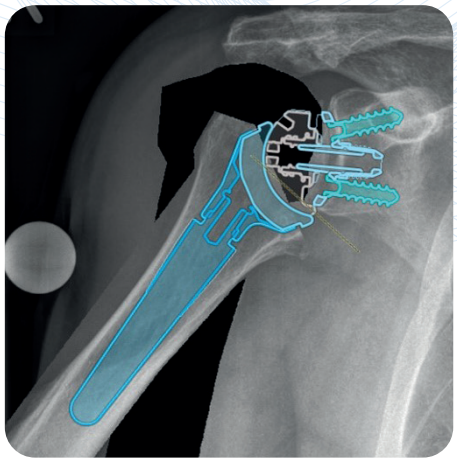
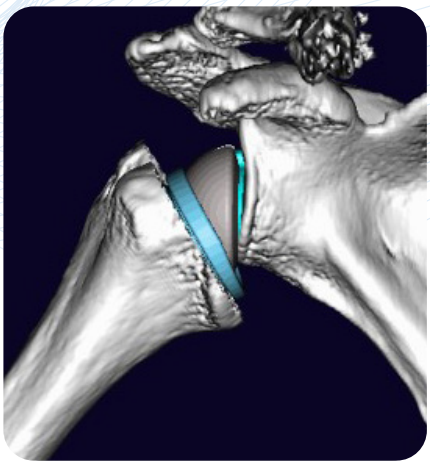
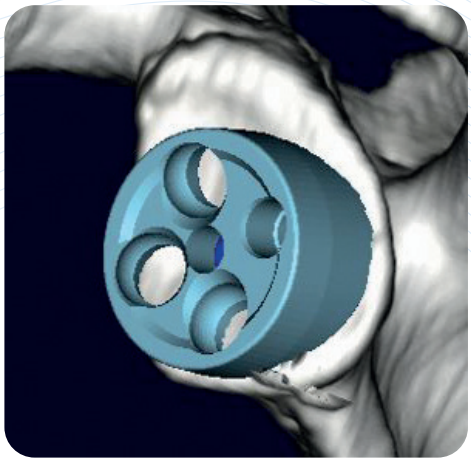
3D Shoulder

Automatic Segmentation
Automatic Measurements
2D/3D Planning
Rapid 3D Reconstruction







mediCAD®

Software Bundesverband IT-Mittelstand Made in Germany
100% Service Quality Future

www.mediCAD.eu

Greetings,

We know your own high standards demand professional digital pre-operative planning, as do well informed patients, lawmakers and quality-consciousness hospitals. Obtain endoprosthetic certification, which is a seal of quality for your hospital, with our qualified planning solution and audit-compliant archiving. Digital images are the future, competent surgical planning is the basis for successful and efficient implant care.

The new mediCAD® 3D Shoulder software is a versatile approach to planning joint replacement based on high-resolution, three-dimensional CT images. This ensures that the most suitable implant sizes can be easily positioned precisely, reducing operating times by making these important decisions preoperatively.
What's more, improved precision of restoration of shoulder joint geometry can accelerate rehabilitation. Since the third plane can be depicted during 3D planning, complications can be reduced by anticipating any challenges and addressing them pre-emptively.

Scientific work is no longer so time-consuming: it can be supported and documented more easily and quickly using up-to-date images. This makes routine consultation and coordination at your hospital easier to understand and more transparent, resulting in a verifiable increase in quality and quality assurance.
Take a look at our user reviews, we are sure you will be impressed by our precise, easy-to-use software.
Take advantage of our implant database, which is updated monthly, and our modern, our modern digital product suite.
Arrange for a free, no obligation demonstration of our system and see how it ticks all the right boxes.
We sincerely hope that this will pique your interest.
We would love to present the solution to you. Our sales team is happy to help and is available to answer any questions you may have.

We look forward to hearing from you.
Phone: + 49 871 330 203-0 / Email: sales@mediCAD.eu

Best wishes
mediCAD Hectec GmbH

- mediCAD® is the first planning program in the world and is also the most used on the market
- Established planning methods have been taken into account
- A modular structure with high-performance add-on modules
- Easy and intuitive to operate
- All procedures are documented in compliance with the law
- Achieve up to 90% time savings compared to conventional planning
- We collaborate with around 130 international implant manufacturers
- mediCAD® is certified under Directive 93/42/EEC and EN ISO 13485 and is an approved medical device
- 510(k) approval for mediCAD® was granted by the FDA (K140434)
- mediCAD® is continuously being developed by doctors for doctors
- Non-standard and special functions and modules are constantly being developed and produced
- mediCAD® has been successfully used in the medical industry for more than 20 years

Precise preoperative 3D planning ensures safety and trust

mediCAD® 3D Shoulder is an easy-to-use software solution that allows surgeons to conveniently plan every case. The software allows you to draw various measurements, select suitable implants and position them automatically in the correct position.
A modern, intuitive, efficient user interface and the familiar, convenient connection to an existing PAC system at your hospital are just two of the many features that make mediCAD® 3D Shoulder an indispensable tool for your daily work.

You can find descriptions of the most important features on the following pages:

- Anatomical 2D and 3D view
- Simple and precise evaluation of pathology in 2D/3D
- Automatic detection of bone landmarks
- Automatic / manual bone segmentation
- Automatic measurements
- Virtual planning and inspection of implants
- Automatic resection of the humeral head
- Automatic screw planning
- Distance and bone-implant contact visualization
- Transparent view for improved visualization of the prostheses within the bone
- Automatic, digital documentation
- Data export for 3D printing of body regions
- Customized implants: detailed planning and detection of special anatomical circumstances during planning, which is then sent digitally to the customized implant manufacturer.

mediCAD® 3D Shoulder was developed in close collaboration with shoulder surgery specialists. The core mission of our company is constant development and improvement.

