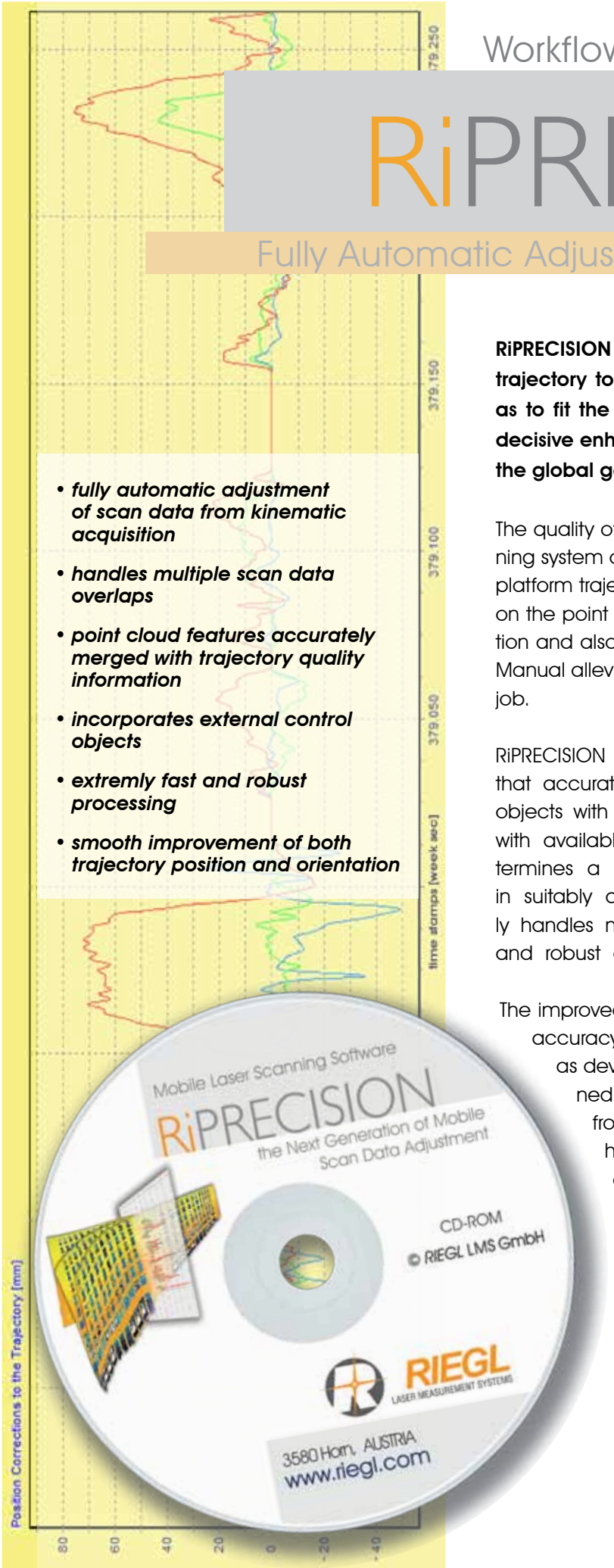
Workflow Completion for RiPROCESS

RiPRECISION

Fully Automatic Adjustment of Mobile Scan Data

- *fully automatic adjustment of scan data from kinematic acquisition*
- *handles multiple scan data overlaps*
- *point cloud features accurately merged with trajectory quality information*
- *incorporates external control objects*
- *extremely fast and robust processing*
- *smooth improvement of both trajectory position and orientation*



RiPRECISION automatically performs adjustments of the trajectory to merge overlapping mobile scan data as well as to fit the scan data to given control objects yielding a decisive enhancement of both the internal precision and of the global georeference of the entire point cloud.

The quality of a point cloud acquired by a mobile laser scanning system crucially depends on the quality of the underlying platform trajectory. Due to inaccuracies in the trajectory solution the point cloud exhibits both deviations from the true position and also discrepancies between overlapping scan data. Manual alleviation of these shortcomings is a time-consuming job.

RiPRECISION applies a most rigorous estimation approach that accurately incorporates external conditions for control objects with features extracted from the point cloud along with available trajectory quality information. It reliably determines a continuous best fit trajectory solution resulting in suitably aligned point cloud data. The software readily handles multiple overlaps of scan data due to its strict and robust application of elaborate adjustment methods.

The improved trajectory is provided along with the according accuracy information from the estimation process as well as deviation plots that allow for verification of the obtained results. RiPRECISION conducts the whole workflow from scan data analysis to trajectory adjustment with highest possible autonomy. Applying highly efficient procedures RiPRECISION is capable of processing large amounts of data within impressively short computation times. To facilitate utmost performance, RiPRECISION has been tightly embedded into RiPROCESS, *RIEGL*'s processing software for mobile and airborne scan data.

