



ARCADIS Orbic

ARCADIS Orbic 3D

Designed for Enhanced Surgical Precision

SIEMENS

medical



ARCADIS Bridging the borders of the OR



Discover the new generation of mobile C-arms from Siemens.

ARCADIS® is more than just a new C-arm. ARCADIS is an entirely new generation of C-arm technology that marks the start of a new era in the OR, offering completely new possibilities – with *syngo*®.

syngo. It's all about you.

syngo, our unique solution for the diagnostic and therapeutic cycles, knows how you work. What you need. What's most important. Fast, easy, and intuitive, *syngo* brings together all of the solutions critical to you – and your patients. Uniquely role-based for your workflow, *syngo* completely integrates your day, your department and beyond. Leading to a whole new level of clinical excellence. And a partnership you can grow with. It's the beginning of a virtualized, "always on, anywhere" world of healthcare. The time to *syngo* is now.

ARCADIS Orbic

Clinical workflow



at its best



ARCADIS Orbic's software is designed to support the entire clinical workflow, from patient registration to image documentation.

PATIENT

HOSPITAL

PATIENT REGISTRATION

Last name: Doe
First name: Jane
Middle name:
Title: Prof. Suffix: L
Other Patient Name(s):
Other Patient ID(s):
Patient ID: 123456
Date of Birth: 5/5/1955
Sex: Male Female Other
Age: 49 Years
Height (in/mm): 139"
Weight (lb): 300
Additional info:
Referring physician: Dr. Ward
Requesting physician:
Admitting diagnosis:
Ward: 3C Left
Admission ID: 2345

PROCEDURE

Accession No: 678
Request ID: 123
Requested procedure(s):
Study list:
Create
Study:
Study comment: obese patient

INSTITUTION

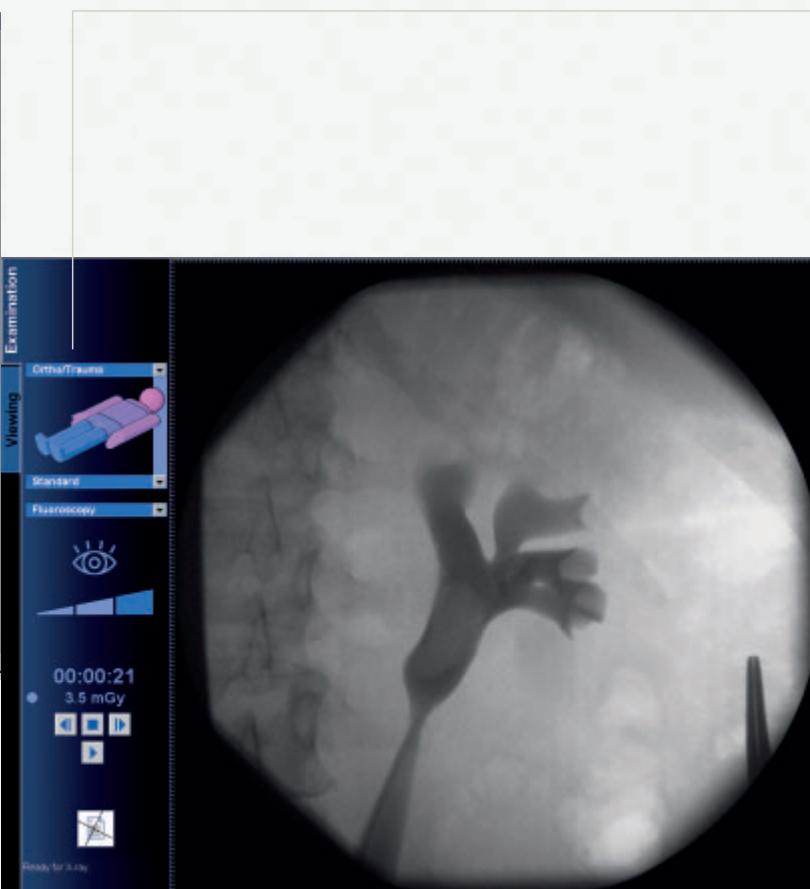
Institution name: St. Jorimias Hospital
1. Performing physician: Dr. Cook
2. Performing physician: Dr. Jameson
1. Operator: Dr. Gray
2. Operator: Dr. Hansen

PATIENT REGISTRATION

Emergency Help

PATIENT REGISTRATION

PATIENT REGISTRATION



Optimal workflow for patient registration

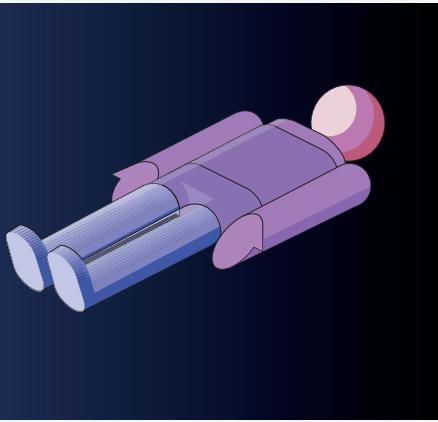
With syngo, ARCADIS Orbic supports all DICOM 3.0 functions, seamlessly integrating your data management process into the HIS/RIS world, beginning with patient registration. You can thereby transfer all patient data directly from the hospital information system to your worklist, or query the archive for "patient search". Patient pre-registration significantly reduces your OR prep time. ARCADIS Orbic also fully supports emergency registrations.

