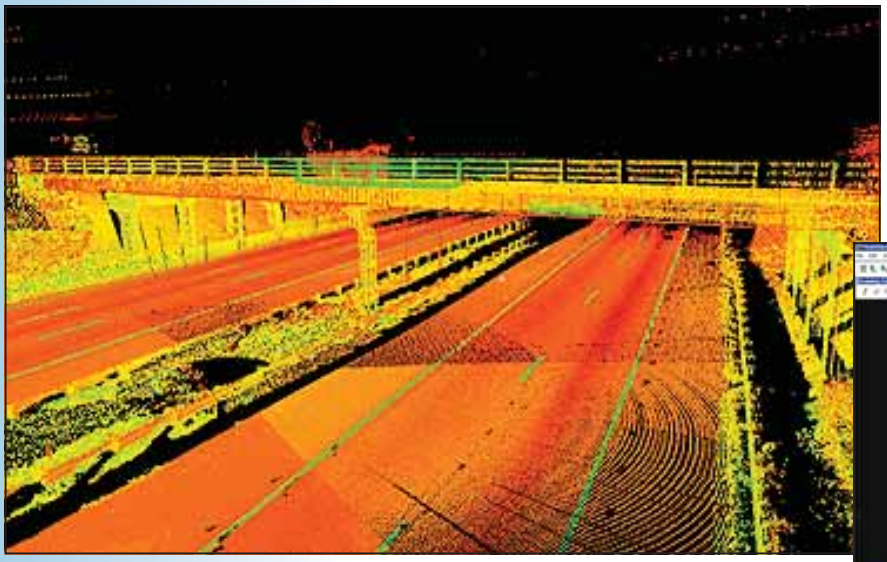
Demand Increasing for Laser Scanning Part 1



▲ End clients, such as NCDOT, are increasingly asking specifically for laser scanning —*Image courtesy: ARCADIS*

In the surveying services business, when it comes to technology—such as high-definition surveying—there are basically two types of adopters. One type is those who take a technology and run with it. They evangelize its benefits to internal and external clients and plug it into their operations as much as they can.

The second type is those who stay aware of a technology but don't actively engage in it until their clients start to specifically ask for it. This is now happening with laser scanning technology. Organizations that had never had clients ask for it have started to receive inquiries, and those that have been providing laser scanning services are reporting an increase in the number of inquiries that are coming in specifically for laser scanning services.

This two-part article provides insights into the basic drivers prompting clients increasingly to ask for laser scanning services today and gives practical examples of such increasing demand. Part 1 examines one major driver: clients' increasing awareness of the benefits of high-definitions surveys. Part-2, in a subsequent issue, will look at key additional drivers that are increasing demand for the technology.

Increasing Awareness of the Cost/Benefit Picture

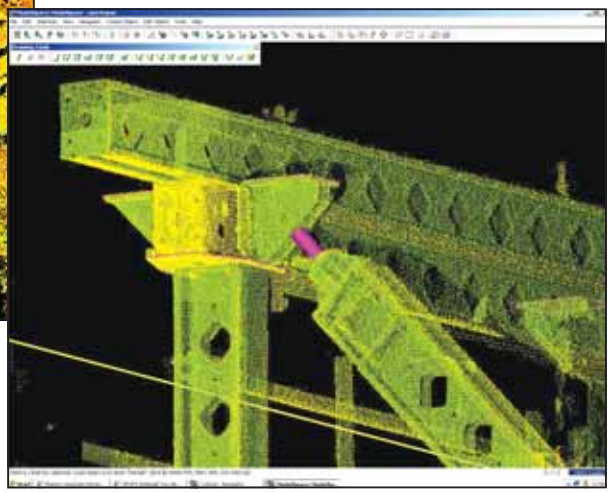
Over time, a new technology's benefits generally continue to improve, while its costs tend to decline thanks to increasingly proficient users and constantly improving tools. For certain technologies, at some point the cost/benefit ratio becomes so attractive that the word spreads among clients such that they start to specifically ask for the technology. This has become the case with laser scanning, which has been in the market now for almost 10 years.

Laser scanning technology offers different types of benefits to different types of clients, so the drivers are a bit different for each.

Owner/Operator and Government Agency Clients

One can argue that owner/operators, including government agencies, can potentially receive the largest benefits from high-definition surveying. They can realize benefits for capital (i.e. construction) projects and asset management applications.

