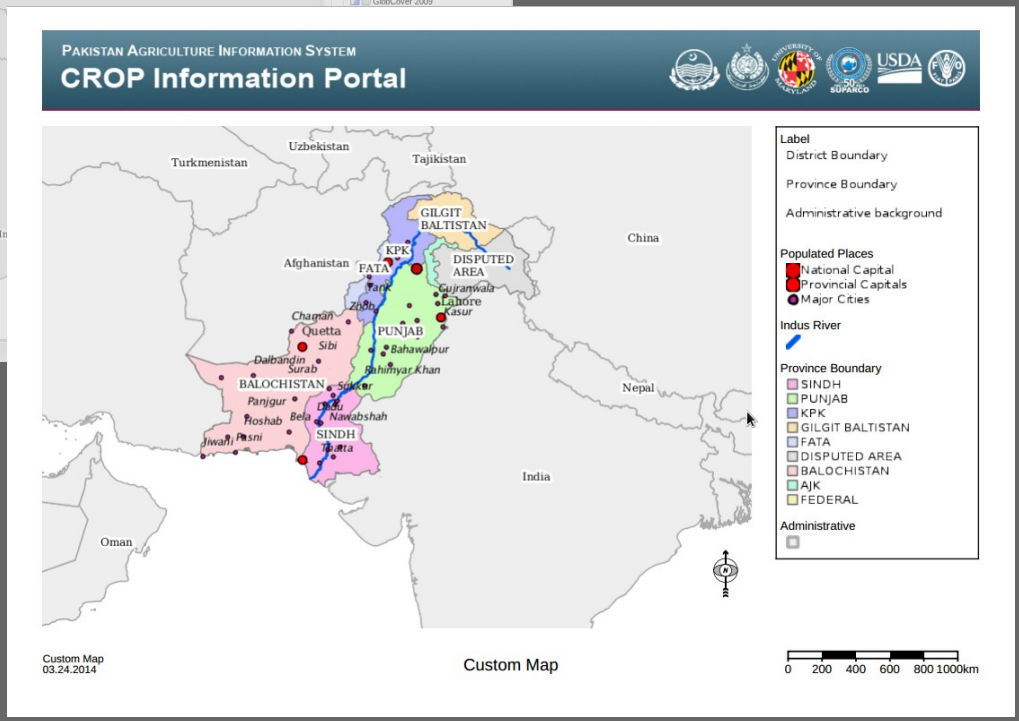
Printing





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Real World MapStore Use Cases

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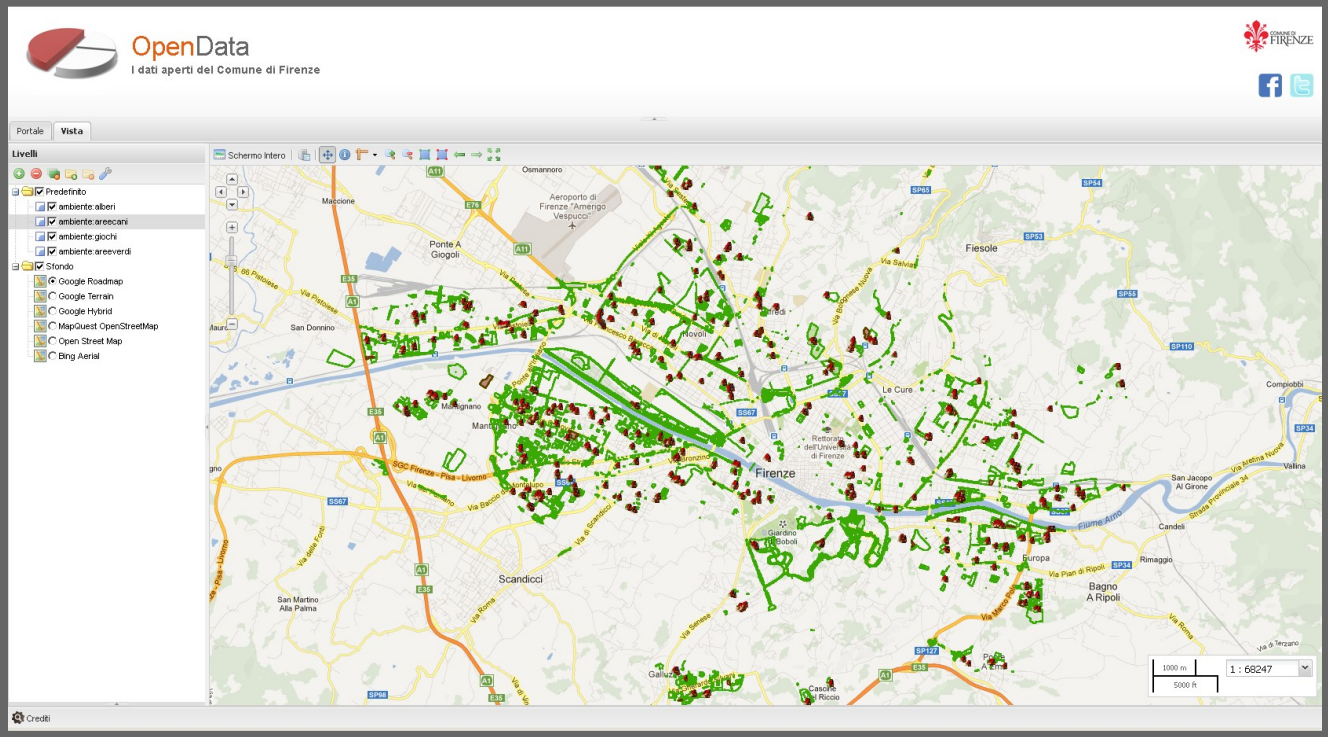
City Of Florence

