Introduction

Landscape in the Czech Republic has been shaped by many political and socioeconomic events. Over the centuries, thousands of settlements have disappeared as a result of these processes. Old photos using a rich archive of maps, aerial photographs in the Czech Republic and reconstructions of the abandoned settlements. Settlements have disappeared from various reasons. The most important factor has been to the displacement of German minority and establishment of the iron curtain in border areas. Additional reasons were the enlargement of military zones, construction of water dams and coal mining. In the second half of the 20th century there occurred also extensive changes in structure of cities and villages because of unsuitable spatial planning when many valuable buildings were destroyed or damaged. GIS technologies and 3D bring a new dimension into the study and visualization of abandoned landscape. The posterior presents the main methodological approaches and the results of LUCS research team at Charles University in Prague.

Case studies

BÝRY area - PADOV village
- abandoned places because of the establishment of military area
- the first mentioned in 10th century, in the year 1921 there were 80 buildings, in the 1953 all the buildings were demolished.

NOVÝBOLEVICE area - KOŠTÁLKOV village
- abandoned because of the establishment of the iron curtain
- the first mentioned in 1487, there were 61 houses before WW II, after 1951 all the inhabitants were expelled out of the Czech Republic and houses were demolished.

DOBRIŠ town
- houses in the central part of town were demolished in the period of 40s and 50s last century as a result of a process called “Ascanie” (redevelopment)
- 36 demolished and 36 preserved buildings in the central part of town
- the synagogue was significantly rebuilt (figure 2).

POVLTAI area - the middle part of Vltava River
- traditional rural area, Vltava river was an important traffic route

3D model

Completed terrain model was joined with objects and layers in the ESRI ArcGIS software - application ArcScene.

Application

3D models can be used in various ways, they are useful especially for the study of long-term landscape changes. It is also useful for demonstration of GIS capabilities or as an educational tool. 3D models are attractive especially for the wide public. For this reason, results have been published on the web site by using Google Earth technology. A follow-up contribution will be focused on the use of server technologies in this topic.

Results

3D models of several municipalities have been developed until now. These models present the reconstruction of abandoned landscape due to the construction of Sázav River dam, military area, iron curtain or the redevelopment of Dobriš town during communist period. Methodology is based on various datasets (maps, aerial photographs, GIS technologies e.g. Google Sketch), ArcGIS and ArcScene. The authors of this paper create 3D animations, flyover animations along the track of the scanned panning scenes.