Using high-definition surveying to create more complete and accurate as-built information at a retrofit or revamp project's design stage can reduce construction rework. Such rework savings have been regularly reported to represent up to 10 percent or more of the entire capital cost of a project. In contrast, as-built high-definition survey costs are typically less than 1 percent of the project cost. Smoother retrofit construction can also result in reduced downtime of assets such as manufacturing plants, transportation facilities, and commercial buildings. Reduced downtime can add millions of dollars in operational revenues for owners. Safety of data collection is yet another big benefit valued by owners and government agencies.

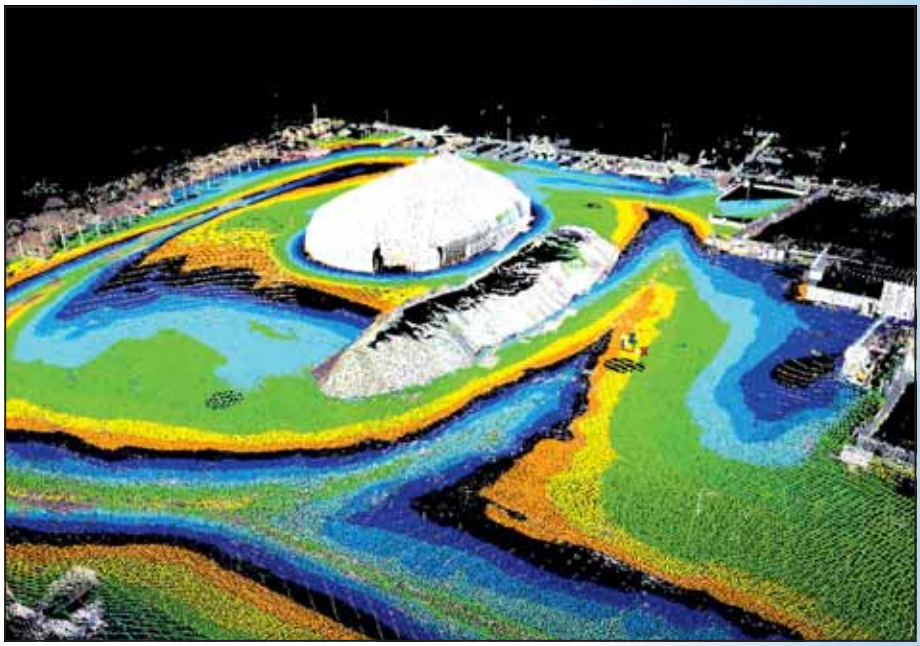


▲ Scanning is used for as-builts of new construction at Heathrow Airport's Terminal 5 project—*Image courtesy: Mason Land Surveys*

Asset owners are also increasingly benefiting from scanning on new construction. A recent article in a UK surveying publication described the extensive use of laser scanning in the construction of a new terminal at London's Heathrow airport. As the terminal is constructed, high-accuracy laser scanners are used to

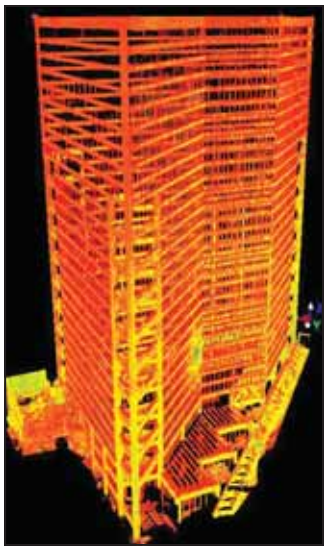
capture accurate as-built information of roads and structures. This information is immediately used to correct out-of-tolerance errors in construction and, if the out-of-tolerance construction is accepted, to update the project's design model for downstream design and project construction planning. The benefit to the owner is a smoother construction project, an asset that's been constructed more closely to its original design, and an asset that's accurately documented at the time of its handover to the owner.

Asset owners also benefit significantly from using high-definition surveys for asset management (i.e., maintenance and operations). For example, high-definition surveys can provide more accurate volumes for excavations and piles, minimizing costly overpayments to contractors. They also provide owners with more accurate asset information for improved maintenance and better emergency response.



