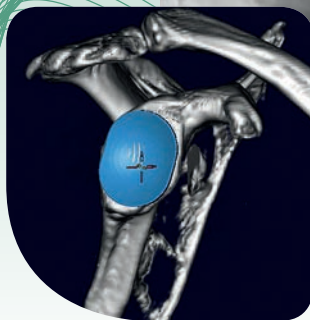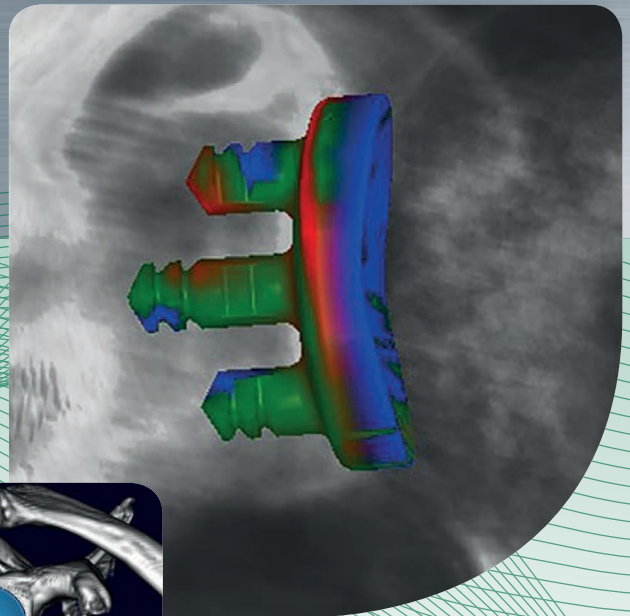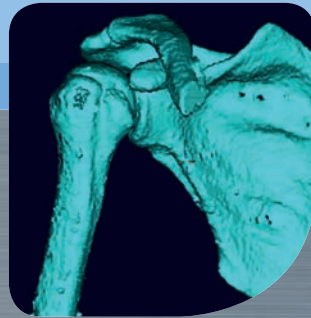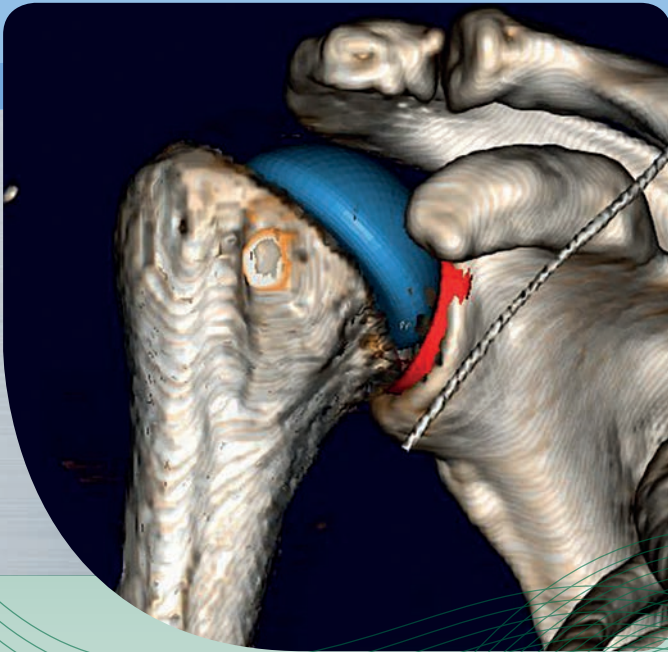# SHOULDER 3D

Automatic segmentation · Secure planning
Customized implants · Simple & exact measurements

mediCAD®

The Orthopedic Solution

www.mediCAD.eu

Create safety and trust through precise preoperative 3D planning

mediCAD Shoulder® 3D is an easy-to-use software solution that allows the surgeon to conveniently plan any case. The software allows you to draw different dimensions, select suitable implants and position these automatically in the correct position.
A modern, intuitive user interface that takes you straight to your object and the familiar, convenient connection to an existing PAC system at your hospital are just two of the many features that make **mediCAD Shoulder® 3D** an indispensable tool for your daily work.

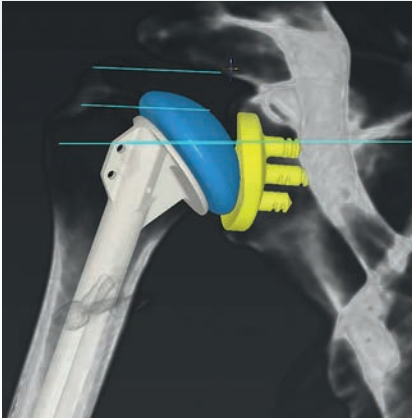## The following are some of the upgraded features to look forward to:

- Anatomical 3D and 2D view
- Simple analysis of the current pathological situation
- Automatic / manual segmentation
- Individual prosthetics
- Precise, simple and automatic measurement processes
- Glenoid size determination
- Inclination angle determination
- Rotation alignment of implants
- Automatic resection of the humeral head
- Exact assessment of the glenoid type
- Increased accuracy in implant selection
- Centering of the glenoid, cranial-caudal and anterior-posterior
- Distance and bone implant contact visualization
- Transparent view for improved visualization of the planned prostheses in the bone
- Digital documentation
- Data export for 3D printing body regions
- Thieme eRef integration

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

TABLE OF CONTENT

shoulder 3D

mediCAD®
The Orthopedic Solution

Greetings,

It is not just the legislator, but your personal high quality standards, the quality consciousness of your hospital and the well-informed patient as well that expect a professional surgical preparation in the form of digital surgical planning by the doctor. The requirements of endoprosthetic certification, which is a seal of quality for your hospital, require that you provide qualified planning and audit-proof archiving. Digital images are the future, and competent surgical planning is the basis for successful and efficient endoprosthetic care.

With the new **mediCAD Shoulder® 3D** software, you have an ultra high quality tool for planning a joint replacement prior to surgery based on high-resolution, three-dimensional CT images. This way, the most suitable implant sizes, such as glenoid replacement and the prosthesis shaft, can be positioned precisely. Surgery times can be shortened with our preoperative planning software. Decisions that were previously made during surgery can now be made beforehand, preoperatively. Moreover, rehabilitation can be accelerated by a more precise restoration of the shoulder joint geometry. Since the third plane can be depicted during 3D planning, complications can be reduced by anticipating any challenges that are identified during surgery preoperatively and addressing these accordingly. Scientific work can be supported and documented more easily and much more quickly. Discussions and coordinating activities during daily hospital work become more transparent and will achieve a verifiable increase in quality. You will be impressed by our sophisticated product concept and how simple it is to operate.

You can benefit from a implant database that is updated every month and a modern, digital product catalog for implant care. Arrange for a free and non-binding demonstration of our system – we're sure you'll be convinced.

We hope you will find our system interesting and look forward to hearing from you.

With kind regards,
mediCAD Hectec GmbH

mediCAD®

The Orthopedic Solution

We would be happy to demonstrate our solution to you. Our sales team will gladly assist you and is available to answer any questions you may have.

Tel.: + 49 871 330 203-0
E-mail:sales@mediCAD.eu

INFORMATION

Our systems have been developed with doctors for doctors, which means the following for you and your patients:

- **mediCAD**® is the world's first and most used planning program on the market

- All known planning methods are taken into account

- A modular design with powerful add-on modules

- Easy and intuitive operation

- All processes are documented in compliance with the law

- Up to 90% time savings compared to conventional planning

- Cooperation with around 130 international implant manufacturers

- **mediCAD**® is certified in accordance with Directive 93/42/EEC and EN ISO 13485 and approved as a medical product

- 510(k) approval for mediCAD® was granted by the FDA (K140434)

- **mediCAD**® is continuously being developed with doctors for doctors

- Customized and special functions and modules are constantly being developed and made available

- **mediCAD**® has been successfully used in the medical industry for more than 20 years
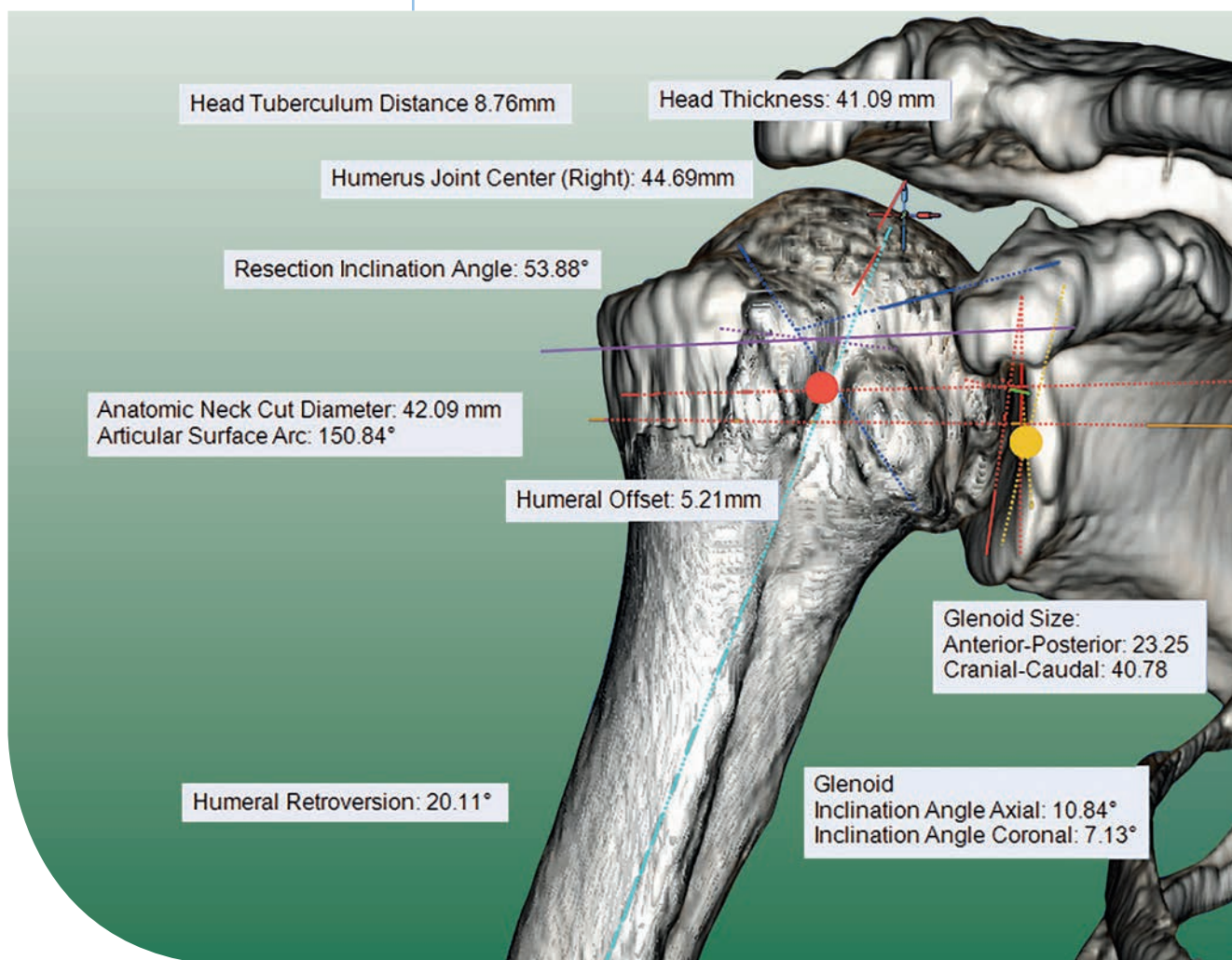
Import assistant / Interactive help

