

6 Facts You Need to Know About 3D Reality Capture



Whether you are a savvy user or new to 3D reality capture, these six facts from Jürgen Mayer, president of Hexagon Geosystems' Reality Capture Division, are sure to set you thinking about new applications.

Rapid changes in technology and computing power are affecting almost every aspect of our lives – from democratization and information access to

communication and how we visualize the world around us. As technology becomes smaller, more affordable and more automated, 3D reality capture is becoming more accessible to a wide range of applications and everyday users, not just specialists. Whether you are a savvy user or new to 3D reality capture, Jürgen Mayer, president of Hexagon Geosystems' Reality Capture Division, explores six facts in this interview.

3D reality capture solutions form the bridge to transform the real world into mirrored digital realities that can be used for all kinds of applications.

3D reality capture enables you to replicate the physical world and turn it into a virtual environment, using software to derive valuable and useful information, such as in building construction, where users can monitor the progress of a project, and quickly compare as-built to design-intent models, ensuring quality control and highlighting any issues.

3D reality capture provides a rich documentation data set so that users can always go back to the site in a digital environment and check as-built documentation. Sometimes, the site might not be available anymore, as in the case of a crime scene or car collision where 3D reality capture enables investigators to capture the evidence and clear scenes quickly. Furthermore, these digital environments can be used to test scenarios and create simulations for training purposes.



Jürgen Mayer, president of Hexagon Geosystems' reality capture division.

3D reality capture is a key enabler in digitizing business processes across all kinds of industries, putting data to work to boost efficiency and productivity.

3D reality capture systems, like [mobile mapping sensor platforms](#), [terrestrial laser scanners](#), or [UAVs](#) are used in a wide array of industries, such as heavy construction, building construction, surveying and geospatial projects. Amongst other things, mobile mapping systems are used for road construction and infrastructure projects. In mining, for example, UAVs are increasingly being used for a number of applications, including capturing the status of an open-pit mine.

Surveyors have adopted 3D reality capture as an additional method in their toolbox. Whenever there is complex geometry to be captured, such as a plant, there is no way to do this with traditional measuring tools. Building construction is another big field for 3D reality capture, where Building Information Modelling (BIM) processes are widely adopted, as they heavily rely on an up-to-date 3D model which people can work on collaboratively.

3D reality capture improves workflows and operations.

A wide range of companies (and industries) can leverage 3D reality capture in their current operations.

Not too long ago, 3D reality capture was the domain of experts and trained specialists who would know how to operate the equipment in the field and process the data in the office. With the introduction of the [Leica BLK360](#) imaging laser scanner, a large number of these hurdles have been removed. New and novice users are now adopting 3D reality capture as a preferred method - unimaginable a couple of years ago. Since Leica Geosystems, part of Hexagon, democratized laser scanning, [architects](#), yacht builders, filmmakers, event planners, climbing gym designers, [real estate agents](#) and many more are leveraging the benefits of 3D reality capture.

Efficiency and productivity are the main drivers enhancing collaborative workflows. People working on complex projects benefit from one single 3D model that can be visualized to make decisions from remote places, bringing work functions closer together to improve workflows.

3D reality capture can be used and integrated with other new technologies.

3D reality capture technology complements technologies like Virtual Reality (VR) and Augmented Reality (AR). From [public safety](#) to entertainment applications, non-traditional scanning users are leveraging the accuracy of Lidar and High-Dynamic Range (HDR) photography that Leica Geosystems' scanners and mobile mapping solutions provide, to texture 3D meshes and create VR and AR experiences. There are also other advanced technologies finding their way into 3D reality capture such as machine learning and Artificial Intelligence (AI), which are used more in the processing side of things to automate processes and detect certain features.

3D reality capture is heading towards two trends in the future.

There are two trends driven by two different user groups. The first trend is driven by a large group of specialists who want to get the most out of their equipment – looking for the highest productivity in even the most challenging conditions. For these specialists, Leica Geosystems will continue to provide high-end equipment that gives the flexibility and performance they need. A good example of this is Leica Geosystems' high-end terrestrial laser scanners and the various [mobile mapping systems](#).

On the other side, there is what has been called 'the democratization of the point cloud'. Opening new applications, the BLK360, Pegasus:Backpack and Leica Aibot are great examples of this. This group of users is looking for simplicity in the workflow. Again, Leica Geosystems is using high-end complex technology, hiding the complexity from the user, to make things easier and more automated and providing simplified solutions.

When we unite the physical with the digital, creating smart digital realities, we see all the elements that contribute to the entirety of a situation and can make the best-informed decisions. Through data acquisition and visualization powered by 3D reality capture, businesses can increase connectivity and autonomy. When visualized data is used to create plans, track progress and evaluate outcomes, projects are more efficient and productive.