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



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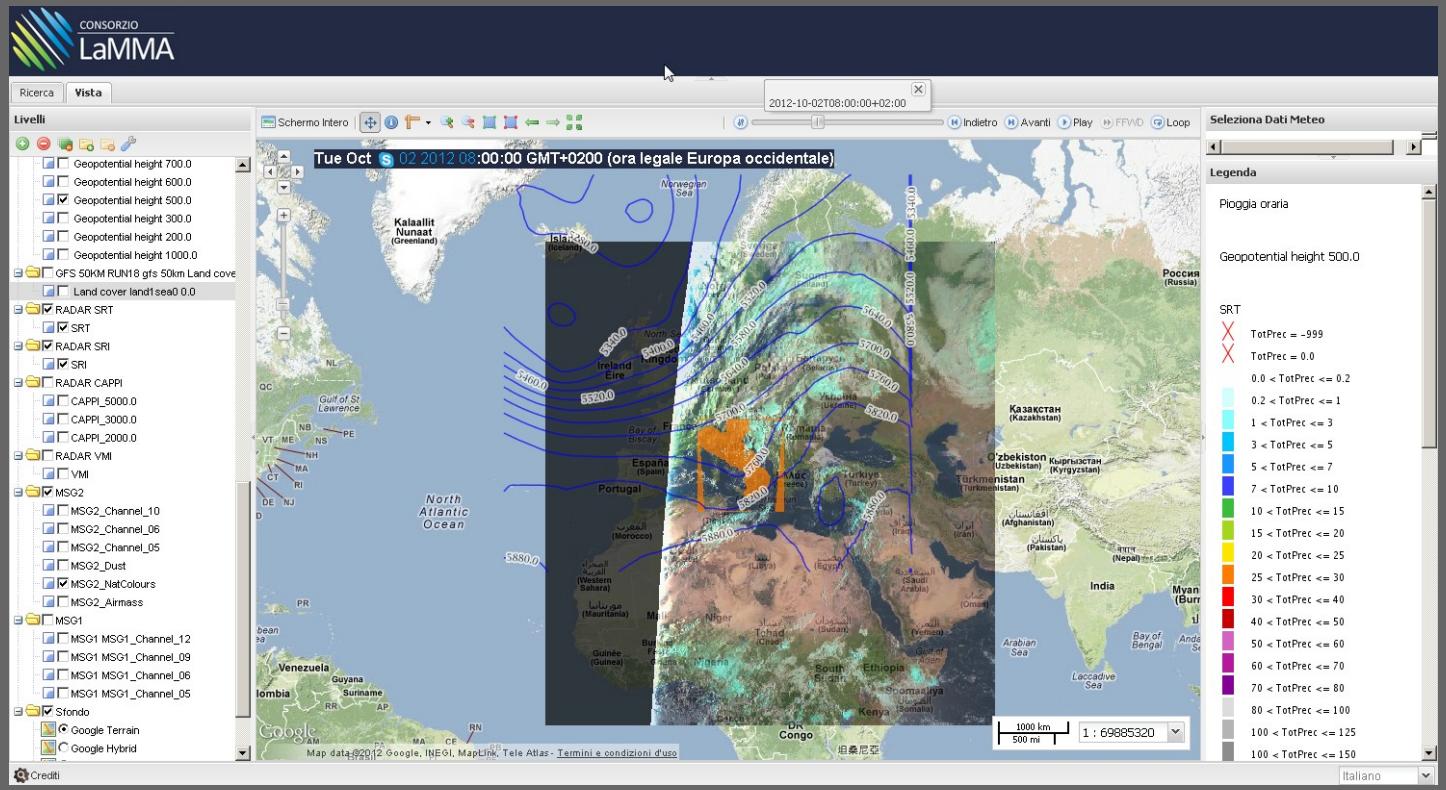
LaMMa Consortium

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



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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

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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

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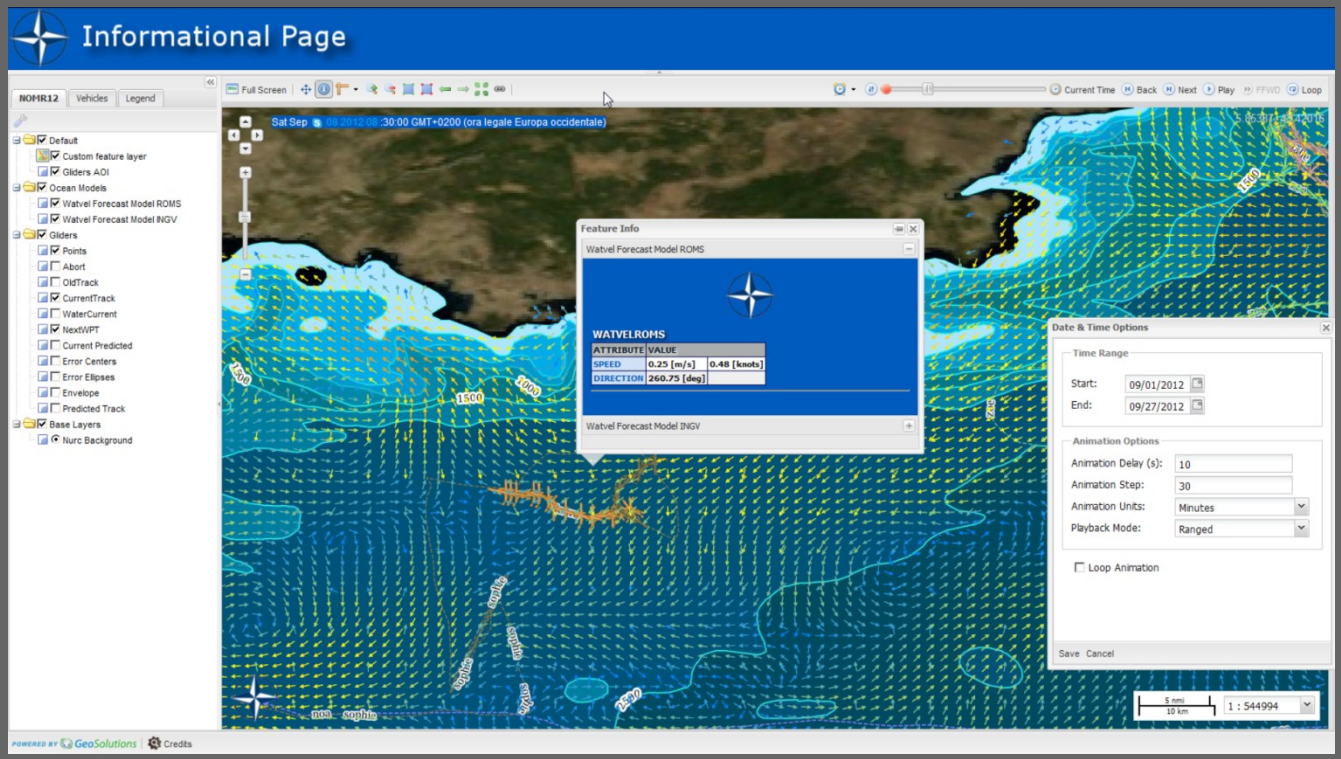
NATO CMRE Gliders Portal

