Cultural Heritage Through Time

Project Deliverable

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Revisions record

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0	Gabriele Guidi	Document framework	April 17, 2018
1	Beata Hejmanowska	Document development	May 31, 2018
2			
3			
4			
5			

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Introduction

3D/4D models or point clouds are common displayed in own local environment (CloudCompare, MeshLab, BIM software etc.). Some limited solutions are available to present this data integrated with GIS data (for example CityEngine or Potree). On the other hand integration with GIS data is possible basing on GIS software (commercial like ArcGIS or open sources like QGIS). For the purposes of the project just QGIS was applied.

Integration of 3D/4D model visualization with GIS data

As an example of the integration of 3D/4D model visualization with GIS data was presented for Poland test area. The research object selected for the project was Krakow Fortress build by Austrian, composed of many single constructions around Krakow, built for defensive purposes (Figure 1 in red). In Figure 1 in yellow marked forts selected in the project. In the legend following background layers are presented:
- historical map,
- OpenStreetMap
- Google Maps Hybride

In next figures (Figure 2,3,4) all the maps are shown with Fort Kosciuszko location.
Active attribute data base with external links is available as in Figure 5:
- description about Fort Kosciuszko
- 4D using CityEngine
- movie.

Measurement's tool (distance and area) and option for coordinate reading like in Figure 6.
Searching in 4D data base is possible as in Figure 7 (For Wegrzce was selected).
Active attribute data base with external links is available for Fort Węgrzce and presented (Figure8):
- description about Fort Wegrzce (Figure 9)
- CityEngine (Figure 10)
- Potree (Figure 11)
- 3DHOP (Figure 12)

Other common functionality is also available:
- search for location (Figure 13)
- search in Google Maps (Figure 14).

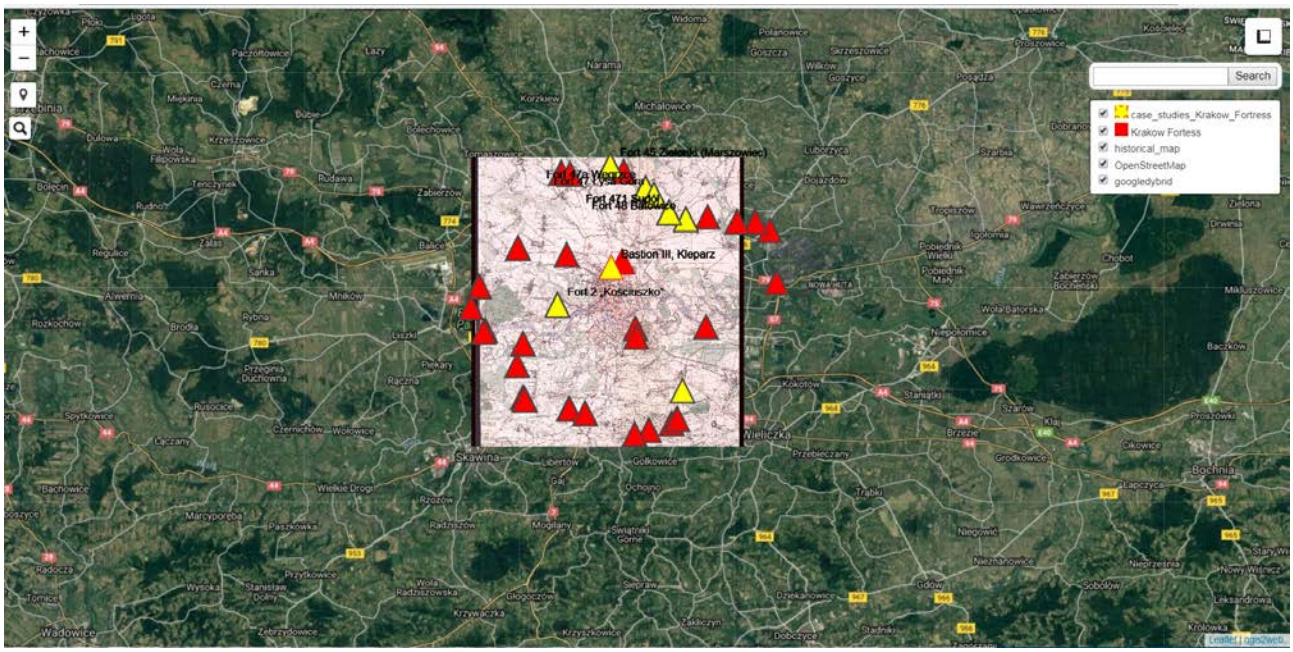

Figure 1 GIS data through www access – case study – Poland, in red all forts around Krakow, in yellow forts selected in the project

