Geo Referencing Software

RiWORLD

for *RIEGL* Scan Data

- *transformation of laser scan data into the coordinate system of the INS*
- *use of geometrical system description and calibration information (e.g. lever arms)*
- *support of different formats of position and orientation data*
- *interfacing to third party software packages*
- *smoothly integrated into RiPROCESS task management*

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 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 requires an accurate geometrical system description as an 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 can be described as a point cloud in WGS84 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.

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RIEGL®
LASER MEASUREMENT SYSTEMS

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

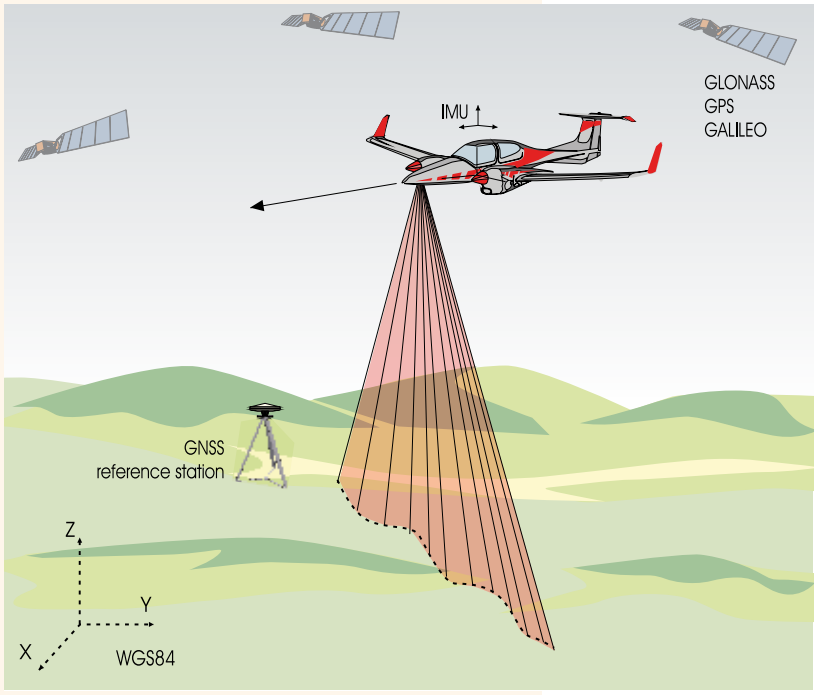


Fig. 1 Principle of airborne laser scanning

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.

