Mixed Reality 2.0

An innovative software for pre, intra and post operative visualization of your mediCAD 3D plan:

Spine - Shoulder - Hip - Knee

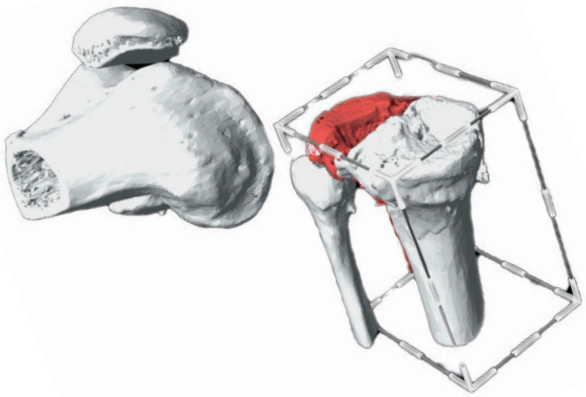
EU-MDR
Medical Device Regulation

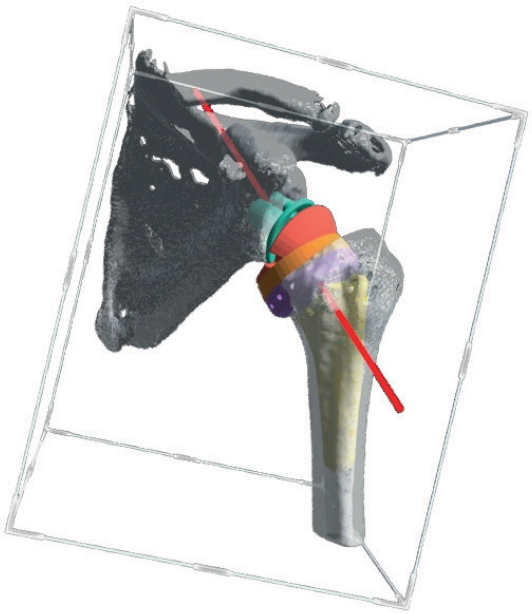
mediCAD®

Software Bundesverband IT-Mittelstand Made in Germany

100% Service Qualität Zukunft

mediCAD® MR is an preoperative plan software for intraoperative visualization of your preoperative planning. It is used on the Microsoft HoloLens 2, a mixed reality headset. This allows you to take your digital planning into the operating room and access it at all times. Unlike a computer monitor, the visualization of your planning can be displayed in true three dimensions using mediCAD® MR, can be adjusted in various ways, and treated like a physical object.





What is Mixed Reality?

Mixed reality solutions allow the user to enhance their real environment with virtual content. In contrast to virtual reality (where the user completely immerses himslef in a virtual world and moves within it), the actual analog environment in mixed reality remains completely visible. However, it is supplemented with holographic 2D and 3D elements that can be placed in the room like real objects, remain there, and interact with the analog environment.

That's as well how mediCAD® MR works. As a surgeon, you have the ability to view a life-size 3D hologram of the planned anatomical region. You can grab, move and scale this hologram like a real object. This allows you to have the plan constantly in front of you both pre- and intraoperatively, and to capture all of its details.

- ✓ Seamless integration into the mediCAD® 3D workflow
- ✓ Individually configurable intraoperative visualization
- ✓ Various posibilities to adapt the hologram visualization
- ✓ Sterile and contactless operability
- ✓ Collaborative work possibilities

