

BIRGIT

Izdvojite 3D zgrade iz oblaka točaka
Travanj 2025. V2.0



Sufinancira
Europska unija

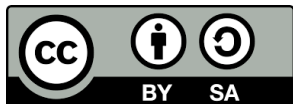
Izdvojite 3D zgrade iz oblaka točaka

vlado.cetl@unin.hr

sanja.samanovic@unin.hr

danko.markovinovic@unin.hr

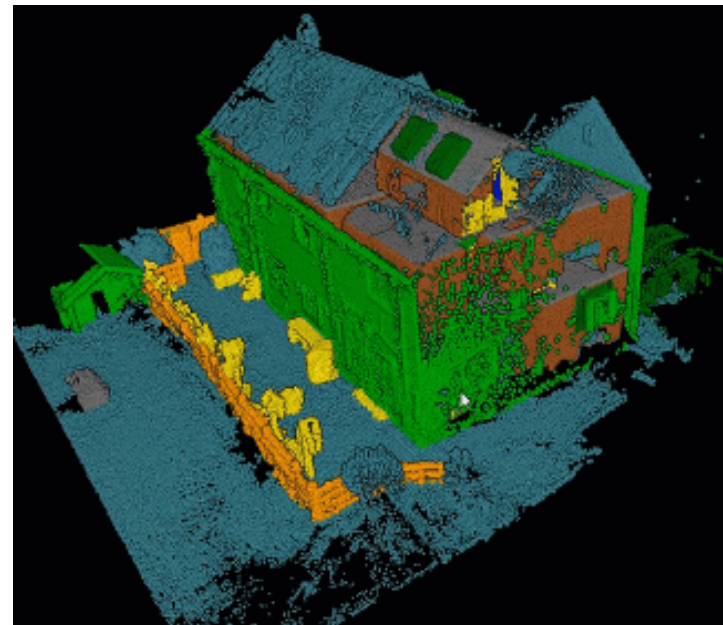
olga.bjelotomic.orsulic@unin.hr



Ishodi učenja

- Na kraju ovog modula od sudionika se očekuje da će moći
 - Identificirati i opisati dostupne 3D izvore podataka koji se mogu koristiti za GIS i BIM
 - Eksperimentirati s vanjskim geopodacima u QGIS-u

- U 3D modeliranju oblak točaka skup je podatkovnih točaka u 3D koordinatnom sustavu - obično poznat kao osi XYZ (ili npr. osi E, N, H).
- Svaka točka predstavlja jedno prostorno mjerenje na površini objekta
- Oblaci točaka najčešće se generiraju pomoću 3D laserskih skenera i LiDAR (detekcija svjetlosti i raspon) tehnologije i tehnika.
- Oblaci točaka mogu se dobiti i fotogrametrijom i ukupnim postajama (taheometrija)



- Izvori podataka
 - 3D oblaci točaka obično su dostupni kao skupovi podataka u infrastrukturama prostornih podataka (u različitim formatima, npr. LAS, LAZ, GeoTIFF, ASCII točke itd.)
 - Otvoreno dostupni LiDAR podaci na Internetu dostupni su u različitim formatima, koordinatnim sustavima i stanju obrade (od očišćenih podataka oblaka točaka do digitalnog modela terena)
 - Neki izvori otvorenih podataka:
 - INSPIRE Geoportal (INSPIRE tema podataka: nadmorska visina) Slovenska arheologija https://arheologijaslovenija.blogspot.com/p/blog-page_81.html
 - Zagreb Lidar primjer uzorka podataka (dostupan za BIRGIT Project u mapi podataka zadatka)

