ROLAND MANGOLD

A Glance Back and Look Ahead to 2017!

Welcome to the 2017 January/February edition of *LiDAR Magazine*. As the first issue of 2017, it's a great time to look back over the year that was and take a peak ahead to what the coming year has in store for the LiDAR, mapping and geospatial business.

2016 was a very good year for LiDAR, laser scanning and reality capture. Financial details are rarely available for companies in this industry however judging from the industry's conferences and exhibitions, this was a bell weather year. A sign of the times is the proliferation of conferences. These must be very lucrative businesses to support so many. But who can afford the time or expense to attend most of them …all would be impossible!

For me, looking at conferences from a LiDAR and laser scanning perspective the top four I attend most years are: INTERGEO, the world's leading innovation platform for the geospatial market with over 16,500 visitors from more than 100 countries. And, of course the biggest and most important North American geospatial event is still ESRI's User Conference.

The International LiDAR Mapping Forum (ILMF) is the leading conference for aerial and mobile LiDAR. Stimulus initiatives such as the Highway Bill, NERC Reliability Standard FAC-003-3 and USGS 3DEP all hold tremendous promise for the LiDAR industry. Terrestrial, mobile and Laser scanning to BIM have been booming and represent unlimited upside potential. The aerial LiDAR sector has not had much to cheer about the last few years however the NERC Reliability Standard FAC-003-3 to manage vegetation in and around power lines and the USGS 3DEP program provides reason for optimism. Tremendous interest surrounds two new forms of LiDAR being evaluated to determine if single photon LiDAR and Geiger mode LiDAR can satisfy USGS LiDAR Base Specification version 1.2 for LiDAR with two points per square meter and vertical RMSE 10 cm for use in the USGS 3D Elevation Program.

For all those doomsayers who are predicting the disruption of the LiDAR industry by single photon and Geiger mode LiDAR technologies and the demise of Linear mode LiDAR are premature in their assessment. Back in the 90's, folks were claiming that LiDAR would lead to the demise of photogrammetry … Now photogrammetry is claiming it can replace LiDAR … UAV's to replace airplanes and helicopters … and, high resolution satellites would replace aerial photogrammetry! We all know that those rumors have been greatly exaggerated and all these new tools will just be another arrow in the technology quiver.

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SPATIAL MEDIA

The fourth leg of my geospatial/LiDAR conference table is the SPAR 3D Expo & Conference. They do an excellent job showcasing 3D technologies focused on end-to-end 3D business and technology. Although unofficial, SPAR tends to focus on the mobile, terrestrial and reality capture aspects of LiDAR technology.

The development and maturation of GIS technology has been the biggest boon for remote sensing technology such as aerial and satellite imagery. Similarly, Building Information Modeling (BIM) will be a huge driver for laser scanning and reality capture.

We are witness to tremendous growth and awareness of 3D technologies such as laser scanning, reality capture and scan-to-BIM. The advent of BIM to simulate planning, design, construction, and operation of a facility helps reduce costs, save time, improve processes and safety for various end users such as construction managers, general contractors, architects and engineers. This will drastically increase the requirement for accurate, high definition as-built, "as-is" digital data to populate their BIM and this market is set to grow to $6.5 Billion worldwide by 2020.

Laser scanning to BIM is recognized as the most efficient and accurate method to obtain this information however indoor mapping has been the elusive "holy grail" due to lack of GPS or "Localization" element unattainable indoors. Recently, there has been considerable excitement about the use of technology from the robotics and autonomous vehicle industries for indoor mapping where GPS or GNSS are not available. Simultaneous Localization And Mapping (SLAM) technology was developed in the robotics and autonomous vehicle industries to simultaneously map and navigate through an unknown environment.

To enable fast and accurate indoor mapping and mapping in challenging surroundings, LiDAR companies are implementing SLAM to develop mobile 3D measurement systems for building interiors. The entire process chain allows the technology to accurately map the environment, even on irregular terrains and the resultant point clouds can be exported in standard formats and exploitable in CAD, GIS and BIM software.

2017 could well be the breakout year with the advent of drones making new markets and applications practically and economically feasible. The drone craze is analogous to the Dot.Com furor of the nineties and not dissimilar from our own Geospatial field where we've seen the number of GIS and image processing companies that have fallen by the wayside over the last 20 years. Who will be the winners in the UAV space and whose hopes and dreams will be dashed on the rocks of future markets and potential applications?

The primary benefit of drones is that they can go places where humans, or manned vehicles, cannot or should not go such as oil refineries to inspect flare stacks or buildings, towns or neighborhoods that have been hit by storms, flooding and fires. The bottom line is that drones are ideal for tasks that are too difficult or dangerous for humans, or can be done more cheaply and accurately by a robotic vehicle.

Another critical element of the proliferation of drones in the geospatial field is it opens the door to neophytes and new-comers to the surveying and mapping disciplines. This should be a major concern for those who are surveying, mapping and photogrammetric professionals.

The democratization of surveying and mapping being made possible by the proliferation of drones opens the door for anyone to start offering surveying, mapping, photogrammetry services. It is now more important than ever to promote the professionalism of your profession. You have to ask yourself … or ask your clients and potential customers, if they want some millennial type with baggy jeans hanging precariously from his hips, a backwards ball cap on his head, skate board in one hand and quad copter in the other … is this really who you want to do your mapping and surveying?

Now, more than ever we must impress upon our customers what is the cost of bad data? When it comes to mapping and surveying, it is as critical as building a solid, true foundation …faults in the foundation will jeopardize the building, the entire project. As the old saying goes, it is cheaper to do it right the first time than to have to do it over!

Finally, I would like to thank our LiDAR community for helping to make this beautiful, glossy, full color, hard copy magazine the showcase of the LiDAR industry. There is something very satisfying when visiting LiDAR folks around the world and on their desks, lobby coffee tables, literature racks and on the table in the lunch room … *LiDAR Magazine* is seen, shared and read from person to person, room to room, building to building and country to country … it's the great tactile experience of a real magazine or physical book that has yet to be undone by the digital revolution.

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