Data Interoperability Examples

deda.next

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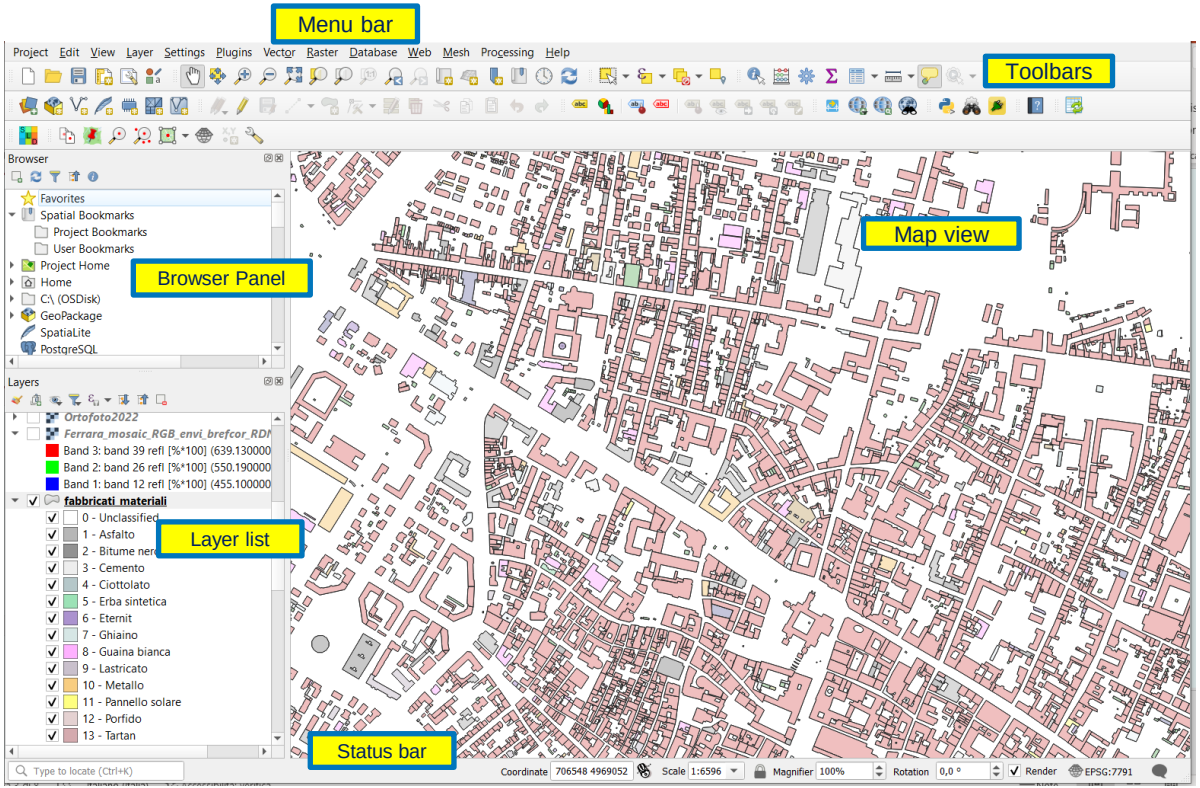
QGIS

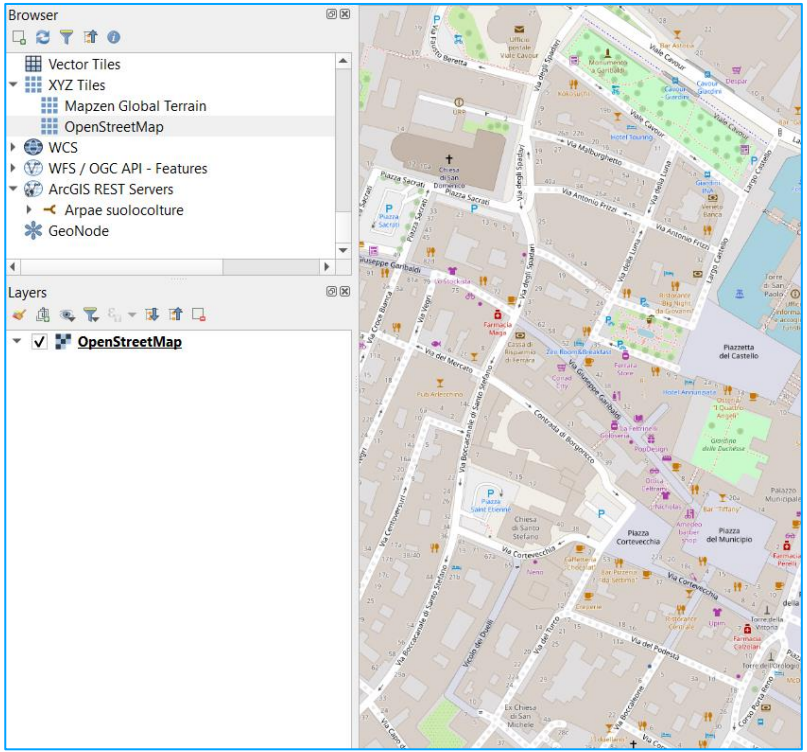
QGIS is a free and open-source desktop geographic information system (GIS) . It allows to create, edit, visualize, analyze and publish geospatial information on Windows, macOS, Linux, BSD.