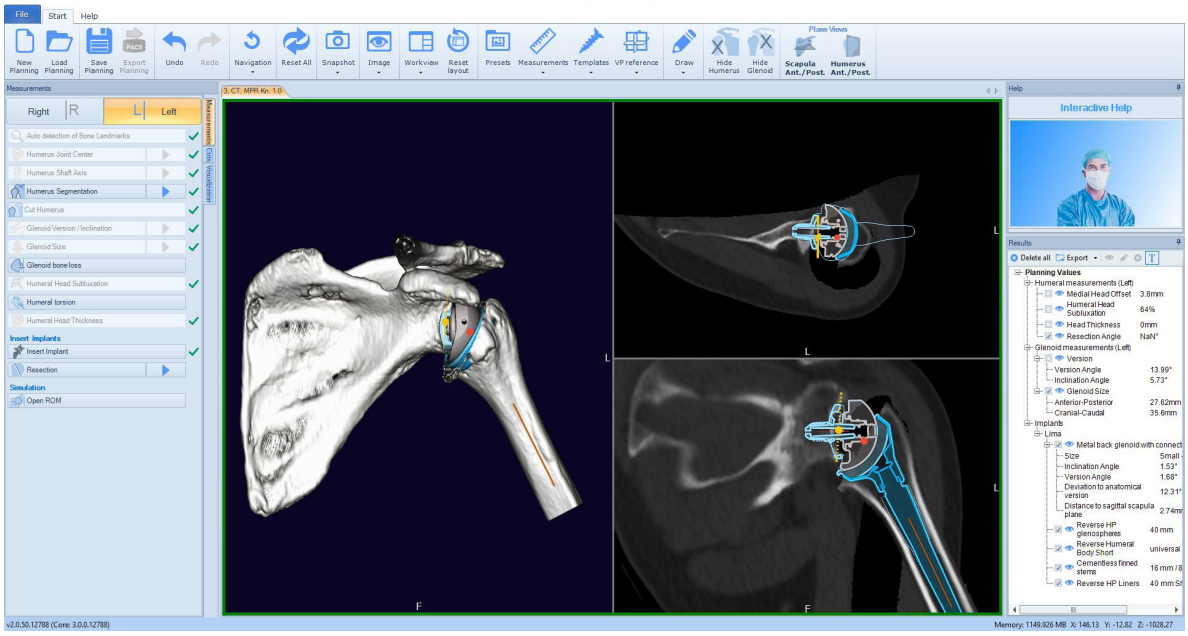
Working with mediCAD® 3D Shoulder

Import assistant/interactive help

mediCAD® 3D Shoulder enables you to select the storage location for your patient data and images with just a click of the mouse. You can load the images, as you would normally, from your PAC system via our mediCAD® Query Client interface.

After selecting the storage location, all the available patient data located in the selected directory and subdirectory is displayed in the mediCAD® 3D Shoulder workspace.

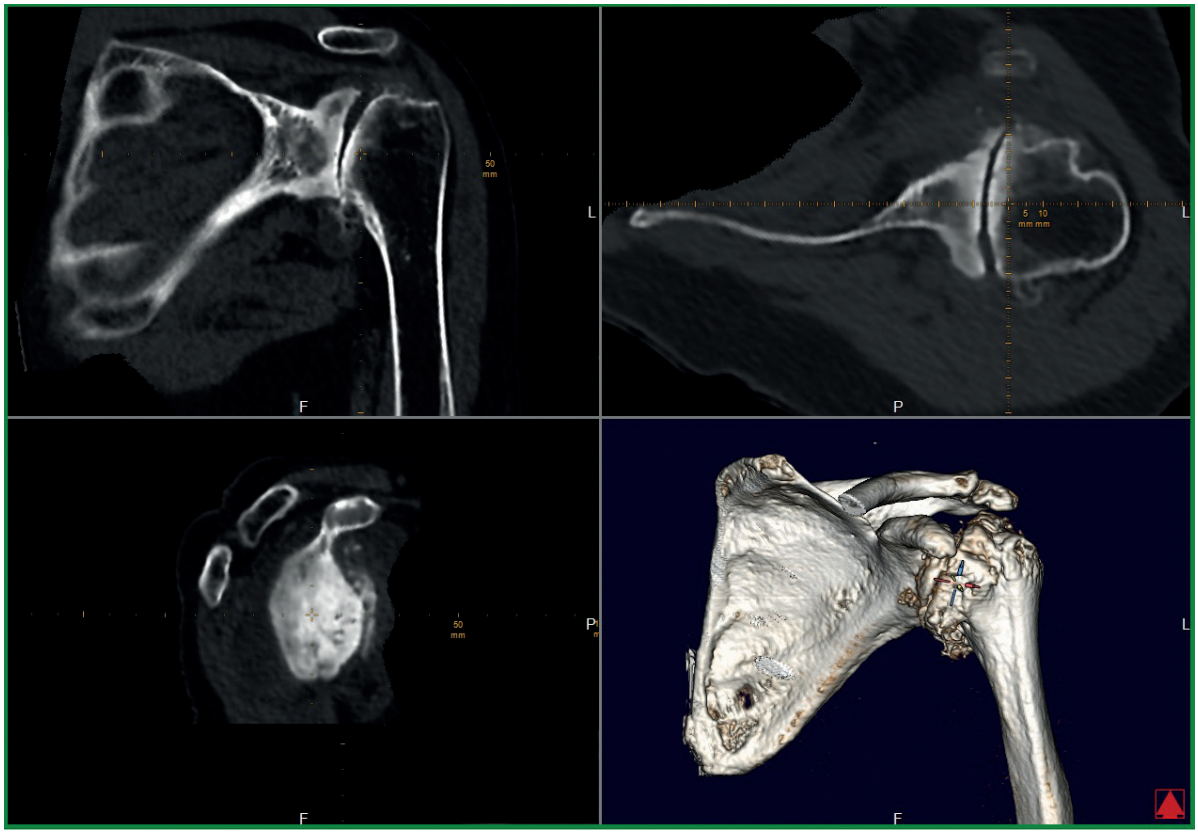
Interactive help will support you during the course of your surgical planning with a schematic view and a list of all the steps you need to take. Clear informational texts and images are also used to highlight the relevant areas and functions in the application.
This means all the information you need is always visible, making your work easier and faster.