Optimal workflow during examinations

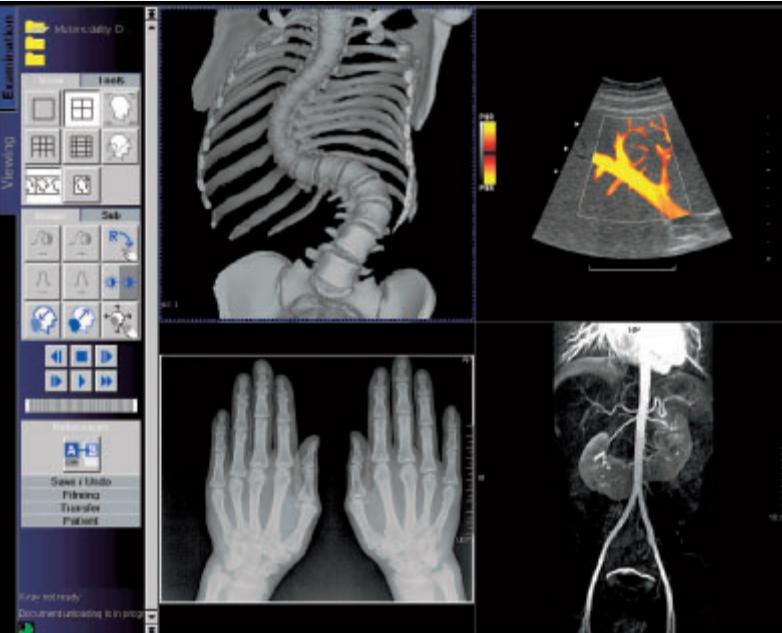
ARCADIS Orbic supports the full range of X-ray-based applications in the OR. The "Examination" task card provides you with a large range of medical applications, from orthopedic and trauma surgery to vascular surgery and beyond. The specific program within these applications is intuitively selected using VPA (Virtual Patient Anatomy). Simply click on the VPA body region to be examined to select the appropriate, optimized application program. Up to 200 dedicated, application-specific programs are available. In addition, ARCADIS Orbic's dose rate concept allows you to precisely adjust the dose to the required levels.

An optional Diamenter* measures the Dose Area Product (DAP) of the fluoroscopy field. The DAP result is displayed on the live monitor for easy viewing and increased dose awareness. The DAP can also be documented either on hardcopy images or in a digital system (PACS). Alternatively the display and documentation of air kerma rate and cumulative air kerma value is possible.

* Standard in some countries.



VPA (Virtual Patient Anatomy) for the selection of the body region to be examined.



Optimal workflow with multi-modality viewing

Multi-modality viewing (Query/Retrieve) allows you to access images from other modalities, such as CT and MR, before, during or after the OR procedure. The monitor cart acts as an OR workstation providing you with virtually all of the necessary image information, making light boxes obsolete. ARCADIS Orbic's self-explanatory icons bring the image postprocessing capabilities of syngo to your OR staff with ease.

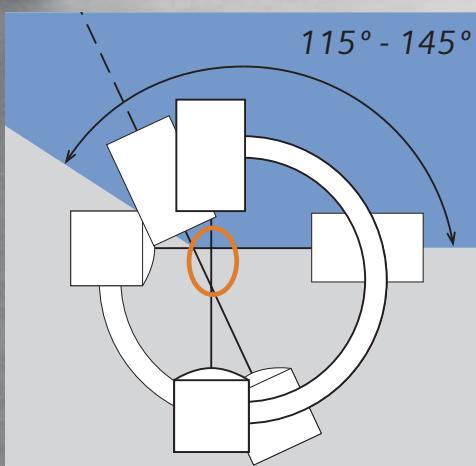
Fluoro Loop/LSH (Last Scene Hold)

The acquired scene starts automatically after radiation stops. Your benefit is the immediate replay of the acquired scene. With LSH up to 120 images are kept in the temporary memory for optional storage of the acquired scene.



