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# Artis zee for interventional radiology

There's so much more to zee

Answers for life.

# zee more, do more

Interventional radiology has never been more challenging. In an increasingly competitive healthcare market, institutions seek to enhance patient outcomes and remain on the cutting edge. That requires solutions that can enable you to deliver better care with greater speed, efficiency and precision.

Artis **zee** imaging systems from Siemens provide an appropriate answer and bring major advancement to interventional radiology in several ways.

The CARE dose reduction program and CLEAR image applications improve radiation protection for patients and staff as well as image quality. Integrated system workflow features help clinical teams conduct procedures more efficiently.

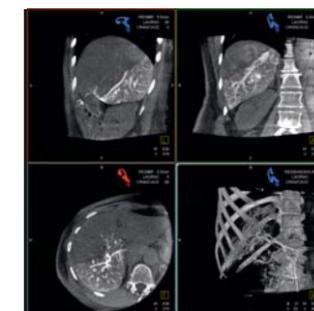
Most importantly, Artis **zee** gives you the versatility and advanced imaging capabilities to deliver faster, more effective patient care.



syngo DynaCT 360 delivers large-organ, soft-tissue images in just 6 seconds



syngo iGuide lets you perform needle procedures more easily



Ex-centric syngo DynaCT minimizes radiation

Artis **zee** is a revolutionary, multi-axis system for interventional radiology offering variable working height adjustment and large volume 3D imaging. Artis **zee** can be positioned with greater flexibility and precision than a conventional system, making it an ideal solution for hybrid rooms.

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The Artis **zee** biplane system with two large (30 x 40) detectors offers excellent coverage and flexibility for the complete applications spectrum, including neuro, spine and abdominal as well as pediatric imaging.



Artis **zee** biplane with mixed detectors (20 x 20 and 30 x 40) allows the utilization of the smaller lateral FD in combination with the larger a.p. detector.



Artis **zeego** is the revolutionary, multi-axis system that enables variable working height and delivers large volume image results to meet your current and future imaging needs.



The Artis **zee** ceiling-mounted system features a large flat detector and affords easy patient access and full body coverage.



The Artis **zee** floor-mounted system features a large flat detector and offers excellent performance for unrivaled clinical workflow.



The Artis **zee** multi-purpose system features a flexible architecture with versatile clinical applications for performing both angiography and fluoroscopy examinations.



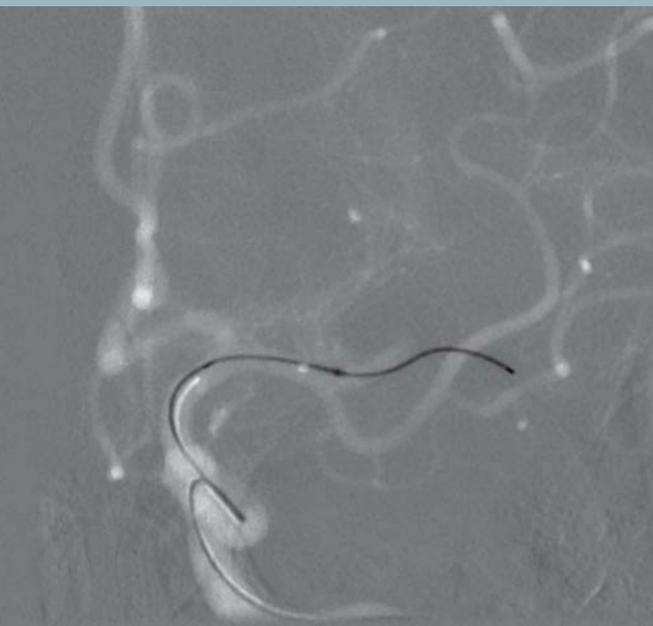
Artis **zee** systems can accommodate various interchangeable tabletops to perform applications for diverse disciplines.

The Artis **zee** family includes a full portfolio of systems to meet virtually any interventional imaging need.

# Take a good look

The Artis **zee** imaging chain enables improved visualization of therapeutic devices as well as a range of advanced applications – from cross-sectional imaging of soft tissue at the tableside to enhanced guidance tools – that enable you to care with greater speed and precision.