Automatic 3D and 2D viewing

mediCAD® 3D Shoulder provides a wide range of visualizations. Each image and each plan is different, and follows a different objective or requires a different approach. This sometimes makes it necessary to display the image data from a variety of perspectives.

In addition to the 3D model, which can be visualized from all sides, you can display individual 2D slices in the axial, sagittal and coronal planes. You can also view and have the 3D model displayed from several different angles at the same time.



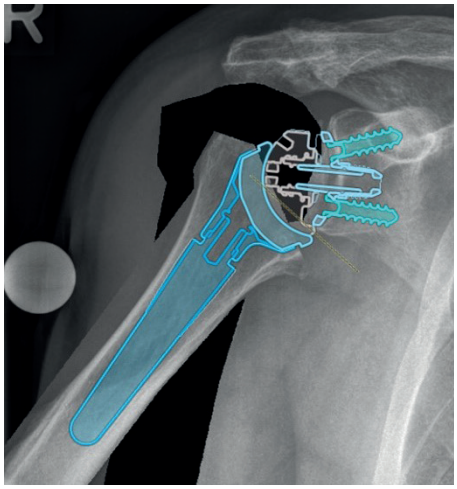
Working with mediCAD® 3D Shoulder

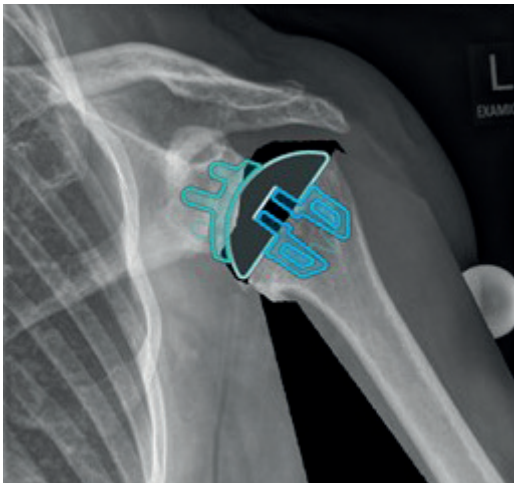
X-ray-based 2D planning

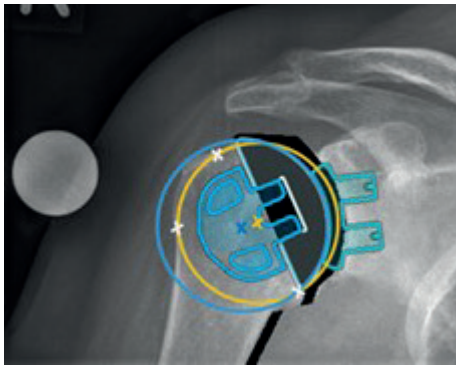
X-ray-based 2D planning has long been a standard part of diagnostics in hip, knee and shoulder surgery. This particular module is automatically included in mediCAD® 3D Shoulder.

In order to obtain the most accurate planning result possible, you should position a reference object (e.g. sphere, rectangular cm dimension) on the joint plane close to the joint while taking the image.
For a true AP projection, the scapula lies almost parallel to the film.

The software allows you to separate bone areas such as the humerus and glenoid. After you have separated the areas, you can select the prostheses from the implant database and position them in the relevant area, as you normally would in mediCAD®. The integrated 2D module repositions the implants automatically.



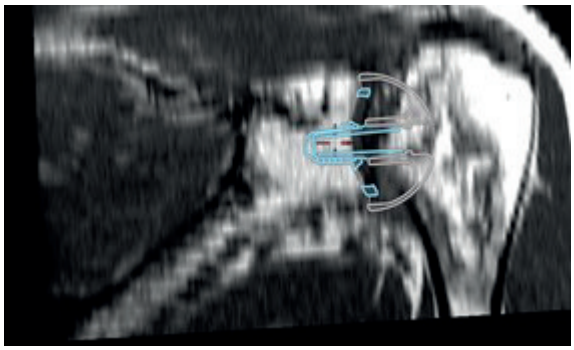


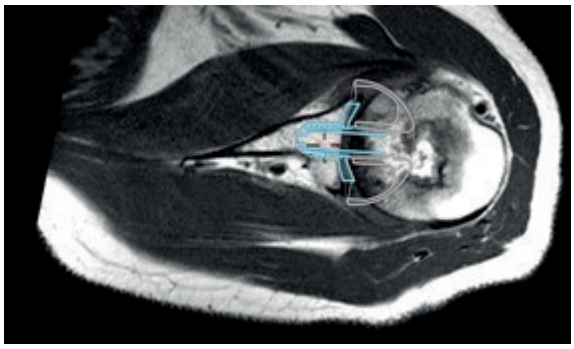


The resection and the additional standard dimensions such as angle, distance, circle etc. are components of the 2D / 3D module in order to carry out a postoperative control measure.

