

DR flat panel upgrade kit for existing X-ray systems for operation without cassettes



Medici DR Systems

with *DX-R* Acquisition Software

IDR Retrofit Systems for the Future



Medici DR upgrade kit

State of the art technology and excellent images

Upgrading to digital made easy



You know the problem: Your 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 systems!

Medici DR systems are available for almost any existing X-ray system. Various makes and sizes of flat panels allow your system to be configured according to your needs. The **dicomPACS® 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.

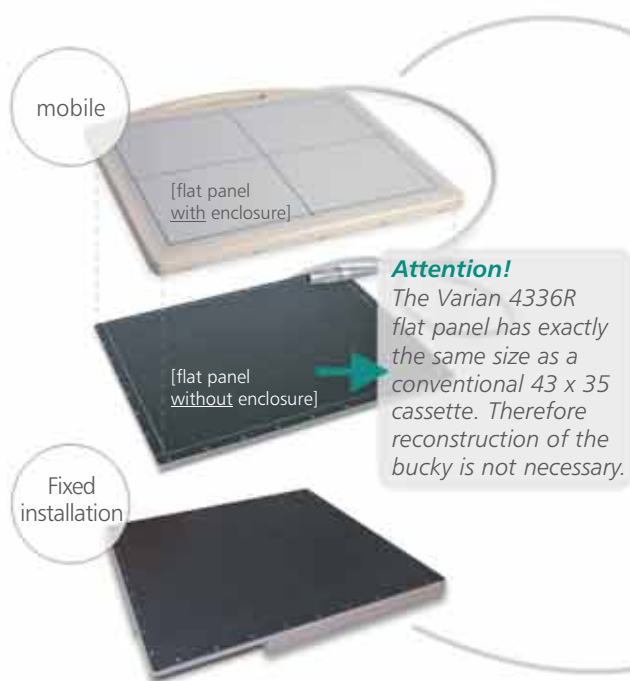
Of course, all **Medici** DR systems can be integrated into your practice management software and transfer the X-ray images to an image management system (PACS). If you have not yet installed such an image management system but still require the images to be distributed within your practice or hospital,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

