![dicomPACS® logo] **dicomPACS®**

# Digital X-ray
## in the modern medical practice

| CE 0482 | **FDA** | 510(k) application has been cleared by the FDA No. K070618 | Health Canada | CMDCAS certification QMS Iso 13485 |

![logo] *dicom*PACS®

# Digital images and documents

**dicom**PACS® is an up to date and sophisticated high tech solution for intelligent image management both for private practices and hospitals. All images created by digital X-ray, CT, MRI and ultrasound units as well as any type of documents such as doctors' letters, diagnostic reports, records of healing processes and faxes may be stored in the digital patient file with the help of **dicom**PACS® and are accessible immediately with one mouse click.

Our carefully thought out archive and backup solutions guarantee fast access to all data while observing maximum security standards in accordance with the German Medical Devices Act. In addition, the software can be integrated easily with all common administration systems.

**dicom**PACS® software includes acquisition, processing, transfer and archiving of image material. Since the software was designed and developed in close cooperation with practicing doctors, you are looking at a well tested and easy to operate instrument for daily diagnosis.
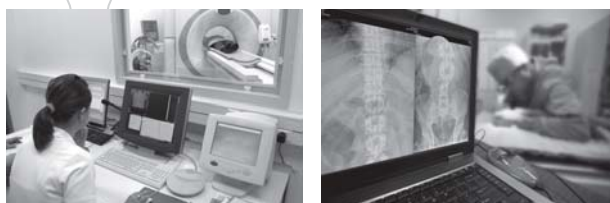
# Benefits
## Digital X-ray imaging in private practices

### Fast access
to all digital patient information such as X-ray images or documents in
practices and hospitals

### Economical
through time and material savings

### No loss of information
as a result of misplaced X-ray images or index cards

### Space saving
due to digital archiving of all patient data, eliminating the need for archive
space and dark rooms

### Images may be accessed worldwide
through the web-based Cloud solution *dicomPACS*®*MobileView*

### Easy communication
between different facilities through exchange of information with other
IT systems via a network, intranet or internet

### Improved diagnosis
due to optimal image quality and the option of computer assisted image
manipulation

### Data security
in accordance with European legislation due to an excellent security concept
for storing, archiving and distributing of medical data as well as long-term
archiving with the in-house solution Cloud Archiving *ORCA*

# Benefits
of *dicomPACS*® at one glance

- Full diagnostic software for all workstations in your practice (no 'light' versions)

- User friendly and clearly arranged structure, minimal training requirements and short familiarisation period

- Individual adjustment of the user interface to your field of specialisation and individual requirements

- Flexible allocation of shortcut keys for many functions to allow fast work without a mouse

- Parallel processing (e.g. option to continue working during a CD burning process)

- Permanent online availability of all images and data in the network – no need to store old images on CDs

- "Perfect memory" – re-opening of images with all previous markings and settings incl. zoom and orientation

- Parallel diagnostic evaluation of several patients made possible by opening any number of programme windows without loss of speed - depending on the size of the working memory

- Import of any external documents such as doctors' letters, faxes or X-ray images – no additional module required

- Installation with Windows, UNIX, LINUX or Apple Macintosh

- Optimal data security, speed and compatibility by using standardised SQL database technology

- All images and documents are filed in the international DICOM standard at all times

![dicomPACS® logo] *dicomPACS*®

## Digital image management
## by OR Technology

With several thousand installed image processing systems nationally and internationally, the system has consistently proved itself (as of 11/2014)

# Structure
## Professional work flow with *dicomPACS*®

*dicomPACS*® encompasses the acquisition, processing, communication and archiving of image material.

Thanks to its versatility and many specialised features, *dicomPACS*® allows you to customise each workstation perfectly to your individual needs. Our software has been conceived and developed in close consultation with specialist doctors, which enables us to offer you a versatile and easy to use tool for daily diagnosis. Its success up to now has given us something to be proud of.

With several thousand workstations installed nationally and abroad, our system has proved itself over and over and has shown every day what it is capable of doing.
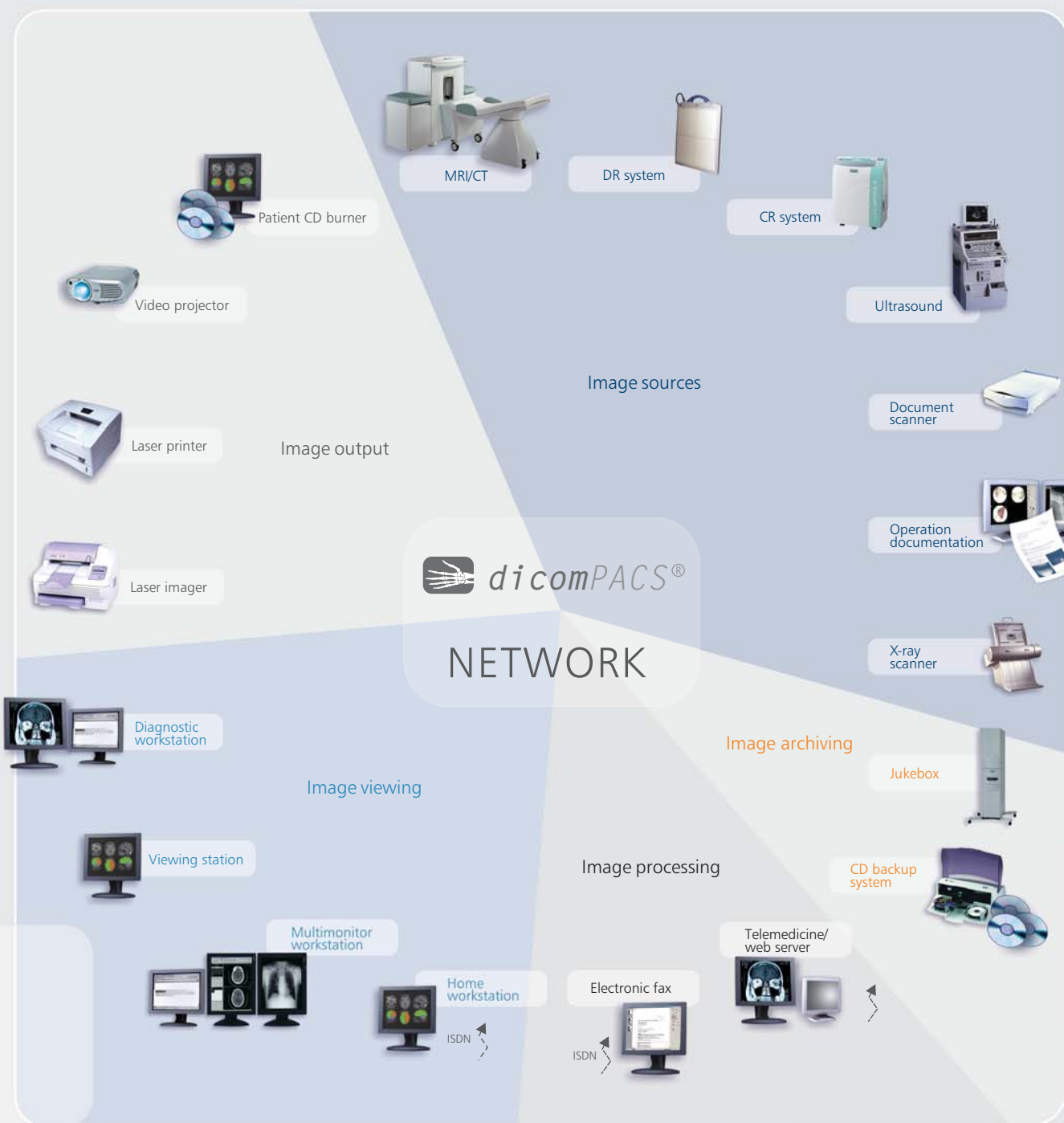
*dicomPACS*® masters simple image processing requirements as competently as it does those of complex radiological networks.

