



BIRGIT

Creation of 3D Building from surveying data
April 2025



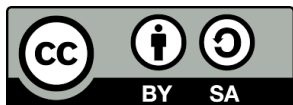
Co-funded by
the European Union

Creation of 3D Building from surveying data

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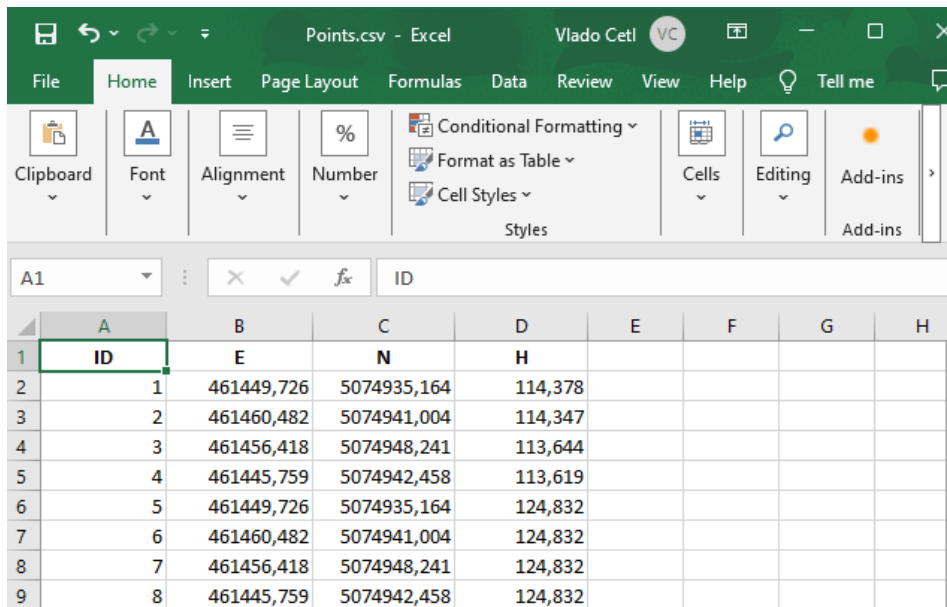
Learning outcomes

At the end of this module, the participant is expected to be able to

- Describe and explain creation of 3D buildings from surveying data
- Apply commercial CAD software to produce a 3D building with a medium level of detail (LOD 2) based on surveying data

3D Surveying Data

- Typically, 3D surveying data is represented by points with associated position coordinates and elevation values e.g.:



Points.csv - Excel							
Vlado Cetl VC							
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A	B	C	D	E	F	G	H
ID	E	N	H				
1	1	461449,726	5074935,164	114,378			
2	2	461460,482	5074941,004	114,347			
3	3	461456,418	5074948,241	113,644			
4	4	461445,759	5074942,458	113,619			
5	5	461449,726	5074935,164	124,832			
6	6	461460,482	5074941,004	124,832			
7	7	461456,418	5074948,241	124,832			
8	8	461445,759	5074942,458	124,832			

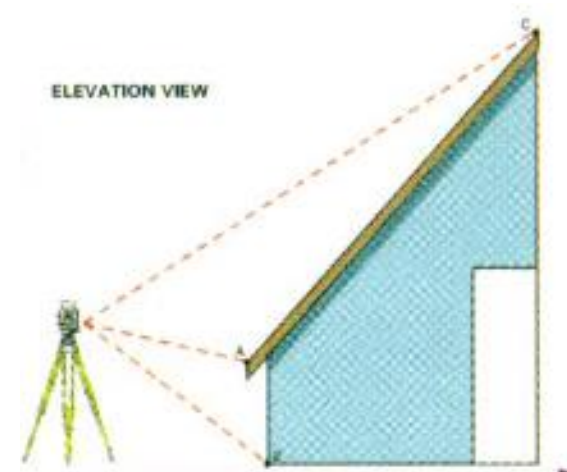
3D Surveying Data

- [Coordinate Reference System](#) (CRS) e.g. HTRS96/TM ([EPSG 3765](#))
- HTRS96/TM is a projected CRS