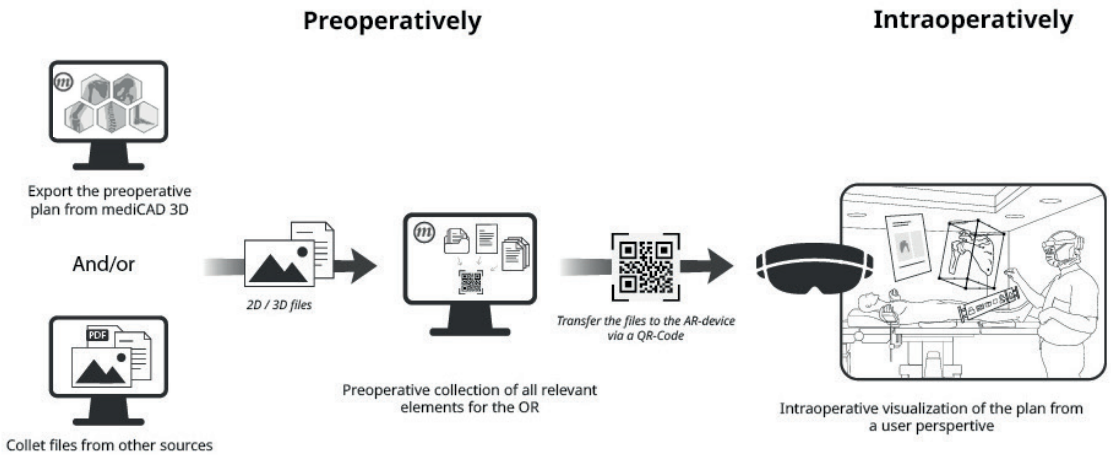
Functions

1. Seamless integration into the mediCAD® 3D workflow

mediCAD® MR can be used with all mediCAD® 3D modules. You can transfer your 3D plan, including all relevant content, directly into mixed reality and view it intraoperatively and true to size.

Your planned implants are transferred along with their anatomical position manufacturer-independently.

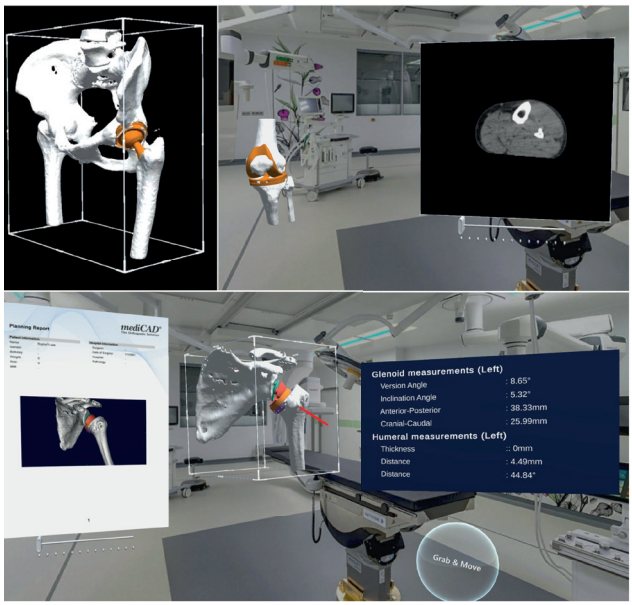
mediCAD® MR provides an intuitive workflow for quick and easy display of all your planning content intra-operatively.



2. Individually configurable intraoperative display

To ensure best intraoperative support, you have the possibility to individually configure the content you want to display intraoperatively.

You can retrieve these either from a local storage or from a connected PAC system.