QGIS

- <https://github.com/qgis/QGIS>

Features

1. Flexible and powerful spatial data management

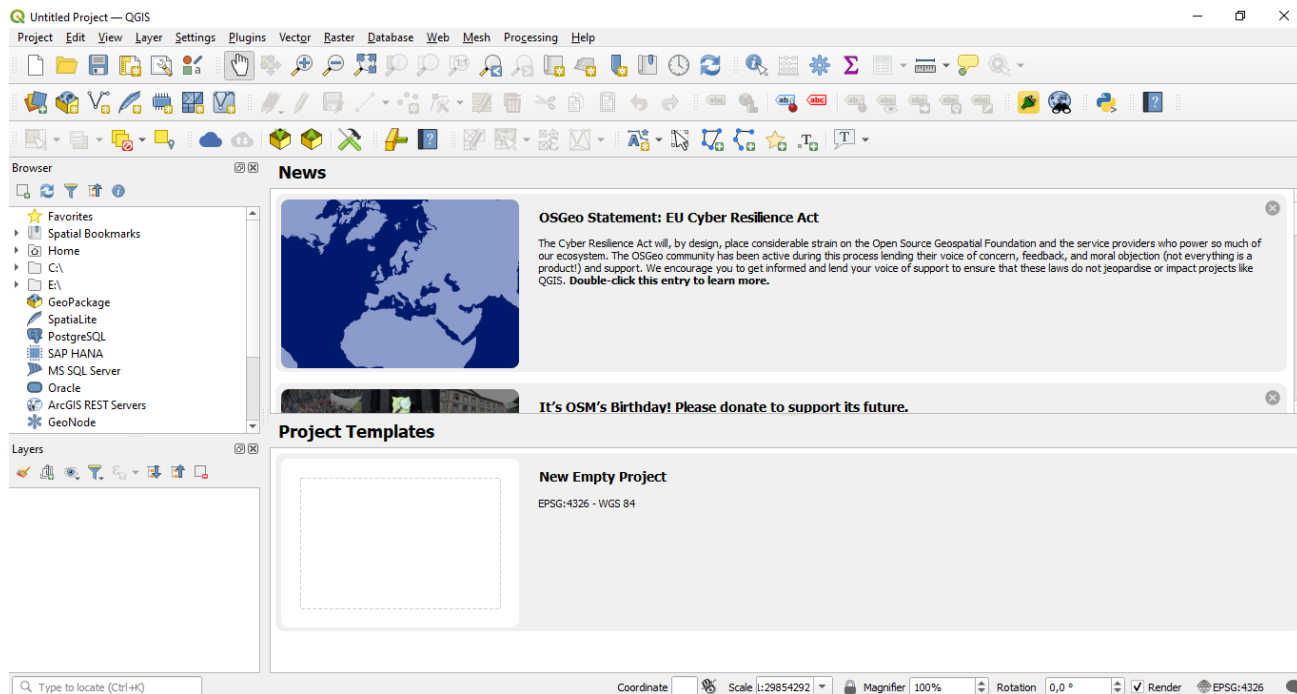
- Support for raster, vector, mesh, and point cloud data in a range of industry-standard formats
 - *Raster formats include:* GeoPackage, GeoTIFF, GRASS, ArcInfo binary and ASCII grids, ERDAS Imagine SDTS, WMS, WCS, PostgreSQL/PostGIS, and [other GDAL supported formats](#).
 - *Vector formats include:* GeoPackage, ESRI shapefiles, GRASS, SpatiaLite, PostgreSQL/PostGIS, MSSQL, Oracle, WFS, Vector Tiles and [other OGR supported formats](#).
 - *Mesh formats include:* NetCDF, GRIB, 2DM, and [other MDAL supported formats](#).
 - *Point-cloud format:* LAS/LAZ and EPT datasets.

QGIS

- <https://github.com/qgis/QGIS>
 - Data abstraction framework, with local files, spatial databases (PostGIS, SpatiaLite, SQL Server, Oracle, SAP HANA), and web services (WMS, WCS, WFS, ArcGIS REST) all accessed through a unified data model and browser interface, and as flexible layers in user-created projects
 - Spatial data creation via visual and numerical digitizing and editing, as well as georeferencing of raster and vector data
 - On-the-fly reprojection between coordinate reference systems (CRS)
 - Nominatim (OpenStreetMap) geocoder access
 - Temporal support

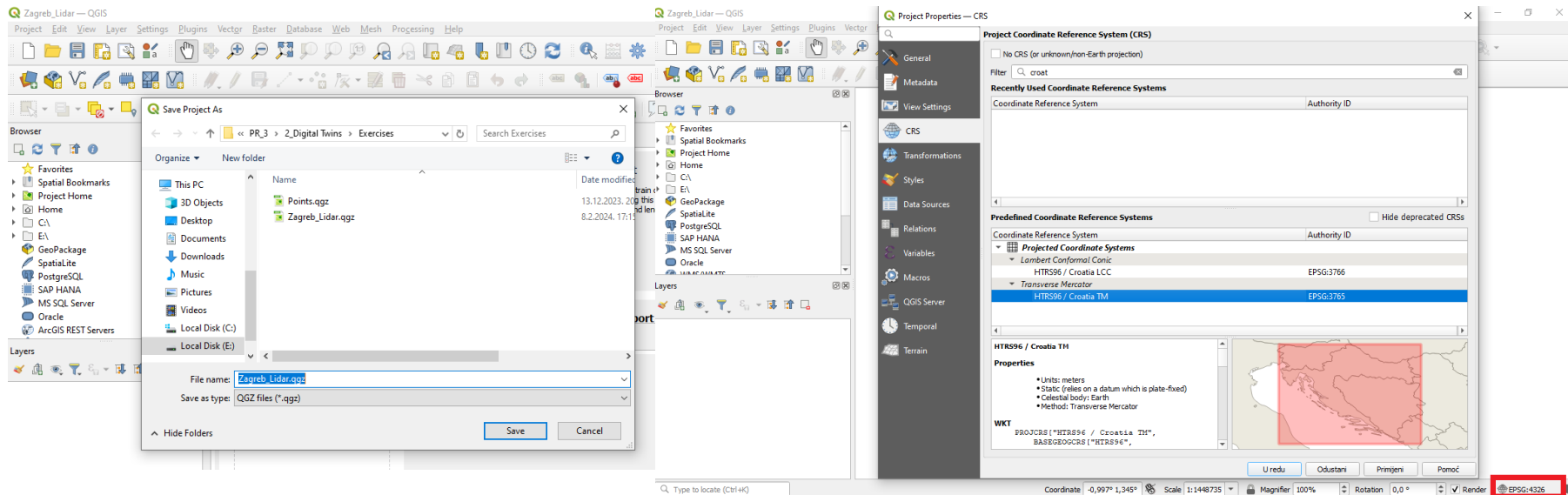
QGIS (<https://qgis.org/en/site/>)

- Besplatni softver otvorenog koda koji korisnicima omogućuje stvaranje, uređivanje, vizualizaciju, analizu i objavljivanje geoprostornih informacija



