

SCAN&GO

THE NEW WAY TO SURVEY



Made in Italy



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SCAN&GO SYSTEM

THE NEW WAY TO SURVEY!



SCAN&GO, A NEW METHOD FOR TOPOGRAPHIC SURVEY OF AREAS BY LASER SCANNER COMBINED WITH GNSS RECEIVERS

The "Scan&Go" devices, installed on a vehicle are studied to obtain a three-dimensional centimeter definition of the single scans within one reference system.

The "Scan&Go" methodology was created to achieve faster and more effective use of the terrestrial Laser Scanner in the branch of the traditional survey and to boost the transition from the actual precise survey to the virtual three-dimensional reality, allowing a daily use even in classical topography.

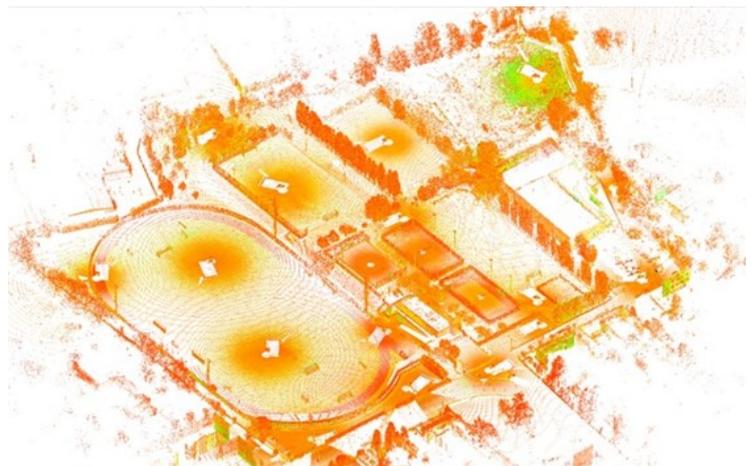
Developments in technology applied to measuring instruments and in post-processing data, have lead to a significant changes and improvements in Topography: motorized and robotics total stations, rangefinders lasers able to measure great distances without reflecting prisms and GNSS receivers efficient to measure distances with millimeter accuracy.

However, all of these technologies, still blind the topographical survey to the mere measurement of "punctual" on the ground, forcing the surveyor to a huge and difficult point-to-point work.

The advent and development of Laser Scanners, with their laser sensors able to measure thousands points each second, is a turning point for classical topography. This category of devices can release the survey of a topographical detail from the single point, thus obtaining in a few minutes a virtual reality linked to a classical three-dimensional reference system.

From the considerations above mentioned, rose the idea to create a topographical survey system that allows to obtain the geo-referenced point cloud during the scanning session, with a significative decrease of working time.

The Scan&Go system is composed of a Laser Scanner combined with two GNSS receivers and a target mounted on a vehicle, that allows fast movements between each measuring session and ensures reaching greater heights due to the "high" position of the laser scanner from the ground. All of this continuing to ensures high measuring quality and geo-positioning in only one referenced three-dimesional system.



The execution of the laser scanner and GNSS measures from a stopped vehicle guarantees a high quality measurement and positioning in a single three-dimensional reference system.

The objectives achieved:

- more range measurable by the laser scanner.
- reduction of the times in the survey phase
- easy restitution of the measures
- excellent accuracy in the positioning of the surveyed points, to comply with the centimetric tolerances typical of a well done topographical survey

REALIZATION

Thanks to the "automatic leveler system (level Plane Evo, equipment created by Scan&Go) installed on two transversal bars on the roof of a vehicle, is ensured the correct verticality of the devices with an accuracy of 3" in any vehicle inclination conditions. On top of the laser scanner is mounted another GNSS receiver.

On the bonnet it's placed another GNSS receiver with his reference target, necessary for the scan orientation.

While the laser sensor scans, the receivers acquire "fast static" measures that, at the end of the measurement process will be post-processed, providing geographic and local coordinates of the laser sensor as well as the target orientation. All of this, allows the surveyor to obtain a single three-dimensional reference system with a sub centimeter precision.

Thanks to the stability of the fixing supports and to the fact that the GNSS receivers are integral, coaxial and leveled respect to the laser sensor (holding point) and to the target orientation, the system is able to guarantee a good precision on the focus of each measurement session using a sole **3D reference system**.

SURVEY PHASES

Once the ideal position for the first scan is determined, the vehicle must be stopped. Then, level the scanner and GNSS receivers by Level Plane EVO,

When the stationing phase is completed, the GNSS receivers start to record in a fast-static mode and simultaneously it's possible to proceed to the scanning with the density characteristics required by the survey.

After that, the vehicle can be moved to the next scanning session and the operation described above must be repeated, and so on, until the survey has been completed. It's no longer necessary to materialize the target points or identify homologous points between the various scans. All this offers to the operator the maximum freedom of choice of the stationing positions



before leveling



after leveling

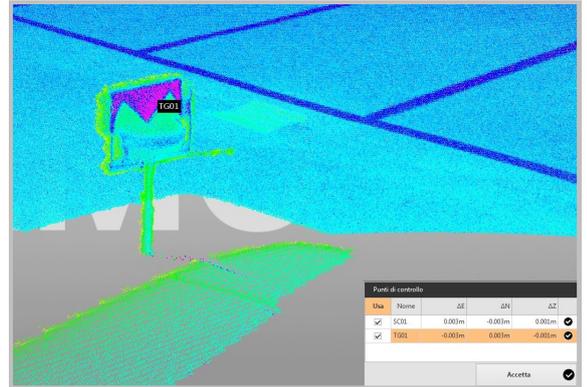


POST-PROCESSING

After the survey session the GNSS measurements will be processed in order to obtain 3D coordinates with sub-centimeter accuracy for all grips (station laser scanner) and for all target orientations.

By assigning coordinates to the stations and targets, the software used for the management of the "point cloud" will automatically acquire, join and geo reference all scans made.

This allows, in addition to faster and easier the phases of relief in the field and geo-refer with high precision, each single scan that haven't common points among, with a result of dramatically decreasing time for the "point clouds" processing arising from same scans.



CONCLUSIONS

This new survey method is a radical revolution in the world of detailed topographic survey.

The choice of the interesting details for the mathematical construction model of the survey's object, is postponed to the moment of management of the "point clouds" in the office and no longer committed to the operator in the field. This results in considerable benefits, like:

- *Non-invasive surveys (no need to physically reach the objects to be measured);*
- *Absolute completeness of information (instrumentation detects everything visible);*
- *Modeling and visualization of three-dimensional reality*
- *Absolute freedom of choice of the interesting points during the return of the survey;*
- *Fast survey sessions manageable by a single operator;*
- *Time of restitution greatly reduced due to the automatic geo referencing of the "point clouds";*
- *Quick and easy mobility in the field thanks to the installation of the system on the vehicle.*

With this innovative methodology, the survey moves from field to the office!



**Scan&Go System
can be used with any 3D Laser Scanner
and GNSS Receiver brands!**

SCAN&GO srl

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