MRT-based planning

mediCAD® endoprosthesis planning features targeted treatment based on the use of advanced image modalities for both diagnosis and treatment. mediCAD® 3D Shoulder allows you to separate the humerus from the glenoid to ensure that you can later reposition the implants. In addition, you can measure the glenoid version and the glenoid inclination. The implants are positioned on the axial and sagittal view.

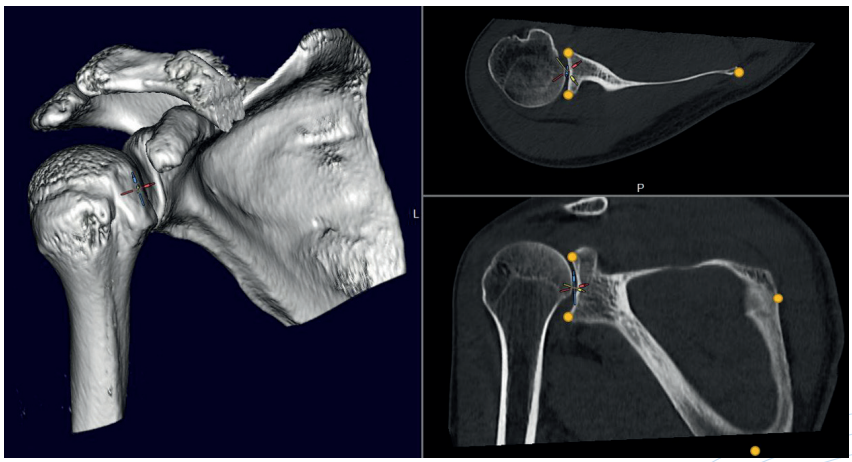




Automatic detection of bone landmarks

The 3D reconstruction of the CT-based images is displayed by mediCAD® 3D Shoulder in just a few minutes, meaning you can get started on planning straightaway.
The software automatically detects and displays landmarks used for clinical measurements within a matter of minutes.
The landmarks are used to carry out automatic measurements and to define the scapular plane.
Measurements and functions that are determined or run automatically:

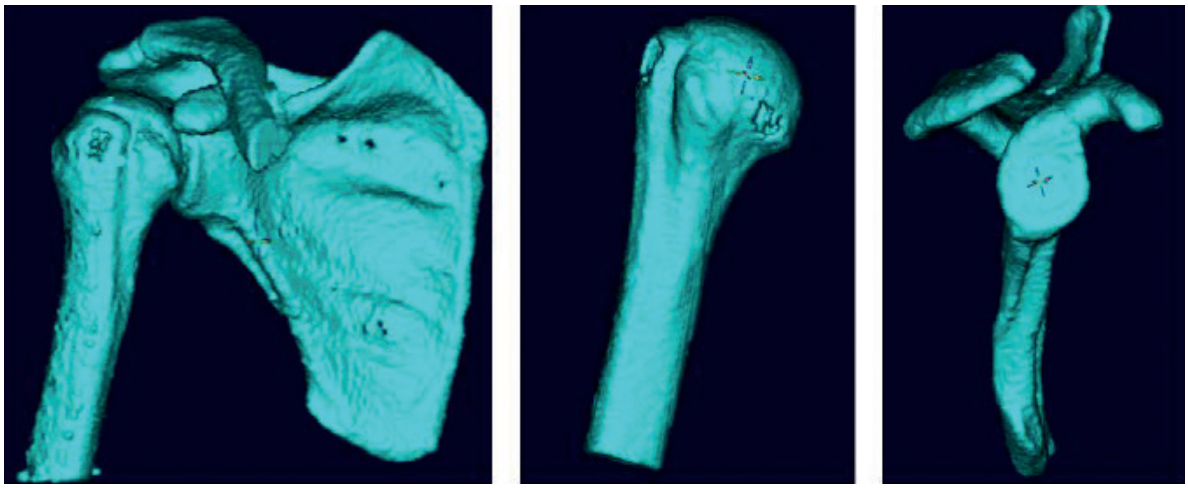
- Humerus segmentation
- Glenoid version
- Glenoid inclination
- Glenoid size
- Scapular axis