Point ID	East coordinate	North coordinate	Elevation	
ID	E	N	H	
1	461449,726	5074935,164	114,378	
2	461460,482	5074941,004	114,347	
3	461456,418	5074948,241	113,644	
4	461445,759	5074942,458	113,619	
5	461449,726	5074935,164	124,832	

3D Surveying Data

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7	461456,418	5074948,241	124,832
8	461445,759	5074942,458	124,832



Different elevations? Points on the ground. Intersection of the foundation of the building with the ground

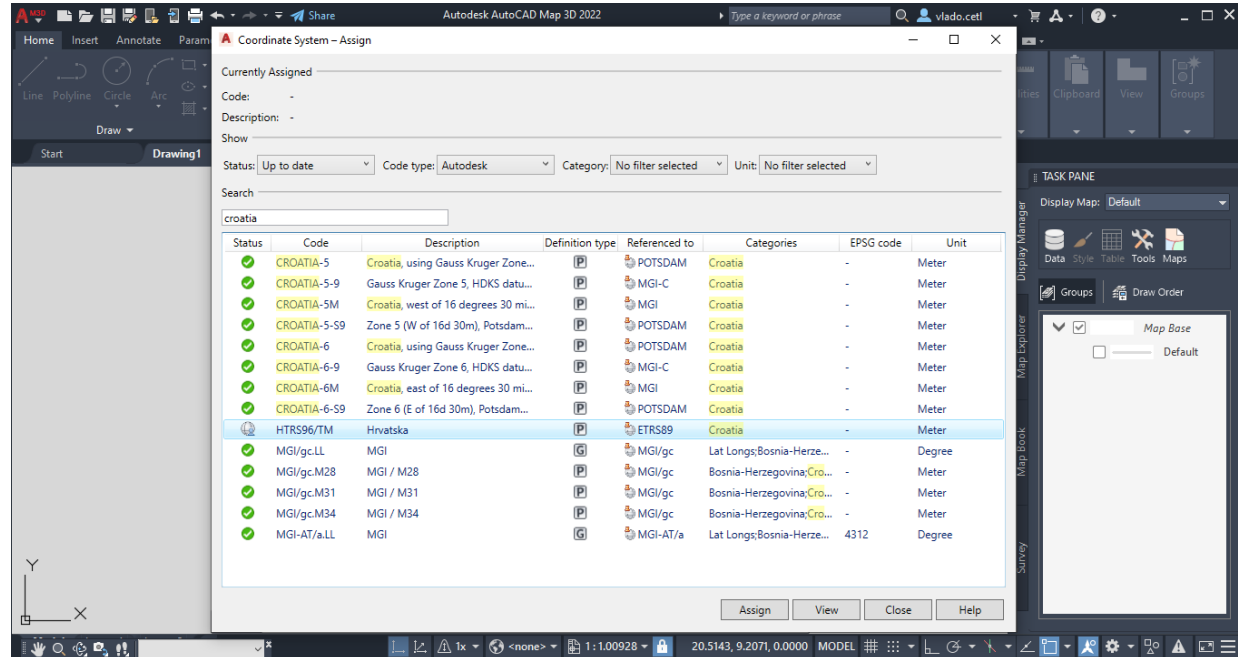
Same elevations? Points on the roof

Import/Draw 3D Surveying data (points) in CAD

- Limited or no possibilities in FOSS CAD software (to create points with 3D coordinates)
- The best option is to use commercial software e.g. AutoCAD Map 3D (<https://www.autodesk.com/products/autocad/included-toolsets/autocad-map-3d>)
 - Free trial available and free student licenses at: (<https://www.autodesk.com/free-trials>)