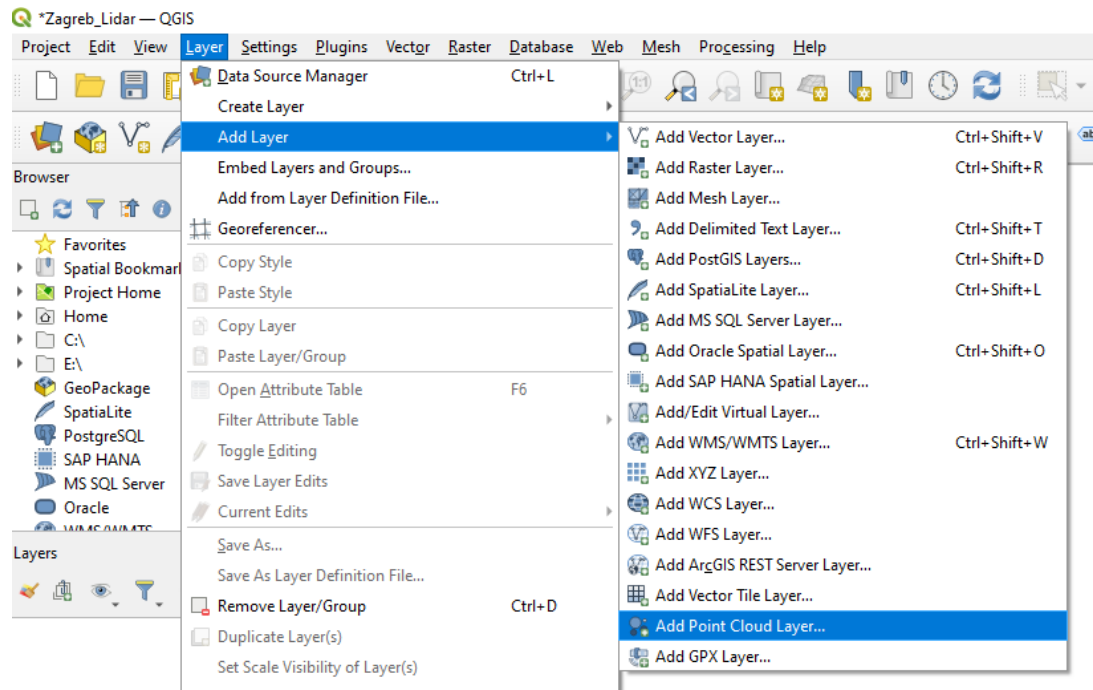
QGIS (verzija 3.28 Firenze ili novija)

- Projekt (Novi Zagreb_Lidar) i definicija računalnih sustava rezervacija (EPSG 3765 – HTRS96/ Croatia TM)



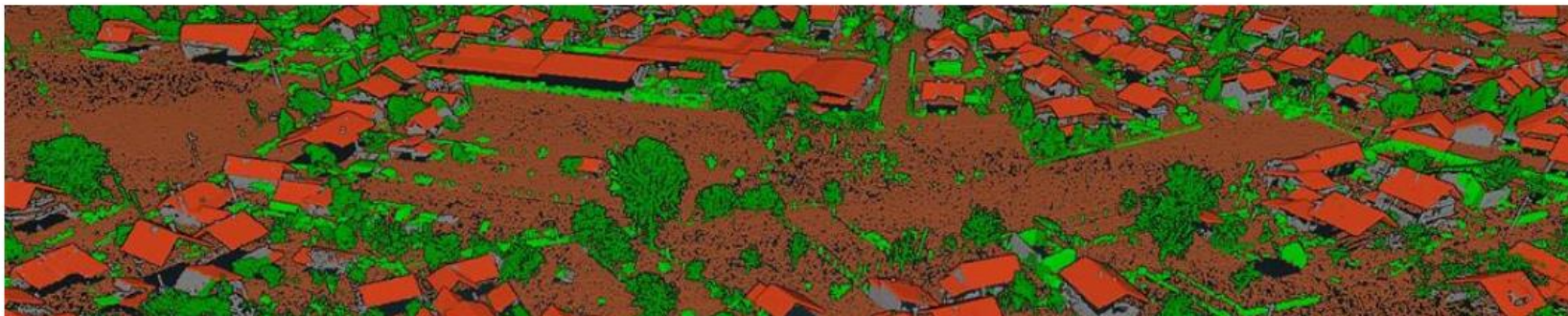
QGIS

- Podaci o uzorku uvoza (Zagreb_Lidar_Example)

