

ConferenceReview



In his opening remarks, Leica's Dr. Juergen Dold, president of the Geospatial Solutions Division, noted that times of change are also times of opportunity.

Leica HDS 2009

Simplifying the Complicated

When GPS technology first began to filter into survey work, it was necessarily complex, depending, as it did, on satellites, atomic clocks, relativistic equations, and the like. Surveyors took this in stride and accepted that working with such arcane magic would always require expensive equipment, lengthy training, and endless hours of post-processing...

Except that's not the way it turned out. Instead, due largely to commercial pressures, GPS equipment very quickly got smaller, cheaper, easier to use, and now appears on the dashboards of technophobe grannies everywhere, guiding them—with friendly, reassuring voices—from Hartford, Kentucky, to Kansas City, Missouri, without mishap. And in surveying, thousands of lightly

trained technicians gather GPS data daily, and for a lot of them it's as simple as turning on a receiver, establishing a cell phone link, and going to work. There are some who have never even heard the phrase, "post-processing."

That laser scanning would follow the same arc was not, at first, obvious. Something about the idea of millions of points being gathered every few

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A presentation by Richard Lasater, president of SmartMultimedia in Texas, encouraged users to scan local heritage sites as a way to promote their services.

seconds seemed inevitably complicated. But judging from the three Leica High Definition Surveying (HDS) conferences I've covered over the last three years, the factors that cheapened and simplified GPS have also been at work in scanning, and the day may yet come when the aforementioned technophobe grannies pull out their Smartphones and use a scanning app to sweep a room and instantly send a precise model of it to, say, their remodeling contractors.

In 2007, for example, users were still largely boggled by scanning, and were madly striving to manage difficult workflows. Especially, mastering office procedures was a subject of concern, and users seemed to be spending a lot of time wrestling software. Conversations at breaks were largely technical, as surveyors shared operating tips.

In 2008, the focus shifted from *how* to do the work, to the work itself: that is, surveyors seemed to have gotten more comfortable with the technology, and were wondering what it could be used for. Presenters spoke on the use of scanning in new markets, like forensics, and several documented impressive returns on investment. Hallway conver-

sations were about billing techniques, the value of cloud data, deliverables, which scanner models were appropriate for what work, etc. In other words, the focus was already moving from how to *do* the work, to how to do *more* work. Owners of scanners were looking for ways to get as many billable hours as possible out of their substantial investments.

This year, even if the face of a recession that has been cruel to surveyors, HDS attendees seem to be well past the 'gee whiz' phase, and no longer feel a need to justify owning a scanner. New markets for surveyors who scan continue to emerge and, in big companies, internal customers are no longer suspicious of scanning or point clouds. Simply put, laser scanners really have become just another tool for a lot of firms. Let's take a closer look at some of the presentations.

Scanning Maintains High Interest

Comparing the 2009 HDS attendance to 2008 isn't quite apples to apples, because in 2008 HDS ran alongside Leica's Airborne Sensing conference. "Nevertheless," says Leica Senior Vice-president Geoff Jacobs, "we did track HDS-attendance in 2008 separately and, comparing 2008 to 2009, attendance was off this year—HDS-attendance this year was 255 registrants from 20 countries, and last year was 300 registrants, also from 20 countries."

Still, that's only a drop of about 15%, and in this business climate practically counts as an increase. "When I've shared these figures with others who follow attendance at various industry conferences," says Jacobs, "the feedback has been quite positive that our conference did very well. Attendance at many other industry conferences has been off 30 to 50 percent, and some conferences have been cancelled altogether."

Jacobs believes the attendance figures are evidence that laser scanning is doing very well in this economy, as it continues



The 2009 Leica HDS User Conference attracted more than 250 registrants from 20 countries.

to find new markets and lower costs in existing markets. “We think this comparatively strong attendance reinforces the general message that the survey market has been hearing about laser scanning,” he says. “It’s holding up much better than many other parts of land surveying, so interest in it continues to run very high.”

However, Leica did go to extra lengths this year to accommodate limited travel budgets. For the first time ever, all presentations were videotaped and are offered to HDS customers and other invitees by webcast.

Small Firms and Specialized Uses

One interesting trend to emerge at this year’s conference was the number of very small firms regularly using scanners to do survey work, and the number of firms using scanning in very specific niches.

Tim Beach, for example, is one half of Multi-Limn, a UK surveying firm that specializes in 2D mapping, GIS, and laser scanning. The other half of the firm is Chartered Land Surveyor Margaret Beach, Tim’s mother. “Scanning is what got me back into surveying,” he says. Prior to surveying he viewed working for his mother as just a way to earn money while getting through school. But now, he uses a Leica ScanStation 2 almost daily, working by himself. Using a scanner instead of adding staff made sense for Multi-Limn. “For one thing,” Beach says, “the scanner never shows up late or hung over!”

