# RiWORLD

for *RIEGL* Scan Data

- **transformation of laser scan data into the coordinate system of the trajectory**

- **use of geometrical system description and calibration information (lever arms)**

- **supporting different formats of position and orientation data**

- **interfacing to third party software packages**

- **smoothly integrated into RiPROCESS project management software**

Airborne and Mobile Laser Scanning Systems provide data acquired by the laser scanner(s) and data from an INS/GNSS system. The laser scanner data is frequently referred to as scan data, whereas the INS/GNSS data or position and orientation data is called in short trajectory data after post-processing.

RiWORLD transforms the scan data into the coordinate reference system of the trajectory, usually WGS84 (world geodetic system). It thus provides the acquired laser data of the object's surfaces within a geocentered coordinate system for further processing.

In order to transform the scan data with high accuracy RiWORLD applies accurate geometrical system descriptions as input, i.e., the transformations from the scanner system to the INS/GNSS coordinate system, and to the vehicle body coordinate system.

The output data of RiWORLD represents a point cloud in the trajectory's coordinate reference system with additional descriptors for each point such as amplitude of echo return, target reflectance, echo pulse width, pre-classification, and more. RiWORLD is smoothly integrated into the project-oriented processing software RiPROCESS via the application server RiSERVER.
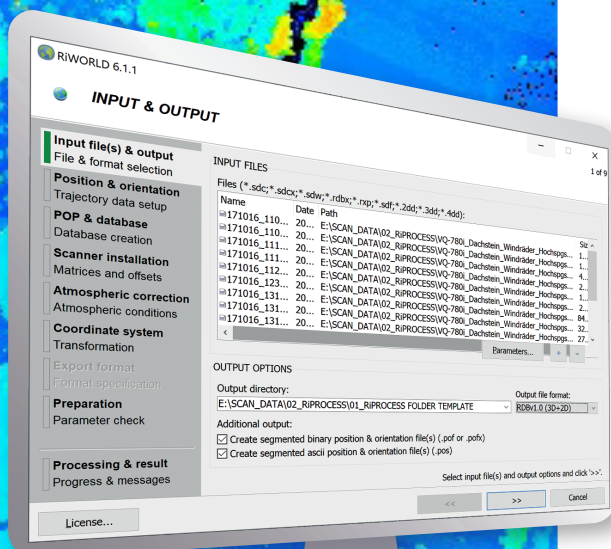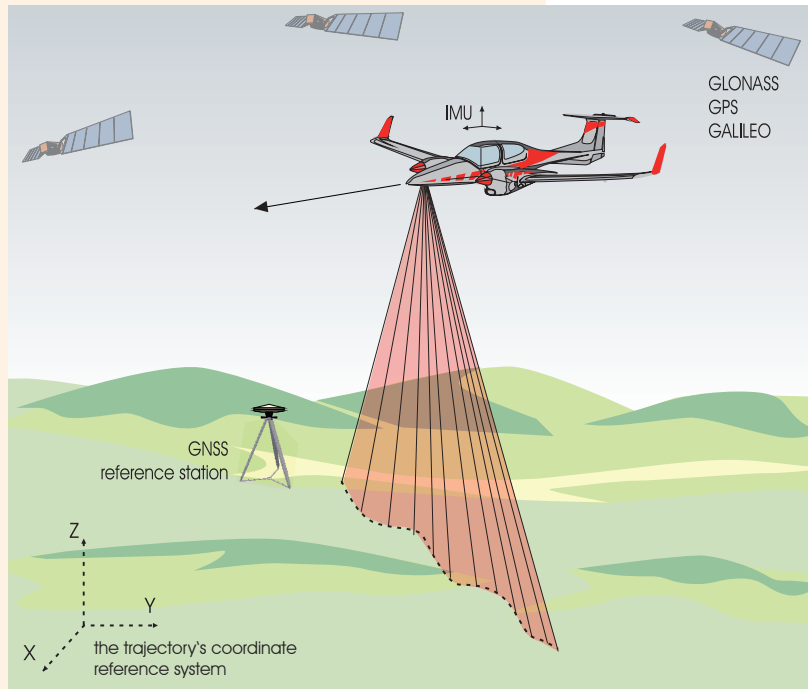
visit our website www.riegl.com

RIEGL®

LASER MEASUREMENT SYSTEMS

An airborne laser scanner system (ALS system) or a mobile laser scanner system (MLS system), respectively, comprises two main components:

at least one laser scanner for acquiring dimensional measurements, i.e. 3D information, on the surface of the scanned objects

and

an INS/GNSS (inertial navigation system and global navigation satellite system) subsystem for acquiring position and orientation of the platform within a global coordinate system.

