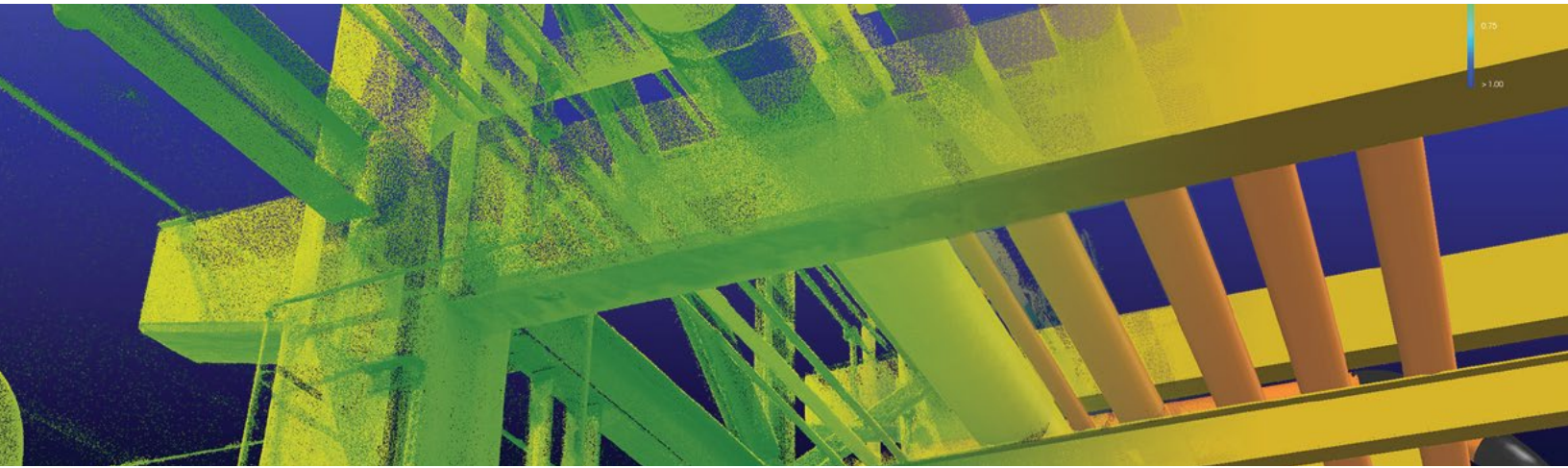Workflow 4.0 Presents

2016 Global Laser Scanning & 3D Modeling Survey Results

Inside this report, you'll find answers to questions like:

- What is the average scanning/modeling project profit margin?

- What are the 3 most critical factors affecting project success?

- What is the industry average for scanner set-ups per hour?

- Which scanner manufacturer has the greatest marketshare?

- Which modeling software is most critical to a smooth workflow?

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1. What brand of laser scanner do you own?

Faro and Leica dominate the market with a combined 90% market share.

The most popular brand among survey participants are Faro scanners. Fully 55% of those surveyed own a Faro scanner. Leica scanners (35.8%) are the next most popular. Many respondents (36.7%) own multiple scanners which brings scale to their operation and the flexibility to deploy each scanner according to its particular strengths. **NOTE**: Multiple choices were allowed which is why the numbers do not add to 100%. 'Other' responses include Geoslam and Teledyne Optech.

