

CARTOGRAPHIC DATA QUALITY ESTIMATION BY AID OF NEW TECHNOLOGIES

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Numerous activities of experts and authorities on cartographic data generalization characteristics are proceeding towards elaboration of algorithms and programs for transition to automated generalization. In environments, where so far data quality has not been given adequate attention we face a task of determining starting quality evaluation of classical as well as already set up digital data. Especially in the field of cartography this is a demanding task since generalization greatly effects the acquired data quality. Positional accuracy is changed and it additionally effects attribute accuracy, completeness, and logical consistency of data.

In Slovenia in addition to system plans and maps of state importance at various scales (from 1:5 000 to 1:1 000 000) we have begun to set up also digital raster ones (completely for the topographic map at 1:25 000 and 1:50 000 scale, for general maps at 1:250 000 scale and lesser ones, and partly for topographic maps at 1:5 000 scale and digital orthophoto at the same scale) and vector data (partly digital topographic database of large accuracy, some elements of digital topographic database of medium accuracy and digital database of small accuracy). The more precise quality of the latter have not been determined yet since we still are in the phase of determining the most accurate quality of source e.g. above all cartographic materials. As an additional test for checking topographic data quality on a local and regional level we have chosen some dozen points of detail on the test area of 27 km². Using the GPS method (Trimble Geodetic Surveyor TM Series 4000) we have indirectly after determining improved coordinates of positional points of the trigonometric network determined coordinates of the chosen minor control points using fast static method. In addition the position of the same points was determined by a manual digitalization on the basis of basic topographic maps at 1:5 000 scale, by determining locations on a digital orthophoto at 1:5 000 scale, and by determining the position for the chosen locations of minor control points on scanned maps at 1: 5 000 scale, and for some on topographic maps at 1:25 000 scale.

The results of measuring positions of minor control points in various basic cartographic materials have given some astounding results. The relative and absolute errors of data quality are larger than previously estimated for the tested maps, plans and digital orthophoto in spite of newly determined coordinates of surveying points of a trigonometric network. The results of measurements will be shown, possible explanations for individual errors will be given, and conclusive evaluation of the expected quality for digital data sets presented. To find the most suitable quality of official source cartographic data and to ensure adequate quality of derived data in connection with a cost-benefit analysis form the reasons for us in Slovenia to decide on a setting up of a topographic database on more levels contrary to the idea of a setting up a unique scale independent database.