UPGRADING TO SURVEYOR 2.0

SURVEYING SOFTWARE USABILITY IS ONE OF THE BIGGEST BARRIERS NOT JUST TO EFFICIENCY BUT ALSO TO ENTRY TO THE SURVEYING PROFESSION. MONICA MILLER RODGERS LOOKS AT HOW INNOVATIONS IN CONSUMER TECHNOLOGY ARE BEING USED TO TRANSFORM SURVEYING

When Shawn Crawford, the assistant regional director of surveying for ESE Consultants in Boston MA in the US, started his career two and a half decades ago, he used a theodolite. There was no interconnectivity between the instrument and a computer back in the office; if he wanted to share data, he used a bulky mobile phone about the size of a cereal box to call in measurements. Phrases like 'smartphones', 'touch technology' and 'customisable apps' weren't even close to being a part of everyday language.

Fast forward more than 24 years and you can now find Crawford working on robotic total stations integrated with software capable of instantly sharing his work with colleagues back in the office, and you would be hard pressed to find a moment when he's not in reach of his smartphone. Crawford, like many of his professional peers, has been upgraded to Surveyor 2.0. These professionals are no longer expected to just measure angles and distances, but they have become manag-

ers of data, shaping not only coordinates for a project but modelling the entire design. Their daily jobs now consist of collecting points in data-capturing software, shaping digital terrain models and positioning projects in GNSS.

Thanks to these advancements in measurement technology, today's surveyor is working with more data than ever before. But more doesn't necessarily mean better.

Managing data challenges

The concept of 'data obesity' – the idea that today's businesses are gorged on the amount and quality of the data they are collecting – is a growing concern for the surveying profession. Improvements in measurement instruments and software mean surveyors are now able to collect thou-

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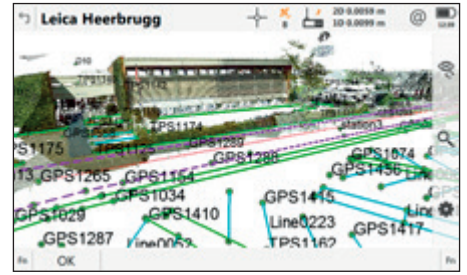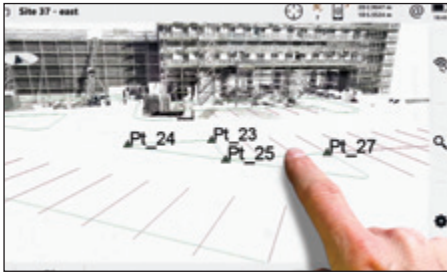Call +31 (0)88 8833450
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sands of points and create digital models of projects, but those models are of little to no value if they don't contain the right information.

For years, surveyors created these models in a limited, two-dimensional view of points. Even though they could collect increasing numbers of points and in three dimensions, the ability to view data in three dimensions was still missing. As Crawford explains, losing precious time and money to make return trips to the field for this data is "the last thing you want to have to do".

This information, even when properly captured, has historically been held in software that is difficult to navigate. Measurement software interfaces, like cereal-box-sized mobile phones, are known all too well for their awkward layout and lack of inviting user experience. Automation in the software is rare, creating a need for a series of constant relocating.

Interface challenges

Alastair Green, Leica Geosystems field controllers and field surveying software programme director, recently explored the difficulties surveyors encounter when working in such software interfaces. Green and his development team conducted focused interviews with several surveyors in Europe and the US. Listening to this feedback from around the world, they found that the biggest struggle for surveyors is the steep learning curve, which raises the barriers of entry for new professionals.

"When we listened to our customers, the repeating theme was simplicity," said Green. "Surveyors often work all day on similar tasks, such as feature coding, linework, and staking points and lines. Keeping these fundamental elements of their jobs easy and enjoyable is very important for a positive user experience."

Working with only a partial representation in reality of the actual site leads to overlooking critical information; struggling to extract meaning from overwhelming amounts of data results in the inability to make the best decisions; the continuous need to reconfigure software settings delays progress are the unfortunate actualities in the field. When users are consistently required to navigate difficult paths to access limited data, regardless of the sophistication in advanced instruments, they will become disengaged and look for other solutions.

A new user experience

In this always-connected world, surveyors are coming to expect the convenience and ease of the technology they already have in their personal lives to cross over into their professional lives. Comfortable with connected and sharing technology, new surveyors entering the field especially demand simple and interactive software.

'Enjoyable' and 'exciting' aren't common descriptors found in this field, and the geomatics industry has historically sacrificed these elements in favour of high precision and accuracy. Measurement software interfaces must embrace these characteristics, while maintaining quality, to remain relevant to today's Surveyor 2.0.

Leica is picking up that gauntlet with its newly released Leica Captivate. Much like mainstream media platforms such as tablets and smartphones, it incorporates touch technology and customisable apps. The interface uses thumbnail images that can be toggled by swiping the screen to locate and customise the organisation of jobs and apps. Advanced lining and coding provide an interactive 3D model that users can zoom, pan and orbit for best viewing and manipulation. They can then merge the overlay of measured points, 3D models and point clouds into a single view, ensuring that only the information needed for

the job is collected and check for any gaps in the data. Leica has also added Automatic Target Recognition, or ATRplus, to Captivate. This enables measurement instruments to become self-learning, so they remain locked onto a single target and ignore irrelevant distractions in the field.

For Crawford, these features are a considerable improvement in usability over previous platforms'. "As with smartphones, the ability to customise applications with images and interact with those apps through toggling and swiping is very valuable for us. We can now view our work right there when we capture it, instead of waiting until we get back to the office. Being able to reference yourself inside a 3D scan – there is just nothing else like it out there in the industry."

For him and other surveyors, the transition of measurement software to the more familiar look and feel of common consumer technology means a better, more enjoyable day in the field. With a focus on improving user experience, the industry is entering into a new era where software interfaces will no longer be forfeited for expert functionality. Instead, the two concepts will continue to advance together and become more personalised, adapting to the changing expectations of the Surveyor 2.0.

THE TRANSITION OF MEASUREMENT SOFTWARE TO THE MORE FAMILIAR LOOK AND FEEL OF COMMON CONSUMER TECHNOLOGY MEANS A BETTER, MORE ENJOYABLE DAY IN THE FIELD

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