



OpenCities Planner – Workshop

Content pipeline examples

Håkan Engman, Director Business Development



Agenda

- OpenCities Planner overview
- Editor examples
- Preparing and uploading Reality Models
- CityGML (3DCityDB) configuration and features
- Polygons to 3D based on attributes





TAP & DRAG THE MAP TO MOVE



PINCH THE SCREEN TO ZOOM IN & OUT



TWIST TWO FINGERS TO ROTATE THE MAP



DRAG TWO FINGERS TO TILT & ROTATE THE MAP



DOUBLE TAP TO ZOOM OR ENTER GROUNDVIEW

Navigation på svenska



Vision 2035



Stadslinbana



Lindholmen



Frihamnen



Stigande vattennivåer



Hisingsbron



Centralenområdet



Västlänken



STARTVIEW



PROJECT INFO

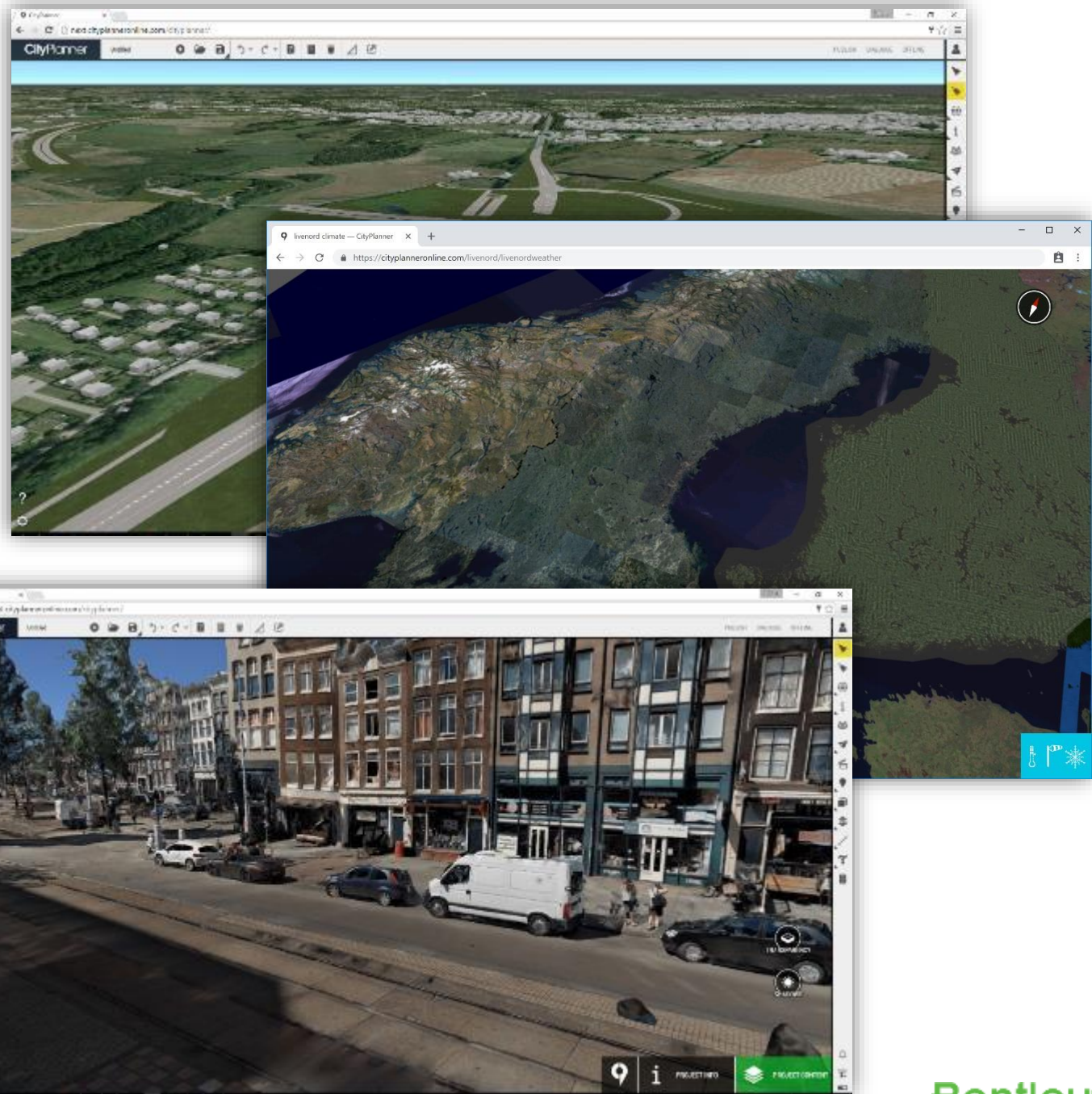


CONTENT



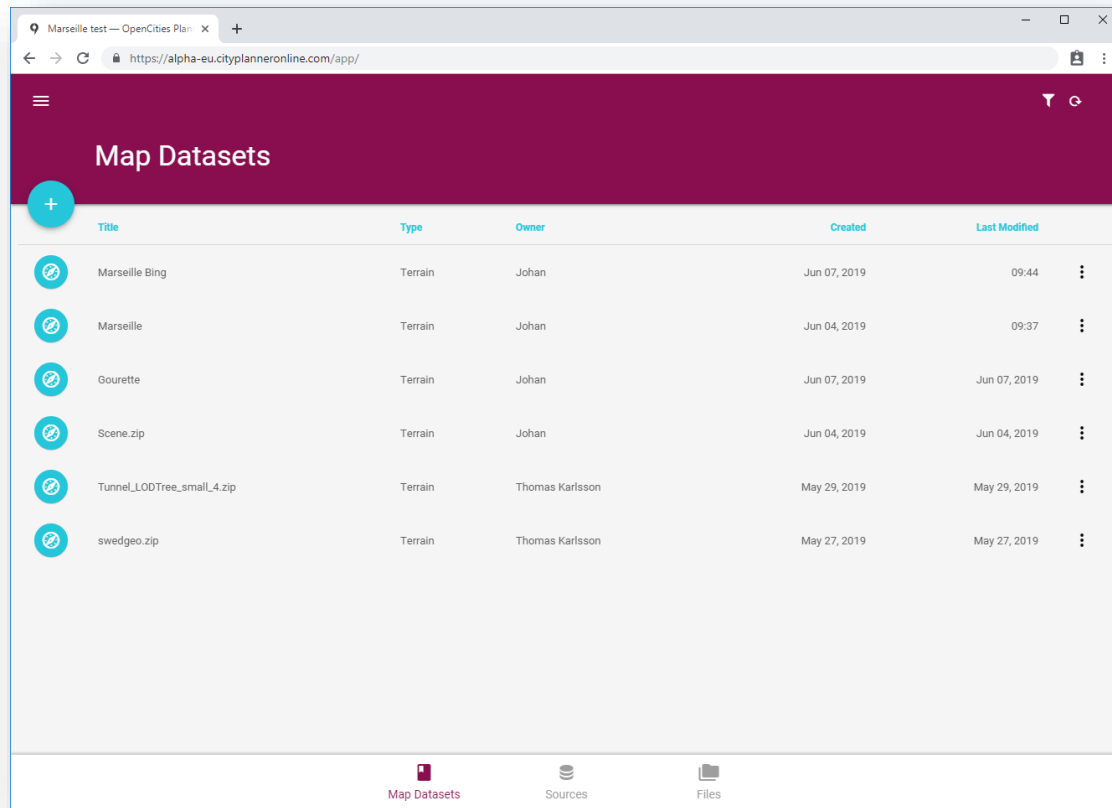
OpenCities Planner

- Cloud application hosted on Azure
 - Visualize entire cities and countries with streaming technology
 - Handles massive datasets and local SRS/coordinate systems
 - Europe, Asia, North America, Australia
- Use
 - Terrain models
 - Aerial imagery
 - Reality models
 - Semantic city models such as
 - CityGML, KMZ, COLLADA
- Web browser, mobile, desktop, VR

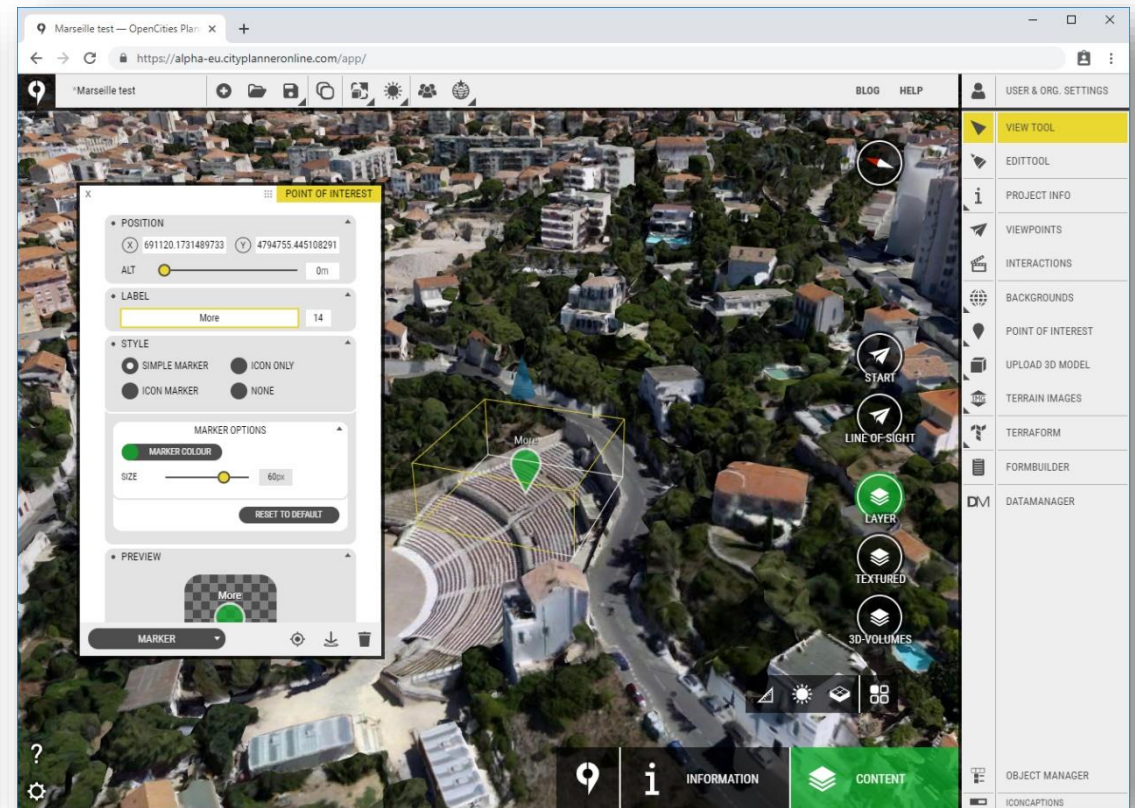


OpenCities Planner

DataManager



Project Editor



Files

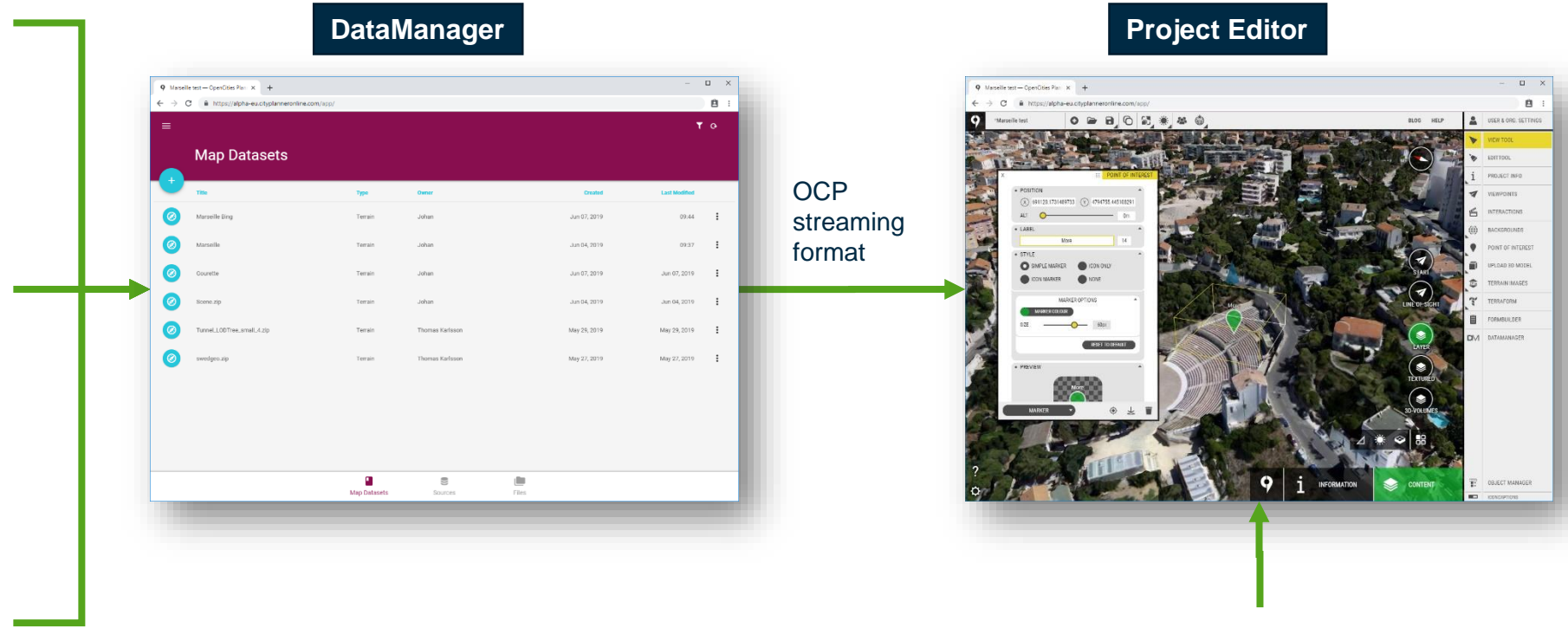
- 3D-models, such as a 3D city set
- DSM/DTM
- Ortho Images
- Reality Models
- Vector