Learn more about laser scanner technology in our Laser Scanner 101 blog posts (www.clearedge3d.com/laser-scanner-101).
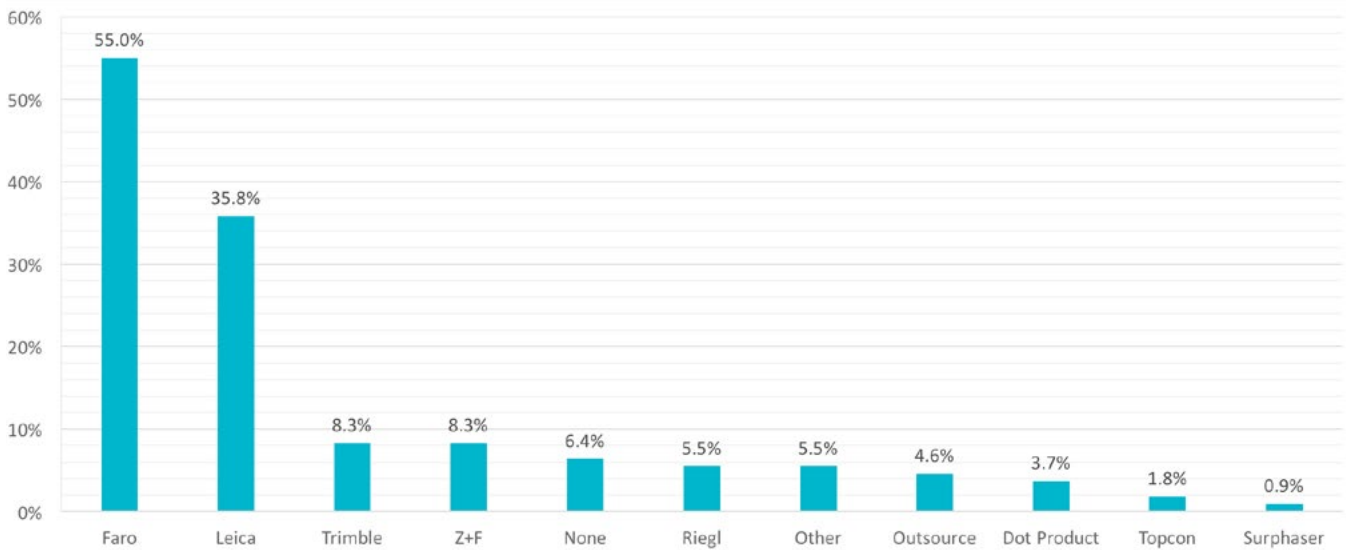
2. Of the best practices listed, please indicate the top three most important to successful project execution?

Clear SOW, LOD, and client expectations are essential to project success.

Developing a clear understanding of the project (Scope of Work and Level of Details) and managing client expectations are the most critical parts of any project. If those aren't aligned and confirmed, then a project, which hasn't yet begun, is already off to a shaky start. Set the project (and your team) up for success by confirming these critical success factors early and often. **NOTE**: We scored only the top three responses and weighted them accordingly to produce an aggregate score.

Learn more best practices by watching the 25 Tips, Tactics and Work-Arounds for Better As-Built BIMS Webinar replay (www.clearedge3d.com/better-as-built-bims).

3. What is your average profit margin on a scanning/modeling project?

The average scanning/modeling project returns a 20% operating margin.

On average, a scanning/modeling project nets a 20.4% profit margin. Twenty point four percent! Here's some perspective: in January 2016, the Stern School of Business at NYU published a list of US industries and their average profit margins. Out of the 95 industries studied, only 4 averaged better than 20%: Banking (24.48), Financial Services – Non Bank & Insurance, (22.3%), Shipbuilding & Marine (23.38%) and Tobacco (24.89%). We know there is a major difference between project profitability and corporate earnings, but it's an interesting contrast.

NOTE: 15% of respondents selected 'Other' which included write-ins such as, "Scan projects are not profitable for us" and "I don't know?"
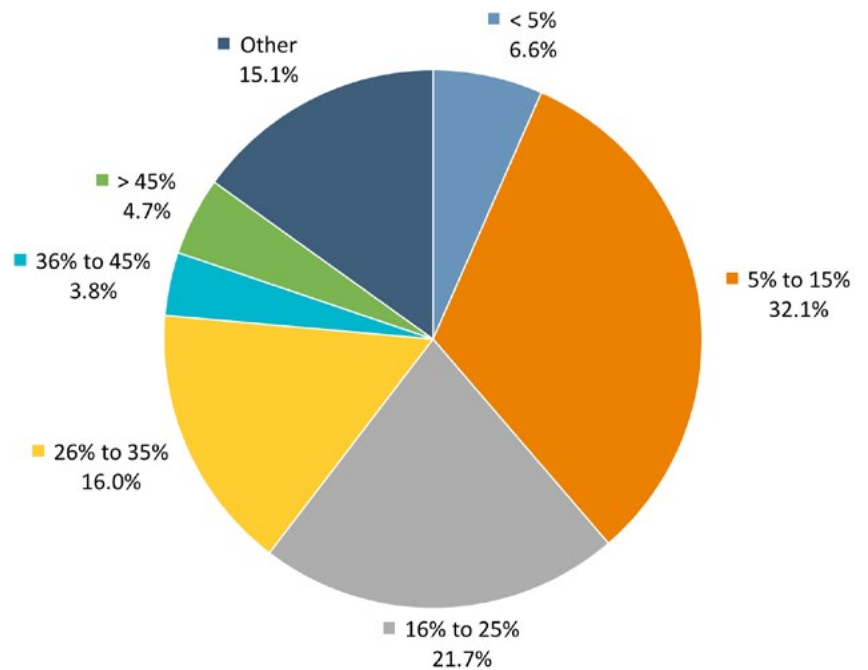
4. What is the single greatest profit margin degrader for your projects?

