

Building Interoperable SDIs with Our Open Source Products

Ing. Simone Giannecchini
Ing. Nuno Oliveira





Quick Facts



- Founded in late 2006
- Expertise
 - Image Processing, GeoSpatial Data Fusion
 - Java, Java Enterprise, C++, Python
 - JPEG2000, JPIP, Advanced visualization
 - Web Based Mashups, Mobile Solutions
 - OGC, ISO, INSPIRE Standards
- Supporting/Developing FOSS4G projects
 - MapStore, GeoServer, GeoNetwork
 - CKAN, GeoNode
- Clients
 - UN FAO (CIOK, FIGIS, NRL, FORESTRY, ESTG), UN WFP, World Bank, DLR, EUMETSAT, JRC, ARPAT, NATO CMRE
 - Private Companies all over the world



Our Offer

- **Enterprise Support Services**
 - Bug Fixing, Support, Customizations & New Features
 - 5 packages → different types of needs
- **Deployment Warranty**
 - Deploy with confidence, we monitor and fix when needed
- **Professional Training**
- **End-To-End Projects (Integration)**
 - Tell me what you need, I'll put it together for you
- **We take our core products and**
 - Bend them, twist them, embed them
 - Hammer them to make clients happy
- **FOSS4G Software is core for us**
 - Not simple use but develop and support

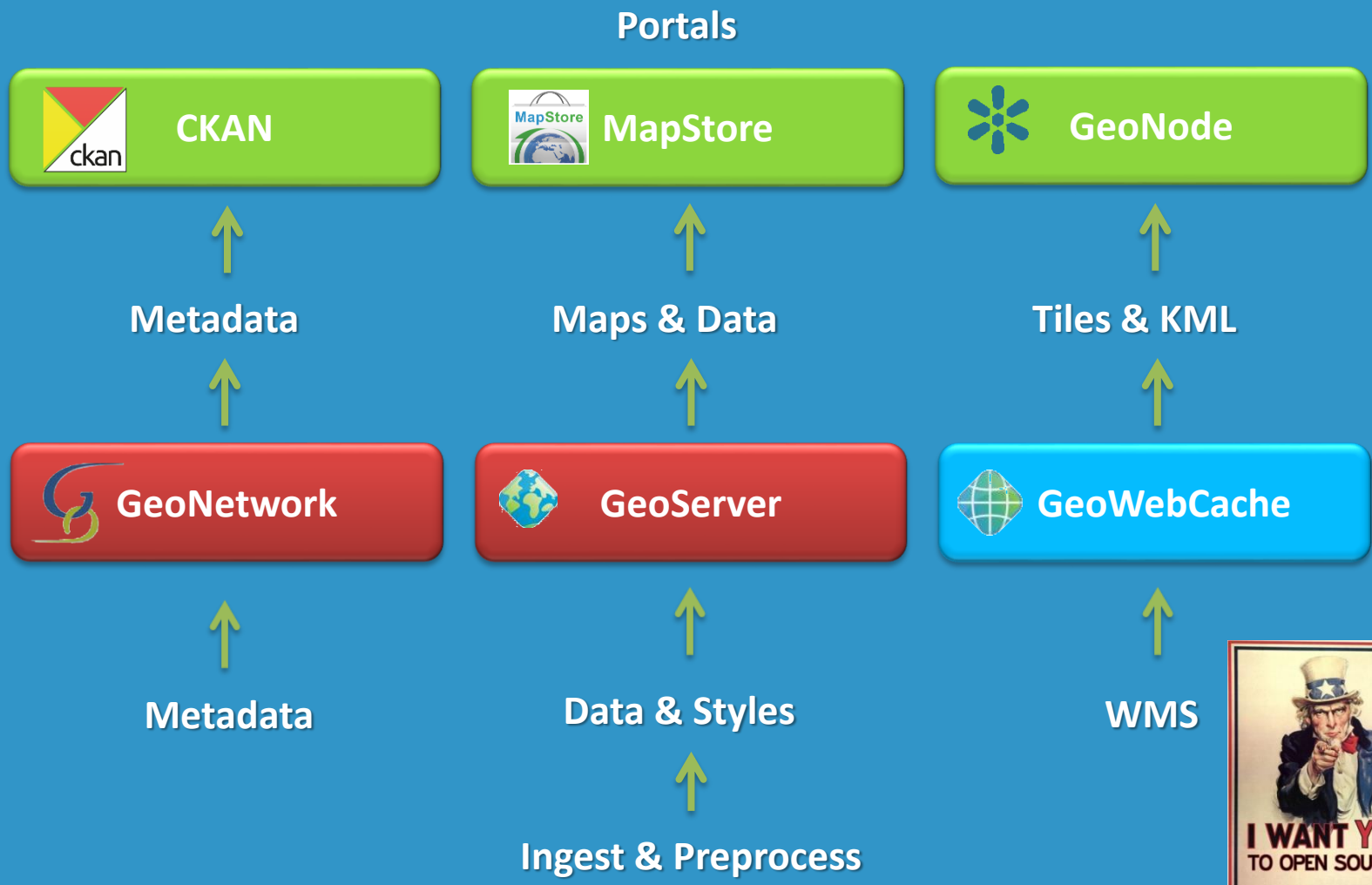
Team – Key Members

- **19 Staff Members, 16 Engineers**
- **Ing. Simone Giannecchini**
 - Founder, GeoServer PSC, GeoTools PMC, ImageIO-Ext Architect, JAI-Tools founder, GeoBatch founder
- **Ing. Alessio Fabiani**
 - Founder, GeoServer PSC, GeoTools Committer, MapStore Committer
- **Ing. Andrea Aime**
 - GeoServer PSC, GeoTools PMC, JAI-Tools Lead, ImageIO-Ext committer
- **Ing. Emanuele Tajariol**
 - GeoServer Committer, GeoTools Committer, GeoNetwork PSC
- **Ing Mauro Bartolomeoli**
 - GeoServer Committer, GeoTools Comitter, GeoBatch Committer, MapStore Committer

Products & Competencies



Our Products





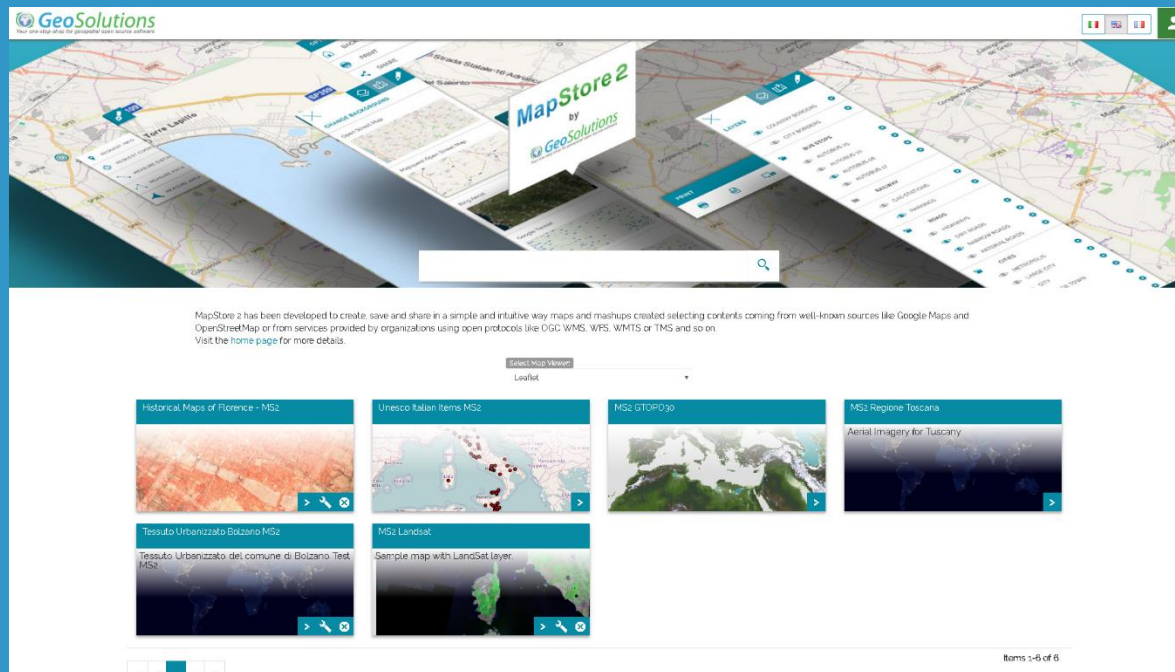
- **GeoSpatial enterprise gateway**
 - Java Enterprise
 - Management and Dissemination of raster and vector data
- **Standards compliant**
 - OGC WCS 1.0, 1.1.1 (RI), 2.0.1
 - OGC WFS 1.0, 1.1 (RI), 2.0
 - OGC WMS 1.1.1, 1.3
 - OGC WPS 1.0.0
 - OGC CSW 2.0.2
- **Google Earth/Maps support**
 - KML, GeoSearch, etc..





