Friuli Venezia Giulia Region

Mobile Mapping System for the Forest Department

The Friuli Region Forest Department, in the North-east of Italy, has adopted the Road-Scanner system for the survey of roads and trails in 2012.

Target

Updating and cataloging the forest roads, to develop maintenance programs and implement a road inventory.

To meet these needs, new survey technologies have been searched, to create an integrated regional asset management system that should be updated dynamically, and shared on the intranet and partly also on the internet.

Results

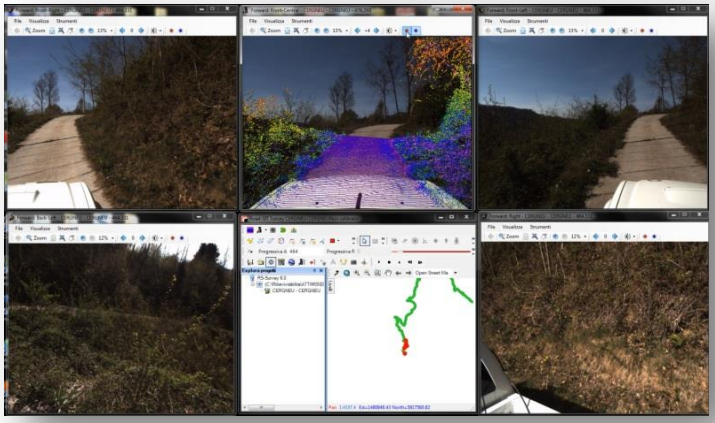
The implementation of an MMS system has allowed a mobile survey, with accuracies that vary from a few centimeters (in the case of ordinary roads with a good GNSS signal), to sub metric accuracies (in the case of forest tracks where the GNSS signal can be absent even for several minutes).

Benefits

Survey of all the geometric elements, creation of an associated imagery database, which also provides a visual check of the locations and the infrastructures. Significant optimization of the operational survey timing on the field.

The implementation of these new methodologies has produced benefits also in terms of data output.

Integration of geometrical and multimedia data that have allowed the use of GIS tools for activities of management, update and maintenance. The resulting data have been made accessible through relevant WEBGIS tools.



System Configuration

- Positioning System: **Applanix POSLV 220**;
- Sensors: **Z+F 5010C** laser-scanner;
- 6 Basler high resolution cameras (2Mpx);
- Additional Sensors: External **Camera Bar** with 3 Basler high resolution cameras 2Mpx

Thanks to its versatile configuration, the system can be mounted on a Pick-up or a quad, to travel in the narrowest forest trails, survey routes and slopes, and monitor their maintenance status. To improve the front imagery, the Pick-up configuration includes a camera bar mounted on the roof, equipped with 3 cameras.

The Z+F 5010C laser scanner can be used also in static mode, to inspect river banks, mountainsides and landslides.

The Road-Scanner system was designed and developed taking into account the need to be easily installed on a Quad, in order to survey the forest roads, which always presents difficulties in terms of crossings through.

When the system is installed on the Quad, it is powered with two special lithium batteries, that guarantee a minimum of 5-6 hours of autonomy.

In this case the Road-Scanner system is controlled through a robust touch screen tablet installed on a support, designed by the Operational Survey Department. This tool does not affect the vehicle driving and allows the operator to manage the survey operations with simple gestures.