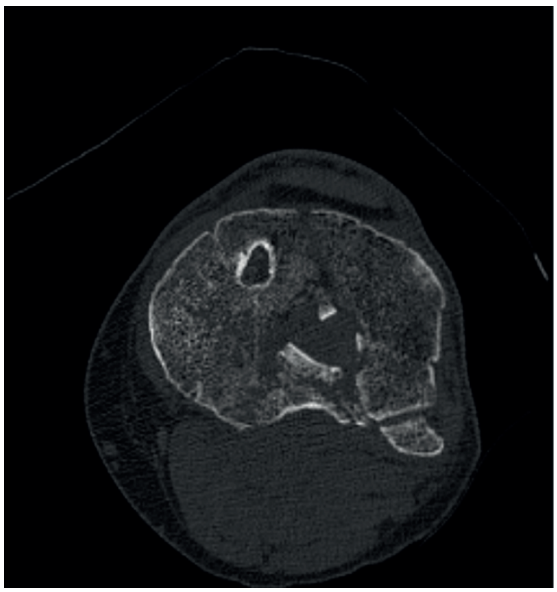


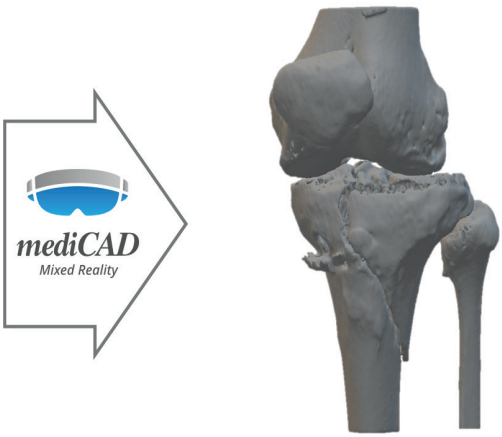
For example, the following elements are available for display:

- ✓ 3D model of the planned body region
- ✓ 3D model of the preoperative anatomy
- ✓ Planning report
- ✓ Preoperative measurements
- ✓ CT scans
- ✓ X-rays
- ✓ Other images or files, such as surgical instructions

No time to plan? No problem!

Upload a CT-stack of the respective body part into mediCAD® MR an the software will automatically generate a 3D reconstruction of the patient anatomy.