- **Tile Oriented Geospatial Cache**
 - Java Enterprise
 - Maps Acceleration (10x to 100x)
- **Standards compliant**
 - OGC WMS 1.1.1, WMTS 1.0
 - TMS
 - WMS-C
- **Google Earth/Maps support**
- **Stand-Alone or Integrated in GeoServer**

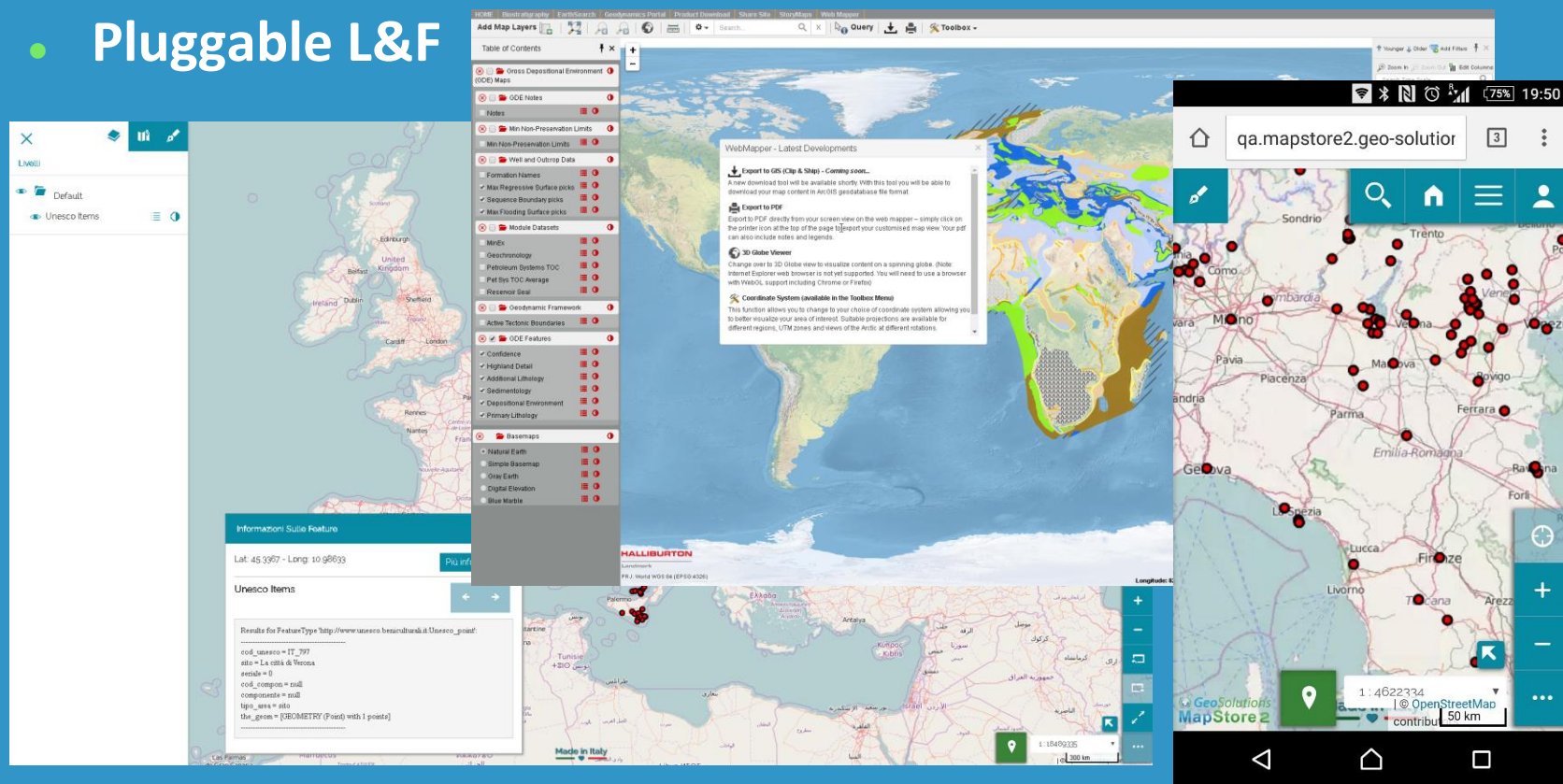
- Create, Manage, Share Stunning Maps easily
- Mashing-up various sources of data
- Inject markers and tracks with custom HTML pop-up
- Embed in existing sites and portal
- Use it as a complete geoportal solution
- <http://mapstore2.geo-solutions.it>



MapStore

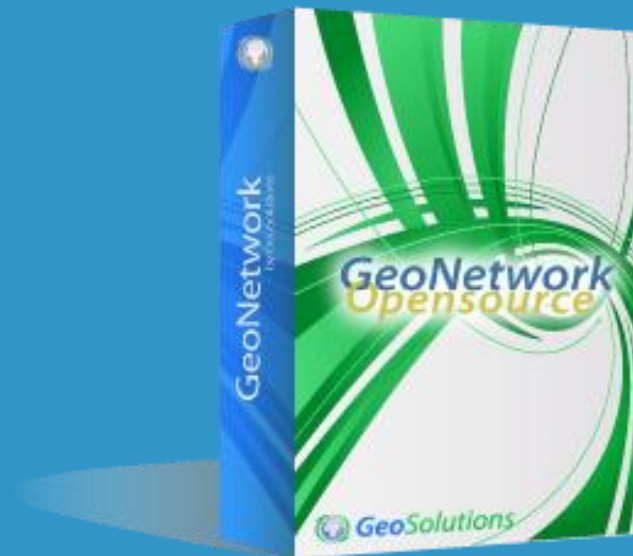


- Mobile First & Responsive
- OpenLayers 3 OR Leaflet OR Cesium
- ReactJS + Bootstrap + Redux
- Pluggable L&F



GeoNetwork

- (GeoSpatial) Catalog
 - Registry of Metadata
 - Repository
 - Enterprise Search Appliance
- GeoPortal
 - SDI entry point
 - Information Broker
- Metadata Editor
- Standards Based (CSW, OAI-PMH, etc..)
- Implemented with Java Enterprise technologies
- [Http://geonetwork-opensource.org](http://geonetwork-opensource.org)





- **GeoSpatial CMS**
- **Discover, Visualize, Download**
 - Upload shapefiles and geotiff
 - Style data
 - Create Metadata
 - Create Map
- **Open Source from the ground up**
 - Django
 - GeoServer
 - OpenLayers
- **Standards Based → Interoperable**
 - WMS
 - WFS
 - CSW
- **<http://geonode.org>**

Comprehensive Knowledge Archive Network (CKAN)

- <http://ckan.org>
- OpenData Catalog & Portal
- Discover, Visualize, Download
 - csv, json, xml, rdf
- Open Source
- Widely Used
 - data.gov.uk
 - data.gov.us
 - dados.gov.br
 - dati.gov.it
 - and more
- Modular and Extensible
 - <http://extensions.ckan.org/> has 167 extensions
 - some are our own 😊



Use Cases



CONSORZIO
LaMMA

Premi **F11** per uscire dalla modalità a schermo intero

Log in Language: English

Dataset Organizzazioni Categorie Informazioni

Ricerca i tuoi dati

Tags popolari 2016-04-23 gfs arw

Meteo

In questa categoria sono immagazzinati i dati relativi a bollettini....

237 Dataset

Trasparenza

In attuazione del decreto legge Lgs n. 33 del 14 marzo 2013, c. sancisce...

40 Dataset

Mare

In questa categoria sono immagazzinati i dati relativi alla modellistica....

7 Dataset

CONSORZIO LaMMA

Datasets Organizations Groups About

/ Datasets

Filter by location Clear

Search datasets...