mediCAD Shoulder® 3D lets you select the storage location of your patient data or images with just one click. You can load the images, from the PAC system via our mediCAD® Query Client interface.

You can also call up any previously stored plannings and load these immediately into the workspace for further editing. After selecting the respective storage location, all the available patient data that is located in the selected directory and subdirectory is then displayed in the **mediCAD Shoulder® 3D** screen.

open Planning	CD / USB	Bitmap / Jpeg	Local Dicom	Query Client

During your surgical planning, you will be provided with interactive help, which supports you with a schematic view and a list of all the steps to be taken. Easy to understand informational texts and images are used to highlight the respective areas and functions in the application. This means you always have all the information you need in view – making your work easier and faster.

Head Tuberculum Distance 8.76mm

Head Thickness: 41.09 mm

Humerus Joint Center (Right): 44.69mm

Resection Inclination Angle: 53.88°

Anatomic Neck Cut Diameter: 42.09 mm
Articular Surface Arc: 150.84°

Humeral Offset: 5.21mm

Glenoid Size:
Anterior-Posterior: 23.25
Cranial-Caudal: 40.78

Humeral Retroversion: 20.11°

Glenoid
Inclination Angle Axial: 10.84°
Inclination Angle Coronal: 7.13°

Anatomical
3D and 2D viewing

mediCAD Shoulder® 3D provides you with various display views. Each image and each planning is different, has a different objective, or requires a different view. Therefore, it is sometimes necessary to display the image data from a variety of perspectives.