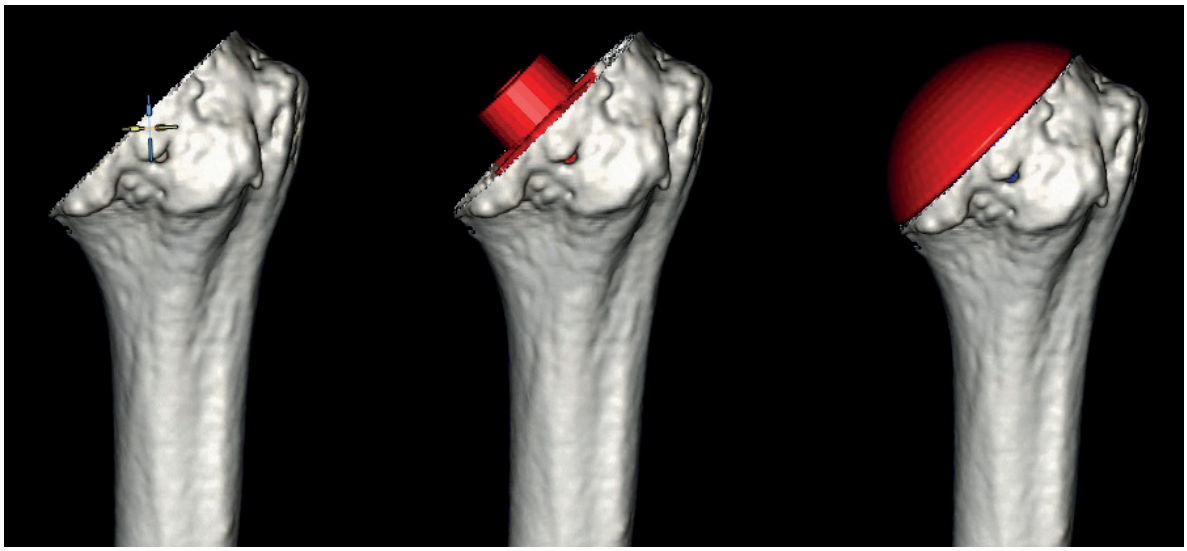
Working with mediCAD® 3D Shoulder

Automatic bone segmentation and automatic resection

Automatic segmentation is an important building block in preoperative planning for shoulder surgery. Segmentation displays the humerus as a high-resolution three-dimensional image separate from the glenoid. With the help of automatic segmentation, the displayed area can be better visualized in order to determine the condition of the joint and to resect the humeral head, for example.

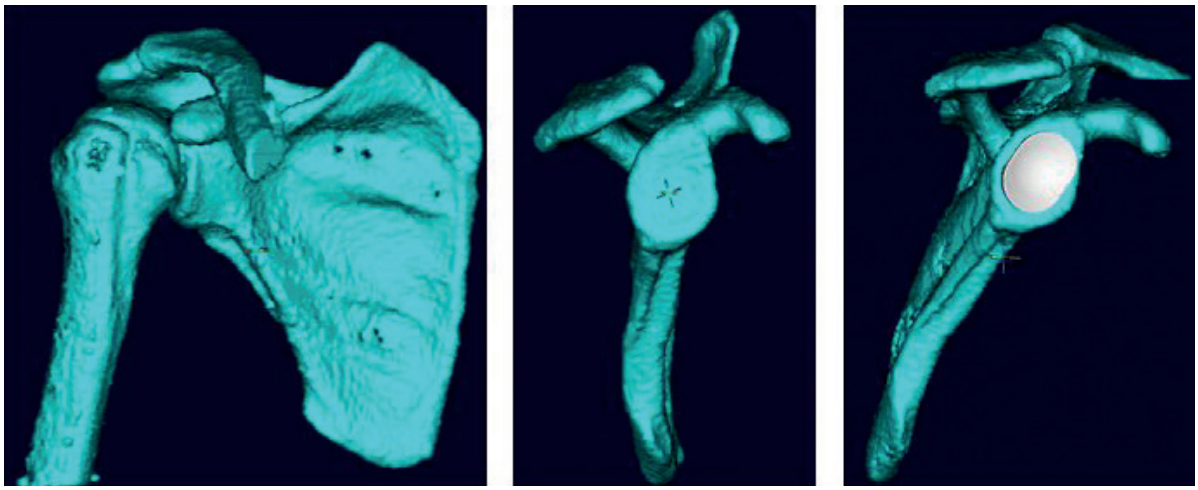


mediCAD® 3D Shoulder provides two different ways of carrying out a resection. The first option is automatic resection. The plane of the cut or the position of the resection is adapted to the resection specifications of the implant manufacturer. The second option allows you to manually determine the resection plane and move or rotate the cut area as needed in order to perform a correction. All dimensions are adjusted automatically and thus reflect the new situation after the correction has been performed.
This allows you to simulate and test various scenarios to achieve the optimal result for the patient.



3D printing and customized implants

The integrated mediCAD® Services allows users to order realistic, patient-specific 3D models of pathologies and anatomical regions.
All of our 3D modules, such as 3D Hip, 3D Spine, 3D Knee, 3D Foot, 3D Hand and, of course, 3D Shoulder, offer the entire range of modern preoperative planning for diseases of the musculoskeletal system. Customized implants are an increasingly important area of surface replacement and partial or total joint replacement.



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mediCAD® 3D Shoulder lets you segment the areas of the bone very precisely. You can save the segmented area, or areas, as a 3D file format. You can send the 3D file with the planning information from your device to your customized implant manufacturer quickly and easily during or after planning together with the corresponding dimensions.
Advancements in visualization technology, such as 3D printing, are proven to support hospitals in developing customized surgical strategies for patients.
You can initiate the ordering process directly from mediCAD® 3D Shoulder.

- The segmented bone areas are created using the software and then saved as stl files
- The user registers at services.mediCAD.cloud to start the ordering process
- The saved stl file of the anatomical region is uploaded
- The user is given an automatic cost calculation and quotation
- The ordering process is initiated

In partnership with a mediCAD® 3D printing partner, the order is processed immediately after it has been received. The 3D printing process uses PolyJet to manufacture the orders. Due to its phenomenal accuracy and precision, this printing technology is ideally suited to manufacturing true-to-life products. It uses the Stratasys J750, which is seen as a first-rate printer for efficiently manufacturing customized, authentic products
Delivery is guaranteed within 2 to 4 working days* thanks to express postage.