Operation mode

for U-arm-systems

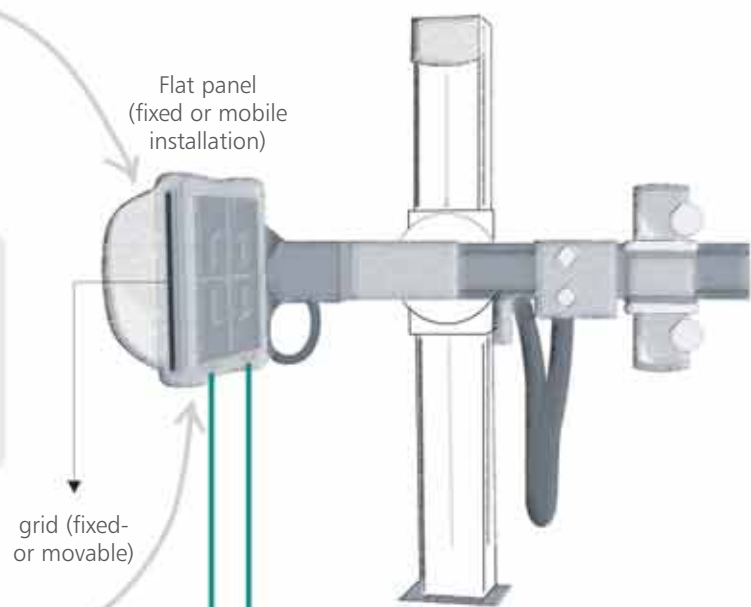


DR flat panels

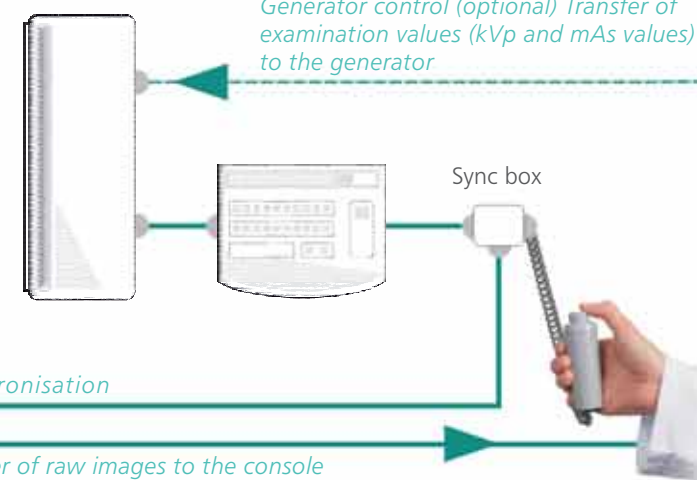


These panels are available in various sizes:
36 x 43 cm [14 x 17 inch], 43 x 43 cm [17 x 17 inch]

X-ray unit



X-ray generator



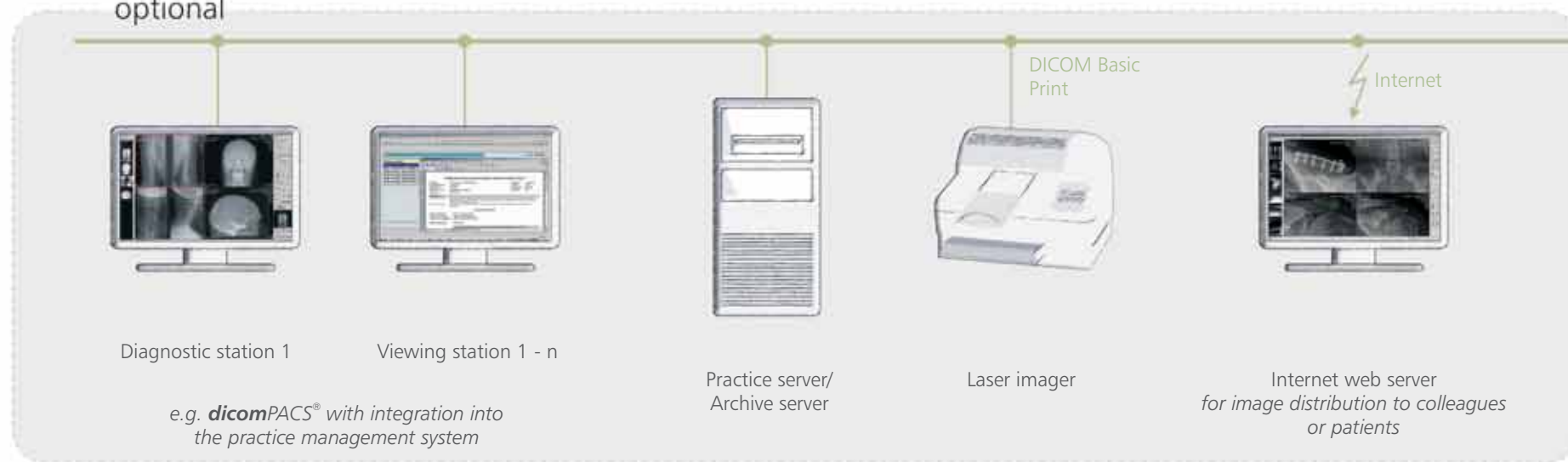
Operating console with worklist (DICOM worklist)



