



Historical/Structural documentation
of the New York State Capitol

Surveyors and Technology

In the more than 11 years I have worked with 3D Laser Scanning (3DLS) technology, I have witnessed many who embrace the challenge of implementing a new technology flourish while others fail. The practical application of ground-based LIDAR units is still relatively new. The first commercially available units hit the market in the fourth quarter of 1998, and since its introduction, the

technology has rapidly advanced on both the hardware and software fronts. Since I began working with the technology in 2004, I've implemented both time of flight and phase-based scanners for a variety of applications, but I continue to be amazed by the technology's rapid growth in the industry.

The first public presentation I gave on 3DLS technology was at my local chapter of NYSAPLS. The first

comment was cynical. "There goes another portion of our profession off to a machine," I heard. "Soon they will not need us at all!" Many of my fellow surveyors seem to share the thought that anything new and automated is bad for the profession. I do agree that electronic data-collectors, digital levels, real time GPS networks and other such advances have had a tremendous impact on the art of surveying. These advances

BY JODY LOUNSBURY



Pavement Analysis Survey Indianapolis International Airport (IND)



Upstate New York Boiler Room Modification Project

have eliminated many basic survey calculations and procedures from the work of younger land surveyors.

My personal experience with the integration of laser scanning with con-

“My belief is that laser scanning really did not come of age until surveyors became involved with the technology and its applications.”

ventional survey techniques has proven to be the exact opposite. The precision and accuracy of the point cloud collected

by a laser scanner is directly affected by the integrity of the control network it geo-references. I have heard many professionals comment negatively about laser scanning, claiming it is not surveying and anyone can purchase a system, collect data and produce mapping. The same has been said about GIS data, and the profession is only now acknowledging that we should have been more proactive embracing the technology in its early states. We as a profession find ourselves explaining the fact that a coordinate on an object is only as good as the method and care by which it was collected. We have all been faced with questions about the property or utility line location portrayed on a municipal website.

My belief is that laser scanning really did not come of age until surveyors became involved with the technology and its applications. Today's ground-based LIDAR systems all began as a result of design professionals and asset

owners looking for ways to gather as-built information in process plant applications. The technology has been used in the plant environment since its inception, but only recent advances have adapted the systems to civil/site applications that intrigue many surveyors. The application of our measurement skills to the collection and registration process has helped legitimize the technology. Manufacturers have developed the individual point accuracy for the hardware allowing surveyors to place that information on the ground. Laser scanning actually boosts the profession by introducing surveyors to new markets that others armed with conventional equipment alone find inaccessible. The introduction of dimensional control to plant and architectural projects increases the value and effectiveness of the data collected, ultimately supplying the client or asset owner with a much more comprehensive product.

3DLS technology has helped bring surveyors to the forefront of many new applications that have helped them sustain a profitable business even during these trying economic times. I have spoken to many colleagues that have seen company-wide staff reductions while their 3DLS/Survey groups have held their own by entering new markets. The real-world 3D feel and workings of 3DLS coupled with new market opportunities have also bolstered our profession by generating new interest amongst the younger generations. In the past decade, I have seen a continually growing interest from both large and small universities from around the world.

The “PlayStation” generation looks at 3DLS/Surveying as a new and exciting career opportunity that would have once been overlooked. Over the last few years, there has even been an increase in the media coverage the technology receives. It has been featured as a measurement/documentation tool in educational and crime shows on television as well as in many magazines.

“Leaving your comfort zone and entering new markets can be a daunting task.”

I’ve received numerous phone calls and e-mails from friends craving more information about laser scanning after they saw it featured in something they read or watched on television.



“Big Bambu” Art Exhibit, Metropolitan Museum of Art

There is, however, a downside to all of this growth. Leaving your comfort zone and entering new markets can be a daunting task. Transitioning from a topographic highway project to a large process plant or building project requires a considerable amount of advanced research and planning. Throughout my laser scanning career, I have had to learn countless new terms relevant to each new field I enter. These changes impact everything related to the project from the proposal and pricing to the execution of field work. By leaving my own comfort zone and venturing into new territory, I have experienced needs for a variety of new safety training, scheduling issues and miscommunication due to industry-based terminology—after all, an entire plant does not consist of just “pipes”.

Through my journey, I have learned the importance of communication. It’s as my second grade teacher aptly said, “There is no such thing as a dumb question.” Sometimes you just have to ask.

In addition to the required learning, having the correct hardware or software is a major driver of success in both winning and completing projects. The rapid growth and development of hardware and software is what tends to make this area of the 3DLS field the most complicated. While attending the SPAR conference in Houston, I was amazed at the amount of exhibitors offering an array of brand-new software and hardware, some of which may even become obsolete within the year. The growth in third-party software is playing a major role in how our industry will continue to develop. Today’s playing field is very wide in comparison to what it was just 5 years ago.

All of these technological advances lead to many questions, and as a current service provider, you have to decide which path you should or will follow. Today when you pick up a trade magazine or open an email, you’re bombarded with an array of new development opportunities including mobile mapping, indoor mapping, UAV mounted scanners, augmented reality, and countless others. These innovative fields all blossomed from conventional 3DLS technologies, and deciding where you fit and the correct business model for your success will assuredly require continued learning and adjustments. ■

Jody Lounsbury, PLS, is the 3D Laser Scanning Group Manager at CHA. He has more than 28 years of experience in all types of survey applications, the last 12 of which have been focused on the 3D laser scanning industry.