Services

- WCS
- WMS
- Bing maps

Databases

- Spatial databases such as Oracle Spatial, PostGreSQL etc
 - Geometry and attributes
- 3DCityDB (CityGML) or custom database layout



Project content

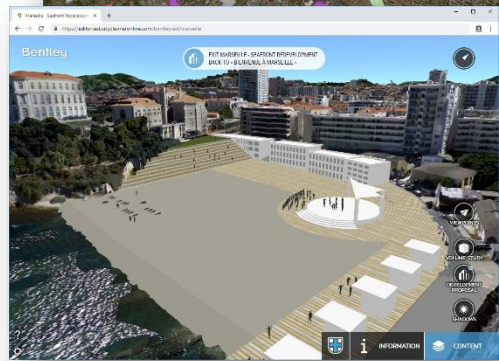
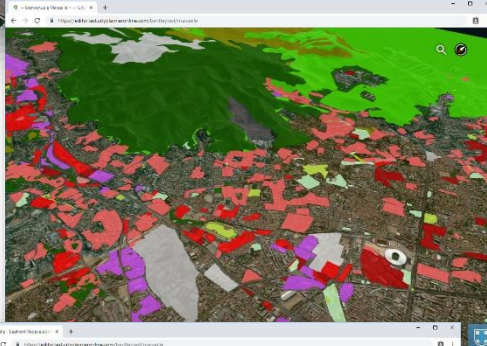
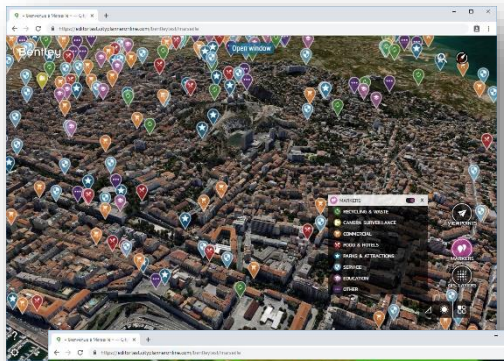
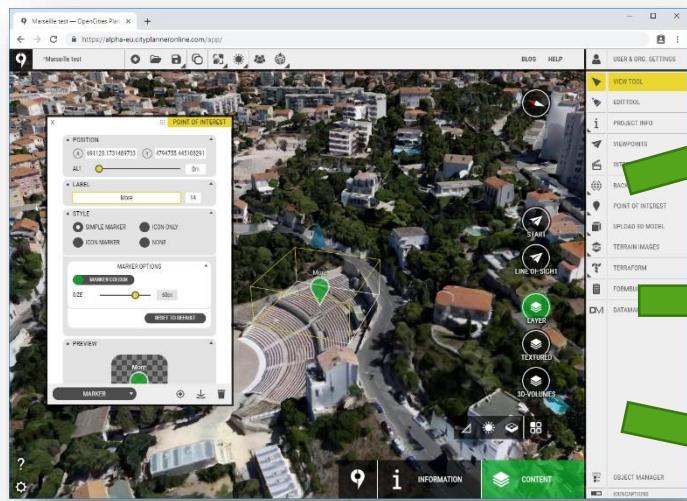
- WMS, Geo Images, Shape
- 3D CAD models
- Points of interest
- Questionnaire form
- Editor Tools: Sketching, Shadows, Videos



Continuous updates



Project Editor



Team, Stakeholders, Citizens



Project content

- WMS, Geo Images, Shape
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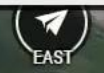
OpenCities Planner



3D MODELS

DRAG FILE OR CLICK TO UPLOAD

KMZ, DAE



- VIEW TOOL
- EDIT TOOL
- BACKGROUNDS
- PROJECT INFO
- VIEWPOINTS
- INTERACTIONS
- POINT OF INTEREST
- UPLOAD 3D MODEL
- TERRAIN IMAGES
- TERRAFORM
- FORM BUILDER

Files

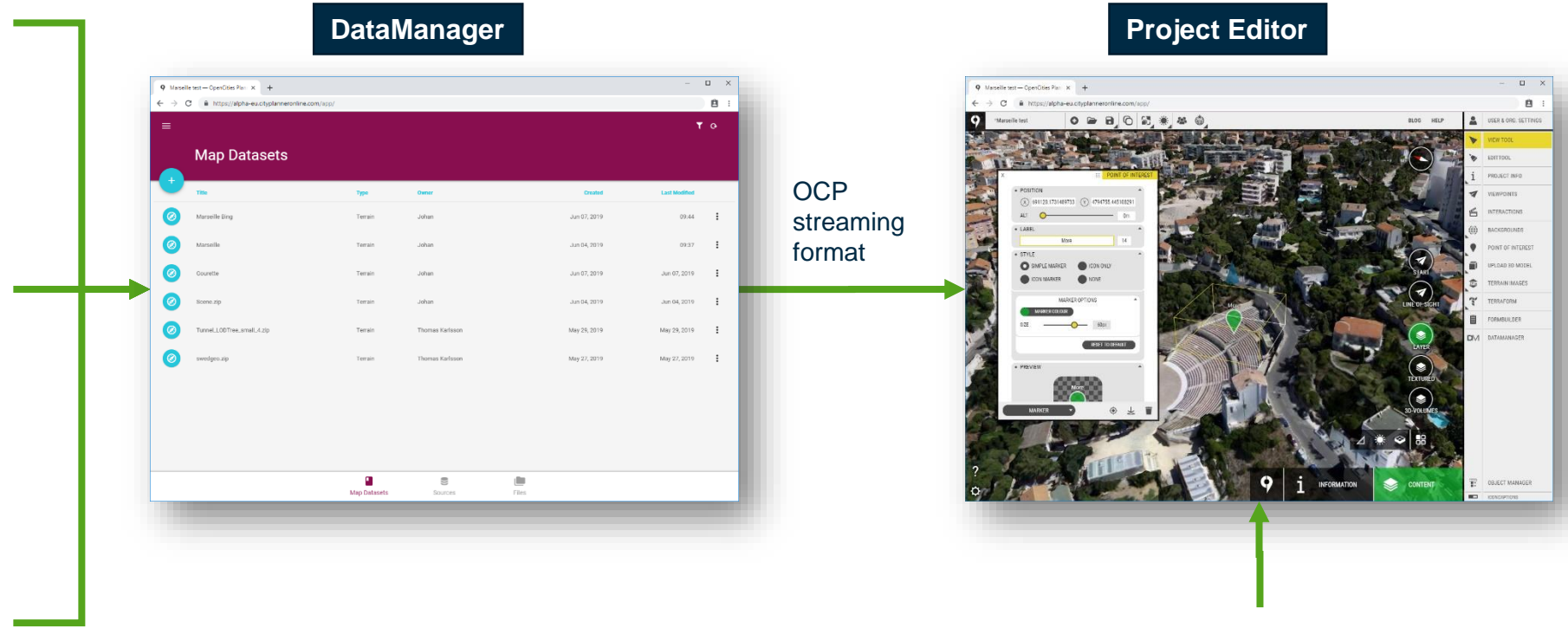
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Project content

- WMS, Geo Images, Shape
- 3D CAD models
- Points of interest
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Exporting Reality model from ContextCapture

Production definition

Define parameters of the new production.

Name

Enter production name and description.

ID: **Production_11**

Name:

Description:

< Back **Next** Submit Cancel

Production definition

Define parameters of the new production.

Purpose

Choose the purpose of the production to submit.

Purpose of production

- 3D mesh
Produce a 3D model optimized for visualization and analysis in third-party software.
Produce the reference 3D model too.
- 3D point cloud
Produce a colored point cloud for visualization and analysis in third-party software.
Produce the reference 3D model too.
- Orthophoto/DSM
Produce interoperable raster layers for visualization and analysis in third-party GIS/CAD software or image processing tools.
- 3D mesh for retouching
Produce and export the reference 3D model for editing in a third-party software and importing back into ContextCapture Master for later productions. The reference 3D model includes an overlap between tiles.
- Reference 3D model only
Produce a 3D model which can be used only inside ContextCapture Master, for quality control and as a cache for later productions.
The reference 3D model is needed for orthophoto/DSM productions.

< Back **Next** Submit Cancel

Exporting Reality model from ContextCapture

Production definition

Production definition

Define parameters of the new production.

Name

Purpose

Format/Options

Spatial reference sys...

Extent

Destination

Format/Options

Choose output format and options for the production.

Format: **LOD tree export** LOD tree exchange format, based on XML files and 3D models in Collada format.

Include texture maps

Color source: Visible colors

Texture compression: 75% quality JPEG

Maximum texture size: 8192 pixel

Texture sharpening: Enabled

Level of detail (LOD)

Type: Quadtree

Scope: Across tiles Recommended for geospatial data or 2.5D scene.

Node size: medium (~35 kB/node)

Skirt: 4 pixel

Tile overlap: 0.13 meter

< Back Next Submit Cancel

Production definition

Production definition

Define parameters of the new production.

Name

Purpose

Format/Options

Spatial reference sys...

Extent

Destination

Extent

Define the production extent.

Bounding box:

X (meters): min 450717.714385 max 451674.564431

Y (meters): min 5410634.451134 max 5411280.840268

Z (meters): min 30.000000 max 120.000000

Dimensions: 956.85 meters x 646.389 meters x 90 meters

Tiling: 44/44 tile(s) selected. [Edit](#)

Import from file...

Reset default bounds

< Back Next Submit Cancel

Exporting Reality model from ContextCapture

The image shows a Windows File Explorer window and the ContextCapture software interface. The File Explorer window is open to the directory 'Production31_LODtree_quadtree_CityPlanner_sample02' and shows files 'Cache', 'Scene', 'generateLOD.bat', and 'tiles.txt'. The ContextCapture interface shows a production status of 'Ready for LOD generation' with a 'Run LOD generation' button highlighted in red.

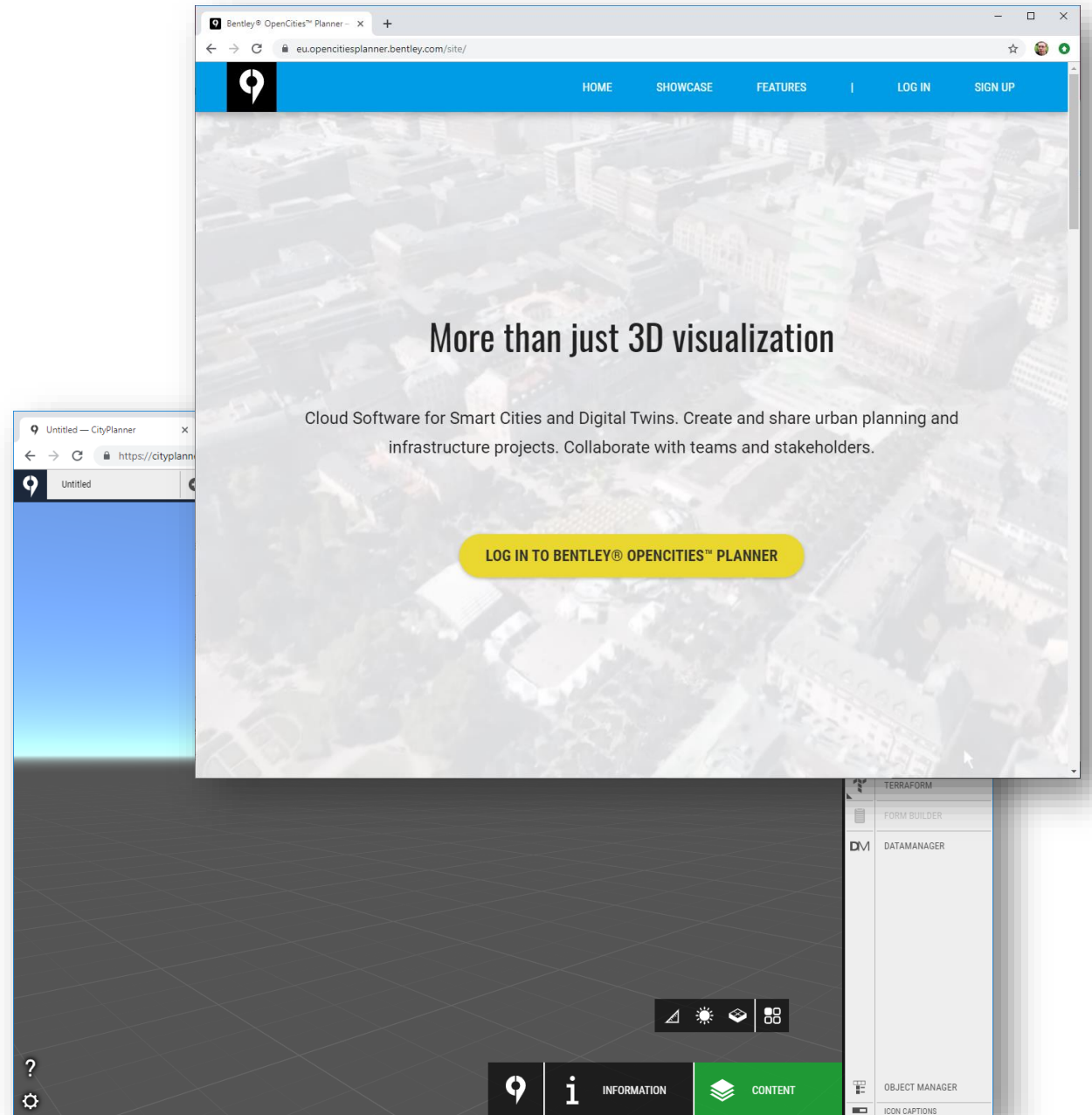
Production - Production_001_sample_accross_title
enter your description here
Cesium 3D Tiles production, 3 job(s)
General Properties 3D view
Ready for LOD generation
The first step of the production is completed. You can now run the LOD generation.
3/3 job(s) completed.
Run LOD generation Open output directory
Format: Cesium 3D Tiles
3 job(s)
Production ID: Production_53
Created: 07-Jun-19 16:58
Last submitted: 07-Jun-19 16:59