The project margin killers: long modeling hours and inefficient data processing.

When it comes to eroding profit margins, two culprits rise way above the rest: longer than expected modeling hours (37.7%) and back-office data processing inefficiencies (21.7). Not surprisingly, this is where the rubber meets the road. Both steps can consume a majority of the billable time in a scanning & modeling project. Fortunately, some technologies use automated feature extraction and assistive modeling tools to help speed the transition from point cloud to intelligent model. The right modeling tools that employ a high degree of automation consistently prove that they can pay for themselves many times over on a single project.
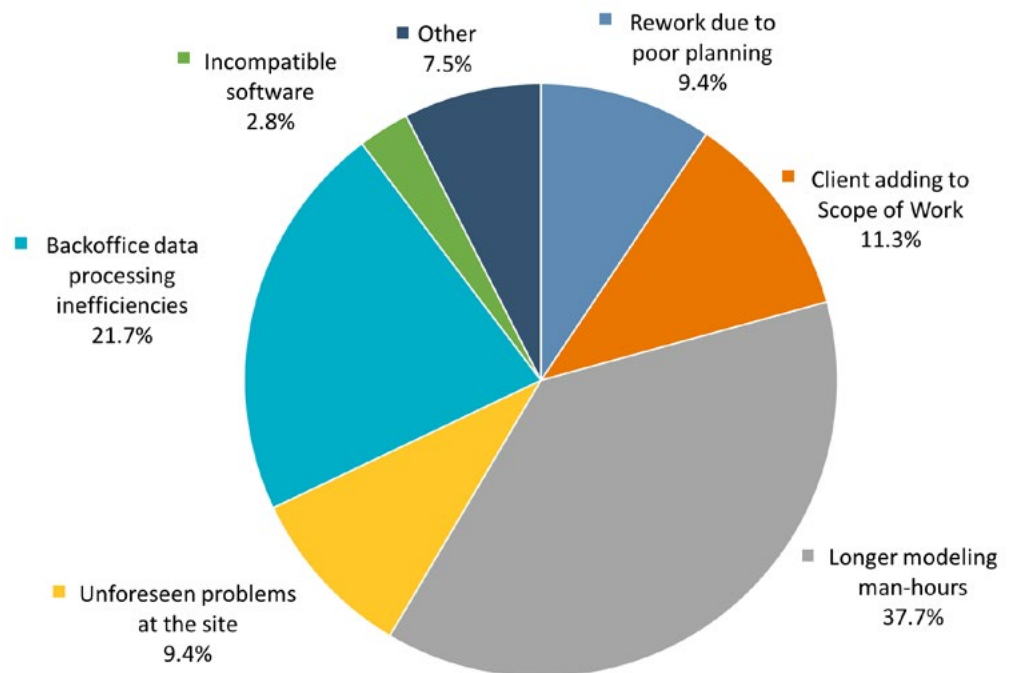

Learn more about As-built modeling technology in the BIM Manager's Guide to As-Built Modeling (www.clearedge3d.com/bim-manager-guide).

5. What is the average number of scanner "set-ups" you can perform in an hour?

6 to 10 set-ups per hour is the overwhelming standard for field collection efficiency.

If you're completing 6-10 scans per hour, then you're keeping pace with the industry average. Use caution when comparing your speed with others. Producing a reliable point cloud is paramount to project success and maintaining a good relationship with customers. All other things equal, quality trumps quantity in the scanning and modeling industry. Numerous factors effect scanner set-up efficiency including scan quality settings, RGB capture, the type of project, and even the choice of tripod.