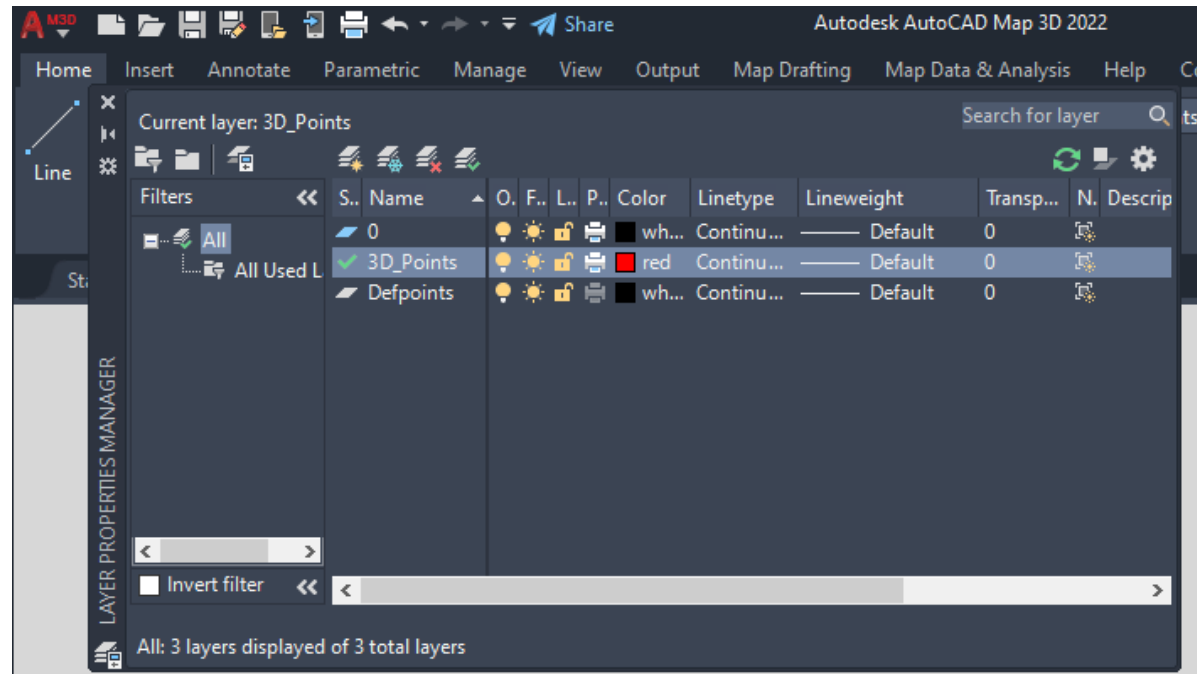
Importing 3D Surveying Data in AutoCAD Map 3D

1. New Drawing
2. Set Units and CRS



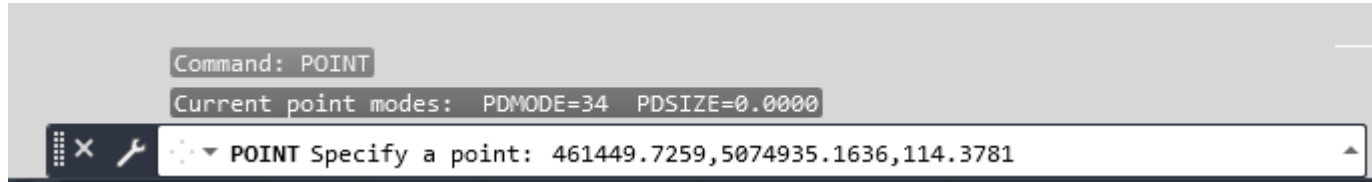
Importing 3D Surveying Data in AutoCAD Map 3D