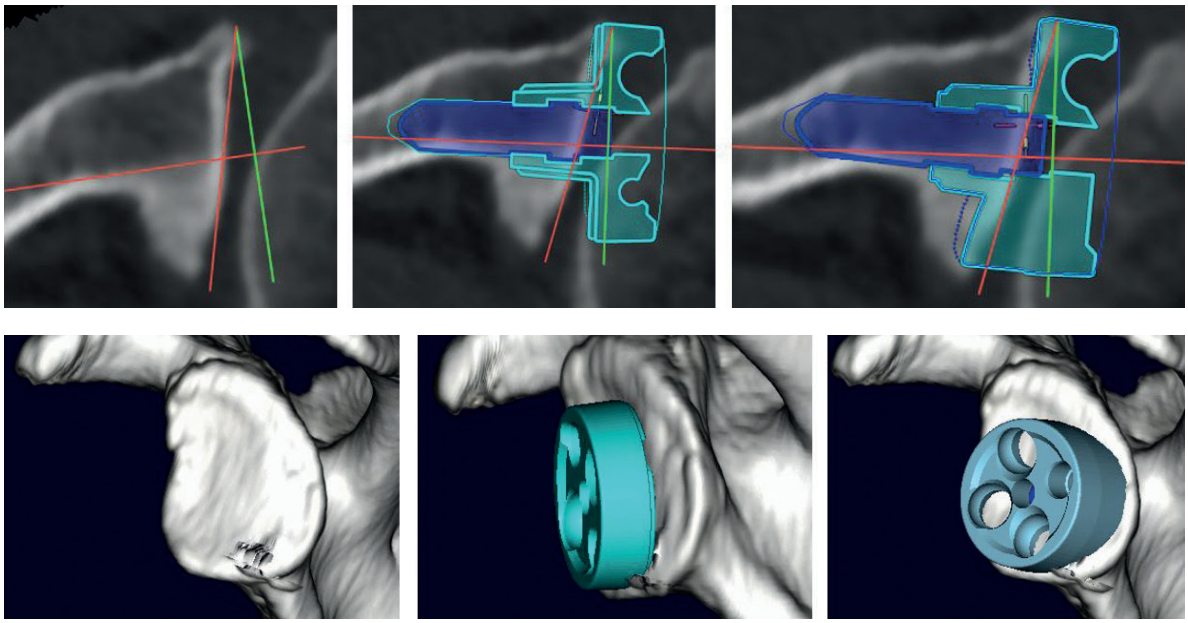
* Within Germany (as this will be sent to international customers)

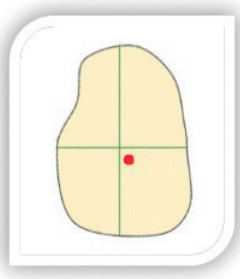
Working with mediCAD® 3D Shoulder

Implants

After more than 15 years of collaboration with a large number of international implant manufacturers, mediCAD® 3D Shoulder boasts the latest expertise and an implant database that is updated and supplemented on a monthly basis.

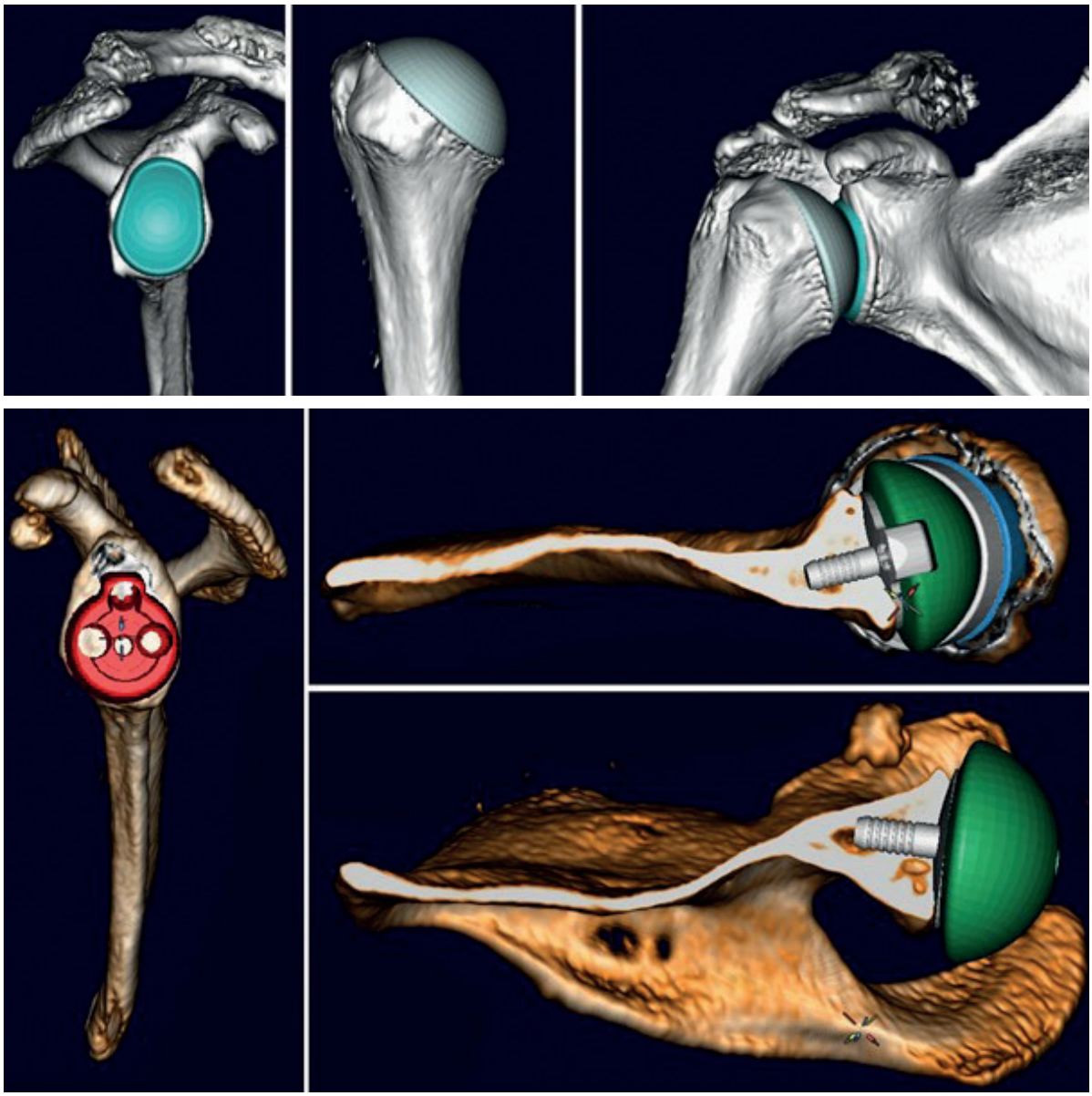
The software allows you to insert anatomical, inverse and modular prostheses. You can correct the glenoid version and recenter it by precisely positioning the individual glenoid components.



