RiMONITOR

for *RIEGL* VZ-Line Laser Scanners

- *for stand-alone monitoring applications by autonomous operation of all RIEGL VZ-Line Laser Scanners*

- *adaptable configuration of data acquisition in the spatial domain and in time domain*

- *variety of pre-defined algorithms for data filtering, data processing and data analysis*

- *remote configuration of data acquisition, on-site pre-processing, and data reduction via RiMONITOR Client*

- *configurable logging of relevant system data and parameters*

- *user programmable alerts*

- *interface for offline processing and analysis of the logged scan data*

- *Linux server architecture for high availability 24/7 applications can be offered as preconfigured hardware solution or virtual environment*

The *RIEGL* Terrestrial 3D Laser Scanners of the VZ®-Line are excellently suited for topographic and industrial monitoring applications. For reliable and uninterrupted operation under highly demanding environmental conditions, the laser scanner is protected with a climate-controlled housing. RiMONITOR offers a sound basis for monitoring solutions to be seamlessly integrated into large scale industrial installations or as a stand-alone system connected to a control center.

RiMONITOR operates the scanner with a user-definable set of parameters, e.g. field of view, scan resolution, and time interval or sequences for logging consecutive scans. Additional data of sensors as, e.g. GNSS, Inertial Measurement Unit (IMU), temperature sensors, can be considered for supporting the precise determination of orientation and position for global referencing.

- *Monitoring of endangered areas in open pit mining*
- *Monitoring of rock falls, slopes, and land slides*
- *Monitoring of snow and ice coverage on glacier and snowfields*
- *Monitoring of avalanche endangered hillsides*

Monitoring Software

RiMONITOR

for RIEGL VZ-Line Laser Scanners

CD-ROM
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LASER MEASUREMENT SYSTEMS

Acquired scan data are continuously pre-processed, analyzed and may be compared to predefined reference data. Parameters for processing and analysis can be defined by the user, such as thresholds for raising alarms, in order to adjust RiMONITOR to the application in question.
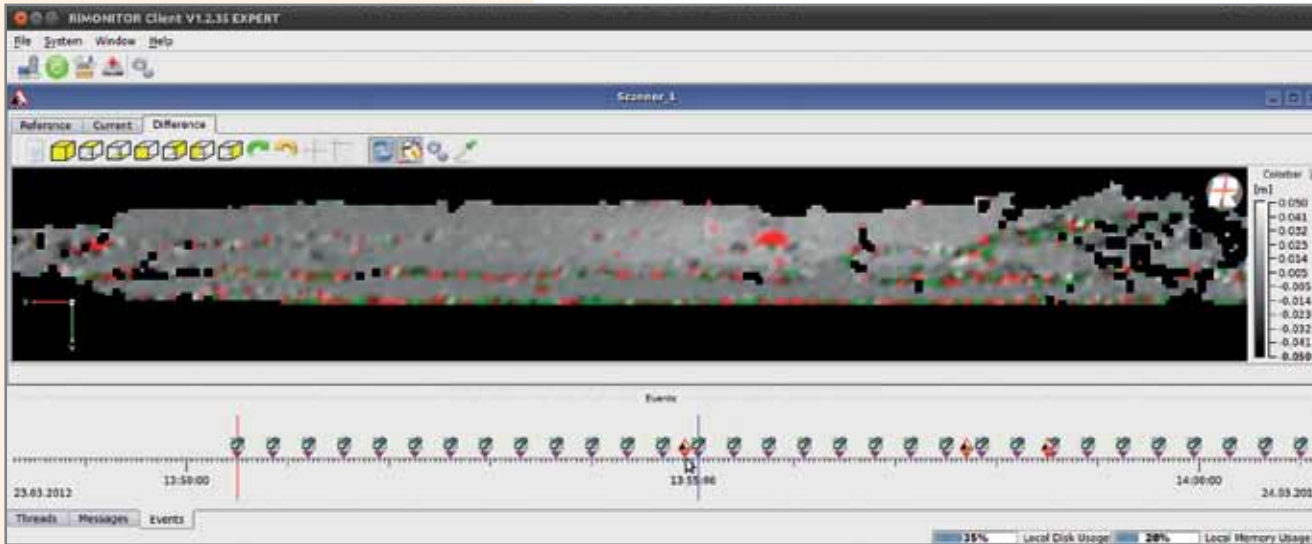