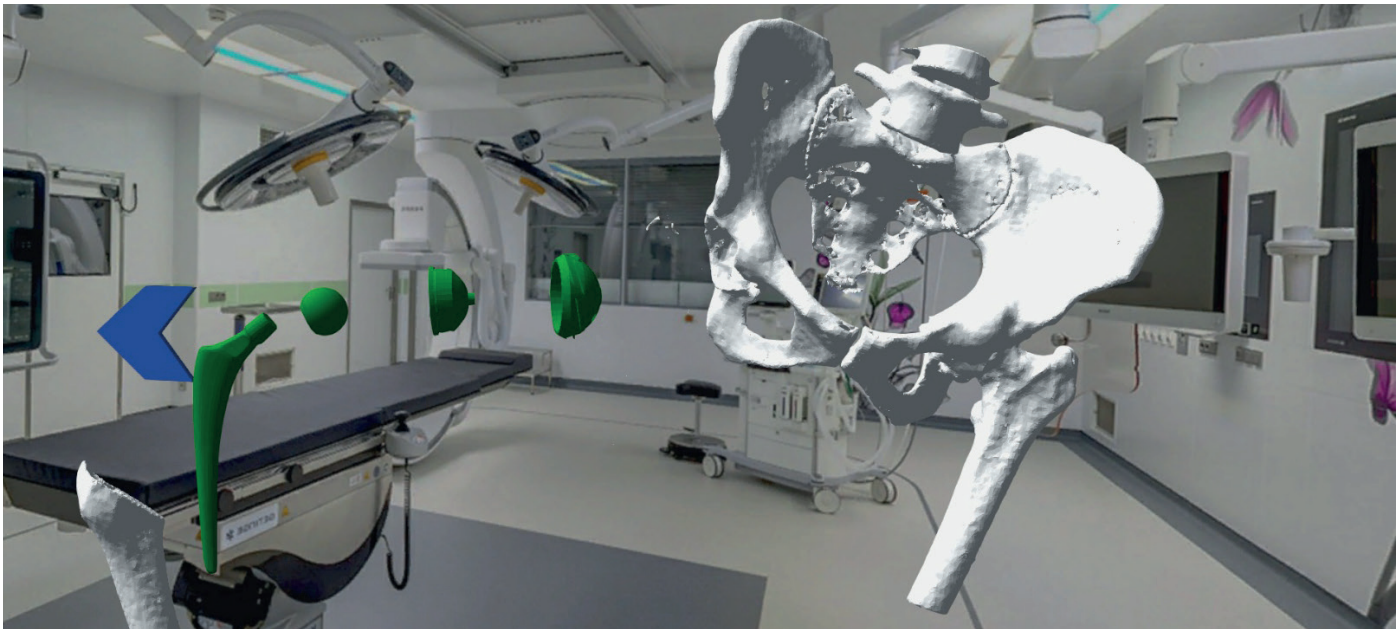




3. Various adjustments of hologram display

To get the most out of the three-dimensional display of your plan, the software includes various possibilities to configure the display of the hologram:

- ✓ Adjusting the transparency of the bony structure
- ✓ Segmentation of implants and bones to view them separately
- ✓ Hiding areas via clipping sphere
- ✓ Automatic alignment according to anatomical planes
- ✓ Fine-tuning of hologram placement and rotation
- ✓ Create step lists with individual object combinations for a better accompanied surgery procedure.



4. Sterile and contactless usage

The software can be operated without any physical contact and is therefore completely sterile.

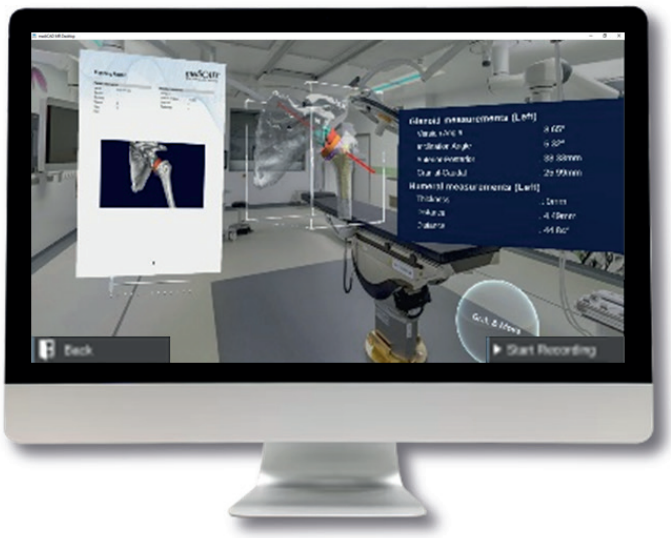
Buttons and holograms can be grasped and moved through an intuitive gesture control, just as if they were real physical elements.

To ensure full functionality even though your hands are busy, the software can also be operated via voice control.

5. Collaborative working

mediCAD® MR gives you the possibility to share your mixed reality experience with others!

Network extending live streaming
The software allows you to transmit your field of view, including all holograms, in real-time to participants all over the world. This gives you the possibility to let other many people participate in your surgery without them to be actually physically present in the operating room.