- Most recent release is v. 3.30 (Hertogenbosch)
- Most recent **long term release is v. 3.28 (Firenze)**
- Maintained by volunteers developers
- Has a lot of plugins (1800+): https://plugins.qgis.org/
- Website: https://www.qgis.org/en/site/

QGIS overview of the interface



QGIS Add a basemap



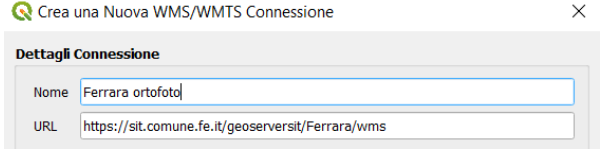
- In the Browser panel, scroll down to find XYZ Tiles
- Click the down arrow to reveal OpenStreetMap
  - Click and drag OpenStreetMap down to the bottom Layers list

Web Mapping Services

A **Web Mapping Service (WMS)** is a service hosted on a remote server. Similar to a website, you can access it as long as you have a connection to the server. Using QGIS, you can load a WMS directly into your existing map.

To add WMS layers:

- click on the **Open the Data Source Manage***r* tool  and enable the WMS/WMTS tab
  - or from the menu Layer > Add Layer > Add WMS/WMTS Layers
- create a new connection giving a name and a URL



WMS examples

- Emilia-Romagna Region Orthophoto AGEA 2020: https://servizigis.regione.emilia-romagna.it/wms/agea2020_rgb?request=GetCapabilities&service=WMS

- Ferrara Orthophoto 2022 urban area: https://sit.comune.fe.it/geoserversit/Ferrara/Ortofoto2022/wms?service=WMS&version=1.3.0&request=GetCapabilities

- Ferrara buildings urban area: https://sit.comune.fe.it/geoserverckan/Ferrara/Fabbricati_USAGE_preview/wms?service=WMS&version=1.3.0&request=GetCapabilities

- carta storica AiPO: http://geomap.reteunitaria.piemonte.it/ws/siti/aipo-01/sitiwms/wms_aipo_cartografiastorica?service=WMS&version=1.3.0&request=GetCapabilities

Web Feature Services

The Open Geospatial Consortium **Web Feature Service (WFS)** provides an interface allowing requests for geographical features across the web
Whereas the **WMS returns an image**, the **WFS returns a Geography Markup Language (GML)**, an XML dialect which can be used to model geographic features.

https://labora.dedagroup.it/geoserver/EDIAQI-Ferrara/ows?request=GetCapabilities&service=WFS

WFS connect from Excel

Form excel :

- Go to Data > Get External Data > From Web
- In the address bar, write the web address of a WFS with parameter outputformat=csv
- Press the Load button.

https://sit.comune.fe.it/geoserverckan/Ferrara/Ciclabili_2021_preview/wfs?service=WFS&version=1.3.0&request=GetFeature&typename=Ferrara:Ciclabili_2021_preview&outputformat=csv

FID	gid	id	note_geom	layer	segnaletic	note_segna
Ciclabili_2021_preview.48	48	394		percorsi esistenti	no	
Ciclabili_2021_preview.367	367	884		percorsi esistenti	no	
Ciclabili_2021_preview.916	916	1076		percorsi esistenti	solo verticale	
Ciclabili_2021_preview.919	919	1347		percorsi esistenti	no	
Ciclabili_2021_preview.951	951	330		percorsi esistenti	verticale e orizzontale	
Ciclabili_2021_preview.1010	1010	68		percorsi esistenti	solo verticale	
Ciclabili_2021_preview.1048	1048	414		percorsi esistenti	solo verticale	
Ciclabili_2021_preview.828	828	1027		percorsi esistenti	solo verticale	
Ciclabili_2021_preview.12	12	278		percorsi di progetto pums		
Ciclabili_2021_preview.51	51	532		percorsi di progetto pums		
Ciclabili_2021_preview.110	110	552	[interrotto e p	percorsi di progetto pums		
Ciclabili_2021_preview.641	641	72	[interrotto ed	percorsi esistenti	solo verticale	limite 30 + dosso
Ciclabili_2021_preview.939	939	976	[interrotto ed	percorsi esistenti	no	
Ciclabili_2021_preview.457	457	848		percorsi esistenti	no	
Ciclabili_2021_preview.533	533	856		percorsi esistenti	no	
Ciclabili_2021_preview.340	340	487		percorsi di progetto pums		

WFS Filtering and the Common Query Language (CQL)

CQL (Common Query Language) is a query language created by the OGC. Unlike the XML-based Filter Encoding language, CQL is written using a familiar text-based syntax. It is thus more readable and better-suited for manual authoring.