- Other 8.5%
- Less than 5 19.8%
- More than 15 10.4%
- 11-15 10.4%
- 6-10 50.9%
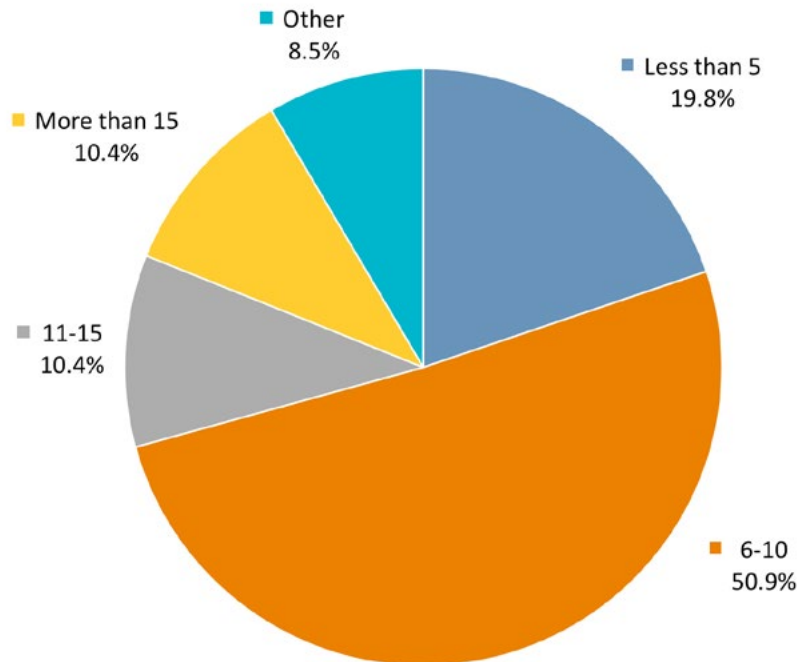
6. What percent of your scanning projects require modeling?

About half of all scanning projects require modeling.

As the prevalence of Building Information Modeling increases, so does the necessity to create accurate as-built models of existing structures. On average, 46.9% of scanning projects include a modeling component. Owners and Operators are increasingly commissioning as-built modeling projects to support their operations and facility management. Chief among the applications of the building model are equipment upgrades, maintenance/expansion projects and validating design intent.

Learn more about how Owners & Operators are using As-Built Models.
(www.clearedge3d.com/faster-turnarounds)

- Other 3.7%
- 76% to 100% 21.3%
- 0% to 25% 27.8%
- 51% to 75% 21.3%
- 26% to 50% 25.9%
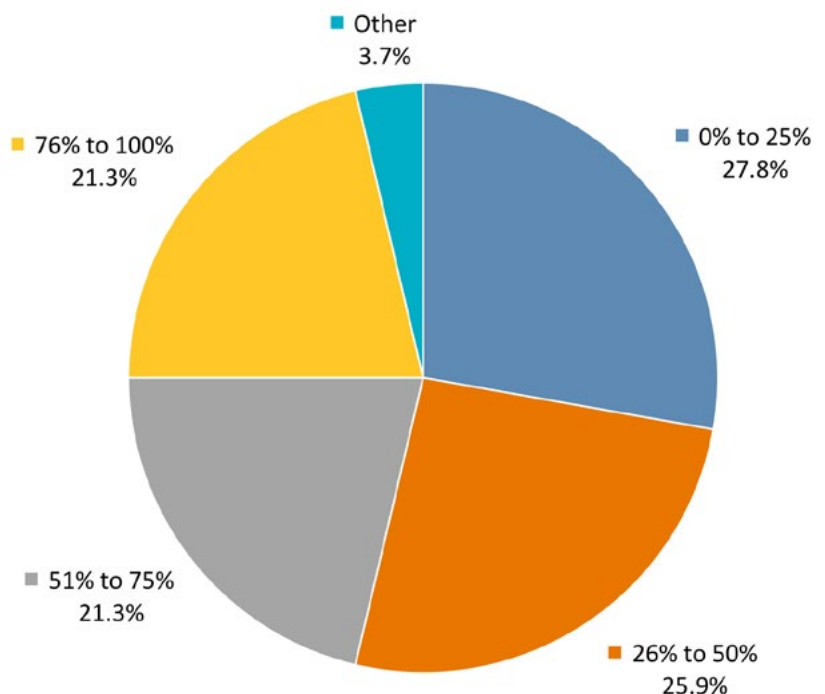
7. What brand of point cloud modeling software do you own?