613 datasets found Order by: Relevance

MODELLO GFS a 50km - Altezza della Tropopausa (m) - (2015-05-23 ore 06 UTC).

Geoportale

Ricerca Vista

Livelli

- ☒ Predefinito
- ☒ Stazioni
- ☒ Pieggi cum. 15min (mm)
- ☒ Pieggi cum. 1 h (mm)
- ☒ Pieggi cum. 6 h (mm)
- ☒ Pressione s.l.m. (hPa) - freq. oraria
- ☒ Vento - velocità (m/s) e direzione (°) h
- ☒ Temperatura di rugiada (°C) freq. oraria
- ☒ Umidità relativa (%) freq. oraria
- ☒ Temperatura (°C) freq. oraria
- ☒ NDVI
- ☒ MODELLI
- ☒ arw_3km_Temperature_height_above
- ☒ SATELLITE
- ☒ Limiti Mondiali
- ☒ Comuni Italia
- ☒ Province
- ☒ Regioni
- ☒ Stati
- ☒ Sfondo
- ☒ None
- ☒ Google Hybrid
- ☒ Google Terrain
- ☒ Google Roadmap
- ☒ MapQuest OpenStreetMap
- ☒ Open Street Map
- ☒ Bing Aerial

Fri Nov 15 2013 10:00:00 GMT+0100 (CET)

Temperatura (°C) freq. oraria

ARSD-Regione Toscana - POPPI - Quota: 419.0

From: Nov 11, 2013 To: Nov 15, 2013

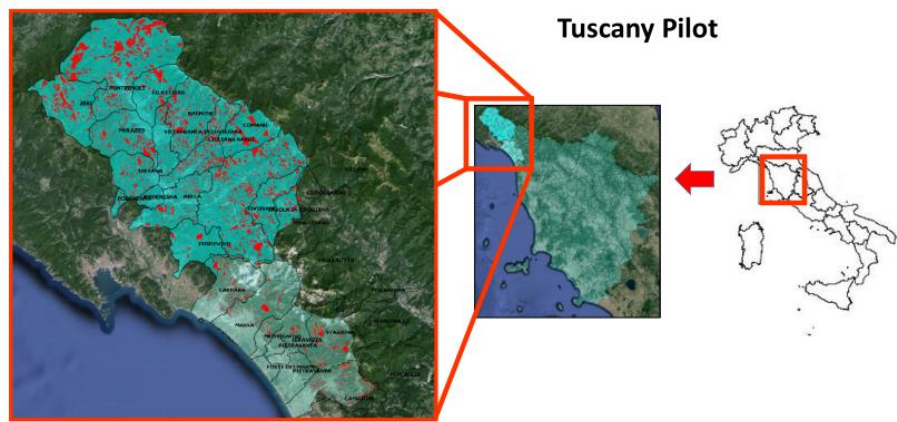
Zoom 6 h 12 h 1 d All

Salvare in CSV

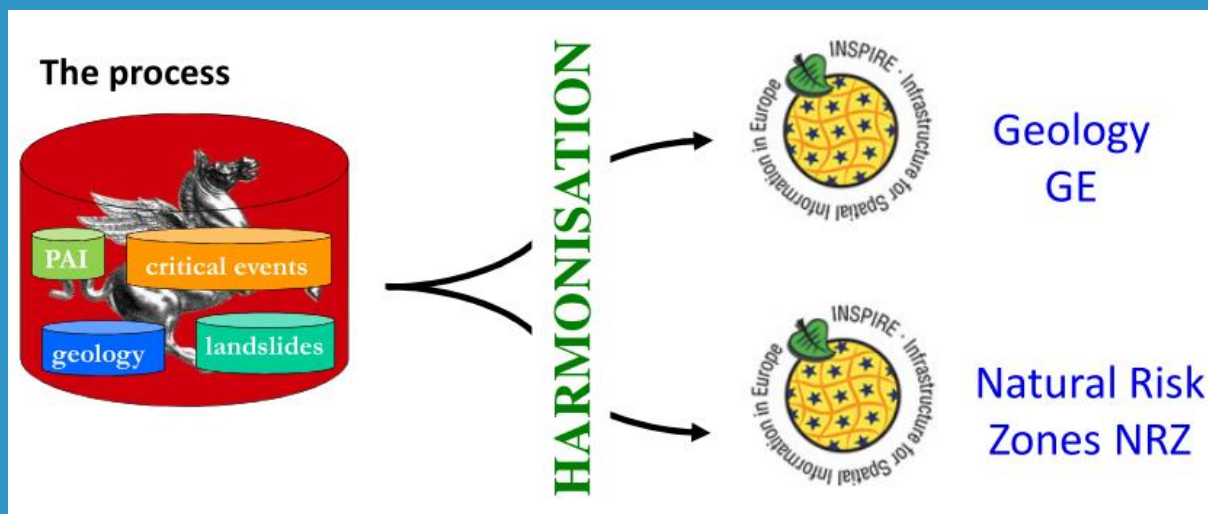
- Ingestion and preprocessing of
 - 3 Meteorological model 2 times a day (00 & 12 UTC)
 - WRF-ARW @ 12km over MED with ECMWF initdata
 - WRF-ARW @ 12km over MED with GFS initdata
 - WRF-ARW @ 3km over Italy with ECMWF initdata
 - GFS @ 50km from ECMWF
 - MeteoSat 2nd and 3rd generation data every 15 minutes
 - Radar data every 5 minutes
- Meteorological model
 - Acquire via FTP after each run
 - Transcode from Grib1 to a series of GeoTiff
 - Mosaic with support for time
 - Publish in GeoServer
 - Prepare metadata and register in GeoNetwork

LaMMa

- **life+IMAGINE project**
- evaluate and analyse landslides in a specific pilot area in Tuscany
- ~14,000 observed landslide events in ~19,000 hazard areas
- Output: INSPIRE compliant data sets for INSPIRE Download Services



- **Harmonisation toward INSPIRE GE and NRZ schemas**

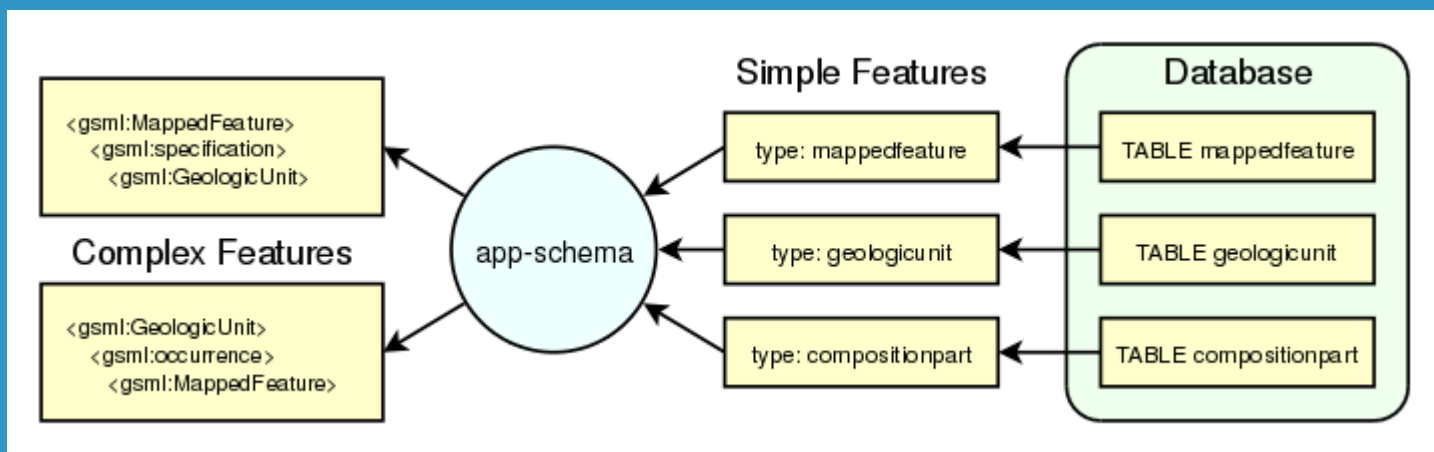


LaMMa

- **Vector datasets containing diverse kinds of data**
 - Soil Morphology
 - Land Cover classification
 - Landslides (activity, type of movement, event time, ...)
 - Record of critical events with ex-ante and ex-post survey information
 - Hydrogeological Management Plan (PAI map): defines and classifies hazard areas (levels from 1 to 4, 1= no hazard, 4 = very high hazard).
- **Maintained by different institutional bodies**
- **Different formats**
 - File: SpatiaLite 3.x / 4.x, SHP
 - Database: PostGIS
- **GOAL: harmonisation toward INSPIRE application schemas**