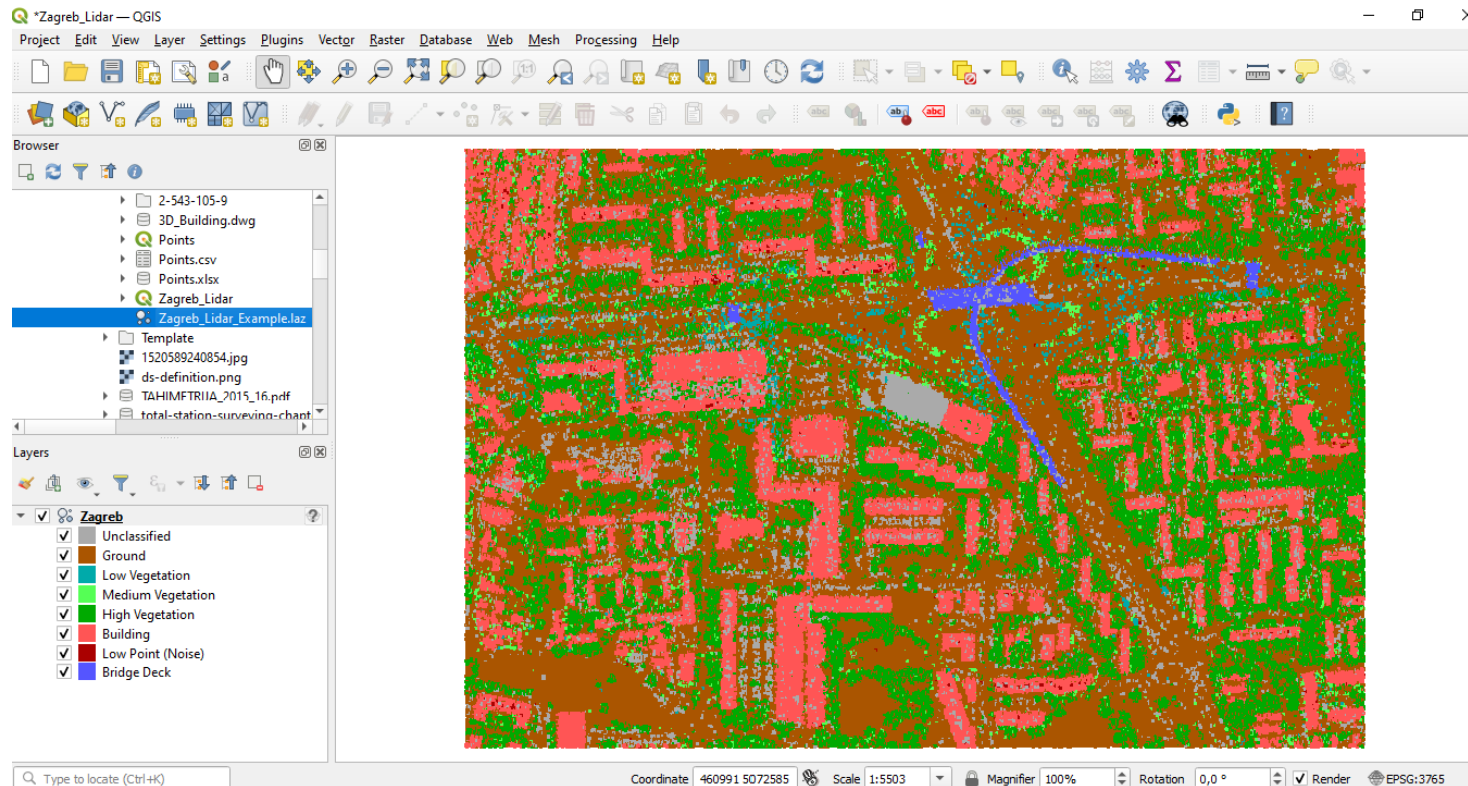


Uzorak podataka o vježbanju (Zagreb_Lidar_Example)

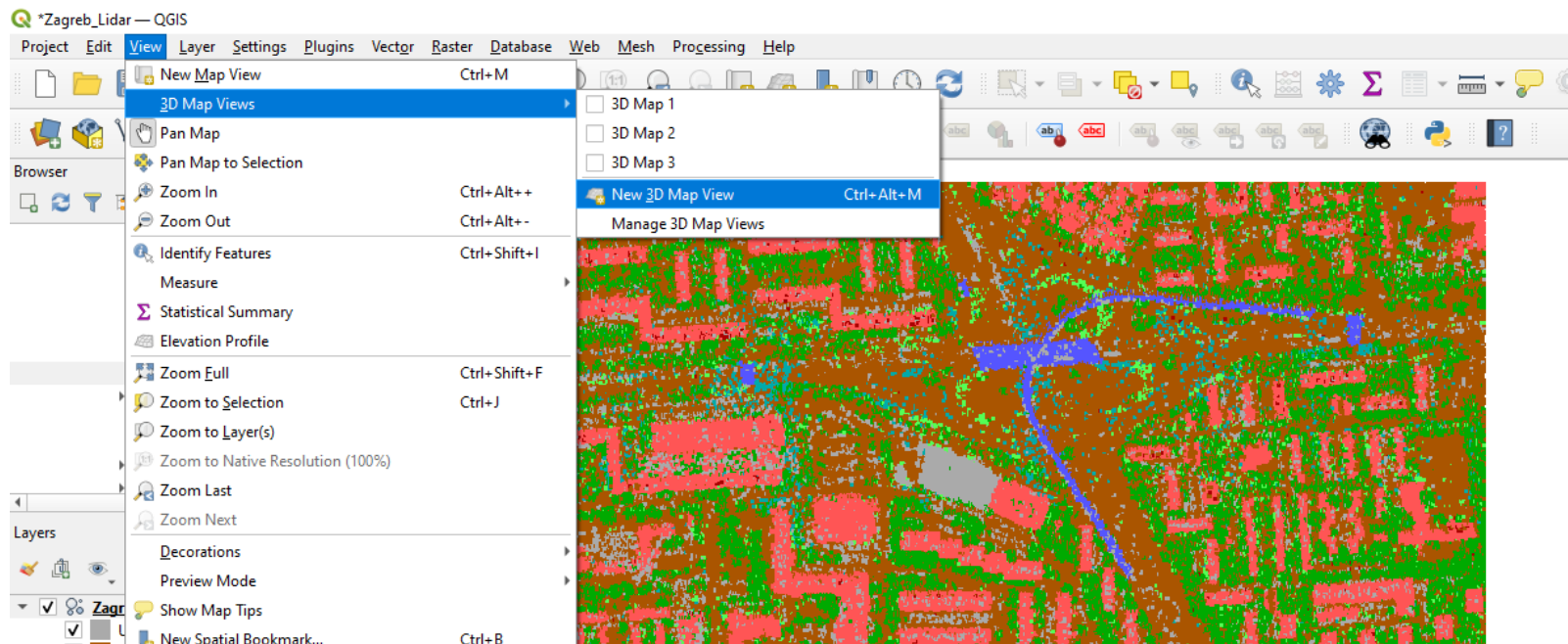
- Opis datoteke
 - aerial LiDAR surveying of the Republic of Croatia, namely:
 - 4 points/m² outside urban areas (~ 70% of the area)
 - 8 points/m² urban areas (~ 30% of the area)
 - 20 points/m² river and embankment corridors
 - aerial photogrammetric survey of the Republic of Croatia
 - spatial resolution GSD (Ground Sample Distance) 0.15 cm