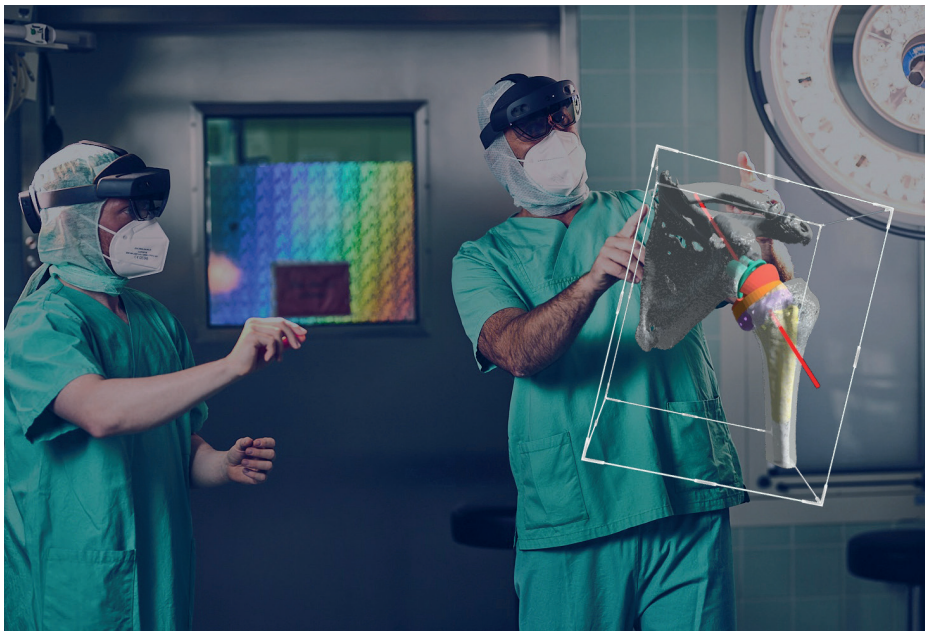


Video recording
In addition, you have the option to record and save a video capture, for example for educational purposes or documentation.

Virtual meetup
The live streaming functionality also enables a two-way communication, allowing you to to not only invite but also interact with others remotely.
This way, you can either support your colleagues from a distance or could even profit from their knowledge yourself.
To support you even better remotely, the streaming participants can es well send virtual markings on the patient anatomy or pictures and documents onto the HoloLens.

Shared holograms
Do you want to analyze the planned procedure together with your assistant doctor, or show your patient in detail how the procedure is performed?

The software allows you to pair multiple HoloLenses and access the same holograms simultaneously in order to edit them.



Application areas:

Preoperative

- **In-depth analysis of pathology**

Even the smallest details that are otherwise hidden can be viewed in the preoperative state.

- **Visualization and review of the plan**

The real three-dimensional visualization of the plan allows for a detailed view of the desired outcome.

- **Patient empowerment**

Use mediCAD® MR to involve your patients into the surgery.

Intraoperative

- **Visualization of planning content**

Reduce the number of necessary surgical screens and save time by displaying all important information directly into your field of view, without having to step away from the patient.

- **Live streaming of the surgery**

Allow other people to participate in the surgery by live streaming the HoloLens view.

- **Participation of external people**

Get support from people outside the operating room by letting them attend virtually.

Postoperative

- **Visual postoperative review**

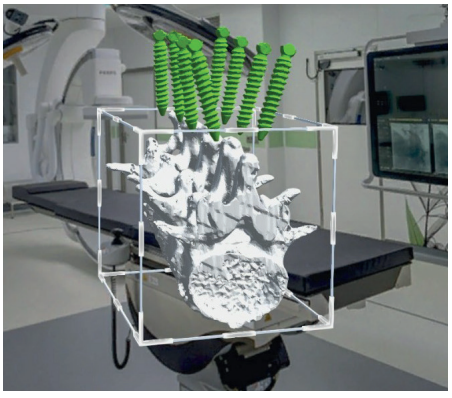
Visualize the result of the surgery afterwards and compare it to the preoperative or planned situation.