LaMMa

- **INSPIRE schemas are based on Complex Features**
 - **Simple features:** flat structure, single valued attributes, no relationships
 - **Complex features:** arbitrarily deep nested structure, multi-valued attributes, relationships between types
 - **App-Schema extension – complex features for GeoServer**

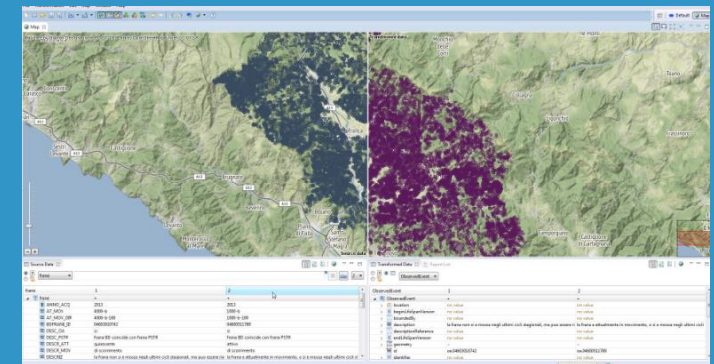
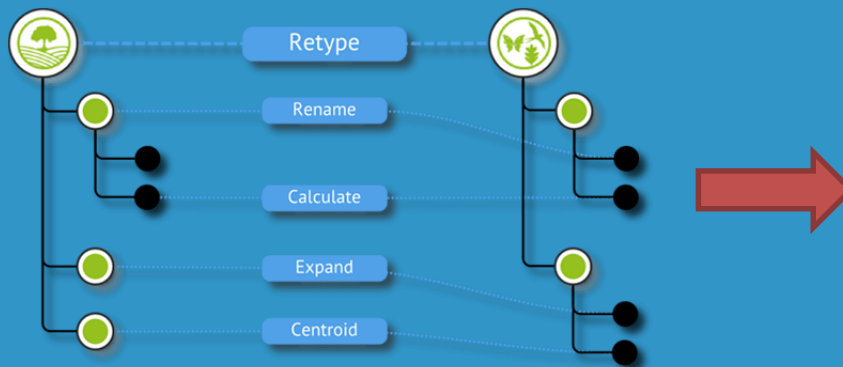


- **Strength – use simple features as Lego bricks to build complex ones**
- **Weakness – Manual configuration is tedious and error-prone**

LaMMa

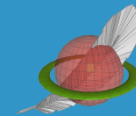
- **HALE - The HUMBOLDT Alignment Editor**

- visual, easy to use tool for defining and evaluating conceptual schema mappings
- ensure logical and semantic consistency
- transform geodata based on mappings



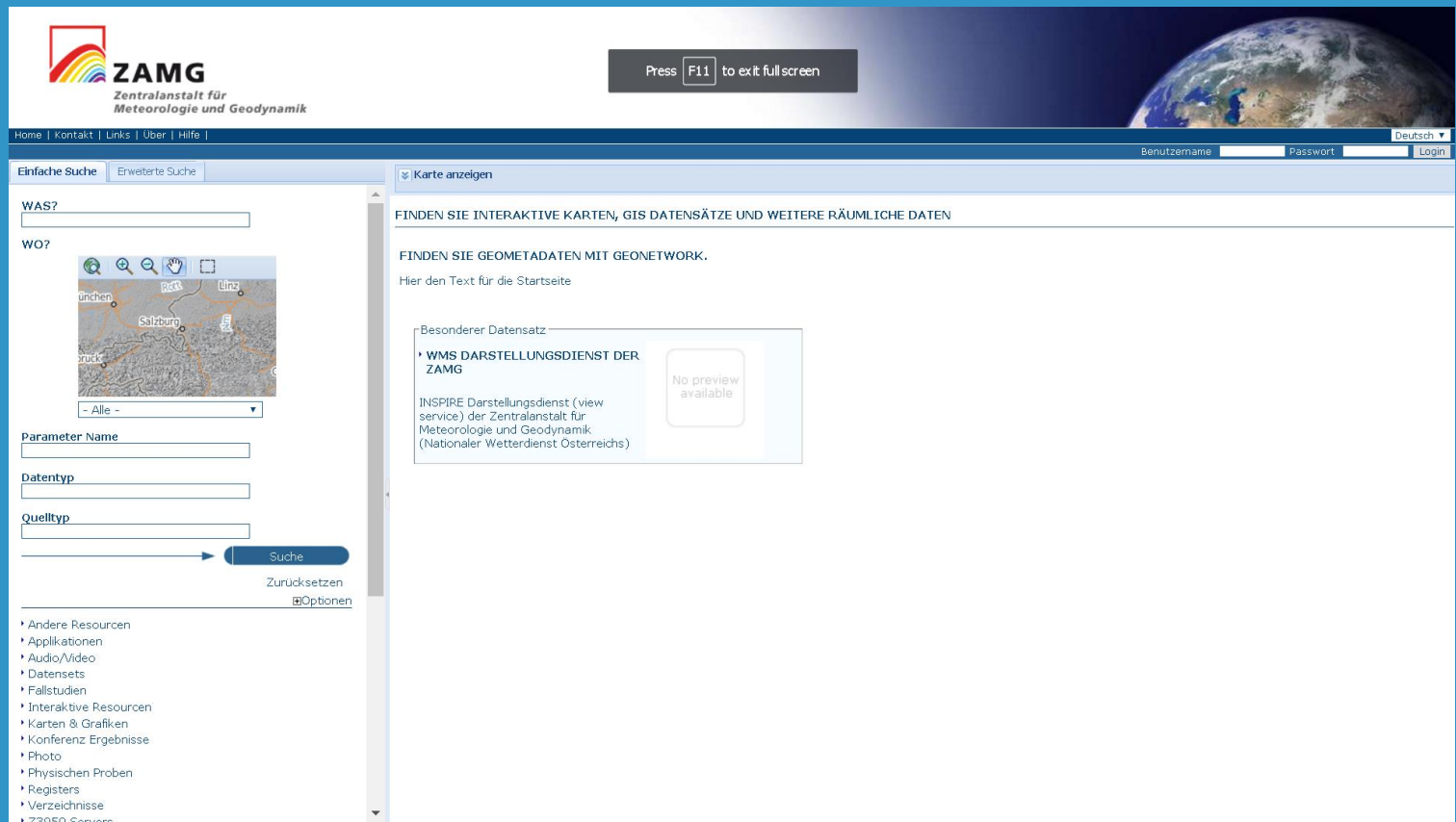
- **Extensions developed by GeoSolutions**

- Spatialite 3.x / 4.x support (since HALE 2.9.3)
- GeoServer App-Schema plug-in for HALE (since HALE 2.9.4)
 - Export alignment as GeoServer App-Schema mapping configuration
 - Direct creation of WFS services via GeoServer REST API



ZAMG

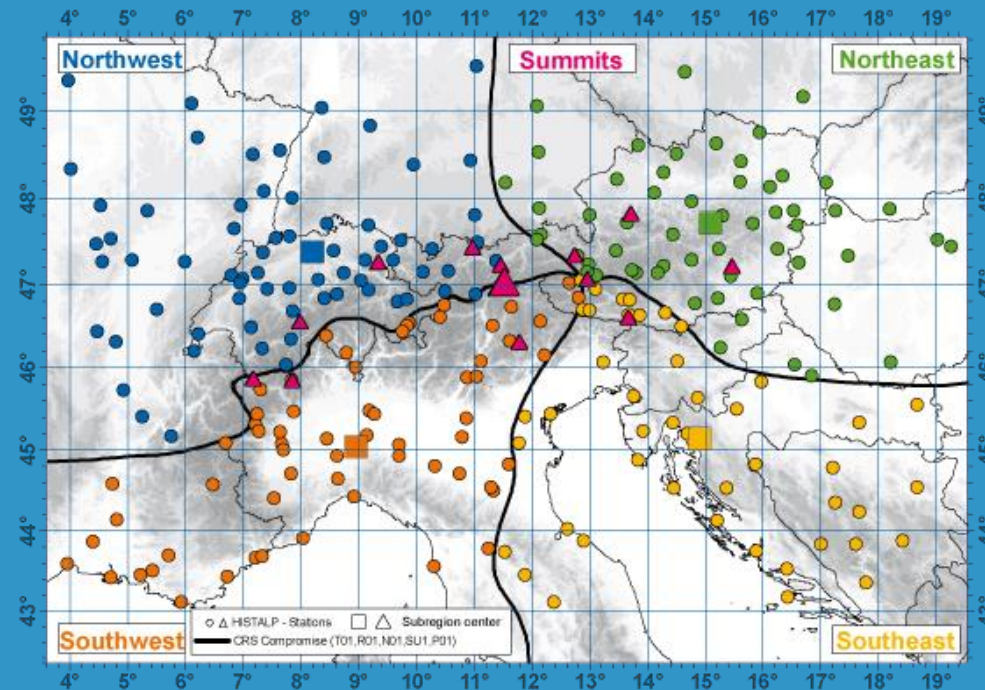
- INSPIRE Discovery with GeoNetwork CSW
- TEST-Prod Installation
- Fully Customised Metadata Editor



