Preoperative Planning
Postoperative Control

mediCAD®
The Orthopedic Solution

www.mediCAD.eu
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Greetings!

In many countries, it is required by law for surgeons to utilize pre-operative planning and to archive their work. mediCAD® is a medical software package that helps ensure a high level of planning and operational quality. Specialized tools for handling and editing digital images have become indispensable and will remain essential for the foreseeable future. They help determine, display, calculate, and document the most effective alternatives and reveal useful information before surgery. mediCAD® is a high-performance, modular software package that provides such information in a compact, easily understood format. Whether you use mediCAD® during daily hospital routines or for scientific purposes, it will help you plan better and ensure quality. Now is a great time to schedule a free, on-site demonstration. We are sure you will be impressed by mediCAD®'s highly refined design, user-friendly operation and cutting-edge procedures, designed in collaboration with doctors for doctors. There are more than 20,000 surgeons working with mediCAD® around the world.

Best,
mediCAD Hectec GmbH

The system was developed in collaboration with doctors for doctors, giving you and your patients:

- A globally recognized planning program
- Access to all current planning methods
- Modular design
- Standard operating procedures
- Immediate access to 23 languages
- Documentation of all steps
- Time savings of up to 90% over conventional planning
- Access to more than 130 international implant manufacturers with more than 500,000 templates

mediCAD® is certified according to 93/42/EWC and DIN EN ISO 13485 and approved as a medical product.

In international markets, mediCAD® is also sold under the name IMPAX Orthopaedic Tools (through AGFA Healthcare)

Both programs are approved as medical products according to FDA 510k / Health Canada CMDCAS.

mediCAD Hectec continuously refines and develops mediCAD®

Custom functions and special modules.

mediCAD® has been used by medical professionals for more than 20 years
Hip

The hip module helps you plan hip implants. It is based on planning methods, which were previously done manually, for hip endoprosthetics using radiographic imaging and prosthesis templates.

Now you can quickly:
- Select and fit suitable cup and shaft combinations
- Correct an adduction or abduction
- Determine pre and post-operative leg-length compensation and display this on the image
- Use the FAI module (femoroacetabular impingement), developed in close collaboration with Dr. Wolfgang Zinser
- Plan an intertrochanteric osteotomy.

Intertrochanteric Osteotomy

The module „intertrochanteric osteotomy“ allows planning an osteotomy at the upper portion of the femur, the greater trochanter. The intertrochanteric osteotomy often provides the possibility to delay the use of a prosthesis.

The module allows to plan the resection close to the trochanter and to rotate around a defined center of rotation. The osteotomy can be flexibly changed. Also the rotation of the femoral head can be simulated.

Suitable osteosynthesis components like nails, plates, screws, etc. can be easily selected from a database.

FAI

The FAI function in the module hip provides the user with tools and techniques which can be used to diagnose pathologies such as: CAM, Pincer, Mixed-impingement as well as dysplasia of the hip.
Biometry

Looking for a biometric analysis?
No problem!
mediCAD® automatically suggests the optimal position of the joint center point while considering body size, weight and initial biometric analysis. The load distribution is improved and physiological muscle flexing is re-established using the biometrically determined standard range for anchoring of prostheses.

Optimized implant geometry avoids biomechanically unfavorable results. mediCAD® has unique capabilities for answering these types of questions.

mediCAD® calculates and displays the right pivot point for optimized joint geometry, simulating the load-bearing situation of a healthy joint.

The mathematically optimized pivot point lies within the green zone, placing it in the optimal range according to a 12-point score.

The inner cortical is automatically detected for precise fitting of the implant.

Coxometry

Pediatric hips:
The coxometry module allows you to use clinically relevant values to evaluate hip joints.

Since orthopedic surgeons worldwide use different criteria to evaluate the hip situation, the coxometry module modifies the procedure to meet your needs. mediCAD® evaluates most of the criteria using known grading tables such as the acetabular head index or the cup angle of inclination.

Saving and/or printing of planning images provides an avenue for follow-up studies.
Knee

The knee module is used to plan knee prostheses. Potential axial misalignments can be detected and corrected during planning session prior to actual surgery. This enables both pre- and post-operative of load distribution correction on the entire leg. Depending on the surgeon’s preference, mediCAD® can correct the misalignment automatically or through manual adjustments. It calculates the mechanical axes, weight-bearing line and all relevant angles that are expected post-op.

