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Mapping Czech Railways: History and Development of the Railways in the Czech Lands

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Abstract:

The development of rail transport was from its beginnings a significant aspect and catalyst of economic and social development in the Czech lands, as well as on a global scale. The railway revolutionised the transport of goods and then passengers. This paper presents a project focused on the development of the railway network in the Czech lands over the last 200 years, from the first horse-drawn railway, through the construction of the main long-distance routes connecting the most important cities in the Austro-Hungarian monarchy and its surroundings, to the massive development of regional transport (passenger and freight) at the end of the 19th century, the connection between the Czech lands and Slovakia in the first half of the 20th century, ending with the partial decline of regional transport at the end of the 20th century. Based on contemporary and historical data, textual and database sources, old maps and current spatial data a vector model of the railway network was created, augmented with a large amount of information on individual line sections and stations (date of construction, start of operation, or termination of operation, owner, builder, line parameters, etc.). Links to archival documents, photographs, etc. will also be added to the lines and stations in the data model. The aim is to show the gradual development of the railway network in time and space to different audiences in various ways in a digital environment or in exhibition spaces. The paper will present different possibilities of cartographic visualization of historical data of the railway network in an online environment, in printed form, and with the use of augmented reality. A particular focus of the project is on the 3D reconstruction of a selected defunct railway line. 3D models were created using CAD software and procedural modelling based on historical postcards, photographs and building plans. The resulting 3D scene contains procedurally visualized vegetation in the vicinity of the selected railway, which is derived from the land cover depicted in old cadastral maps, 3D models of railway buildings and a reconstructed digital terrain model cleaned of later anthropogenic elements.

The present project is parallel to related initiatives in recent years, such as the historical atlas of Great Britain railways [1], research on railways and population distribution [2], and historical GIS of the railways of Europe [3]. However, a distinctive feature of our project is the large-scale work with the shortest feasible railway segments to which existing databases with historical data are systematically joined.

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