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ZAMG

- HISTALP – *Historical Instr. Climatological Time Series Of The Greater Alpine Region*

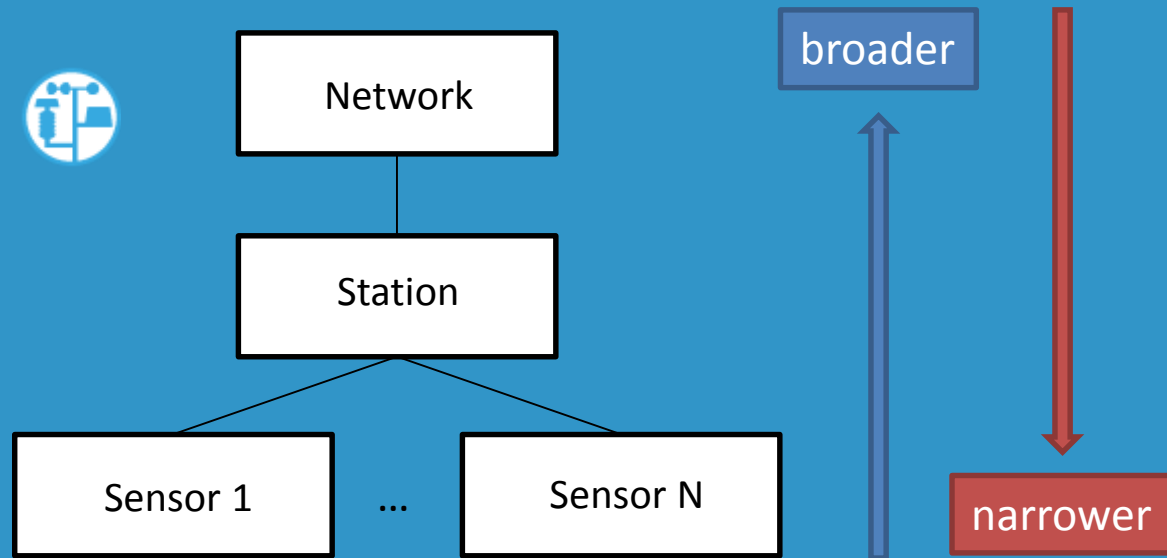


- >200 stations grouped in Coarse Resolution Subregions (CRS)
- database consisting of monthly homogenised temperature, pressure, precipitation, sunshine and cloudiness records
- longest temperature and air pressure series extend back to 1760!

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ZAMG

- GOAL: Expose HISTALP data as INSPIRE Download and View Services
 - Station and sensor data mapped to INSPIRE EF data specification – Environmental Monitoring Facilities

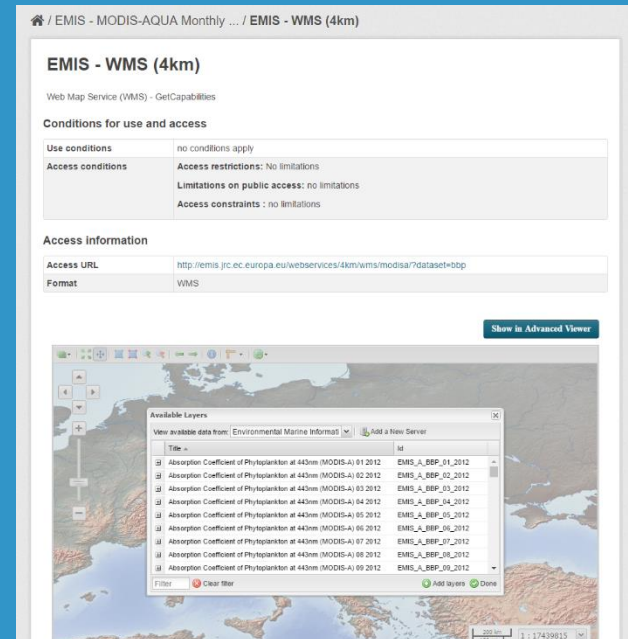


- Measurements data modeled according to INSPIRE Specialised Observations schema (based on O&M and SWE OGC specs)

ZAMG

- SQL views created in the source DB to make structure compatible with App-Schema
- HALE: mapping between DB tables and target INSPIRE schemas
- GeoServer App-Schema plug-in for HALE: creation of App-Schema DataStore in GeoServer to serve mapped data
- **INSPIRE Download Services → GeoServer WFS 2.0**
 - Pre-defined dataset download services via Stored Queries
 - Direct Access download services via regular WFS
- **INSPIRE View Services → GeoServer WMS 1.3.0**
- **Several enhancements committed to GeoServer:**
 - StoredQuery support for App-Schema layers backed by database (GEOS-7306)
 - Enhanced GML encoding capabilities for xs:anyType elements (GEOT-5251)
 - Usability improvements (GEOS-7226)

- CKAN Based OpenData Portal
 - Harvesting from various sources
 - Geospatial and alphanumeric data
- Integration with MapStore for Map Viewing



• New Products Visualization Platform

EUMETSAT
MONITORING WEATHER AND CLIMATE FROM SPACE

Time: 2016-03-16 14:45:00 Region: [dropdown] [slider]

METEOSAT IODC

- IMAGERY
- IR 11.5
- VIS 007
- WV 064

METEOSAT 0 DEGREE

- IMAGERY
- IR 10.8
- IR 03.9
- VIS 006
- WV 062

VISUALISED PRODUCTS

- CLAI
- CLM
- CTH
- FIRE
- MPE
- CLAHCDC
- CLALCDC
- CLAMCDC
- CLATCDC
- RGB COMPOSITES
- AIRMASS
- ASH
- CONVECTION
- DUST
- EVIEW
- FOG
- MICROPHYSICS
- NATURAL COLOR**
- SNOW