Fig. 1   Live visualization of surveillance area with display of events

Fast analysis of scan data is realized by parallel computing. In order to further adjust RiMONITOR to the specific needs of new applications, the software architecture is modular with well-defined and well-documented internal interfaces.
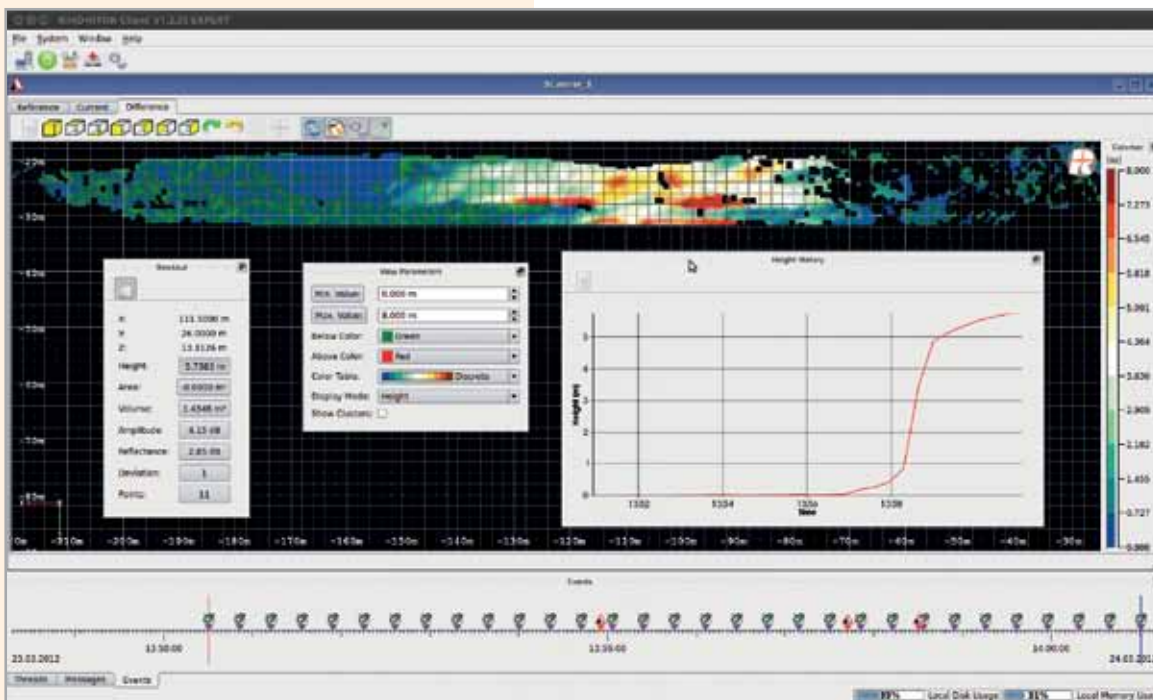

Fig. 2   Various methods of data analysis using different types of false color encoding and visualization of changes over time with charts

