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VERIFICATION AND IMPROVING PLANIMETRIC ACCURACY OF AIRBORNE LASER SCANNING DATA WITH USING PHOTOGRAMMETRIC DATA

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Abstract. In this study results of planimetric accuracy of LIDAR data were verified with application of intensity of laser beam reflection and point cloud modelling results. Presented research was the basis for improving the accuracy of the products from the processing of LIDAR data, what is particularly important in issues related to surveying measurements.

In the experiment, the true-ortho from the large-format aerial images with known exterior orientation were used to check the planimetric accuracy of LIDAR data in two proposed approaches. First analysis was carried out by comparison the position of the selected points identifiable on true-ortho from aerial images with corresponding points in the raster of reflection intensity reflection. Second method to verify planimetric accuracy used roof ridges from 3D building models automatically created from LIDAR data being intersections of surfaces from point cloud. Both analyses were carried out for 3 fragments of LIDAR strips. Detected systematic planimetric error in size of few centimetres enabled an implementation of appropriate correction for analyzed data locally. The presented problem and proposed solutions provide an opportunity to improve the accuracy of the LIDAR data. Such methods allowed for efficient use by specialists in other fields not directly related to the issues of orientation and accuracy of photogrammetric data during their acquisition and pre-processing

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