In the WFS request add the parameter **cql_filter:** &cql_filter=layer='percorsi esistenti'

- **no filter** (and output format json):
  https://sit.comune.fe.it/geoserverckan/Ferrara/Ciclabili_2021_preview/wfs?service=WFS&version=1.3.0&request=GetFeature&typename=Ferrara:Ciclabili_2021_preview&outputFormat=application/json
    - totalFeatures 1051

- **with filter** (and output format json)
  https://sit.comune.fe.it/geoserverckan/Ferrara/Ciclabili_2021_preview/wfs?service=WFS&version=1.3.0&request=GetFeature&typename=Ferrara:Ciclabili_2021_preview&outputFormat=application/json&cql_filter=layer=%27percorsi%20esistenti%27
    - totalFeatures 861

EDIAQI PilotBuildingsFerrara

Layer preview:
http://labora.dedagroup.it/geoserver/EDIAQI-Ferrara/wms?service=WMS&version=1.1.0&request=GetMap&layers=EDIAQI-Ferrara:PilotBuildingsFerrara&bbox=704366.66443,4967078.67264,709941.13115,4970086.80497&width=768&height=414&srs=EPSG:7791&styles=&format=application/openlayers

WMS GetCapabilities (to add layer to QGIS o from browser):
https://labora.dedagroup.it/geoserver/EDIAQI-Ferrara/ows?request=GetCapabilities&service=WMS

WFS GetCapabilities (to add layer to QGIS o from browser):
https://labora.dedagroup.it/geoserver/EDIAQI-Ferrara/ows?request=GetCapabilities&service=WFS

WFS GetFeature:

- **output format CSV to connect from Excel/Google Sheets** (&outputformat=csv)

https://labora.dedagroup.it/geoserver/EDIAQI-Ferrara/wfs?service=WFS&version=1.3.0&request=GetFeature&typename=EDIAQI-Ferrara:PilotBuildingsFerrara&outputformat=csv

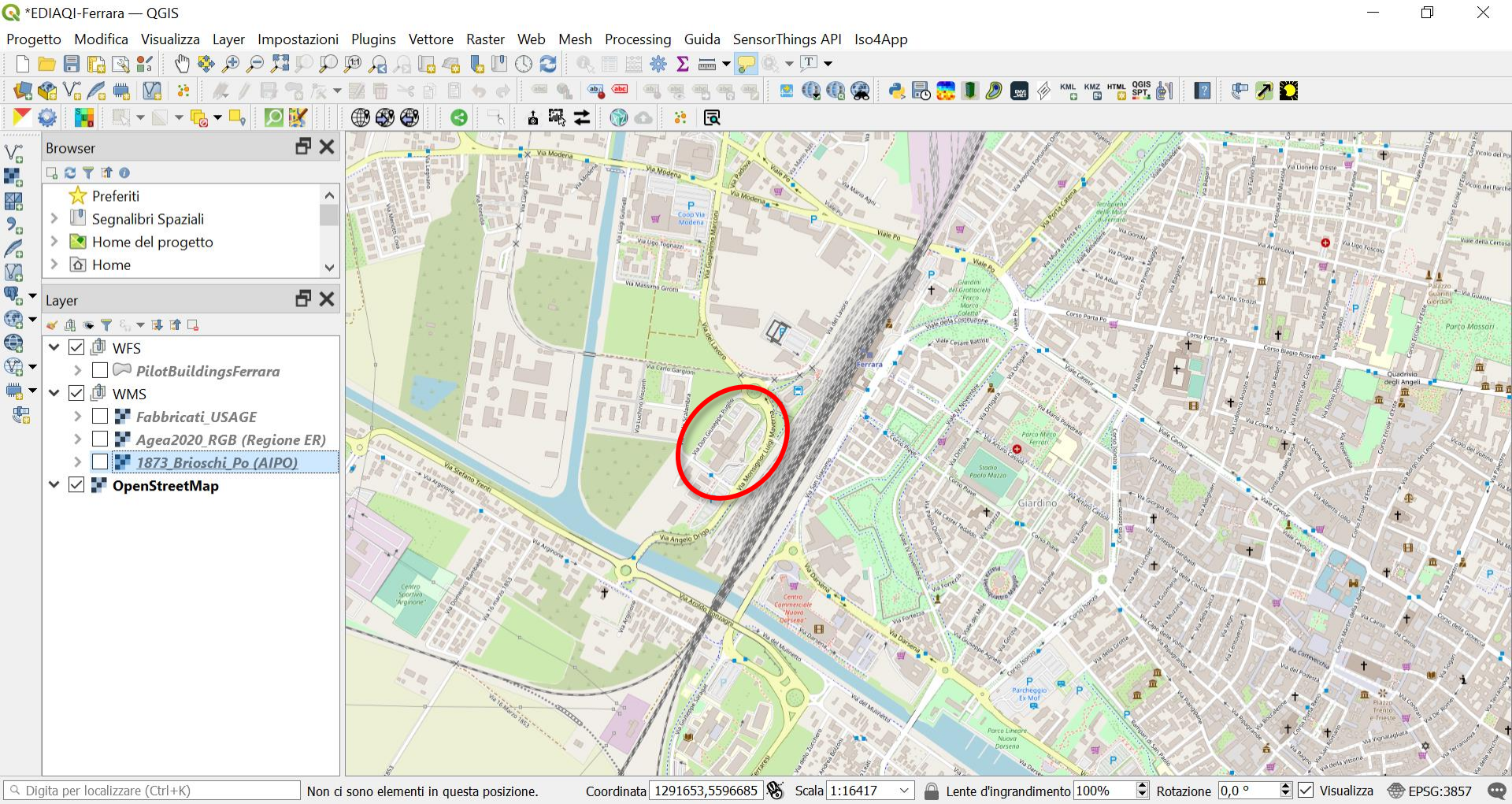
- **output format json (**&outputFormat=application/json)

https://labora.dedagroup.it/geoserver/EDIAQI-Ferrara/wfs?service=WFS&version=1.3.0&request=GetFeature&typename=EDIAQI-Ferrara:PilotBuildingsFerrara&outputFormat=application/json