Optimal workflow for documentation and archiving

ARCADIS Orbic has a local storage capacity of 40,000 images, offering you increased flexibility. A CD burner is provided for local long-term storage in DICOM or BMP formats. A DICOM viewer is written to the CD together with the image data. This allows you to view the images stored on the CD on any computer. Naturally, you can also use DICOM to send your images to the archive or to a local or network printer. Printing is facilitated by the virtual film sheet, which allows you to view images before printing and arrange them as desired.



Non-isocentric design:

- The central beam moves out of the isocenter, making repositioning necessary.
- Repositioning of the C-arm is time-consuming and can lead to additional radiation exposure
- The distance between the image intensifier or X-ray tube and the body region being imaged varies with each change of the orbital movement.
- The image size thus varies for different projections
- The orbital movement is restricted to 25° to 55° degrees of "overscan", depending on C-arm model and manufacturer

ARCADIS Orbic

True isocentricity makes a difference



ARCADIS Orbic has distinctive features which add up to a clinical efficiency unparalleled by any conventional mobile C-arm:

- **Industry-leading true isocentric orbital movement** enables time and dose savings by eliminating readjustments, especially for examinations involving several different projections.
- **Industry-leading 190° orbital movement with 95° overscan** enables virtually unrestricted positioning options for any projection which may be required.

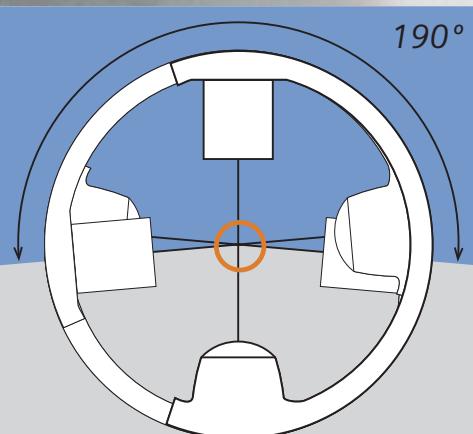
Conventional C-arms require adjustment of the C-arm when changing the projection angle. ARCADIS Orbic features an isocentric design which ensures that the anatomy being imaged remains in the center of rotation (isocenter) of orbital and angular movements. Therefore, ARCADIS Orbic requires no horizontal or vertical readjustment in order to keep the field of view centered – for example, after changing from an AP to a lateral view.

The result is improved workflow and the elimination of time-consuming and troublesome repositioning. Especially important in spine surgery and pain management, the isocentric design and large overscan ($\pm 95^\circ$) of ARCADIS Orbic enables precise views in a very time-efficient manner. Less repositioning can also translate into substantial dose savings for both OR personnel and patients.

Additionally, isocentricity sets the stage for efficient intra-operative 3D imaging with a mobile C-arm. ARCADIS Orbic was designed so that all existing and future ARCADIS Orbic systems can be upgraded to 3D imaging functionality.

Isocentric design:

- The central beam always remains in the isocenter, eliminating the need for repositioning and enabling both time and dose savings
- The distance between the image intensifier or X-ray tube and the body region being imaged always remains the same, thus ensuring a constant image size with varying projections
- Large orbital rotation of up to 190° (+95°–95°)
- Prerequisite for 3D imaging via orbital movement



Brilliant 1K² image quality throughout the entire imaging chain

ARCADIS Orbic was designed with the highest standard of image quality in mind. This unique C-arm is equipped with a **fully digital 1024 x 1024 (1K²) imaging chain**, covering everything from image acquisition to image processing and documentation. Like all X-ray-based products from Siemens, the individual components of the entire image chain are from one source – Siemens. These ideally matched components allow ARCADIS Orbic to consistently deliver the best possible image quality.

High performance for demanding applications

ARCADIS Orbic delivers tube currents of up to 23 mA, which means that you are prepared for virtually any application. The enhanced "Power Mode" is available at the touch of a button when you need it most – for example, imaging the pelvis or the dense region between the pelvis and spine.