In addition to the 3D model, which can be viewed from all sides, you can also display individual 2D layers ("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.
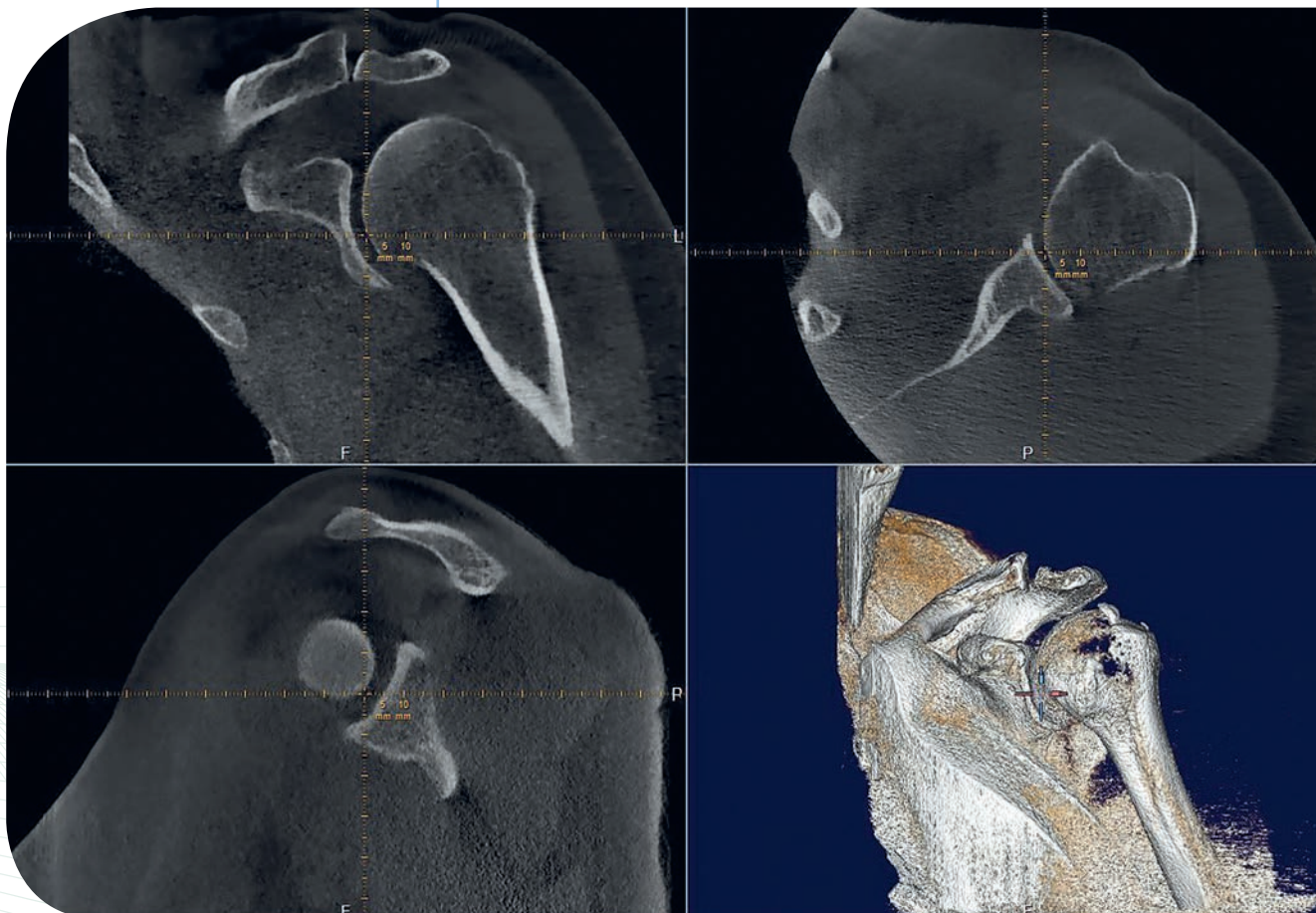
Automatic bone segmentation and automatic resection

Automatic segmentation is an important building block in preoperative planning for shoulder surgery. Segmentation displays the humerus of the glenoid as a high-resolution three-dimensional image. 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.
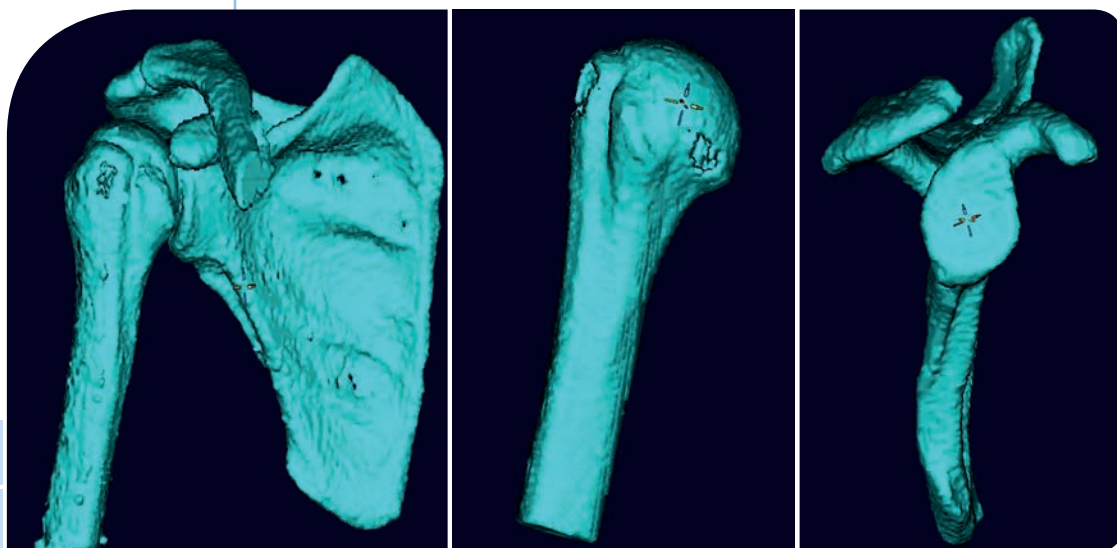

