

# Aspects of Quality Control for UAV Applications in Photogrammetry

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**Key words:** Photogrammetry; UAV, multi-sensor system, georeference, GNSS-RTK, camera sensors, 3-D test field, quality control

## SUMMARY

The article names the components (e. g. administrative regulations, technology, user knowledge) for surveying projects using UAV and analyzes their influence on the quality of the results. From a geodetic-photogrammetric point of view, the focus is on the measuring sensors (camera, scanner, GNSS) as well as the resulting measurement data and their processing by means of suitable software solutions.

For the testing (and if necessary calibration) of the mentioned systems or sensors, in photogrammetry 3-D test fields with a correspondingly large number of signalized control points are an appropriate practice. They allow an evaluation of the processes as well as the involved components (sensors). Currently, imaging sensors (cameras) are the preferred measurement tool for UAV measurements, but laser scanners are also being used increasingly.

Using the example of two contemporary UAV systems from the company DJI (Phantom 4RTK, Matrice 300RTK), that are frequently used in geodetic practice, their performance will be evaluated by means of corresponding test field flights, in particular also in interaction with the process component "RTK-GNSS". Potential problems with the use of the UAV are highlighted.

Finally, recommendations for georeferencing (e. g. the combined use of control points and precise GNSS) will be given - with special consideration of the reliability and controllability of the UAV image blocks.

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