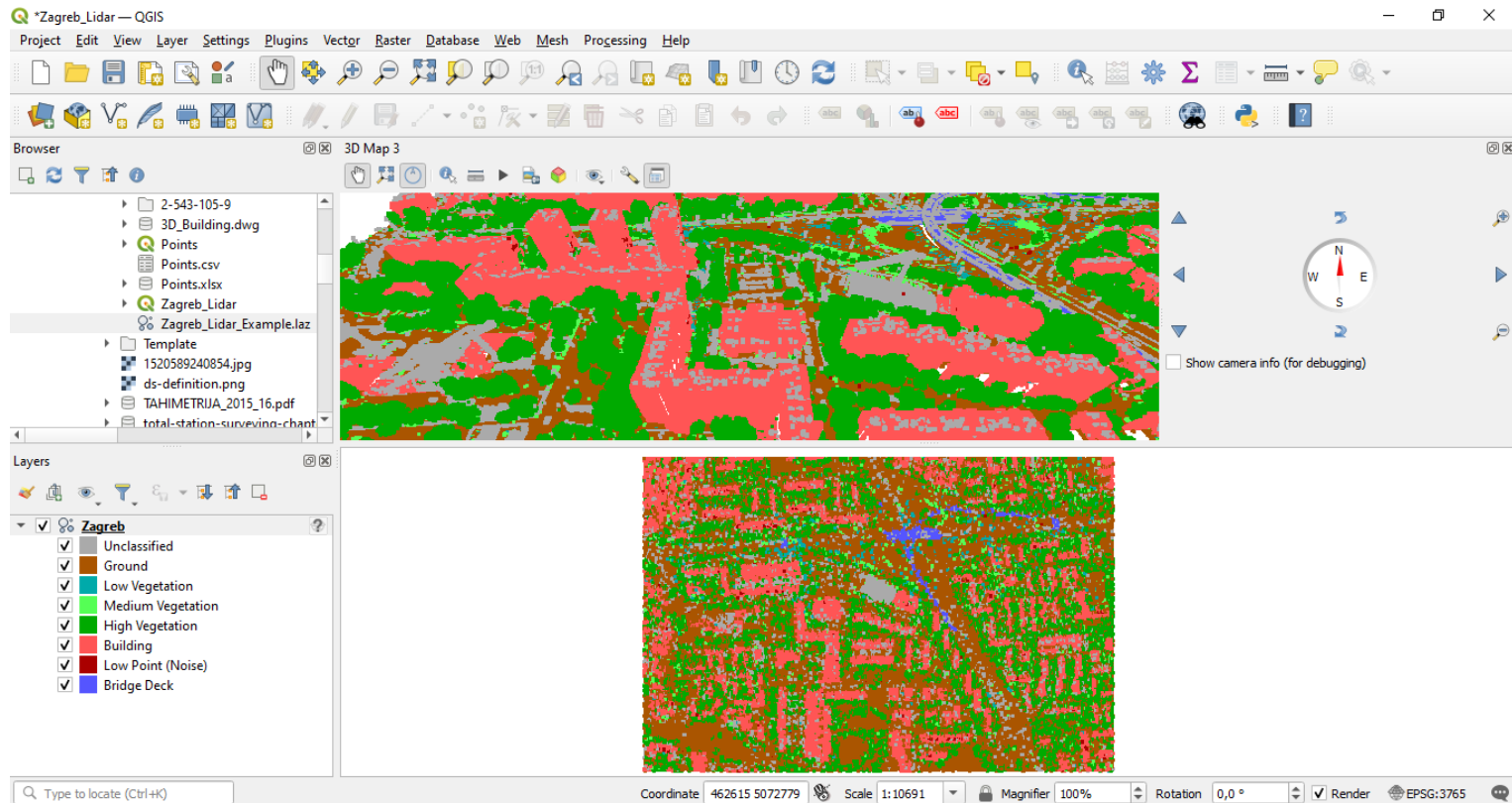
QGIS – podaci iz uzorka uvoza (Zagreb_Lidar_Example – dio grada)



