

CONNECTING REAL ESTATE WITH BIM

How to scan multiple sites in a single day



Crew-B – a trio of young entrepreneurs – recently discovered the best tool to scan multiple sites in a single day. Their client, a European leader in the fitness market, is currently engaged in converting its gyms to 24-hour operation and required Crew-B to provide building information modelling (BIM) models that would support data administration and the rollout of multiple upgrades. Crew-B found that NavVis VLX – a new, wearable mapping device – provided the right balance between accuracy, speed and scale.

Crew-B has a clear purpose – to connect real estate with BIM. Based in the Netherlands and operating all over Europe, Matthias Louwerens, Twan Burger and Jorginho Kors are trained specialists and have been providing BIM and reality capture services since 2018.

One of their biggest clients is the European leader in the fitness market. With more than 2.2 million members and 831 locations in the Netherlands, Belgium, Luxembourg, France and Spain, the fitness chain has a property portfolio of at least 1,000,000 sqm and continues to grow.

Crew-B won the contract by demonstrating how BIM models made with [Autodesk Revit](#) could be used to efficiently plan the floor layout of gym equipment, enhanced with additional applications such as asset management and facilities management.

Matthias Louwerens explained that 3D models have proved their worth in comparison to 2D floorplans because the height of a room, for example, does not always accommodate the gym machinery. “It’s very expensive to ship a heavy machine to another country and then find out afterwards that it doesn’t fit in the gym.”



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Task

The client is converting its gyms to 24-hour operation and Crew-B's brief is to provide BIM models that support data administration and the rollout of multiple upgrades. Examples of these improvements include first aid stations, security camera coverage, and fire exits. Crew-B was initially tasked with delivering BIM models for 430 sites, but it is now expected to provide as-built documentation for all 831 locations.

But the work does not stop there. The client is opening an average of three new sites a week across all five markets, and its goal is to expand to 4,000 clubs across Europe. Crew-B will provide additional services by surveying newly acquired sites for development into fitness clubs. In effect, they will be bringing both existing and new property assets into standardized BIM documentation.

Challenge

Crew-B is rapidly scaling up its business to meet the expectations of its client. Where previously they measured a site by hand, they now needed more efficient methods to capture the data for creating their BIM models in Autodesk Revit.

The challenge in mapping an indoor space like a fitness gym, however, is that it is a GNSS-denied environment. Concrete, pipework and wiring can weaken or create obstructions for satellite signals for positioning. And without an absolute reference, surveyors need another

means of creating very reliable or accurate reference points indoors.

Laser scanning devices can bridge this gap. When researching the market, the team were able to choose between devices capable of tying into measurement points projected into the GNSS-denied area, or a device featuring SLAM (simultaneous localization and mapping) technologies. Either way, it becomes possible to create BIM models using high-quality data from point clouds generated with a laser scanning device – a process otherwise known as Scan-to-BIM.

When evaluating their options, the team found terrestrial laser scanners were too slow to set up for scanning at volume, while handheld laser scanners did not have the required level of accuracy. But then came the launch of a new wearable mapping device offering survey-grade accuracy: “NavVis VLX is absolutely the best tool for the job,” says Twan Burger, “providing the right balance between accuracy, speed and scale.” Best of all, because [NavVis VLX](#) has both SLAM capabilities and can tie into measurement points in GNSS-denied environments, it is even more accurate and resilient to drift than many other SLAM devices on the market.



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Solution

The whole team was impressed by NavVis VLX, citing many features such as the ability to scan at the speed of walking, the high quality of the data captured, and the usability that enables them to pause scanning or use the screen to verify that no areas have been missed.

Features such as dynamic object removal are also incredibly valuable when scanning a fitness club that is operational 24 hours around the clock. “Members use the gym at all hours of the day, moving from machine to machine,” says Matthias Louwerens, “so dynamic object removal is really useful for delivering a clean point cloud.”

And with so many sites that require both scanning and modelling, every member of the team is completely hands-on with the project. This enables Crew-B to minimize the amount of time spent travelling and the costs incurred.

“We alternate our working weeks between scanning and BIM modelling, and we spend a lot of time travelling,” Twan Burger remarks. “We can now scan more clubs in a single trip, scanning about 15 clubs a week on average – the most we scanned was six in a single day.” A single club is on average 1,500 sqm in size, which means that the team scans roughly 45,000 sqm per month.



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Results

Every club scanned is hosted on [NavVis IndoorViewer](#), and the team makes use of features such as the measurement tool, panoramic photos, and automatically generated floorplans. They have also started using the new Cloud Processing Add-on for increased efficiency with data crunching while on the fly. “When you want to be quick, the cloud processing tool is what you want,” says Twan Burger.

In addition, Crew-B continues to make extensive use of Autodesk REVIT for their BIM models, importing the point clouds and panoramic images into the software to create 3D models, 2D floorplans, and building layers with up to LOD (level of detail) 300 for information concerning the site, building structure, and space plan. Their client no longer needs to physically visit each gym; they can now inspect each location remotely.

All in all, the team finds that scanning with NavVis VLX is at least three times faster than other methods. “It’s far more complete and far more accurate,” says Jorginho Kors. “You deliver a better product to your client, of a greater quality, which we expect will unlock more customers for us down the road.”

Looking to the future, as Crew-B expands as a business, they intend to take on more staff – and perhaps wearable mapping devices – to assist with the workload. “NavVis VLX is so easy to use,” Jorginho Kors continues, “we’re confident that we’ll be able to hire more technicians and quickly train them for scanning sites.”

Key takeaways

In short, Crew-B found NavVis VLX to be the best tool for the rapid capture of multiple sites in a single day. The quality of the data captured is exactly right for scan-to-BIM to Autodesk Revit and the measurements are reliable. Its compact design means that it is easy to store and transport to different locations and it offers sufficient scope for Internet of Things applications with real-time data. Its scalability will ultimately allow Crew-B to invest in more technicians and NavVis VLX units as the business grows.