

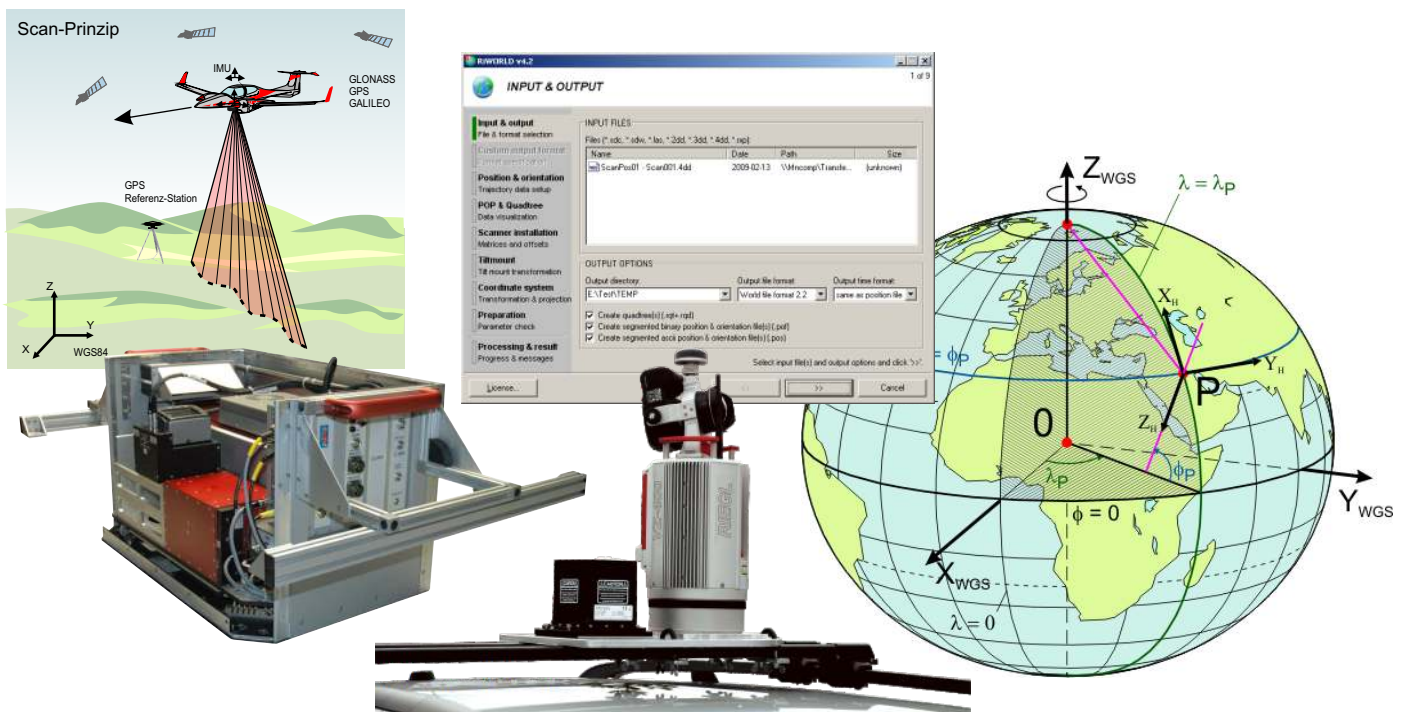
RiWORLD

FOR COORDINATE TRANSFORMATION OF AIRBORNE & MOBILE LASER SCANNER DATA

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 IMU/GPS (inertial measurement unit and global positioning system) subsystem for acquiring position and orientation of the platform within a global coordinate system.

The laser scanner data is frequently referred to as scan data, whereas the IMU/GPS data, after post-processing, is called position and orientation data, or in short trajectory data.