DICOM store of X-ray images

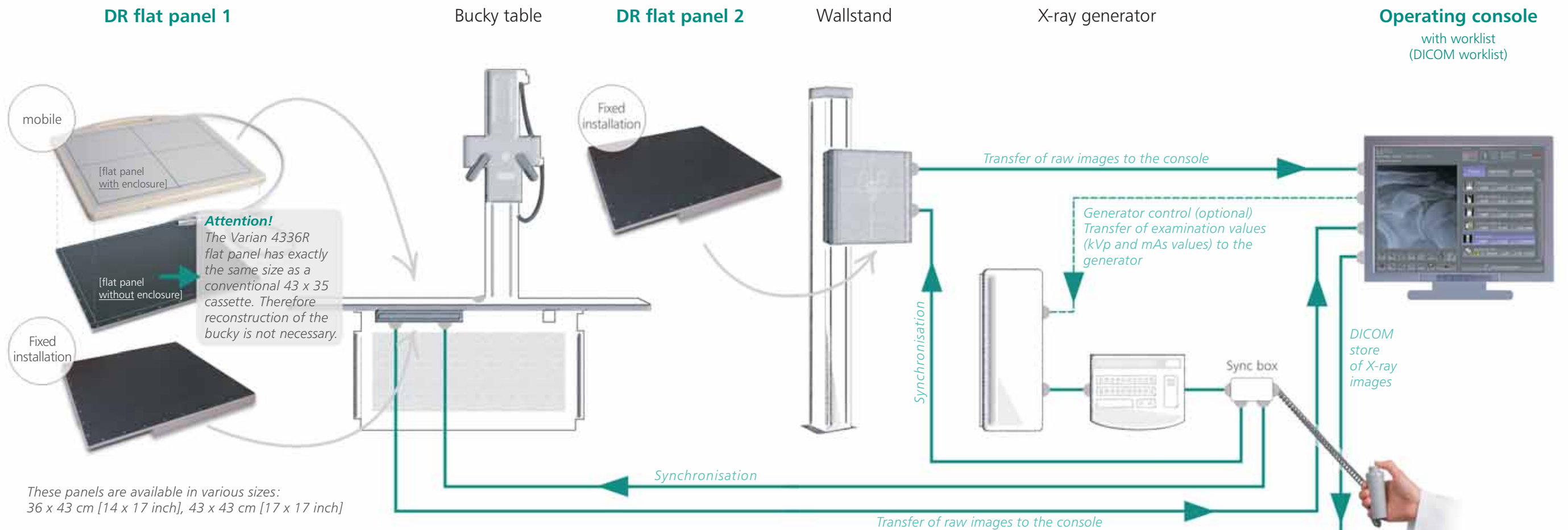
100/1,000 Mbit practice network

optional

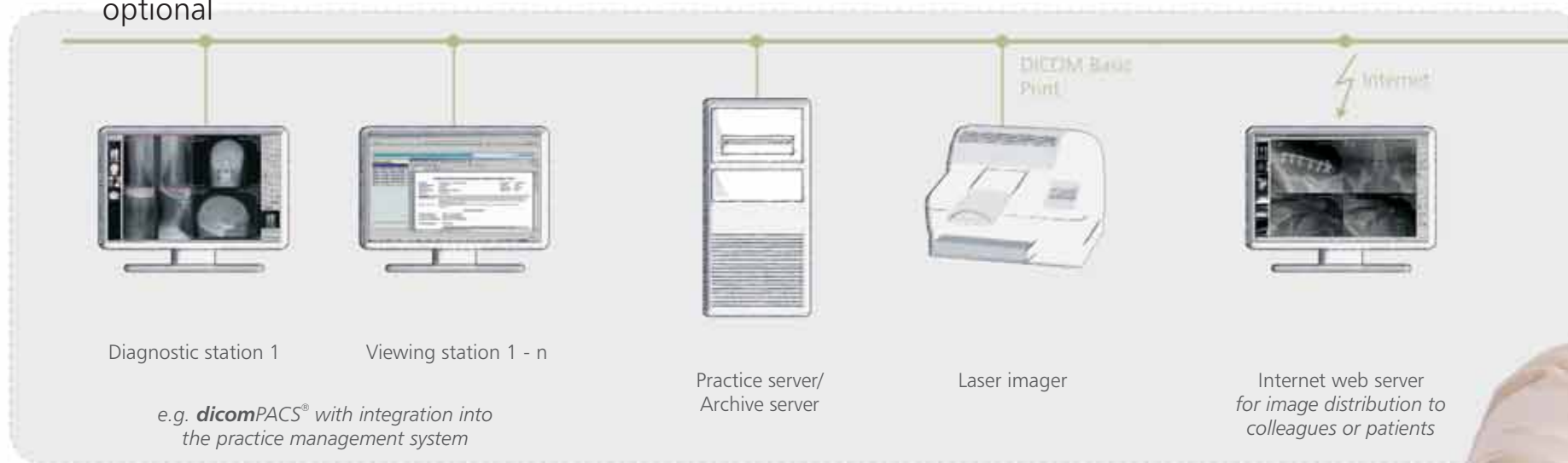


Operation mode

for bucky table and wallstand



optional



100/1,000 Mbit practice network





Scope of delivery

of a **Medici** DR upgrade kit

1.

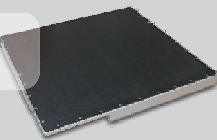
Flat panel (as fixed installation or mobile version)

Depending on requirements and your practice setup, flat panels of various manufacturers, sizes and image resolutions may be used: 27 x 33 cm [10 x 12 inch], 36 x 43 cm [14 x 17 inch], 43 x 43 cm [17 x 17 inch]

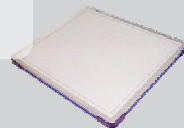
You may choose among the following flat panels (examples):

Panel for fixed installation

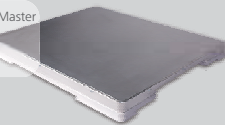
Varian
PaxScan 4343R
43 x 43 cm
(17 x 17 inch)



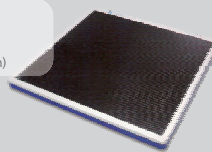
DR Tech
Flaatz 550
36 x 43 cm
(14 x 17 inch)



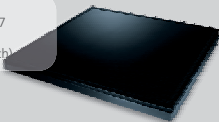
Dunlee QuantMaster
3543 RG0
36 x 43 cm
(14 x 17 inch)



DR Tech
Flaatz 750
43 x 43 cm
(17 x 17 inch)

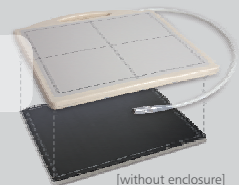


Samsung
Xmaru 1717
43 x 43 cm
(17 x 17 inch)



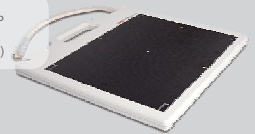
Mobile panel

Varian
PaxScan 4336
36 x 43 cm
(14 x 17 inch)



[without enclosure]

Samsung
Xmaru 1210P
27 x 33 cm
(10 x 12 inch)



Thales Trixell Pixium
portable wireless
36 x 43 cm
(14 x 17 inch)



2.

Operating console with touchscreen and **dicomPACS®DX-R** X-ray acquisition software:

- PC with touchscreen and wall bracket, if required
- **dicomPACS®DX-R** acquisition software including
 - operating software
 - X-ray positioning guide
 - professional **DX-R** image processing
 - image evaluation software incl. measuring etc.
 - creation of patient CDs
 - DICOM store transfer of images to image management systems (PACS)



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 **human medicine** 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





Software

Benefits of flexible image acquisition

- Integration of various **flat panels and CR systems** by different manufacturers
- Option to **connect up to 3 flat panels** (bucky, wall stand and mobile) to one system
- 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

Radiographic positioning guide



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

Shows an example of a correct X-ray image

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

Opens examples of inaccurate X-ray images with comments

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 *without*
DX-R image
processing



