

Costruzione di 3 applicazioni webGIS complete

Software backend:

- 1) GeoServer
- 2) NodeJS, PostgreSQL/PostGIS, ogr2ogr
- 3) QGIS, mod_tile e renderd

Input backend:

- <http://webgis.crs4.it/resources/assets.zip>

Macchina virtuale VirtualBox

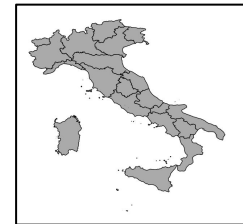
- **GNU/Linux Ubuntu 21.04**
 - Username: codemotion
 - Password: codemotion
- **Database PostgreSQL**
 - Username: codemotion
 - Password: codemotion

<http://webgis.crs4.it/>

Esposizione di uno shapefile e un geoTIFF tramite GeoServer

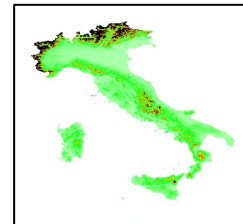
ShapeFile: assets/demo1/regioni.shp

- Regioni d'Italia
- Tipo poligono
- Fonte: ISTAT <https://www.istat.it/it/archivio/222527>



GeoTIFF: assets/demo1/dem.tiff

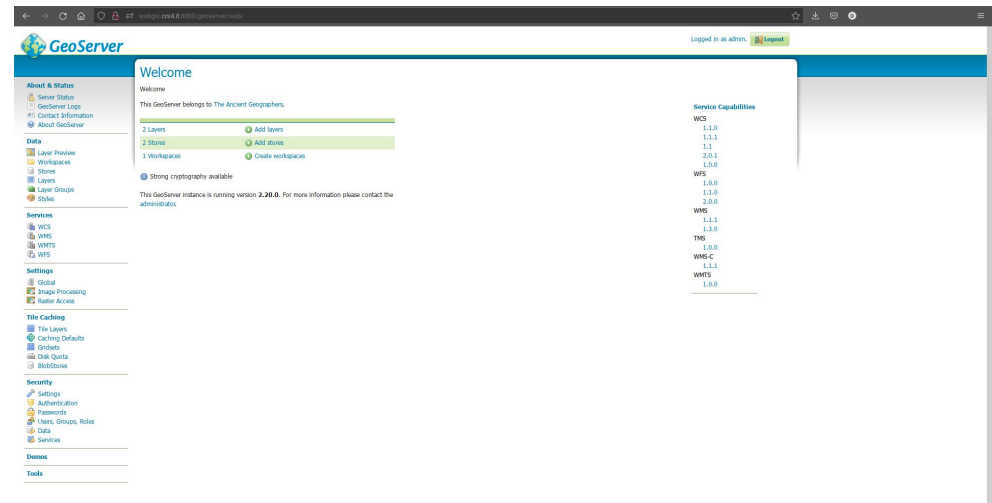
- Digital Elevation Model dell'Italia
- Fonte: INGV <http://tinitaly.pi.ingv.it>



GeoServer Server opensource per la condivisione di dati spaziali

URL: <http://geoserver.org/>

- Protocolli OGC (WMS e WFS)
- Supporto dei principali data-source
- Scritto in Java
- Interfaccia da browser



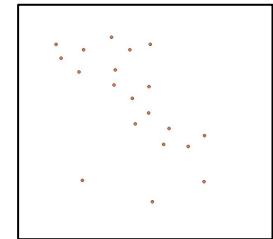
Macchina virtuale

- URL: <http://localhost:8080/geoserver/>
- Username: admin
- Password: geoserver

Importazione di uno shapefile in un database PostgreSQL e esposizione delle feature tramite server nodeJS

ShapeFile: assets/demo2/capoluoghi.shp

- Tipo punto
- Fonte: ESRI <https://hub.arcgis.com/datasets/esri::world-cities>
- SR: EPSG:4326