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

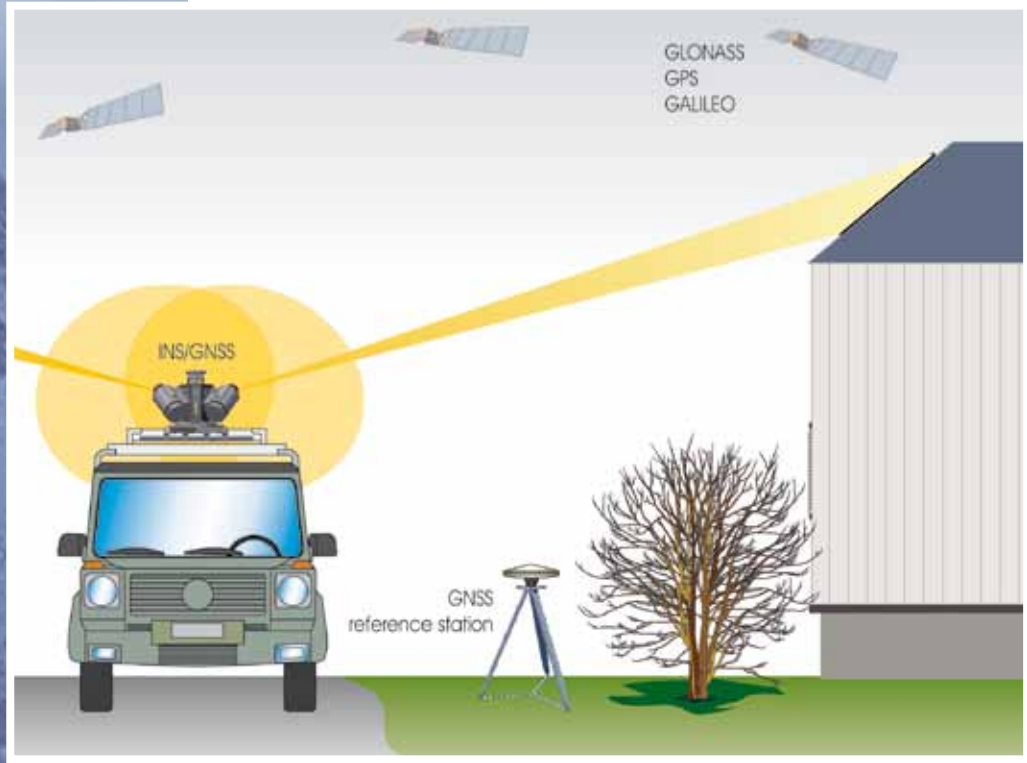
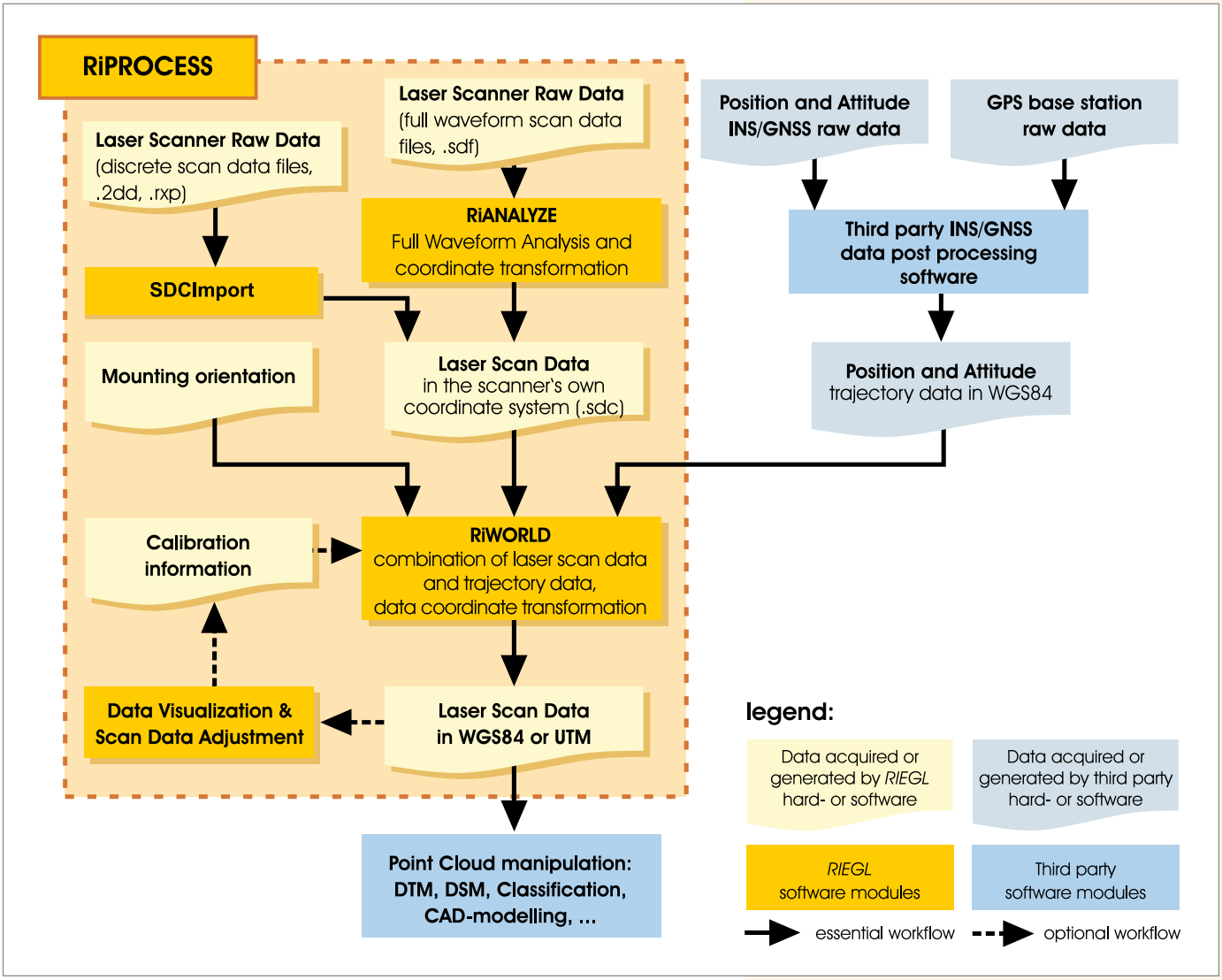


Fig. 1 Principle of mobile laser scanning



RiWORLD Key Features

- *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 POF-Import*
- *Compatible with different definitions of the navigation frames, e.g., east-north-up (ENU) or north-east-down (NED)*
- *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 XP Professional, Windows Vista Professional, Windows 7 Professional. 32 or 64 bit operating system Note: In case of Windows Vista and Windows 7, please ensure that you have up-to-date device drivers installed (especially for the graphic card).
Memory requirements:	1024 MB RAM minimum, 2048 MB (32 bit) / 4096 MB (64 bit) or more recommended Note: On 32 bit operating systems, RiWORLD can use up to 3 GB RAM and on 64 bit operating systems up to 4 GB RAM.
Disk space requirements:	approximately 5 MB of free disk space for the program

RiWORLD Download Information

To download RiWORLD please navigate to http://www.riegl.com/ and click on „DOWNLOADS".
(Download after e-mail registration only.)

RIEGL®
LASER MEASUREMENT SYSTEMS

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