3. Create a new layer (3D_points)

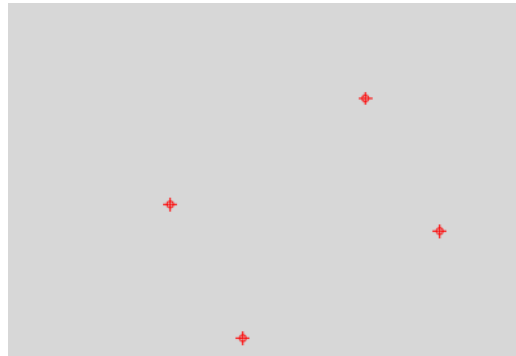


Importing 3D Surveying Data in AutoCAD Map 3D

4. Draw points (one by one) using their coordinates (1-4) and the command: POINT

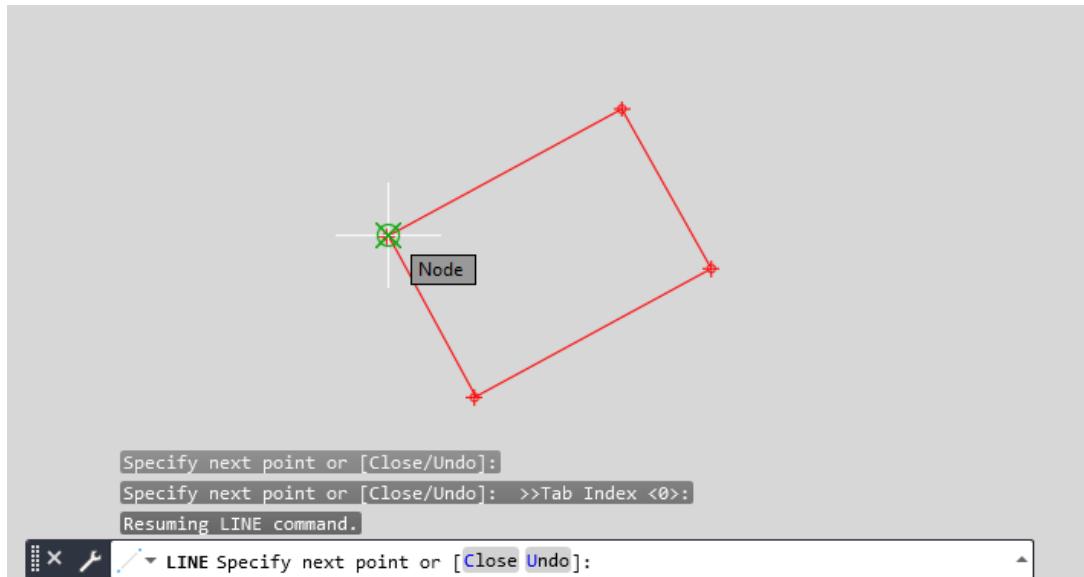


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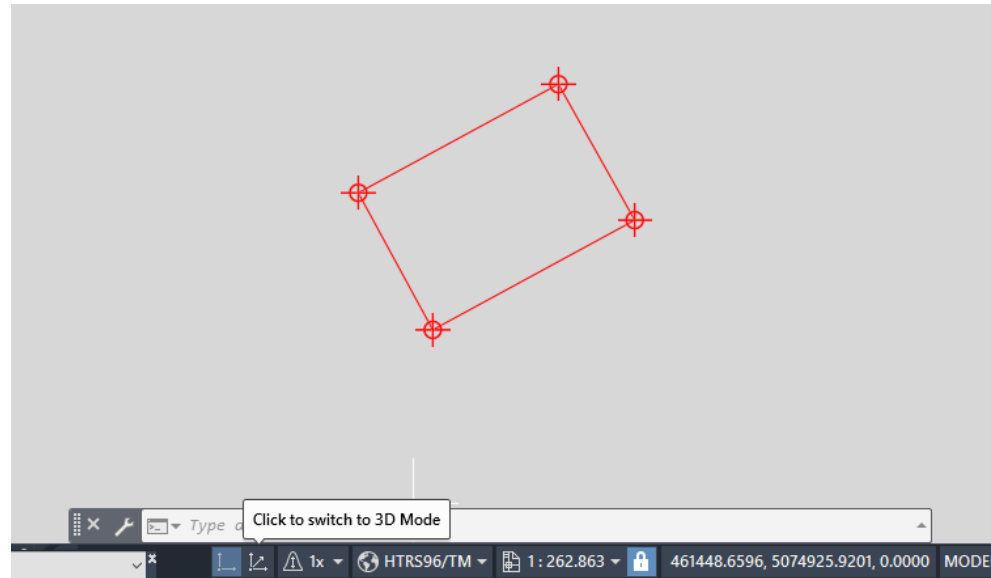
Importing 3D Surveying Data in [AutoCAD Map 3D](#)

