DR X-ray detector upgrade set

- To upgrade existing **stationary** X-ray systems
- To upgrade existing **mobile** X-ray systems

1.

Upgrade existing **stationary** X-ray systems

Included in delivery:

X-ray detector
(fixed installation or mobile)

Acquisition software
dicomPACS®DX-R

Operating console
with touchscreen

back

Upgrade existing **mobile** X-ray systems

Included in delivery:

Wireless X-ray detector in cassette format

Acquisition software
dicomPACS®DX-R

Toughpad or Tablet-PC

Upgrading to digital made easy

You know the problem: Your stationary or mobile X-ray system is not even that old and works perfectly. Yet as a progressive doctor you would now like to create your X-ray images digitally and benefit from all the advantages of this technology.

CR systems are not an option for you since digitalisation with a flat panel (DR system) offers many additional advantages, mainly better image quality and hardly any servicing costs. Therefore you would like to extend your existing X-ray system by a flat panel system and are looking for a complete upgrade kit that is easy to install, easy to operate and provides X-ray images in a professional and reproducible quality. **Welcome to our Medici DR system!**

Medici DR systems can be supplied for almost any X-ray system:

❶ **To upgrade existing stationary X-ray systems**
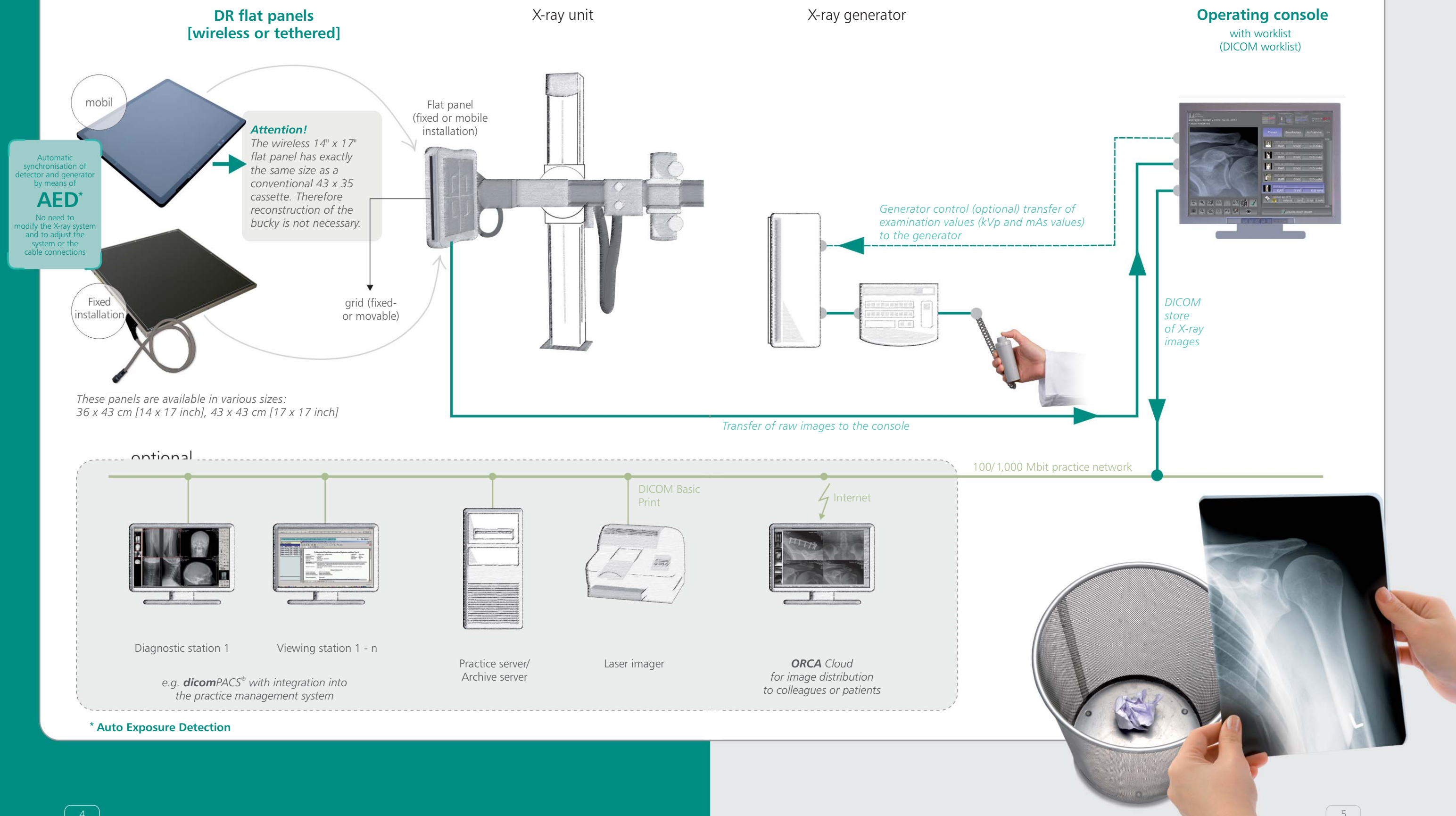❷ **To upgrade existing mobile X-ray systems**

Various makes and sizes of flat panels allow your system to be configured according to your needs. The **dicom**PACS®**DX-R** acquisition software can be operated intuitively via a touchscreen, adjusts to your work routine and provides X-ray images in a reproducible, extremely high quality.

Of course, all **Medici** DR systems can be integrated into your practice management software and transfer the X-ray images to an image management system (PACS). If you have not yet installed such an image management system but still require the images to be distributed within your practice or hospital, or to colleagues or patients via the internet - no problem: Our **dicom**PACS® image processing system will do just that.

Mode of operation using U-arm X-ray system

DR flat panels [wireless or tethered]

X-ray unit

X-ray generator

Operating console
with worklist
(DICOM worklist)

mobil

Automatic synchronisation of detector and generator by means of
AED*
No need to modify the X-ray system and to adjust the system or the cable connections

Attention!
The wireless 14" x 17" flat panel has exactly the same size as a conventional 43 x 35 cassette. Therefore reconstruction of the bucky is not necessary.

