

The Use of UAV Point Cloud Object-Based Classification in the Agricultural Land Consolidation

Josip Šiško, Hrvoje Tomić, Rinaldo Paar, Siniša Mastelić Ivić and Iva Vuković (Croatia)

Key words: Geoinformation/GI; Land management; Land readjustment; Remote sensing; UAV; object-based classification, structure-from-motion

SUMMARY

Development of unmanned aerial vehicles and automated processing (structure-from-motion technique) of photogrammetric measurements led to a large number of different spatial datasets, obtained by using various sensors. In order to use them in various land management tasks, they need to be further processed and/or adjusted. Land Consolidation is the agrarian-technical operation that aims to group and collect the segmented and fragmented holdings into one or more rounded whole to achieve a more rational agricultural production. As the procedure of LC is a comprehensive, long-lasting and expensive operation, it needs careful and responsible planning. These plans should take into consideration the ratio between consolidation costs and benefits from improved conditions for agricultural producers. To ascertain that, it is necessary to determine areas suitable for consolidation and express their qualitative features in a quantitative manner. This database needs to include a cadastral dataset, physical planning documentation, land use, dry stone wall structures, digital terrain model, pedological and other spatial or non-spatial datasets. That makes possible to determine various indicators and measures to be used in a multi-criteria analysis to make a decision on size, coverage, comprehensiveness, costs and benefits as well as other characteristics of selected land consolidation procedure. Although the use of multispectral and hyperspectral sensors allows relatively simple and reliable classification of natural and artificial surfaces, the paper discusses application use of a UAV point cloud object-based classification of the most widespread UAV sensor - imaging sensor in the visible spectrum range. The comparison of classified data obtained by surveying at different height was done at the case study of UNESCO's World Heritage Site Stari Grad Plain in Croatia.

The Use of UAV Point Cloud Object-Based Classification in the Agricultural Land Consolidation (10693)
Josip Šiško, Hrvoje Tomić, Rinaldo Paar, Siniša Mastelić Ivić and Iva Vuković (Croatia)

FIG Working Week 2020
Smart surveyors for land and water management
Amsterdam, the Netherlands, 10–14 May 2020