

Dreaming in 3D

Halifax's Smarter Spaces is on the global front of 3D scanning **By Matthew Halliday**



Contributed

Dan MacIntosh (left) and Colin Gillis, co-founders of Smarter Spaces, which uses 3D scanning to create digital models of buildings, streetscapes and other spaces.

“I don’t want to create hundreds of jobs in other countries,” says Colin Gillis. “I want to create them here in Nova Scotia. Part of the reason we built this company was to make something that could grow locally and internationally, but create value here above all.”

“We” refers to Gillis and Smarter Spaces co-founder Dan MacIntosh, who jointly created the company in 2016 as an outgrowth of their previous company, IPECC. That company focused on project management and relocation planning, among other services. But, says Gillis, “The model wasn’t growing, wasn’t creating new jobs, not really even paying a fair market wage.”

They decided to take a risk and become early adopters in the burgeoning field of 3D scanning. With the help of a Business Development Bank of Canada loan to purchase equipment, they transitioned the company into what would become Smarter Spaces. Today, they

create detailed digital models of buildings, streets and other spaces for clients including developers, government, non-profits, universities and hospitals.

“It sounds simple,” says Gillis, “but one of the biggest causes of cost overruns in any building project are those ‘I didn’t know that was there’ moments.”

The Smarter Spaces team uses an array of scanning tools which utilize LiDAR (light detection and ranging) technology. The most sophisticated tools can emit tens of thousands of laser pulses per second, measuring the distance between the scanner and nearby objects, creating a “point cloud.” Each point is assigned three-dimensional co-ordinates and the point cloud is transformed into a 3D representation of the space is being scanned. The technology has been used for years in industrial, military and other applications, but the benefits on smaller scale projects are potentially transformative.

“We’re right now working with a local developer to scan a new building as it’s being built, before the drywall and ceilings go on,” says Gillis. “When a contractor builds, he’s supposed to red-mark the drawings to indicate changes — but sometimes doesn’t. Same with the architect, so you can have a brand-new building with an ‘as-built’ that’s already off.”

To that end, Smarter Spaces has trademarked the phrase “as-scanned,” as opposed to “as-built.” With an “as-scanned,” every stud, bundle of wire and pipe is accounted for, making for an unprecedentedly accurate image of a building, inside and out, which helps says Gillis, “Everything from figuring out where a water leak is coming from to knowing where to hang a picture.”

The need for accurate drawings is even more vital in older buildings, which might have decades of undocumented renovations and repairs. Smarter Spaces has been working with

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— **Colin Gillis,**
Co-founder,
Smarter Spaces

Armco on Halifax's old World Trade and Convention Centre (WTCC) and that's also where they're besting their competition globally.

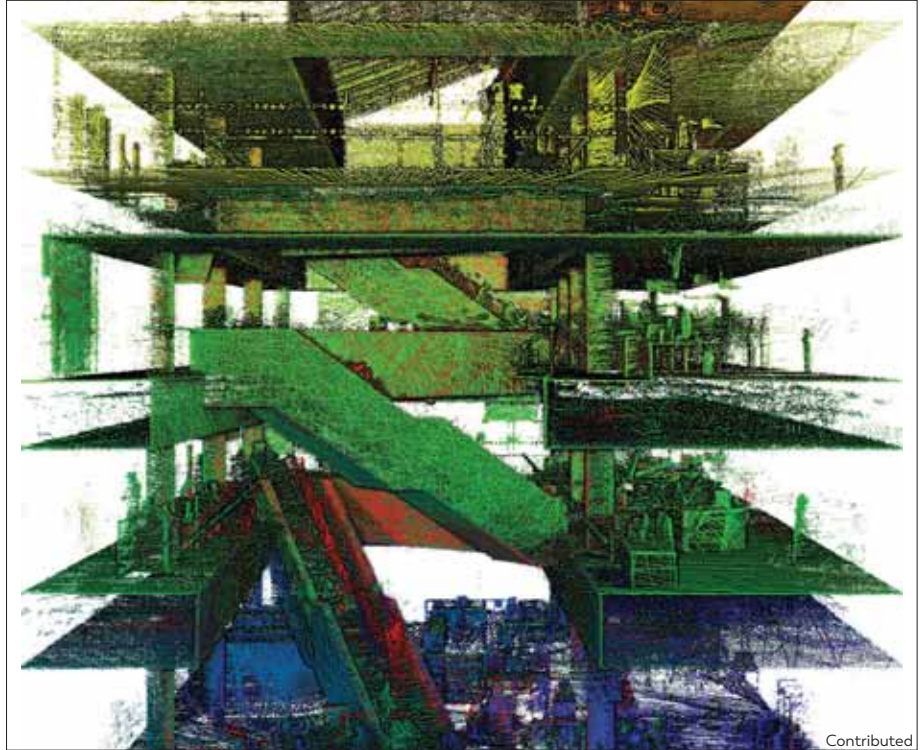
“We are world leaders in merging technology like photogrammetry [surveying and measuring distances between objects with photography] and LiDAR,” says Gillis.

For Armco, they deployed drones to capture aerial images of the WTCC and merged that with their LiDAR scanners. “It allowed us to do a complete model, which would have been impossible otherwise,” since the LiDAR scanners alone only measure up to 30 metres.

The applications go well beyond accurate building drawings — it can be used to create immersive 3D environments for tourism or in video games. All of which makes the company poised that much more for the growth Gillis envisions.

The staff is almost all drawn from NSCC's Architectural Engineering Technician program and Gillis hopes the current team is just the beginning — and that no matter how large the company scales, the bulk of its workforce remains in Nova Scotia.

“Every hour of scanning requires three or four hours of processing, which can be done from anywhere. So we can scan a building in Ottawa and the technicians putting together those renderings are right here in Halifax.”



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Smarter Spaces uses an array of scanning tools to create a “point cloud,” to create 3D representations of spaces.



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