

AMATEURS VERSUS PROFESSIONALS



TECHNOLOGICAL ADVANCEMENTS ARE AUTOMATING MANY ASPECTS OF SURVEYING THAT REQUIRED HUMAN LABOUR, BUT SURVEYORS CAN DIFFERENTIATE THEMSELVES WITH NICHE EXPERTISE, SECURING THEIR ROLES AND EVEN GROWING THEIR CAREERS, SAYS **DAMIEN SCHMITZ**

Up until a decade or so ago, we were still largely carrying out surveys the same way as we always had. Yes, there were enhancements around automated total stations in the 1980s and 1990s, and GPS changed the game when it became widely publicly available in the early 2000s, but surveyors still had to use traditional techniques, because GPS doesn't work everywhere or in all locations.

However, new technologies are truly giving surveying a jolt of innovation. Everything from photogrammetry and LIDAR to UAVs is changing the game and helping to take surveying to a new level.

It's worth pausing to ask: what's the value of new ways of measuring things that we've likely already measured before? Why should we be excited by this?

There are several reasons. The first is that each time we measure something again, especially if it's with a new technology, we have an opportunity to be more detailed and precise.

The second is that everything changes – surveying is about describing reality and reality is always changing. This has been particularly true in industrialised countries, where massive spates of development and large-scale infrastructure projects have drastically altered the public space. As a result, any survey taken in recent decades has a built-in expiration date and quickly becomes obsolete.

Another important point here is that a lot of infrastructure assets aren't necessarily visible: they're underground. Think here of electricity lines, water lines, fibre optic cables and sewer systems. Just because you can't see them doesn't mean they don't exist; nor does it mean they don't need to be surveyed. And in many cases, they haven't been.

The result is that many towns and cities know they have some electricity or water lines somewhere underneath a particular road, but they don't know exactly where. Oftentimes, municipalities will detect the

underground assets via electromagnetics and mark it with paint on the street, but alas, this paint isn't permanent. It wears down and washes away in the rain – hence the need for a more permanent record.

Towards a digital city

The ability to go out into the field and accurately capture all aspects of the public space enables cities to take a step towards the holy grail of creating a digital twin for the entire city.

A digital twin, of course, is a digital representation of a real-world asset that is informed by real-time data collected by sensors in the physical world.

But before cities can start 'going digital', people must survey them – and the mainly manual surveying processes of the past aren't sufficient to cover this ground.

Enter the technological advancements of recent years. This includes laser scanners creating massive point clouds that describe buildings and bridges, and camera-carrying UAVs that can fly inside a massive cathedral to capture every aspect of the structure. It means the ability to create 2D and 3D representations of every water line and sewer pipe in the jurisdiction, captured in one go while out in the field and tied to accurate geospatial data.

This comprehensive level of reality capture delivers several important benefits.



