What is 3D Reality Capture?
New opportunities, greater understanding

Leica Geosystems

PART OF HEXAGON

Rapid changes in technology and computing power improve nearly every part of our lives from democratisation and access to information to communication and how we view the world around us. 3D reality capture is another example of how technological innovation can improve our environment, understanding and productivity.

What is 3D Reality Capture?

3D reality capture enhances understanding of our environment

3D reality capture is a process of scanning and capturing any site, for example plants, buildings or crime scenes, in a 3D digital model, combining measurements and imagery. The resulting model can be used for design and comparison purposes, to ensure site safety in inhospitable environments or as evidence in a criminal case, capturing every detail with to-the-millimetre accuracy.

As technology has become smaller, more affordable and more automated, 3D reality capture has become increasingly accessible to a wider range of applications, putting control in the hands of those that may have required specialists in the past.

The latest solutions combine one-touch operation with portability and speed to deliver high levels of accuracy, automation and the ability to create 3D environments in a matter of minutes.

Opportunities

Automated comparison of **as-built to design-intent (BIM)**

Enhanced safety in inhospitable environments through **3D modelling**

Quickly capturing every detail of crime scenes or accidents, reducing disruption

Quality assurance of projects, **reducing additional expenditures**

Accurate as-built detail for maintenance or extension design of complex plant

Court-ready evidence documentation with accurate and visual detail jurors can understand

Detailed as-built documentation for future reference

The Benefits of 3D Reality Capture

Increased Efficiency and Productivity

3D reality capture significantly reduces labour costs associated with surveying, design and documentation. It empowers novice users to improve productivity and workflows, reducing time on site and enhancing design, construction and maintenance processes.

Improved Accuracy

Rapid technological innovations have delivered greater accuracy and speed in smaller hardware combined with automated software; providing users with the access, data and detail they need to ensure projects run smoothly.

Automated Processes

The latest software automates many of the more complex functions of scan capture and manipulation. Automatic registration of scans, detailed certification software and simple one-touch operation puts this technology in the hands of novice users who can be trained in minutes.

Collaboration and Interaction

The speed and connectivity offered by 3D reality capture enhances collaboration and interaction. With almost immediate visibility of scans to be marked up, annotated and sent from site to office for stakeholder feedback, 3D reality capture brings together work functions and improves workflows.

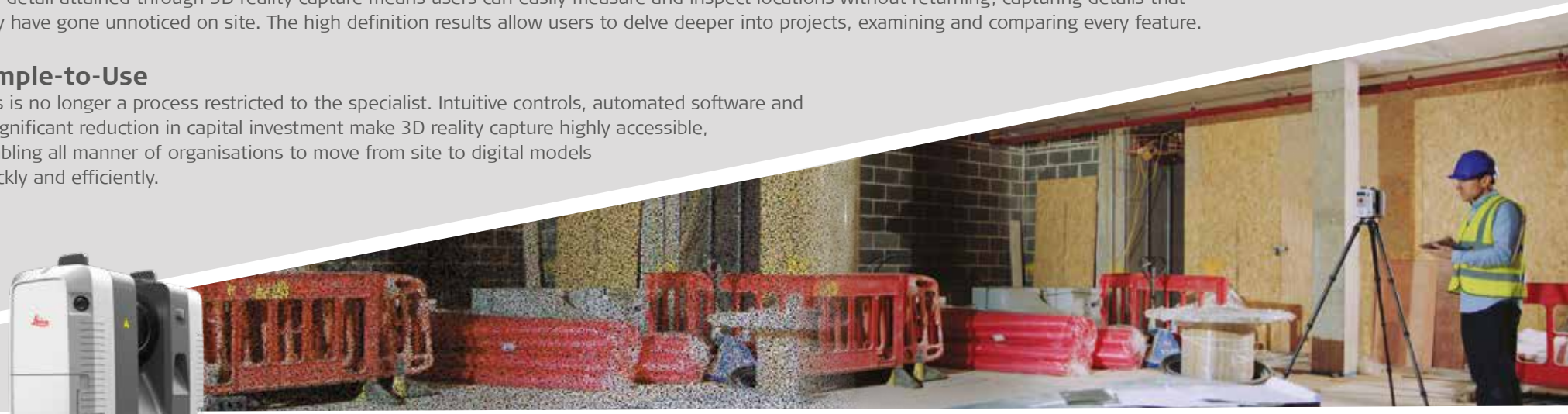
Detailed Verification

The detail attained through 3D reality capture means users can easily measure and inspect locations without returning; capturing details that may have gone unnoticed on site. The high definition results allow users to delve deeper into projects, examining and comparing every feature.

Simple-to-Use

This is no longer a process restricted to the specialist. Intuitive controls, automated software and a significant reduction in capital investment make 3D reality capture highly accessible, enabling all manner of organisations to move from site to digital models quickly and efficiently.

Capturing every detail delivers quality assurance, safety and a complete picture



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Industry Opportunities

Construction

3D Reality Capture offers the construction sector an opportunity to reduce costs and man-hours while increasing quality control and improving productivity. Through detailed scanning, as-built can be quickly compared to design-intent and BIM, ensuring quality control and highlighting any issues. Plus, this can be carried out by non-surveyors, such as BIM managers, to check the accuracy of their projects.

Step-by-step documentation provides a detailed record of a project for quality assurance purposes, providing contractors with the information needed for client handover, future maintenance and invoicing.

The level of detail captured means one trip to site is all that's needed. Innovative technology delivers results that can be immediately checked on-site using edge computing, enabling users to verify they have all the information needed, then annotate and mark-up important areas for future inspection.

Plant and Mechanical Engineering

Many plants are inhospitable environments where the safety of employees, contractors and the local environment is paramount. 3D reality capture enables plant managers and contractors to digitise the site in detail to create as-built documentation.

This can be used to provide health and safety training to site employees and visitors, highlighting danger and safe zones, providing walk-throughs of specific areas, and also draw attention to areas in need of examination, maintenance or repair.

As-built documentation can also be used for plant extension and maintenance, for example by piping designers, to provide highly accurate information without needing to access the site during the design process.

The digitisation of the environment safely provides plant managers with all the information they need when planning maintenance or extension, reducing downtime and increasing efficiency.

Public Safety

When collecting evidence or examining a crash scene, accuracy and attention to detail are essential. 3D reality capture provides investigators with a solution that enables them to capture the evidence and clear scenes quickly, confident they have all the digital evidence they require.

Some solutions provide automated verification and data audit trails that are accepted by the justice system, ensuring that evidence can be presented and relied upon when it matters.

The simple operation and automated software built into 3D reality capture solutions means scanning can be carried out by non-specialists with minimal training, while improved portability and lower capital costs mean solutions are more accessible to public safety organisations. This enhances evidence gathering and productivity and reduces disruption to the public caused by accidents and crime scene investigation.

To learn more about 3D reality capture solutions and the opportunities they offer, contact Leica Geosystems at leica-geosystems.com