

# LASER SPOT-SCANNING TO CONSTRUCT “GROUND CONTROL AREA” IN VERY HETEROGENEOUS PHOTO BLOCK

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## ABSTRACT:

A large part of the island Papua of Indonesia is not yet mapped in a standard 1:50.000 topographical map. There are thousands of aerial photo over the jungle and swamps area, which were made for several purposes by several companies with various cameras, flying heights and dates of photograph. Moreover the aerial photos were mostly taken in the time when GPS was still exotic and expensive, so that only few photos were completed with kinematic GPS. Since the topography of the area is almost unchanged during last 20 years, it is efficient to use the existing heterogeneous photos for topographical mapping. The problem is to put the ground control in the photo-block. Previously, it was solved by selecting some points in the photos, making approximation of the coordinates, searching the points using helicopter, measuring the positions using GPS and making photo snapshots from helicopter to the points for comparison to the (old) aerial photos. This way was proven to work, although it was uneasy, inaccurate and very expensive. A new proposed solution is to carry out laser spot scanning over the suspected GCP-locations. Instead of GCP, it would be a GCA – “Ground Control Area”. It is a small area of about 500m x 500m which will completely be laser-scanned and digital-photographed. The relative oriented photo-block and relative generated DEM would be then easier to be placed absolutely in the reference coordinates. An algorithm similar to pattern recognition will find the most accurate GCA from the best correlation between two data sets: DEM and digital photo between laser spot scanned one to the aerial photo one.

**TOPIC:** Lidar and laser scanning

**ALTERNATIVE TOPIC:** Geometric modeling