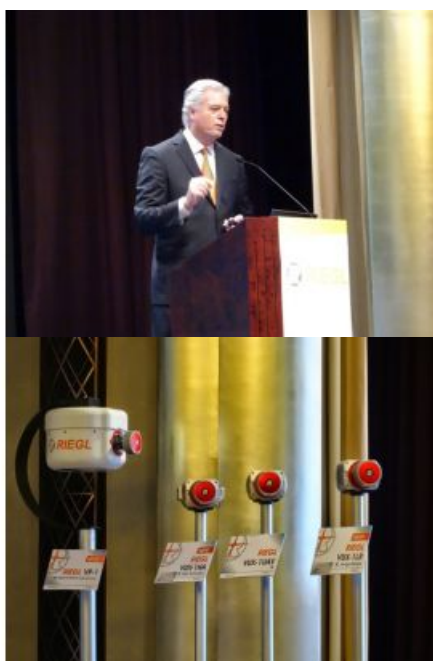


RIEGL Lidar User Conference 2015: New Small Laser Scanners and Focus on Unmanned Lidar Systems



On 5 May 2015, the RIEGL Lidar User Conference was opened by Dr Johannes Riegl, CEO of the company. Over 300 attendees were present at the event, which was held in two cities: Hong Kong and Guangzhou, the nearby city in mainland China. Following the previous user conference in Austria, this year's location in China reflects the rapidly developing Lidar market in Asia.

(By Martin Kodde, contributing editor, GIM International)

RIEGL took the opportunity of the conference to introduce a number of new products, with the highlight being the launch of new range of small, lightweight laser scanners for kinematic scanning. This VUX-1 series builds on RIEGL's UAV scanner that was introduced in 2014. That product range is now extended with scanners for higher accuracy and longer range. The long-range scanner is also available with an integrated camera in a new helipod for efficient use from helicopters. In addition, RIEGL unveiled a new entry-level mobile mapping system based on a single scanner.

From static to dynamic

The keynote was given by Lawrie Jordan, director of imagery at Esri, who outlined his vision on the rapidly developing market for imagery and Lidar data. According to Jordan, while the GIS world may have been too static in the past, it is now rapidly evolving towards a continuously changing and interconnected 3D GIS. Imagery and Lidar data are enablers of this development. Plenty of captivating images of Lidar data were shown on screen to illustrate the point. One major development is that users want simple and fast access to the data through apps.

Esri's new ArcGIS Pro product is a first step in that direction. Work still needs to be done to reduce the time between data collection and service delivery to the user. Among other challenges, this requires different ways of storing data, most prominently by storing data in the cloud. Here, it is essential to differentiate between the public and private cloud. Due to the nature of the GIS business, not all data is suitable for storage in the public cloud; the risks would be too high for users in the defence and oil & gas industries, for example. Hence, a seamless transition between the public and private cloud is crucial. According to Jordan, these developments are moving at a tremendous pace and will significantly change the way we work with GIS.

Unmanned Lidar systems

Much attention was paid to the evolving concept of unmanned Lidar systems (ULSs). According to RIEGL, laser scanners mounted on a UAV fill the gap between static, mobile and airborne Lidar since they supply the overview of airborne scanning, the detail of terrestrial scanning and the scale of mobile scanning.

In comparison to UAV systems based on images, an unmanned Lidar system has the advantage that it requires less ground control and that the scanner looks sideward and downwards. This means that a greater spatial extent can be covered with fewer flight lines. Objects such as poles and trees can easily be scanned from all sides. However, due to the weight of the laser, GNSS and IMU, a large UAV is required which is capable of carrying a payload of up to 15kg. These larger UAV systems come with more stringent requirements for pilot certificates and flight permission, plus they are considerably more expensive.

Both the Technical University of Vienna and the Japanese company Nakanihon Air Service presented results of some early tests with the VUX-1 UAV scanner. Some extensive accuracy comparisons had been conducted in Japan at various flying heights. In the vertical, they found a standard deviation of a little over 2cm. On top of this was a systematic error of 1.2cm at an altitude of 150m. For the horizontal accuracy, Nakanihon found values below 5cm. More details on the use of unmanned Lidar systems will be presented in future issues of *GIM International*.

Software evolution

Both RIEGL and its partners demonstrated the importance of software for laser scanning. Processing software is evolving and now allows multiple pulses in air, analysis of the full wave form and calibration. Especially the alignment of multiple scan paths is of great importance to ensure that all point clouds fit together well. This is especially true for ULS scanning, where the UAV flight operations do not allow for long dynamic and static alignments that are typically needed when using an IMU.

Some of RIEGL's partners illustrated the developments in automating the processing of data. In particular the automation of object extraction remains a key challenge that is currently being addressed by many companies. In addition, now that many more scanners supply the full waveform of a scan, Martin Isenburg, the developer of LASzip and PulseWaves, called for better use to be made of such full waveform data.

Conclusion

After two days in Hong Kong, the conference moved on to Guangzhou in mainland China. In addition to the conference being a venue for RIEGL to present its latest technology to potential clients, it was also a unique opportunity for many attendees in the Asia-Pacific region to learn more about Lidar technology. Indeed, RIEGL expects the majority of unmanned Lidar systems to be sold in that very region.

<https://www.gim-international.com/content/news/riegl-lidar-user-conference-2015-new-small-laser-scanners-and-focus-on-unmanned-lidar-systems>
