



ABSTRACTS

11. Cristian Trifanov, Iulian Nichersu, Alexandru Paun, Marian Mierla: *Generation of geo-referenced Orthomosaics and Digital Elevation Models from aerial images obtained with UAVs – a silo case study as a trial for SCENT project*

This small study aims to develop a methodology for 3D model processing and rendering of all the irregular shaped objects, such as this case study silo. SCENT project aims to engage citizens in environmental monitoring and enable them to become the ‘eyes’ of the policy makers. In doing so citizens will support the monitoring of land-cover/use changes using their smartphones and tablets. In order to achieve this objective, we need to provide the technological infrastructure. Mapping this silo was a relatively easy task. The DJI’s Phantom 3 UAV solution was used to fly over the structure and take pictures at different heights and angles. The only limitation was the changing of the light over the survey time (one afternoon), the large area (57 Ha) and the screening of the UAV’s sensors due to the presence of large metal infrastructures in the nearby area. The challenge was to process and harmonize all the 500 images into one project. All the images were color corrected using professional software and afterwards imported into another software for stitching and generation of the point cloud. We encountered huge relative difference (RD) errors but after many trial and error procedure of changing and improving the camera optimization, we reached a perfect value of 0.02% RD. From this point on the editing of the point cloud and re-rendering the final outcome was again a trial and error procedure until the sweet spot was achieved. The final product – a 3D model of the silo, was by far not perfect but considering the low light situation and the sparse photos for a 3D model, the outcome couldn’t be any better. The number of obtained densified points are 12,375,968 and the average density per m3 is 275 points. Further on, for future 3D mapping we need to take into account the lighting situation and adjust the density of the photos in respect with the volume of the surveyed structure. The SCENT end-users will need to benefit from the most accurate and high detailed models in order to generate relevant information.

Organisers



Partners