Thanks to its modular design, a *dicomPACS*® network can grow as needed. It can be expanded and amended to incorporate special features such as telemedicine, pre-operative planning or 3D reconstruction into your system.

# Connectivity

## The diversity of *dicomPACS*®

Image sources

MRI/CT

DR system

CR system

Ultrasound

Document scanner

Operation documentation

X-ray scanner

Patient CD burner

Video projector

Image output

Laser printer

Laser imager

*dicomPACS*®

NETWORK

Diagnostic workstation

Image viewing

Image archiving

Jukebox

Viewing station

Image processing

CD backup system

Multimonitor workstation

Telemedicine/ web server

Home workstation

ISDN

Electronic fax

ISDN

# CR
## Digital X-ray imaging with cassettes

A Computed Radiography (CR) system does not change the process of conventional X-ray imaging substantially. Instead of the normal film cassette you use an imaging plate cassette that is identical in shape and size. After the usual X-ray process this cassette is inserted into the CR system and read within a few seconds. The resulting image data is stored automatically and can be viewed on your diagnostic evaluation monitor in optimal quality.

CR technology includes all the advantages of up to date image processing technologies

**Increased security**
X-ray exposures are always optimally processed – irrespective of anatomic region.

**Low radiation dose**
The higher sensitivity of imaging plates results a distinctly lower exposure to X-ray radiation than conventional technologies.

**Clear diagnosis**
X-ray imaging proceeds as usual. The X-ray images, however, are more accurate, richer in contrast and can be optimised and post-processed on the computer.

3DISC

Carestream
HEALTH
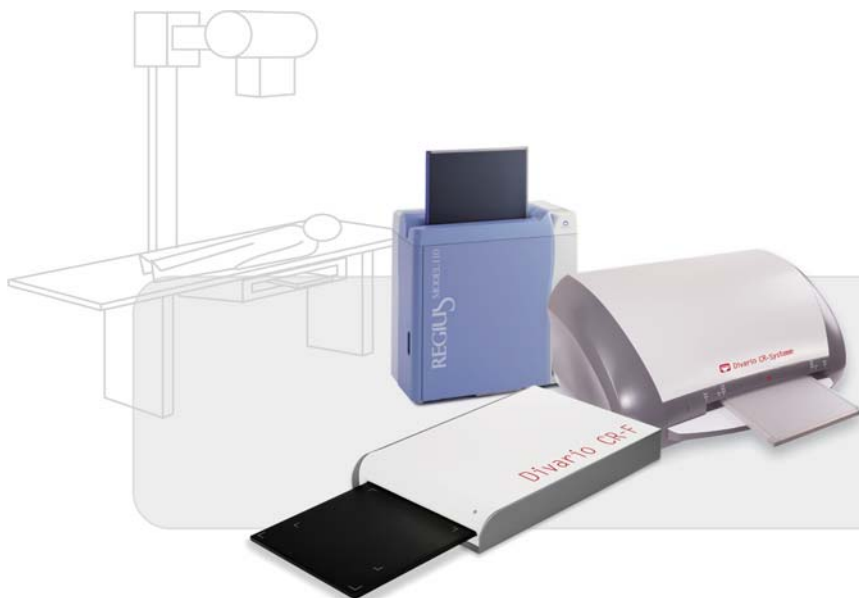
# DR
## Direct radiography – X-ray imaging without cassettes

If you decide to use digital Direct Radiography, your images will be of excellent quality.

Flat detectors convert X-rays directly or indirectly into a digital image signal. The in-between step to read the imaging plate as well as cassette handling is dispensed with. After about 5 seconds the X-ray image is already available for diagnosis. DR systems stand out through **very fast image creation** and **excellent image detail quality**.

In addition to the advantages of the CR system, there will be further benefits for you:

**Flexibility**
X-ray images have a very high dynamic range (simultaneous display of soft parts and bones).

**Space saving**
The direct radiography system can be combined with existing X-ray units.

**Low maintenance**
System and function stability is extremely high since there are no mechanical parts like rollers, films etc. The system is virtually maintenance free.

ATLAIM

CARERAY

DRTECH

iRay 奕瑞影像

Kodak | Dental Systems

KONICA MINOLTA

PerkinElmer
For the Better

Rayence

SAMSUNG

THALES

TOSHIBA

VARIAN
medical systems

# MobileView

## Web-based viewer *dicomPACS*®*MobileView* for mobile devices

The web-based viewer *dicomPACS*®*MobileView* counts among the many extension modules of *dicomPACS*® diagnostic software. As a virtually independent browser, it allows the viewing of image material on mobile devices also outside a clinic or a practice. The doctor or the nursing staff can access all image material from the *dicomPACS*® system worldwide via a network connection.