Osteotomy

The osteotomy module can be used to plan femoral or tibial corrective osteotomies, with single or multiple osteotomies, using the open wedge or closed wedge technique. Axial misalignments are found automatically and corrections are handled both automatically or manually. An integrated database makes it easy to select suitable osteosynthesis components such as nails, plates, screws and more. With mediCAD®, merging partial images to create a complete long-leg image is a very simple and intuitive process.
Osteotomy according to Dror Paley

An analysis determines the type, number, size and localization of the osteotomies. When correction is complete, all joint-related mechanical weight-bearing axes and joint tangents must lie within the normal range.

Common methods:
Open Wedge or Closed Wedge, Translation

All pre- and post-operative results are shown. Misalignments can be calculated using the expanded osteotomy module according to Dror Paley. The process has been used for years at the Gelenkzentrum Rhein-Main (www.gelenkzentrum-rheinmain.de). The mathematical principles are based on the studies of Prof. Dror Paley of Baltimore, as well as Prof. Dr. J. Pfeil and Prof. Dr. B. Gladbach.

- Analysis of the pre-operative situation
- Determination of CORA/NCORA, single or multiple osteotomies
- Simulation of post-operative results.
- Automatic calculation of optimal angles.
- Determination of the apex and actual angle of deformity from the AP and sagittal views.
- Interactively select and evaluate the correction yourself.

Dror Paley’s principles of deformity correction. Developed for mediCAD® with Prof. Dr. J. Pfeil and Prof. Dr. B. Gladbach of Wiesbaden
Trauma

Bone segments can be isolated and shifted as well as required osteosynthesis products put into place. Implant templates for plates, screws and nails are included. With mediCAD®, merging partial images in order to create a complete image is a very simple and intuitive process.

- Very simple and intuitive image processing for reconstructing skeletal elements.
- Data library for pins, screws, and plates.

Shoulder, Elbow
Hand, Finger

Enables determination of the size and position of implants for shoulder, elbow, hand and finger, ensuring optimized planning.

- Post-operative results can be simulated.
Foot / Ankle Joint

Enables optimized planning, determination of size and position of implants for feet, ankle joints and toes.

Hallux Valgus

Analysis of the pre-operative situation through automatic calculation of all relevant angles. Post-operative results can be simulated at any time.

Individualized dimensioning options and a variety of implants are accessible.
Hip 3D

You can use this module to implement preoperative planning of hip endoprosthesis in 3D.

Many features are available such as:

- Segmentation of the 3D object
- Removal of the femoral head
- Full intuitive planning of the socket, inlay, head and stem
- Planning of revision endoprosthesis
- Hip length compensation
- Femoral cut
- CCD angle dimensioning
- Acetabular ante-retroversion
- Femoral ante-retroversion
- Femoral offset
- Acetabular offset
- Range of motion simulation
- Distance and implant-bone contact visualization
- Transparent view for better recognition of the planned position
- Fragment positioning in the event of a trauma
- Possibility of exporting as STL for 3D printing
- Individual prosthesis interface with leading manufacturers and data anonymization
- Thieme eRef integration
- PACS export

Spine 3D

This new module opens entirely new worlds for the doctors carrying out planning sessions. CT or MRI images can now be used for planning in 3D.

The following functions are available:

- High-resolution MIP and MPR representation in colour
- Various visualization representations
- 360-degree image of the patient and the prosthesis
- Internal visual of the patient
- Display or hide regions of the body
- Focus on specific areas of the body
- 3D measurements
- Batch of the spinal focus
- Scoliosis in accordance with Cobb
- Scoliosis in accordance with Ferguson
- Internal pedicle distance
- Spinal canal width index Lordosis
- Kyphosis
- Atlantodental distance
- Dens batch
- Diameter of the spinal canal
- Spondylolisthesis
- Disc height
- Disc angle
- Instability in accordance with Van Akkerveeken
- Sacral angle
- Pelvic Tilt
- PT Pelvic Incidence PI
- Pelvic Angulation PA
- Pelvic Lordosis Angle
- Pelvisacral Angle PSA
- Sacral Slope C7 Plumb Line
- Pelvic Thickness CS
- Pelvic Thickness SPT
- Planning spondylodesis
- Planning cages

mediCAD Spine<sup>®</sup> 3D provides active support for all of our customers, for all the various measurements that can be performed automatically. You can also reduce the automatic results to the desired value manually.
Knee 3D

You can use the knee 3D module to analyze and correct deformities and carry out the preoperative planning for the endoprosthesis.

