

# Advances in Mobile Laser Scanning Data Acquisition

Peter RIEGER, Nikolaus STUDNICKA, Martin PFENNIGBAUER, Austria

**Key words:** mobile, laser, scanning, time-of-flight

## SUMMARY

The superior performance of state-of-the-art fully digitizing online waveform processing laser scanners is optimally exploited when used in a mobile laser scanning context. At 600,000 time-of-flight range measurements per second, the *RIEGL VMX-250* mobile laser scanning (MLS) system allows surveyors to capture highly accurate and high resolution dynamic 3-dimensional spatial data at normal traffic speeds. The cutting edge multi-target capability enables penetration of foliage, fences, and other obstacles. The calibrated relative reflectance reading allows for range-independent grey-coded texturing of, e.g., facades and the automatic, range-independent identification of traffic signs. We also discuss an innovative and accurate method for calibration of this MLS system. Employing accurately calibrated digital cameras enables the combination of photogrammetry and laser scanning. Field data is presented demonstrating the accuracy of the calibration and the high quality of the geo-referenced colored point cloud.

## CONTACT

RIEGL Laser Measurement Systems GmbH  
Dipl.-Ing. Nikolaus Studnicka  
Riedenburgstraße 48  
A-3580 Horn  
Phone: +43 2982 4211  
Fax: +43 2982 4210  
e-mail: [nstudnicka@riegl.co.at](mailto:nstudnicka@riegl.co.at)