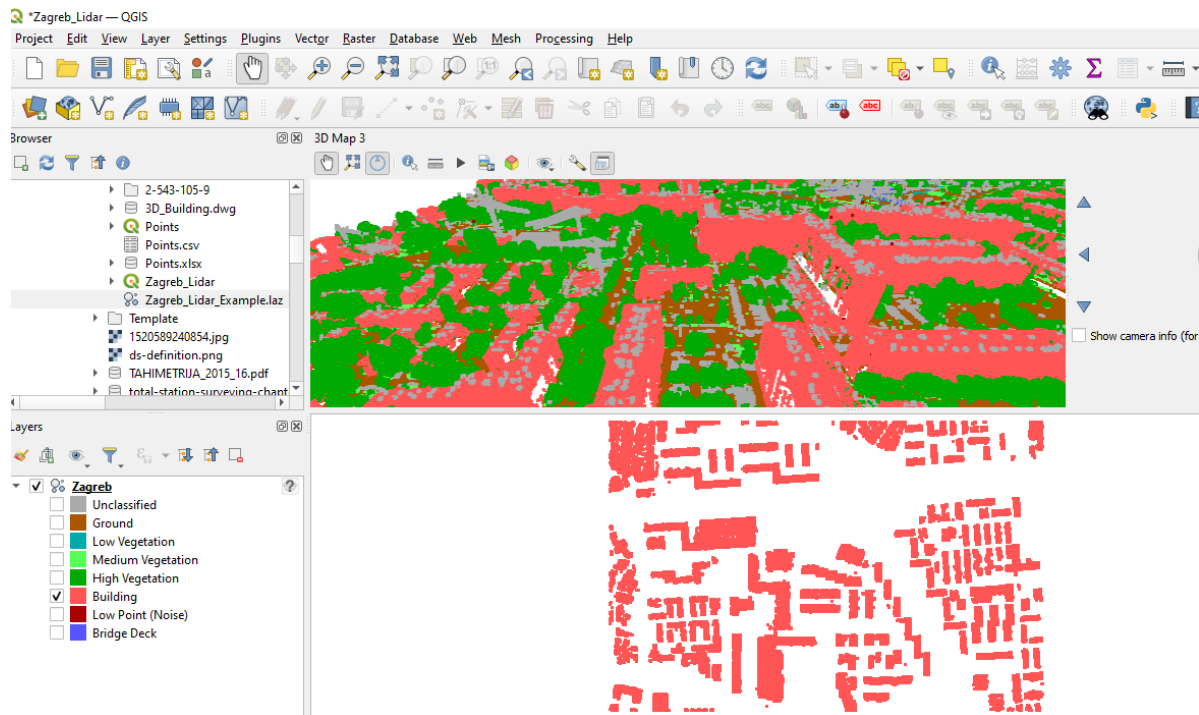
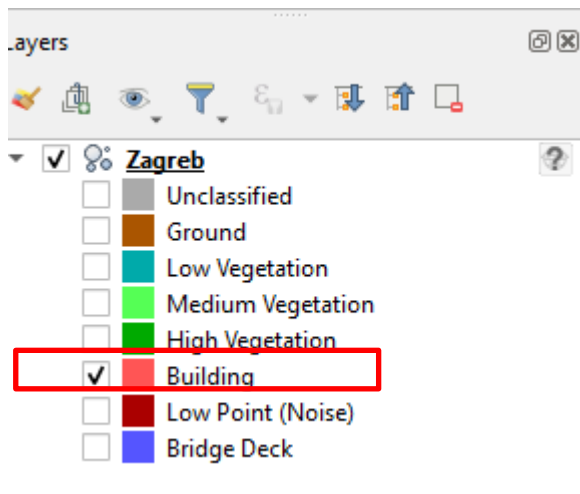
QGIS – vizualizacija (Zagreb_Lidar_Example – dio grada)