EdgeWise and Cyclone are the dominant modeling tools.

Respondents rely heavily on their point cloud modeling tools. The most common solutions in their portfolio are ClearEdge3D EdgeWise (42.2%) and Leica Cyclone (38.5%). Both tools help to extend the value of point clouds (ClearEdge3D is a sponsor of this report). Interestingly, respondents who take advantage of purpose built modeling tools also see a higher profit margins and are reporting higher than average 2016 growth expectations. **Note**: Multiple choices were allowed on this question. Write-ins include Autodesk AutoCAD, Autodesk Revit, Faro Scene and others.

**Learn more about the future of point clouds on our blog** (www.clearedge3d.com/point-cloud-future).
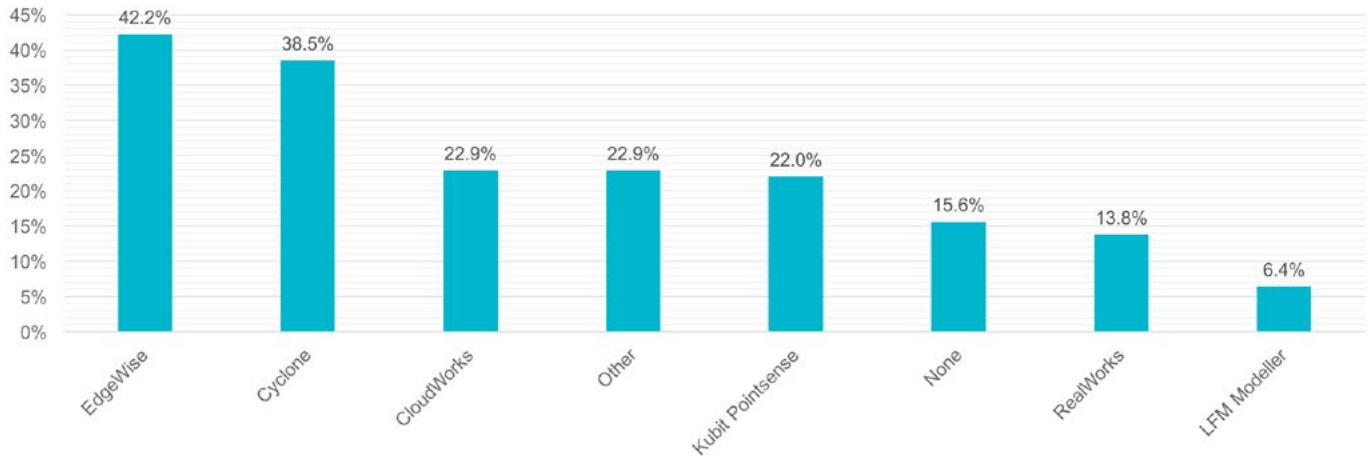
8. Of the modeling software you own, please rank them in terms of criticality to your workflow?

Cyclone and EdgeWise seen as essential to the modeling workflow.

In the 2016 As-Built BIM Survey, we reported that nearly 70% of a scanning & modeling project is spent in the Modeling stage. When optimizing a project process, teams rightfully focus on ways to optimize this part of the process. They look to technology to help remove errors and accelerate modeling. Point cloud modeling tools Cyclone and EdgeWise rank at the top of criticality list in 2016.