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



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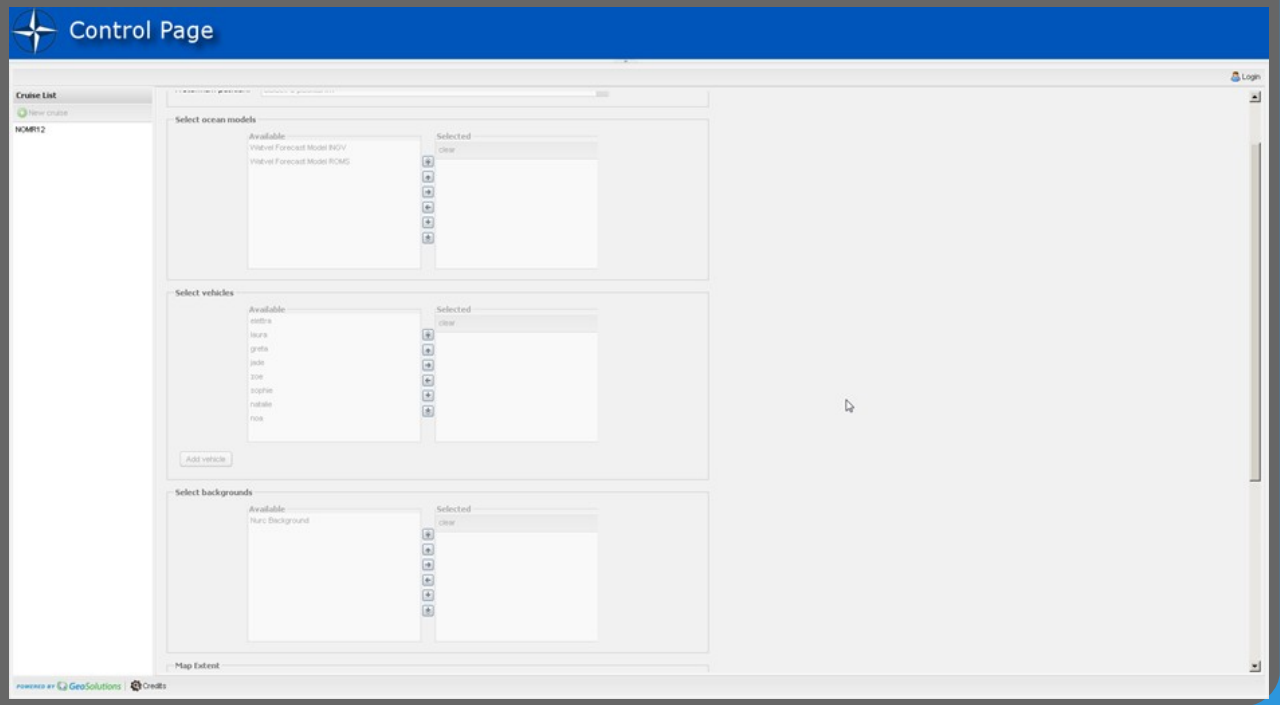
NATO CMRE Gliders Portal

- **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 defaul time animation params



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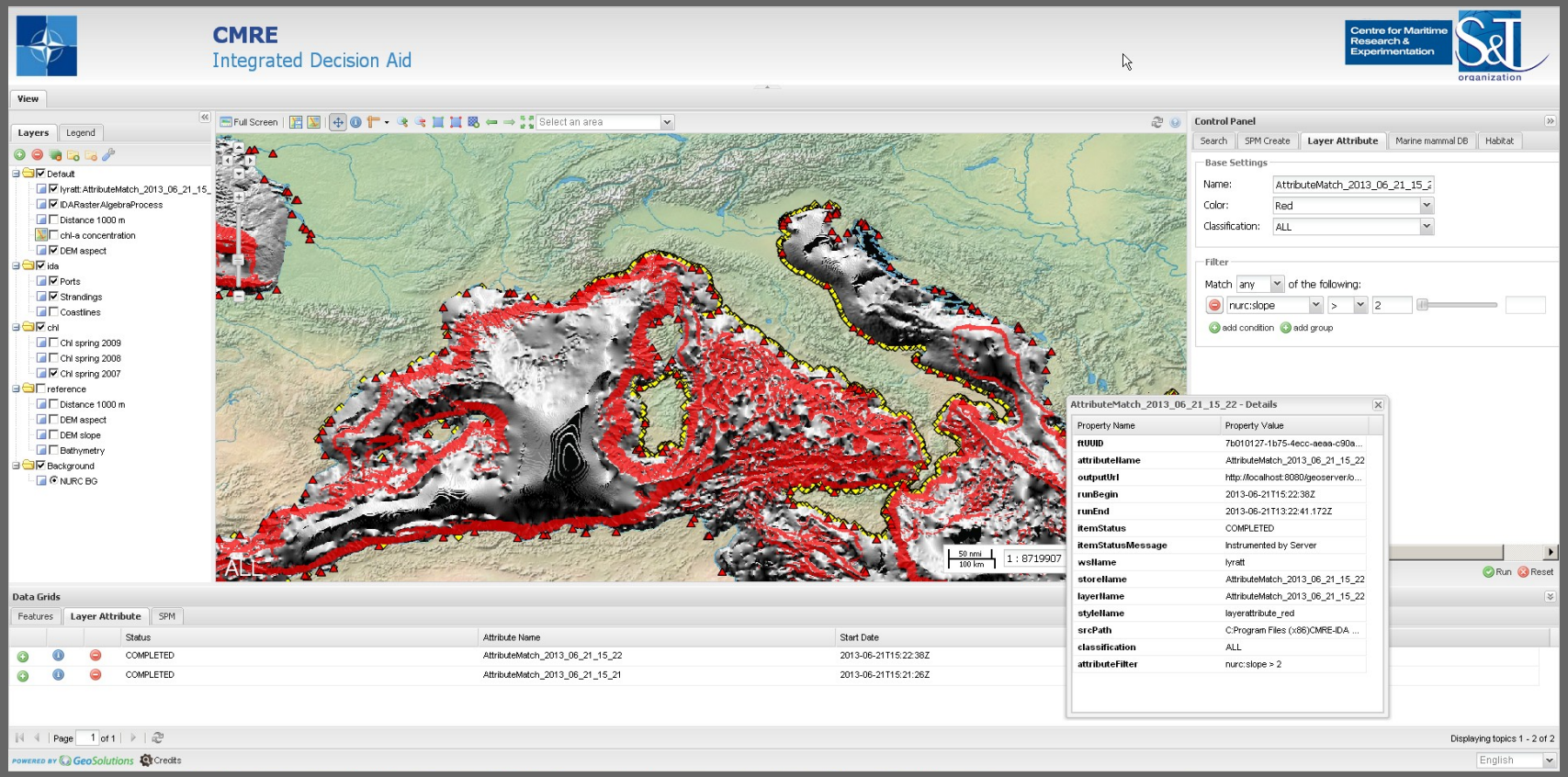
NATO CMRE IDA Tool