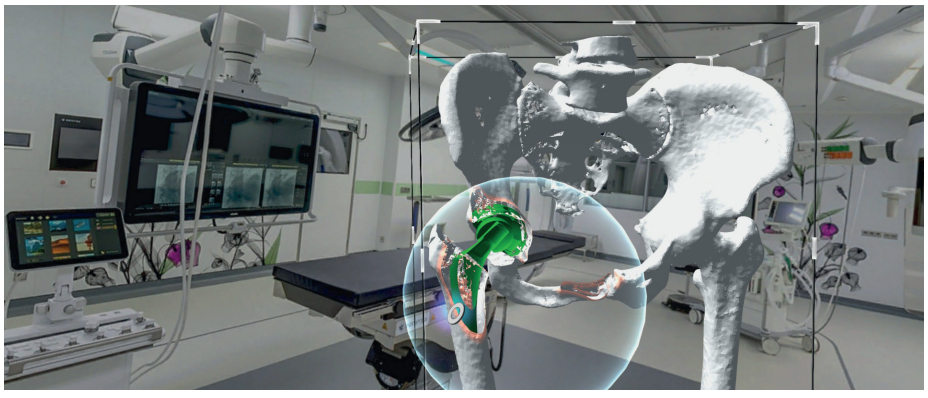
- **Documentation and training**

Save video recordings of the HoloLens field of view, including displayed holograms, in order to document the surgery or for educational purposes.

- **Patient empowerment**

Even after the procedure, you can use mediCAD® MR to involve the patient and ensure they leave with a sense of satisfaction.





FAQs

Can mediCAD® MR really be used intraoperatively?
Yes, mediCAD® MR is a medical device (according to MDR Class I) that has been developed and approved for pre-, intra- and post-operative use.

What exactly is Mixed Reality?
Mixed reality is a type of extended reality experience in which digital and analog content can be combined and merged with each other.
One form of extended reality is augmented reality, where digital content is projected into the analog environment without merging in (e.g. head-up display); on the other hand, there are virtual reality applications where the user is completely immersed in a virtual world.
Mixed reality is located right in between these two forms and is characterized by the fact that the user can still fully perceive their analog environment, but digital content is embedded in, and can interact with the environment.

What hardware does mediCAD® MR run on?
To use mediCAD® MR, you need a Windows PC (Win 10 or newer) on which the desktop application is installed. The mixed reality application itself has been developed for the Microsoft HoloLens 2, currently one of the most powerful head-mounted devices for immersive reality.

What are the network requirements when using mediCAD® MR?
To be able to use mediCAD® MR in your hospital network, you only need a standard laptop/PC that fulfills the system requirements (for details, please contact us directly at sales@medicad.eu).
To enable the mixed reality device and PC to communicate with each other, both devices must be connected to the same network. This can for example be done via an existing hospital network or a locally set up network. The mixed reality device is delivered by us fully pre-installed and only needs to be integrated into your network.

Can the HoloLens also be used if I wear glasses?
Yes, due to the foldable visor, with which the distance to the eyes can be adjusted, it can also be used in combination with prescription glasses without any problems.

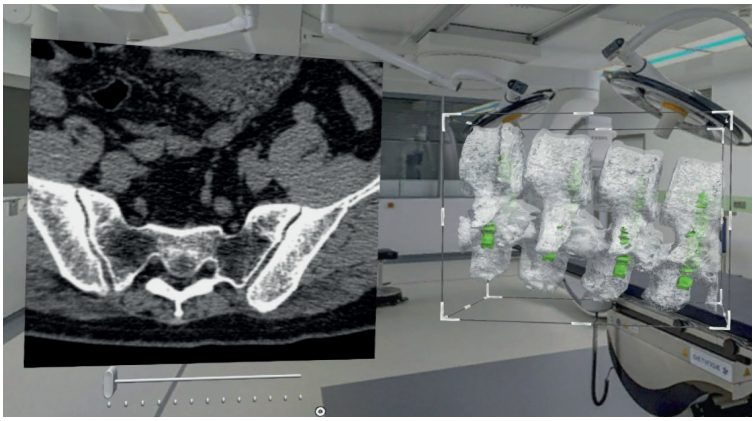
Can the HoloLens be disinfected/sanitized?
DISINFECTANT: The HoloLens can be cleaned with a 70% isopropyl alcohol solution.
UV LIGHT: UVC radiation via UVC LED, working at 265nm with an intensity of 0.5-0.6 mW/cm2 and does not emit ozone, can be used to disinfect the HoloLens. Please follow the manufacturer‘s instructions for handling and exposure time.