Flat panel
(fixed or mobile installation)

Fixed installation

grid (fixed-or movable)

Generator control (optional) transfer of examination values (kVp and mAs values) to the generator

DICOM store of X-ray images

These panels are available in various sizes:
36 x 43 cm [14 x 17 inch], 43 x 43 cm [17 x 17 inch]

Transfer of raw images to the console

optional

100/ 1,000 Mbit practice network

DICOM Basic Print

Internet

Diagnostic station 1

Viewing station 1 - n

Practice server/ Archive server

Laser imager

ORCA Cloud
for image distribution to colleagues or patients

*e.g. **dicomPACS**® with integration into the practice management system*

* Auto Exposure Detection

Mode of operation using bucky table and wall stand

DR flat panel 1 [wireless or tethered]

Bucky table

DR flat panel 2

Wallstand

X-ray generator

Operating console with worklist (DICOM worklist)

mobil

Fixed installation

Automatic synchronisation of detector and generator by means of

AED*

No need to modify the X-ray system and to adjust the system or the cable connections

Attention! The wireless 14" x 17" flat panel has exactly the same size as a conventional 43 x 35 cassette. Therefore reconstruction of the bucky is not necessary.

Fixed installation

Transfer of raw images to the console

Generator control (optional) transfer of examination values (kVp and mAs values) to the generator

DICOM store of X-ray images

These panels are available in various sizes: 36 x 43 cm [14 x 17 inch], 43 x 43 cm [17 x 17 inch]

Transfer of raw images to the console

100/1,000 Mbit practice network

optional

DICOM Basic Print

Internet

Diagnostic station 1

Viewing station 1 - n

Practice server/ Archive server

Laser imager

ORCA Cloud for image distribution to colleagues or patients

e.g. **dicom**PACS® *with integration into the practice management system*

* Auto Exposure Detection

Mode of operation: **one** wireless X-ray detector for all systems

Bucky table/
wallstand system

**Wireless
DR flat panel**

Automatic
synchronisation of
detector and generator
by means of

AED*

No need to
modify the X-ray system
and to adjust the
system or the
cable connections

X-ray unit

Flat panel
(fixed or mobile
installation)

grid (fixed-
or movable)

X-ray generator

Generator control (optional)
transfer of examination values
(kVp and mAs values) to the
generator

Operating console
with worklist
(DICOM worklist)

DICOM
store
of X-ray
images

Wifi image transfer via router

Transfer of raw images to the console

optional

DICOM Basic
Print

Internet

100/1,000 Mbit
practice network

Diagnostic station 1

Viewing station 1 - n

Practice server/
Archive server

Laser imager

ORCA Cloud
for image distribution
to colleagues or patients

e.g. **dicomPACS**® with integration into
the practice management system

Medici DR Systems

* **Auto Exposure Detection**

Mode of operation using Toughpad/Tablet-PCs

**Wireless
DR flat panel**

Mobile X-ray unit
with **operating console**

Operating console
Toughpad or Tablet-PC with and without keyboard
with worklist (DICOM worklist)

Automatic
synchronisation of
detector and generator
by means of

AED*

No need to
modify the X-ray system
and to adjust the
system or the
cable connections

*Transfer of raw images
to Toughpad or Tablet-PC –
no additional
access point required*

*A variety of mounting
systems are available
for the operating console*

*Transfer of images to the
practice network via wireless LAN*

100/1,000 Mbit
practice network

optional

DICOM Basic
Print

Internet

Diagnostic station 1

Viewing station 1 - n

Practice server/
Archive server

Laser imager

ORCA *Cloud
for image distribution
to colleagues or patients*

Wireless
access point

*e.g. **dicomPACS**® with integration into
the practice management system*
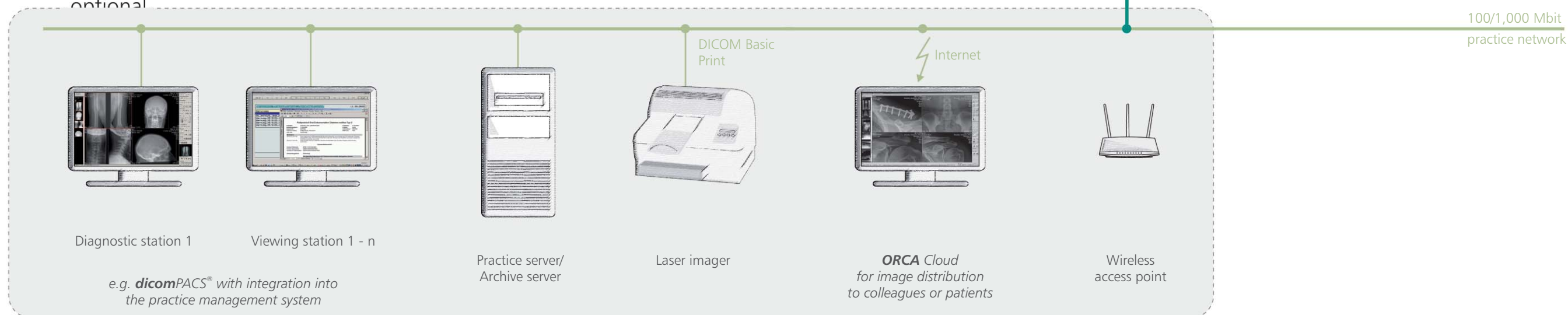
* Auto Exposure Detection

Software

Benefits of the professional
dicomPACS®DX-R X-ray acquisition software

- Modern graphical user interface (GUI) adaptable to almost **any language**

- **Touchscreen** operation - to ensure quick and efficient work and a smooth workflow

- Capture of patient data via **DICOM Worklist, BDT/GDT, HL7** or other protocols - data may also be captured manually

- Use of **DICOM Procedure Codes** for the transfer of all relevant examination data directly from the connected patient management system (HIS/RIS)

- **Freely configurable** body parts with more than **200 projections** and numerous possible adjustments in already included

- Safe and fast **registration of emergency patients**

- Allows the user to **switch between examinations** of a patient, for instance to avoid having to re-position the patient frequently

- Allows the user to **subsequently add images** to an examination, even after that examination has already been completed

- Integrated measurement, special image filter and various other tools for measurement and image optimisation

- Registration of recurrent examination procedures as macro, e.g. thorax screenings or BG-examinations

- **Fully integrated radiographic positioning guide** for each examination incl. comprehensive notes, videos, photos and correct X-ray images