- **output format shapefile (**&outputformat=shape-zip)

https://labora.dedagroup.it/geoserver/EDIAQI-Ferrara/wfs?service=WFS&version=1.3.0&request=GetFeature&typename=EDIAQI-Ferrara:PilotBuildingsFerrara&outputformat=shape-zip

- **filter** (&cql_filter=Type='School')
- https://labora.dedagroup.it/geoserver/EDIAQI-Ferrara/wfs?service=WFS&version=1.3.0&request=GetFeature&typename=EDIAQI-Ferrara:PilotBuildingsFerrara&outputFormat=application/json&cql_filter=Type=%27School%27



QGIS + https://api.openstreetmap.org/

*EDIAQI-Ferrara — QGIS

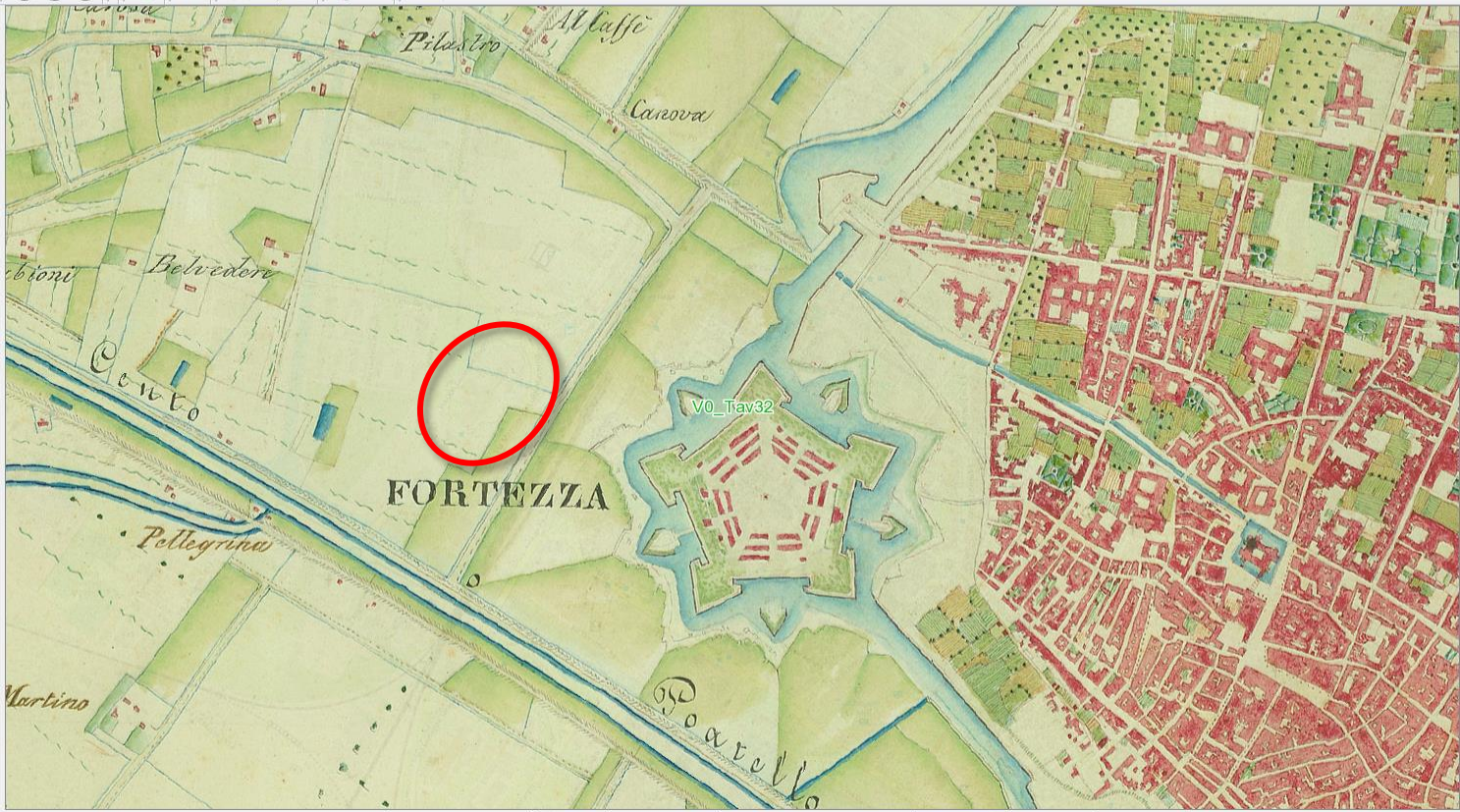
Progetto Modifica Visualizza Layer Impostazioni Plugins Vettore Raster Web Mesh Processing Guida SensorThings API Iso4App