The image shows a context menu for a file named 'metadata.xml'. The menu options include 'Open', 'Open with Brackets', 'Sök igenom med Windows Defender...', 'Share', 'Give access to', 'Add to archive...', 'Add to "Scene.rar"', 'Compress and email...', 'Compress to "Scene.rar" and email', 'Send to', 'Cut', 'Copy', 'Create shortcut', 'Delete', 'Rename', 'Properties', 'Bluetooth device', 'Compressed (zipped) folder', 'Desktop (create shortcut)', 'Documents', 'Fax recipient', 'Mail recipient', and 'TeamViewer'.

Name	Date modified	Type	Size
Data	2019-04-11 14:59	File folder	
complete	2019-04-11 14:59	File	0 KB
metadata.xml	2019-04-11 14:08	XML Document	1 KB

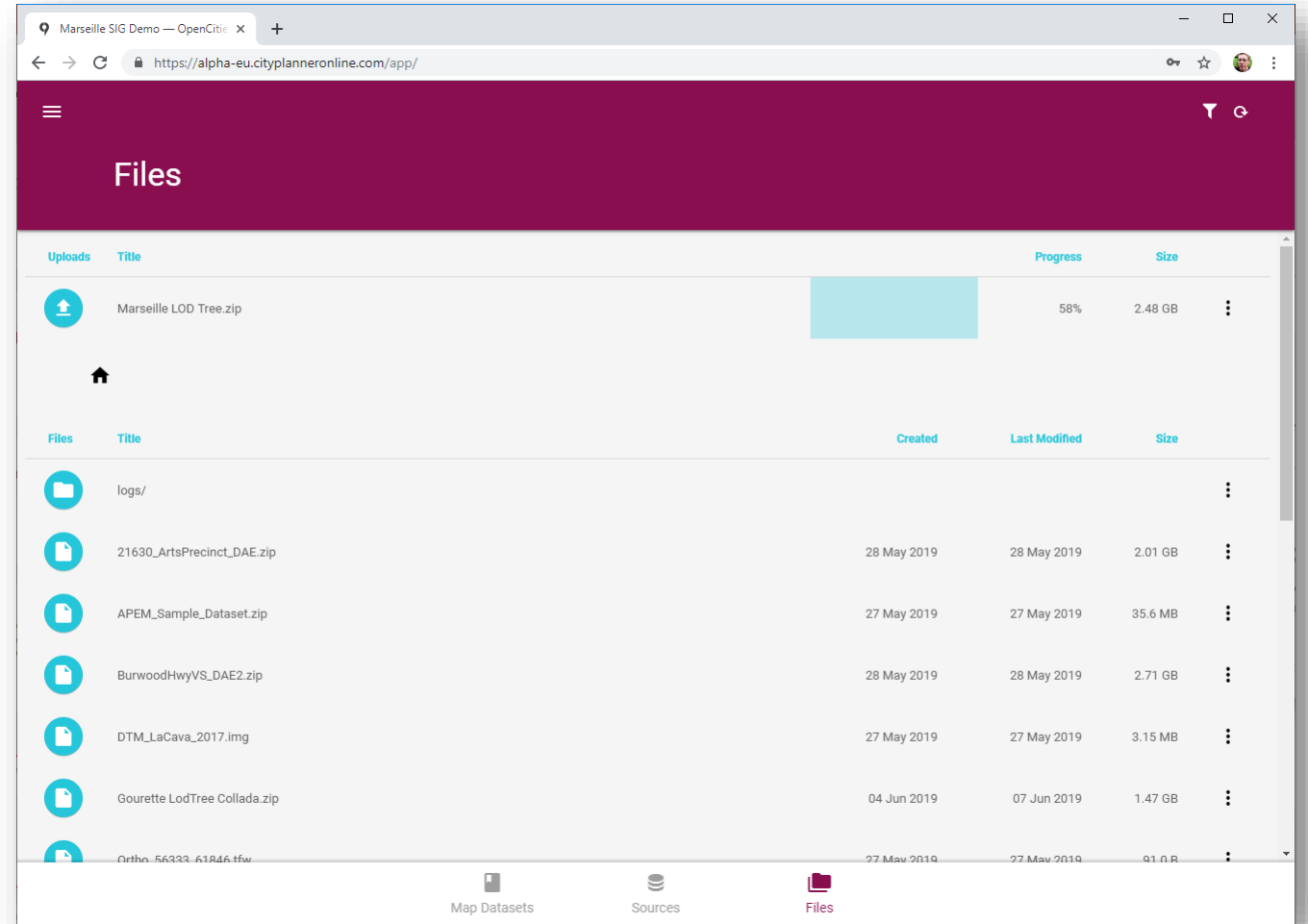
OpenCities Planner

- Login with your user and web browser
- Click the DataManager tool



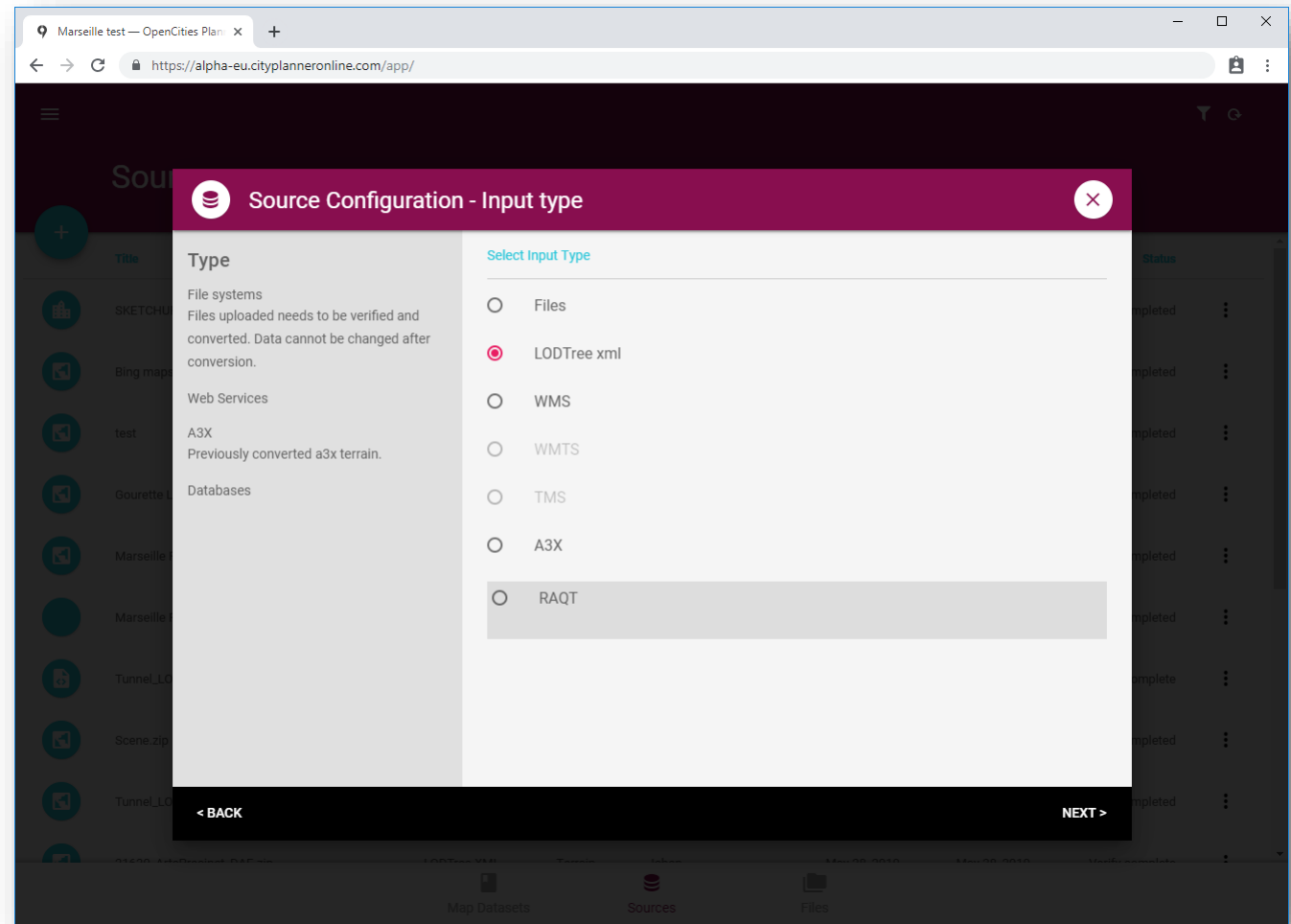
OpenCities Planner - DataManager

- Drag and drop to upload
- Or, use the Azure Storage Explorer to upload
- Create a “Source” from the zip