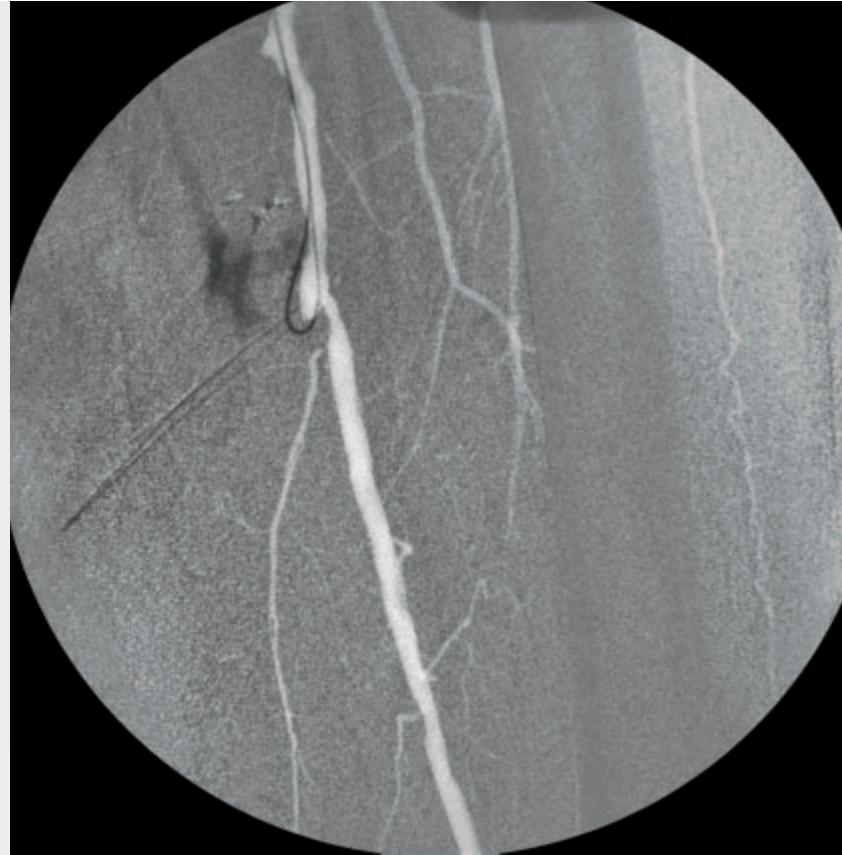
Economic video splitter solution "Monitor-Out"

With the monitor-out function, the monitor cart of ARCADIS Orbic can be connected to external monitors, e.g. ceiling mounted monitors.

Excellent image quality from nearly any angle

ARCADIS Orbic is equipped with large, flicker-free TFT flat screens – available either in color or monochrome. These TFT displays feature high-brightness and high-contrast, as well as a viewing angle of 170°, both horizontally and vertically. The monochrome version provides exceptionally high brightness.





1K2

DICOM – through and through



ARCADIS Orbic: Key DICOM functionalities

The unique *syngo* software platform supports virtually all DICOM functionalities, such as DICOM Send/Receive, DICOM Storage Commitment, DICOM Print, DICOM Worklist, DICOM Query/Retrieve, DICOM MPPS.

ARCADIS Orbic allows you to access the entire clinical network, directly from the OR – regardless of the manufacturers involved.



Navigation



NaviLink 2D and NaviVision 2D: Innovations for surgical navigation

ARCADIS Orbic features an integrated digital 1K² navigation interface with automatic image transfer. For better image quality, 2D images are transferred in digital 1K² format, significantly increasing the accuracy of surgical navigation. NaviLink™ 2D is compatible with the navigation systems of leading manufacturers and is synchronized for optimal clinical workflow.



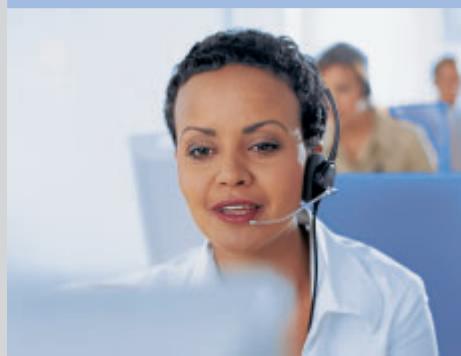
CD-ROM



Autoburn-DICOM-Viewer on CD: The interface for your PC

The *syngo fastview* DICOM viewer is written to the CD together with the image data. This allows you to view and to evaluate the images stored on the CD on any computer for enhanced image management.

Remote Services



Remote Diagnostics: Our service for maximum availability

ARCADIS Orbic is fully integrated in Siemens Remote Services (SRS). What does this mean for you? A service organization that is proactive rather than reactive – and is therefore especially effective. The secret of our success is that SRS operates in the background, locating possible sources of trouble and eliminating them before they lead to malfunctions.

Easy and convenient handling

ARCADIS Orbic also offers clear advantages with easy and convenient handling.

Mobility: safer and easier

The excellent maneuverability of ARCADIS Orbic is supported by an ergonomically shaped steering handle. The simple steering mechanism provides maximum mobility.

In addition to its attractive design, the monitor cart is easy to move. Its large, ergonomic handles enable precise and secure handling, while the TFT flat screens allow for an unobstructed view during transport.

Handling: easier than ever

ARCADIS Orbic's concealed cables give the system a very neat appearance and permit extremely fast and easy aseptic preparation and post-operative cleaning of its surfaces. A sterile environment is much easier to prepare and maintain without any interference from exposed cables.

