Old maps of Prague and web information system for a visualization and comparision of old plans and views using map server and databases

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This short text is briefly describing former and future research of old maps and city plans displaying the area of the present Prague city. The first part discusses Prague plans from a historical point of view. The second part handles with a rising project of creation of the web information system for a visualization and comparison of old city maps and views.

Mankind had tendencies to depict and write down a situation and knowledge about its neighborhood from past times. As well as other cartographic works, plans of towns and cities were points of interest of former cartographers. Nice example is the ancient city plan of the Rome displayed on the mosaic paving. Attempts to represent view and situation of towns in the Czech lands came later, in the beginning of the modern period. Primarily it was usually view (vedut) or prospectus made from an uphill place above the town, from a place within a level of river surface, or from a "bird's horizon". It is relevant to appearance of a perspective in a painting. These townscapes had more decorative than topographical importance. On the other hand, they are excellent way to familiarize with a past appearance of the town. Later the real planimetric plans were made. They were usually based on some type of field-measurement and used orthogonal projection. A plan was still partly art product and very often it was well decorated by veduts and interesting views of the town and important buildings.

First known illustration of the Prague is the Prospectus from the Vysehrad hill in the Schedel's World Chronicle from 1493. Then era of making of prospectus started. Namely only some of them: Sadeler's prospectus from 1606, Hollar's prospectus from 1650, Ouden-Allen's prospectus from 1685. Important person in the Czech cartography should be also Tadeas Hajek z Hajku, who was attempting to measure Prague towns as far back as in the middle of the 16th century. His attempt was unsuccessful because of lack of interest of Emperor Ferdinand I.

Plans of towns were made from the beginning of the 17th century. Most of them haven't come down till the present times. Müller's plan is a first one, which kept up to date. It was made as a part of the Müller's mapping of the Czech lands during 1712-1720. Interesting is its orientation to the north-west. Next important plans are for example: Huber's plan, which was made during the I. military mapping of Austria-Hungary Empire, and Herget's plan from 1790.

Really revolutionary plan was made by Josef Jüttner in 1816. It is the first plan based on a practical geodetic measurement. Jüttner, an artillery officer with the experience with astronomical and trigonometrical measurement, was well prepared to make the most precise plan made till his time. Plan in the scale 1 : 4 320 was published in black-white and colored version. It was many times reprinted, remade, copied, and was used as a pattern for other

plans of the Prague. The Jüttner's plan will be subject of the future research. A cartometric analysis as well as an analysis of topographical content will be done. On-coming research will be also focused on the other city plans founded until the end of the 19th century.

Next part of the research will be creation of the web information system for a visualization and comparison of old city maps and views of the city. Visualization of maps on the Internet is still more and more popular. About this problem was written a lot of papers. The best and most effective way how to published georeferenced maps is a map server. Aim of the next research is a concept of a web interface based on map server and databases focused on displaying of town plans a processing of them.

The web information system about old city plans will be based on popular open source UMN MapServer. MapServer focused on old maps has been already working at the Department of mapping and cartography. It is expected processing and visualization of raster images of a large data volume and supplemental information. PostgreSQL database system will be used for better storing and processing with the data. PHP language for a connection between map server, web server and database system will be used. Main goal is to make instruments: for displaying and comparison of various plans, for displaying of views to the town and important buildings, their position, orientation in map and information about them, for searching in database in the terms of various parameter.

Jüttner's map of Prague and some present city map will be base of the application. Many of old views will be possible to display. It is necessary to process and prepare old maps for the visualization in map server. The first step is usually creation of a raster image of the entire plan. It is advisable in case of map on the few map sheets, like city maps are. The second step is georeferencing. It is essential to make a spatial localization of the map for the publication through the map server. There is usually not the exact geographical grid on the old map. The solution is transformation of the raster image to the net of identical points of topographical content of the map. The coordinates in current coordinate system and coordinates in a map system are possible to get in any GIS software, for example ArcGIS. Different types of transformation can be used and it is necessary to choose the most fitting one.

Works on this project are based on the successful cooperation with the Historical Institute of the Czech Academy of Sciences, which will continue.

References:

[1] KREJČÍ, J.: *Vizualizace a kartometrická analýza historického plánu Prahy z let 1842-1845.* diplomová práce, ČVUT v Praze, 2006.

[2] CHODĚJOVSKÁ, E.: *Mapy Prahy v raném novověku, katalog pražských map do roku 1800.* diplomová práce, FF UK v Praze, 2006.

[3] CAJTHAML, J.: *Nové technologie pro zpracování a zpřístupnění starých map.* doktorská disertační práce, ČVUT v Praze, 2007.

[4] CAJTHAML, J.; KREJČÍ, J.: *Usage of Old Maps and Their Distribution within the Frame of Web Map Services.* In Proceedings of XXIII International Cartographic Conference, Moscow, 2007, p. 333, abstract, full text on CD.