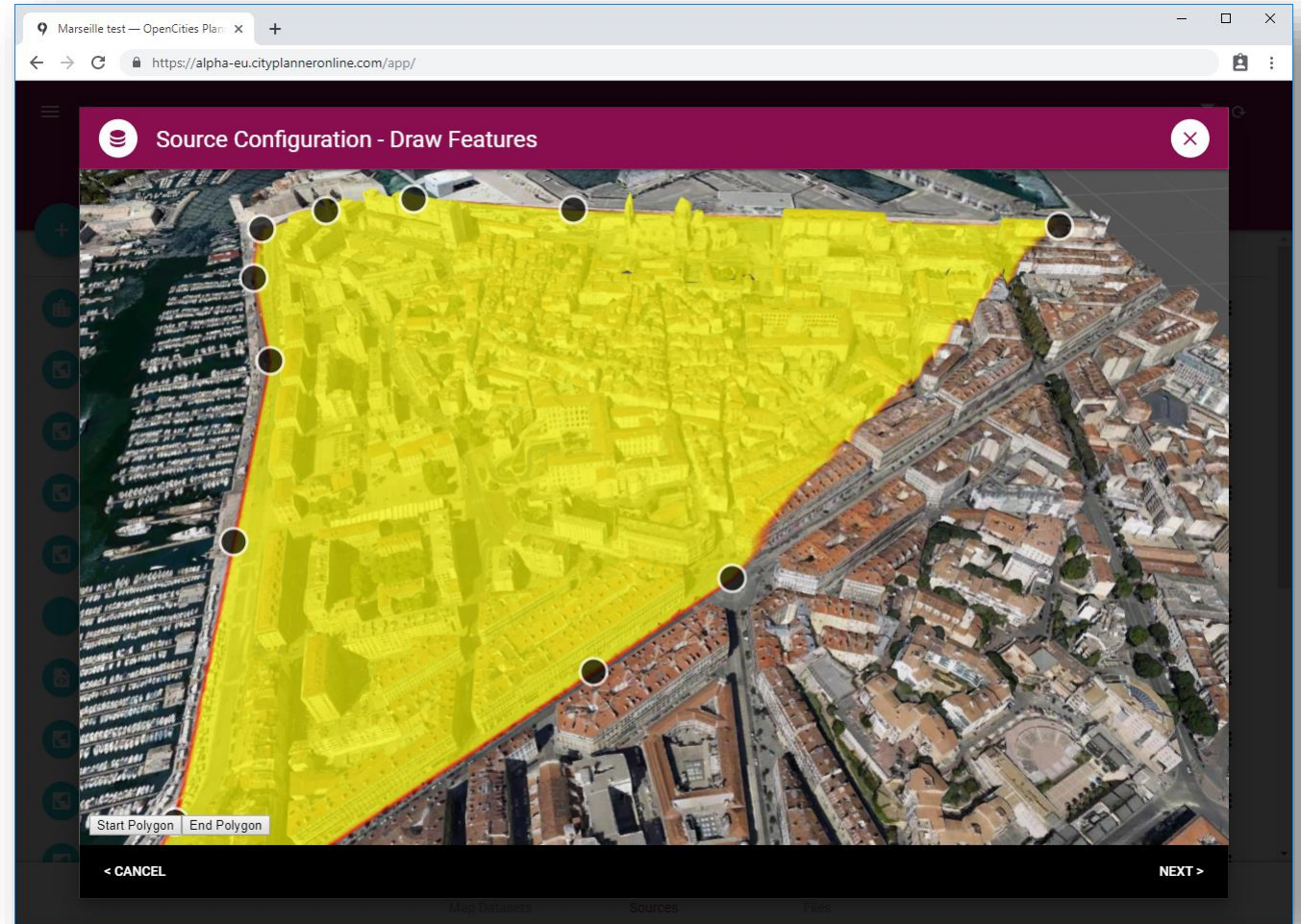
OpenCities Planner - DataManager

- Pick LOD Tree XML input type
- Set coordinate system
- Validate files

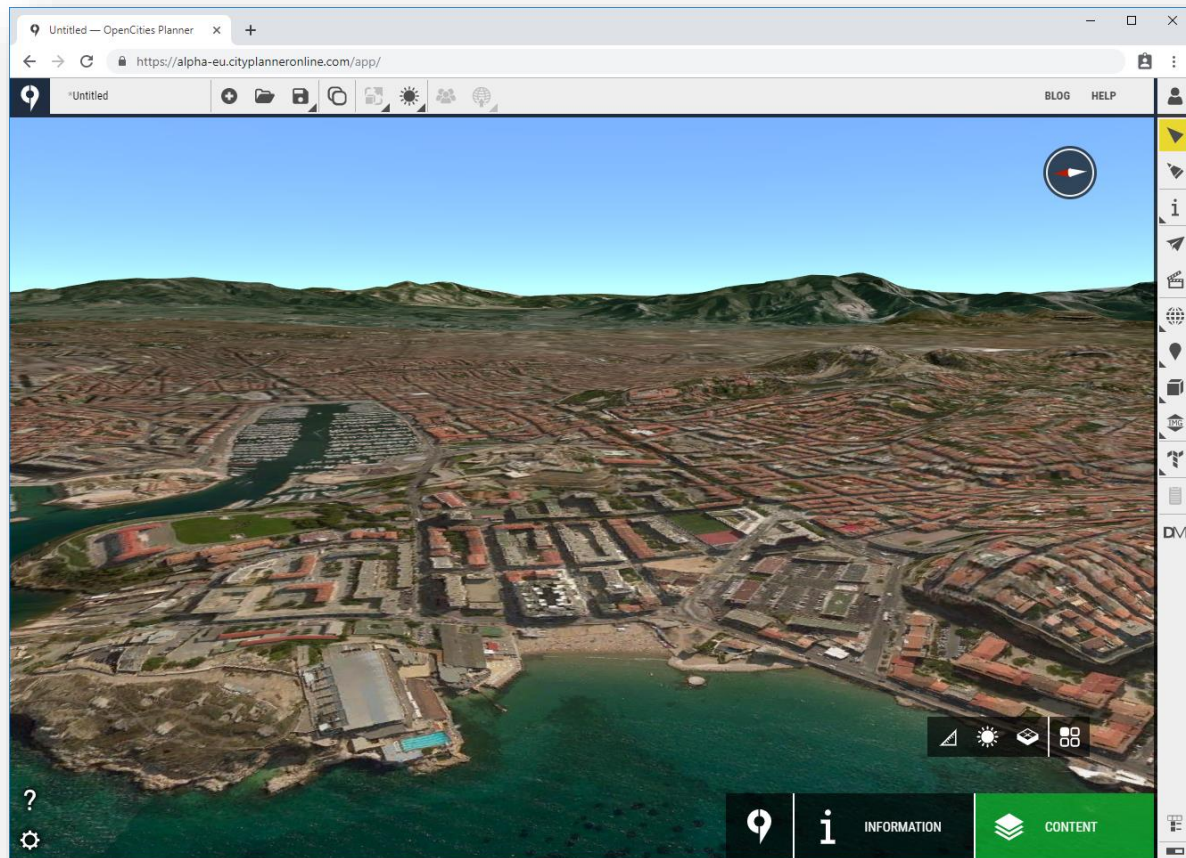


OpenCities Planner - DataManager

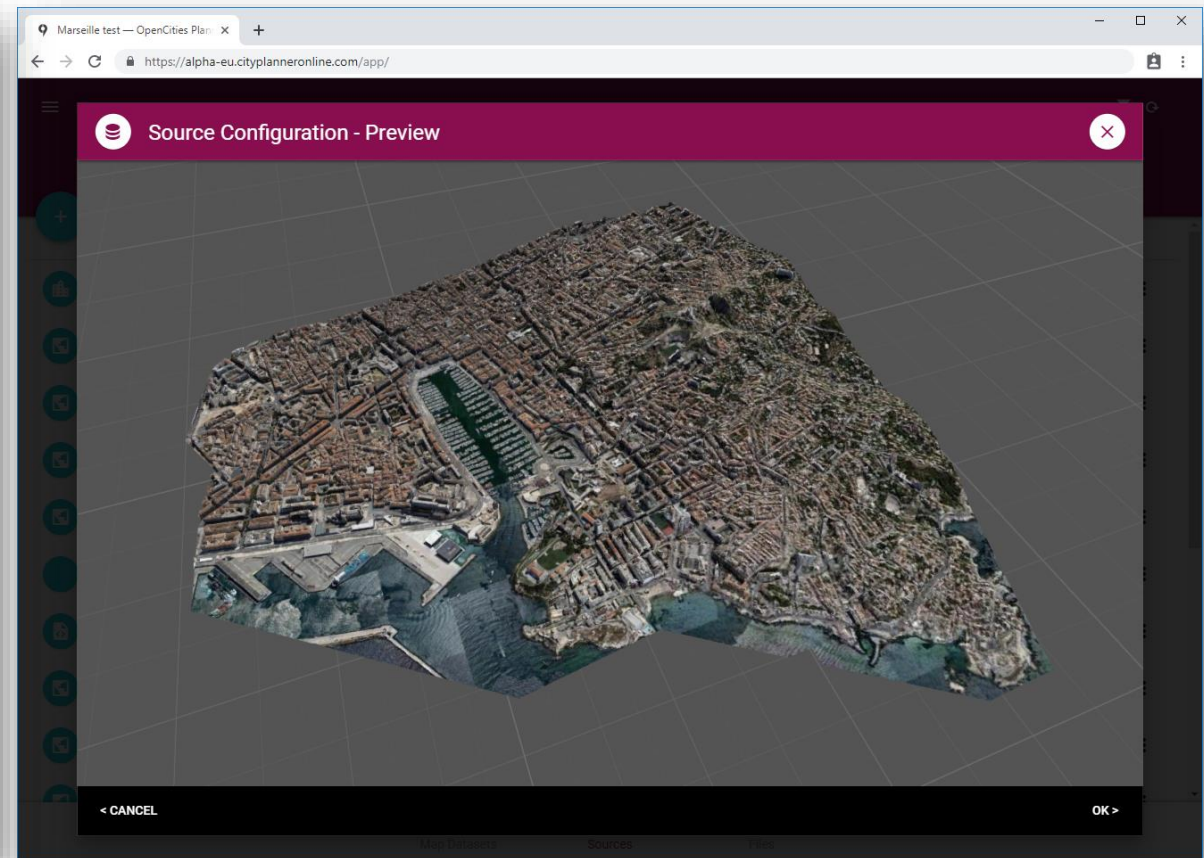
- Draw clipping polygon
- Or upload shape file for clipping



OpenCities Planner - DataManager



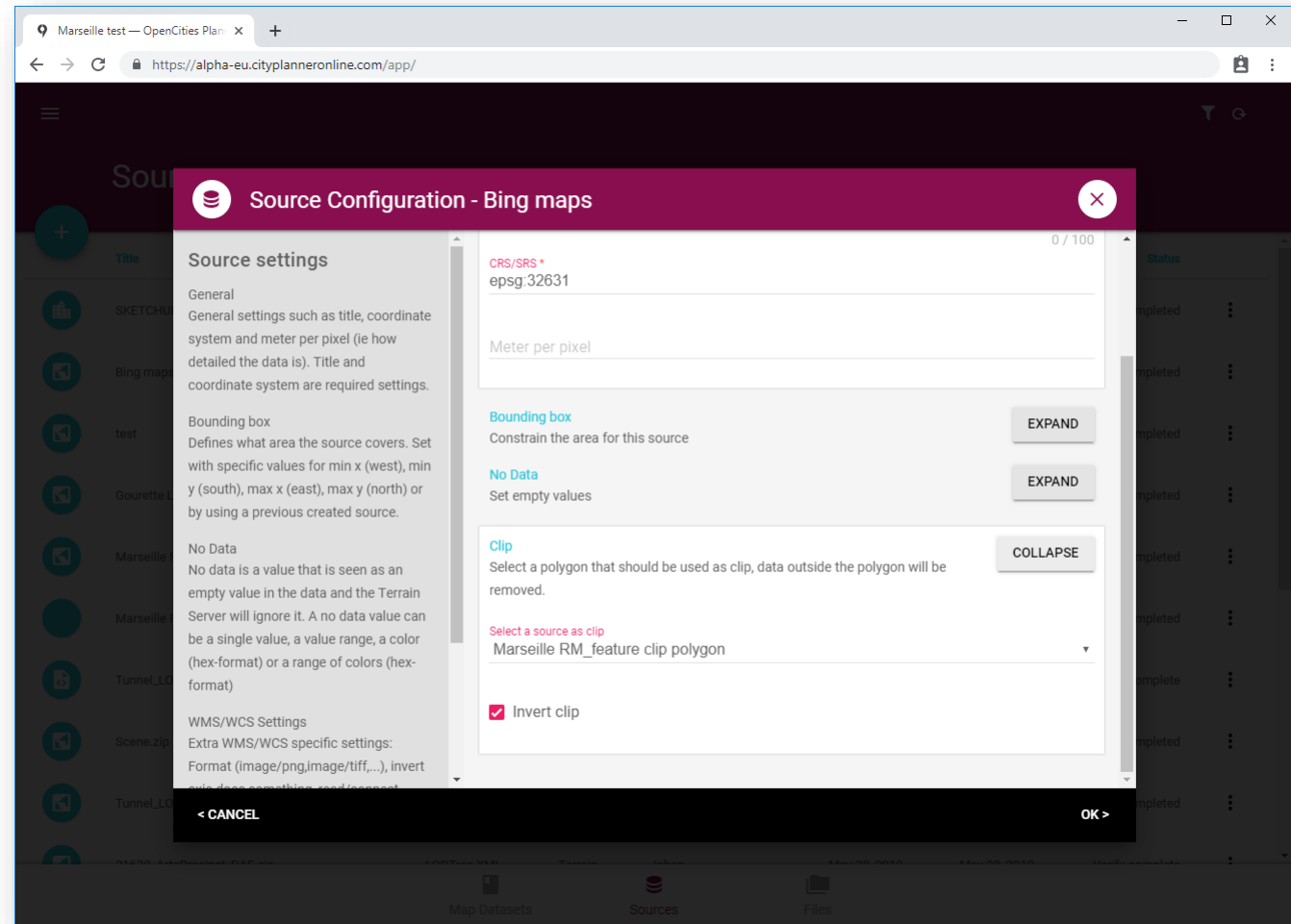
Bing maps



Reality model

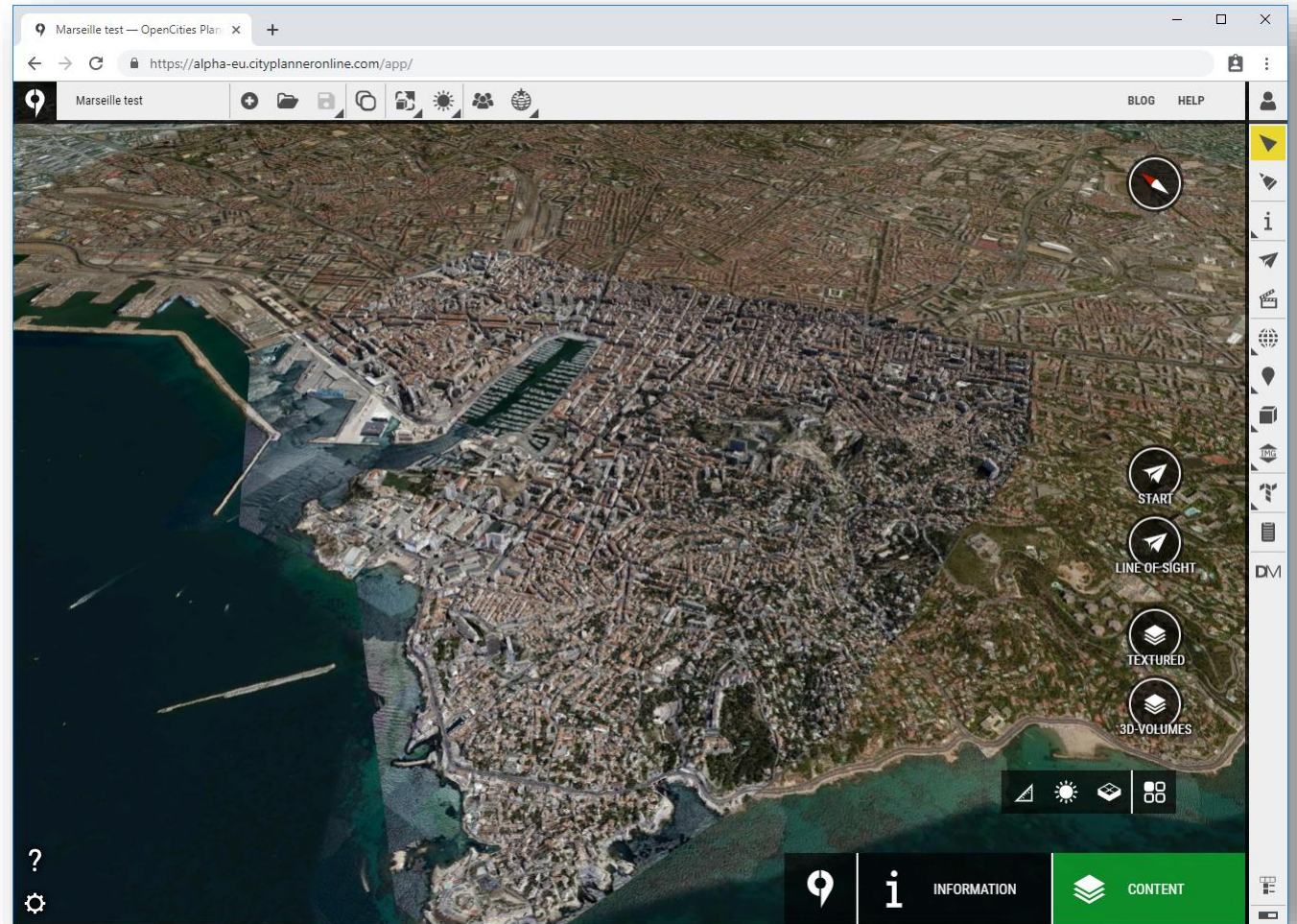
OpenCities Planner - DataManager

- Merge with other Reality models or Terrains
- Use the same clipping mask, but inverted



