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ASSESSMENT OF THREE-DIMENSIONAL MODELS DERIVED FROM LIDAR AND TLS DATA

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Abstract. This paper suggests the use of specific methods for assessing the geometry of 3D building models, by considering models extracted automatically from terrestrial laser scanning (TLS) data and aerial laser scanning (ALS) data. Well known quality factors have been applied for assessing roofs and façades separately. A projection into 2D makes sense in this case, because currently, 3D models or point clouds of façades are often projected into 2D for generating 2D façade maps, as required in the building trades. For assessing roofs in 3D, error maps have been suggested especially for analysing the spatial distribution of plane adjustment errors which might affect the final reconstructed 3D model. For assessing 3D building vector models as one object, first experiments based on volumetric quality factors are presented. This approach is based on ratios inspired from quality factors that have already proven themselves in the literature for comparing surface areas. The volumes considered here are computed on vector models (faceted solids) and not voxels. Further investigations are necessary on the one hand, for testing the sensitivity of these factors. On the other hand, the approach must be completed by criteria allowing the detection of shape differences, independently of the building volume.

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