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LASER MEASUREMENT SYSTEMS

RiPRECISION Workflow

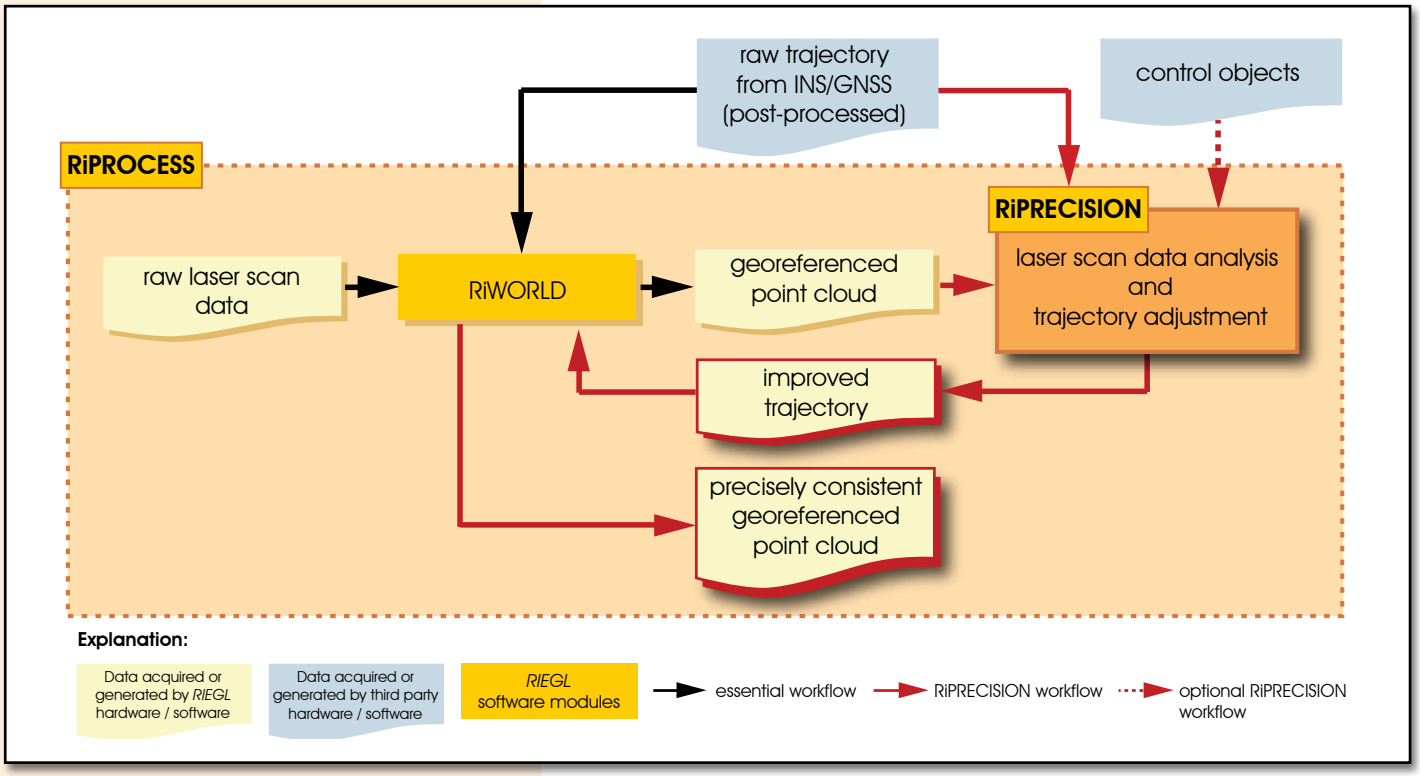

Fig. 1 Workflow of RiPRECISION

RiPRECISION Results

RiPRECISION sets new standards for the quality of redundant scan data by transferring the extremely high precision of the raw laser measurements to the entire point cloud.

Fig. 2a Point cloud of overlapping runs

Fig. 2b Point cloud after applying RiPRECISION

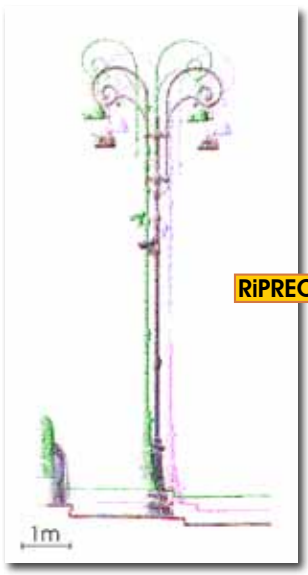

Fig. 3a Point cloud of overlapping runs

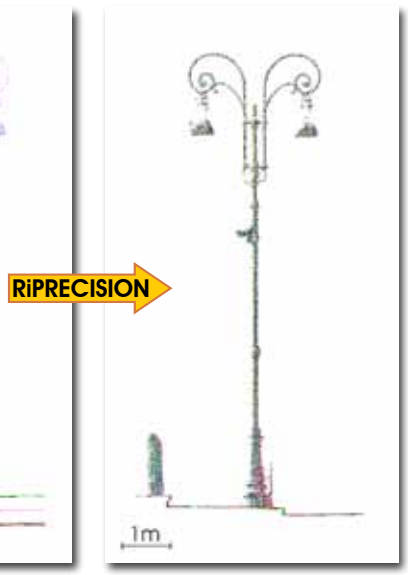

Fig. 3b Point cloud after applying RiPRECISION

System Requirements

Data acquired with *RIEGL* VMX-250 or VMX-450 Mobile Laser Scanning Systems
Valid processing license of RiPROCESS 1.4.7.x or later and RiWORLD 4.5.2 or later

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