Template nodeJS: assets/demo2/nodejs/

Macchina virtuale

- Path: /home/codemotion/node/backend
- Restart: pm2 restart backend
- URL: <http://localhost:3001/data/capoluoghi>

Preparazione database

- Creazione del database da shell

```
createdb -U codemotion -E UTF8 capoluoghi
```

- Accesso al database

```
psql -U codemotion -d capoluoghi
```

- Creazione delle estensioni

```
CREATE EXTENSION postgis;
```

- Uscita

```
\q
```

- Importazione shapefile

```
ogr2ogr -f "PostgreSQL" PG:"host=localhost  
dbname=capoluoghi user=codemotion  
password=codemotion port=5432"  
~/assets/demo/demo2/capoluoghi.shp
```

Preparazione backend

- Creazione del pool di connessione al database

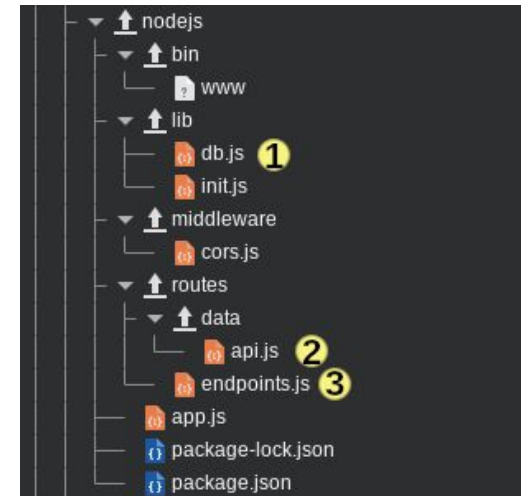
1 **lib/db.js**

- Creazione dell'API per l'estrazione dei dati

2 **routes/data/api.js**

- Esposizione dell'API

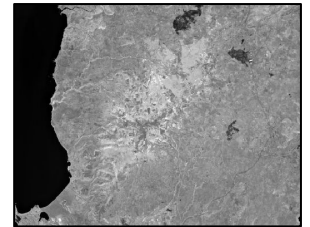
3 **routes/endpoints.js**



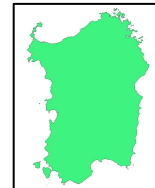
Esposizione di due raster satellitari tramite mod_tile e integrazione con dati OSM

Raster: assets/demo3/raster/T32TMK_20210722T101031_B08_10m.jp2
assets/demo4/raster/T32TMK_20210730T101559_B08_10m.jp2

- Immagini NIR del 22/07 e 30/07 nel Montiferru
- Fonte: Sentinel 2



Maschera: assets/demo3/maschera/sardegna.shp



Configurazione tilesever: assets/demo3/OSM

- **mod_tile**: modulo Apache per l'esposizione delle tile delle mappe
- **renderd**: demone per la renderizzazione delle tile tramite il toolbox mapnik

Set-up: <https://switch2osm.org/serving-tiles/>

OSM/montiferru.pbf (<https://download.geofabrik.de/europe/italy.html>)

```
osm2pgsql --create --slim -G --hstore -H localhost -U codemotion  
-P 5432 -d montiferru --tag-transform-script  
./openstreetmap-carto.lua -C 2500 --number-processes 1 --style  
./openstreetmap-carto.style montiferru.pbf -W
```

Macchina virtuale

- Configurazione renderd: /usr/local/etc/renderd.conf
- Preview: <http://localhost/sample-pre.html> | <http://localhost/sample-post.html>
- Risorse rendering: /home/codemotion/assets/demo/demo3/OSM/out/



Programma europeo finalizzato alla creazione di una capacità europea di osservazione della Terra.