In addition to mere diagnostic evaluation of images, the *dicomPACS*®*MobileView* viewer allows diagnostic reports to be captured and exported. Documents may be attached and exchanged. All diagnostic reports of a patient are always displayed. Individual diagnostic reports of a patient may be selected for exporting and formatted.

There are many applications. On-call hospital doctors can promptly make a first diagnostic thanks to *dicomPACS*®*MobileView*. This saves the patient a lot of time and additional visits. But also during a ward round, further treatment can be discussed together with the patient or colleagues directly at the bedside using a mobile device.

*dicomPACS*®*MobileView* can be installed in addition to existing *dicomPACS*® diagnostic modules (diagnostic workstations). It is irrelevant whether the *dicomPACS*®*MobileView* software is used on a network PC (pure viewing workstation) or/ and on a mobile device. Worldwide access to all image material is available via a network connection, e.g. VPN access via the internet, of the used mobile device to the central *dicomPACS*® system in the office or clinic.

**The main advantages at a glance:**
- High flexibility through the use within various internet browsers, including Microsoft Internet Explorer, Mozilla Firefox, Google Chrome, Safari 5, Safari for iPad and Android browser
- Intuitive operation
- Supports the multi-touch operating technology (e.g. zoom in and out with two-fingers)
- Supports full screen mode
- Allows accessing the *dicomPACS*® database without any additional modules
- Allows playing series (e.g. ultrasound)
- High loading speed with modern streaming technology
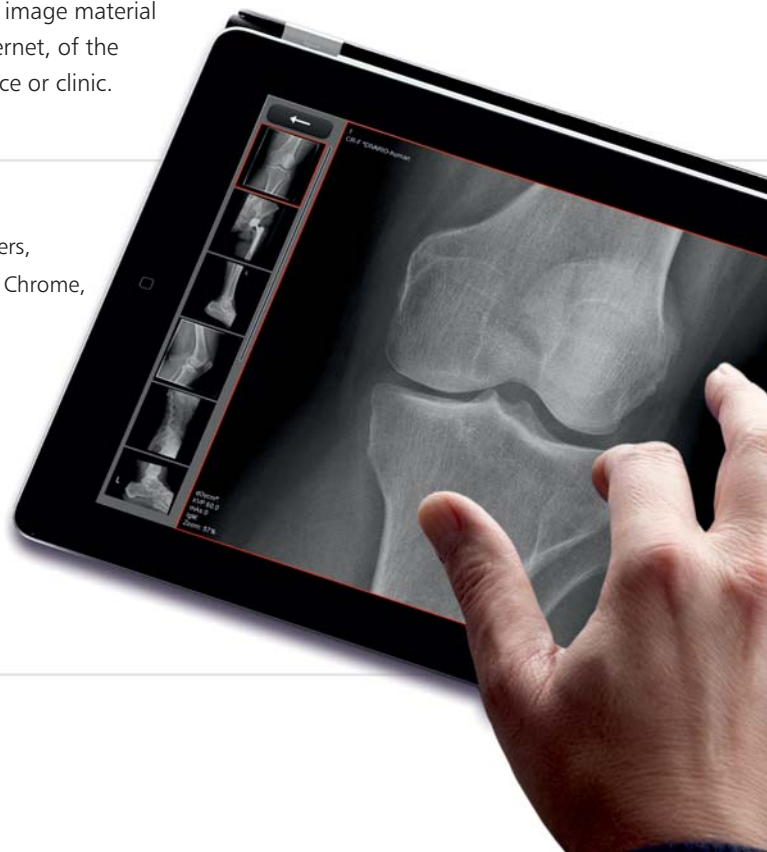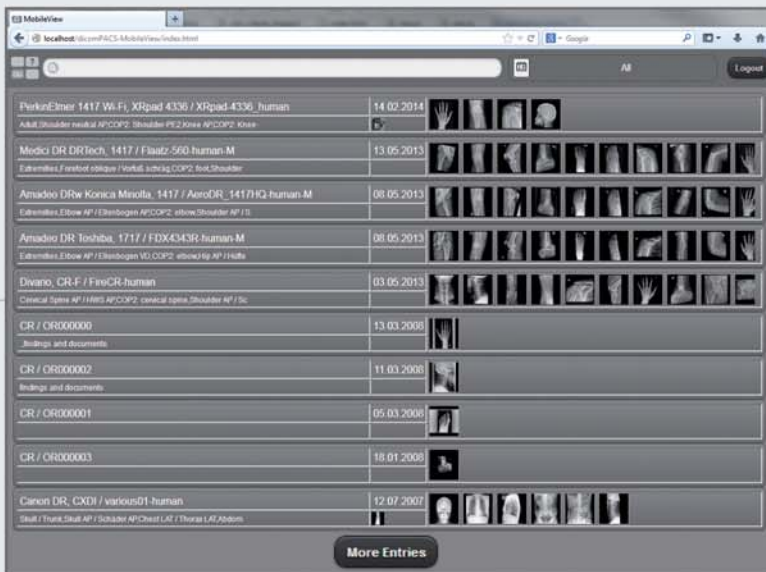
**Features of *ORCA* online viewer:**
The web-based viewer offers an important range of functions of a professional PACS viewer:

- Draw annotations

- Measurements

- Registration of diagnostic findings

- Attach documents

- Draw lines and arrows (multi-coloured)

- Compare images in different grids

- Adjust brightness/ contrast

- Flip and rotate images

- Adjust brightness / contrast

- Invert, zoom in / out

- Full screen, fit image

- PAN

- Scroll through image series

- Cine loop for multi frame series and CT/ MRI

- Export images and documents

- Print images and documents

# Value

## *dicom*PACS® features

*dicom*PACS® is a so called „Picture Archiving and Communication System", acronym: PACS, and it performs many different, at times highly complex tasks. It connects, controls and administrates everything related to your images: from the acquisition of images and the compilation of diagnostic reports to the archiving and transfer of image data.

It ensures that the images can be distributed quickly and without complications and viewed e.g. via the web server. In addition, the system is extremely flexible and open for many applications.