OpenCities Planner - DataManager

- Merged datasets, loaded in OpenCities Planner



Data Source Configuration - Draw Features




Start Polygon End Polygon

< CANCEL

NEXT >

i « BIENVENUE À MARSEILLE » X



This demo shows integration of a reality model with a digital terrain model, ortho imagery, and vector data from a spatial database.

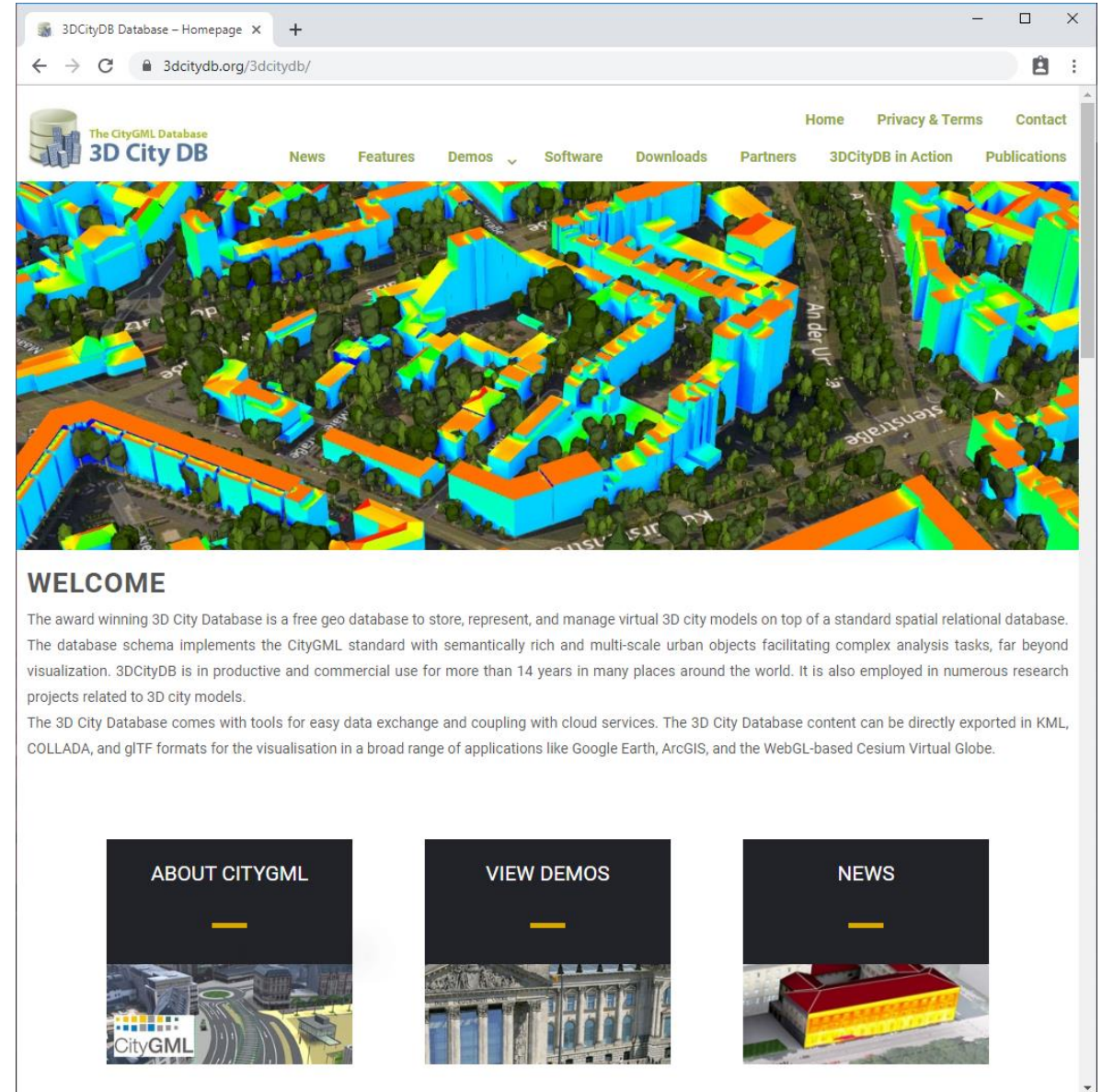
Here's what you can do:

- Click a building to see the associated database attributes
- Toggle different layers to overlay geo-data
- Use the search feature to look up locations from a connected spatial database

Twitter Facebook LinkedIn Email

CityGML & 3DCityDB

- CityGML
 - OGC Standard for semantic 3D cities
 - LODs, textures, street furniture
- 3DCityDB
 - Database mapping of CityGML schema
 - Plug and play



3DCityDB Database – Homepage x +

3dcitydb.org/3dcitydb/

The CityGML Database
3D City DB

Home Privacy & Terms Contact

News Features Demos Software Downloads Partners 3DCityDB in Action Publications

WELCOME

The award winning 3D City Database is a free geo database to store, represent, and manage virtual 3D city models on top of a standard spatial relational database. The database schema implements the CityGML standard with semantically rich and multi-scale urban objects facilitating complex analysis tasks, far beyond visualization. 3DCityDB is in productive and commercial use for more than 14 years in many places around the world. It is also employed in numerous research projects related to 3D city models.

The 3D City Database comes with tools for easy data exchange and coupling with cloud services. The 3D City Database content can be directly exported in KML, COLLADA, and glTF formats for the visualisation in a broad range of applications like Google Earth, ArcGIS, and the WebGL-based Cesium Virtual Globe.

ABOUT CITYGML

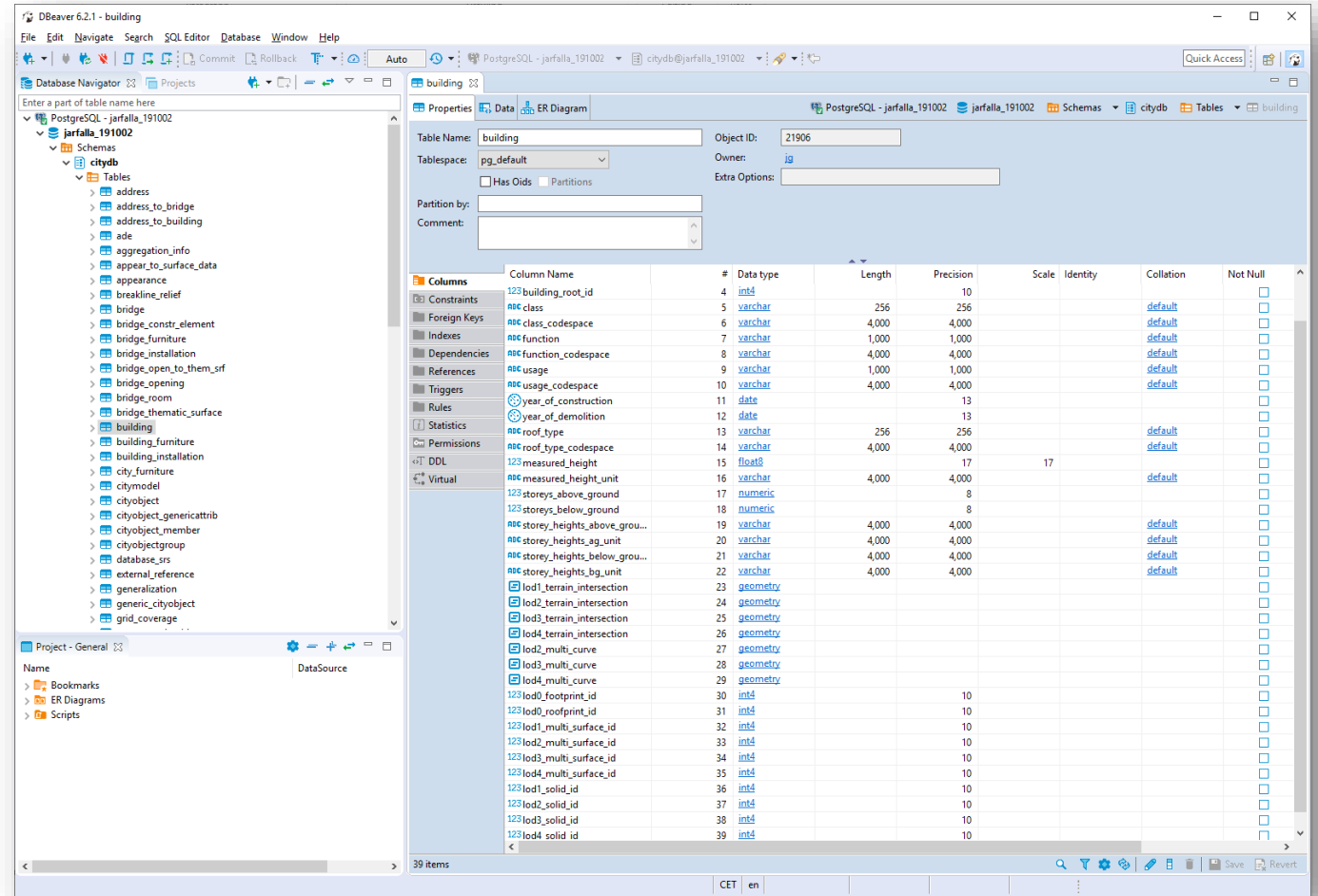
VIEW DEMOS

NEWS

CityGML

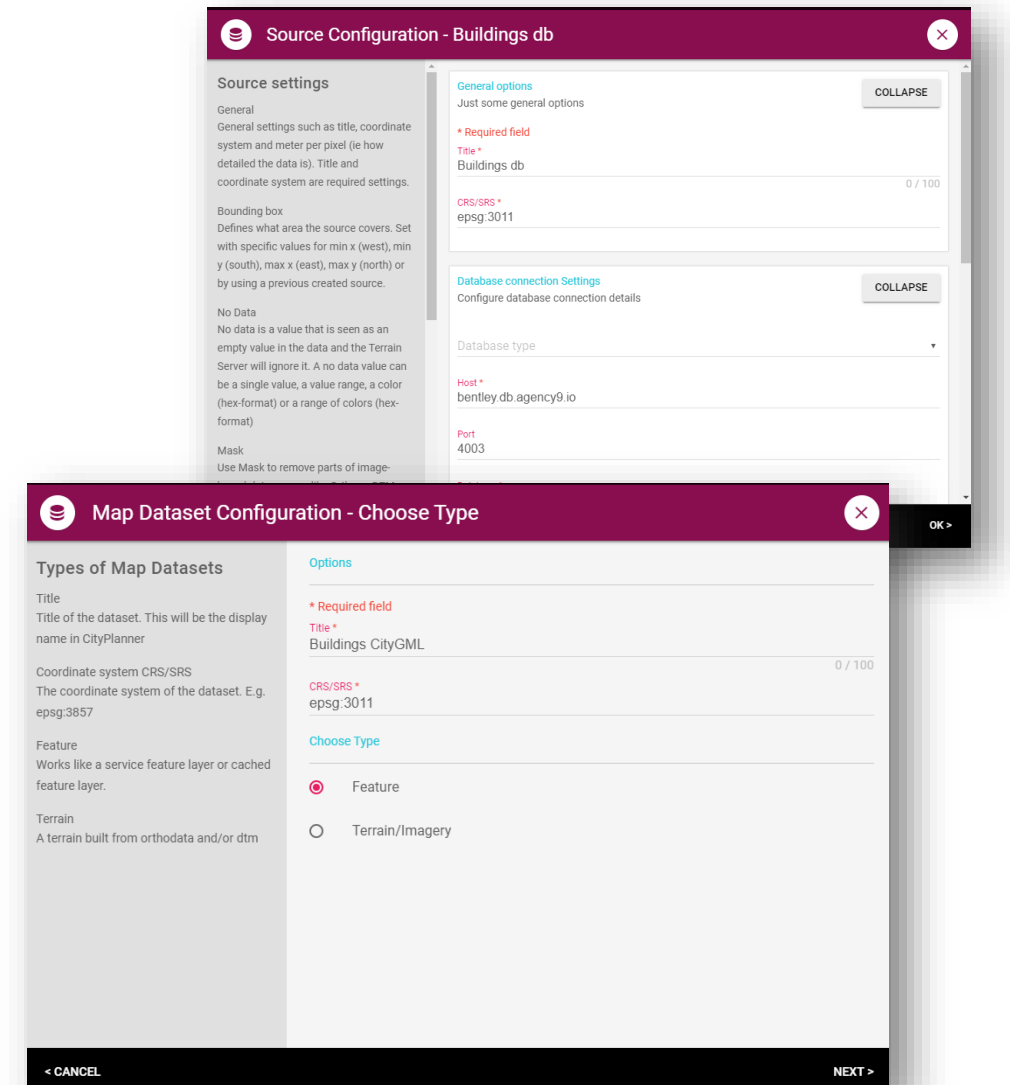
CityGML/3DCityDB

- Import CityGML into a 3DCityDB
- Configure access
 - DataManager IP must have read access
 - User with read access