5. Create a new layer (3D_Building)
6. Draw the foundation of the building (draw lines connecting points 1-4)



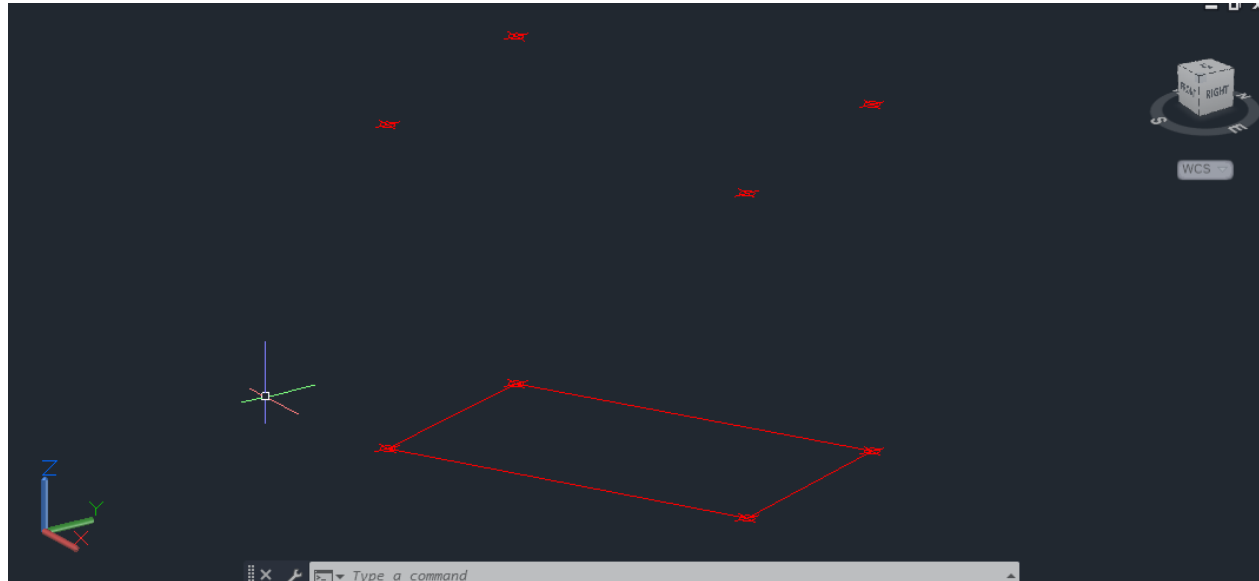
Importing 3D Surveying Data in [AutoCAD Map 3D](#)

7. Change the current layer to 3D_Points and draw points by coordinates (5-8)
8. Switch to 3D mode



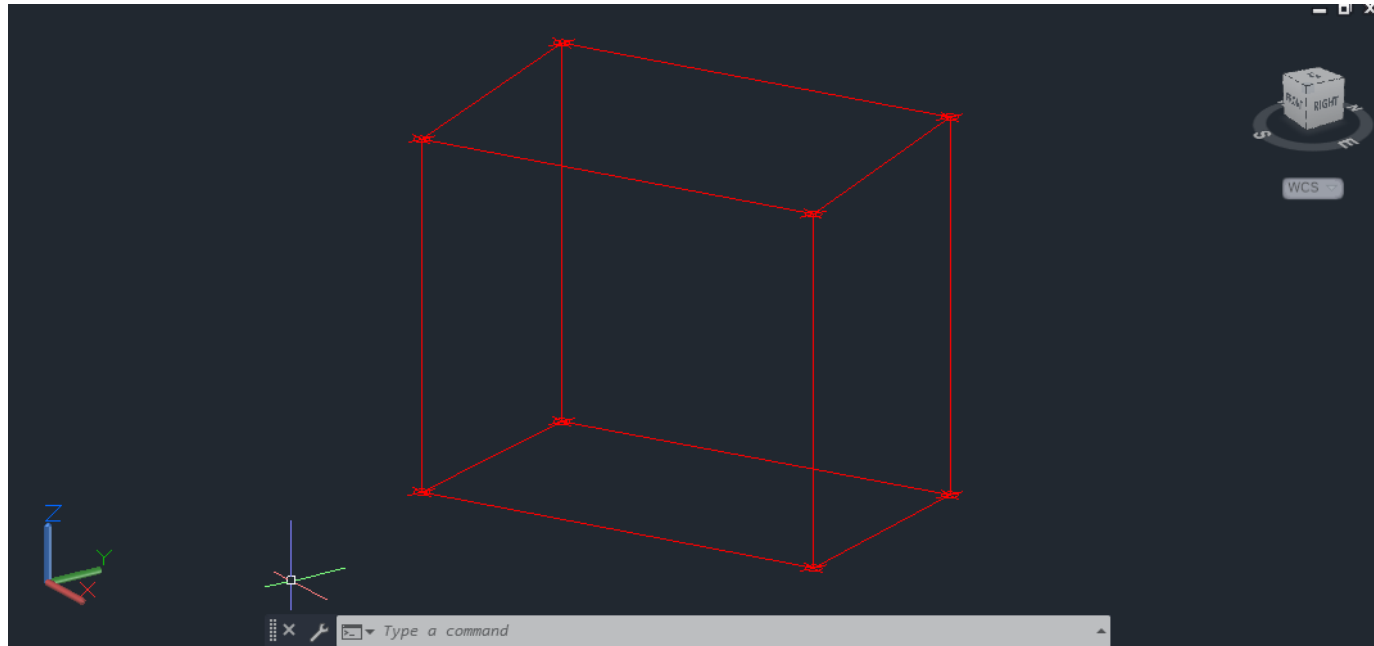
Importing 3D Surveying Data in [AutoCAD Map 3D](#)