- The digital X-ray system can be controlled via **wireless remote control** including display of the work list, image preview and much more
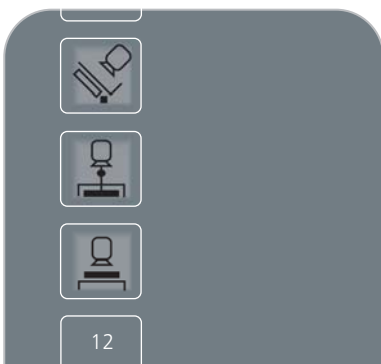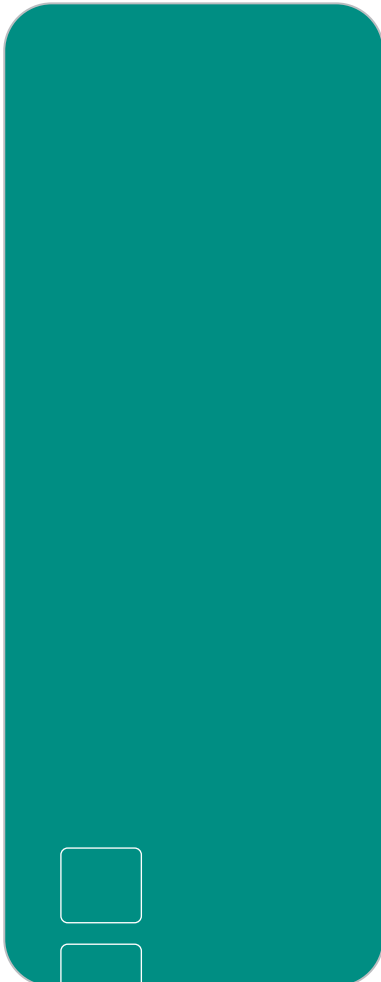
Benefits of flexible image acquisition

- The **configurable generator interface** enables the user to control
X-ray generators or X-ray systems by different manufacturers, delivering
the generator settings directly from the software

- Option for the **parallel operation of a flat panel and a CR system** included in
the standard package. The user has the choice to take the next image with either
the flat panel or the integrated CR system. This flexibility also provides an
excellent emergency concept in case of a defect flat panel.

- Integration of **dose area product meters** (DAP) - the readings are
saved directly to the relevant image

- **AEC** (Automatic Exposure Control) and **ARP** (Anatomical Programmed
Radiography) allow the user to **automatically adjust all X-ray options**
for each projection with an option to subsequently edit the
image manually

- Electronic X-ray log

Operation
of the acquisition software

The correct settings for adults and children at a mouse click

Job creation

Chart for the planning of an individual X-ray job

Switch to the planning of X-ray jobs for children

operator: Marion
Lee, Joseph Nov 29, 1978
Schädel, Nasenbein

patient   x-ray   lists   management

dicomPACS® DX-R
DR console software

| plan | edit | exposure | 0/4 |

Upper limb

Skull PA — default — DAP — 73 kV — 125.0 …
Skull LAT — default — DAP — 73 kV — 80.0 mAs
Nasal bones — default — DAP — 46 kV — 3.2 mAs
Skull AP axial Towne — default — DAP — 73 kV — 125.0 …

✓ finish study

Radiographic positioning guide

Video with sound for the step by step positioning of the patient

Shows an example of a correct X-ray image

Radiographic Positioning Guide]   Back

Os pisiforme
Positioning and centering

Material:	18/24, S200, (S400), appropriate side marker, lead apron, two wedged positioning aids (15°, 45°), weights.
Bucky:	cassette/detector
Exp. EU:	45-55 kV
Exp. CH:	42-46 kV
Speed class:	S200
Format:	18/24
TFD (=FFD, =SID) EU:	105 cm
TFD (=FFD, =SID) CH:	120 cm
Grid:	no
Filter:	no
Measuring chamber:	
Focus:	small

Drawing   Correct X-ray

Patient position:	The patient is seated laterally, arm and hand in a straight line. Semi-supinated position of the hand 60° to the film. Some dorsiflexion of the wrist may be used. Support the hand with a positioning aid. Make sure the lead apron covers the legs.
Alternative:	Some dorsiflexion of the wrist may be used. Both hands next to each other, scoop position, for a comparative view.
Central ray:	Perpendicular to the Pisiform and the center of the film.
Comments/Notes:	A comparative view of the other side may be indicated, remove jewellery.
Hints:	Comparative view: Both arms on the bucky, both hands semi-supinated 60° to the film. Slight dorsiflexion at the wrist: so called "scoop position".

Presentation of helpful hints for the positioning of the patient, central beam, tips and tricks, frequent errors etc.

Preview of the X-ray image and worklist

Preview of the current X-ray image

Generator control

The generator panel displays all values and settings (kVp, mAs, focus etc.) recommended for a specific examination
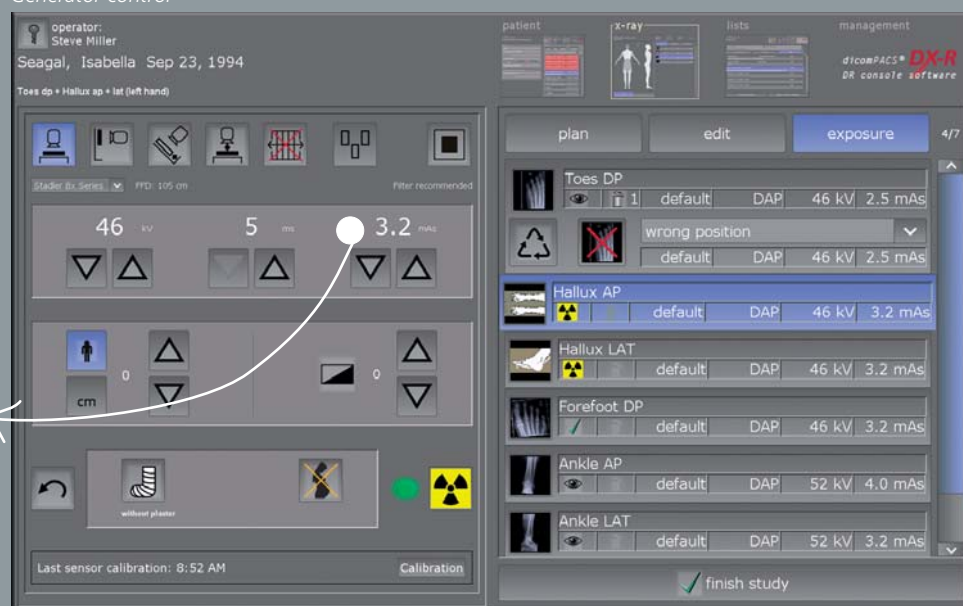
Image processing

Automatic image processing for optimal quality

- Perfect images at all times - generally **no adjustment** required

- Integrated software for **automatic image optimisation**

- Professional, **adaptable image processing** for each individual examination to obtain best possible image settings for the needs of each customer

- Due to specially developed processes, the image processing allows the user to **vary the X-ray settings on a large scale** while the image quality remains virtually the same (**possibility of reducing the dosage**)

- **Bones and soft tissue** in one image - this enables the user to significantly improve his diagnosis

- **Details of bones and microstructures are very easy to recognise**

- Noise suppression

- **Black mask** (automatic shutters)

- Automatic **removal of grid lines** when using fixed grids

Exposure with
***standard** image processing*

Exposure with
***dicomPACS®DX-R** image processing*

Image diagnostic
at the highest stage

- Completely integrated *dicomPACS*® **Viewer for image diagnosis**, further processing and storage of images in an SQL database incl. image manipulations, export options, layout adjustments, freely configurable user interface and much more

- Stepless **zoom, PAN, magnifyer, ROI, crop, rotate, mirror** etc.