mediCAD Shoulder® 3D gives you two options when performing a resection. The first option permits automatic resection. The plane of the cut or the position of the resection adjusts itself to the resection specifications of the manufacturer. The second option allows you to manually determine the resection plane and, as needed, to move or rotate the cut area in order to perform a correction, for example. 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 in order to achieve the best results for the patient.
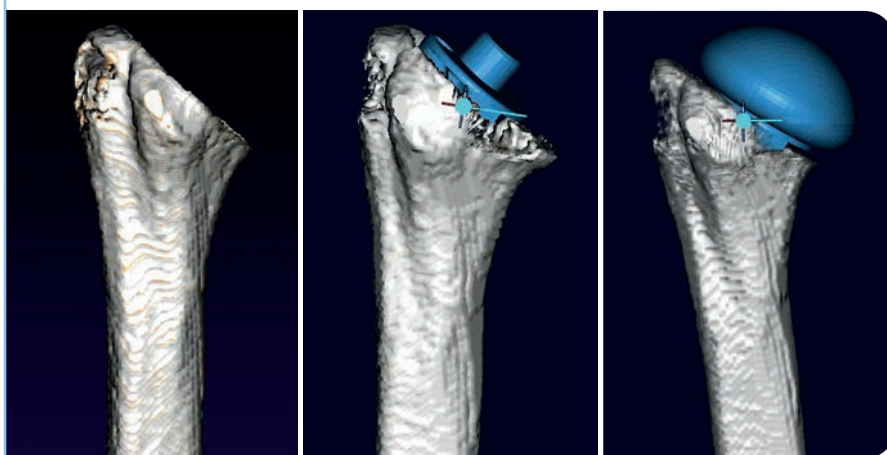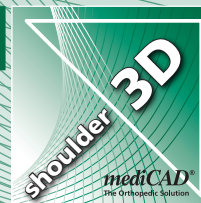
Customized implants

All of our 3D modules, such as **Hip® 3D**, **Spine® 3D**, **Knee® 3D** and **Shoulder® 3D**, offer the entire range of modern preoperative planning for diseases of the musculoskeletal system. The customized implant is an important area of surface replacement, partial or total replacement of the joint.
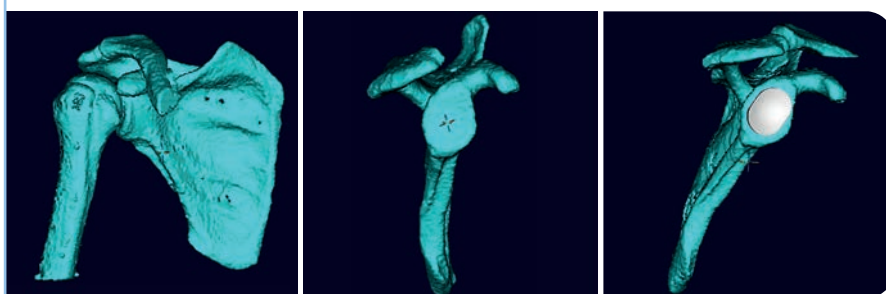
mediCAD Shoulder® 3D lets you segment the areas of the bone very precisely. You can save the segmented area or areas as a 3D file format. You can easily send the 3D file with the planning information to your customized implant manufacturer during or after the planning together with the corresponding dimensions.

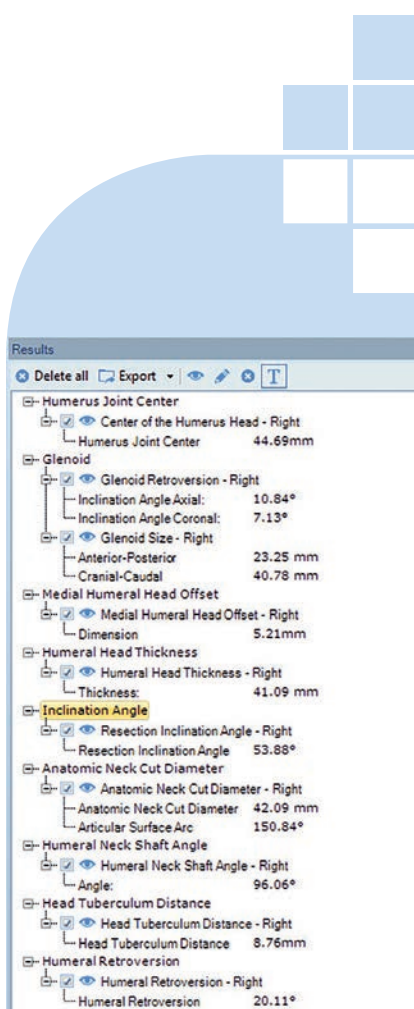# Simple and precise measurement methods

mediCAD Shoulder® 3D supports you in planning shoulder endoprostheses. A wide range of traditional measurements can be carried out and recorded:

- Exact assessment of the glenoid type according to Walch
- Glenoid size determination
- Inclination angle determination
- Humerus retroversion
- Glenoid retroversion
- Medial humeral head offset
- Inclination angle of resection
- Anatomic neck cut diameter
- Humeral neck shaft angle (CCD)
- Humeral head thickness

The measurements are not only displayed directly in the 3D model but also recorded in a structured list of results. Where possible, an evaluation is carried out based on the standard range, and its compliance or any lower/upper deviations are then displayed in color.

This way, **mediCAD Shoulder® 3D** helps you to save a great deal of time. This means you have significantly more time for your patient and to prepare for the pending surgery.