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



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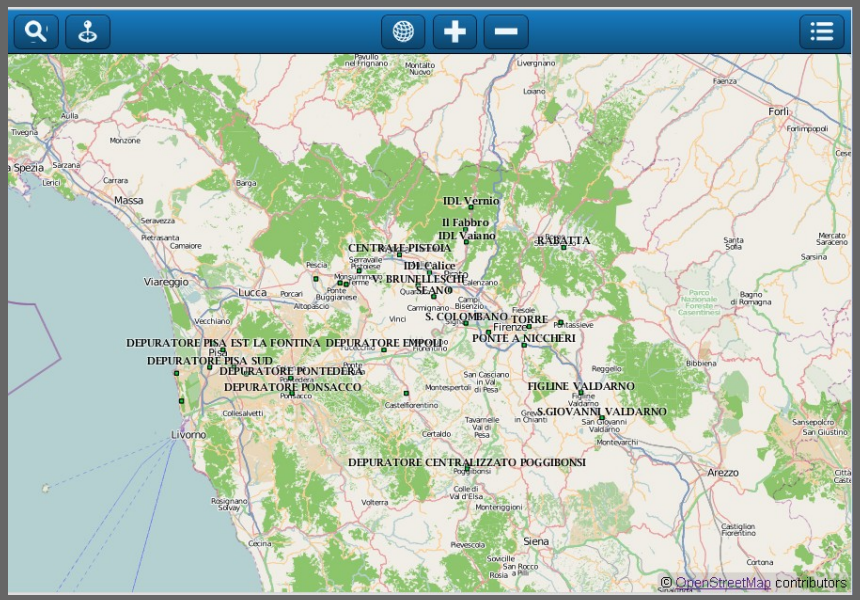
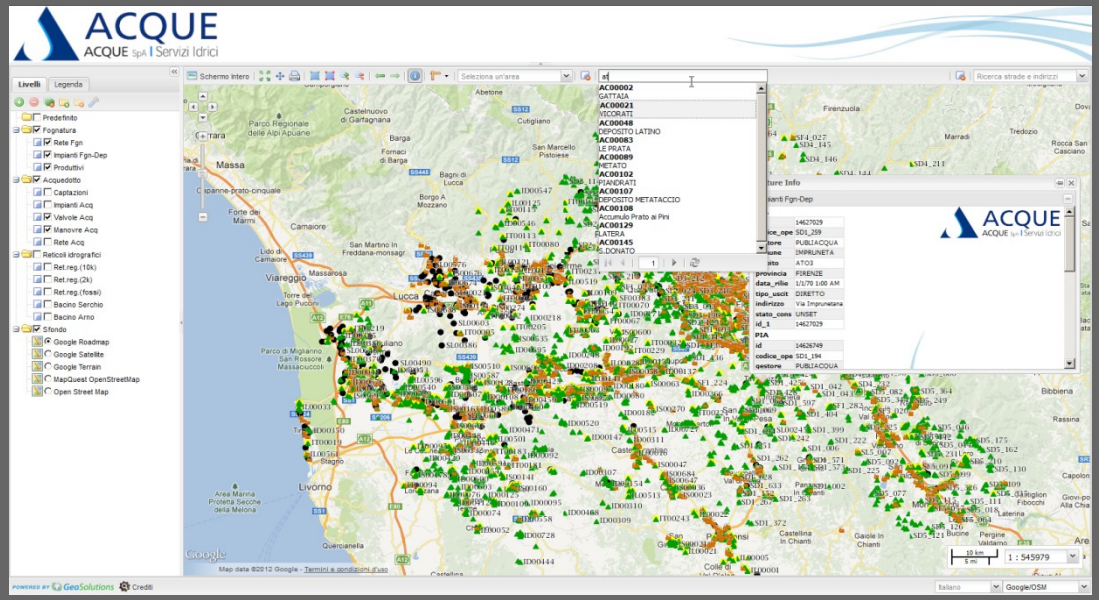
Acque S.P.A. GeoPortal

- **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)





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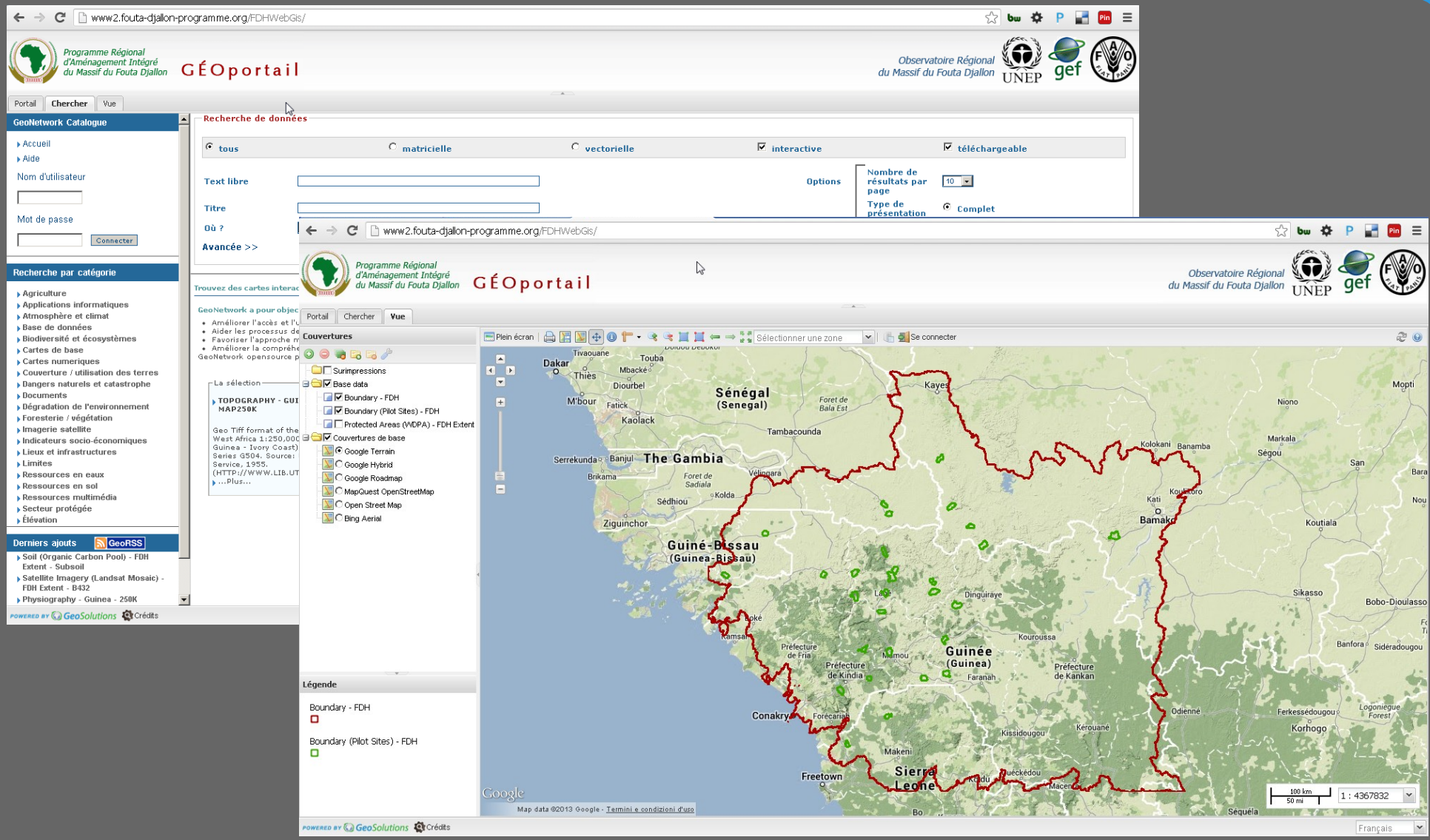
FAO - Fouta Djallon Highlands Atlas