- Insertion of **image annotations**, e.g. free texts, arrows, ellipses etc.

- **Measuring** of distances, angles, areas and density

- Adjustment of window/level options and **gamma correction**, sharpening filters, noise suppression

- Many additional functions such as **Chiro Tools**, calculation of **Cobb's angle, pelvic obliquity measurements, integrated capturing of diagnostic reports** etc.

- Creation of **DICOM patient CDs** with free **WEB viewer**

- **Export of images** to JPEG, TIFF, BMP and DICOM format

- Image transmission via integrated **e-mail function** – no external e-mail program required

- Easily upgradable to the professional, **integrated image management system** (PACS)

Integrated viewer

Completely integrated *dicomPACS*® viewer for image diagnosis

An integrated prosthesis documentation module provides preoperative planning (optional).

The system enables fast and easy customisation of the operating interface for individual customer preferences.

Useful tools such as the configurable measuring magnifier make diagnosis much easier.

The stitching module merges a number of separate digital X-ray images into a single image.

Comprehensive search tools enable the comparison of X-ray examinations of one or more patients.

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:

→ Safe, long-term archiving of patient data with intelligent usage of internal databases
→ 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.

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.
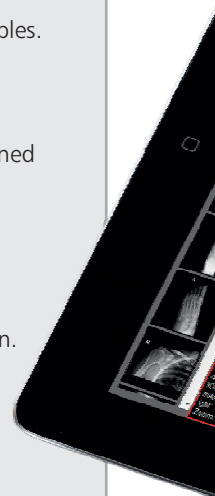
Features of *ORCA* online viewer:
The web-based viewer offers an important range of functions of a professional PACS viewer:

- 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

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.

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.
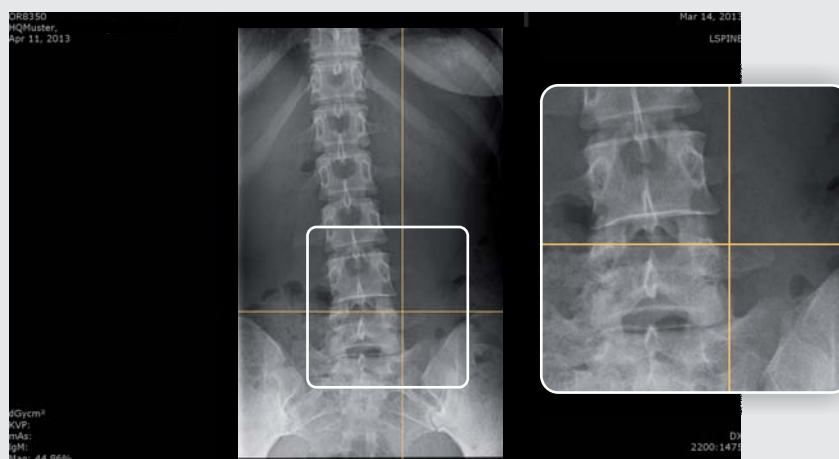
Orthogonal line

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°
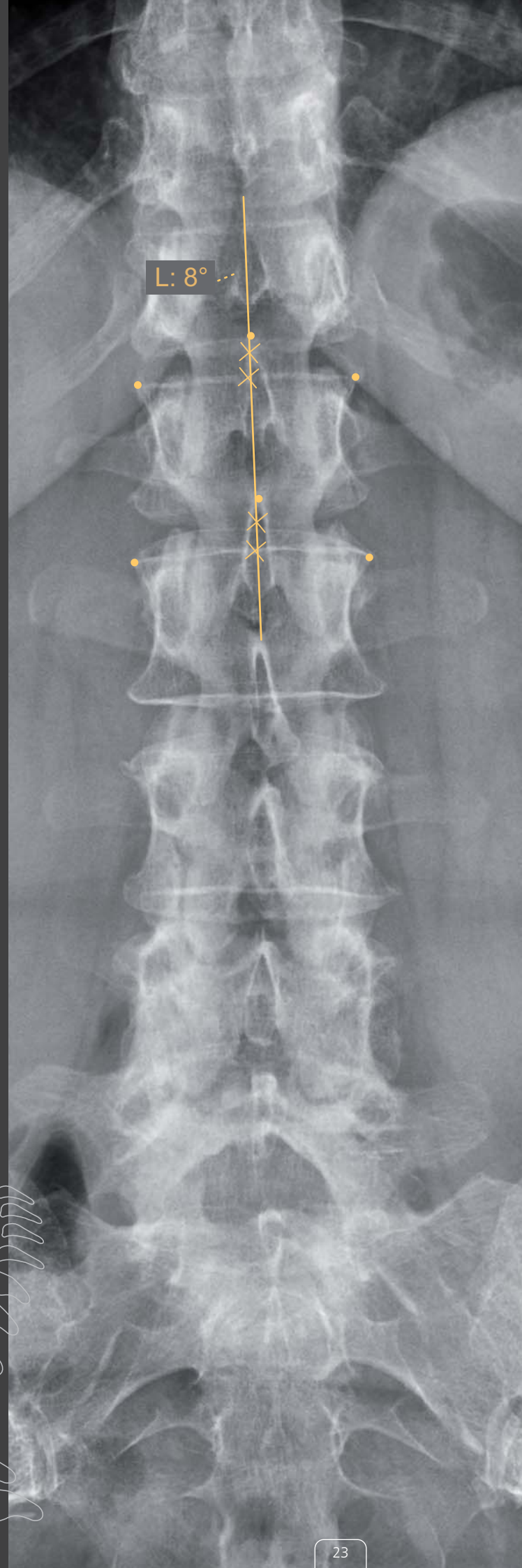
Chiro tools

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).

