

Introducing New Technology in the Cadastral Surveying

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SUMMARY

GNSS measurements and digital photogrammetric procedures have long been introduced into the cadastral surveying process. However, the latest visual positioning technology which provides integrated solutions by combining various sensors together such as a modern GNSS receiver, IMU and a camera may open new ways in this field. It becomes now possible with the use of integrated technology to capture several images of the site on the go, every half second, create a 3d model from the georeferenced point cloud while still being in the field, and obtain coordinates of the various points of the model either right there in the field or later in the office. The principle is identical to that of digital photogrammetry and it allows the capturing of a large number of point details, even those that cannot be accessed by a GNSS receiver. At the same time, the integration of a modern GNSS receiver that can map points with either tilted or levelled pole enables the measurement of other points, too, those with obstructed view to the sky, more efficiently and easily.

This technology may have an immediate applicability in speeding up the systematic cadastral surveying, where a lot of measurements with a total station are needed. It is anticipated that a significant flexibility and time-saving may be introduced in the field cadastral surveying.

This paper attempts to test this new technology in two case studies, one in Romania and one in Greece, where parallel systematic cadastral surveying is currently taking place for the establishment of modern land administration systems in both countries. For the case studies the GS18 I of Leica will be used. The studies will assess (a) the flexibility of the method when used in the various terrain types such as rural or peri-urban areas, the required time for field work or the need for revisiting the place for additional measurements, (b) the productivity and efficiency of the technical tool in capturing large numbers of point coordinates of high accuracy within a short time, (c) the advantage of no need for using other time-consuming equipment and for long data processing time

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in the office to catch all needed detail points over its cost, (d) the required need for staff training, as well as the required staff numbers during the field work, (e) the potential for doing real-time field controls in the collection of the boundary points, etc. These case studies aim to present the advantages and disadvantages of using new GNSS receivers in systematic cadastral works.

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