See the full As-Built BIM Survey Infographic (www.clearedge3d.com/as-built-survey-infographic).
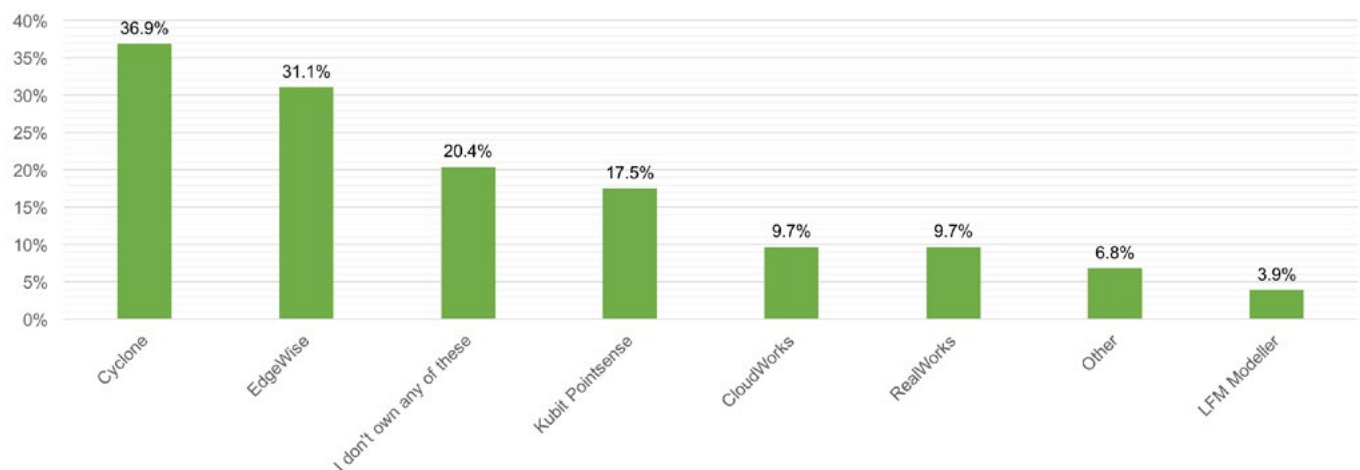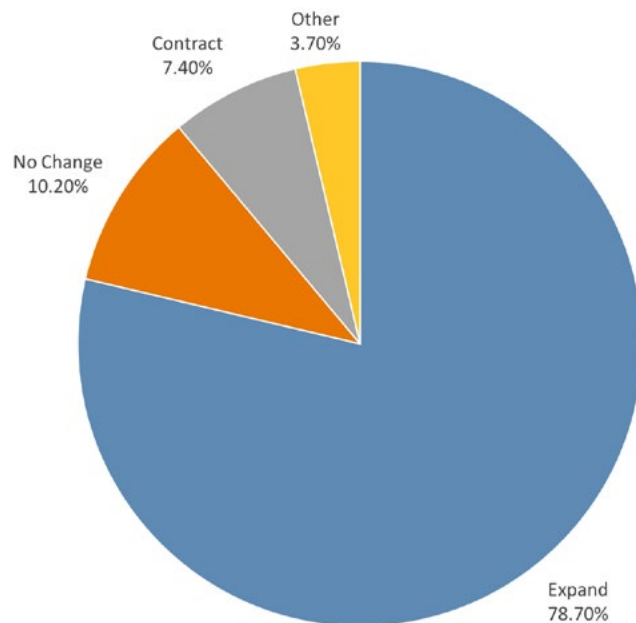
9. Do you expect your scanning/ modeling business to contract or expand in the next 12 months?

Nearly 80% expect their scanning/modeling work to increase in 2016/17—only 7% forecast contraction.

Rational exuberance reigns in the scanning and modeling marketplace with 78.7% of respondents predicting business expansion in the next twelve months. When combined with those that see no change in their business, nearly 90% of the scanning and modeling market is forecasting a positive or neutral growth in the next twelve months—great news for everyone involved in this growing market.

10. How much do you expect your scanning/modeling business to contract or expand in the next 12 months?

Growth rate in scanning/modeling market is out-pacing historical averages.