▲ Owners and government agencies are increasingly using scanning for volume surveys
—Image courtesy: Nevada DOT

These benefits have been well documented in trade magazine articles, case studies, and conference presentations. The client reference list for high-definition surveying services includes many of the world's largest and most respected owner/operator organizations, and the awareness of this has now begun to snowball. Consider these recent facts:



▲ GSA issued solicitations in 2006 for laser scanning of buildings
—Image courtesy: GSA

- Virtually all DOTs deploy laser scanning through survey consultants, and almost 25 percent of all DOTs already have their own laser scanners.
- At a recent major 2007 plant industry conference, owner/operators in attendance were polled about their usage of laser scanning. While 44 percent of the owner/operator organizations said that they used laser scanning in 2006, 70 percent said they planned to use it in 2007!
- At the same conference, one large oil and gas engineering firm that owns four scanners reported in a main stage presentation that they have "more scanning business than they can shake a stick at" for their owner/operator clients.
- At another 2007 laser scanning industry conference, a panel session was run for the first time that featured *only* owner/operator organizations (including plant owner/operators and government agencies). The spokesperson for the owner/operator panel session was an executive from Anheuser Busch, the world's largest brewing company. Anheuser Busch has standardized on laser scanning for as-builts.
- In 2006, the General Services Administration (GSA), the landlord for the civilian federal government, issued three solicitations for laser scanning services. The as-built scan information is used for creating building information models (BIM) of U.S. government buildings. The projects were for locations in three pilot cities, New York City, Atlanta, and Miami. Services contracts were awarded to three different service providers with laser scanning capabilities. In total, this GSA initiative has funded seven laser scanning service projects to date. The pilot projects have ranged from a single small building to a 60-building campus. Based on the ultimate level of success of these pilot projects, there is a potentially significant upside for additional such services in the future (*http://www.gsa.gov/bim*).
- The U.S. State Department's Overseas Building Authority recently issued a solicitation for laser scanning services for an embassy and seven adjacent buildings. This contract has since been awarded to a service provider with laser scanning capability.

Engineering Clients

An increasing number of engineering clients, both internal and external, have come to value the better quality of high-definition survey as-builts to improve design. They benefit from reduced risk of having to re-do their designs due to poor as-built information (a cost avoidance). It also means happier owner/operator clients who will continue to prefer their design services. And, in many cases, it can mean lower cost surveys and/or ones that can be completed sooner, thus allowing engineering and architectural design work to start sooner.

Here are two interesting examples on the civil engineering side that exemplify what's going on.

▲ Based on the initial success of scanning 2000' of roadway survey, an engineering client greatly expanded the project scope for additional scanning—*Image courtesy: Nevada DOT*

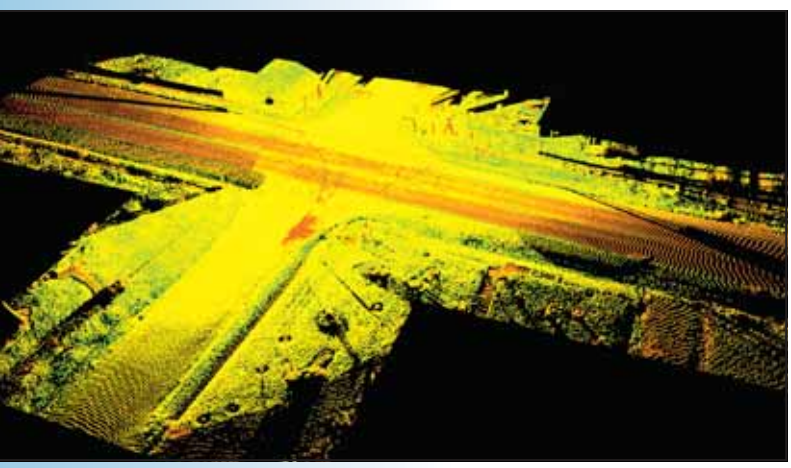
1. Nevada DOT owns two high-accuracy laser scanners. One is used exclusively for an extensive asset management project in which bridge clearances are given to NDOT's bridge section for truck routing.

In a conversation with an engineering consultant who was looking for engineering survey data for a railroad overpass clearance, NDOT's laser scanning expert noted that they had already captured that information with their scanner as part of their bridge road clearance survey. After the consultant was shown the scan data for the railroad overpass, he asked for a laser scan survey for 1000' in each east-west direction on either side of the overpass. After this scanning was done, the engineering client was so impressed by the detail and additional information in the high-definition survey that the consultant continued to request additional scanning for the road widening project in the entire downtown Reno area.