Exposure *with*
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 calculation of **Cobb's angle, pelvic obliquity measurements, integrated capturing of diagnostic reports** etc.
- Printing of images both on Windows printers and laser imagers
- Creation of **DICOM patient CDs** with free **WEB viewer**
- **Export of images** to JPEG, TIFF, BMP and DICOM formats
- Easily upgradable to the professional, **integrated image management system (PACS)**

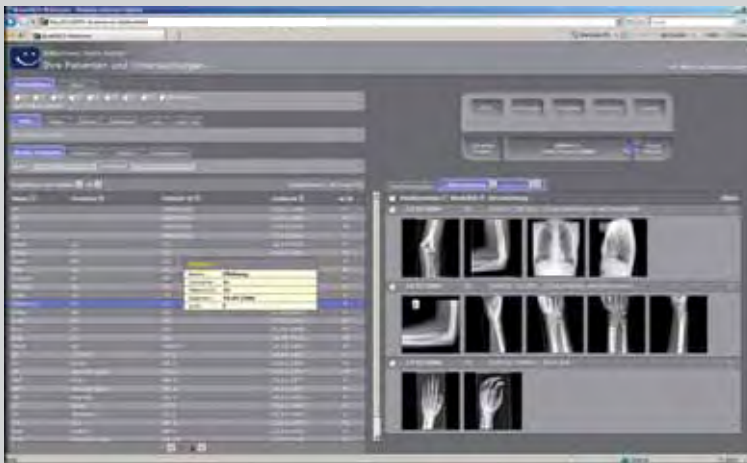




Image distribution

over the internet web server (optional)

- **Worldwide image distribution** to colleagues or patients via the **dicomPACS® Web Server** (optional) - Images can be accessed from any PC with internet access
- Option of **direct auto routing** of images to external radiologists
- On request, **images can be archived externally via the web server**
- Images can be sent to image management systems or **several databases** via **DICOM store**



Web preview



Web viewer

Options

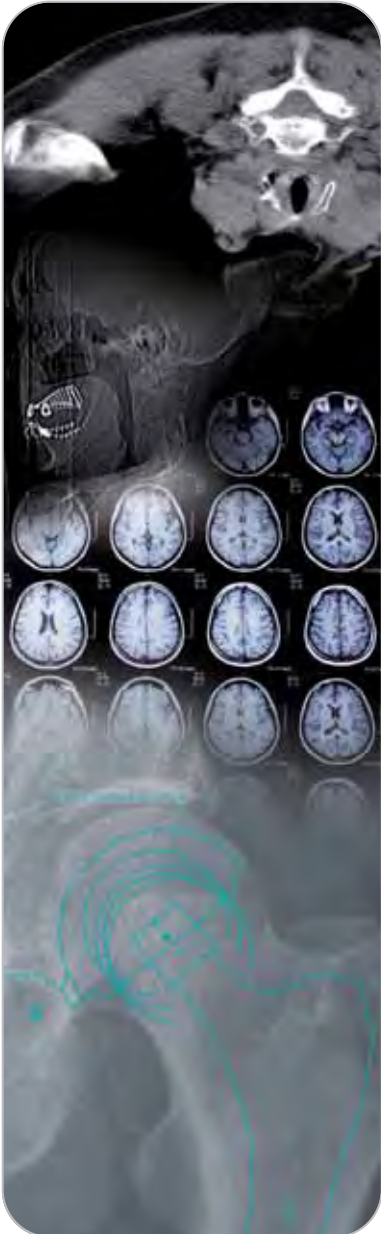
for upgrading **dicomPACS® DX-R**
X-ray acquisition software

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. Over 5,000 installed workstations in more than 35 countries (as of 1 November 2008) prove that our customers are satisfied.