Fig. 1 Principle of airborne laser scanning

RiWORLD transforms the laser scan into a global earth-centered-earth-fixed (ECEF) coordinate reference system (e.g. WGS84) by means of the provided trajectory data, mounting orientation, and boresight adjustment parameters.
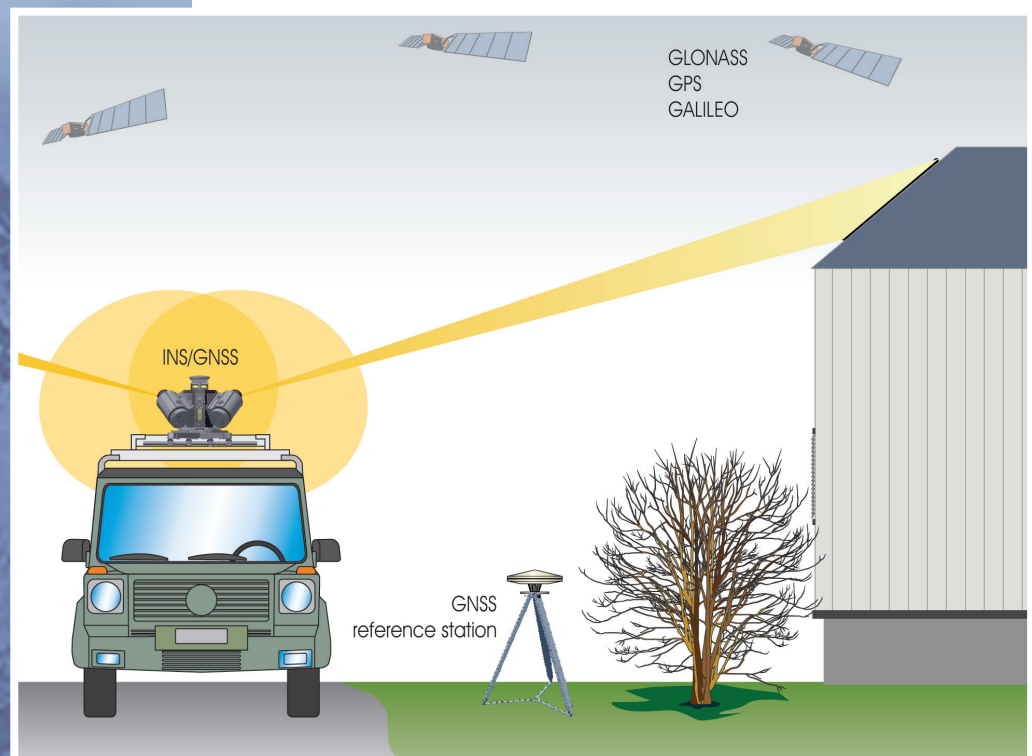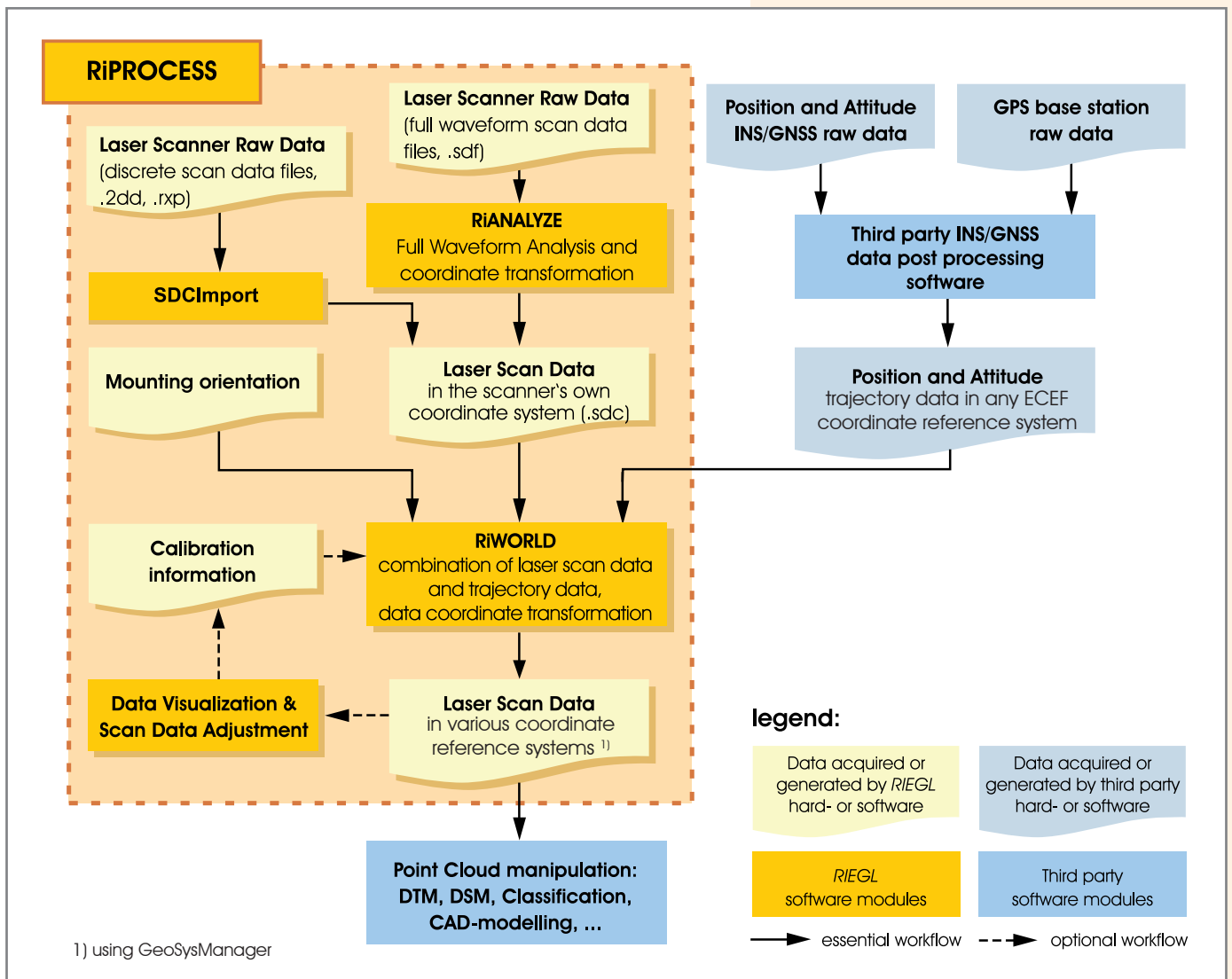