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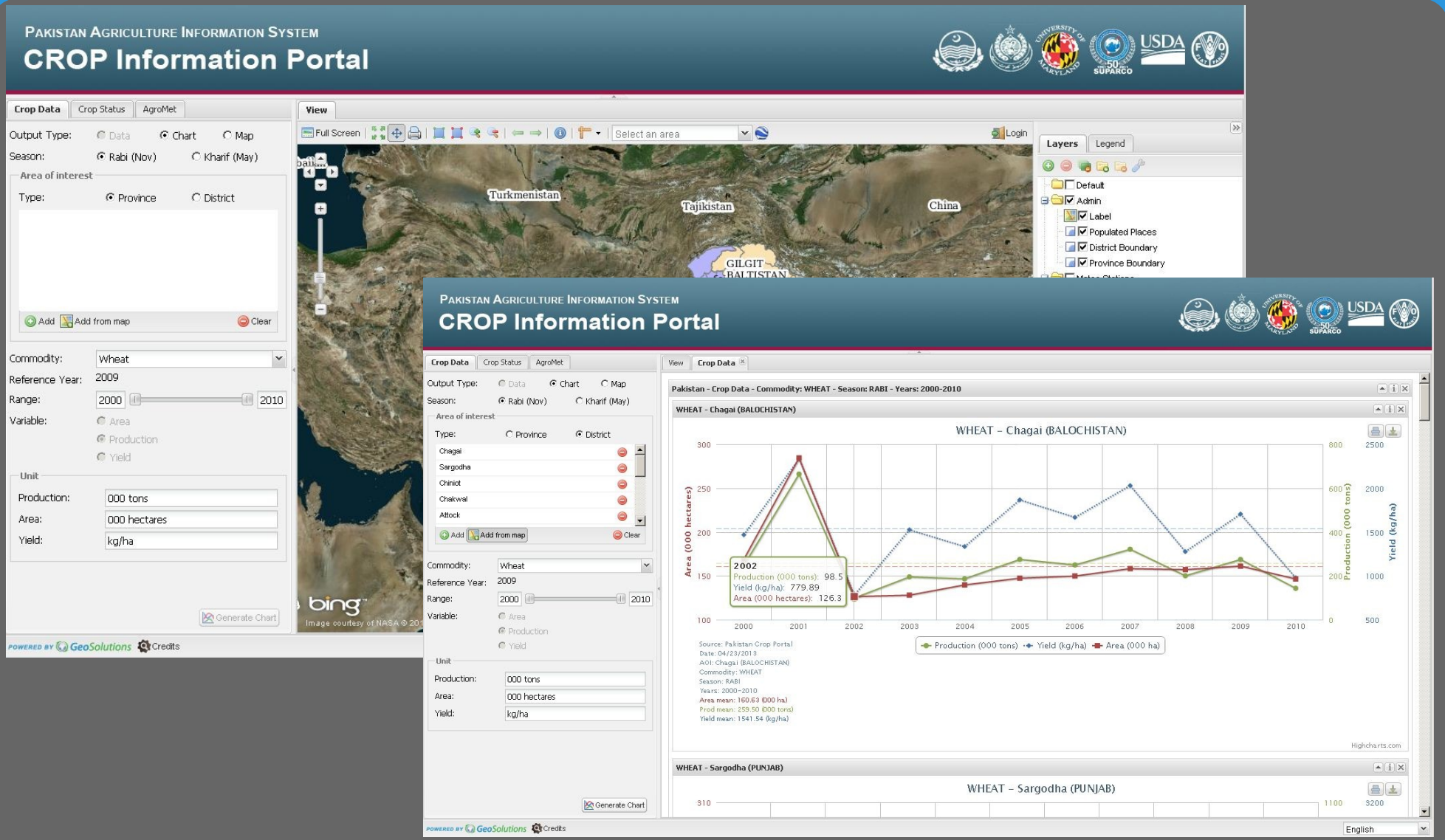
FAO – NRL Crop Monitoring



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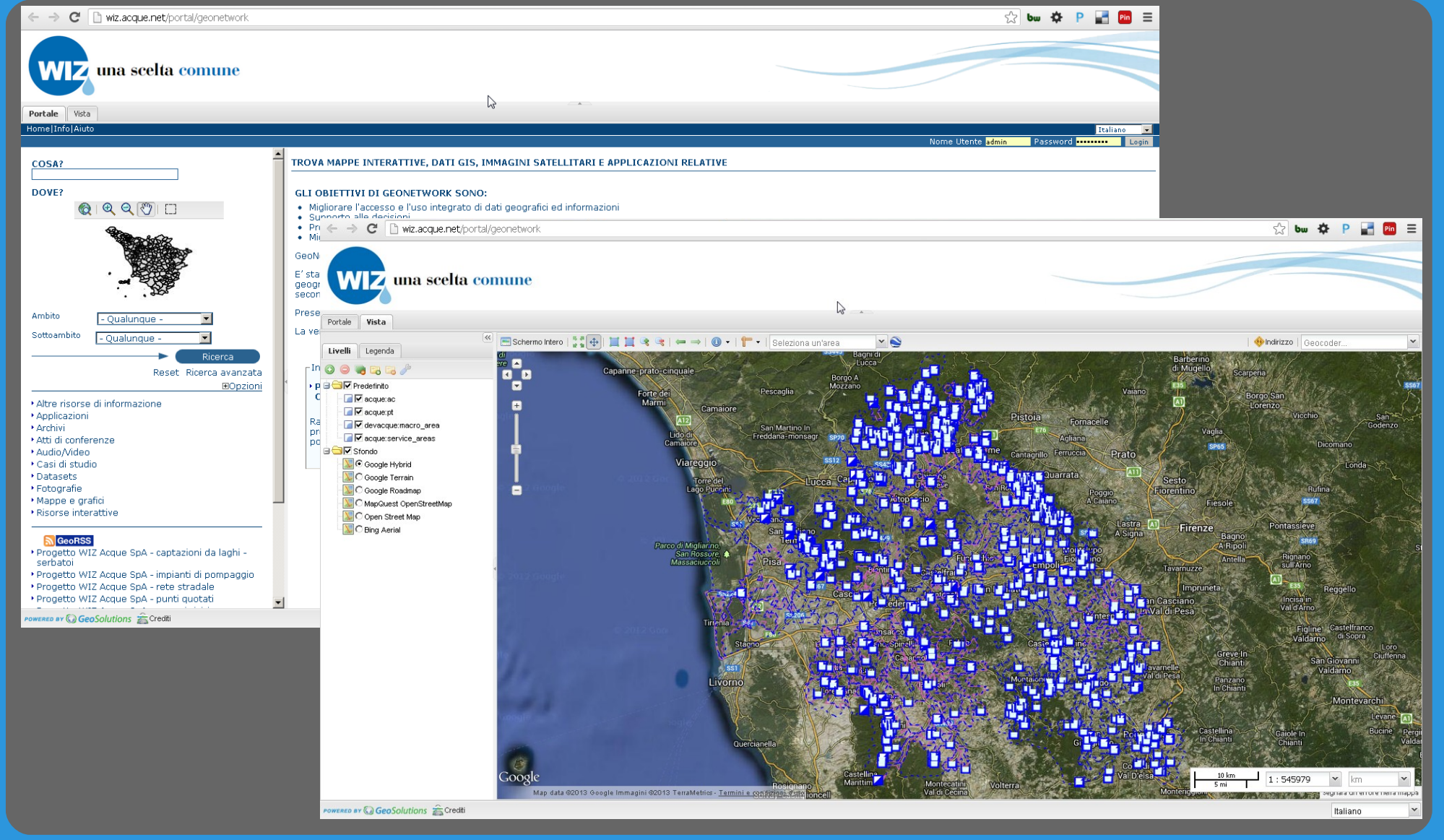
EU Wiz Project