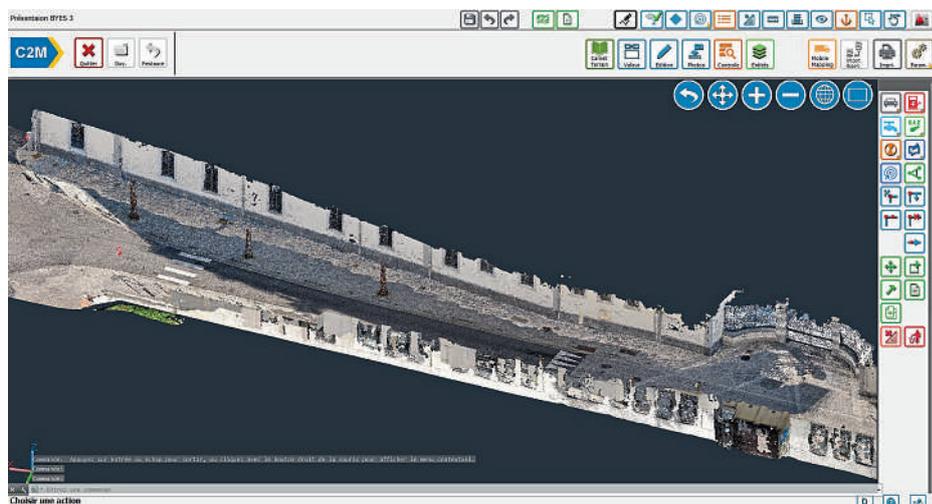
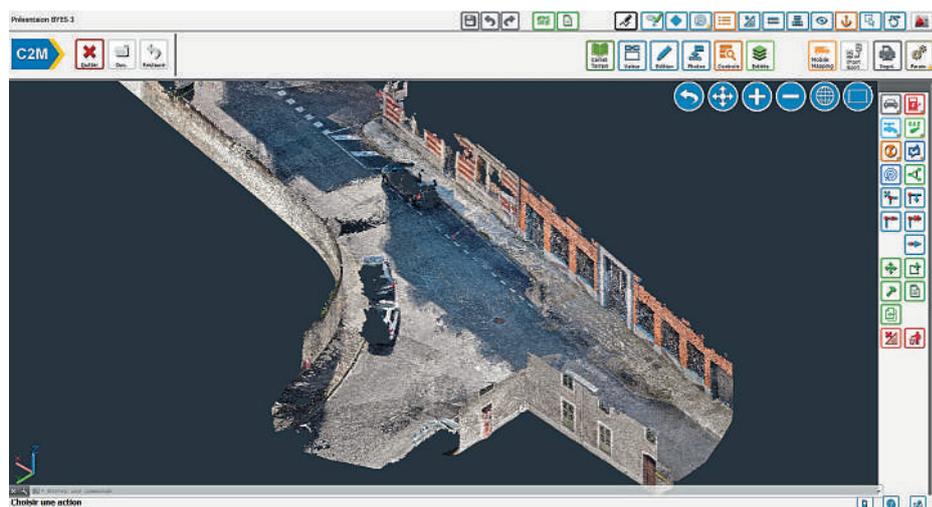
When you know where every building, pipe and even tree is located, you can more efficiently tackle new infrastructure and building projects, understanding in advance any conflicts or negative impact before ground has even been broken. You can even start to better understand the environmental effects of the project, such as how it might affect carbon emissions – and how that impact could be lessened.

Having a holistic digital view of the city enables authorities to view it almost like a single, large organism whose overall health can then be tweaked and optimised.

This won't be possible until a survey has taken a place – which is precisely why surveying remains of critical importance in the 21st century. Making digital cities a reality rather than a pipe dream may well be surveying's most important next act.

The future requires more than accuracy

Of course, for the surveying field to play this important role, surveying tools need to make sure that they themselves are not stuck in a previous century. They need to properly manage and handle 2D and 3D data and point clouds, and even make accommodations for technologies like augmented reality and virtual reality (AR/VR), which are



THIS NEXT PHASE OF SURVEYING REQUIRES A COMBINATION OF BOTH TECHNOLOGY AND EXPERTISE

increasingly finding mainstream application.

One thing that is clear, however, is that it's not enough as a surveyor to rely on accuracy alone as a differentiator or a calling card in the coming decades. The ability to precisely locate something is quickly becoming commoditised. Nearly anyone can precisely locate something using the GPS on a smartphone, and within the next five to 10 years, they will be able to do it at the centimetre- or even millimetre-scale. Simply put, accuracy is no longer the domain of experts.

So, what should surveyors do in the face of 'the commoditisation of accuracy' and the possible risk it represents for the field? How do they secure their position as experts?

For starters, they should consider specialising and finding a niche. Don't just be a surveyor – be a surveyor who specialises in building facades, underground sewage networks or bridges. Be the person who can do these specific types of jobs perfectly the first time around because of accumulated knowledge about what is most valuable to capture and how to capture it.

It's like the difference between an expert photographer and an amateur photographer: knowing what to focus on – taking one perfect picture rather than 1,000 meaningless pictures – exposes the difference between the amateur generalist and the specialist, and demonstrates the value.

More than ever, then, this next phase of surveying requires a combination of both technology and expertise – things that can be purchased, as well as those things that cannot.

While the commodification of accuracy might enable anybody with a smartphone to do a precise and accurate positioning of a single point within the next decade, surveyors should not fear for their jobs – this is simply the evolution of the field.

By evolving with it and bringing their full expertise to bear, surveyors can ensure that they stay on the cutting edge and continue to play a vital role in mapping out and shaping the world around us..

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