Integrated image intensifier (I.I.) laser localizer

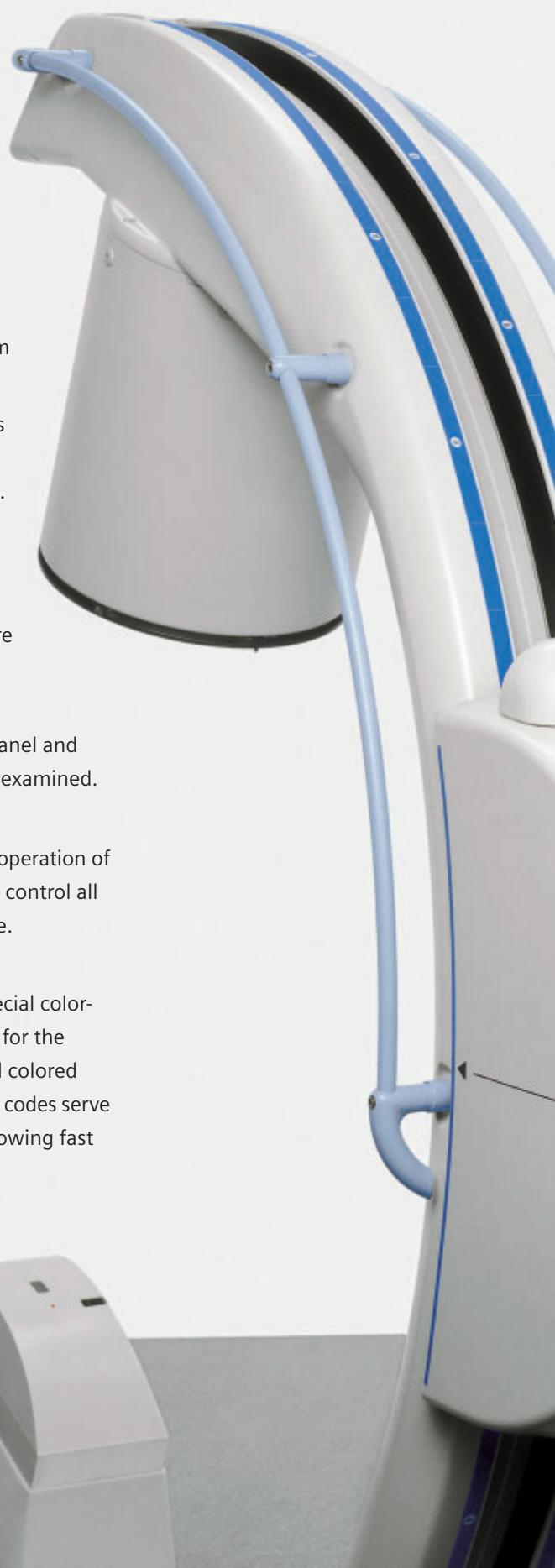
The optional integrated laser localizer is switchable from the control panel and supports easy positioning of the c-arm to the body region going to be examined.

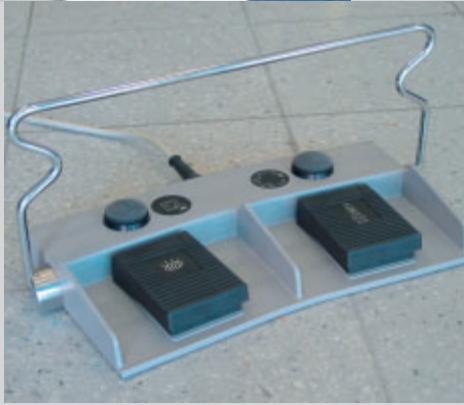
Multifunction foot switch

This alternative to the standard foot switch leads to more user friendly operation of ARCADIS Orbic. With the new foot switch, surgeons as well as OR staff control all operating modes and single image storage of ARCADIS Orbic with ease.

Color coding: simply clever

In order to facilitate your daily work, ARCADIS Orbic incorporates a special color-coded design of the handles and C-arm movements. The pushbuttons for the electromagnetic brakes are color-coded and matched with an identical colored measurement scale or colored marking for each movement. These color codes serve as an easy-to-understand and efficient orientation for the OR staff, allowing fast and precise positioning of the C-arm.





ARCADIS Orbic 3D – Intra-operative 3D imaging for increased precision in the OR





Some of the greatest challenges in trauma and orthopedic surgery are the identification and repositioning of fractures, placement of pedicle screws in the spine, and verifying accurate placement of fixation devices.

For example, placing a screw too close to a joint can lead to extremely painful post-traumatic complications that may require further surgical intervention.

2D projection imaging via conventional C-arms does not always offer enough information to precisely check these interventions and prevent such complications. Furthermore, CT or MR equipment is not commonly available in the operating room.

ARCADIS Orbic 3D provides the answer in a single mobile C-arm with intra-operative 3D imaging. Thanks to the generation of 3D image data directly in the OR and the resulting possibility of 3D navigation, this system can make surgical interventions safer and more precise than ever before.