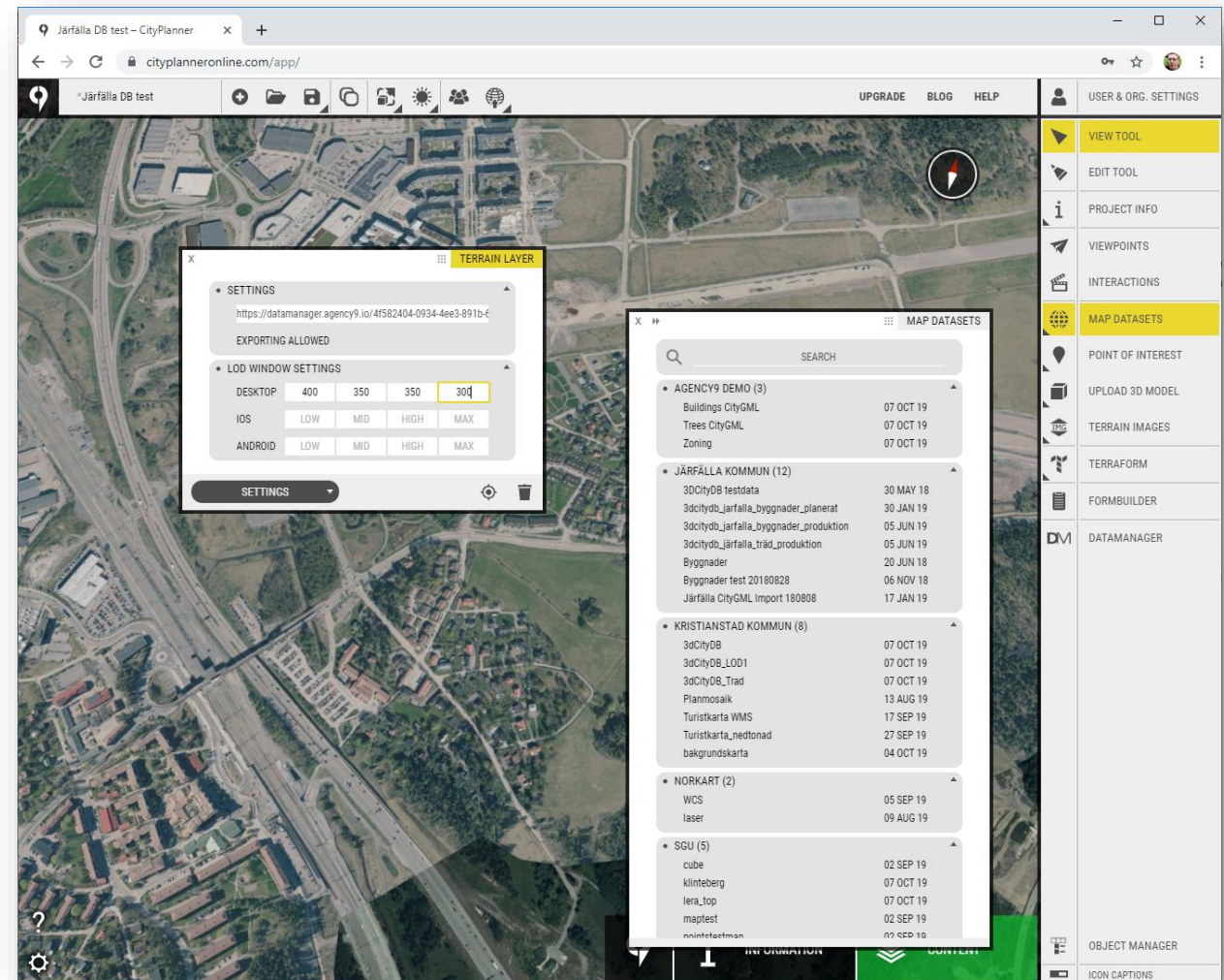
DataManager

- Create a Source
 - 1 for buildings, and 1 for trees
- Configure
 - Choose Feature, CityDB
 - Enter credentials
 - Pick Building or Vegetation from City object
 - Pick LOD or leave empty for default
 - Editable, History
- Create a Map Dataset
 - Feature
 - Pick the source
 - Visualization option: Tile size
 - Done



Editor

- Add from Map Datasets
- Configure LOD window settings
- Cache
 - Built on the fly
 - Has a time to live
 - Can be cleared manually



Updating the 3DCityDB

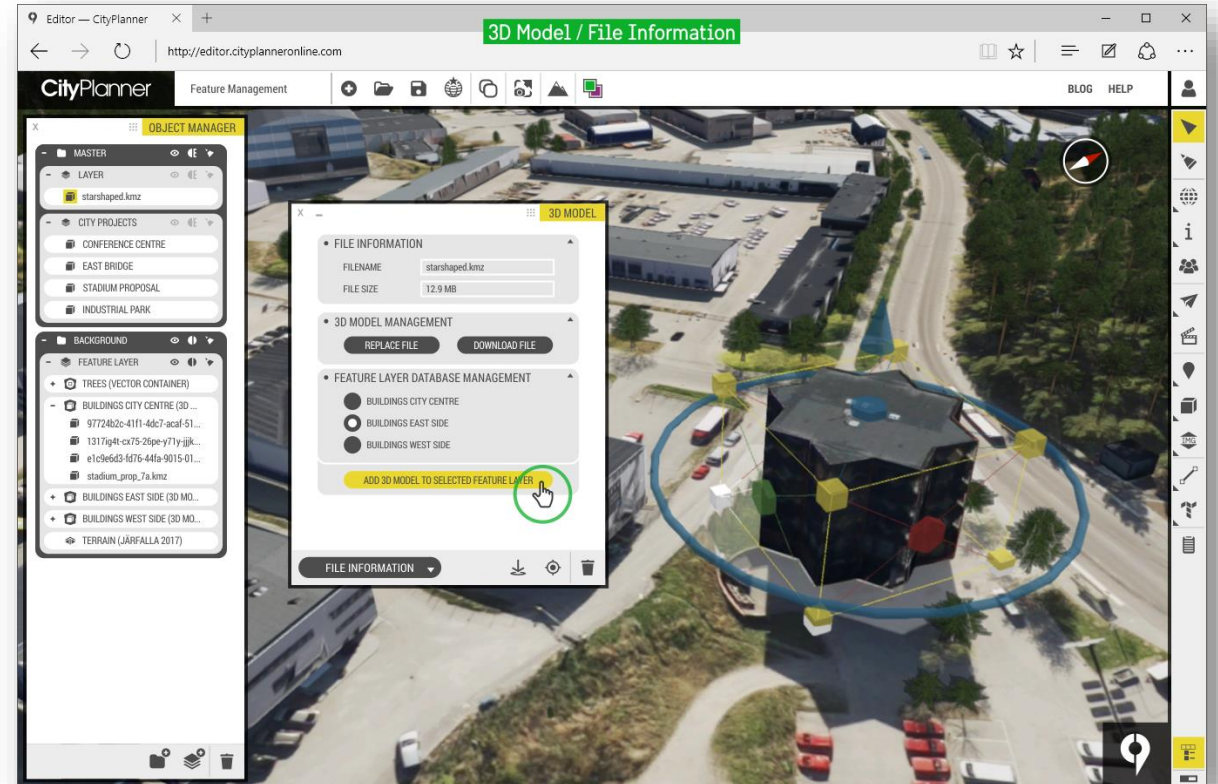
- If the source was set to Editable, you can:

- Add
- Remove
- Update
- Download

- In Editor:

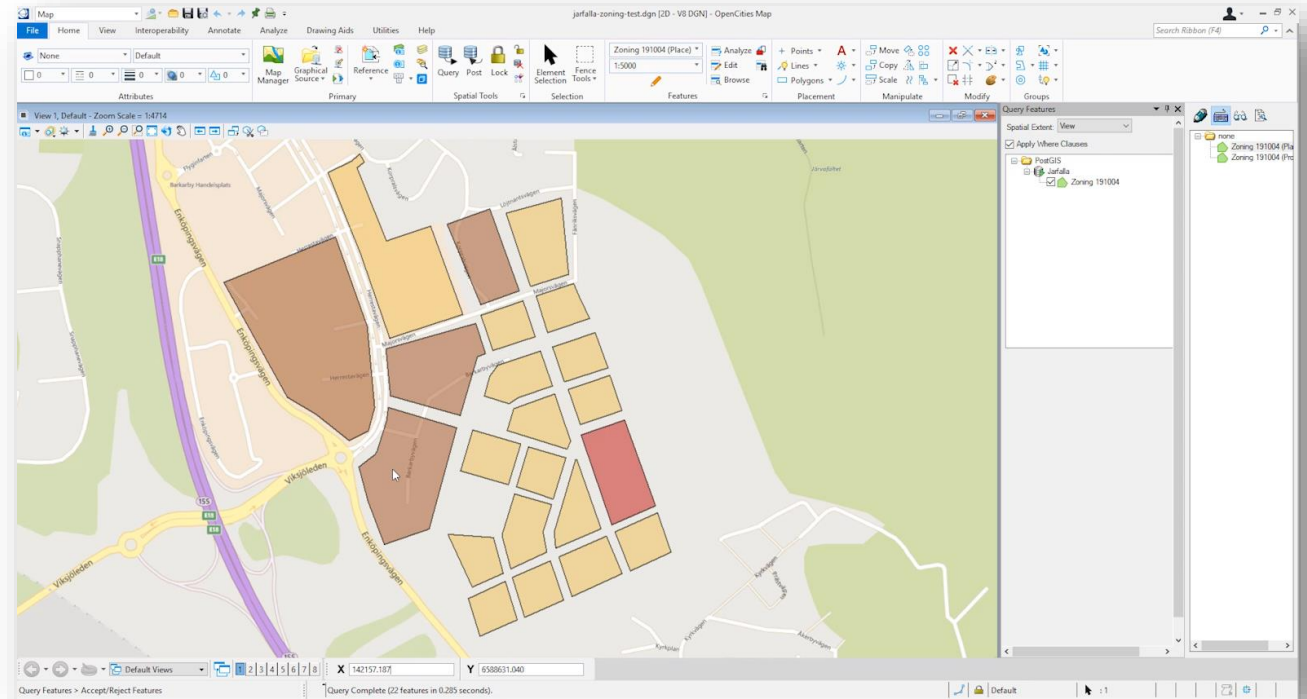
- Go to properties
- Data sources
- Edit Data Sources

- Edit and then Commit changes



Generic geometry from Database

- Database preparation:
- User with read access to
 - Data as geometry
 - Points
 - Lines
 - Polygons
 - Attributes for extruding, colors, id