Additional features include:

• Full intuitive planning of the femur and tibia components
• Automatic detection of relevant points in the CT scan.
• Stitching together partial CT images, thus reducing the amount of time the patient is exposed to radiation while the images are taken
• Osteotomies
• Implant bone distance visualization
• Measurement of the torsion of femur and tibia
• Adding slope to tibia when placing implant

Ankle Joint 3D

In the ankle joint 3D module, you can correct a misalignment of the ankle bone, realign the Mikulicz line and therefore know how many degrees the ankle joint needs to be corrected before the ankle joint surgery.

Features:

• Planning of implants
• Measurements
• Range of Motion
• Implant bone distance visualization
Manufacturer information

All product and company names are copyrights or protected trademarks of the corresponding companies. Information contained in this brochure may be changed at any time without advance notification.

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GERMANY

FDA 510(k): K140434
CMDCAS 512917 MP23CMDR / 170616856

The quality management system of mediCAD Hectec is certified according to DIN EN ISO 13485, issued by said site 0483. The product complies with the basic requirements of 93/42/EWC as provided by the quality management system and is approved as a Class I m medical product in accordance with this directive.

Hardware recommendations

mediCAD® runs smoothly on any current Windows PC, laptop, or netbook and on selected tablet computers. Recommended display resolution is 1280x1024. A diagnostic monitor is not required.

Templates:

We are happy to integrate your preferred manufacturer's implant and accessory templates into the system. Currently the system contains approximately 500,000 templates from more than 130 manufacturers.

Training - DICOM®

Introduction / Training

mediCAD® 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 two hours.

mediCAD Hectec is ready to provide skilled training for every module. Both on-site and online training are available.

Radiographs are imported in DICOM® format through an interface on your PACS/RIS system. mediCAD® communicates with all DICOM® interfaces, making it compatible with all PACS systems. Many common image formats can also be imported.
Implant manufacturer

**mediCAD** has the world's largest database of implants. Surgeons can select from approximately 500,000 templates and more than 130 international manufacturers. The database is expanded and updated monthly with new and revised implant systems.

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<td>3M</td>
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- Special validations are available at any time (in conjunction with the prosthesis manufacturer).
- We support our customers during planning of complete tumor and modular systems.
Providers

mediCAD® uses the DICOM® standard. Please contact us for special adaptations to other digital systems. Here is a small excerpt from the list of our many partners:

AGFA HEALTHCARE  FUJIFILM  PANSYS
ALTERIS  GE-HEALTHCARE  PERGAMON
AMETIQ  GEMED  PHILIPS
ARCFORGE  INFINITT  PHÖNIX-PACS
ARCHIMED  IQ-WEBX  PLANORG MEDICA
ASHVINS by  ITH-ICOSERVE  RESQMED
MEDICALCOMMUNICATIONS  ITZ-MEDICOM  SECTRA
AYCAN  MEDAVIS  SIEMENS HEALTHCARE
BW-PLUS  MEDIDOK  SPIRIT | TIANI
CARESTREAM  MEDIATION  SYMEDRA
CERNER  MED-RAY  TELEMIS
CHILI  MERCURY  VEPRO AG
DIGITAL MEDICS  NEXUS | INOVIT | MEDOS  VISUS TT
DIX-RAY  OEHM & REHBEIN  WIROMA AG

DICOM® is the registered trademark of the National Electrical Manufacturers Association for its standards publications relating to digital communications of medical information.
I would like to receive information about the following planning modules:

- Hip
- Knee
- Biometry
- Coxomery
- Hip 3D
- Osteotomy
- FAI
- Osteotomy according to Dror Paley
- Spine 3D
- Knee 3D
- Foot, Hallux Valgus, Ankle joint
- Shoulder, Elbow, Hand
- Trauma

Four ways to contact us!

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Reference objects

Scaling stations and reference balls - accessories for radiology
Calibration balls / reference dimension, 25 mm diameter. Calibration balls are made of stainless steel. Our hollow balls are significantly lower in weight than conventional solid steel balls. The balls have a smooth surface that makes them easy to clean. To achieve the most accurate results possible, the balls are placed at the same level as the bone. We offer specially designed disposable adhesive pads to facilitate attachment of the ball to the patient. Our different scaling aids give you two very simple & intuitive ways to add a scaling object to your radiographs.

- Flexible arm for precise placement
- Length of arm is adjustable
- Integrated 25-mm scaling ball
- Precise placement at bone level
- Large base plate for placement on flat surfaces
- Practical clamp for long-leg images
- mediMARK® - new scaling device! www.mediCAD.eu/mediMARK

www.mediCAD.eu/equipment
Successful surgery by digital planning

Additional products by mediCAD Hectec:

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