Intra-operative 3D imaging with ARCADIS Orbic 3D is based on ARCADIS Orbic, with its isocentric design and 190° orbital movement that provide the prerequisites for 3D imaging.

Important considerations for intra-operative 3D imaging:

The CT-like reconstruction principle of ARCADIS Orbic 3D requires metal-free OR tables and positioning accessories to avoid artifacts in the reconstructed 3D dataset. Tables with carbon-fiber tops and accessories offer unobstructed 3D imaging and are commonly available.



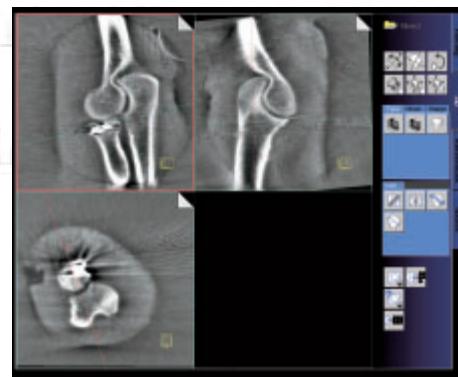
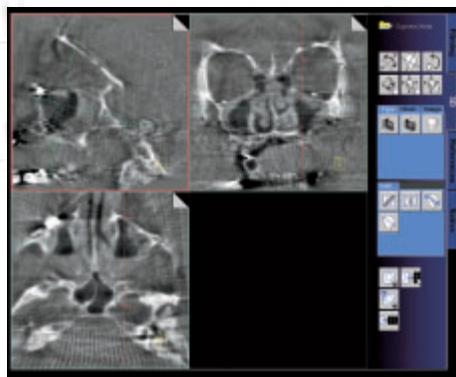
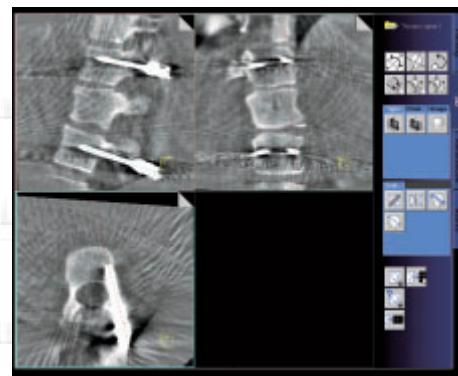
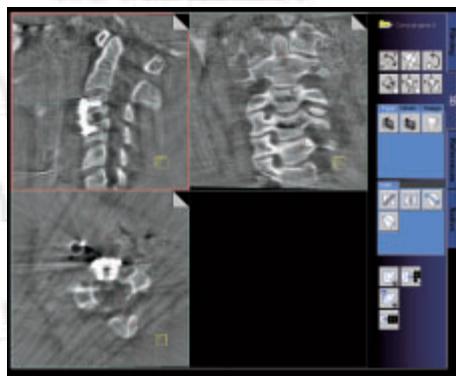
The application of intra-operative 3D imaging with ARCADIS Orbic 3D is ideally suited to the following body regions:

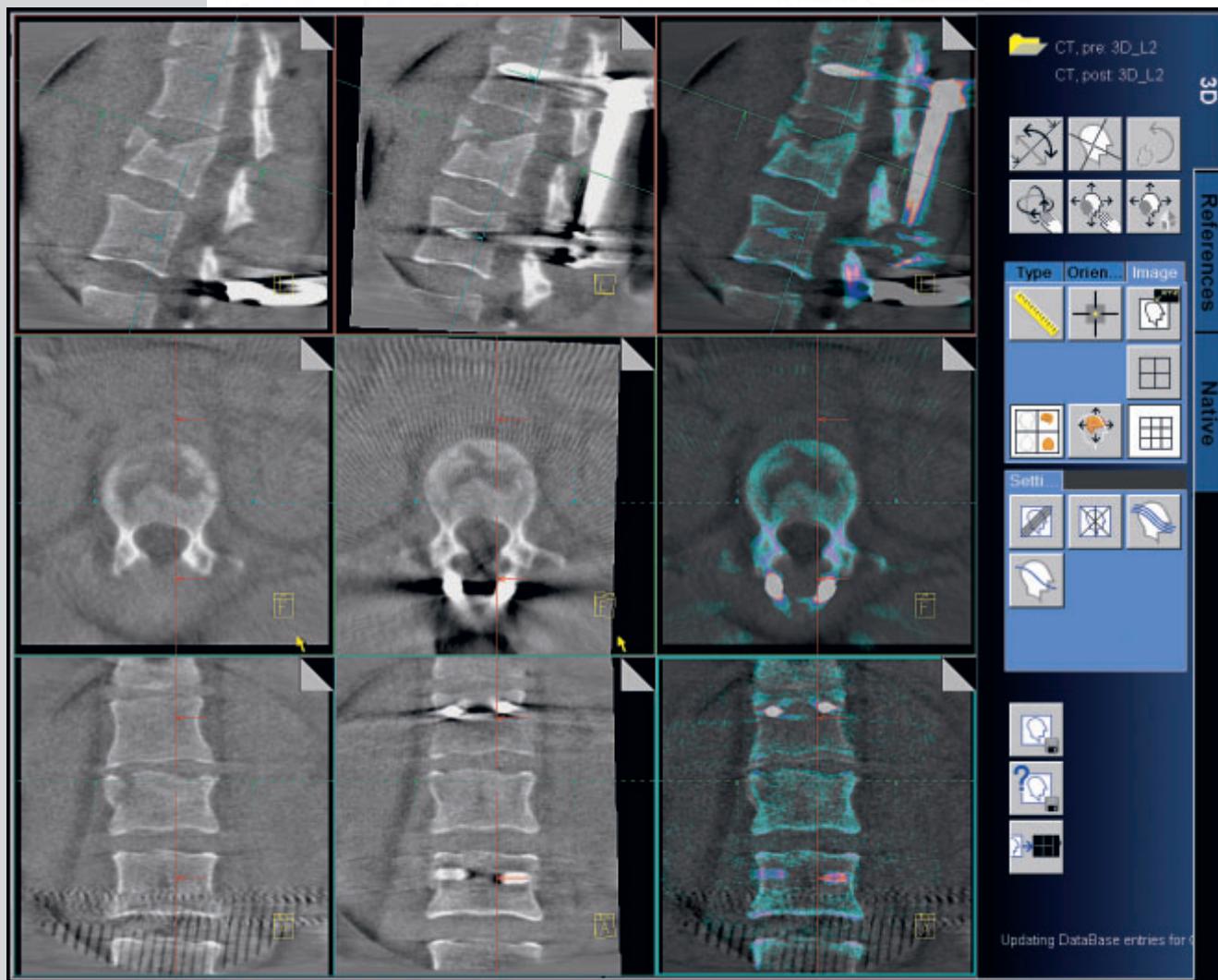
- **Bones and joints of the upper and lower extremities**
- **Cervical, thoracic and lumbar spine**
- **Pelvis/hip**
- **Maxillofacial**

3D imaging workflow with ARCADIS Orbic 3D

- The body region being imaged is positioned in the isocenter with the help of laser light localizers
- A radiation-free manual test run is then performed to ensure that the unit will not collide with other objects during the automated scan
- The automatic 190° scan is then initiated via the foot switch
- ARCADIS Orbic 3D requires only **30 or 60 seconds** for the exposure of 50 or 100 **2D images in 1K² resolution**
- The 3D dataset, a cube with a volume of approximately **12 cm x 12 cm x 12 cm**, is progressively generated throughout the scan and displayed on the right monitor
- The **correct position** of the reconstructed dataset can be **monitored during the scan**
- The complete 3D image data is **available immediately** after the scan
- The 3D image data is displayed as multiplanar reconstructions (MPRs) in coronal, sagittal and axial views
- Clinicians can review, individually align and evaluate the reconstructed 3D dataset on the right monitor in all three spatial directions. The corresponding 50 or 100 individual 2D images are displayed in **brilliant 1K² image quality** on the left monitor.

ARCADIS Orbic 3D – brilliant intra-operative 3D imaging and effortless workflow





Fusion of two intra-operative 3D datasets displaying the stabilization of a fractured vertebra

3D Image Fusion

The 3D Image Fusion package allows spatial alignment and visualization of image data of one patient when images have been generated at different points in time even by different modalities.

The major clinical benefits are:

- Combining pre-operative diagnostic images (e.g. CT) with intra-operative 3D data
- Combining soft-tissue information (MR) with high-contrast / skeletal information
- Combining intra-operative 3D images (pre-/postoperative; e.g. tumor resection)

NaviLink 3D and ARCADIS Orbic 3D

The new standard in surgical navigation

NaviLink™ 3D provides a direct 3D navigation interface for ARCADIS Orbic 3D. This interface combines the intra-operative 3D imaging of a mobile C-arm with high-precision surgical navigation. ARCADIS Orbic 3D enables both pre-operative and intra-operative 3D imaging with the patient in the most current surgical position. The acquired 3D image data is optimally suitable for direct surgical navigation. The spatial coordinates of the anatomy are assigned to the image data, which are then automatically transferred to the navigation system without any further processing steps. As a result, manual alignment of the anatomy to the 3D images is no longer required. The accuracy of the surgical navigation is thus increased considerably and the clinical workflow is greatly optimized. In addition, 3D image data acquisition can be repeated as often as necessary to account for any anatomical changes which may occur in the OR field during surgery.

