**What’s Behind Your Walls?**



Why every owner should invest in a robust plan for laser scanning and photogrammetry now, even if they aren’t sure how they are going to use them immediately. The data you gather during construction will pay dividends for the entire life of your building.

By Bert Aultman, Procon Consulting, LLC

Facility owners are heavily invested in the properties they own and manage, but that is often hard to tell when you visit the facility manager’s office. Some are still operating exactly like they did 20 years ago, with cardboard boxes, file cabinets, and drawing rolls. Some offices will at least have digital versions of that same information on their shared network drives. Either way, facility managers are still often armed only with 2D drawings and product specifications that didn’t match the building when it was delivered, much less after years of operations, minor projects, and repairs.

Even the most diligent and prepared professional will be challenged when relying on incomplete, poorly organized, or conflicting information. Poor or incomplete information leads to considerable unnecessary risk in the operation of your facility. It also creates inefficiencies in the day-to-day operations and maintenance activities that add cost and time even to basic tasks and may cause important preventive maintenance tasks to be missed. It makes it harder to diagnose issues or give direction to outside vendors or contractors during construction or maintenance projects, again leading to increased costs and added time. The end results are more outages, shortened life of critical systems, and increases to the total cost of ownership of the facility. Additionally, all of these situations are potentially disruptive to building occupants. Most could be avoided with more accurate, more complete, and better organized building information.

When it comes to facility management technology, many owners wait on the sidelines, rightfully concerned that the technology solutions available in the marketplace can be flawed, expensive, technically overwrought, or often all of the above. I don’t blame them, but in doing so they are missing opportunities to capture important information during new construction or major repair and alteration projects. Not only can many of today’s imperfect solutions be implemented effectively providing a return on the investment over the life of your facility but capturing that data now will prepare the facilities team newer and better solutions that aren’t so far off in the future.

One of the first areas that owners can leverage right now with limited investment, easy payback, and no real risk is taking the opportunity during any major construction activity to perform 3D laser or lidar scans of infrastructure inside walls, above plenums, and in other areas that will be closed in. There is no better mechanism for getting hi-fidelity, verified, as-built building information. This technology has matured considerably in the last five years which has led to lower prices, better product, and more availability. There are more highly qualified providers producing better results at considerably lower prices. Software providers have also introduced low cost or even free viewers that can display the resulting models extending access beyond specialist users in the back office with high cost modelling software. These models can then be used to augment, verify, or further inform the 2D CAD files you get at the end of the project or can form the basis for a more complete BIM program.

An alternative to laser scanning that is low cost and low barrier entry that some owners should explore is photogrammetry. While the name makes it sound complicated, the current solutions require very little technical knowhow or training. Basically, photogrammetry uses multiple 2D photos, sometimes combined with low-fidelity lidar sensors, to create 3D models of a space. There are several providers, such as Matterport, which provide hardware and software necessary for an end-to-end solution, but there is also low-cost software that can take data from a cell phone camera and stitch it together into a 3D “model” of your space. You will want to make sure that any tool, hardware or software, you choose will output data into a standard, non-proprietary file type, but at this point, most everyone supports multiple file types (or the .ifc file extension). The results do not have the same accuracy as a laser scan, but if implemented correctly they are certainly more valuable than 3,000 construction progress photos hidden on a shared drive. This is a definite case where the whole is greater than the sum of the parts.

Whether you have resources to spend on laser scanning or need to pursue lower cost photogrammetry, the technology is easily available today to provide immediate value to your team for the life of your assets. There is little risk to jumping in and using these tools today because the investment is low and the resulting model files are portable enough that they can be integrated into almost any technology you choose going forward or can provide value standing alone. The real risk is in the missed opportunity to capture information in a meaningful, structured way while the wall, ceiling, or mechanical space is open and available. Once those walls are in place, the only way to really know what is behind them is to break them open.

About the Author: Bert Aultman, PMP is Manager of the Business and Technology Management Division, for Procon Consulting, LLC, a full-service asset management consultancy in Arlington, VA. Bert has managed multiple large technology implementation programs for both private and public clients. His practice areas include organizational and operational planning, change management, technology, capital and operating budgeting, performance management, and process improvement. Bert has a Mechanical Engineering degree from the Georgia Institute of Technology. He is currently managing a Program Management team supporting GSA’s Office of Facility Management and another supporting the Architect of the Capitol’s implementation of a new PMIS solution.