METOP

- IMAGERY
- IR 10.8
- VIS 0.6
- RGB COMPOSITES
- ORBITVIEW 124

NATURAL COLOUR RGB - MSG - 0 DEGREE

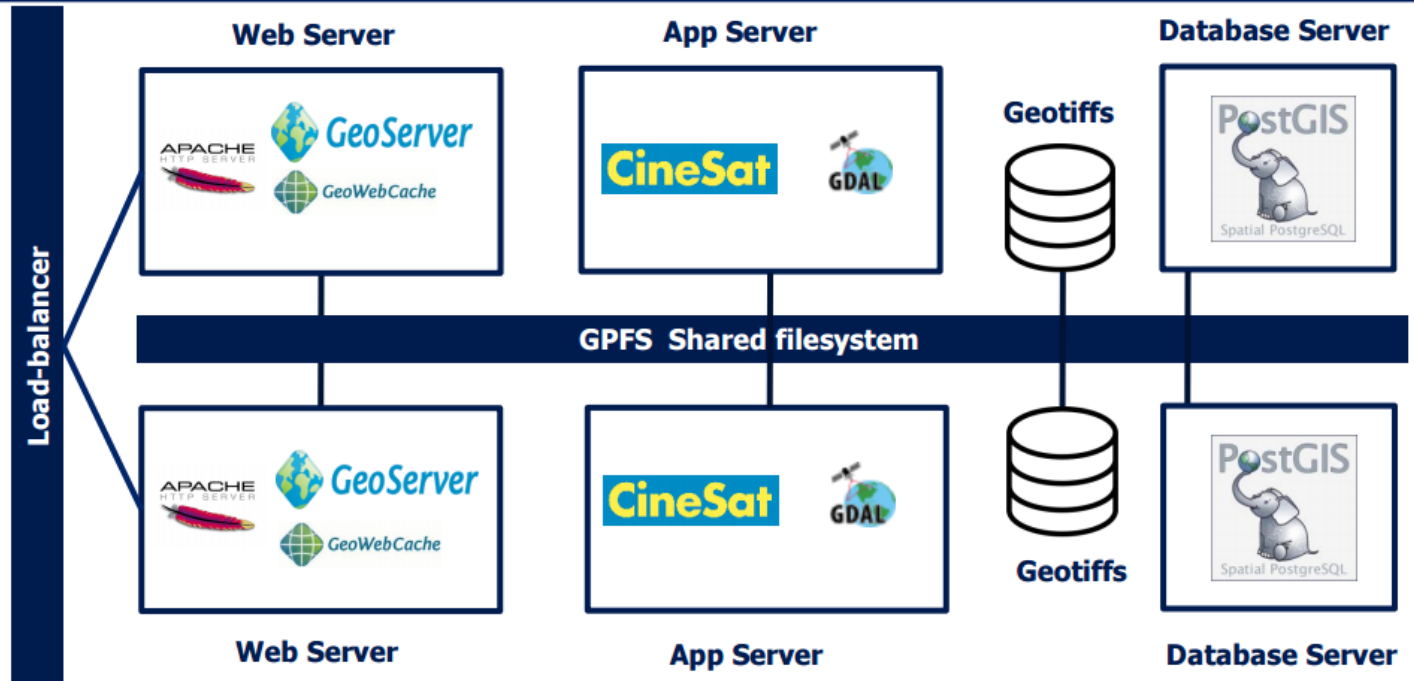
The Natural Colour RGB (Red, Green, Blue) makes use of three solar channels: NIR1.6, VIS0.8 and VIS0.6. In this colour scheme vegetation appears greenish because of its large reflectance in the VIS0.8 channel (the green beam) compared to the NIR1.6 (red beam) and VIS0.6 (blue beam) channels. Water clouds with small droplets have large reflectance at all three channels and hence appear whitish, while snow and ice clouds appears cyan because ice strongly absorbs in NIR1.6 (no red). Bare ground appears brown because of the larger reflectance in the NIR1.6 than at VIS0.6, and the ocean appears black because of the low reflectance in all three channels.

CONTACT US LEGAL INFORMATION

SCALE = 1 : 98M

EUMETSAT - EUMETVIEW

EUMETView Current Deployment



200 concurrent users and 800 concurrent requests
Keep up to 5 days of products

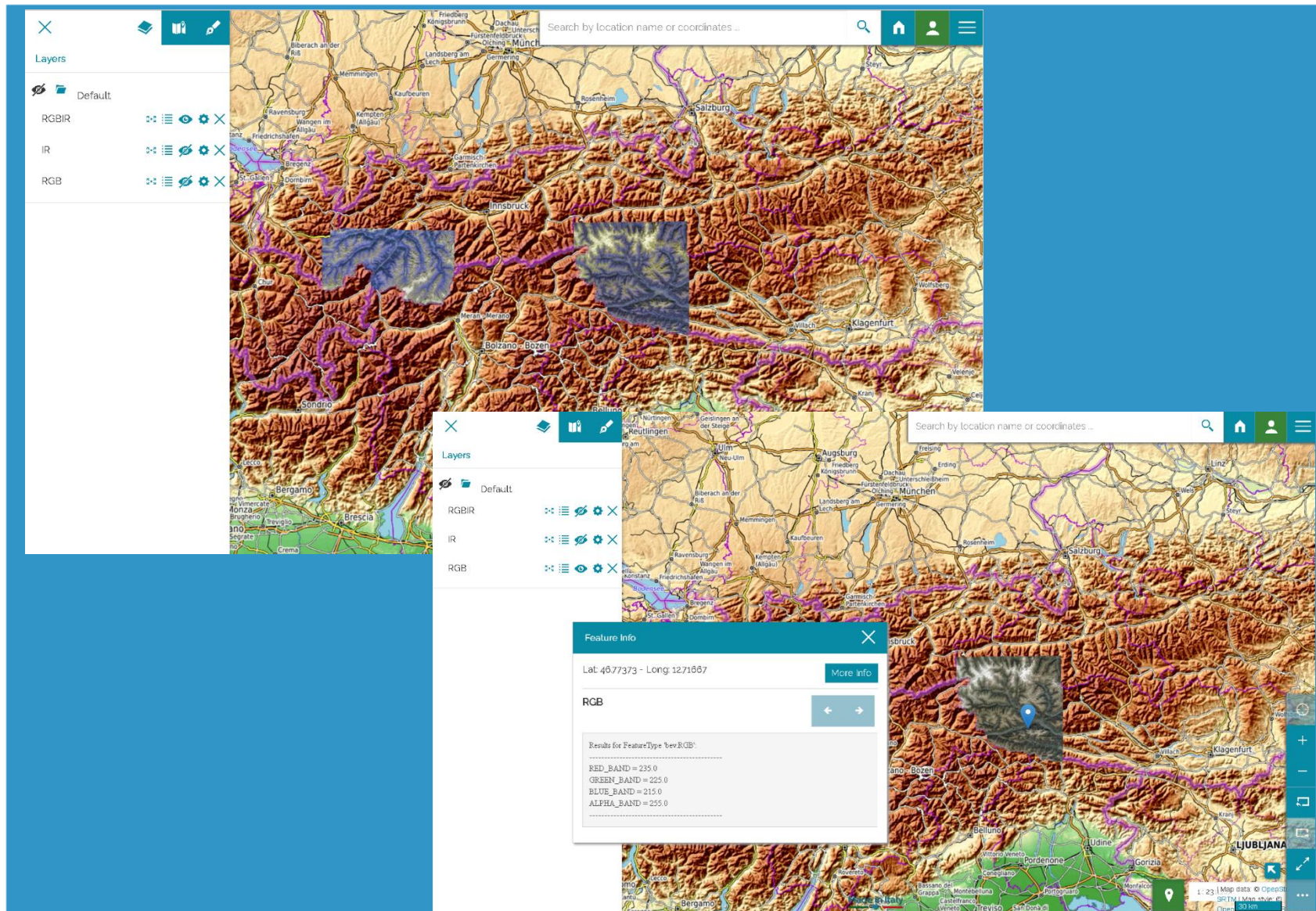
EUMETSAT - EUMETVIEW

- Ingestion and preprocessing of EUMETSAT data
- Rolling Data Archive
 - 1W of Data retained
 - Automatic ingestion and decommissioning of data
- GeoServer Cluster + Integrated GeoWebCache for caching








- **GeoNetwork 3 as the core catalog and CSW**
 - Implemented and released support for Spatial Data Services (SDS) metadata
 - Edit and Publish support
- **New dissemination infrastructure for aerial imagery ingestion and serving**
 - Python based preprocessing
 - GeoServer cluster for WMS and WMTS with INSPIRE compliancy
 - RGBIr data full support
 - Clip & Ship via WPS for internal users
 - TIME dimension enabled

Bundesamt für Eich- und Vermessungswesen (BEV)




CSI Piemonte - GeoPortal






[HOME](#) [IL GEOPORTALE](#) [SERVIZI](#) [BDTRE](#) [GEOPORTALI IN RETE](#) [ARCHIVIO NEWS](#) [LINK UTILI](#)




Ricerca

Ricerca i dati di interesse attraverso il catalogo metadati del GeoPortale Piemonte.



Visualizza

Visualizza i dati sul visualizzatore del Geoportale o sul tuo viewer attraverso i geo-servizi WMS.



Scarica

Scarica gli ultimi dati messi a disposizione.