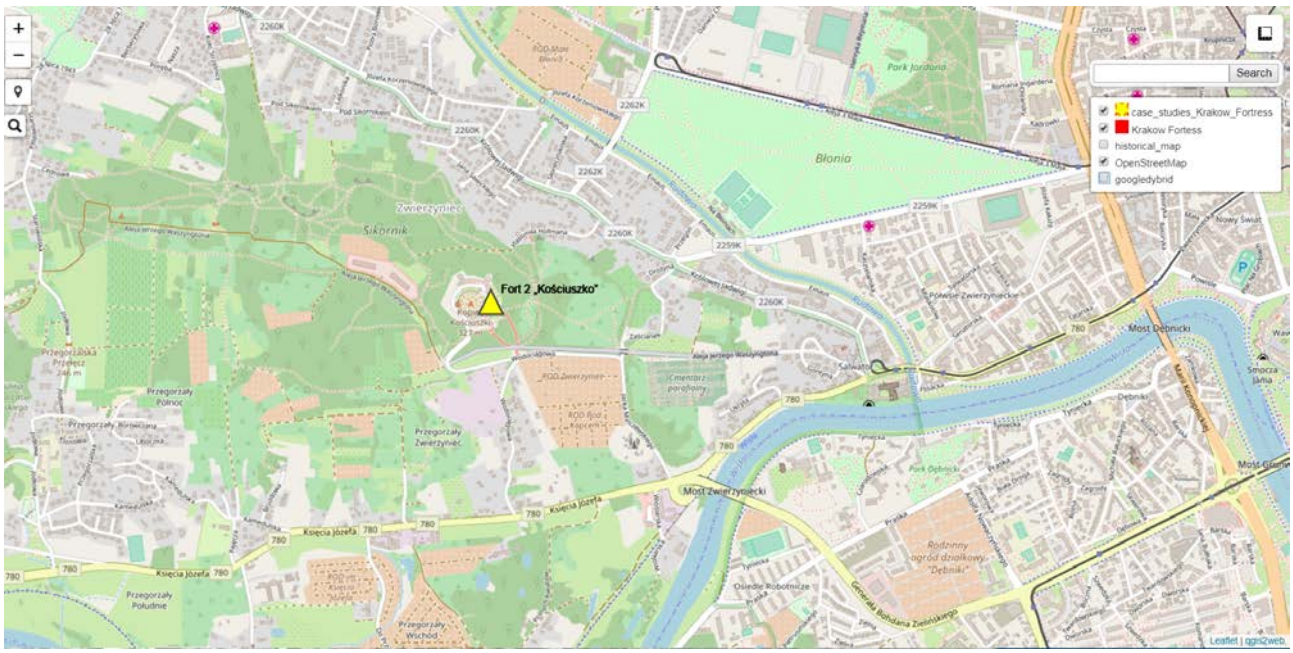

Figure 2 Fort Kosciuszko – on the OpenSteerMap

Figure 3 Fort Kosciuszko – on the Gogle Maps Hybride

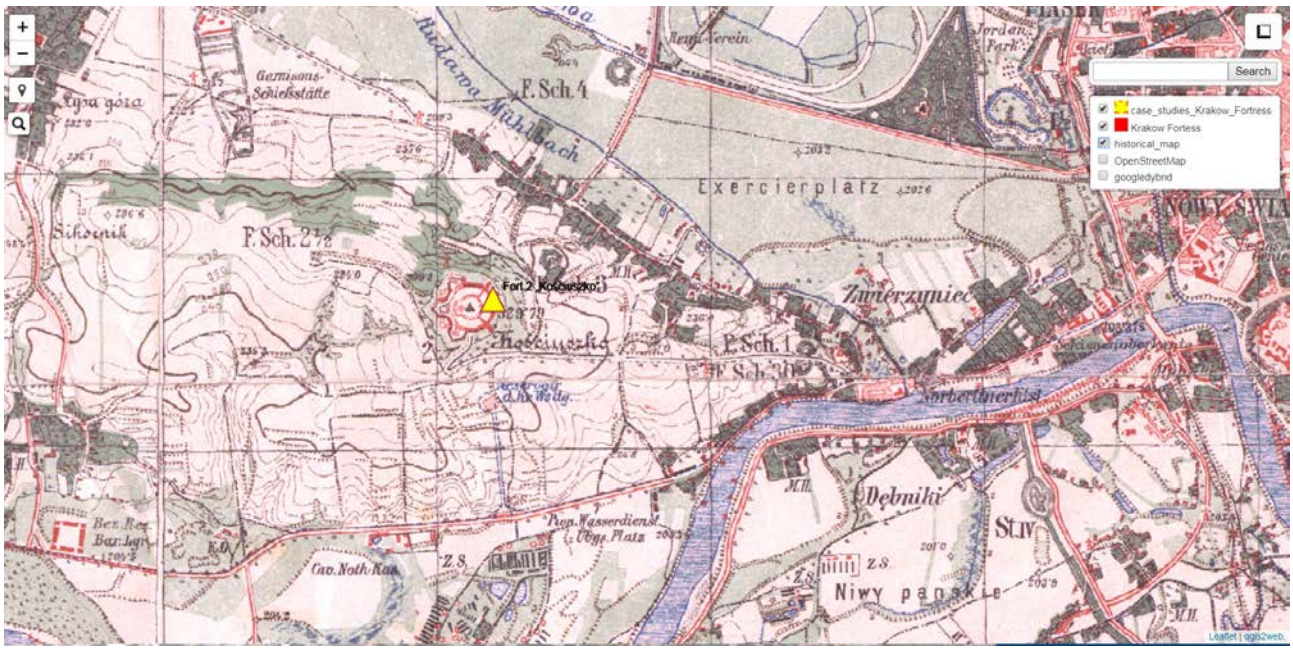

Figure 4 Fort Kosciuszko – on the historical map