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.
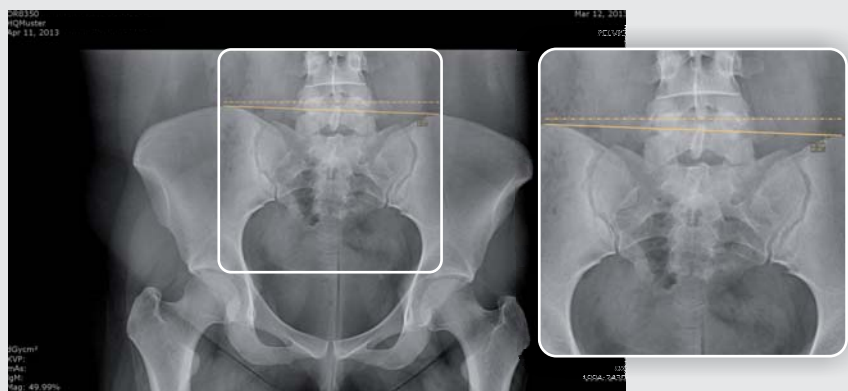
Circumscale

Circumscale is a measurement tool used on a nasium/frontal view. 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. The tool consists of three points which indicate the lumbar curve with reference to the standard and the aberrancy, calculated in mm and degree.

Vertebrae line

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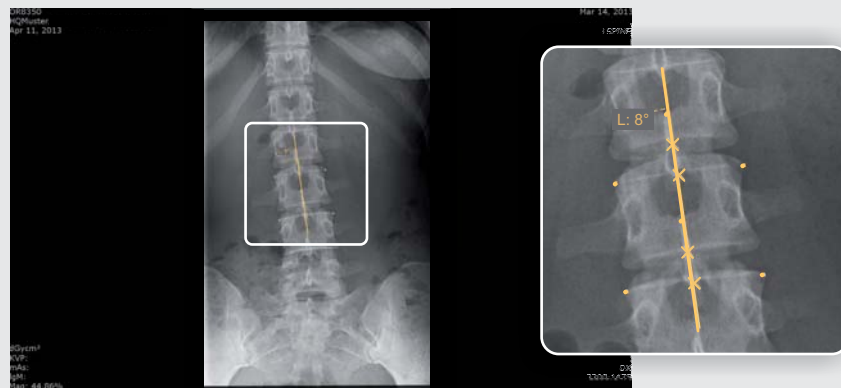
Center point

This tool calculates the center point in order to define a precise axis.

Distance comparison

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

Mark intersection

This tool marks the intersection of two intersecting lines. The default display of the intersection is a filled dot.

Special NUCCA Tools

Diagnostic tools for optimal treatment

The NUCCA tool set has been created in cooperation with leading NUCCA experts from the US and Canada. It offers a variety of ways to reach a fast and accurate diagnosis. Templates like the Cephalometer, grid, Circumscale, and Relatoscope enable you to continue working as you are used to.

S-Line and Hard Palate Line and Raw Data Box

You simply set two points each on C1 and the hard palate to create the S-Line and the Hard Palate Line. We will show you the horizontal aberrancies. All measured values will be shown in the raw data box. You can also show and hide values manually.
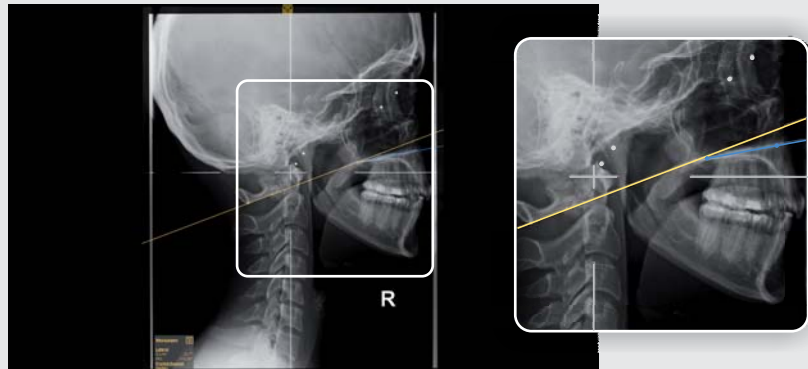
Atlas Plane Line and Atlas Check Line

The horizontal aberrancy and the angle between Atlas Plane Line and Atlas Check Line will be shown in the raw data box.
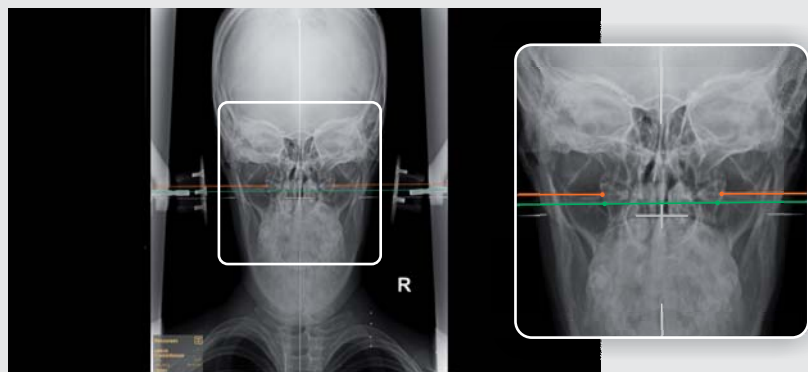
Cephalometer and Central Skull Line