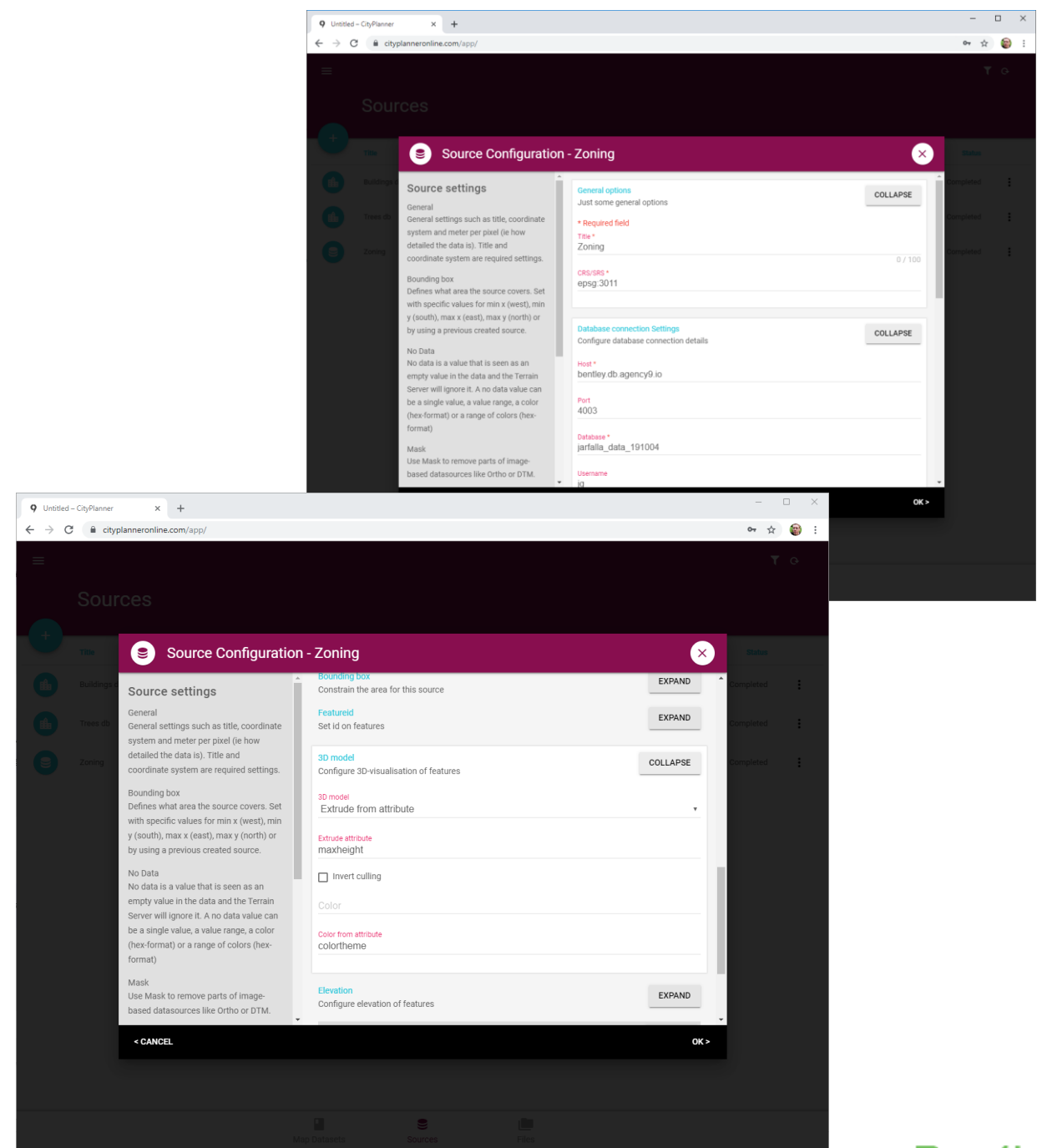
DataManager

- Configure

- Choose Feature, PostGIS
- Enter credentials
- Enter the Table name
- 3D-model visualization
 - Extrude from attribute
 - Color from attribute

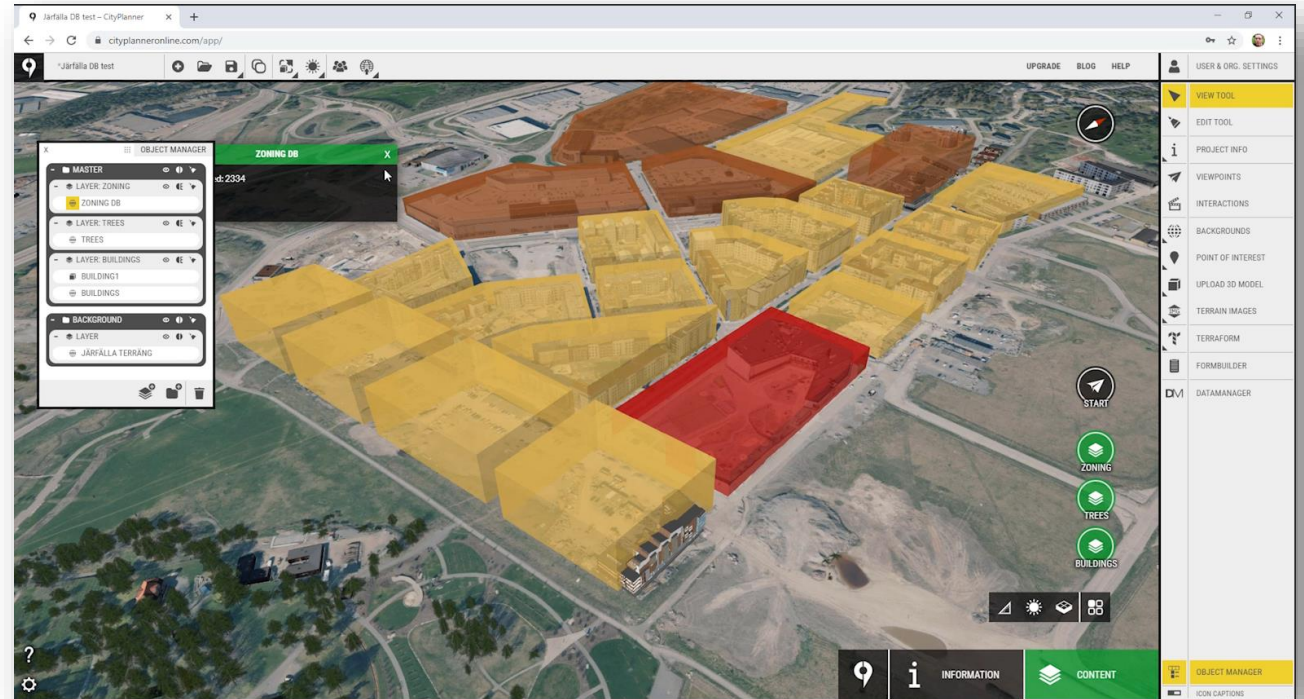
- Create a Map Dataset

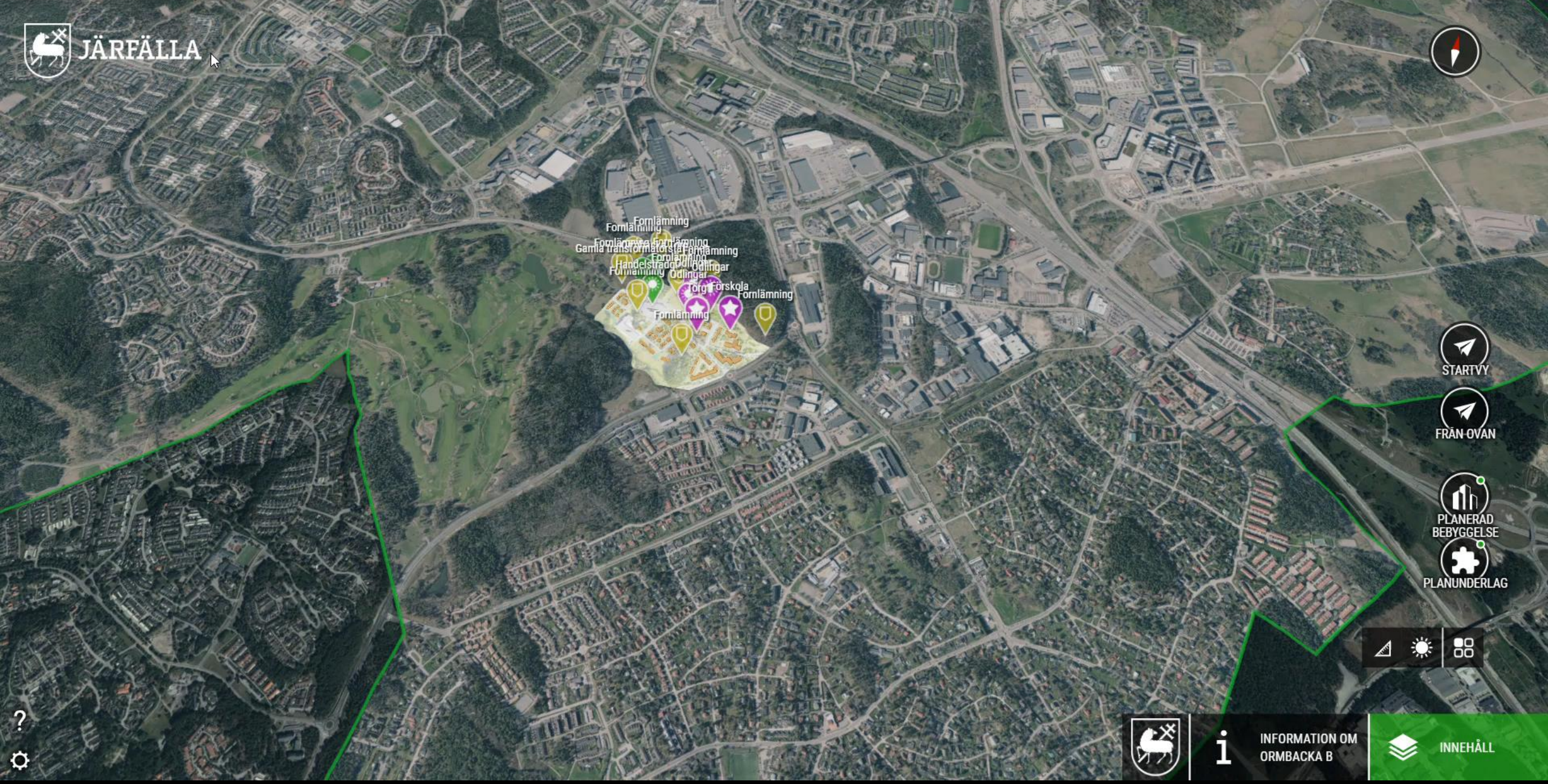
- Feature
- Pick the source
- Visualization option: Tile size
- Done



Editor

- Add from Map Datasets
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- Cache
 - Built on the fly
 - Has a time to live
 - Can be cleared manually
- $\{\text{objectid}\}$
 - For instance:
`url.to.yourservice/?id=${objectid}`





Fornlämning
Fornlämning
Gamla transformatörställen
Handelssträdgården
Fornlämning Odlingar
Torg Forskola
Fornlämning



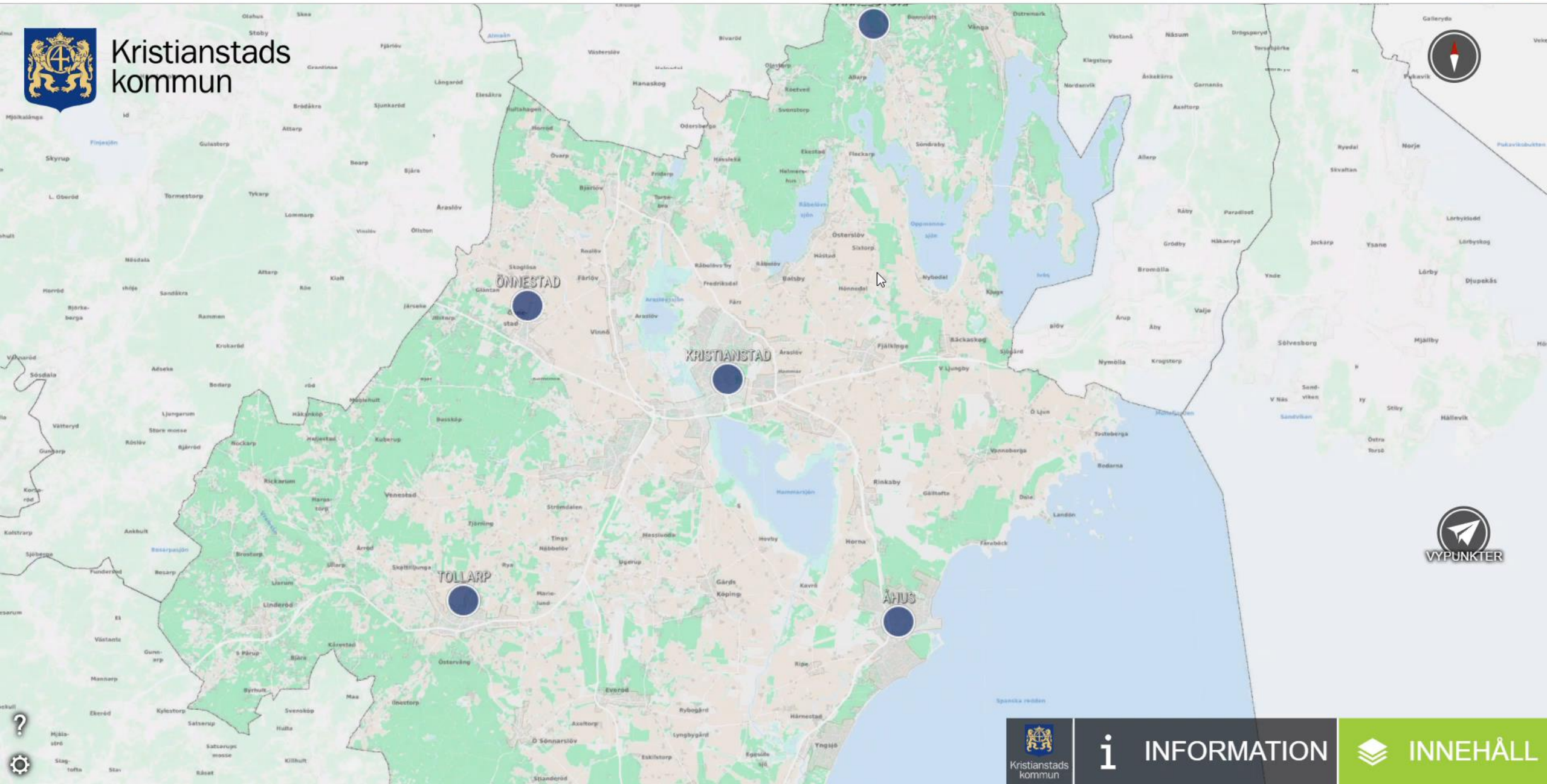
INFORMATION OM ORMBACKA B



INNEHÅLL



Kristianstads kommun



i INFORMATION

INNEHÅLL



Open window

SEARCH



APARTMENT	
UID	71/346-6801/Bay Square - 07/602
LAND_NO	71
PARCEL_ID	346-6801
BLD_NAME	Bay Square - 07
UNIT_NUM	602
AREANAME	Bay Square
ACTUALSIZE	223.21
DEWA_PREM	345280237
PROP_USAGE	42