43% of respondents believe their work will grow between 21% and 100%, and 5.6% believe their business will expand by more than 100%. That's heady growth in any market but particularly bullish in an industry that has seen 15% to 20% historical growth on average. 10% of respondents see no change in the level of activity and nearly 30% expect a small increase in the 1% to 20% range.
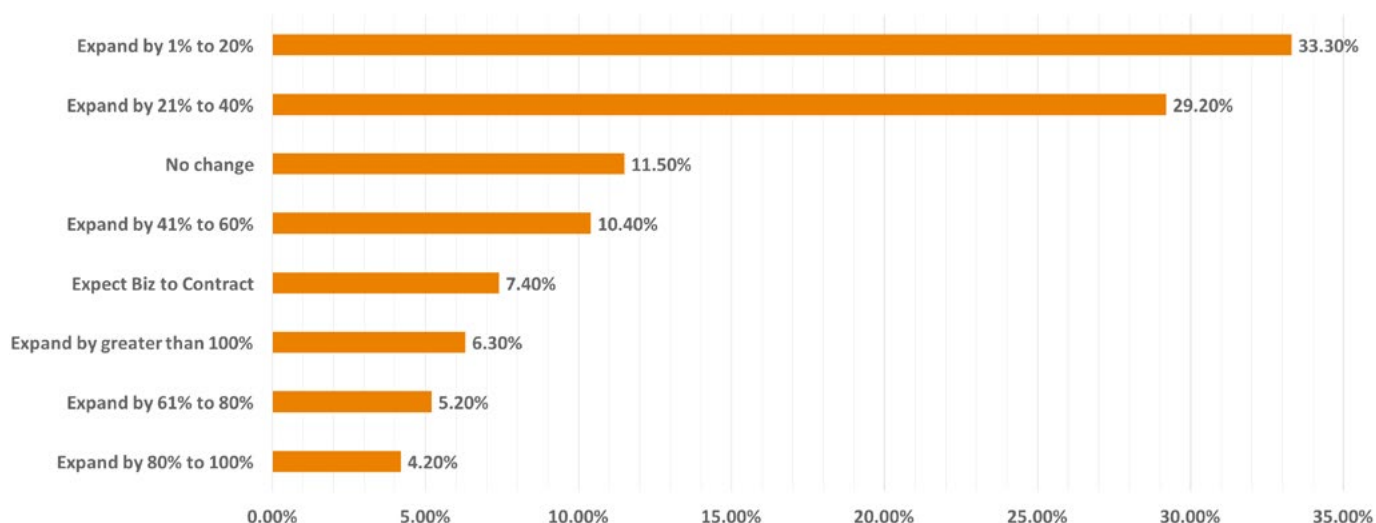
Conclusions

There were several significant data points from the survey results that bode well for the industry as a whole. Overall, the scanning/modeling marketplace is growing faster than ever with nearly 80% of firms forecasting growth in the next twelve months. The profit margin that most firms are experiencing is robust with 46% of respondents reporting project profit margins of 16% or higher.

Margin killers include long modeling times and back office data processing. These represent areas of opportunity for those firms who have not yet incorporated automated modeling technologies into their workflows—and a competitive advantage for those who have.

On the vendor side, the dominance of Leica and Faro in the hardware market wasn't particularly surprising—but what did surprise us is the scale of their dominance, with a combined market share of 90%. The emergence of EdgeWise as the "go to" 3D modeling platform was significant given the software was launched only four years ago (full disclosure: ClearEdge3D is a sponsor of this survey) but Cyclone is still a dominant and viable modeling option for many firms given its breadth of tools.