Use the Cephalometer to draw the Central Skull Line. Laterality and Skull Tippage will be calculated automatically. The Four Elements and Listing Information will be inserted and are completely editable.
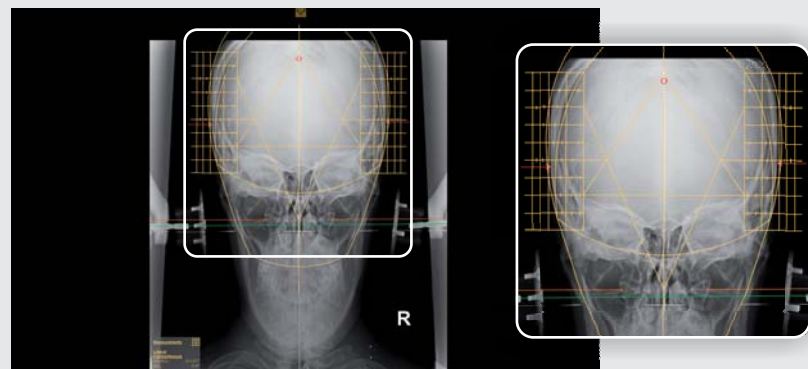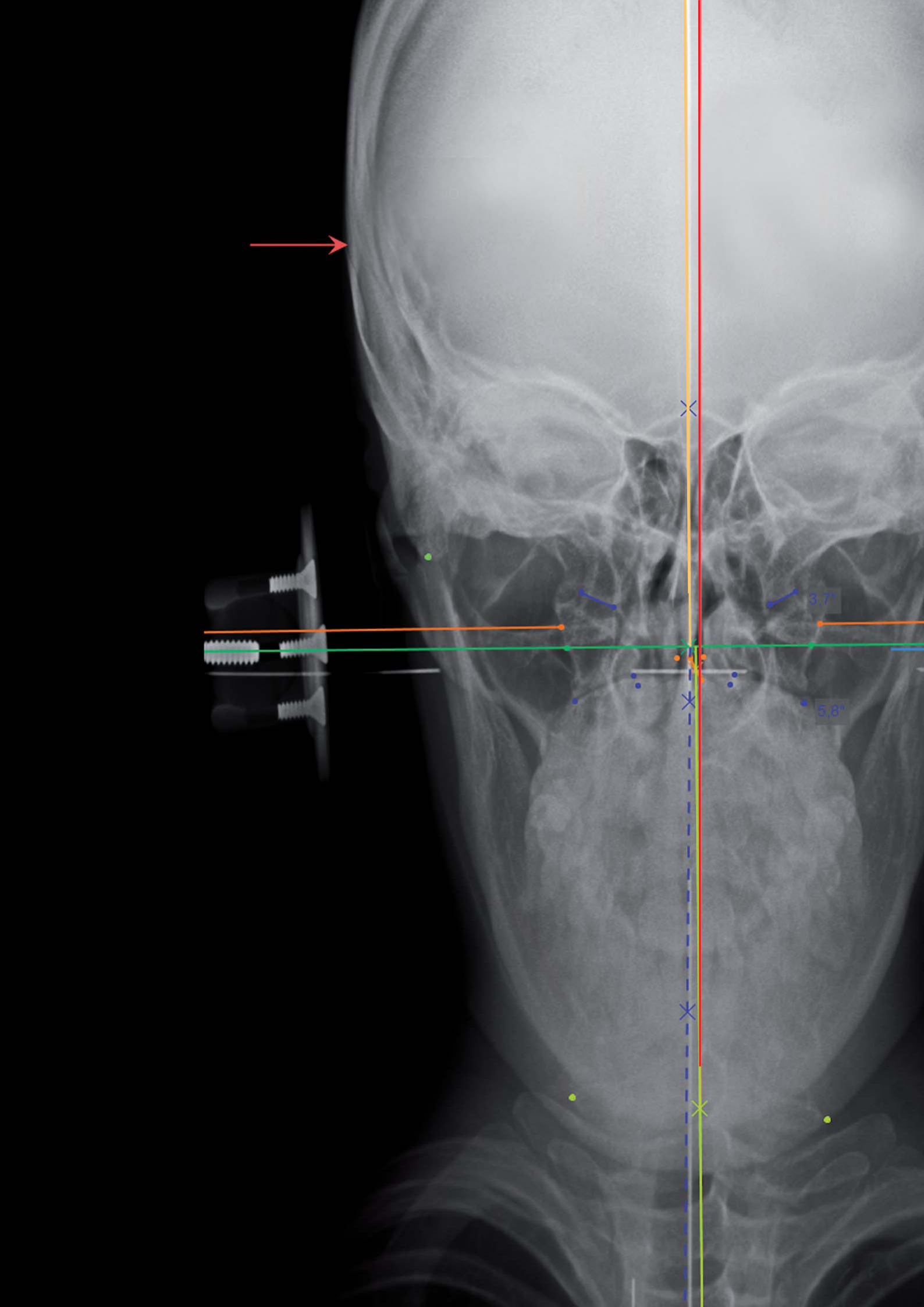
Axial Circle

The Body Center Line will be set automatically and the Axial Circle will be calculated and shown on the side of laterality. You can set the calculated measurement manually to the value you prefer.
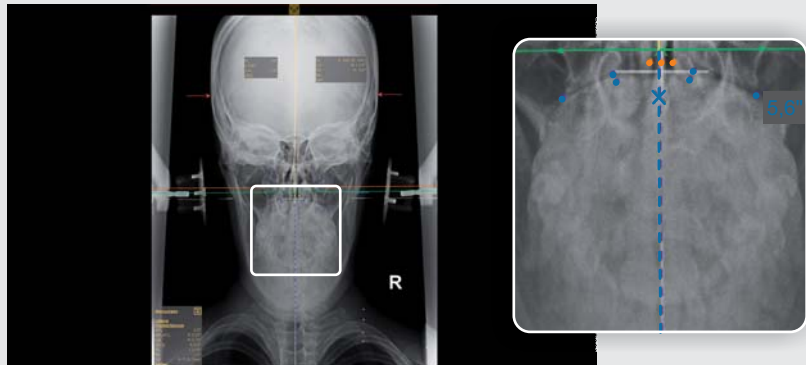

Condylar Circle

Choose between the three point and four point Condylar Circle. The middle point will be shown. You can set the calculated measurement manually to the value you prefer. The Relatoscope will use the shown value.
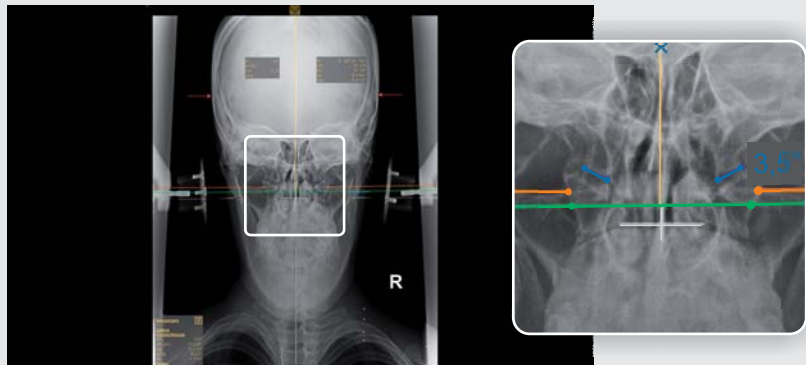

Odontoid Center and Vertex Square

Mark the lateral aspects of the dens and the Odontoid Center Line will be inserted. After marking the C2 canal, the Vertex Square will be inserted and the Spinous value will be calculated depending on the Condylar Circle.
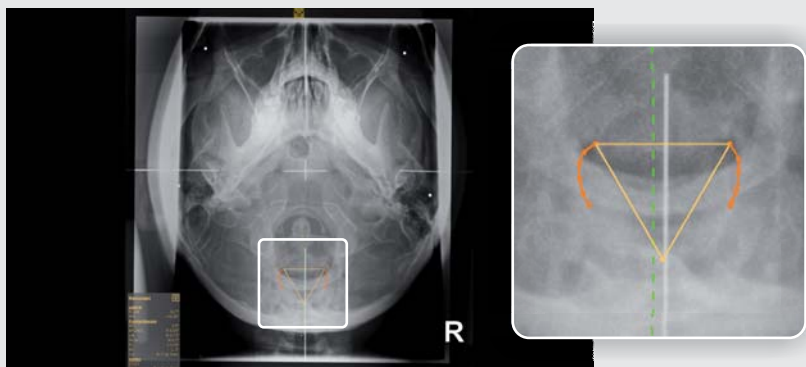

