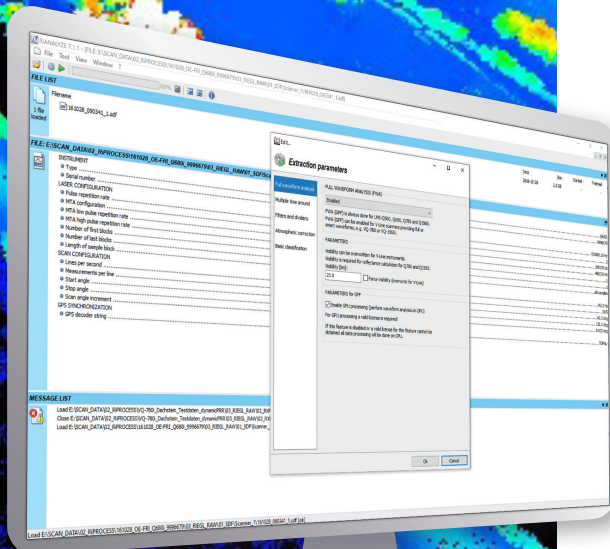# RiANALYZE

for *RIEGL* Airborne Laser Scanners

- *full waveform analysis of digitized echo signals acquired by RIEGL LMS-Q560, LMS-Q680(i), LMS-Q780, LMS-Q1560, VQ-780i and VQ-1560i*

- *extraction of an unlimited number of targets*

- *coordinate transformation into scanner's own 3D coordinate system*

- *enhanced performance using NVIDIA® GPUs, more than up to 10 times faster processing*

RIEGL® **Airborne Laser Scanners with full waveform capability digitize the waveform of the echo signal for every emitted laser pulse.**

RiANALYZE applies the so-called **Full Waveform Analysis** to the digitized echo signals provided by the laser scanner and additionally transforms the geometry data (i.e., range and scan angle) into Cartesian coordinates. Thus RiANALYZE converts the digitized echo signal data to data compatible with conventional airborne laser data processing packages for further processing.

The output is a point cloud in the well-defined Scanner's Own Coordinate System (SOCS) with additional descriptors for each point, i.e., the precise time stamp, the echo signal intensity, the echo pulse width, a classification according to first, second, up to last target.

Additionally, RiANALYZE is smoothly integrated into the project-oriented processing software RiPROCESS via the application server RiSERVER.

visit our website www.riegl.com

RIEGL®
LASER MEASUREMENT SYSTEMS
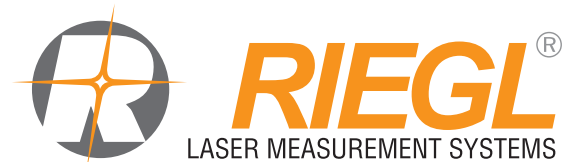
RiANALYZE supports either direct access to the sample data files stored on local hard disks or in a local area network. Sequential processing of an arbitrary number of sample data files allows the analysis of sample data without user attendance.

Additionally, RiANALYZE is smoothly integrated into the project-oriented processing software RiPROCESS via the application server RiSERVER.

