

Use of contemporary 3D geoinformation technologies for historical reconstructions of sites: case study Zahrádka u Ledče nad Sázavou

Abstract

This bachelor thesis deals with contemporary 3D GIS technologies and methods used for historical reconstructions, especially reconstructions of lost sites and objects. Thesis contains an overview of technologies, methods and softwares suitable for these purposes. Thesis is focused on quite unique single image-based modeling, which uses geometry of object in the image. There is also brief overview of visualisation 3D models on the internet and web mapping.

Thesis introduces a prescription for creating 3D model of lost site. First, TIN is produced from contours of old maps and DMR 5G data using breaklines, which are generated automatically. SFM models of preserved objects and models of destroyed objects acquired through single image-based modeling with help of old archival images, are placed on DTM. The case study area is the lost town of Zahrádka u Ledče nad Sázavou.

The results of this work are view scenes and interactive web map application for visualisation of 3D model. The accuracy of used single image-based modeling method is compared to the standard SFM technique. SFM had better accuracy.

Keywords: 3D model, 3D GIS, single image-based modeling using geometric constraints of object, DTM, Zahrádka u Ledče.