Browser

Preferiti
Segnalibri Spaziali
Home del progetto
Home

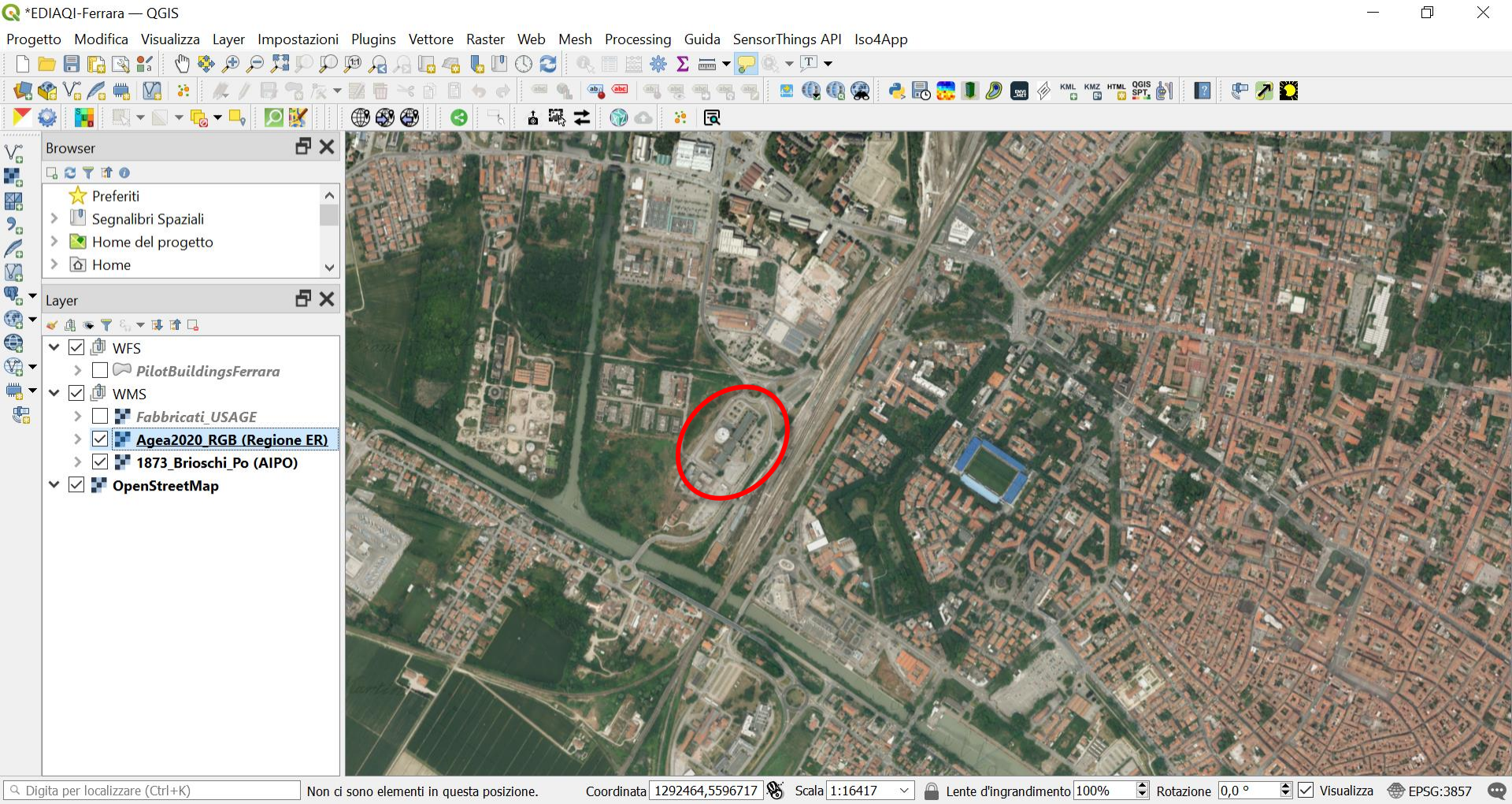
Layer

WFS
PilotBuildingsFerrara
WMS
Fabbricati_USAGE
Agea2020_RGB (Regione ER)
1873_Brioschi_Po (AIPO)
OpenStreetMap