Results

Delete all Export

Humerus Joint Center
  Center of the Humerus Head - Right
    Humerus Joint Center   44.69mm
Glenoid
  Glenoid Retroversion - Right
    Inclination Angle Axial: 10.84°
    Inclination Angle Coronal: 7.13°
  Glenoid Size - Right
    Anterior-Posterior   23.25 mm
    Cranial-Caudal   40.78 mm
Medial Humeral Head Offset
  Medial Humeral Head Offset - Right
    Dimension   5.21mm
Humeral Head Thickness
  Humeral Head Thickness - Right
    Thickness: 41.09 mm
Inclination Angle
  Resection Inclination Angle - Right
    Resection Inclination Angle   53.88°
Anatomic Neck Cut Diameter
  Anatomic Neck Cut Diameter - Right
    Anatomic Neck Cut Diameter   42.09 mm
    Articular Surface Arc   150.84°
Humeral Neck Shaft Angle
  Humeral Neck Shaft Angle - Right
    Angle: 96.06°
Head Tuberculum Distance
  Head Tuberculum Distance - Right
    Head Tuberculum Distance   8.76mm
Humeral Retroversion
 Humeral Retroversion - Right
    Humeral Retroversion   20.11°

Implants

Thanks to the convenient options provided by **mediCAD Shoulder® 3D**, the individual implant components can be assembled with the help of the implant configurator and placed into the 3D model (the patient's CT recording). Additionally, the implants can be adjusted, rotated, moved or changed to another implant type either as a group or as individual objects. The implant configurator lets you select various shoulder implants. You can filter your implants according to manufacturer, type, material and size, or even list your personal or hospital favorites.

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

After more than 15 years of collaboration with a large number of international implant manufacturers, **mediCAD Shoulder® 3D** includes the latest expertise and an implant database that is updated monthly.
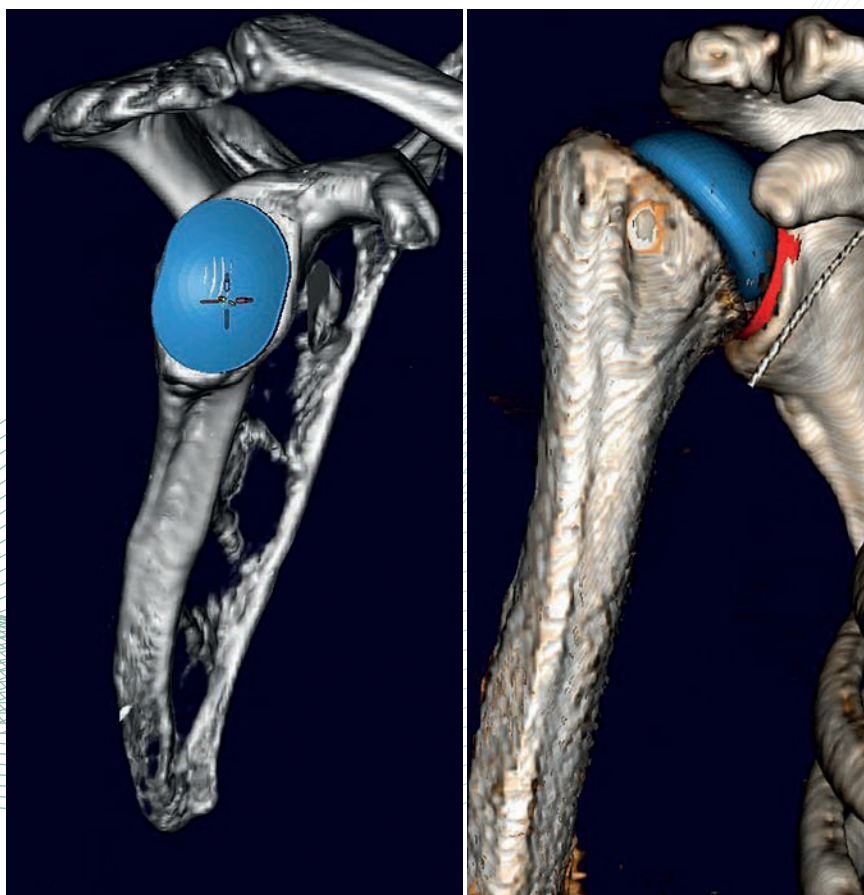
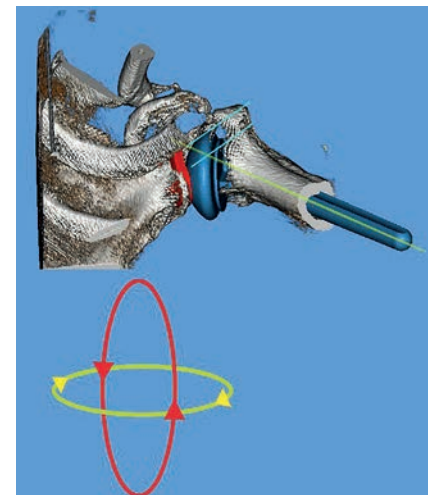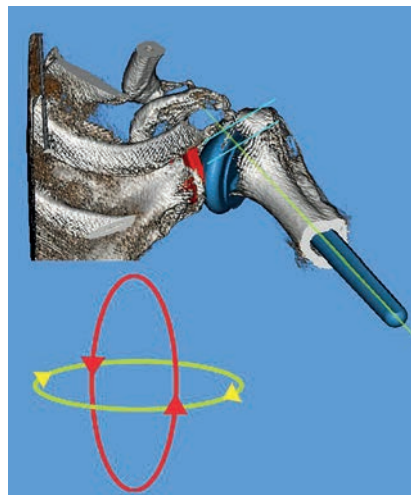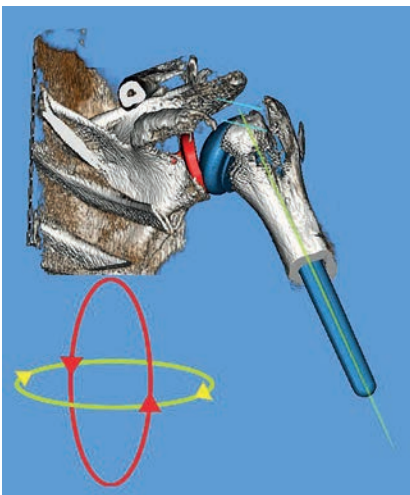# Transparent view and implant-bone contact visualization

