

# CarnaLifeHolo

**3D imaging system enhancing precision, comfort and safety of medical procedures.**



CarnaLife Holo is a groundbreaking technology of three-dimensional medical data imaging, facilitating planning and performance of medical procedures. With the use of special goggles Microsoft HoloLens, it creates a real-space three-dimensional hologram reflecting the true structure of anatomical area being imaged.

Microsoft Partner | Mixed Reality

Microsoft HoloLens



VIRTUAL REALITY (VR)

- ✓ Fully virtual, closed environment
- ✓ No interaction with the outside world



AUGMENTED REALITY (AR)

- ✓ Virtual elements integrated into a real environment



MIXED REALITY (MR)

- ✓ Full interaction and the ability to manipulate both the real and virtual environment elements

## Main and additional features:

- ✓ DICOM standard support
- ✓ Holographic visualization of 3D datasets
- ✓ Interaction with holograms using gestures and voice commands
- ✓ Cooperation with hospital PACS systems
- ✓ Tools for defining area of interest (virtual scissors)
- ✓ Presets optimized for different modalities, dedicated filters
- ✓ Possibility of real time data display from GE Vivid E95

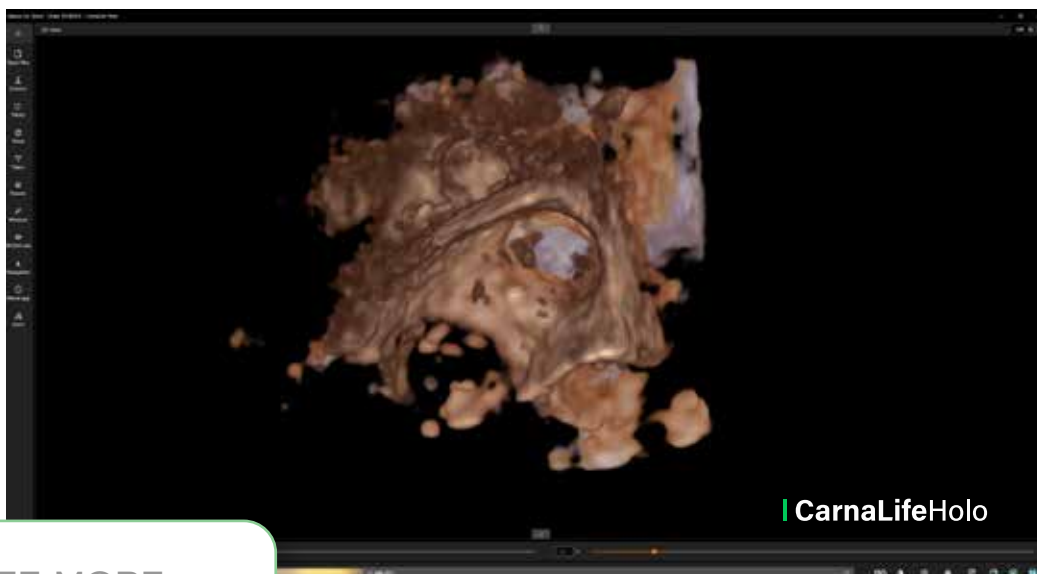


## MedApp S.A. – GE Healthcare. Success Story.

Over the past 50 years, the diagnostic capabilities of echocardiography have evolved significantly: from M-mode imaging via 2D to real-time three-dimensional imaging. Three-dimensional echocardiography (3DE) represents a new standard of ultrasonic imaging of the heart, offering improved quantification but also unlimited access to cardiac anatomy. However, the traditional way of displaying 3DE data was two-dimensional projection onto computer monitors, which stripped the image of all the three-dimensional information.