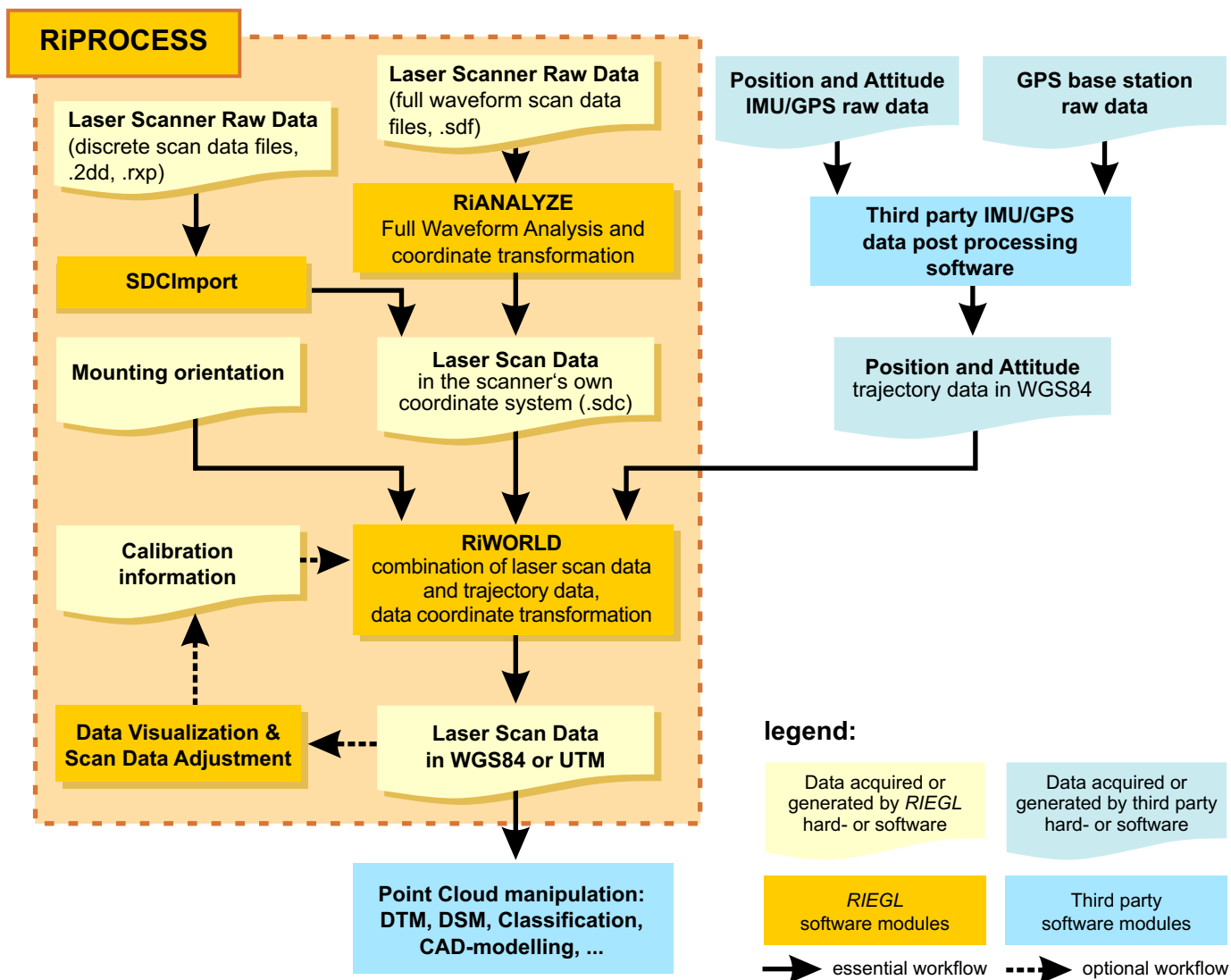
RiWORLD transforms the scan data into the coordinate system of the position and orientation data set, usually WGS84 (world geodetic system). It thus provides the acquired laser data of the object's surfaces within a geocentered coordinate system for further processing.

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 IMU/GPS 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, 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



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
- Supports different formats of position and orientation data
- 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

Information contained herein is believed to be accurate and reliable. However, no responsibility is assumed by RIEGL for its use. Technical data are subject to change without notice. Data sheet, RiWorld, 20/08/2009



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