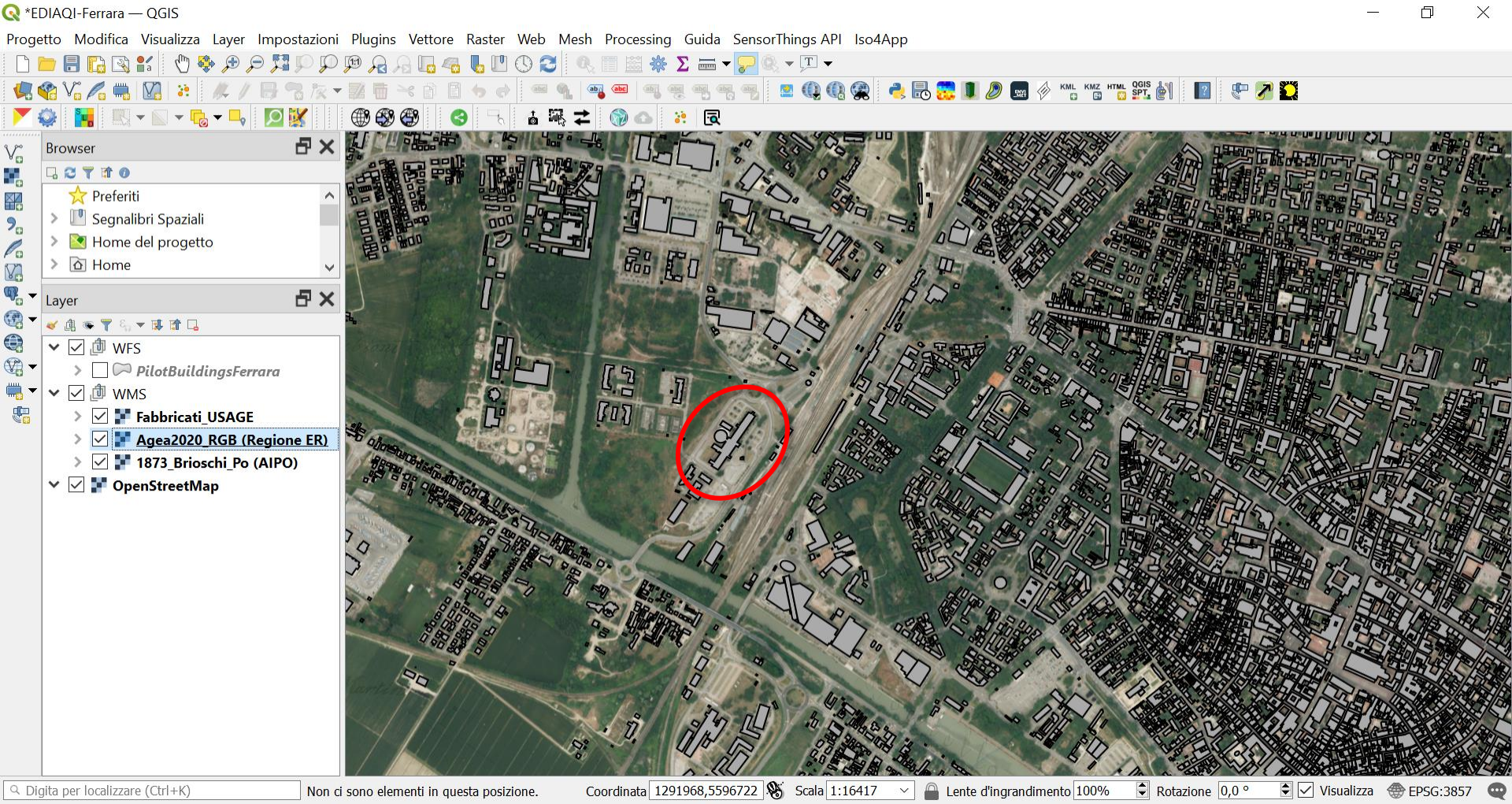


Digita per localizzare (Ctrl+K) Non ci sono elementi in questa posizione. Coordinata 1292000,5596786 Scala 1:16417 Lente d'ingrandimento 100% Rotazione 0,0 ° Visualizza EPSG:3857

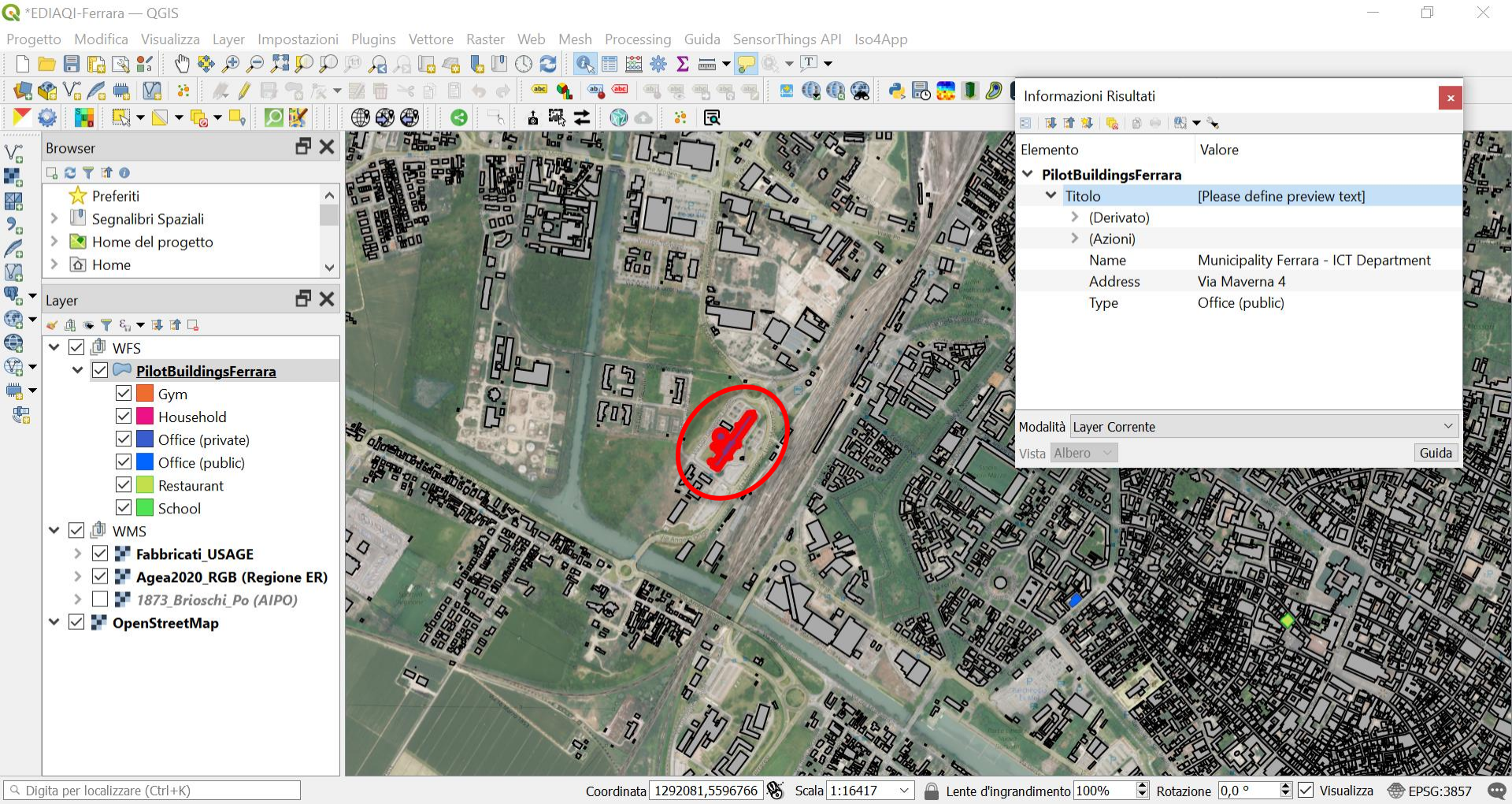
QGIS + http://geomap.reteunitaria.piemonte.it/ws/siti/aipo-01/sitiwms/wms_aipo_cartografiastorica?service=WMS&request=getCapabilities