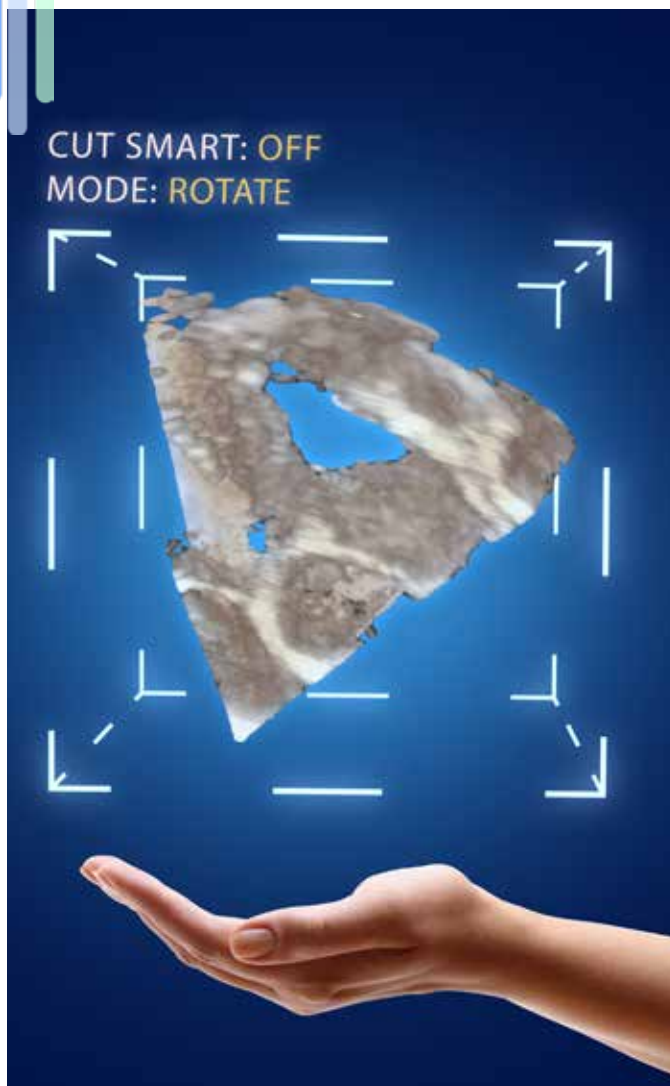
CarnaLife Holo is an innovative software that can visualize the echocardiographic data that are either imported or streamed from the GE Vivid echocardiographs utilizing the Stream Server capability. With this cooperation we bring live-stream of 3DE data into Mixed Reality space where the imaging or interventional cardiovascular specialist can see the Echo as a realistic 3-dimensional hologram that can be controlled independently from the current view on the echo scanner.



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3DE can now be supported by additional tools, like Mixed Reality (MR). CarnaLife Holo is an innovative software that can visualize the echocardiographic data that are either imported or streamed from GE Vivid echocardiographs using the Stream Server capability. Such cooperation brings a livestream of 3DE data into Mixed Reality space where the imaging or interventional cardiovascular specialist can see the Echo data as a realistic three-dimensional hologram that can be controlled independently from the current view on the echo scanner. This gives them an opportunity for enhanced analysis, discussion and expert therapeutic planning based on the same data but presented in a different perspective, with touchless MR interaction and information sharing between GE Vivid and CarnaLife Holo.



In the Mixed Reality space, the medical specialist can interact with the hologram by hand and head movements, controlling rotation, zooming, and changing rendering parameters such as gain or opacity using hand gestures and voice commands. The view available for their eyes can be recorded and even streamed further, e.g. to a conference call. This opens up a whole new perspective on echocardiography and how it can be used in the clinical environment for pre-procedural planning and intra-operative visualization. The solution has been already used for over 70 procedures, including advanced percutaneous interventions on valves, septum and thoracic vasculature. Many of them were described, presented at global cardiology meetings and published as scientific papers in world-renowned journals and conferences.

Recently, first-in-man echo streaming during a structural heart procedure was highlighted as a major step by the experts of the European Heart Journal.



*„Three-dimensional echocardiography (3DE) represents a new standard of ultrasonic imaging of the heart, offering improved quantification but also unlimited access to cardiac anatomy”*

**Prof. Jarosław Kasprzak**

PhD MD, Head of the 1st Department of Cardiology of the Medical University in Łódź, Member of the MedApp S.A. Scientific Council

Prior to the procedure, the patients were unable to move unassisted and took pain medication daily. After surgery with the CarnaLife Holo system, they regained lost function in the treated limb.



*„In our opinion CarnaLife Holo brings a whole new dimension to medical imaging. Advanced techniques of visualization in the Mixed Reality provide a new perspective for interventional cardiology in pre-procedural planning and intra-operative support”*

 **Maciej Stanuch**  
CarnaLife Holo Technology Manager

The cooperation between CarnaLife Holo and GE Vivid E95 enables preparation for the procedure and intra-operative visualization. It makes independent second assessment of the echocardiography data possible in real time. CarnaLife Holo aims to shorten the procedure and improve the precision of treatment in complicated cardiovascular cases.

**With all the technological and medical benefits of cooperation between CarnaLife Holo and GE Vivid E95, we empower people for better health!**

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