9. Change the current layer to 3D_Building and draw the lines connecting the building



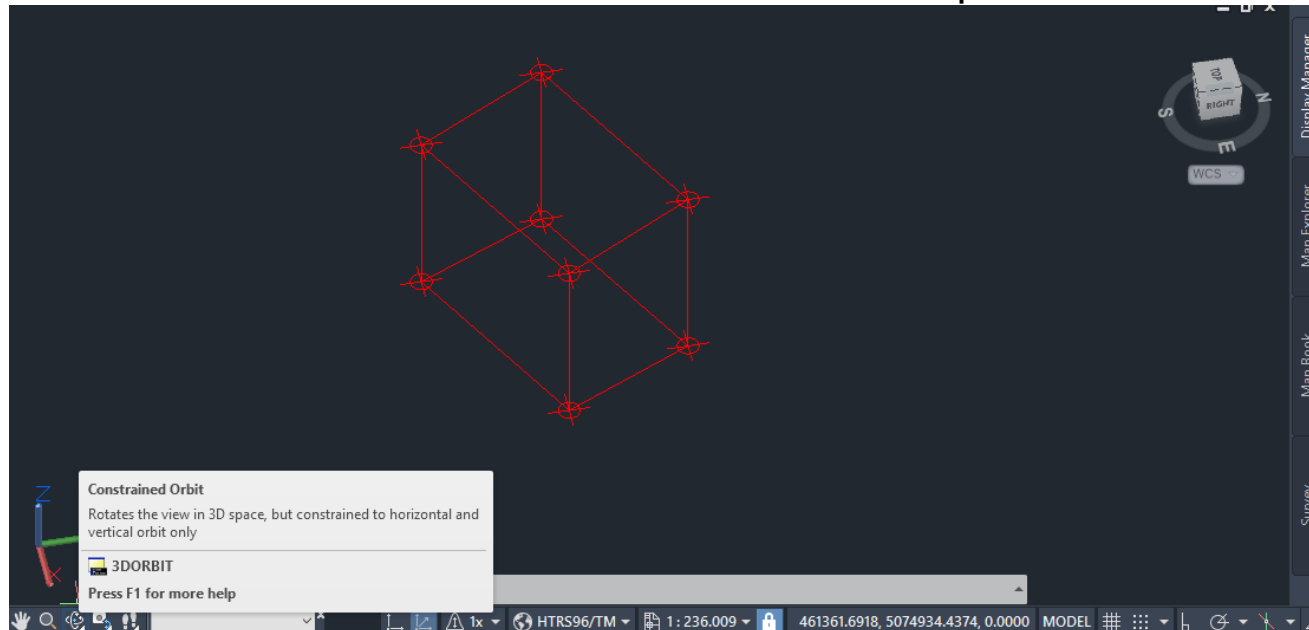
Importing 3D Surveying Data in [AutoCAD Map 3D](#)