Functionality of NaviLink 3D

A reference ring is attached to the image intensifier for automatic navigation registration. The manufacturers of the navigation systems have adapted their marker rings to our reference ring in a way that the marker ring is always located in the same position. During system installation, a calibration matrix is calculated and stored in the ARCADIS Orbic 3D. The calibration matrix automatically supplies the relation between the coordinates of the C-arm and the image coordinates in space. These image coordinates and the 3D dataset are transferred to the navigation system and provide direct coupling with the position of the navigation instruments. Manual navigation registration is no longer required and surgical intervention can begin immediately after 3D image data acquisition with ARCADIS Orbic 3D.

Open interface

NaviLink 3D represents an open and universal interface for navigation systems from various providers. NaviLink 3D is currently compatible with navigation systems offered by BrainLAB, Medtronic, Stryker and Praxim.





NaviVision 3D

With NaviVision™ from BrainLAB we offer the first fully integrated optical navigation platform for 3D navigation with ARCADIS Orbic 3D.

NaviVision provides more space for the OR team due to 20% less footprint and streamlines the clinical routine. 30% shorter prep time and flexible monitor operation will strongly optimize your clinical workflow in the OR.

The screen of the navigation unit is attached directly to the monitor trolley of the C-arm. Its adjustable swivel arm can be set in the horizontal or vertical direction. Also, the material of the swivel arm is fully sterilizable. Thus, the monitor can be quickly removed from the monitor trolley and attached directly to the OR table. Once attached, it can be aligned to meet the surgeon's needs. The surgeon operates the monitor per touch-screen and, for example, toggles back and forth between axial or lateral views. A DICOM interface allows for easy documentation of image data.

Surgical navigation is an essential step in linking intraoperative image data directly with surgical actions and clinical workflow in the OR. It increases precision and reduces both invasiveness and radiation exposure during surgery.



ARCADIS Orbic

ARCADIS Orbic 3D – Clear advantages in clinical workflow and surgical precision

syngo

- Uniform, intuitive user interface for system operation, image post-processing and networking
- Workflow-oriented task card structure
- Comprehensive connectivity with other modalities and clinical networks

Optimized clinical workflow

- Maximum flexibility in patient registration
- Easy, intuitive selection of application-specific programs with VPA (Virtual Patient Anatomy)
- Virtually unlimited possibilities for documentation and archiving
- Fluoro Loop for immediate replay and LSH (Last Scene Hold) for optional storage of the last acquired scene

Brilliant 1K² image quality

- Optimally matched, continuous 1K² imaging chain from image acquisition to viewing and archiving
- High tube currents of up to 23mA
- Large high-brightness, high-contrast TFT flat screens
- Monitor-out for viewing on additional monitors

Distinctive design

- Time and dose savings through isocentric design, no readjustments required
- High flexibility and virtually unlimited projection possibilities through 190° rotation
- Outstanding handling through laser light localizer, electromagnetic brakes and ergonomic handles
- Intelligent color coding for fast and precise positioning and operation

Comprehensive connectivity and specialized interfaces

- Support of virtually all DICOM 3.0 functionalities
- Integrated, digital 1K² navigation interface NaviLink 2D with automatic transfer of 2D images in 1024 x 1024 resolution for surgical navigation
- syngo fastview for convenient viewing of clinical images on the PC
- NaviVision, the first fully integrated optical navigation platform for 2D navigation

In addition, ARCADIS Orbic 3D features:

Intra-operative 3D imaging

- Integrated 3D imaging function to increase safety and precision in the OR
- Acquisition of the 3D dataset in only 30 or 60 seconds
- The correct position of the reconstructed dataset can be monitored during the exposure
- 3D Image Fusion for combining e.g. soft-tissue information (MR) with high-contrast/ skeletal information

NaviLink 3D and NaviVision 3D

NaviLink 3D

- Shorter preparation phase through automatic registration and elimination of pre-operative imaging for navigation
- Automatic 3D image data transfer to the navigation system following the 3D scan
- Universal interface for navigation systems from various providers, e.g. BrainLAB, Medtronic, Stryker and Praxim

NaviVision 3D

- 20% less space required, main components are integrated in one mobile trolley
- 30% less preparation and setup time compared to single components
- Navigation image- and control monitor can be mounted either at the trolley or at the table side in the sterile field



Proven Outcomes.

This is what Siemens is helping to deliver right now. Outcomes that result from truly efficient workflow. Outcomes that improve your bottom line. Outcomes that lead to a level of care that feels exceptional to the patient and the care provider. Proof positive of the value of integrating medical technology, IT, management consulting and services. In a way that only Siemens can.



Life – our customer care program

Life is the unique customer care solution from Siemens that helps you get the most from your investment. From the moment of your purchase, Life surrounds you with an array of programs and support that enables the continuous development of your skills, productivity, and technology. Allowing you to broaden your capabilities. Increase profitability. And take patient care to the next level.

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