The primary output is a binary data file in a well-documented format. This output is usually the input to RiWORLD for transforming scan data into a target coordinate reference system. Alternative data formats are available to allow straightforward processing of the resulting point cloud with third party software packages.
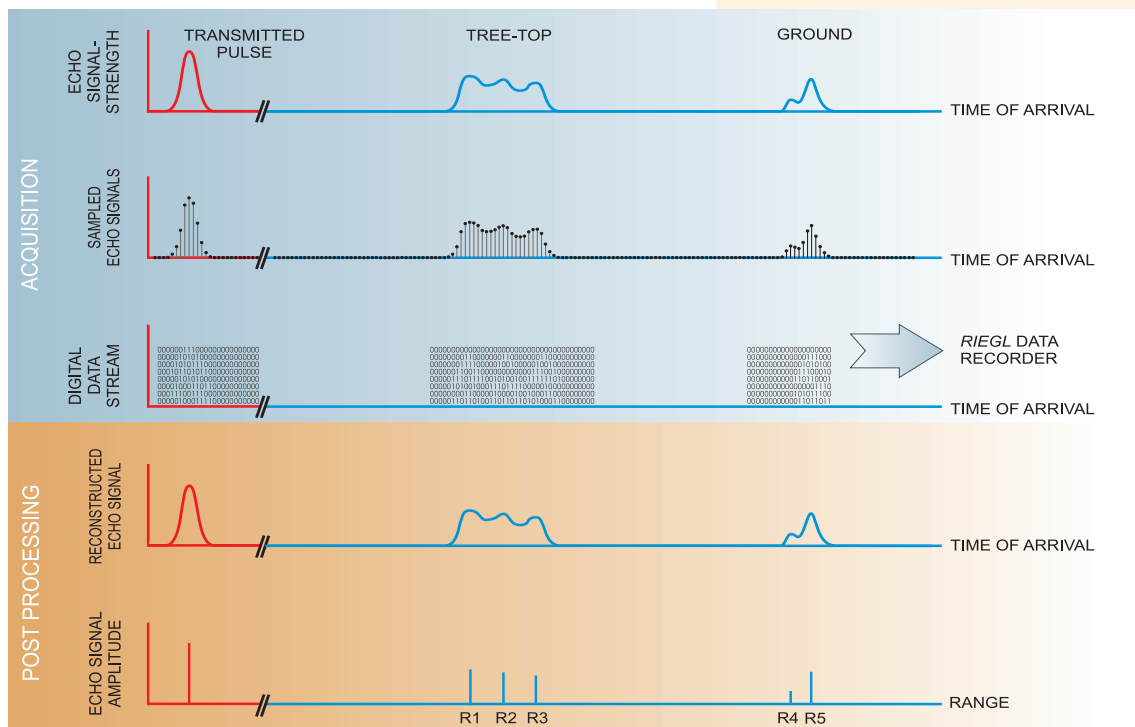
Input Data:
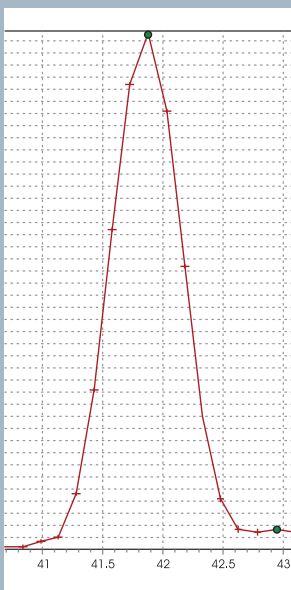
digitized
laser pulse
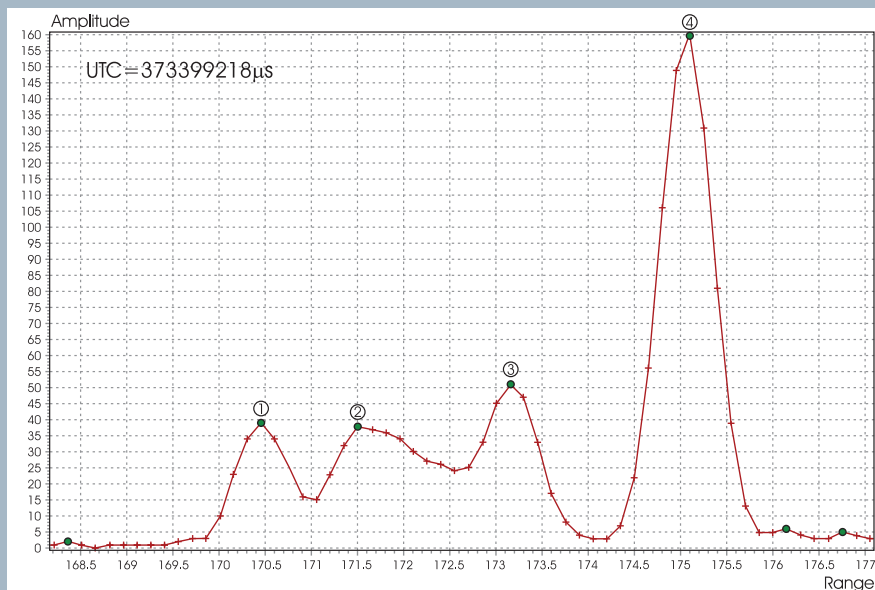
digitized echo signal
(targes 1-4 indicated)

Output Data:

UTC	Target	Range	Amplitude	Width
3733992180	1	170.4	36	3.83
3733992180	2	171.5	36	8.98
3733992180	3	173.2	47	4.73
3733992180	4	175.1	157	4.48

ASCII-data output file for target 1 - 4 ready for postprocessing with third-party software like, e.g., SCOP++, TerraScan or others

Data Sheet

RiANALYZE detects, analyses, and converts an unlimited number of targets per emitted laser pulse based on the stored digital sample data.

For each single target the following parameters are extracted and provided:

- range, scan angle
- x, y, z-coordinates
- time stamp (UTC, GPS)
- pulse width
- pulse amplitude
- first, second, ..., last target identifier

RiANALYZE Key Features

- *Performs Full Waveform Analysis: Target detection and target parameter estimation of digitized echo signals of RIEGL Airborne Laser Scanners with full waveform capability*

- *Extraction of an unlimited number of targets per emitted laser pulse*

- *Coordinate transformation into the well-defined Scanner's Own 3D Coordinate System*

- *Provides various data output formats for a variety of post-processing software packages*

- *Command line interface for sequential unattended processing of sample data files*

- *Smooth integration into RiPROCESS*

RiANALYZE System Requirements

Operating systems:

Windows 7 Professional, 64 bit operating system
Note: Please ensure that you have up-to-date device drivers installed (especially for the graphic card).

Memory requirements:

4 GB RAM minimum / 8 GB recommended

Disk space requirements:

approx. 180 MB of free disk space for the program

RiANALYZE GPU

Hardware requirement(s):

NVIDIA® GPU Geforce 8xx or higher recommended
better: NVIDIA® GPU Geforce 9xx (Maxwell architecture)
Note: GPU is also used by RiMTA (vicinity)
NVIDIA® CUDA Compute Capability Version 3.2 or higher required

Performance increase:

increases processing speed up to tenfold

RiANALYZE Download Information

RiANALYZE is available for download in the members' area of
www.riegl.com

In order to download RiANALYZE, it is necessary to be registered. After registration and activation, you will be able to download the current version. Subsequently, you will be kept updated in case of later software version releases.

RIEGL
Laser Measurement Systems GmbH
Riedenburgstraße 48
3580 Horn, Austria
Phone: +43 2982 4211
office@riegl.co.at | www.riegl.com

RIEGL USA Inc. | info@rieglusa.com | www.rieglusa.com
RIEGL Japan Ltd. | info@riegl-japan.co.jp | www.riegl-japan.co.jp
RIEGL China Ltd. | info@riegl.cn | www.riegl.cn
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