CONSTRUCTION OF BASIC DIGITAL MAP FOR CITY GIS BY STEREOPHOTOGRAMMETRIC APPROACH

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ABSTRACT

The Geodesy Institute of Vilnius Gediminas Technical University is accomplishing works on establishing the basic digital map for the city Vilnius. There are forming the topographic data bases. By constructing the appropriate specification it was taken in account the GIS requirements and the possibility to identify the planimetric features in stereomodel without the field interpretation. Essentially an accurate map compilation technology is applied and further improved. The planimetric absolute accuracy for defined feature points is predicted to be about 20 to 30 cm. At latest time the data bases shall be supplemented by information of the engineering installation networks. Those works and the technical aid partly was sponsored by the Government of Norway.

The map is constructed by digital photogrammetric techniques using the stereodigitalisation of the features (details). Digitalisation of geodetic elevation's points from existing plans at a scale of 1:500 was carried out for facilitate of establishment the digital map by stereophotogrammetric technique. Importation of digitised high points to stereophotogrammetrics data base speed up construction of digital map and in the wooded territory as well as in territory built on by high buildings digitised data from existing plans are only information about relief.

The aerophotography had been taken at scale of 1:6 000 by the Norway AO Fjellanger Widerøe on an area of 250 km². For determining the space positions of the air stations for photographs has been used the kinematics GPS system. The aerotriangulation was constructed in blocks expanded to 340 photographs in one unit. Adjustment of triangulation blocks has been performed according to the Norwegian programme NLHBUNT. The programme is used for GPS-supported bundle block adjustments. Calculation of point coordinates in the strip has been done by Schuts method. Estimated a priori sigma – naught of the adjusted block was received 8.30 μm. Residuals in ground control points – till 0.10 m.

The digital map is digitised using the computerised analogue photogrammetric instruments such as Wild autograph A8 and Santoni-Galileo stereosimplex IIc.