Result = LOD1 building model



Importing 3D Surveying Data in [AutoCAD Map 3D](#)

10. Use the 3DORBIT command to rotate the view in 3D space

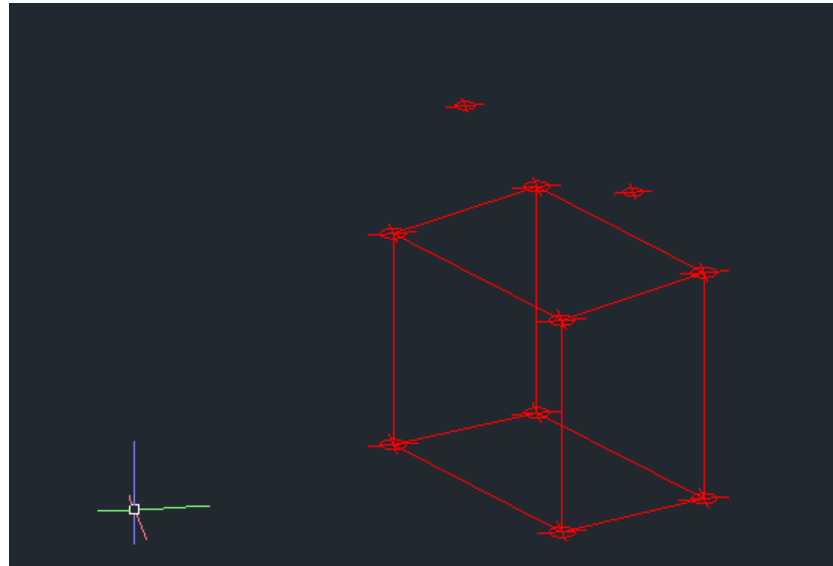


Importing 3D Surveying Data in AutoCAD Map 3D

11. Let's create the roof (draw 2 more points with coordinates)

Point ID 9 461447.7423,5074938.8110,130.0000

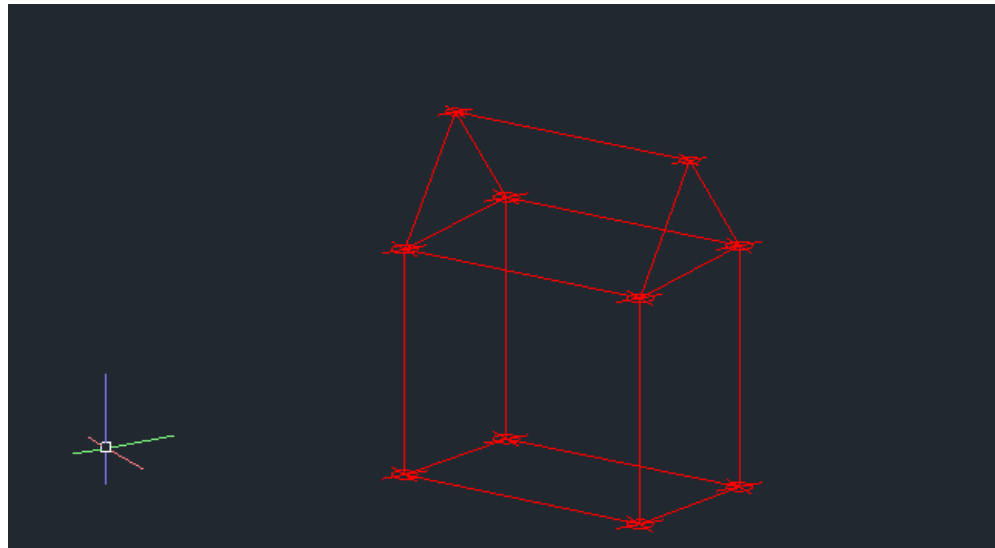
Point ID 10 461458.4498,5074944.6226,130.0000



Importing 3D Surveying Data in AutoCAD Map 3D

12. Change the current layer to 3D_Building and draw the lines connecting the roof of the building

Result = LOD2 building model



Thank you for your attention

Some logo's and links to web site and social media here



<https://birgitproject.eu/>