

# Automatic On-board Registration

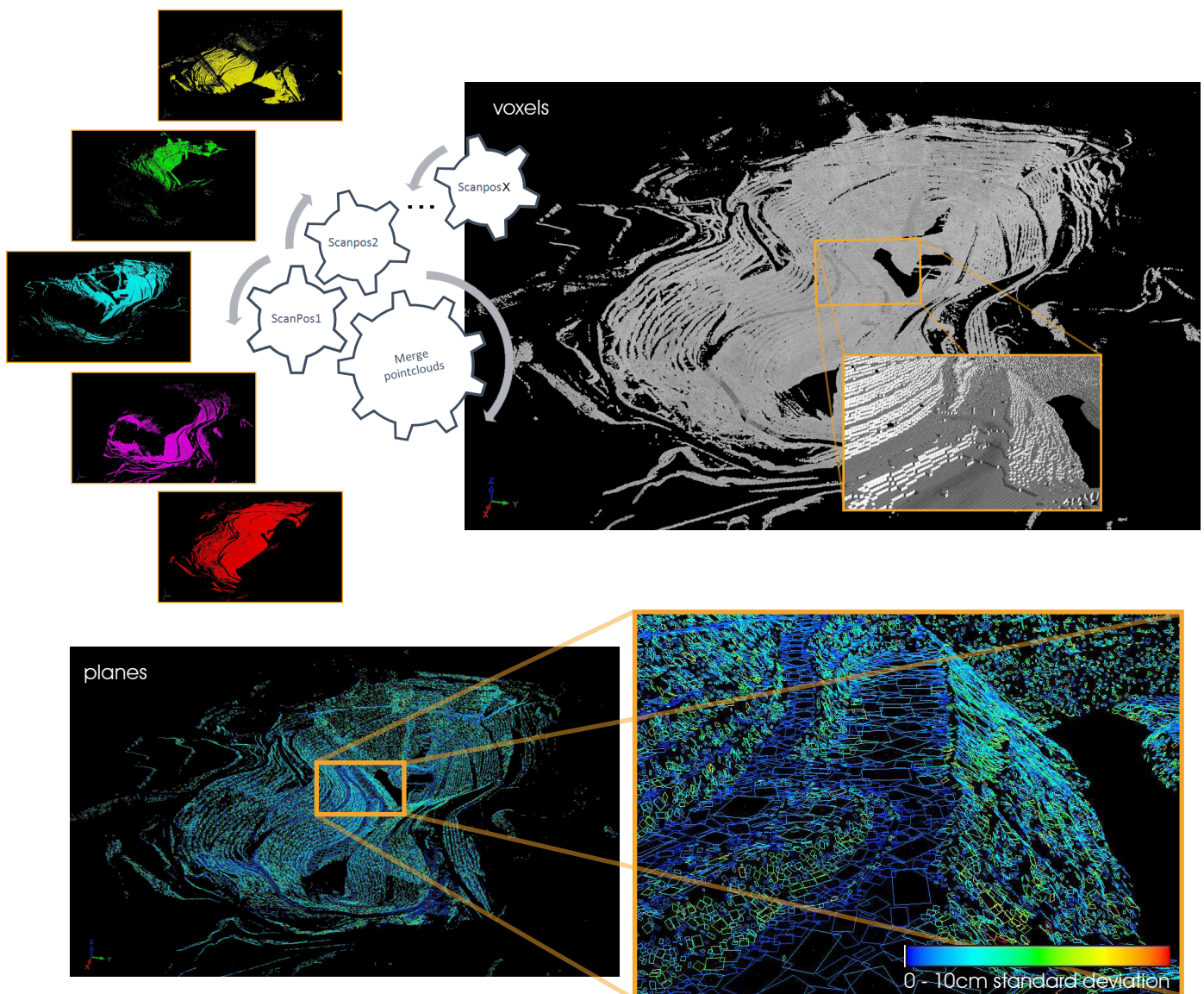
Matching point clouds of different scan positions (registration) has always been one of the most time-consuming tasks during the post-processing of 3D scanning projects.

With two processors on-board, the *RIEGL VZ-2000i* carries out some post-processing tasks in real-time such as automatic on-board registration in parallel to the scan data acquisition. Find here some examples on how this feature may be utilized to fasten the registration process in open-pit mine surveying.

## Merging of Scan Positions

The on-board sensors (GNSS, mems-IMU, compass) deliver a rough orientation of the different scan positions.

The registration task running in the background extracts a voxel representation of the data and it merges automatically the scan positions based on these voxels. Thereafter a fine-alignment is done based on extracted plane-patches from all the scan positions. The resulting common dataset of plane-patches visualized by standard-deviation of these planes indicates the quality of the overall alignment.



first scan position

next scan position

background process

registered pointcloud

## Rain, Haze, and Dust Penetration

Using deviation and reflectance filters, range measurements caused by rain drops, dust or haze can be identified, selected, and deleted, resulting in a clear and clean point cloud of the relevant scene.



scanning in the rain



point cloud before filter application



automatically cleaned-up point cloud

## A NEW Standard in User-Friendliness

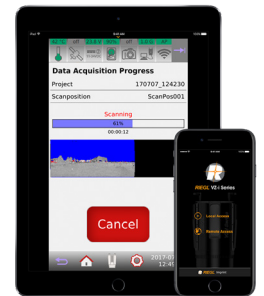
### Operation & Remote Control

- >> Easy operation of the RIEGL VZ-2000i with the integrated Graphical User Interface (GUI) via touchscreen.
- >> Remote control via RIEGL VZ-i Series App on your device. The GUI of the laser scanner will be displayed on the screen of your smart device. Connect locally or from anywhere in the world.

The App is available for iOS (iPhone, iPad, iPad Touch), Android and Windows PC (32 and 64 Bit).



Download now!



RIEGL VZ-i Series App

### Scanner Motion Detection

Several pre-defined data acquisition workflows (e.g. Default, Forensics, OneTouch) are available. These **pre-defined workflows** allow the operation of the scanner by pushing just one icon on the screen per scan position. Once the tripod is re-arranged, a new scan position will automatically be generated. Modifications or creations of individual workflows to meet user specific requirements are also possible.



select the appropriate scanning parameters and start the first scan



move the scanner to the next scan position



to start the next scan, just press the START-button

### User Applications

User developed applications (written in python software language) for further improvement of processing of surveying missions can be uploaded into the scanner.



### RIEGL VMZ Hybrid Mobile Laser Mapping System

Mobilization of the RIEGL VZ-2000i

The RIEGL VMZ Hybrid Mobile Laser Mapping System with fully integrated IMU/GNSS unit supports the VZ-2000i scanner for kinematic data acquisition. A well proven platform design enables quick transition from mobile to terrestrial applications, and vice versa, without losing system calibration. Flexible installation options and fully integrated optional cameras complement this user-friendly solution.