**Selection of features:**

- **Prosthesis documentation** - enables the user to plan operations with digital prosthesis templates by one or more manufacturers

- **Report Module** - for easy preparation of different reports (e.g. operation reports, ultrasound reports etc.) incl. Word macros with images and a digital dictation system

- **Statistics Module** - enables freely configurable analysis of the complete database

- **Video Modules** - enable standard and non-standard video signals to be recorded as single images and video sequences

- *MobileView:* distributes images within a hospital and displays the images in a web browser

- *ORCA* **- Intelligent cloud solution**: enables worldwide image distribution to referring doctors and patients via the internet

- **Processing of CT and MRI series** - *dicom*PACS® includes professional tools such as MPR and MIP to evaluate cross section series

- **Hanging protocols**

- **Special function for mammography analysis**

- **Integration of speech processing systems**

- **Telemedicine**

- **Special solution for multiple archives**
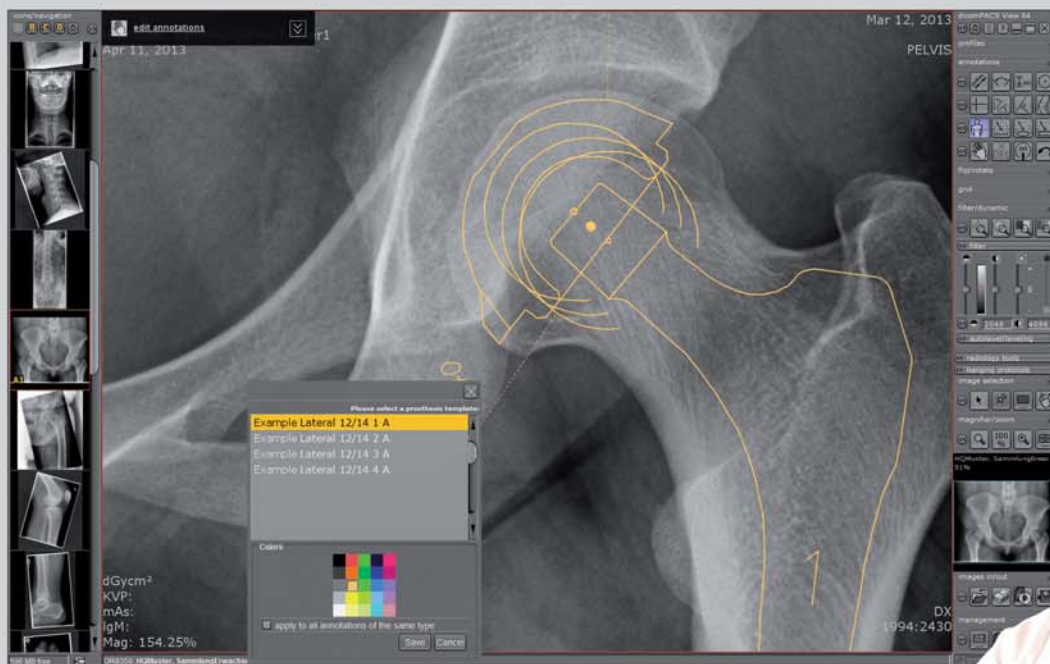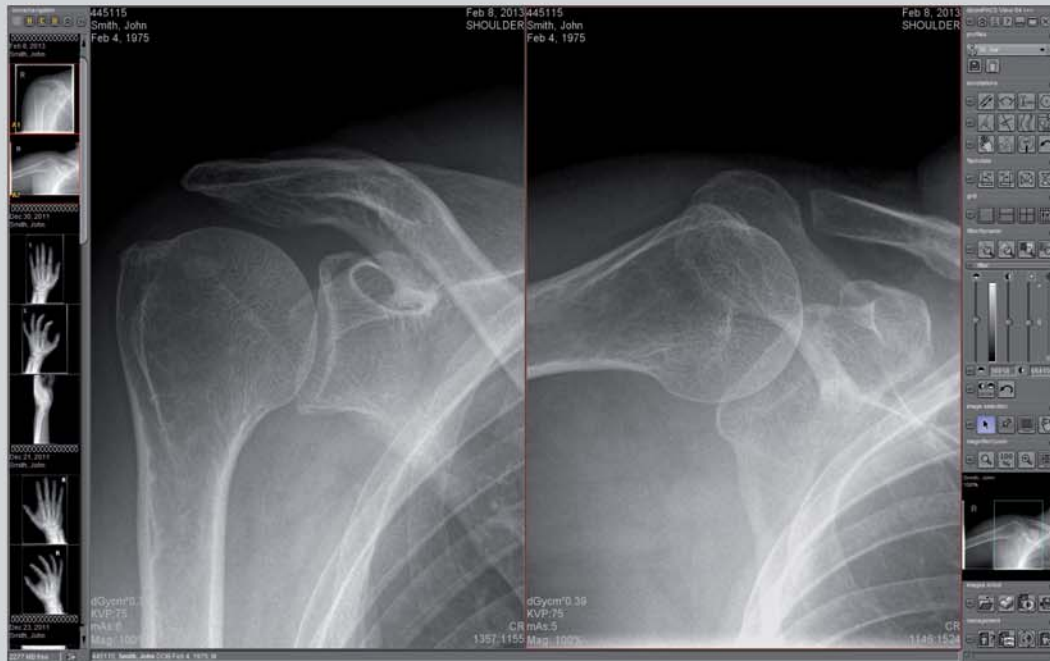
The operational idea is based on an interface that can be freely configured down to the smallest detail. Depending on your needs and demands – based on your field, specialisation, or specific use of the system – you can arrange your *dicomPACS*® user interface yourself. Customising fast access to the most important tools is child's play – just click on the selection menu. The selection will remain in place when you re-start your PC.

# Cloud-based

## Cloud-based telecommunication solution and data archiving for images, documents and diagnostic evaluations for stationary and mobile applications

Even for state-of-the-art practices and hospitals, the rapidly rising data flood of digital images, diagnostic reports and other documents is becoming increasingly challenging. Current legislation demands safe and long-term storage of patient data which generally requires investing in expensive hardware infrastructure as well as maintenance and corresponding staff costs.