News

20 Luglio 2016

Seminario sul Servizio di Posizionamento Satellitare SPIN GNSS: 14 settembre 2016

13 Aprile 2016

Rilasciata l'edizione 2016 della BDTRE

18 Dicembre 2015

Rilasciata nuova versione del Geoportale

9 Dicembre 2015

Aviato il Servizio di Posizionamento Interregionale GNSS Piemonte-Lombardia (SPIN GNSS)

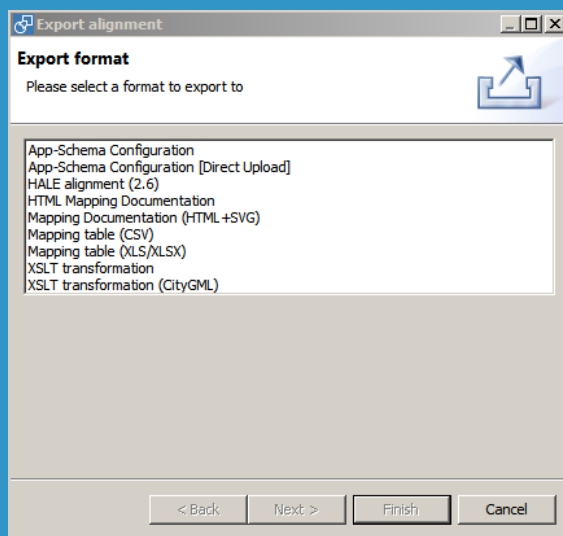
[Archivio news](#)

CSI Piemonte - GeoPortal

- <http://www.geoportale.piemonte.it/cms/>
- GeoNetwork 2.10 as the core catalog and CSW
- OpenLayers based mapping engine
- Harvest metadata from other local authorities
- RNDT Metadata Profile
 - Italian Standard catalog interface to the INSPIRE GeoPortal
 - Redefines the use of internal metadata codes to create a hierarchical dependency among metadata records
 - Schema Plugin

CSI Piemonte - SIRA

- Visually publish complex models
 - Publish your models and mappings to GeoServer
 - Use HALE Export to App-Schema to Configure a new Store
 - Publish your layers as Complex Features



<< < | > >> Results 1 to 9 (out of 9 items) Search

<input type="checkbox"/>	Type	Workspace	Store	Layer Name	Enabled?	Native SRS
<input type="checkbox"/>		sira	sipra	Sede	✓	EPSG:32632
<input type="checkbox"/>		sira	sipra	AutorizzazioneUnicaAmbientale	✓	EPSG:32632
<input type="checkbox"/>		sira	sira_postgis	province	✓	EPSG:404000
<input type="checkbox"/>		sira	sira_postgis	tipo_rifiuto	✓	EPSG:404000
<input type="checkbox"/>		sira	sira_postgis	sipra_r_istanza_sede	✓	EPSG:404000
<input type="checkbox"/>		sira	sira_postgis	comuni	✓	EPSG:32632
<input type="checkbox"/>		sira	sira_postgis	tipo_recupero	✓	EPSG:404000
<input type="checkbox"/>		sira	sira_postgis	sipra_d_attivita	✓	EPSG:404000
<input type="checkbox"/>		sira	sira_postgis	operaz_recupero	✓	EPSG:404000

<< < | > >> Results 1 to 9 (out of 9 items)

<input type="checkbox"/>		sira	sipra	Application Schema DataAccess	✓
<input type="checkbox"/>		sira	sira_postgis	PostGIS	✓

-

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CSI Piemonte - SIRA

- Visually publish complex models
 - Build a WebGIS UI on your Complex Features through configuration
 - Query Builder on Feature attributes (also nested ones)
 - Query Results table
 - Show Cards using JSX templates from a Complex Feature tree

Filtra Elementi

OGGETTI
AUA - IMPIANTI DI RECUPERO ENERGIA E MATERIA

FILTRO ATTRIBUTI

Soddisfa seguenti condizioni:

Comune TORINO

Aggiungi Condizione Aggiungi Gruppo

FILTRO SPAZIALE

Risultati - 813

	Codice SIRA	Codice fiscale ...	Comune	Autorizzazioni ...
	1411367	03559660372	TORINO	Recupero di rifiut...
	1410857	05656860011	TORINO	Recupero di rifiut...
	1410817			
	1439477			
	1438967			
	1438927			
	146417			
	1467587			
	1467077			
	1467037			

AUA - IMPIANTI RECUPERO ENERGIA E MATERIA
N° 127/2013 del 2014-08-17Z

DATI GENERALI - Provvedimento

Codice Fiscale (PIVA) 03559660372
di provvedimento Autorizzazione Unica Ambientale (A.U.A.) Recupero di rifiuti non pericolosi
Autorizzazione 127/2013
Data autorizzazione 2014-08-17Z
Tipologie impiantistiche ALTRA TIPOLOGIA
Quantità inviata al recupero totale (t/a) 52900
Capacità massima stoccabile (t) non specificato
Capacità massima stoccabile (m3) non specificato
Note non specificato

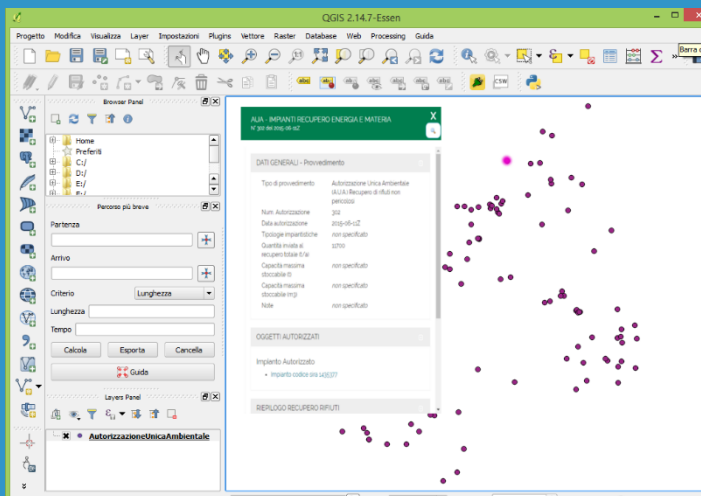
OGGETTI AUTORIZZATI

RIEPILOGO RECUPERO RIFIUTI

Numero sch...	Tipo recupero	Tipologia di ri...
---------------	---------------	--------------------

CSI Piemonte - SIRA

- Visually publish complex models
 - Integrate your complex features in QGIS with a proper plugin
 - Integrate a search / detail UI in QGIS with a custom plugin (used to include the WebGIS UI and establish two way communication)



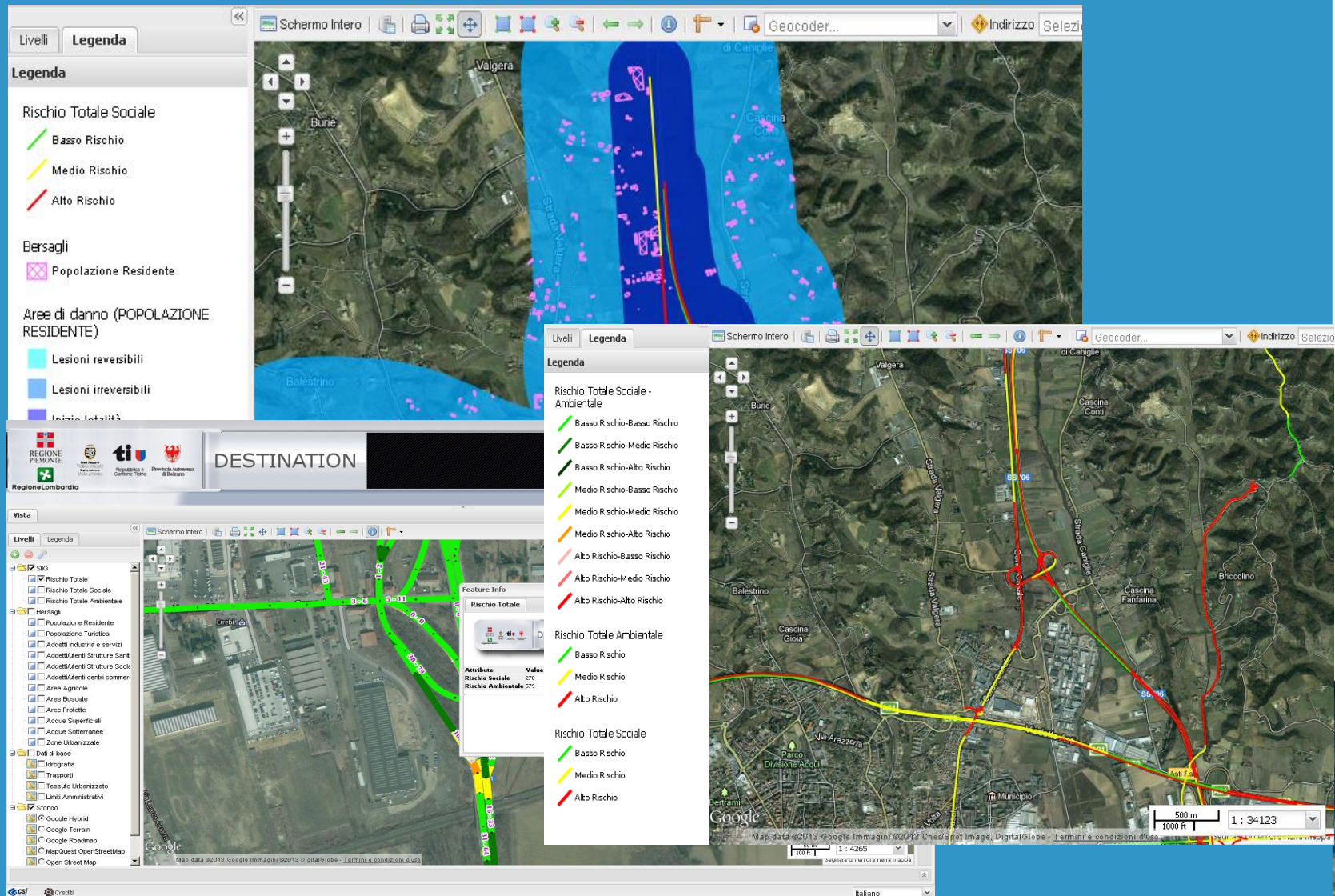
- Next Steps
 - Build a Visual UI to create WebGIS configurations
- Inspire support
 - You can use Inspire Schemas for your models
 - And publish them to GeoServer as Complex Features (needed by many Inspire schemas)