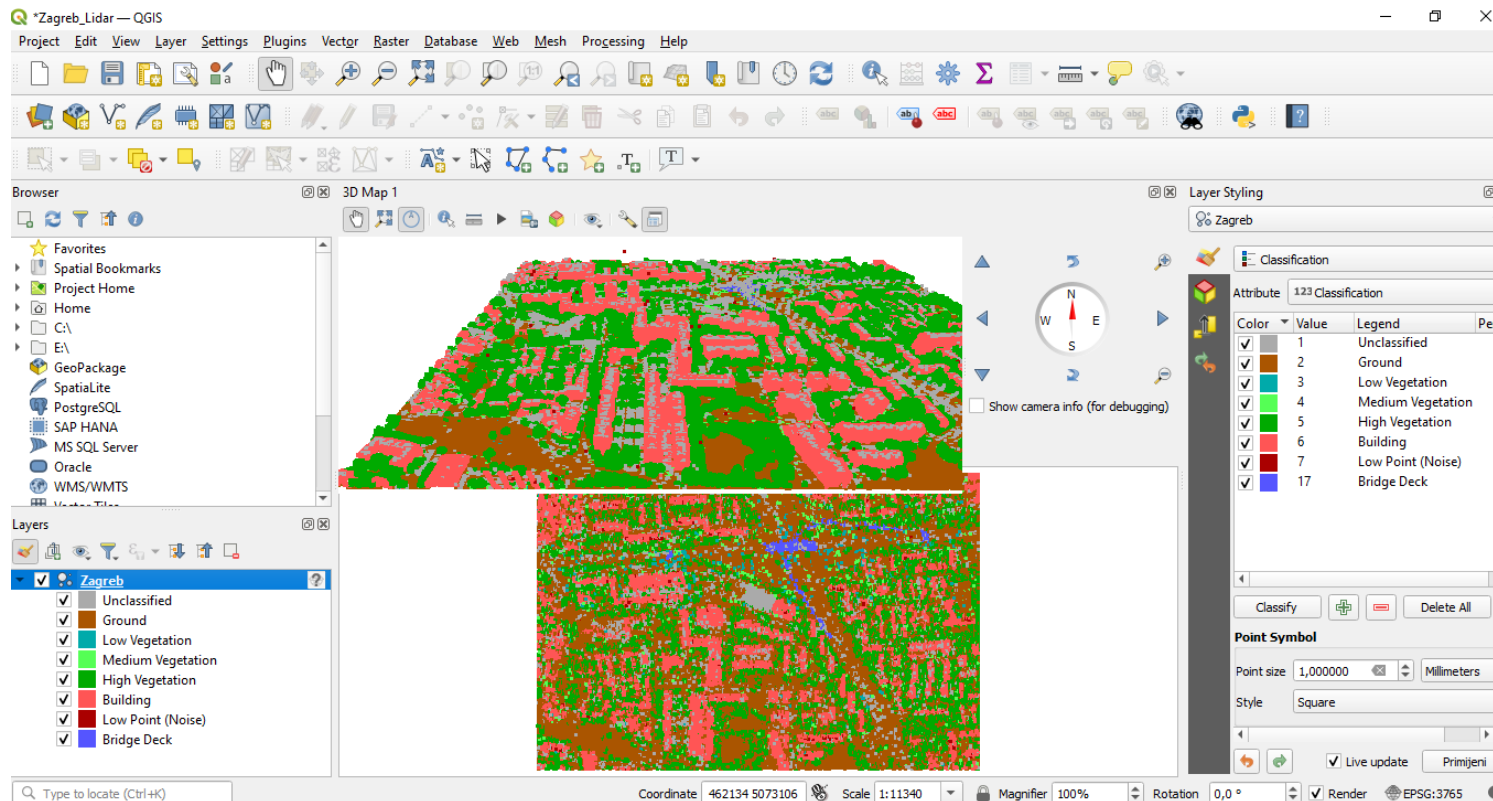
QGIS – vizualizacija (Zagreb_Lidar_Example – dio grada)



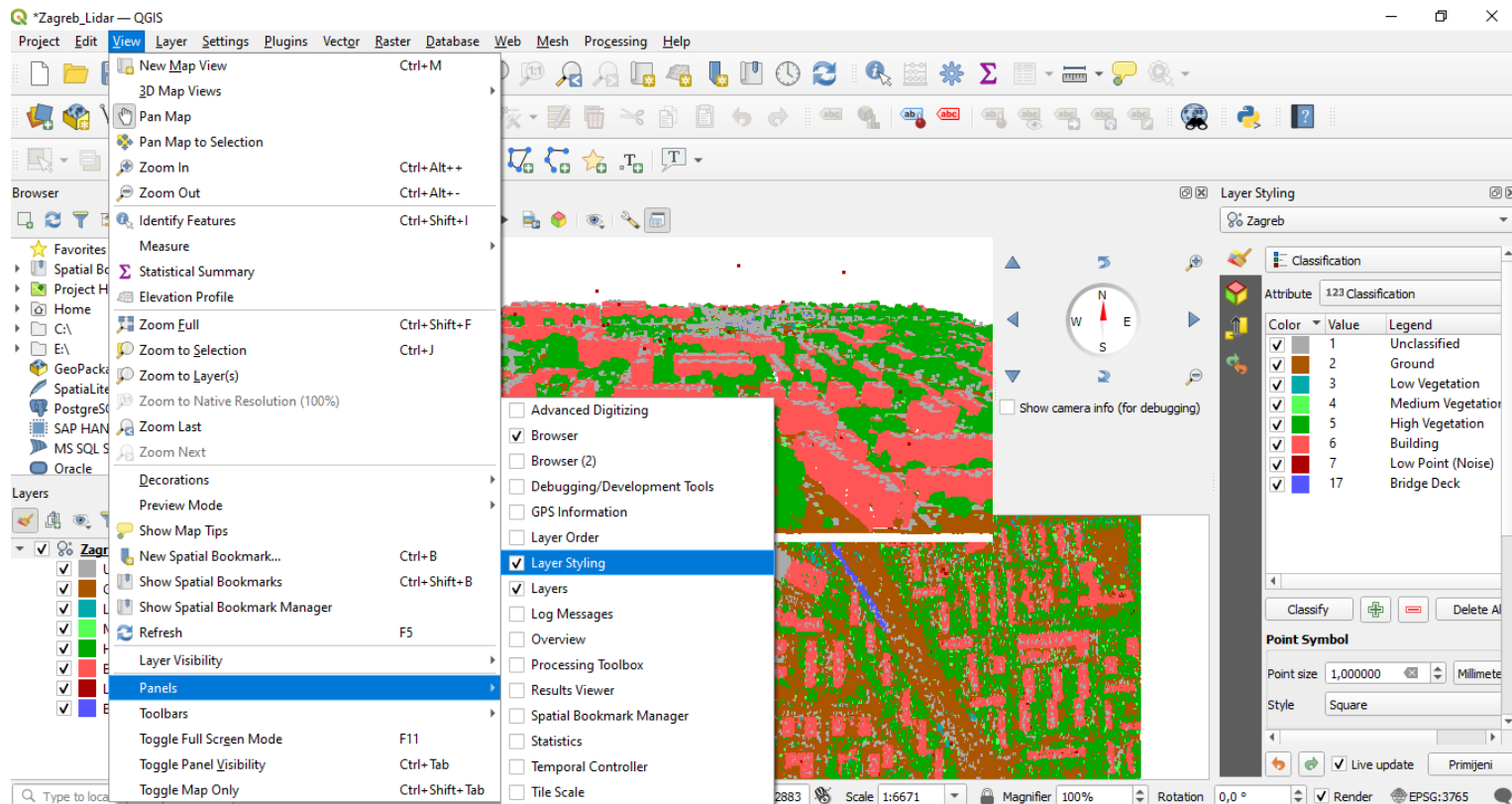
QGIS – Izdvajanje građevinskog otpada (Zagreb_Lidar_Example – dio grada)