To this end, we developed the **ORCA** Cloud archiving solution, thus paving the way for cost-effective and safe Cloud-based data archiving in practices and clinics. **ORCA** offers two application options:

→ **Archive function:** Safe, long-term archiving of patient data with intelligent usage of internal databases

→ **Share function:** Communication platform (exchange of images and diagnostic reports) with colleagues and specialists or as an easy way to forward image data to patients (an alternative to creating patient CDs)

Data is **exclusively** archived on European servers with the relevant safety certificates.

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**Benefits of Cloud archiving through *ORCA***

**Minimal expenditure: *ORCA*** does not require investing in expensive infrastructure such as server and data cables.

**Scalability:** The amount of memory required when using **ORCA** is determined by the demand.

**Long-term security: *ORCA*** archives data on many individual European servers in professional and air-conditioned data centres. Server technology is continuously updated.

**Accessibility: *ORCA*** stands out by being highly accessible. Since data is saved with multiple redundancy, **ORCA** guarantees more continuity than a mere server solution.

**Environmentally friendly: *ORCA*** is sustainable – through the optimised use of resources and their distribution.

**Location-independent: *ORCA*** guarantees access to archived patient data – worldwide.

**Simplicity: *ORCA*** allows easy access to data from any computer – from your place of work, from the comfort of your home or from any other computer or tablet PC.

**Stress-free: *ORCA*** deals with everything – no need to struggle with loose network cables, removed hard drives or software problems.

# ORCA

## Archive

Image,
documents
and
diagnostics

## Share
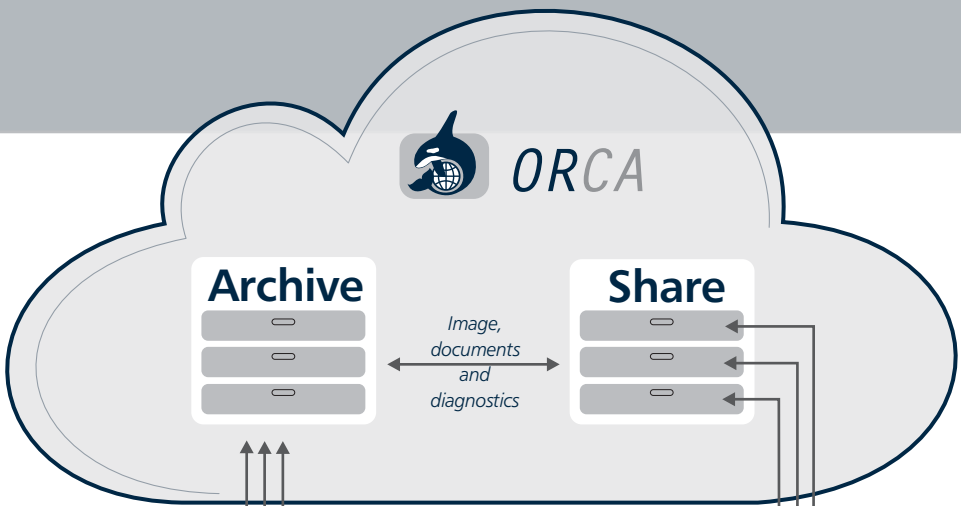
### "Archive" function

**Safe long term archiving of patient data with intelligent use of professional data storage**

### "Share" function

**Communication platform for colleagues and specialists as well as an easy way to forward image data to patients**

*dicomPACS®* viewer
Tablet-PC/Laptop

Colleagues

Big and small hospital, doctor's practice, medical centre and medical facilities on ships, oil platforms etc.

*dicomPACS®*
image
management system

Images,
documents

and
diagnostics

Referring physicians/ patients
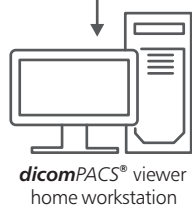
Password protected
remote access
via mobile or
stationary devices

*dicomPACS®* viewer
home workstation

Diagnostic centres
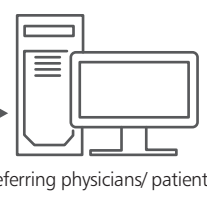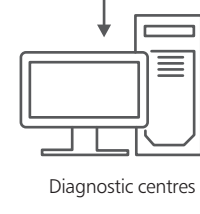
### Share functionality

**2.** Automatic e-mail notifications

**4.** Automatic e-mail notification with diagnostic report transfer

**1.** Authorise access to a report in the cloud with the help of the integrated address book

**3.** Diagnosis by referring physicians, diagnostic centres, or colleagues (second opinion)

# Special Chiro Tools
## Diagnostic tools for optimal diagnosis

The Chiro Tools have been developed in cooperation with experts from the USA and Canada and offer great possibilities for diagnosing accurately as well as for planning further treatment. According to the tool used, automated center lines and points, defined curves, angle measurements etc., are generated after the manual selection of the points of interest.