Odontoid, Spinous and Relatoscope

Use the Relatoscope to apply the Spinous value from Vertex to Nasium View. Mark the lateral aspects of the dens and the (corrected) Odontoid will be inserted automatically.
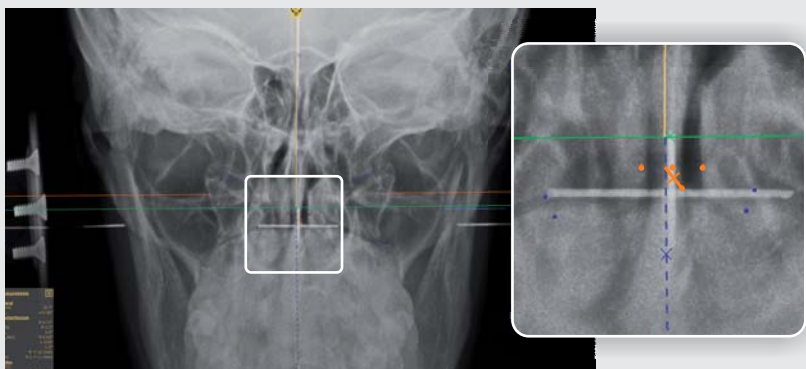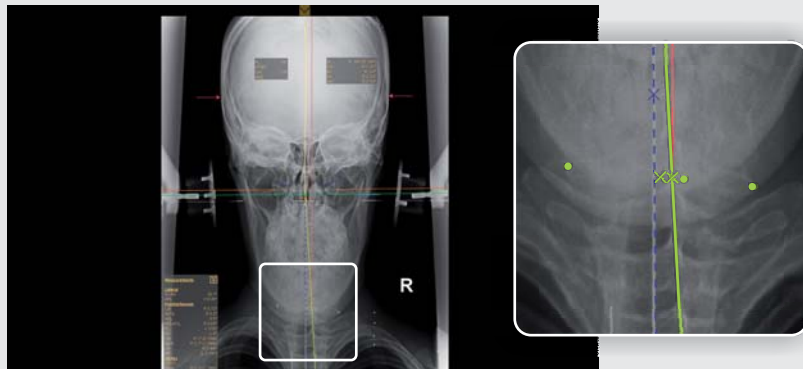
Vertex Skull Line
After marking the nasal structures, click the Inferior Point button. The point will be set automatically depending on the Listing Information value and the Vertex Skull Line will be inserted. Atlas Rotation will be calcuated.
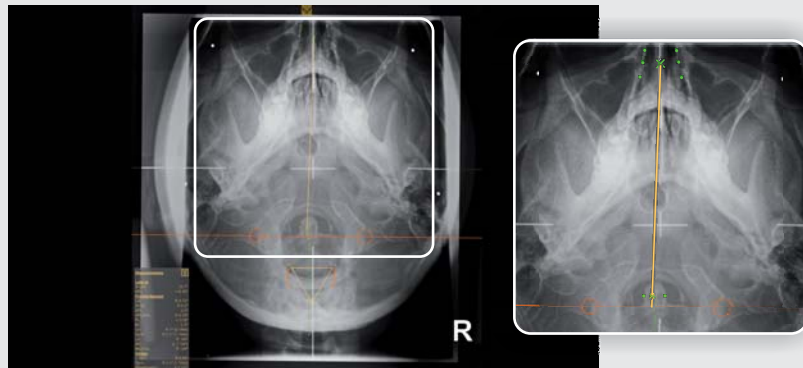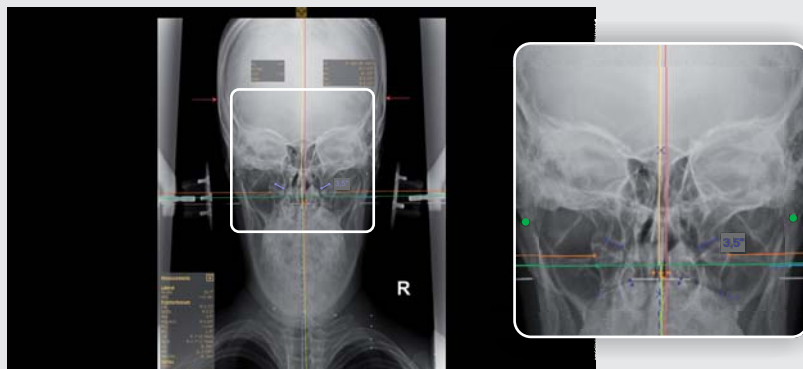

Lower Angle and Angular Rotation
The Lower Angle and Angular Rotation will be calculated automatically after setting the Inferior Point. You can also set a corrected Inferior Point.
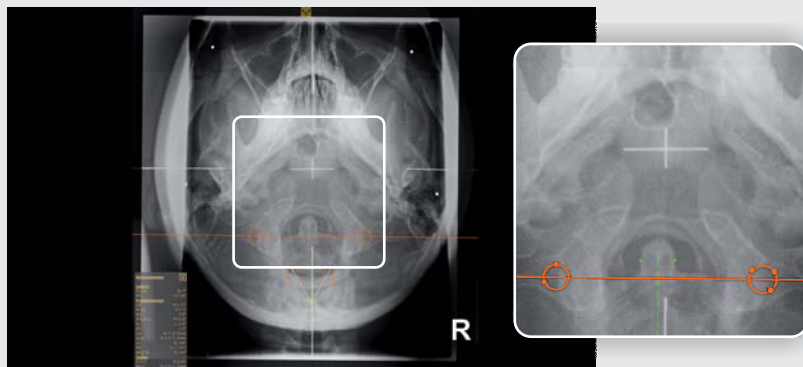

Intermastoid Line
Mark the inferior tips of the mastoid processes. The measured value, its aberrancy to the Central Skull Line, will also appear in the raw data box.

Vertex Atlas Line
After marking the transverse foramina of the atlas with three points each, we will draw the Vertex Atlas Line and show the convergence of C1 and C2.

Options

for upgrading *dicomPACS*®*DX-R*
X-ray acquisition software

dicomPACS®*DX-R* may not only be used as a software for the acquisition and processing of X-ray images, but can also be upgraded to a MiniPACS or even to an Enterprise Multi Modality PACS. Several thousand installed image processing systems in almost 70 countries (as of July 2014) are proof of customer satisfaction.