Fig. 1 Principle of mobile laser scanning

Data Sheet

RiPROCESS

Laser Scanner Raw Data (discrete scan data files, .2dd, .rxp)

Laser Scanner Raw Data (full waveform scan data files, .sdf)

Position and Attitude INS/GNSS raw data

GPS base station raw data

RiANALYZE Full Waveform Analysis and coordinate transformation

Third party INS/GNSS data post processing software

SDCImport

Mounting orientation

Laser Scan Data in the scanner's own coordinate system (.sdc)

Position and Attitude trajectory data in any ECEF coordinate reference system

Calibration information

RiWORLD combination of laser scan data and trajectory data, data coordinate transformation

Data Visualization & Scan Data Adjustment

Laser Scan Data in various coordinate reference systems [1]

Point Cloud manipulation: DTM, DSM, Classification, CAD-modelling, ...

1) using GeoSysManager

legend:

Data acquired or generated by *RIEGL* hard- or software

Data acquired or generated by third party hard- or software

RIEGL software modules

Third party software modules

——▶ essential workflow

- - -▶ optional workflow

- *Transformation of laser data into the coordinate system of the position and orientation data set (usually WGS84)*

- *Makes use of geometrical system description and calibration information*

- *Support of different formats of position and orientation data by software tool POFImport*

- *Provides information for subsequent transformation into a local, levelled, north-east-aligned coordinate system for accurate visualization based on single-precision numbers*

- *Processes a large number of files for unattended operation in batch mode*

- *Provides different data output formats including LAS format*

- *Smoothly integrated into RiPROCESS*

RiWORLD 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:

approximately 180 MB of free disk space for the program

RiWORLD Download Information

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

In order to download RiWORLD, 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.

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