Of course all the standard tools (like distance measurement, angle and Cobb angle, mark spots etc.) are also included.
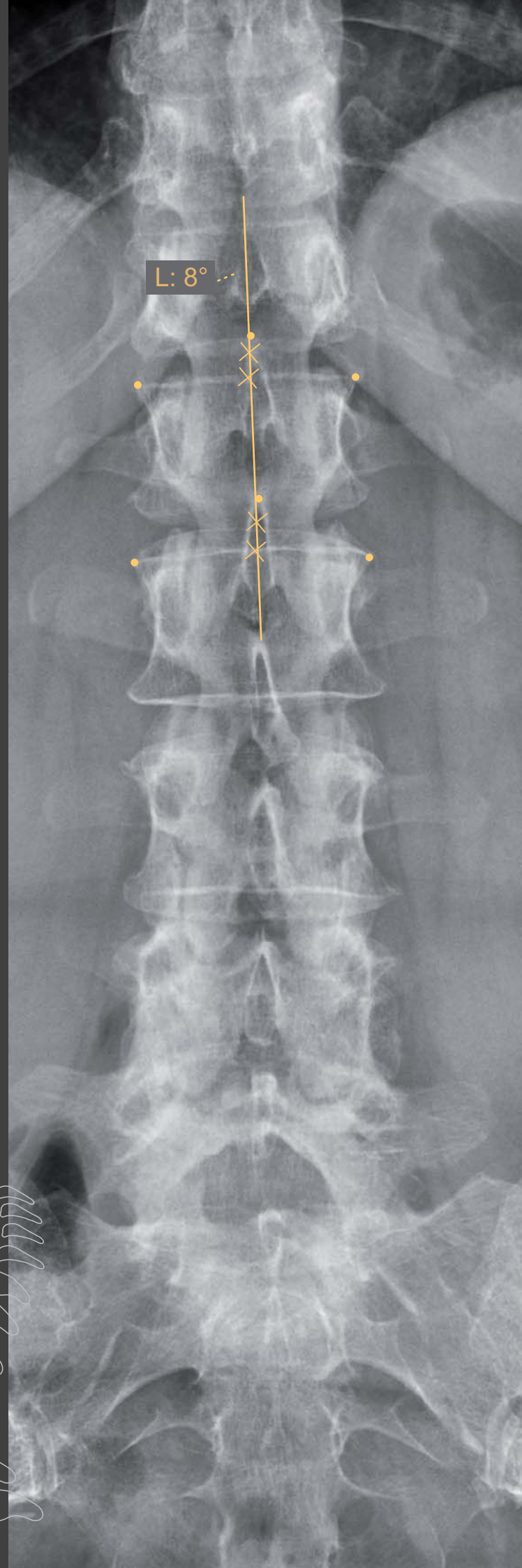
**Axis line**
The tool creates a vertical or horizontal axis by holding down the left mouse button, depending on the direction, in which the mouse pointer is moved.
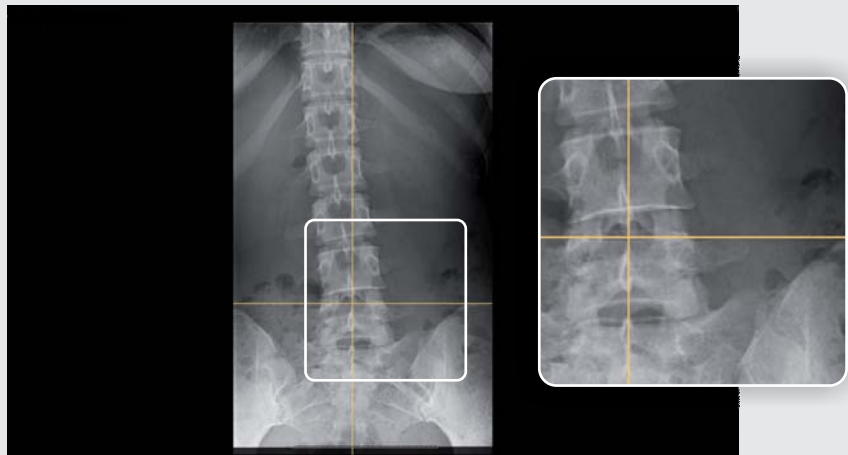
**Orthogonal line**
This tool is used to mark perpendicular lines on existing or yet to be drawn baselines. Furthermore the aberrancy of the x/y-axis (nearer axis) is displayed by default.

L: 8°
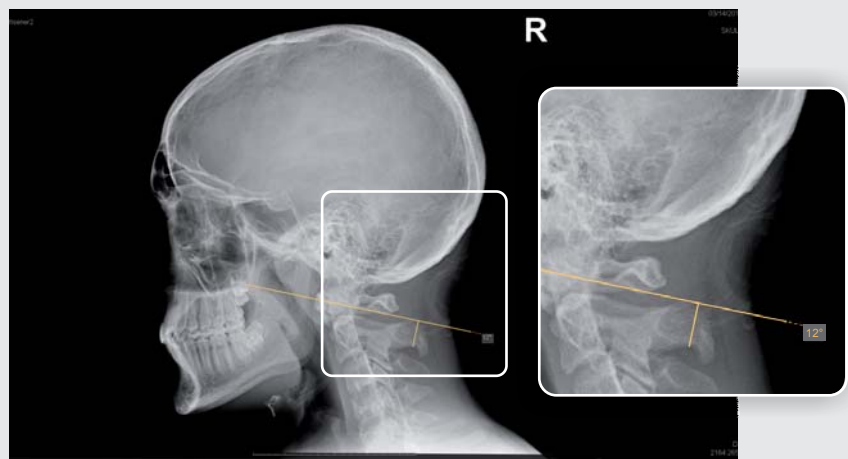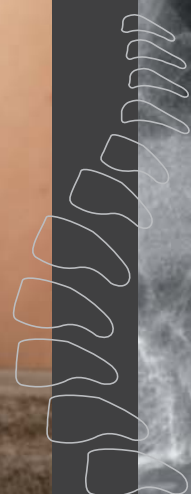
# Chiro tools

**George's line**
This tool is used to draw vertical lines on each vertebra along the spine in a lateral view and to calculate their distances (in mm or inch).
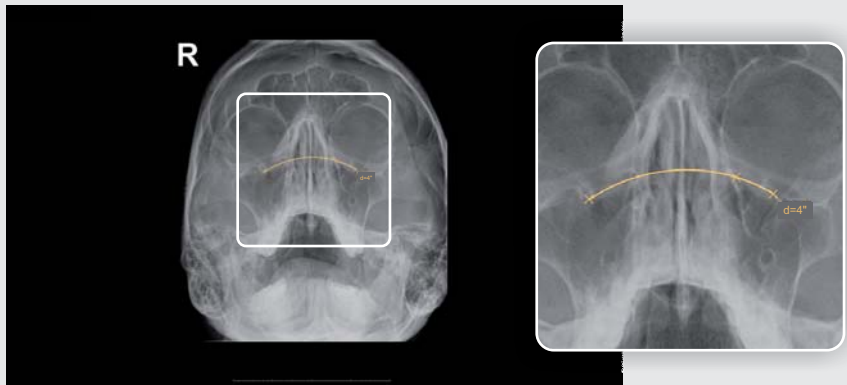