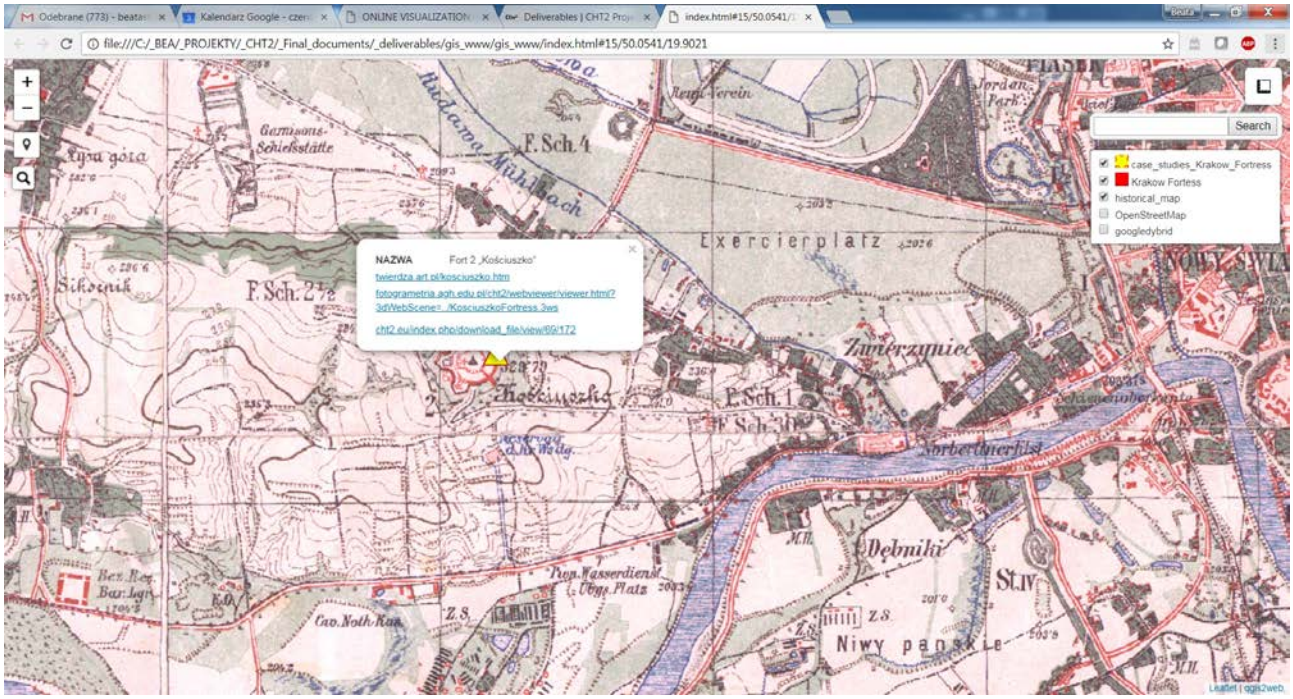

Figure 5 Fort Kosciuszko – active attribute data base with external links

Figure 6 Fort Kosciuszko – measurement's tool, coordinate reading (upper right)