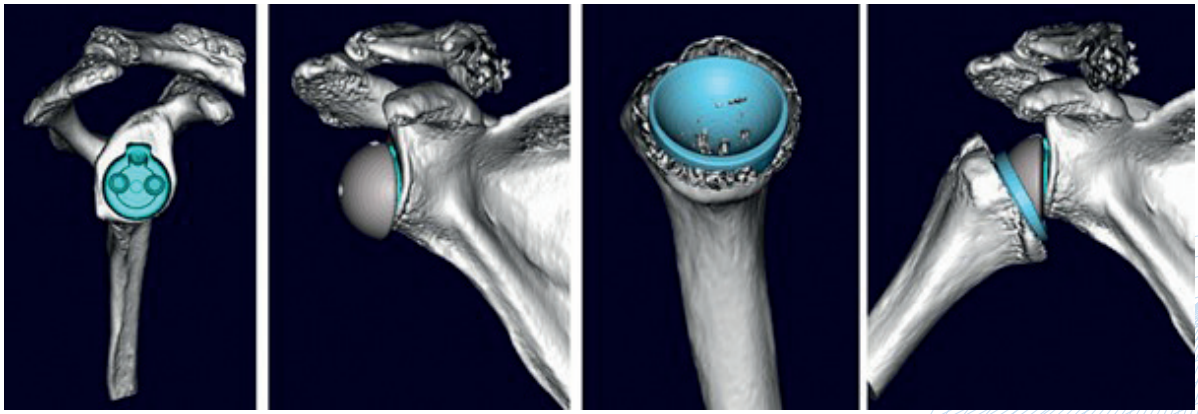


The planning software provides additional visual information about the positioning of the glenoid component. This real-time visualization enables users to see how the component is positioned in the sagittal plane and the extent to which it deviates from the anatomical glenoid center.

Thanks to the convenient options provided by mediCAD 3D Shoulder, the individual implant components can be assembled with the help of the implant configurator and placed into the 3D model (the patient's CT image). In addition to this, the implants can be adjusted, rotated, moved or changed to another implant type. The implant configurator lets you select various shoulder implants from various manufacturers. You can filter the implants according to manufacturer, type, material and size, or even list your individual favorites or those used at the hospital.



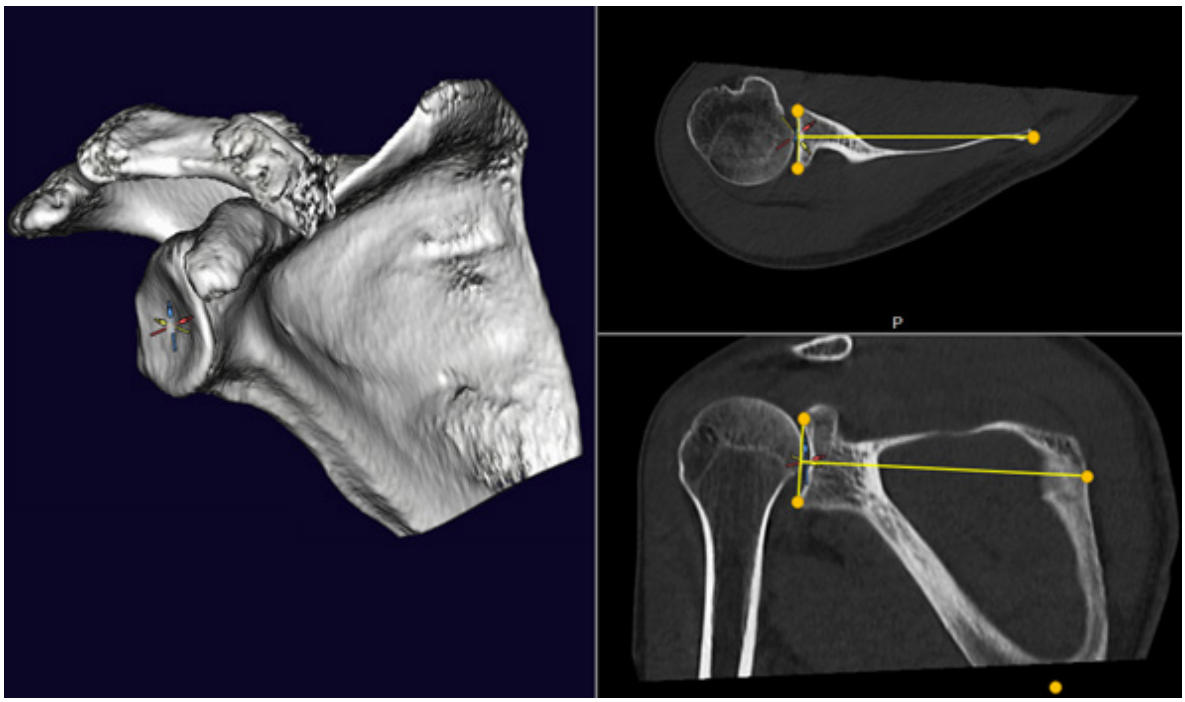
The implants selected and used are compiled in a structured list of results with all relevant parameters and can then be used for further planning and preoperative preparation.



