Editorial

Leica Geosystems HDS User Conference

Technology continues to slice away the hours surveyors spend in the field and the office. As evidenced at the first annual Leica HDS international conference held last November in San Ramon, California, surveyors *outside* the United States are taking technology we develop and running with it. For quite some time I've received calls from surveyor friends who want to know if they should get into scanning. My answer, "If you have the projects to support it, by all means, go for it." Remember, the early adopters of technology are the ones who make the most money. At some point the service becomes a commodity, and the price for the service will fall.

Leica's fast-paced two-day conference was packed with presentations. **Sean Douthett** from David Evans and Associates (DEA) in Portland touted the advantages of laser scanning for generating new business. In addition to the usual civil works, DEA has scanned shoes for Nike, ancient Native American petroglyphs, and delved into automobile accident forensics. "You are limited only by the extent of your imagination," said Douthett. When creating a full-blown model, such as one of a congested baggage handling area, DEA currently spends six to eight hours in the office for every hour in the field. For those users that need only a point cloud or a small portion of the cloud, the ratio is much lower.

Guy Cutting, Customer Field Solutions Manager for Leica HDS, outlined the details for setting up a wireless connection to the scanner that would enable the operator to be 200-300 feet away from the instrument (say, in a vehicle). Not only does the setup provide safety for the operator and the expensive laptop, it also opens the possibility of using vehicle power to run the laptop. Required equipment includes a high output wireless access Point (not a wireless router), a directional antenna on the access point, and a hi-gain antenna PC card for the laptop.

Constantine Fidis and **Tom Balser** from ASC (USA) discussed the challenges of doing corridor surveys. They admitted that the pricing structure is higher when working for the private sector than it is when working for a DOT. **Dave Reinhart** from INOVx (USA) believes that scanners are more accurate than total stations, but stressed that registration is paramount. He also discussed the effects of vibration, saying that excessive vibration, such as that experienced near power plant compressors, lowers accuracy.

Ben Kacyra, often heralded as "the father of laser scanning," gave a rousing luncheon presentation and recounted his history in the industry. Kacyra founded Cyra – I first interviewed him in 1998 – and as the company's opening goal, wanted an order of magnitude improvement in detail, accuracy, speed and cost. He also wanted data that was immediately available to the client. Kacyra feels that while productivity, speed, and quality in design has rocketed, the construction industry has not benefitted from similar gains. Kacyra claims that $40 billion is wasted in construction each year on a worldwide basis. "The world is full of walls. Integration is not occurring," he said. Looking to the future, he predicts significant product cost reductions, effortless mining of clouds, and more killer apps. He praised **Hans Hess** for understanding that it's not about the tools, it's about the information. Kacyra has always said that three things need to happen: first, a change to the paradigm (the way things are done); second, a

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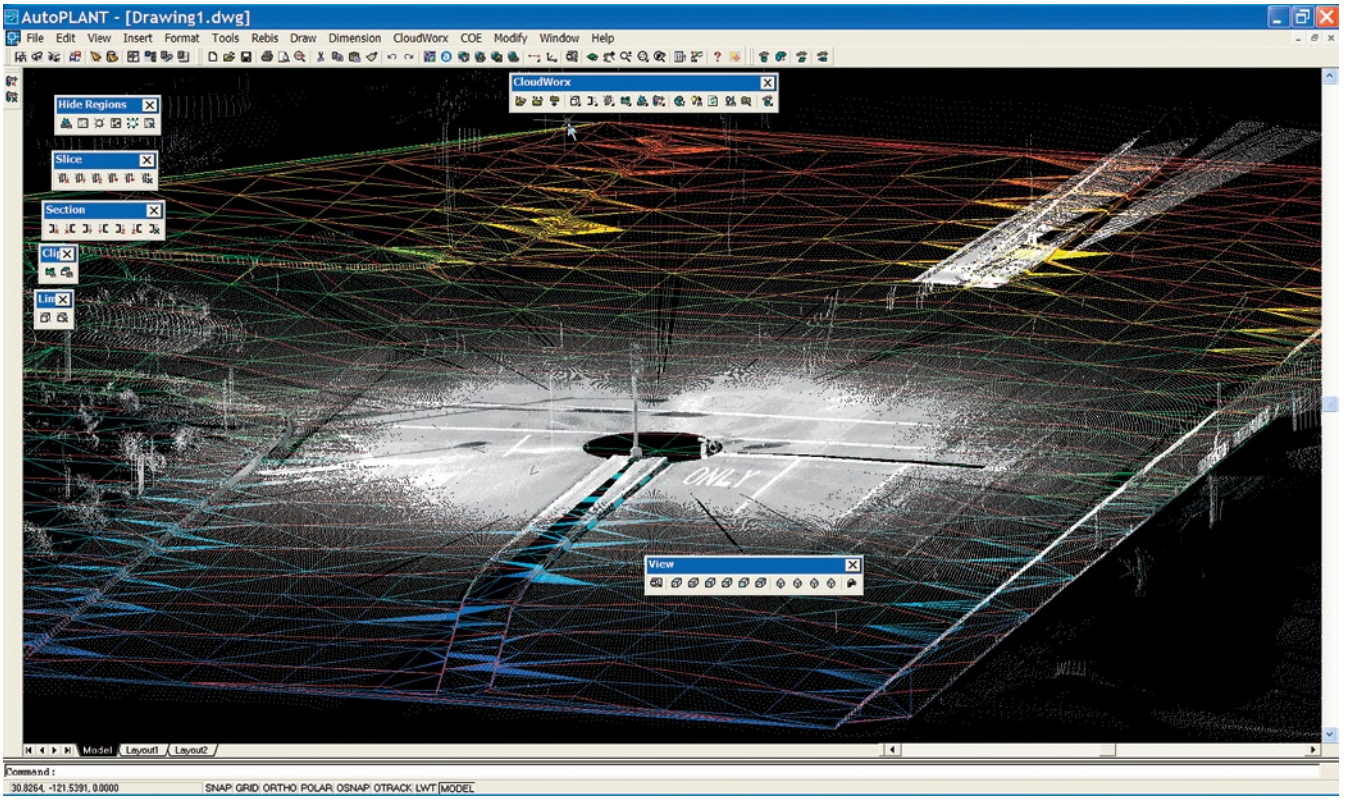