Figure 7 Search by attribute (upper left) – Fort Wegrzce location

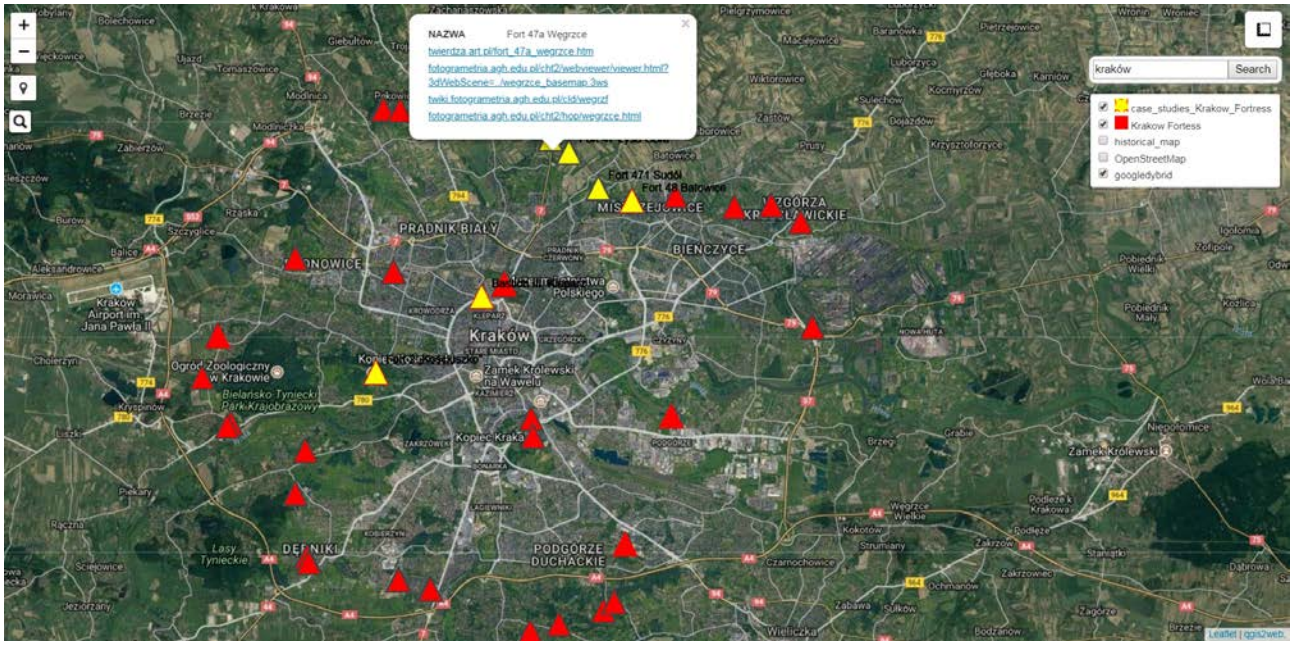

Figure 8 Fort Wegrzce – active attribute data base with external links (fort description, CityEngine, Potree, 3DHOP)