**Horizontal or vertical aberrancy**
This tool calculates the horizontal or vertical aberrancy to the horizontal or vertical axis. By default the nearer axis is used for the calculation of the aberrancy.
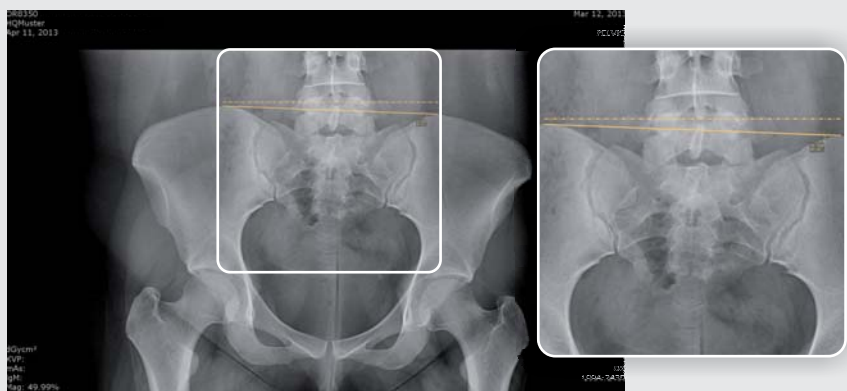


**Circumscale**
An arc is drawn through three defining points and the diameter of the corresponding circle is displayed by default.
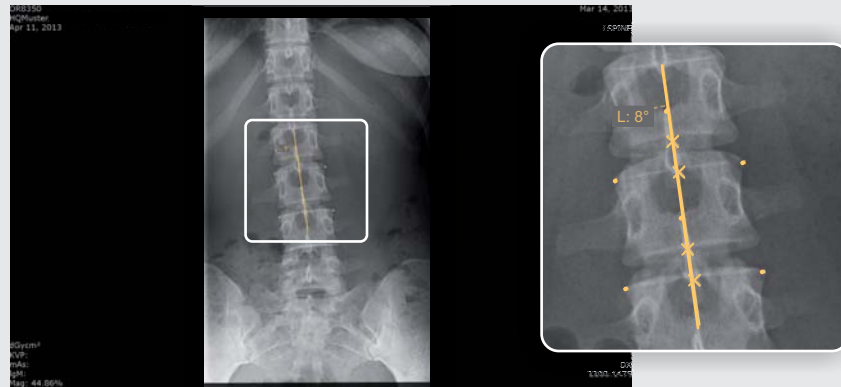


**Spinal curve**
This tool is used to draw an arc in the lateral view of the spine. The annotation uses a fixed radius set by default to 220 mm. Radius or degree can be adjusted manually.
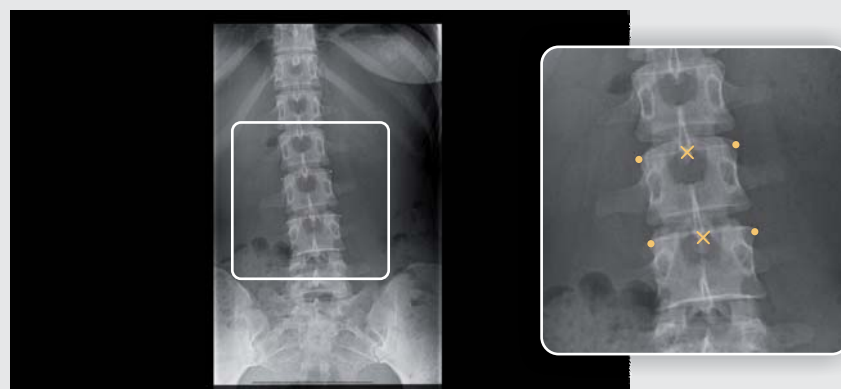
### Vertebrae line

This tool generates a vertical line of six points (2x3) along the spinal canal and displays the lateral aberration and side of laterality in degrees.



### Center point

This tool calculates the center point between two points.



### Distance comparison

This tool compares the distances between three set points (between point 1 and point 2 and between point 2 and point 3) and shows the larger distance.



### Pelvic obliquity

This tool is a measurement that is calculated automatically after two simple clicks which generate two horizontal lines showing the distance between these two parallels.
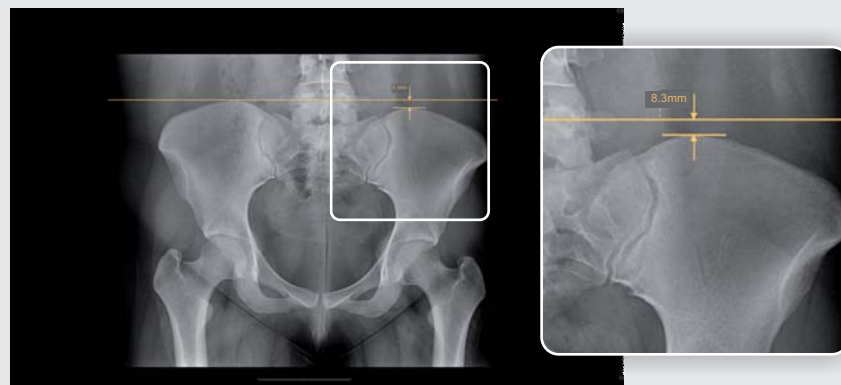
# Network
## Global Competence

Our users come from all areas of medicine, particularly radiology, cardiology, orthopaedics and surgery. All of them work with our **dicom**PACS® image processing system and they are very enthusiastic about its multi-faceted services.

However, it is not only the product that will satisfy you, but also the cooperation with a team that strives to treat their clients as partners. This attitude is necessary because we can only find the perfect solution together.

It is important that our clients can be sure that we will always do our best; but this works only if we approach even the smallest task with the highest possible concentration, while being as highly motivated as ever.

OR Technology has set up a global competence network of local partners who will provide quick assistance should any problems occur after installation. You, as our valued customer, are investing in a high quality product "made in Germany" while making use of the service and support provided by one of our qualified and authorised local partners.