Note About this Report: Scope of Survey

The survey was sent to more than 5,500 scanning and 3D modeling practitioners in the worldwide AEC industry. 110 surveys were completed, so while the data is illustrative, it must be noted that the sample size of the data set is small relative to the overall size of the market. As such, this report is not meant to be the definitive authority on scanning and 3D modeling, rather it's simply a window into the thoughts and best practices of your colleagues in the industry.
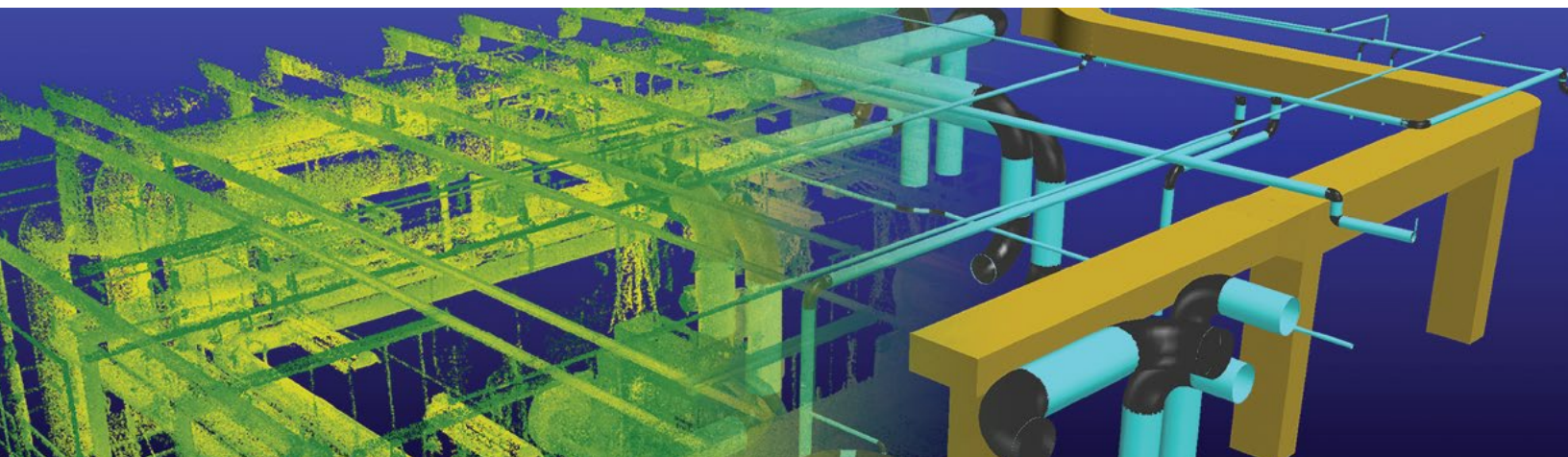
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EdgeWise

EdgeWise offers a host of building, structural, MEP and plant modeling features and tools to bring you from field-scanning to finished faster than ever before. The updated core automated feature extraction algorithms and results are amazing. Not only is the pipe extraction substantially better, we've also designed new algorithms to automate the extraction of gridded structural steel and concrete.

EdgeWise includes:

- Structural modeling tools that use advanced extraction algorithms and automated modeling technologies to accurately extract steel, concrete and wood structural elements faster than ever before.

- Pipe modeling tools with better, faster automated pipe extraction, spec-driven fitting placement, billion-point visualization, and exacting quality assurance tools.

- Duct modeling tools that can bring extracted ducting, conduit, and other mechanical, electrical, and plumbing (MEP) elements directly into Autodesk® Revit® as fully functional pipe, conduit, or duct Revit families.

- Building modeling tools use groundbreaking algorithms that can identify and extract some of the most common building features from point clouds and automatically create Revit family objects. The model will export seamlessly to Revit as an intelligent model, saving you countless hours.

Verity

$500 Billion USD. That's how much the construction industry spends each year fixing poorly constructed, out-of-tolerance work. Experts say between 5% and 12% of a project's costs are lost on expensive rework and resulting schedule delays. Verity™ software from ClearEdge3D dramatically reduces this financial impact, resulting in more profitable construction projects, more accurate as-builts, and fewer schedule delays.

How Verity works:

Verity analyzes point cloud data of construction sites and compares it to the design model, determining which elements have been installed to date and flagging out-of-tolerance or inaccurately constructed work. Verity provides unprecedented insight into and control over your construction projects.
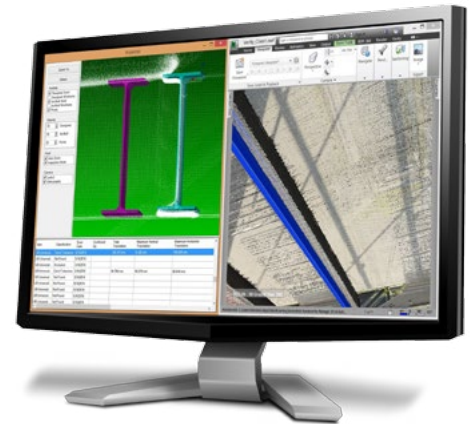
To request a demonstration, please contact:

sales@clearedge3d.com | USA: + 1 866-944-8210 or visit clearedge3d.com.