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

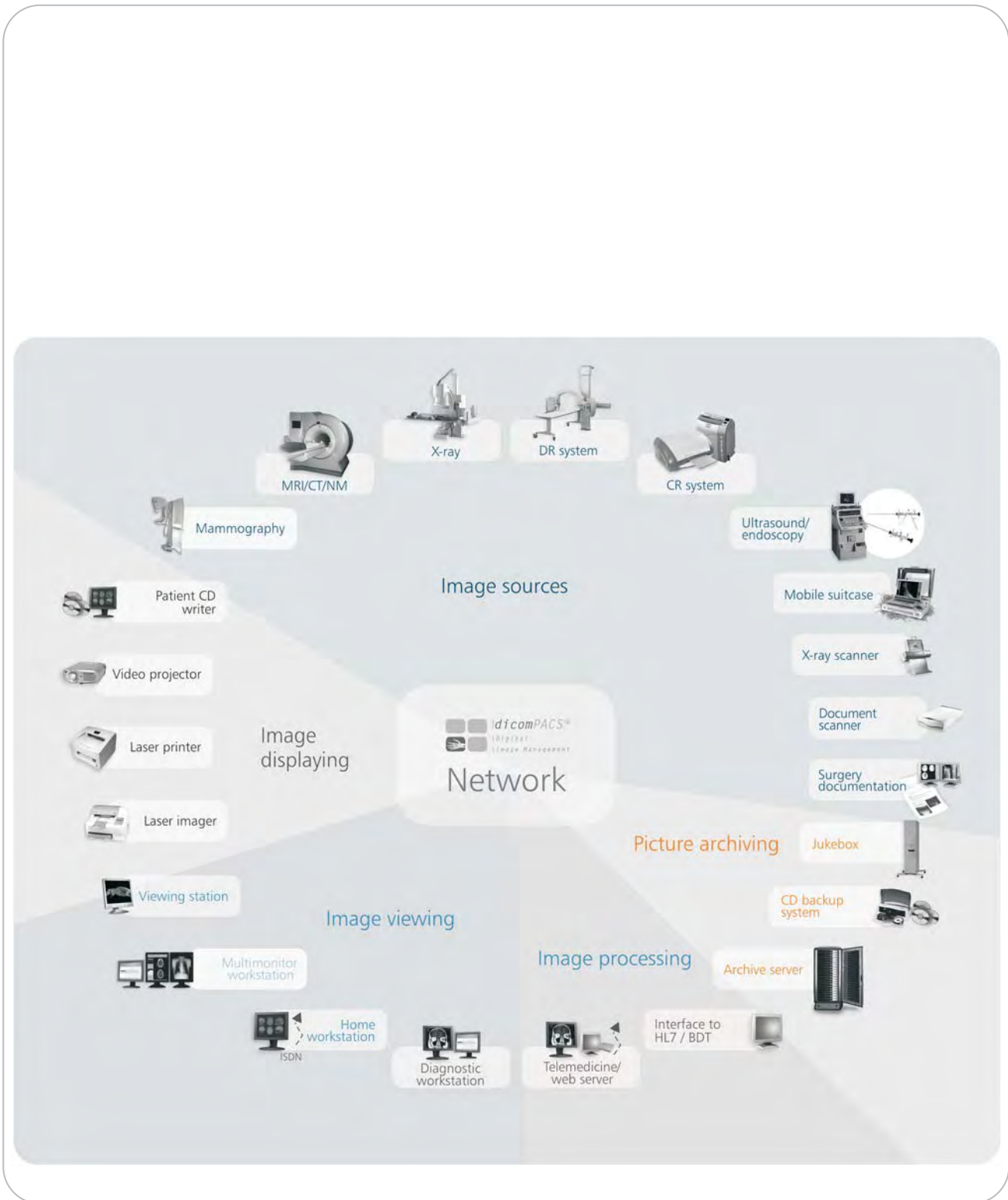




Options

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 **Pre-fetching**
- **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
- **Web Server Intranet**: distributes images within a hospital and displays the images in a web browser
- **Web Server Internet**: enables worldwide image distribution to referring doctors and patients via the internet



Reference

X-ray practice Dr. med. Uwe Kairies & Dr. med. Frank Rosenbaum

The X-ray practice Dr.med. Uwe Kairies & Dr. med. Frank Rosenbaum, established in 1996, was committed right from the start to the most modern technology in all areas of diagnosis. The clinic disposes of ultrasound, mammograph, X-ray system, CT and MRT. All work stations, from reception to the office, are linked to each other. Dr. Kairies and Dr. Rosenbaum consider modern standards as a basis for effective diagnostic evaluation and archiving of image data.