One of the current core modules extrapolates alterations in slope faces by rasterizing the point cloud data and thus obtaining a compact surface model which is further analyzed to determine changes and tendencies in volumes as the basis for raising early alarms. RiMONITOR can raise alarms in various forms, e.g. sending e-mails or set SPS (Siemens, Mitsubishi) memory slots to activate electronic warning alarms, a horn, warning lights, etc.
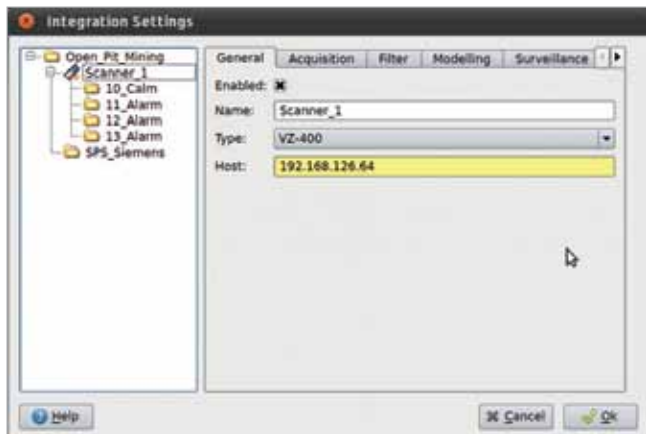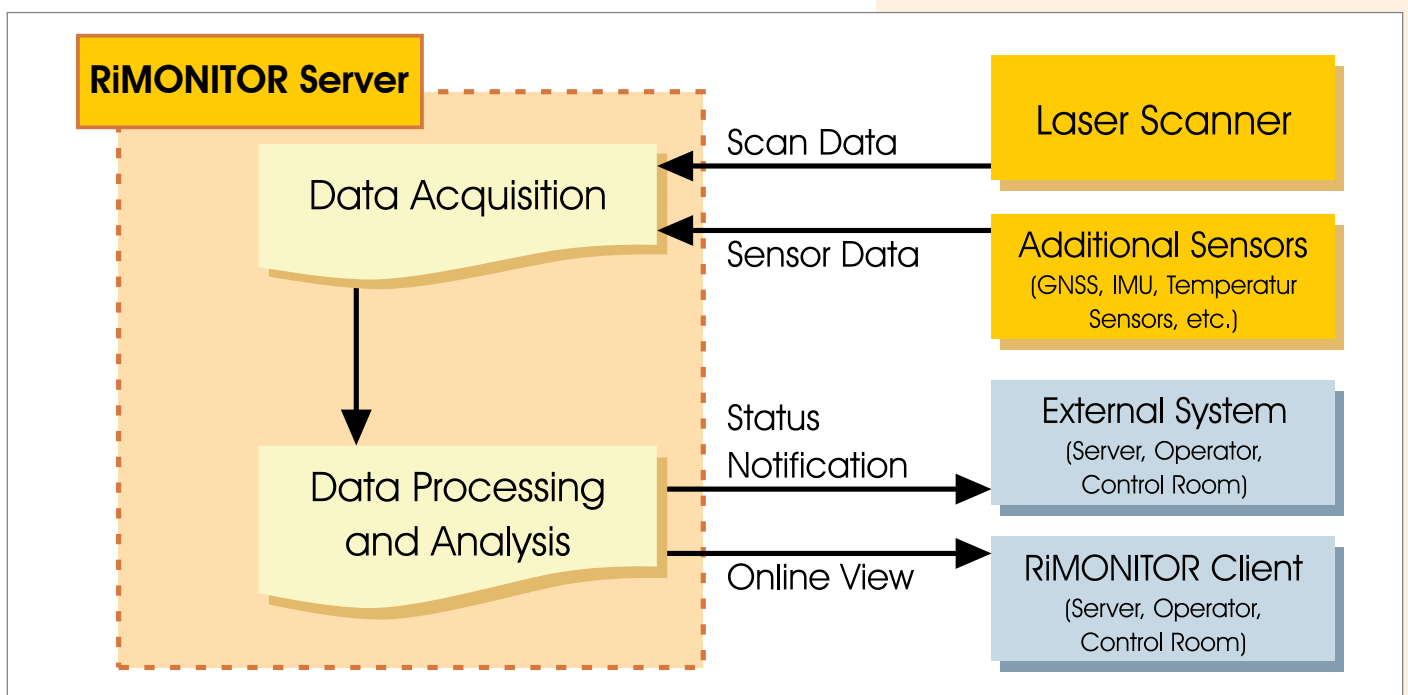

Fig. 3   Easy but powerful configuration

Fig. 4   Web Interface enables remote status updates

In most applications, RiMONITOR requires only a moderate computing hardware configuration and can be run on nearly every state-of-the-art PC or industrial embedded computer. If complex processing paired with low latency is required, a 19" Rack PC is recommended.

- *Supported laser scanners: RIEGL VZ-Line*

- *Modular software architecture*

- *Well-documented open data formats*

- *Pre-defined modules for data acquisition, data filter for outlier rejection, data modeling, robust volume estimation*

- *Configurable alert*

- *Straight forward processing and visualization with third party software packages*

- *RiMONITOR Client for configuration and online monitoring*

- *Recommended minimum hardware configuration (depending on complexity of surveillance area and required response time): single-core CPU @ 1.2 GHz, 1 GB RAM*

- *Robust system design*

- *Self recovery on power failure*

- *Ability to read QR codes*

RIEGL
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Preliminary Data Sheet, RiMONITOR, 20/09/2012