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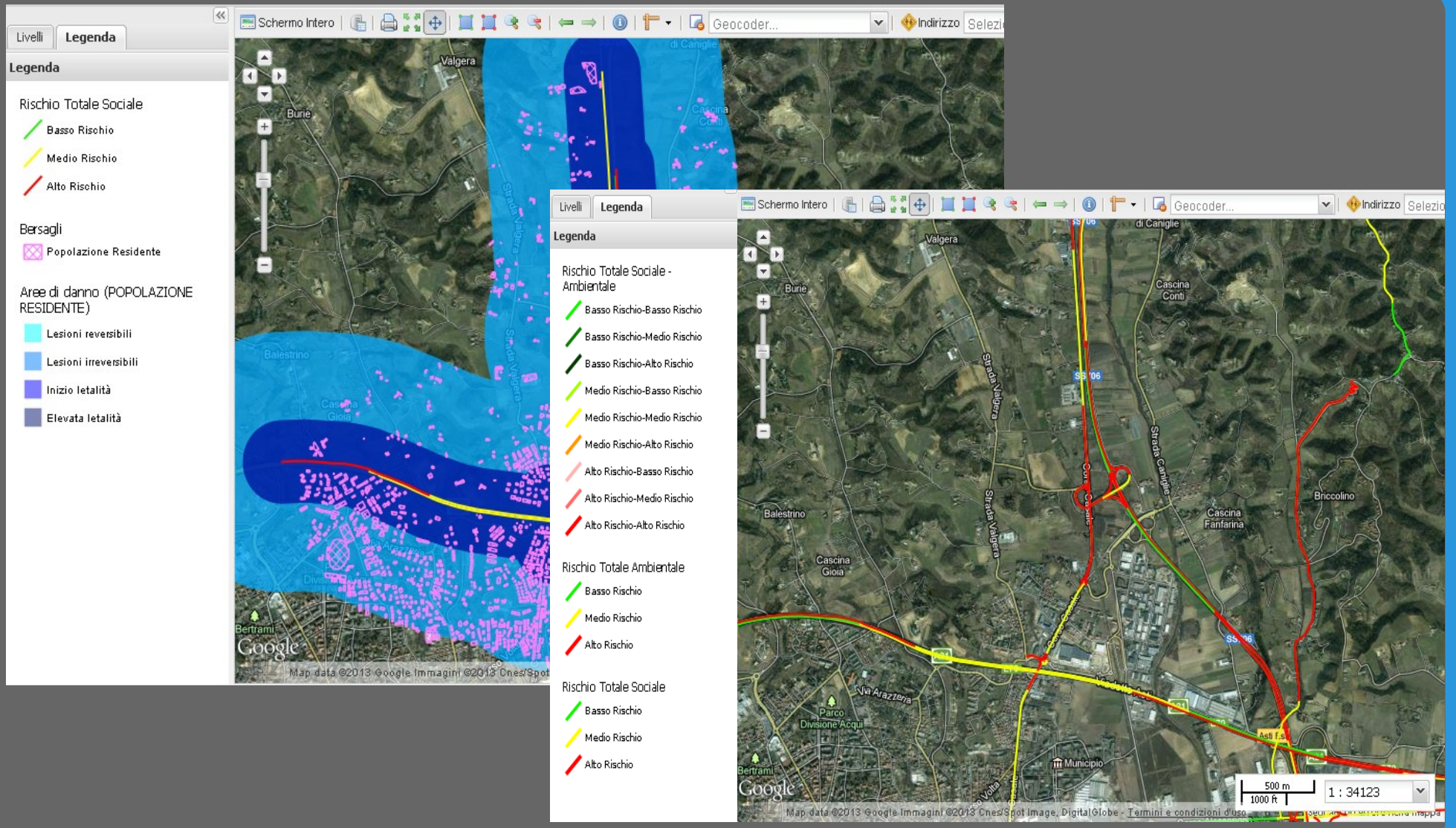
CSI Piemonte – Destination Project