QGIS + https://servizigis.regione.emilia-romagna.it/wms/agea2020_rgb?request=GetCapabilities&service=WMS



QGIS + https://sit.comune.fe.it/geoserverckan/Ferrara/Fabbricati_USAGE_preview/wms?service=WMS&version=1.3.0&request=GetCapabilities


*EDIAQI-Ferrara — QGIS
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Office (public)
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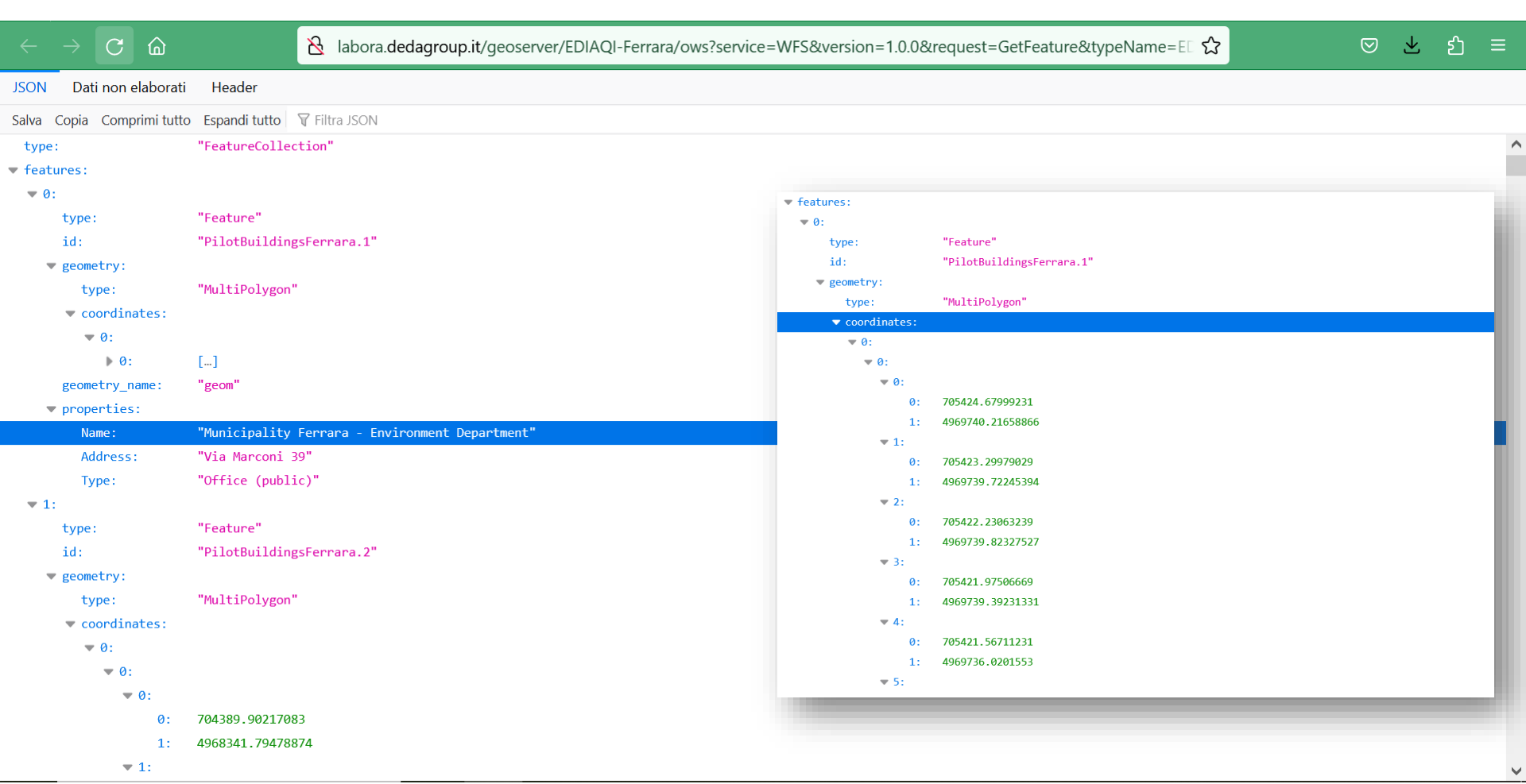
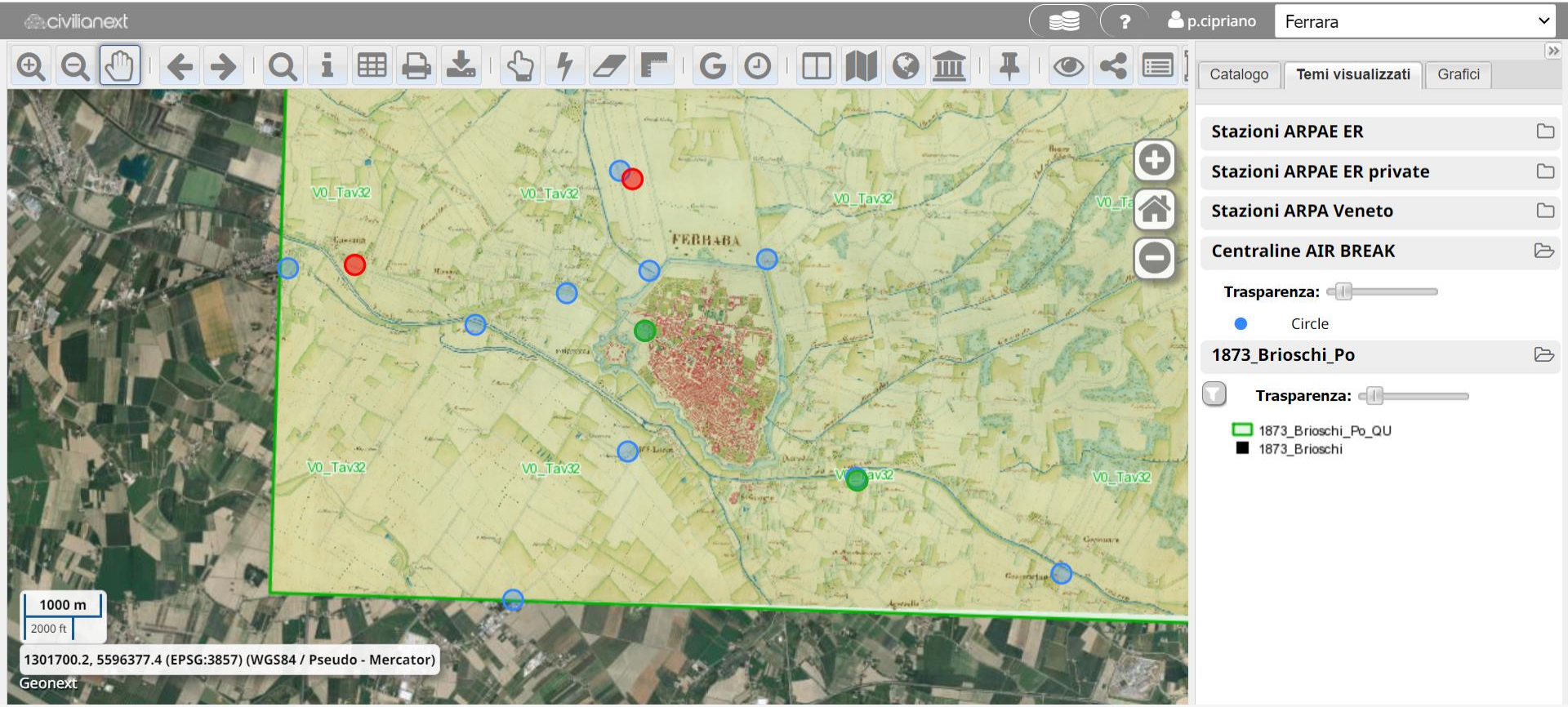
Agea2020_RGB (Regione ER)
1873_Brioschi_Po (AIPO)
OpenStreetMap
Informazioni Risultati
Elemento
Valore
PilotBuildingsFerrara
Titolo
[Please define preview text]
(Derivato)
(Azioni)
Name
Municipality Ferrara - ICT Department
Address
Via Maverna 4
Type
Office (public)
Modalità
Layer Corrente
Vista
Albero
Guida
Digita per localizzare (Ctrl+K)
Coordinata
1292081,5596766
Scala
1:16417
Lente d'ingrandimento
100%
Rotazione
0,0 °
Visualizza
EPSG:3857



http://labora.dedagroup.it/geoserver/EDIAQI-Ferrara/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=EDIAQI-Ferrara%3APilotBuildingsFerrara&maxFeatures=50&outputFormat=application%2Fjson



GeoNext + AQ stations + http://geomap.reteunitaria.piemonte.it/ws/siti/aipo-01/sitiwms/wms_aipo_cartografiastorica?service=WMS&request=getCapabilities