change in the culture (all the way to the top, including company owner/operators); and third, a spirit of collaboration and sharing. He went on to say that the competition is not the other guy, it's the old way of doing things. Kacyra also discussed CyraArk, the Kacyra Family Foundation's initiative to scan 300-500 of the top monuments in the world.

Alan Barrow of ABA (UK) said that his company looks at bottom-line costs when considering the application of scanning. It's not the cost of the surveying effort, it's the cost to the project. And it's not a *slice* of the cost of the project, it's the cost of 30-40% waste in doing it "the old way." ABA has applied scanning to 65 kilometers of underground railway projects. Interesting statistics for one of the railway projects included a data-gathering rate of 1.5Mb/scan = 500Mb/100 meters. ABA achieves one kilometer per hour at 8mm scan spacing. Barrow gave a history of improvement by saying that 30 years ago, they gathered 150 points per day. Fifteen years ago it was 1,000 points per day. Five years ago, it was 15 million points per day, and currently, it's 10 billion points per day. ABA believes that scanning minimizes risks by improving health and safety, enabling a better design, and employing one database.

Kevin Carpenter, WD Partners (USA), outlined two important criteria his firm uses for employing their scanner: 1) whether or not the site is improved, and 2) whether or not it is clear of vegetation. **Martin Dunn** of Metco (USA) discussed pricing and said his firm has three schemes: Cost Plus (for DOT work); Hourly (includes scanner cost); and Lump Sum (hourly rate for scan work). He said Lump Sum was the most profitable, and on some projects, has resulted in an extra 33 percent profit. **Jonathan Patterson**, J-Tech Design (Canada), said clients are starting to ask for the point clouds. This reminded me of how surveyors now routinely provide AutoCAD files to clients.

In a rousing presentation, **Simon Barnes** of PCA (UK) discussed the many non-civil projects his firm has scanned, including a Grand Prix simulator, an Olympic velodrome, Egyptian statues, and the movies **Tomb Raider II** and **Troy**. PCA has done work for Nokia, and Barnes said Nokia doesn't consider itself to be in the phone business, but rather the entertainment and information business. He shared an intriguing quote by Bill Gates: *People overestimate the effect of technology in two years, but underestimate the effect in ten years*. Barnes also echoed one of my long-held beliefs: young people today are undaunted by technology, and have no techno-fears. Because of Nintendo games and such, they are quite comfortable with 3D and virtual reality.

As part of a factory tour, **Dennis McLaughlin**, Director of Manufacturing with Leica HDS, pointed out the "global" nature of HDS scanners – the bases are made in Singapore, the special bearings in Switzerland, the motors in Oklahoma, the cameras in Belgium, and the receivers in Japan! The units contain nine PC boards, and fiber optics allow the induction motors to turn through 360º. The units are assembled in Switzerland and California, and the final assembly takes four hours. After assembly, the units are subjected to rigorous "smoke tests," including 14-hour thermal relax and stress tests. They are also subjected to vibration and 6G-force tests. Only then are the outside skins installed for the calibration routines. Part of the calibration includes a triangulation test that employs a *very* precise laser tracker. Because each instrument is unique, the constants from the calibration are stored onboard. The company recently implemented a new 18-hour calibration that is even more sophisticated than the previous12-hour calibration. To avoid having to go outside for testing, the company has installed a 103-meter indoor test range.

Although this was a Leica-specific conference, attendees were presented with dozens of presentations and success stories that applied to laser scanning in general. To top it off, an evening dinner cruise on San Francisco Bay was the perfect place to relax, share stories, network, and digest all the conference had to offer.