*Overview of the countries with **dicom**PACS® systems (as at 11/2014)*
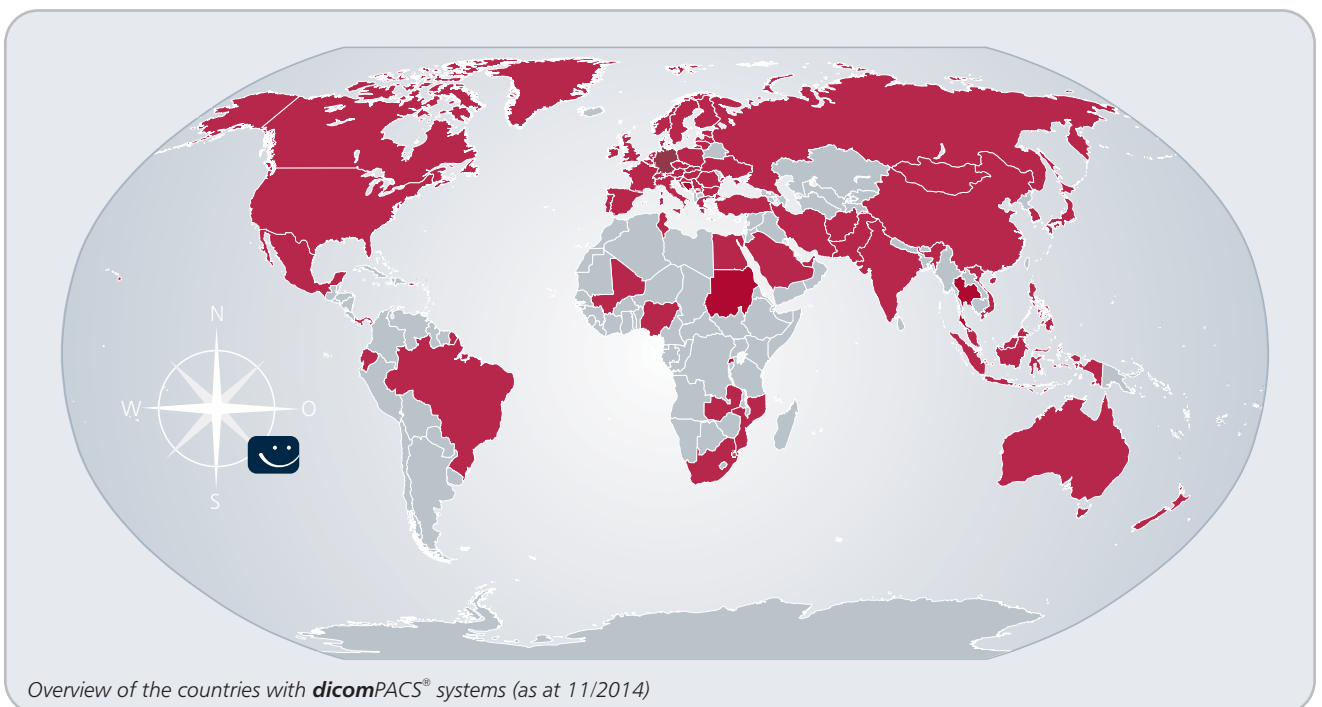
# Satisfied Customers

## Digital X-ray and image processing in the orthopaedic practice of Dr Stephan Grunert, Germany

**Dr Stephan Grunert about digital X-ray with *dicomPACS*®:**
"I felt a little adventurous when I decided to convert the entire practice IT in one go whilst introducing digital X-ray with *dicomPACS*® and Fuji. This included the incorporation of the ultrasound scanner and a document scanner, introducing the *dictaDECT*® networked voice recognition system and changing the practice management software to DOCconcept - all done while the practice was in full operation.

Thanks to the competent and professional advice given and the installation of all systems by OR Technology from Rostock (Germany), there were no problems during or after the installation in the practice.

Specific to our practice is the fact that due to the responsibility of the company for all IT areas, there is one contact person for all queries. Our orthopaedic practice is highly satisfied with the implementation and and has come to appreciate the enormous benefits of digital X-ray and the fantastic voice recognition facility."

**Specifics of the image processing system**
OR Technology installed a complete IT system including speech recognition and digitalX-ray in the orthopaedic practice.

The details: Dr Grunert's practice shares its equipment with two other medical practices. This large initiative of Dr Grunert. By sharing network was created on the  the digital X-ray equipment, the archive server, practice IT system and parts of the speech recognition system, the costs for each practice could be substantially reduced.

The system includes two double monitor workstations. One monitor displays the practice management system and speech input, the other the imaging system. Both monitors are operated with one mouse and keyboard and are connected to the same PC. No electronic switching is needed. When a patient's index card is called up, the relevant images and documents appear automatically on the other monitor.

Images can be burnt onto a CD including a viewing software and handed to the patient for consultations with other doctors.
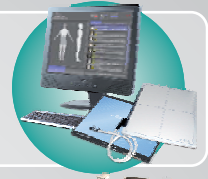
*Dr Stephan Grunert*

# Portfolio

Overview - products of OR Technology

### Medici DR Systems

**DR retrofits** - digital upgrade set for existing X-ray systems incl. *dicomPACS®DX-R* acquisition software, also available for stationary and mobile X-ray machines

### Leonardo DR Systems

**DR suitcases** - compact suitcase solutions for mobile and portable X-ray incl. *dicomPACS®DX-R* acquisition software

### Amadeo X-ray Systems

**Complete digital X-ray systems** (incl. stand, bucky, generator, flat panel incl. *dicomPACS®DX-R* acquisition software etc.) as well as mobile and portable X-ray solutions

### Divario CR Systems

**CR solutions -** CR systems for digital X-ray with cassettes incl. *dicomPACS®DX-R* acquisition software

### X-ray Accessories

**Accessories for X-ray**
(e.g. radiation protection walls, gloves etc.)

### dicomPACS®

**Image management (PACS)** - comprises acquisition, processing, diagnosis, transfer and archiving of image material

### ORCA

**Cloud-based archive solution** - safe, long-term archiving of patient data with intelligent usage of internal databases, communication platform with colleagues and specialists and transfer of image data to patients

### dicomPACS®DX-R
*X-ray Acquisition Software*

**X-ray acquisition software** [only for OEMs] - acquisition and diagnostic software for X-ray images from flat panels or CR systems

## OR Technology
Digital X-ray and
Imaging Solutions

**Info hotline: +49 381 36 600 600**

**OR Technology** (Oehm und Rehbein GmbH)
18057 Rostock, Germany, Neptunallee 7c
Tel. +49 381 36 600 500, Fax +49 381 36 600 555
www.or-technology.com, info@or-technology.com

[Stamp of distribiution partner]