Working with mediCAD® 3D Shoulder

Automatic, simple and accurate measuring methods

mediCAD® 3D Shoulder supports shoulder endoprosthetics planning. A large number of classic measurements can be carried out and recorded.

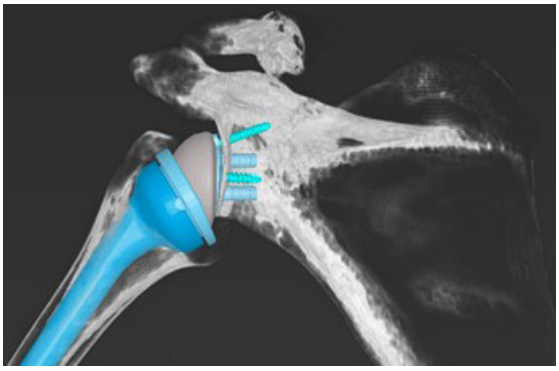


- Exact assessment of the glenoid type according to Walch
- Glenoid size determination
- Inclination angle determination
- Humeral torsion
- Glenoid version
- Medial humeral head offset
- Inclination angle of the humeral head resection
- Humeral head subluxation
- Humeral head thickness (and height)
- Humeral head diameter
- Standard measurements such as distance, angle, etc

The measurements are recorded directly in a structured list of results.

Transparent view and implant-bone contact visualization

Each image and each plan is different, has a different objective, or requires a different view. You can use the transparent view to better observe the implants used in their various positions.
It is often necessary to visually determine the condition of the bone at the planned implant position. High and low density values can occur at the planned implant location. Higher or lower primary stability can therefore be assumed when the implants are inserted.



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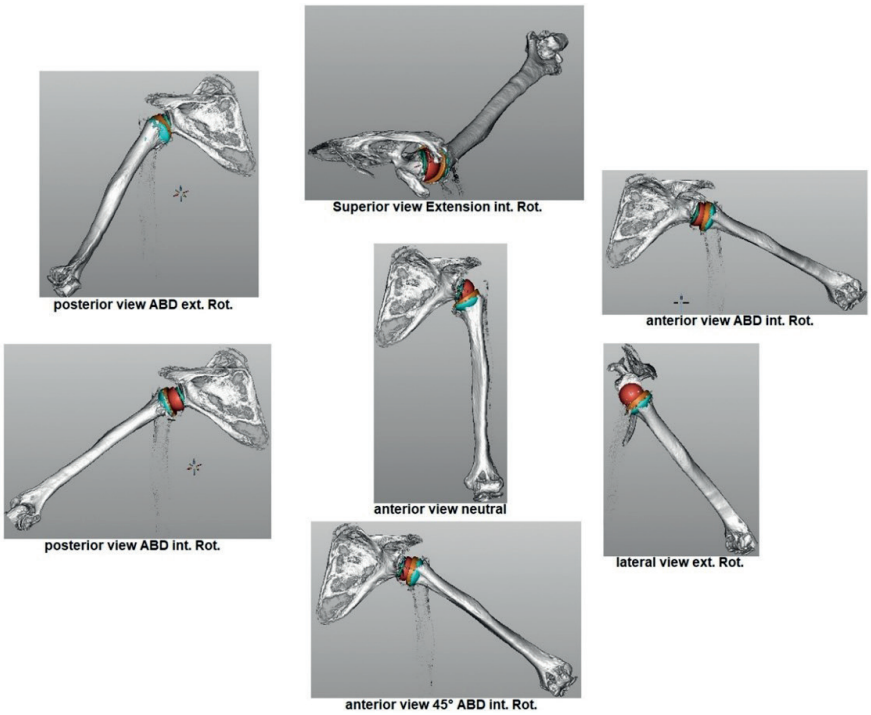
ROM (range of motion) simulation

The abnormal shape of bones that leads to shoulder impingement is not always identified by traditional radiology. The complex relationship between the shape of the glenoid, the shape of the humeral head and their interaction during movements is difficult to conceive without a visual depiction. Shoulder problems are dynamic and multidimensional. Current, static imaging leaves a lot to the imagination. By entering anatomical movement parameters, the range of motion can now be display- ed dynamically and visually with the ROM simulation.



Manufacturer information

mediCAD® 3D Shoulder requires Windows 7/10, 64 Bit with .NET Framework 4.6.1 and a current processor with at least 4 x 2.6 GHz and a RAM of at least 16 GB. Recommended display resolution is Full HD. No diagnostic monitor is required.

The required training generally takes 3-4 hours. mediCAD® 3D Shoulder is easy to learn and the user is intuitively guided through the program. Moreover, all instructions are clearly displayed on the interface.

mediCAD Hectec GmbH is happy to offer you qualified training sessions for each module, either at your workplace or online via the internet. X-ray, CT and MRI images are imported via an interface of your PAC/RI system. mediCAD® 3D Shoulder communicates with all DICOM® interfaces and is therefore compatible with all PAC systems. Many common image formats can also be imported.

We would be delighted to present our software solution to you. Our sales team is happy to help and is available to answer any questions you may have.

We will gladly take your wishes and ideas into consideration.

You can also order a free demo version of mediCAD® 3D Shoulder. The demo version corresponds to the full version of the program and is valid for 30 days. There are no restrictions on the functionalities or the implant database.

To order the demo version, please contact us at:

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Notes

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