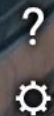
START

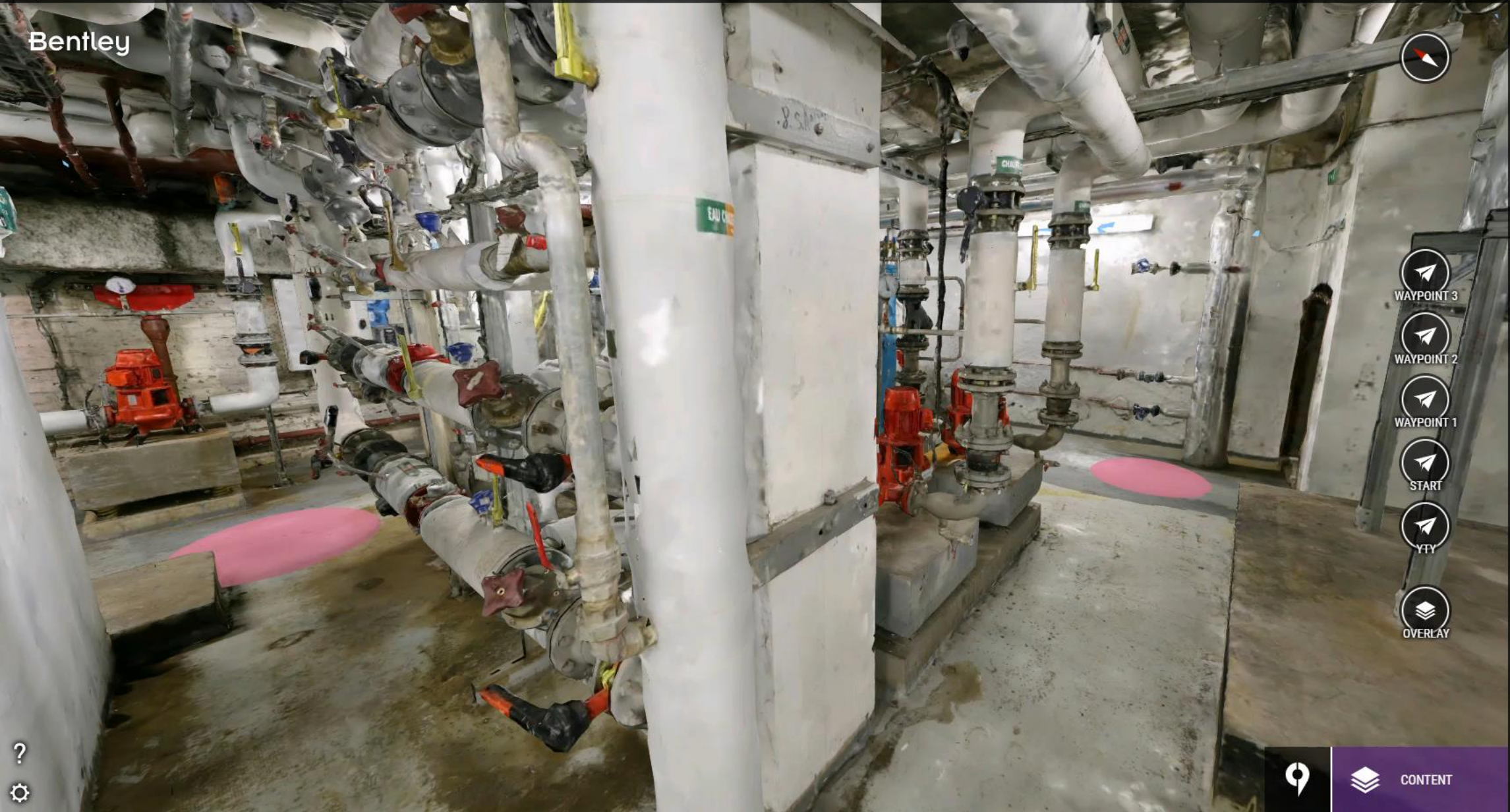


360° GROUND VIEW



INFO





Bentley

USER & ORG. SETTINGS

- VIEW TOOL
- EDIT TOOL
- PROJECT INFO
- VIEWPOINTS
- INTERACTIONS
- BACKGROUNDS
- POINT OF INTEREST
- UPLOAD 3D MODEL
- TERRAIN IMAGES
- TERRAFORM
- FORM BUILDER
- DATAMANAGER



OVERLAY

WAYPOINT 3

WAYPOINT 2

WAYPOINT 1

START

YTY

OVERLAY



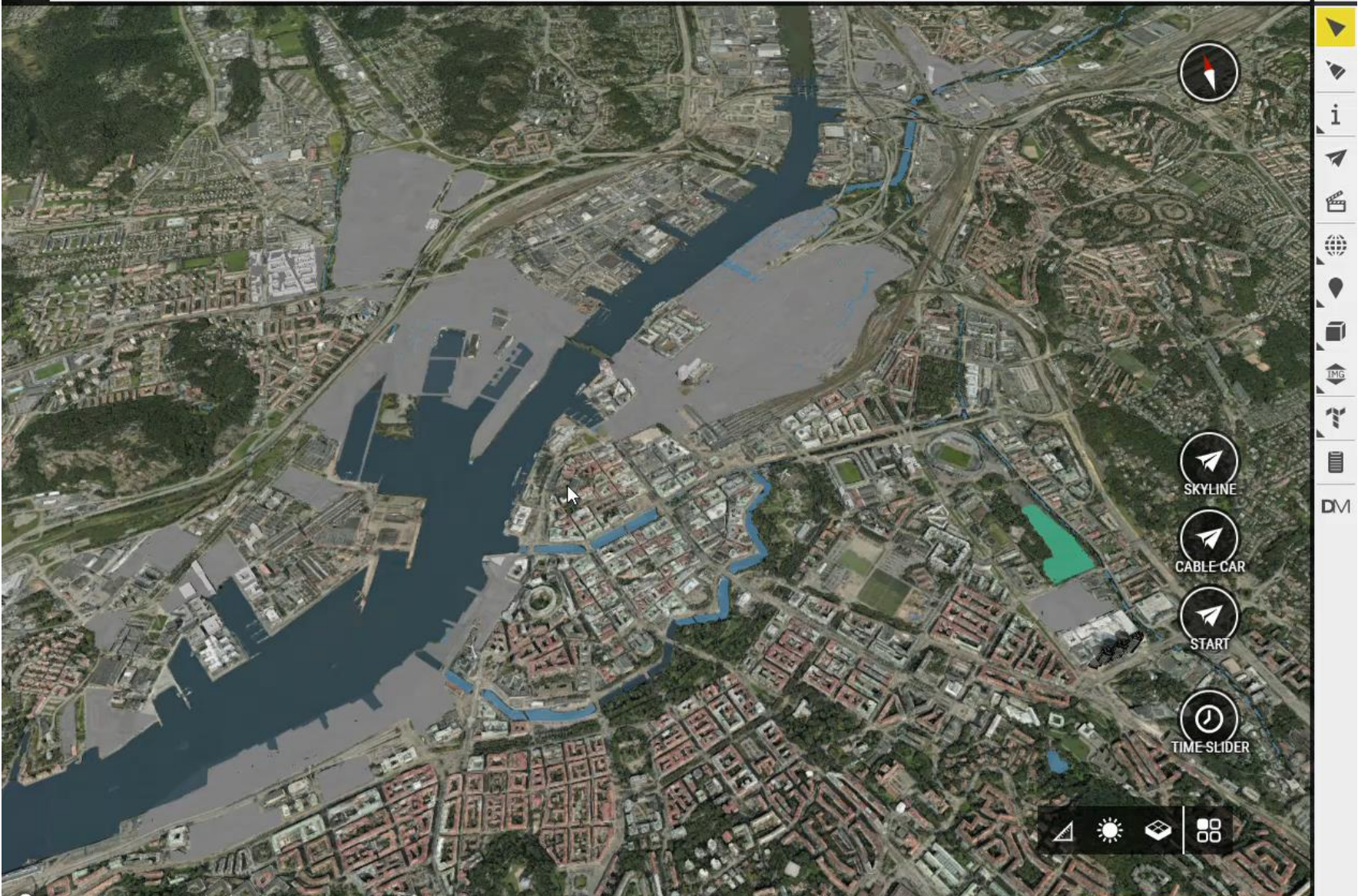
CONTENT

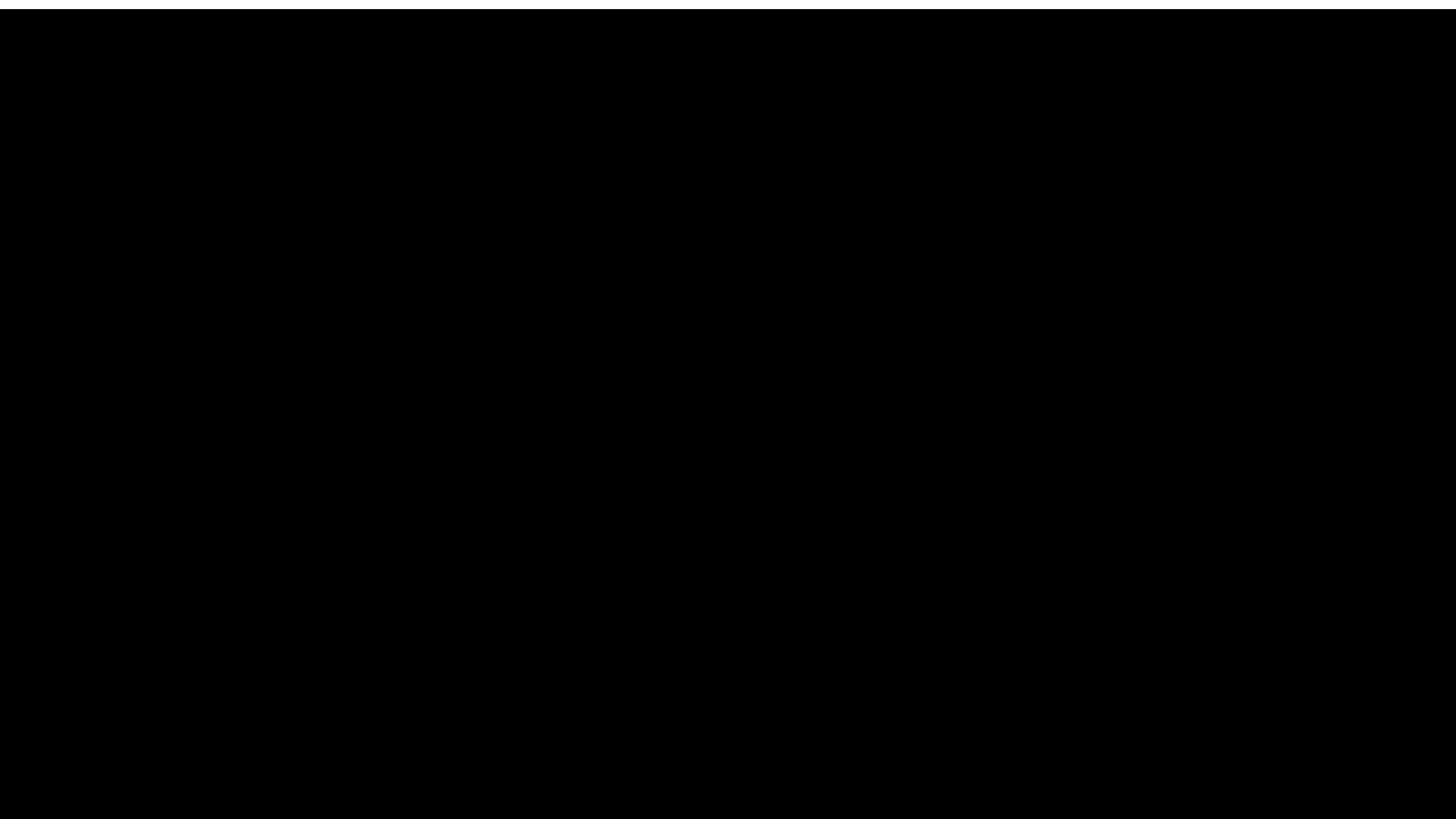


OBJECT MANAGER



ICON CAPTIONS





Summary

- Web application that let's you visualize 2D, 3D, GIS without any installations
- Web interface that supports self provisioning of datatypes
 - Ortho, Aerial imagery
 - WMS, WCS
 - Reality Models, semantic 3D-city models and street furniture,
 - Spatial databases

Thank you!

For more information, please visit:

www.Bentley.com/OpenCitiesPlanner