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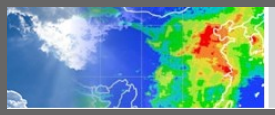
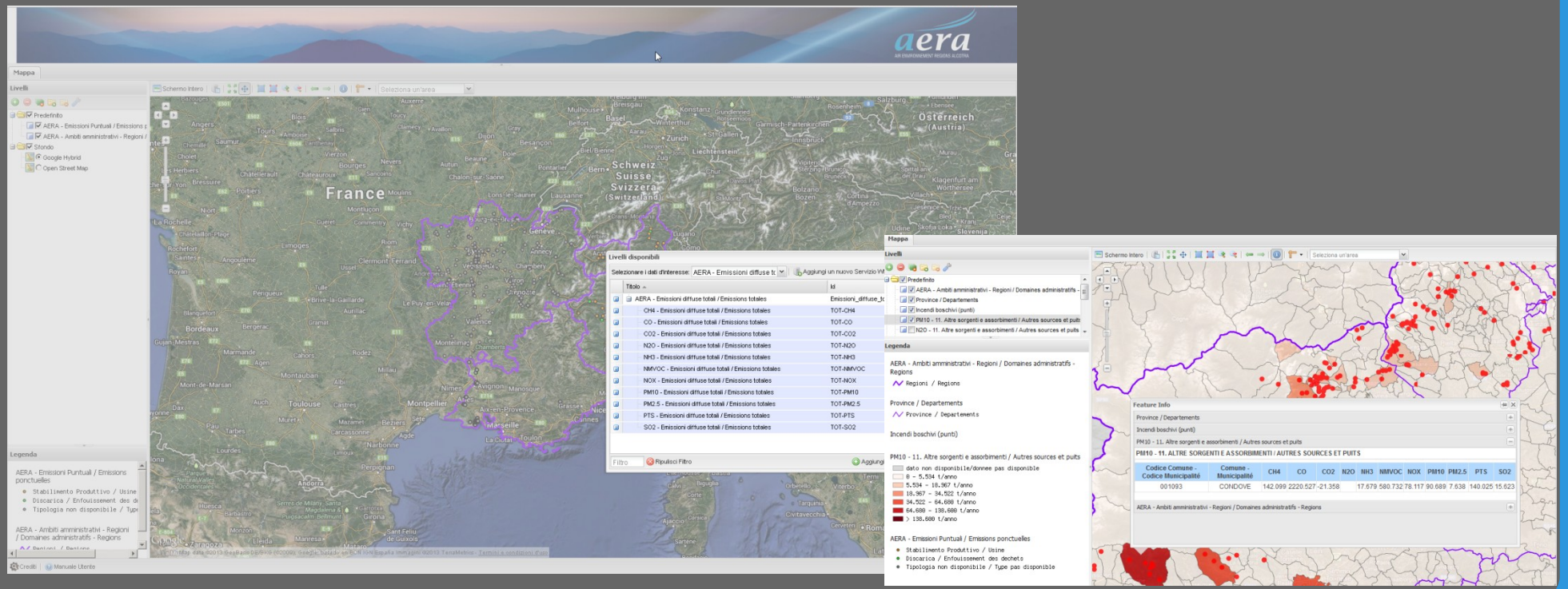
CSI Piemonte – Aera Portal

- **CSI Piemonte**



IREA Inventario Regionale delle Emissioni in Atmosfera

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



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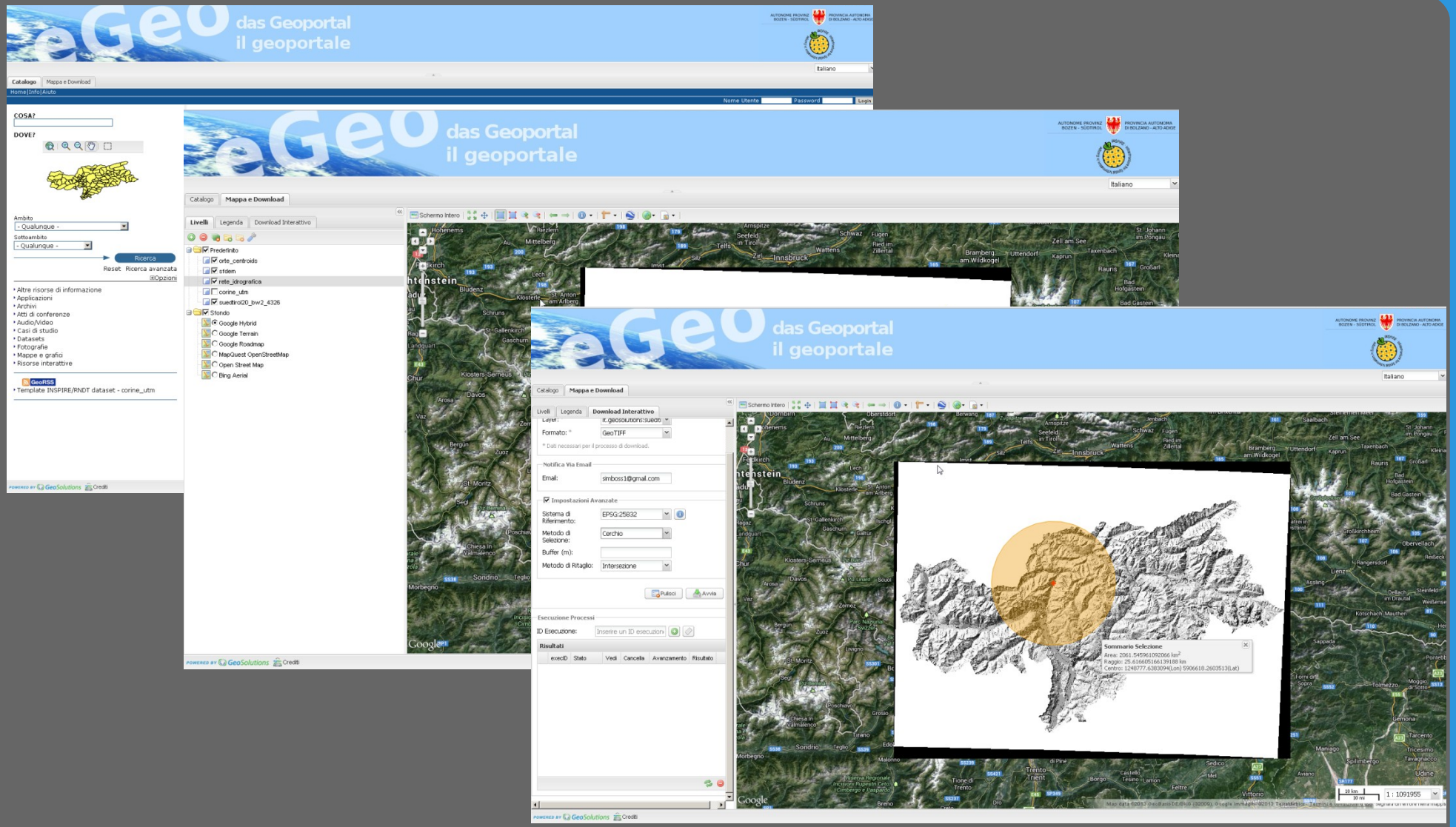
County of Bozen – GeoPortal Portal



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RoadMap

Current stable is 1.5

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

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

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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

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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**