Each image and each planning 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 respective positions. It is often necessary to visually determine the condition of the bone at the planned implant position. Here, high and low density values can occur.

Higher or lower primary stability can therefore be assumed when the implants are inserted. The distance visualization of the Hounsfield units can be used to create concepts for preoperative planning in order to determine the correct preparation technique and the consecutive prosthetic solution.
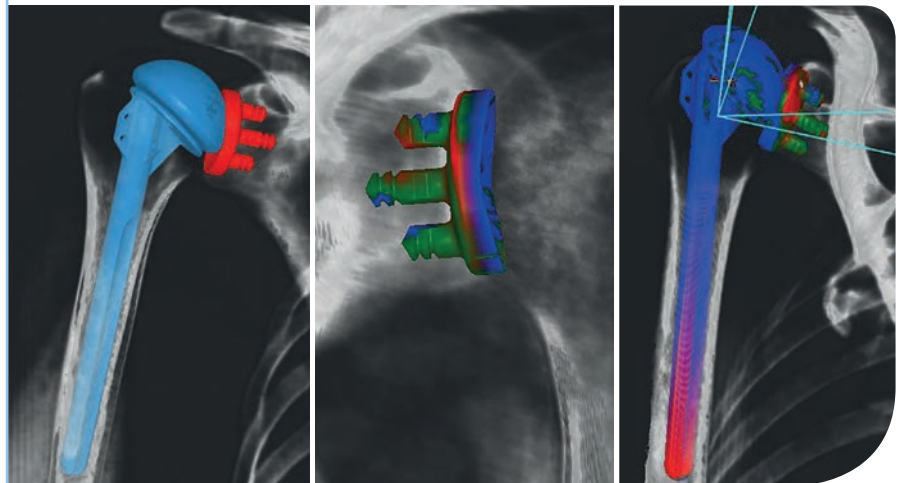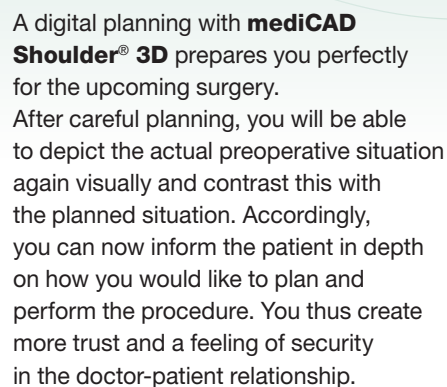

ROM (Range of Motion) simulation

The abnormal shape of the 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 movement can now be displayed dynamically and visually with the ROM simulation.

Preoperative and postoperative views

A digital planning with **mediCAD Shoulder® 3D** prepares you perfectly for the upcoming surgery.
After careful planning, you will be able to depict the actual preoperative situation again visually and contrast this with the planned situation. Accordingly, you can now inform the patient in depth on how you would like to plan and perform the procedure. You thus create more trust and a feeling of security in the doctor-patient relationship.


OR Viewer

Optimal surgical preparation and preoperative planning are crucially important for achieving good results. **mediCAD Shoulder® 3D** lets you digitally document all the planning steps, such as anatomical views, dimensions, implants or resections, through images recorded in the planning. You can store the images onto a USB flash drive using the application developed by **mediCAD®** and display these on a monitor in the operating room. You can successively call up the steps performed in the planning and implement these steps during surgery.