Multi-Limn’s practice is about 50% topographic surveys, 30% building as-builts, and 20% boundary and GIS surveys. “It all adds up to about six scans a day,” says Beach. Nearly all scans are geo-referenced, and Beach usually scans a full 360°, even if he’s working on a smaller slice, to aid registration and to put items in context. He also typically color codes scans to keep set-ups straight, and likes the quality assurance (QA) aspects of scanning. “When in doubt,” he says, “I can always check the point cloud. That’s why taking the hour each day to set up the scanner is almost always worth it—the redundancy is great.”

As an example of getting the most out of a small niche, consider Burton Christensen, PLS, who handles scanning for Sunrise Engineering, a consulting firm. Christensen found an interesting application for scanning in rock crushing plants associated with



The new Leica ScanStation C10 scanner, which features onboard control plus attachments for accessories like GPS, was on display in the exhibit area.

Western mining. Many plants use ball mills, which are rotating cylinders that work much like huge rock tumblers. Heavy steel balls in the mill gradually crush rock to fine powder, but they’re also hard on the inner mill surface. Plant owners are very interested in getting the longest life possible out of the ball mill’s replaceable inner surface, which means they need to monitor wear closely. This work is usually done with hand methods. But scanning is more precise, and much quicker, and Christensen has found regular work scanning mill interiors, producing cross-sections aligned to the mill centerline, and delivering heat maps that compare to ideal surfaces and previous scans. The work is quarterly and predictable, and from the plant operator’s perspective, is also cheaper, faster, and better than previous methods. Minimizing mill down time is always desirable.

Christensen says that being ‘local’ helped. There are other firms that do plant scanning internationally, but working with them meant that the plant had to shut down on the contractor’s schedule. With Christensen being nearby, plant managers can call on him when shutting down makes the most sense in their operations. Steady work like this is very comforting for a firm that has made a major investment in scanning equipment.

Heritage Market Has Huge Potential

“Don’t get involved in it unless you have an interest in it,” says former Plowman Craven CEO Simon Barnes of digital preservation, “it’s *not* low hanging fruit.”

Digital preservation is the use of scanning to record and analyze the exact configuration of historic artifacts, buildings, or whole districts. As Barnes says, it’s not “low hanging fruit” in the sense that it’s easy work to do, but on the other hand, there seems to be a lot of it... so maybe it’s worth *developing* an interest in it.

Of about 35 total presentations at HDS 2009, six were related to digital preservation, including a four-member panel discussion of the heritage market. Other presentations included: the use of scanning at Korean heritage sites, a very impressive talk devoted to the scanning of all of Istanbul to create a model used for city planning, preservation of historic U.S. bridges, and discussions of work flows and techniques that are particularly applicable.

There are obvious reasons why the heritage market is likely to be important for scanning surveyors. Mainly, scanning is the only method that allows precise measurement and documentation with literally no touching whatsoever—for this reason alone, scanning will continue to



Leica's Frank Collazo (left) demos the new ScanStation C10 scanner for attendees in the exhibit hall.



Dr. Gurcan Buyuksalih from Istanbul presented details about a massive scanning project that included scanning and modeling many city landmarks.

practical, focusing on how to do the work *and* on how to get the work. Presenters were relaxed and prepared, and the visual components of talks were relevant and well done. And the venue, the San Ramon Marriott, continues to be a comfortable, organized and efficient place to attend a trade show. The food and coffee are always good, and the bar even has a respectable selection of single malts.

Of course the economy was on people's minds, but I didn't detect much pessimism. After all, if the world is to work at all it requires working infrastructure. And despite the expense and complexity that still (for now) applies to scanning equipment, there appears to be no better game in town for quickly gathering and analyzing the data that keeps the world's infrastructure in good shape. *AS*

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be attractive to preservationists. Also, a precise scanned model allows historians and others to analyze sites and objects in ways that weren't previously possible, and these analyses are already revealing new knowledge of the past, and facilitating more effective preservation.

But it can be a difficult market. Though there is some private money funding preservation projects, the majority of funds come from federal governments... with all the associated paperwork and hoops that that implies. And the surveyor

is often asked to comply with complicated and contradictory guidelines that don't perfectly apply to scanning. Still, digital preservation will certainly be an important market that surveyors should consider getting into.

A Great Success

Leica's 2009 HDS conference showed, once again, that this may be the best event of the year for surveyors looking to learn more about scanning. Talks and breakout sessions tended to be very