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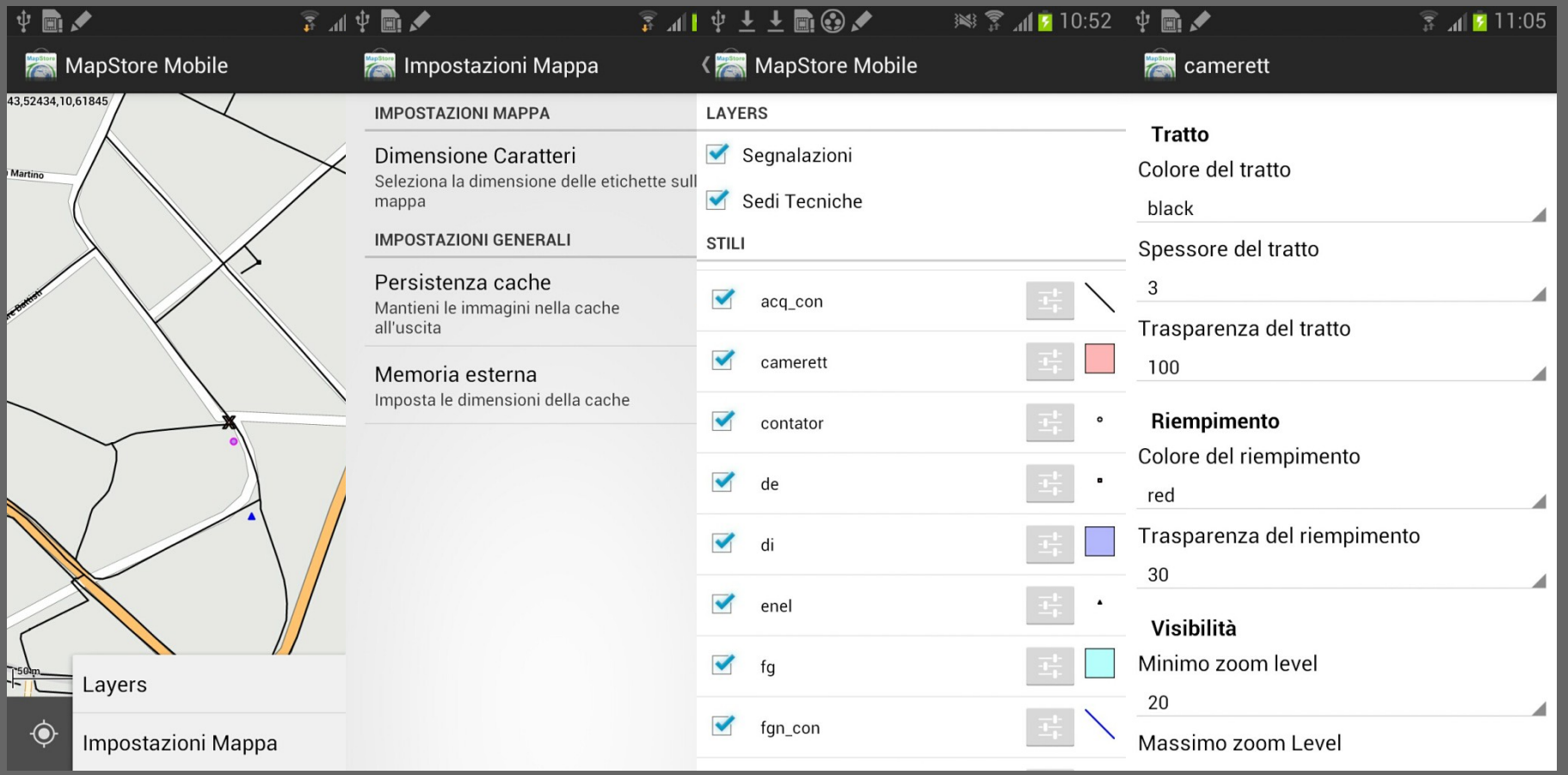
MapStore Mobile



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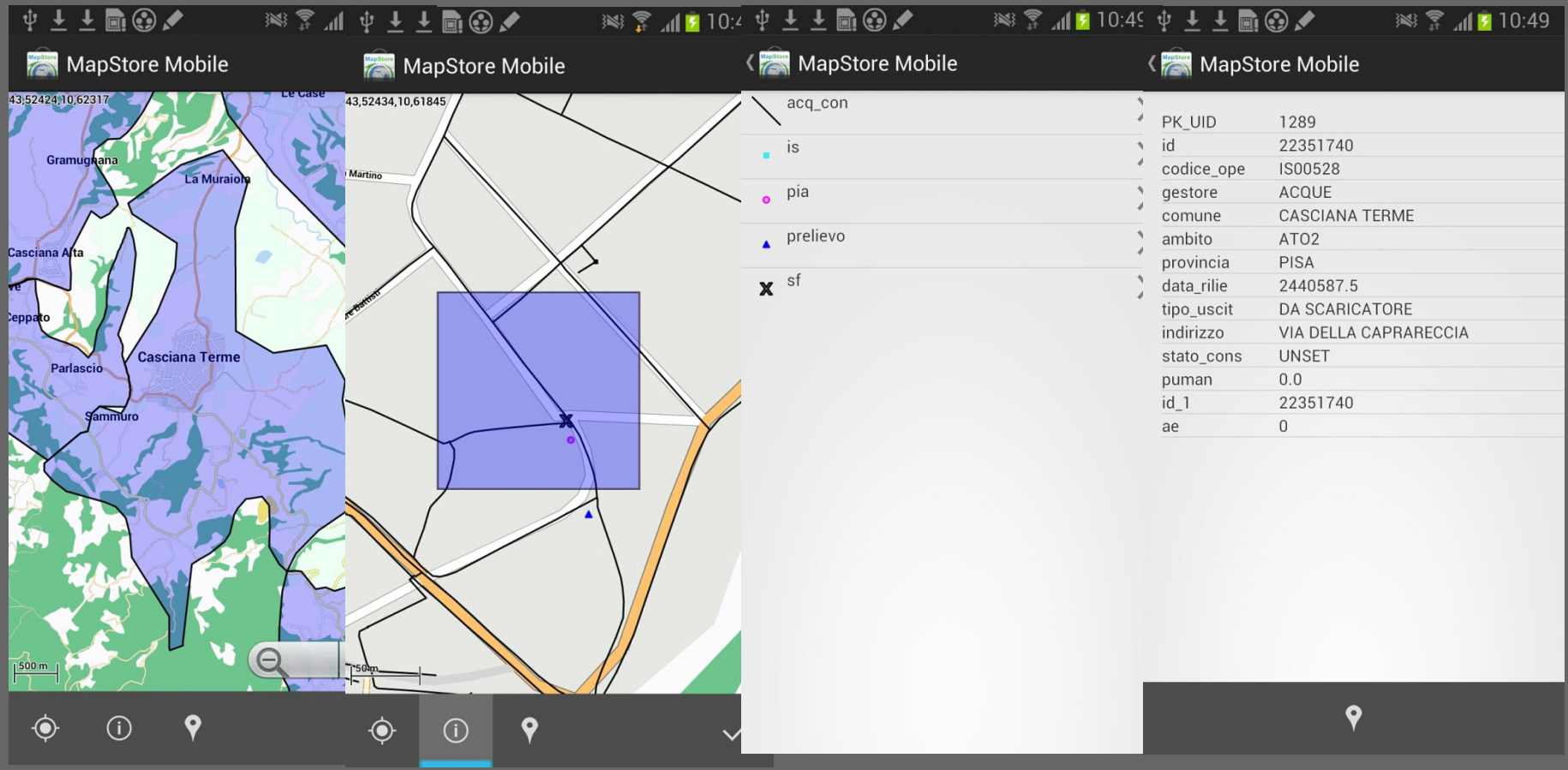
MapStore Mobile



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The End

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