Planning-Report

mediCAD® not only provides a convenient PACS connection and audit-safe storage of the planning, it also lets you save or print your planning as a report. Once you have carefully carried out your planning and optimally used all the implants, **mediCAD®** creates a structured report at the end of the planning that displays and lists all the relevant information, such as patient ID, dimensions, implants, etc. You can then discuss the planning with your colleagues or with the patient based on this planning report. This saves time and creates transparency.
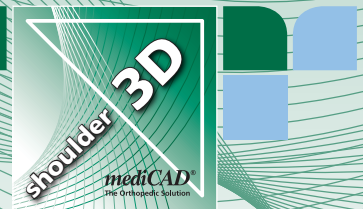
Thieme eRef integration
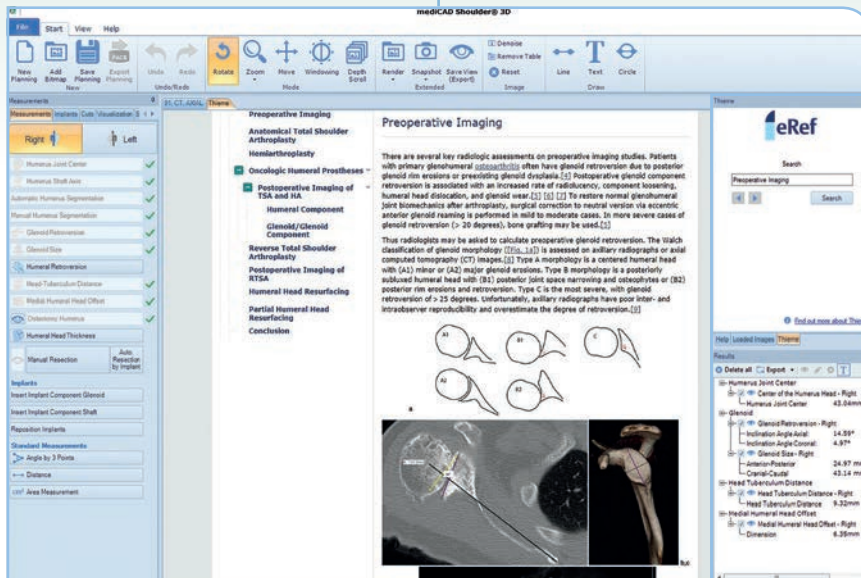
Effective immediately, the **mediCAD®** preoperative planning software includes Thieme eRef content. **mediCAD®** provides digital support to doctors when planning surgeries. In Thieme eRef, doctors receive comprehensive situational-based and case-based medical information from Thieme reference books and journals, as well as information from databases. Through the integration of eRef into the **mediCAD®** planning software, doctors can now access the contents in eRef at any point of their digital surgical planning. Use of eRef is free of charge for 14 days after registration.

Manufacturer information

mediCAD Shoulder® 3D requires 64-bit Windows 7/10 with. NET Framework 4.6.1, a current processor with at least 4 x 2.6 GHz and at least 8 GB RAM. Recommended display resolution is Full HD. No diagnostic monitor is required.

mediCAD Shoulder® 3D requires no prior program knowledge and is easy to learn. The user is intuitively guided through the program. Moreover, all instructions are clearly displayed on the interface. Training generally requires approx. 3-4 hours to complete. mediCAD Hectec GmbH is happy to offer competent training sessions for each module. The training sessions can either be conducted at your workplace or online via the internet. X-ray, CT and MRI images are loaded via an interface of your PAC/RI system. **mediCAD Shoulder® 3D** communicates with all DICOM® interfaces and is therefore compatible with all PAC systems. Many common image formats can also be imported. We would be happy to demonstrate our solution to you. Our sales team will gladly assist you and is available to answer any questions you may have.

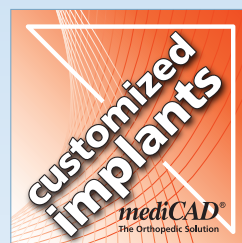## We will gladly take your wishes and ideas into consideration.

You can also order a free demo version of **mediCAD Shoulder® 3D**. The demo version corresponds to the full version of the program and is valid for 30 days. There are no restrictions on the functionalities and the implant database in the demo version. To order the demo version, please contact us at:

📞 +49 871 330 203-0   🌐 www.mediCAD.eu
🖨 +49 871 330 203-99   @ sales@mediCAD.eu

Successful surgery
through digital planning

Additional products by mediCAD Hectec

spine 3D *mediCAD*® The Orthopedic Solution

ankle joint 3D *mediCAD*® The Orthopedic Solution

knee 3D *mediCAD*® The Orthopedic Solution

hip 3D *mediCAD*® The Orthopedic Solution

customized implants *mediCAD*® The Orthopedic Solution

Corporate Headquarters:

mediCAD Hectec GmbH
Opalstraße 54
DE‑84032 Altdorf
GERMANY
📞 +49 871 330 203-0
📠 +49 871 330 203-99
info@mediCAD.eu
www.mediCAD.eu

US Office:

mediCAD US, Inc.
191 Peachtree St., NE, Suite 3720
Atlanta, GA 30303
USA
📞 +1 404 263-3123
📠 +1 404 586-6820
info@mediCAD.us
www.mediCAD.us