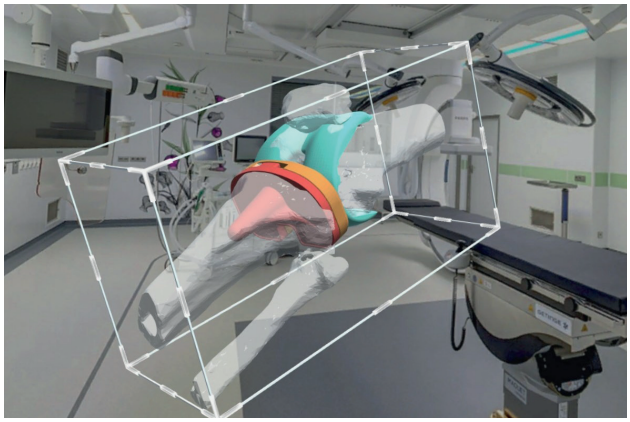
Experience reports

„I was very euphoric when I wore the HoloLens for the first time [...] and had the opportunity to walk into the pelvic fracture and have a look from the inside. It gives me a completely different idea of the morphology of the fracture pattern. That was very impressive."
- Prof Dr Steffen Schröter (Chief Physician at Diakonie Klinikum GmbH Jung-Stilling-Hospital)

„Once you've seen that the anatomy is in front of your eyes and you can exactly see what it looks like, you can compare it with reality, then you have all the planning data three-dimensionally in front of your eyes, then you simply don't want to work without it anymore, because it gives us security, because it gives the patient security and because it will significantly improve the quality of surgical processes in the short or long term."
- Dr Klaus Schlüter-Brust (Chief Physician St. Franziskus-Hospital GmbH)

„We can give the HoloLens to our residents or to our fellows in order to see the deformity and to understand the planned procedure. We can give them a second HoloLens so they can be in real time in the same augmented reality environment. The Mixed Reality Technology provided by MediCAD radically changes the way that you understand, and you operate in a 3D manner"
- Dr. Achilleas Boutsiadis (Shoulder & Knee Surgeon Bioclinic Athens)





Intuitive use of mediCAD® MR

At mediCAD®, we understand that in the hectic hospital environment, there is often little time to become familiar with new technologies. However, having a good understanding of one's tools is essential when treating patients. Therefore, we have set ourselves the goal of providing you with mediCAD® MR, **a highly innovative yet easy and intuitive** to use software.

Interactive Tutorial

Like all mediCAD® products, MR also comes with a comprehensive user training. If you have any questions during the application or want to practice the workflow, the software also offers an interactive tutorial where you will be guided through the various functions by an avatar and can be started either prior to the first use or during the workflow.

In case of any questions during usage, further you also have the possibility to view a interactive quick guide to specific functions.

You want to see more?

Scan the following QR-Code to see mediCAD® MR live and in motion:

Or contact us directly for a product presentation or further questions:

Tel.: +49 871 330 203 0
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Manufacturer information

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Hardware Recommendations

mediCAD® MR requires a Microsoft HoloLens 2® with at least 500 MB of free device storage. Additionally, a PC with Windows 7 SP1 or 10, 64 Bit, a current processor with at least 2.0 GHz, and a minimum of 8 GB of RAM is needed. The recommended display resolution is Full HD. A diagnostic monitor is not required.

Training

mediCAD® MR requires no previous knowledge and is easy to learn. The user is guided intuitively through the program with all instructions displayed in plain language on the interface. Training usually requires approximately three to four hours.
mediCAD® Hectec is ready to provide skilled training for every module. Both on-site and online trainings are available.

Compatibility

mediCAD® MR communicates with all DICOM® interfaces and is thus compatible with all PAC systems. Many common image formats can be imported as well. The software is compatible with all mediCAD® 3D planning modules, allowing for easy planning transfer and connection to all mediCAD® 3D implant databases.

Get a demonstration of the solution. Our sales team is happy to help and answer any further questions.

Premium
Solution for Orthopedics

CE

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