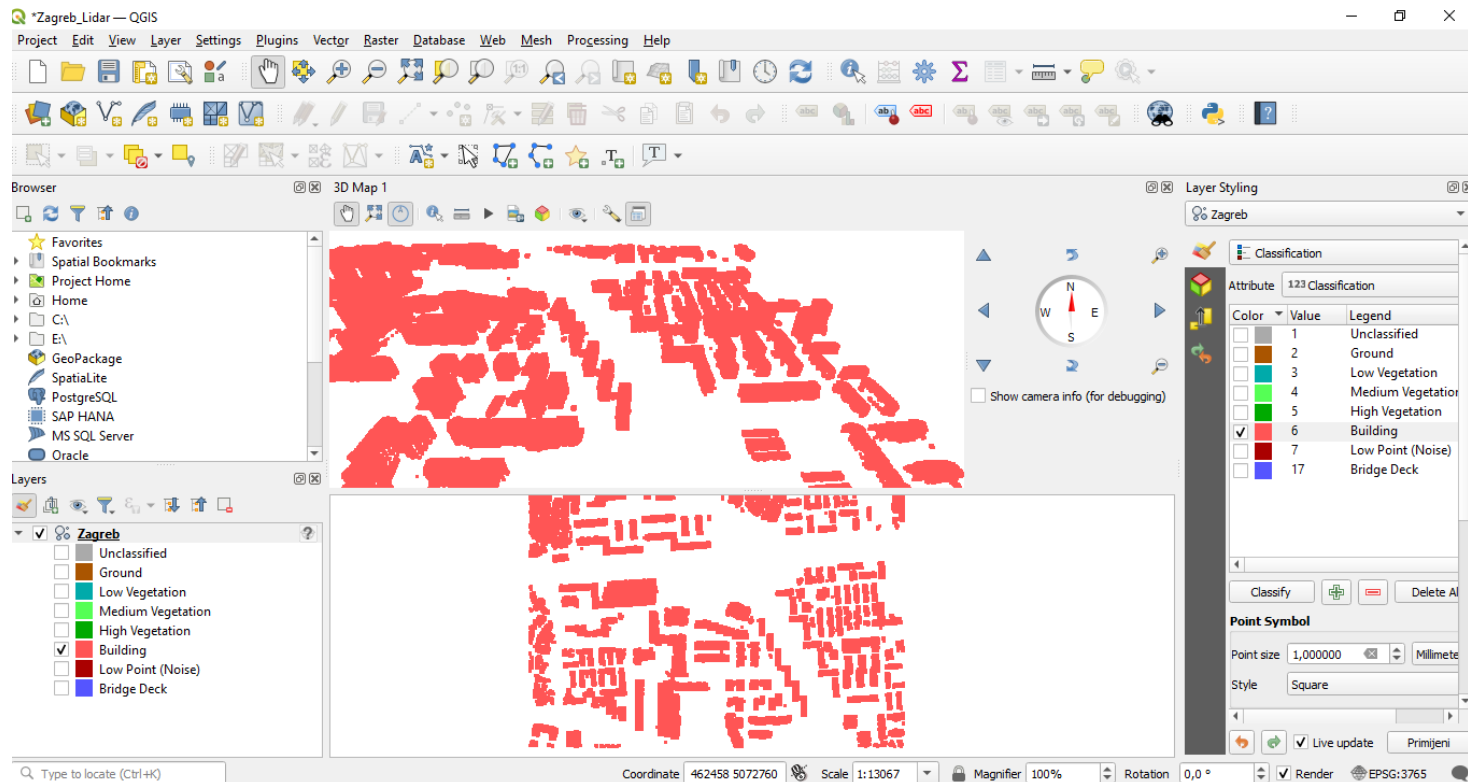
QGIS – Izdvajanje građevinskog otpada (Zagreb_Lidar_Example – dio grada)



QGIS – Izdvajanje građevinskog otpada (Zagreb_Lidar_Example – dio grada)



QGIS – Izdvajanje građevinskog otpada (Zagreb_Lidar_Example – dio grada)



- <https://qgis.org/en/site/>
- https://docs.qgis.org/3.28/en/docs/user_manual/working_with_point_clouds/point_clouds.html
- https://arheologijaslovenija.blogspot.com/p/blog-page_81.html
- <https://www.youtube.com/watch?v=v-ZMRpk0mv8>

Hvala na pažnji



<https://birgitproject.eu/>

Financirano sredstvima Europske unije. Izneseni stavovi i mišljenja su stavovi i mišljenja autora i ne moraju se podudarati sa stavovima i mišljenjima Europske unije ili Europske izvršne agencije za obrazovanje i kulturu (EACEA). Ni Europska unija ni EACEA ne mogu se smatrati odgovornima za njih.