Figure 9 Fort Wegrzce – fort description

Figure 10 Fort Wegrzce – CityEngine

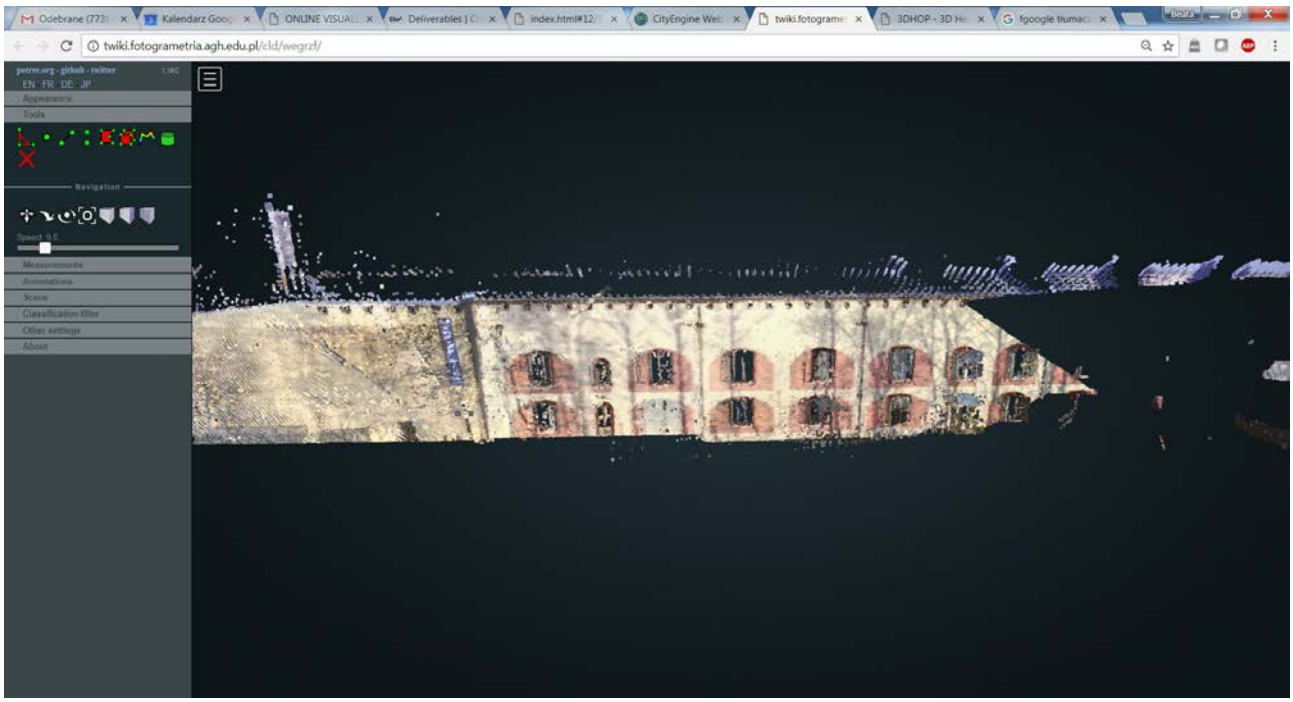

Figure 11 Fort Wegrzce – Potree

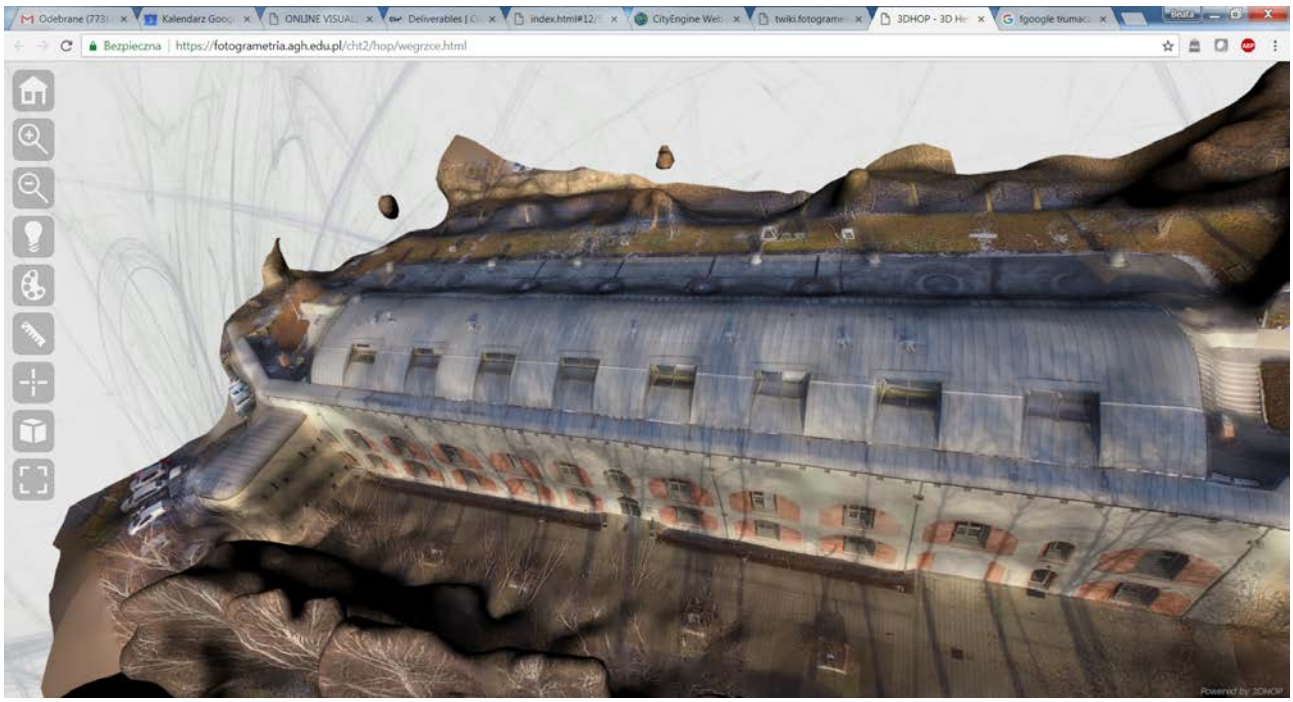

Figure 12 Fort Wegrzce – 3DHOP

Figure 13 Search by location

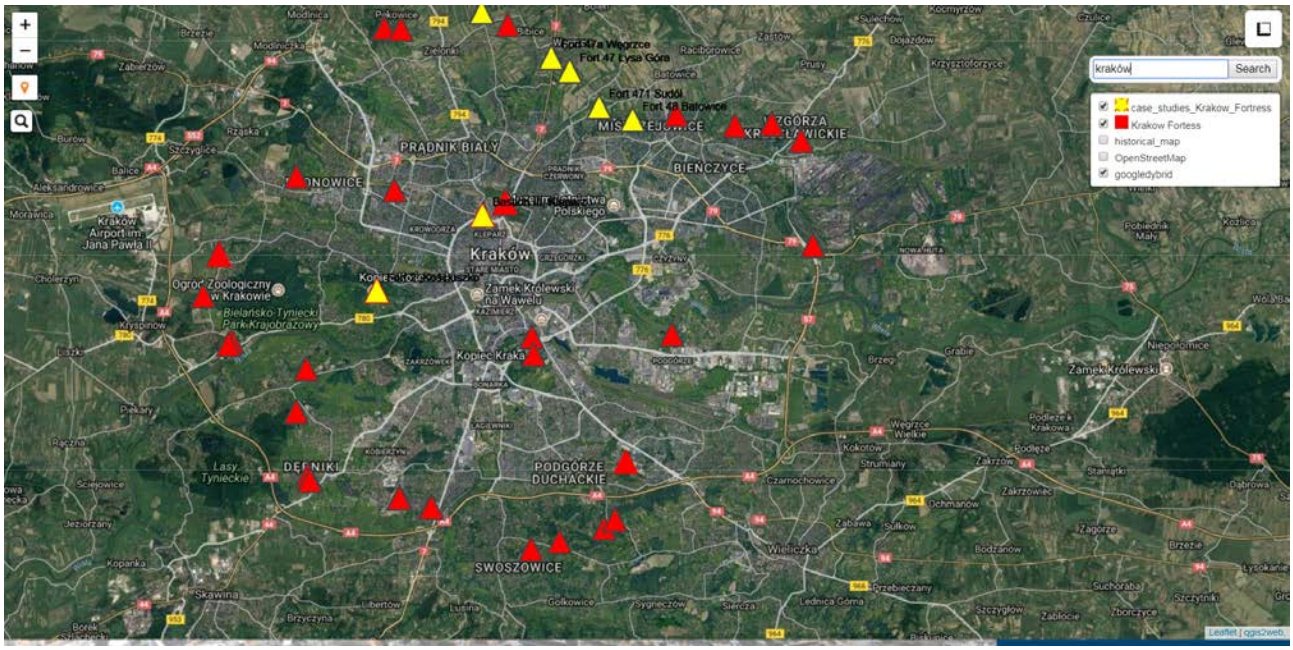

Figure 14 Search in Google Earth (upper right: "Krakow")

Conclusions

1. Integration of 3D/4D models with GIS data is possible in GIS commercial software as well open-source.
2. GIS analysis are also available through Internet
3. Full integration on VR level is not the same like in GIS environment
4. An example for Poland case study is presented in June other test sites will be completed.