Towards the end of 2008, a new X-ray system was installed through the company of "Fischer-Sehner medical imaging". This X-ray system includes a bucky table and bucky wall stand, both with a detachable movable grid including automatic grid recognition via the **DX-R** software and a "Stadler" generator. In addition, 2 Varian flat panels 4343R GadOx were integrated into the system. The flat panels were installed into bucky cabinets made by the Dutch firm "Hoon".

OR Technology supplied the **dicomPACS[®]DX-R** operator console comprising a 19" touchscreen monitor including generator control, AEC, APR and much more. Installation and application of the digital components including the generator control was also implemented by OR Technology.

Dr.med. Uwe Kairies comments on his reasons for changing to a new system:

"For many years we have been cooperating with the district hospital of Demmin and thus have a large number of patients. Our RIS/PACS system is connected to the hospital's RIS/PACS system of the company Afga. Images and diagnostic reports are available promptly to the referring doctor at the hospital.

We realized it was time to change to a more advanced X-ray system so we could continue offering our patients the best diagnostic quality. The entire old X-ray

system was replaced with the new direct-digital DR system. The old CR system could no longer significantly improve our work. For this reason we decided on direct radiography without cassettes. Now X-ray images are available on our monitors for diagnostic evaluation after 10 seconds only. The process of cassette reading with all its disadvantages is no longer necessary. Our new X-ray system has proven to be successful, not only because of its very high imaging speed, but also in terms of the quality of image details. After having worked with FUJIFILM CR systems for many years, we are highly experienced concerning the quality of digital images. So we obviously had very high expectations of the new X-ray system. We were not disappointed. On the contrary, the X-ray images of our new system have a very high dynamic range, i.e. we can view soft parts and bones simultaneously. This is due to the fact that the increased quantum efficiency (DQE) allows more X-ray quanta to be changed into image-effective information, which may result in lower X-ray exposure and increased image quality."

Dr.med. Frank Rosenbaum comments on the introduction of the DR system:

"After extensive restructuring procedures including dismantling the old system, various alterations and installation of the entire new system as well as some minor adaptations, we were able to resume our work without any limitations after only 3 weeks.

At our request, an additional image quality application was implemented. Now we can certify an excellent image quality for the system. The entire work process has also become faster and more efficient. Also this change-over criteria was executed to our complete satisfaction. For the old X-ray system we used to require two radiography assistants, one handling the X-ray imaging, while the other read the

cassettes in the CR system. Now this can be accomplished by one assistant only so that the second person can be deployed differently."

Ms. Arndt (radiography assistant) comments on the image acquisition software **dicomPACS[®]DX-R**:

"My colleagues and I are extremely satisfied with the process of X-ray imaging. The entire X-ray system can be controlled via the touchscreen monitor. The design of the graphical interface is very clear and precise. As soon as an image is taken, it can be checked on the monitor and released into the system. The integrated radiographic positioning guide also contributes to quality assurance in our communal practice. It provides the correct adjustments for each examination as well as examples and videos. Faulty images can be avoided almost completely. The system allows the user to switch between the planned examinations of a patient very easily. This is above all very helpful, which means a patient does not have to be repositioned frequently. Even when examinations have been concluded, images may subsequently be added quickly and easily.

The invariable image quality also contributes to an accelerated and smooth work routine in our practice. The special **DX-R** image processing allows X-ray parameters to shift substantially, leaving the image quality constant. The X-ray dose for our patients is reduced partially also, and the integrated image viewer is also configured very user-friendly."



Dr.med. Uwe Kairies

OR Technology
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 | Imaging Solutions

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