From the initial request, the scanning project grew into more than 20 days of scanning covering many miles of roadway.

2. A survey company recently used high-definition surveying for an engineering consultant on a simple intersection survey for ADA compliance design. After the first survey, the client felt that a high-definition survey was overkill. So, to save a bit of money, the client asked the survey company to use traditional survey methods instead.

Well, sure enough, after doing the next intersection survey conventionally, the client later wanted to know the location of features of the intersection that are not normally captured in an intersection survey for ADA compliance design. So the survey company had to re-send a crew back to the site, which was very remote. The client wound up paying for the survey twice. In addition, the engineering client also quickly came to appreciate the benefit of having the additional detail of the intersection area readily available to accommodate "scope creep" and for safety benefits in urban areas. The engineering client has since directed the survey company to deploy laser scanning on every ADA intersection survey.



▲ An engineering client has standardized on scanning intersections for ADA compliance design—*Image courtesy: SAM inc.*

Architectural Clients

As a practical example on the architectural client side, Ron Aarts, COO of Optira (one of the service providers for GSA's BIM program), recently told me that they had just received a specific request for laser scanning services on a seismic retrofit project for Santa Monica City Hall. The project's architect had heard of the benefits of scanning, including the speed at which as-builts could be completed, and inquired with Optira to help them out of a "way-behind-schedule" problem. The inquiry resulted in new laser scanning service business for Optira on the project with a new client.

Contractor Clients

The value of benefits from high-definition surveying reaped by construction, fabrication, and installation companies may be second only to the value reaped by owner/operators. Depending on how a construction contract is written, many contractors are on the financial hook for cost and schedule overruns. Thus, reductions in construction costs and the ability to better meet or beat schedule—such

as can be aided with accurate, high-definition survey as-builts for refit design and for construction QA—can land directly on a contractor's profit line.

As an example of this, a project manager for FLINTCO Construction, who had good prior experience with scanning, specifically sought out a survey firm with high-definition survey experience to provide construction as-builts during a project to modify the University of Texas baseball stadium. The project manager later requested the survey firm (SAM Inc.) to present to other project managers at FLINTCO. (To read more about this project, see *Professional Surveyor Magazine's* February article, "Whole New Ball Game," page 26.)

Forensic Clients

Rich, high-definition survey data can offer compelling evidence that can significantly aid forensic investigations, especially for cases that involve potentially large financial awards. Once clients have benefited from a high-definition survey, many have started to specifically request such surveys for subsequent cases.

▲ Forensic clients have also started to specifically ask for high-definition surveys

Increasing awareness among end clients of the benefits of high-definition surveying is one of the major factors driving increased demand for it. Owner/operators, government agencies, engineering consultants, architects, and forensic clients are all part of this phenomenon among survey clients as word of the technology's benefits spread from project-to-project, person-to-person, and across entire organizations.

How Does the Word Spread?

As clients benefit from high-definition surveying, the word spreads in many ways. In addition to an increasing number of trade magazine articles, marketing case studies, and conference presentations, scanning product vendors and laser scanning service providers are quick to report client successes to others (provided that clients okay it).

Within a client company, a project manager who has had good success with laser scanning is apt to use it on his/her next project. More and more, project managers are sharing their laser scanning success stories with other project managers within their company or agency. This may be via one-on-one encounters, but increasingly, it's done at periodic meetings when all of an organization's project managers share their general project successes stories.

Laser scanning has been in the market long enough now that another phenomenon has kicked in: movement of knowledge from one organization to another via people moves. One user recently reported to me that in his geographic area, a number of employees from one of their largest laser scanning services clients had moved on to other organizations in the area. These customers were busy educating their new employers about the benefits of high-definition surveys. The service provider reported that "calls were now coming in from new client prospects out of the blue."

Once there is sufficient positive history within an organization, the next step is that the technology becomes a standard within the organization. In these organizations, you have to explain why you don't want to use scanning, as opposed to the other way around.

Today, for laser scanning technology, all of the above scenarios exist … including all the way to leading global organizations having standardized on the technology for as-built information.

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