<https://www.copernicus.eu/it>

Missioni Sentinel (2 satelliti per ciascuna)

- Sentinel 1: osservazioni radar di terra e mare
- Sentinel 2: immagini ottiche ad alta risoluzione
- Sentinel 3: monitoraggio globale di oceani e terra
- Sentinel 4: composizione atmosferica (2023 e 2030)
- Sentinel 5p: precursore della missione 5, composizione atmosferica
- Sentinel 5: composizione atmosferica complementare al Sentinel 4 (2021 e 2022).
- Sentinel 6: rilievi altimetrici (2020 e 2025)




Training

<https://rus-copernicus.eu>




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2021/07/20

» Ingestion period

☐ Mission: Sentinel-1

Satellite Platform

Polarisation

Relative Orbit Number (from 1 to 175)

Product Type

Sensor Mode

☒ Mission: Sentinel-2

Satellite Platform

Relative Orbit Number (from 1 to 143)

Product Type

Cloud Cover % (e.g.[0 TO 9.4])

☐ Mission: Sentinel-3

Satellite Platform

Timeliness

Product Level

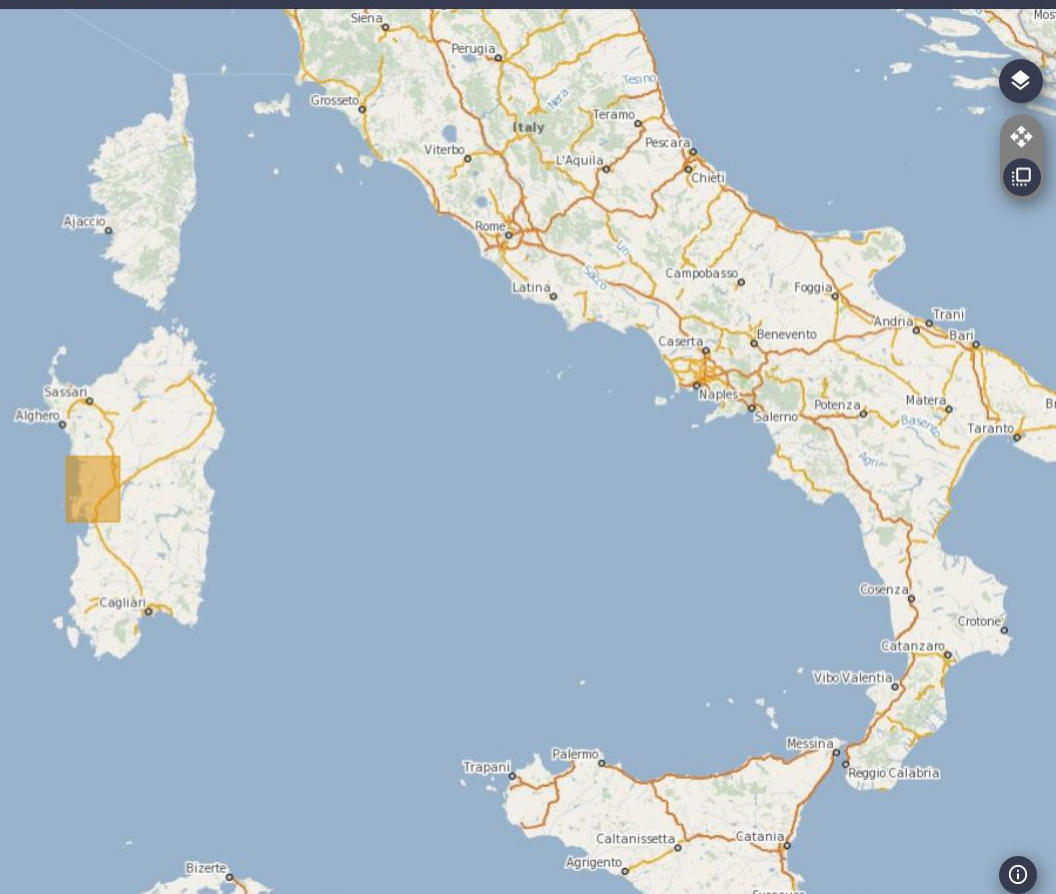
Product Type

Instrument


Relative Orbit Start [1-385]

Lat Lon: 37.08, 17.60




DD





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
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