Alto Adige/Sudtirolo OpenDATA Portal

- CKAN + GeoNetwork
- Harvest multilingual (IT/DE) metadata from OGC CSW
- Link existing resources contained in OGC CSW Metadata records (i.e. maps, data, etc..)
- Integration with the existing security subsystem based on Shibboleth and LDAP
- Customized L&F
- <http://dati.retecivica.bz.it/it/>



Destination Project



Destination Project

- Mitigation of risk associated to trucks carrying dangerous good
 - Simulation of
 - Assessment
- MapStore front-end
- GeoServer back-end
 - Specific rendering transformation for on-the-fly rendering of simulations (no execute-store-visualize)
 - HA Cluster
- Custom ingestion & harmonization engine
 - Data coming from different regions (Italy) needs harmonization as well as optimizations



Field Base Asset Management Made Simple!

Templates | My Account | User Manager | Mission Configuration | Photos | USER LOGGED: admin | Logout | English

Map Manager | Map Viewer - Segnalazioni Rifiuti Abbandonati

Full Screen | Notice Details | Zoom To Feature | Edit | Delete

CODICE	GRAVITA	RISCHIO	STATUS
IX-2A	elevata	alto	Aperto
IV-6B	media	medio	Chiuso
II-1A	elevata	alto	Chiuso
VI-2A	media	medio	Sopraluogo as...
V-1A	elevata	alto	Chiuso
tester	area pulita	Alto	Sopraluogo as...
VI-6A	area pulita	Alto	Chiusura eseg...
IoT123	area pulita	basso	Aperto
cod234	area pulita	basso	Chiuso
tardi	elevata	basso	Chiuso
II-2A	media	basso	Chiuso
testploadddd	area pulita	basso	Aperto
vallo	area pulita	basso	
IV-2D	area pulita	ALTO	
IV-3D	area pulita	Basso	Sopraluogo pr...
Test	bassa	elevato	Chiuso
ultima	elevata	alto	
VI-5B	media	medio	Chiusura eseg...
VI-5A	scarsa	basso	Chiuso
VI-6A	scarsa	basso	
VIL2C	area pulita		

Ricerca Segnalazioni

☒ Region Of Interest

Selection

Selection:

☐ Query by attributes

Reset | Query

Tiles Courtesy of MapQuest

1 km | 1 mi | 1 : 136494 | km

POWERED BY GeoSolutions | Credits

English

GeoCollect

is proudly

made in italy

by



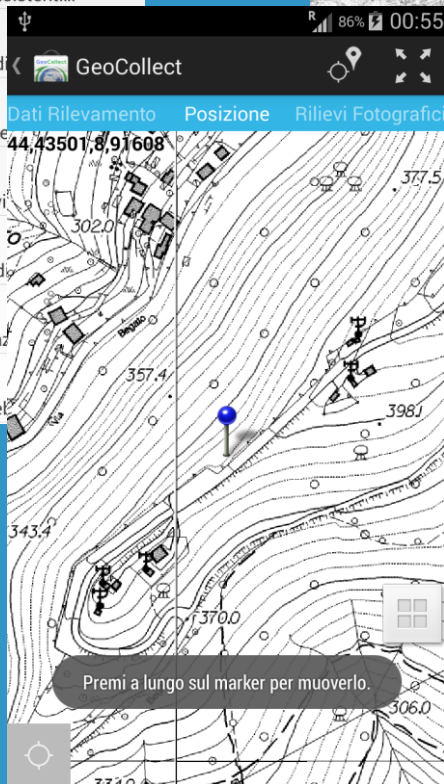
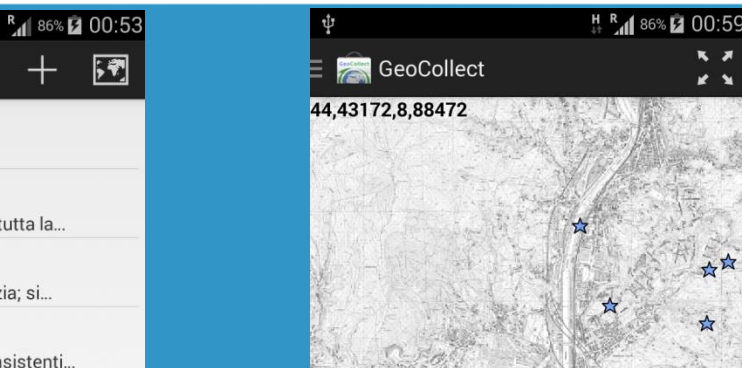
GeoSolutions

your one-stop-shop for geospatial open source software

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- GeoCollect
- ★ VI-1A
L'area permane pulita.
 - ★ VI-5B
Incremento della vigilanza su tutta la...
 - ★ VI-5A
Previsto un intervento do pulizia; si...
 - ★ VII-1A
se si ravvisano abbandoni consistenti...
 - ★ VII-1C
inserimento di segnaletica di d
 - ★ VII-1B
Area difficilmente raggiungibile
 - ★ VII-6A
opportuno l'incremento della v
 - ★ VII-2A
Inserimento di segnaletica di d
 - ★ VII-2C
eventuale chiusura del 4Â° piazz
 - ★ VII-2B
Strada chiusa con sbarra, sare



GeoCollect

Scheda Rilevatore

Data Scheda
12/Mar/2015

Data aggiornamento scheda
12/Mar/2015

Original Mission ID
80

GeoCollect

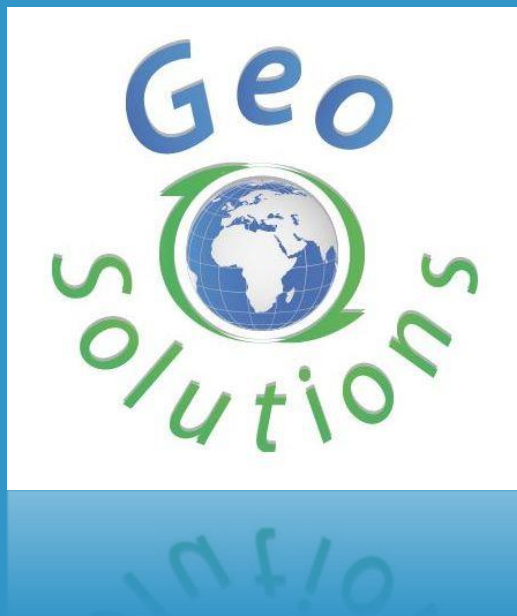
- ★ I-1B
inserimento di un'isola ecologica. ✓
- ★ I-1A
Incremento della vigilanza sulla macroarea...
- ★ I-1D
incremento della vigilanza

Caricamento dati di tipo Sopralluogo

Caricamento sopralluogo:
I-1B

Annulla OK

That's all!



Questions?

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