A single workstation system with installed *dicomPACS*®*DX-R* software can be upgraded with the following options (extract):

Further optional viewer functions:

- May be installed on **Windows, Apple MAC and Linux** systems

- Generation of full leg/full spine images **(image stitching)**

- Preparation of diagnostic reports with integrated images in MS Word

- Connection of several diagnostic monitors

- Capturing of additional patient and examination data with their freely configurable **statistical analysis**

- Working with **digital prosthesis templates for surgery planning** and documentation - Prosthesis templates can be selected from a set and inserted into the image as annotations

- Additional radiological functions such as Maximum Intensity Projection (**MIP**), Multiplanar Reconstruction (**MPR**) and hanging protocols and mammo tools

- Fast and easy preparation of **surgery reports** with automatically inserted X-ray images and much more...
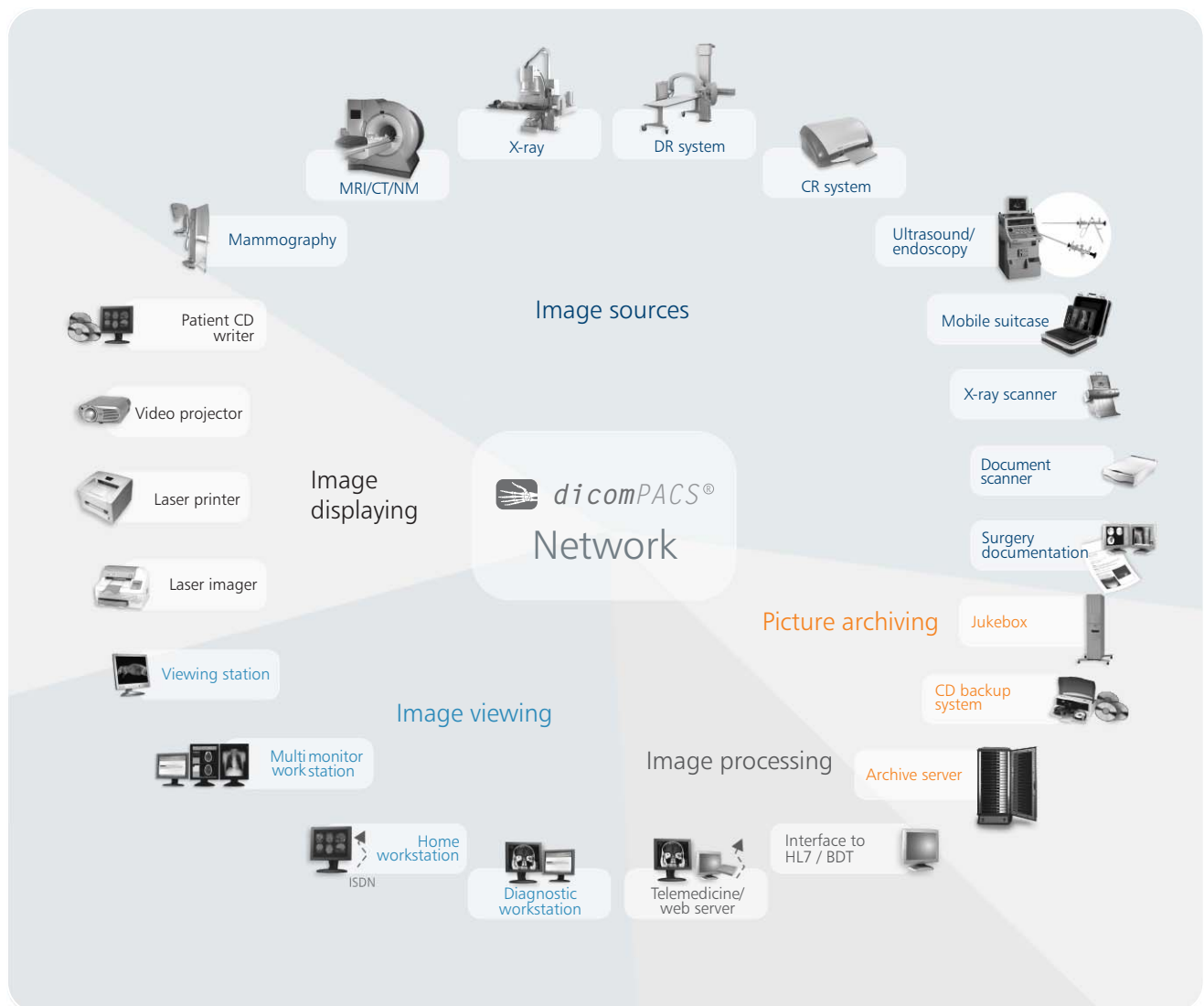
Options

Upgrade to an integrated multi-modality PACS

- **DICOM reception** from any DICOM sources, e.g. CT, MRI, scintigraphy, ultrasound etc

- **DICOM distribution** with freely configurable rules

- **DICOM DIR import** for archiving patient CDs by other manufacturers

- **DICOM Query/Retrieve** (SCP/ SCU)

- DICOM Auto **Prefetching**

- **DICOM Print Server** to convert DICOM Basic Print into Windows print jobs

- **DICOM Compression** according to freely configurable rules

- DICOM CD/DVD Backup Module, also via robot systems

- Integration of **film and document scanners**

- Digitalisation of standard and non-standard video signals, e.g. **endoscopy, angiography** etc.

- Fully automatic **synchronisation** of two image databases, e.g. laptop and main archive

- **Exchange of images and diagnostic** reports between individual clinics by means of teleradiology

- *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

Image sources

MRI/CT/NM

X-ray

DR system

CR system

Mammography

Ultrasound/
endoscopy

Patient CD
writer

Mobile suitcase

Video projector

X-ray scanner

Image
displaying

dicomPACS®

Network

Document
scanner

Laser printer

Surgery
documentation

Laser imager

Picture archiving

Jukebox

Viewing station

CD backup
system

Image viewing

Multi monitor
work station

Image processing

Archive server

Home
workstation

ISDN

Diagnostic
workstation

Telemedicine/
web server

Interface to
HL7 / BDT

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 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
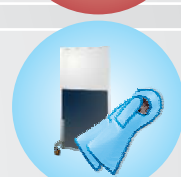
Divario CR Systems

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
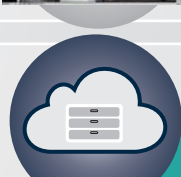
dicomPACS®DX-R
X-ray Acquisition Software

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

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|OR Technology
| Digital X-ray and
| Imaging Solutions

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