## Improved visualization with the least possible dose



Outstanding device visualization with roadmap

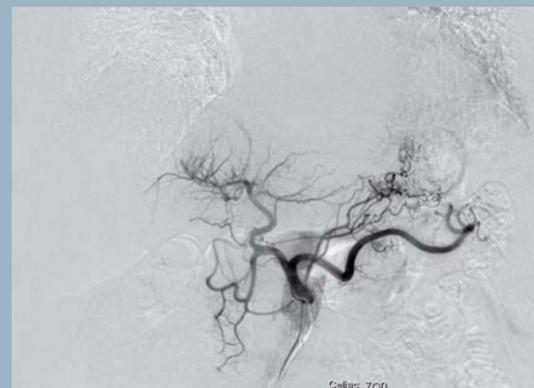
### Enhanced clarity

Artis **zee** features key advances that significantly improve the clarity of live fluoro, roadmap, and reference images, and greatly enhances the visualization of stents, their meshes, coils, and guidewires.

- Intelligent noise reduction enhances not just the reference image, but the fluoroscopy image during live fluoro – without an increase in dose.
- Advanced temporal filtration uses an intelligent motion detection algorithm to separate moving from non-moving structures in real time.
- Advanced Roadmap enables separate windowing for vessel and device contrast. In combination with the latest Artis **zee** software, the Advanced Roadmap lets you select any DSA reference image as a roadmap. With the 'Show Progress' function, you can observe the glue injection or actual coil placement with the vessel map from the initial roadmap.

### See the finest detail with 2k Imaging

2k Imaging, combined with a true micro focus, provides four times the information and twice the resolution for pre- and post-overview imaging. It offers excellent visualization of fine structures and enables you to zoom your image without loss of detail.



Visualize the finest distal vessels in overview formats with 2k Imaging

## Enhanced 3D imaging for greater precision



Visualize the arterial feeding vessels of the left liver lobe tumor with *syngo* DynaCT

### Cross-sectional imaging at tableside

*syngo* DynaCT is a unique form of rotational angiography that uses special reconstruction algorithms to generate CT-like images in less than one minute directly at tableside. *syngo* DynaCT supports the clinician with RF ablations, vertebroplasties and drainages, speeds up and simplifies chemoembolizations and enables visualization of:

- Hemorrhages
- Tumors
- Ventricular system of the brain
- Stent placement



Pooling of contrast agent during interventional stroke treatment

### zeego opens your eyes

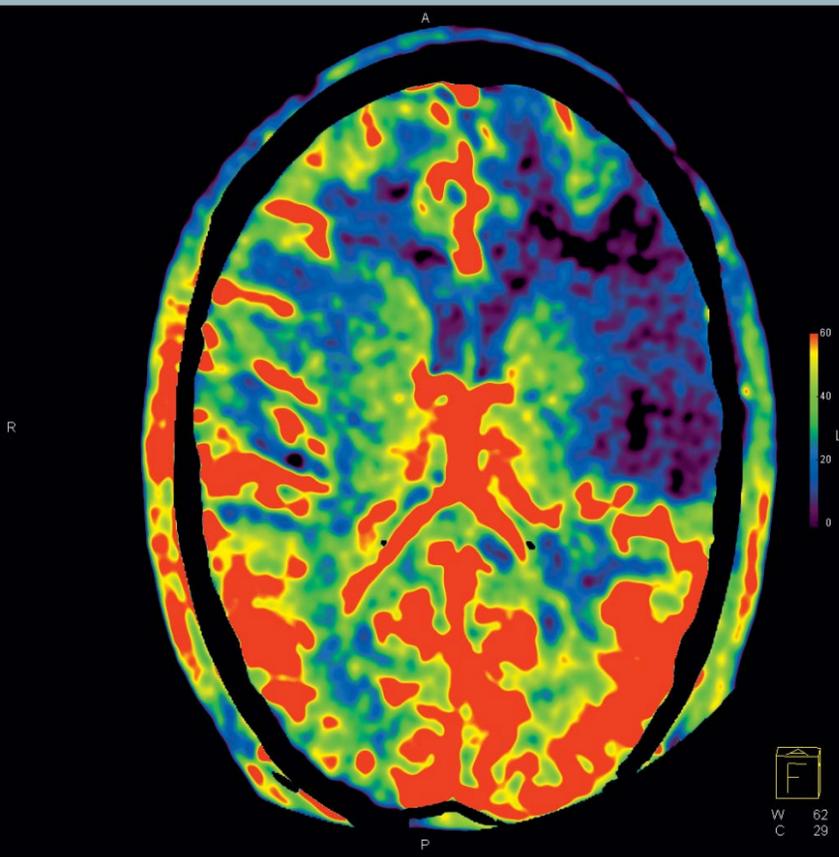
When used with the advanced multi-axis Artis **zeego** system, *syngo* DynaCT can also provide images of the whole abdomen with Large Volume *syngo* DynaCT. Artis **zeego** with *syngo* DynaCT enables:

- Large volume coverage that rivals a traditional CT scanner, ideal for obese patients
- Portrait volume imaging, ideal for liver, spine and carotids
- With *syngo* DynaCT 360, it delivers large-organ, soft-tissue images in just 6 seconds



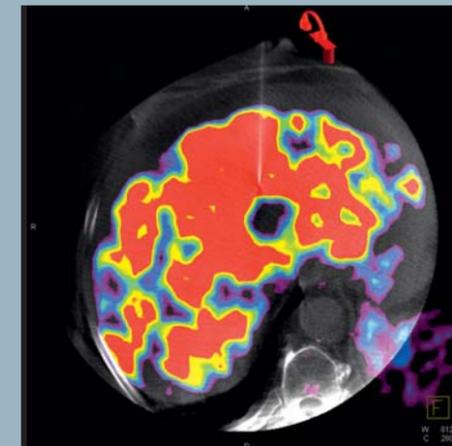
Image the whole abdomen with Large Volume *syngo* DynaCT

## Advanced applications for enhanced treatment



Functional Imaging in your interventional suite with *syngo* Neuro PBV IR

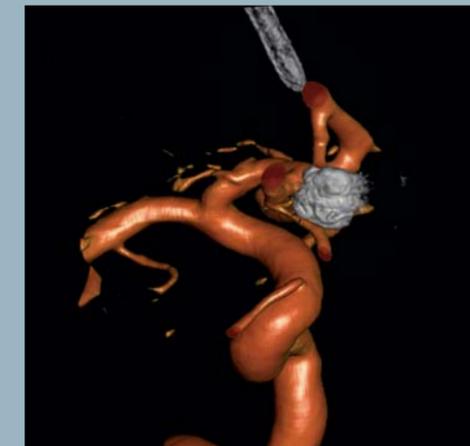
**Visualize the parenchymal blood volume during interventions with *syngo* Neuro PBV IR**  
 A market first, *syngo* Neuro-PBV IR enables you to visualize the parenchymal blood volume of the brain during interventions. You can also make parenchymal blood measurements in the angio lab and compare regions of interest within different lobes. The function offers several clinical advantages for stroke treatment as well as for tumor biopsies and treatments, tissue embolizations and vasospasm therapies.



Additional information provided by fusing *syngo* DynaCT with a PET dataset during interventions.

**Multimodality Fusion with *syngo* InSpace 3D/3D Fusion**  
*syngo* InSpace 3D/3D Fusion superimposes volumes from different modalities, enhancing the clinical workflow.

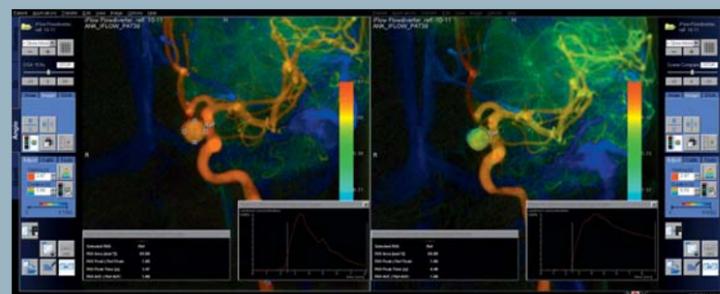
*syngo* DynaCT or *syngo* InSpace 3D images can be fused with datasets from CT, MR or PET. During interventional guidance procedures InSpace 3D/3D results can be overlaid on live fluoro images.



Dual-volume visualization of a cerebral coil package with *syngo* iIdentify

**Dual-volume visualization with *syngo* iIdentify**  
*syngo* iIdentify provides simultaneous visualization of dual-volume high-contrast imaging or one high- and one low-contrast dataset. It saves time, simplifies procedures, and is an ideal tool for providing a baseline for surgery. With *syngo* iIdentify you can:

- Differentiate between contrast-filled vessels and bones, stents, and coils
- See the anatomical structure of tumors in combination with feeding vessels
- Visualize calcification next to contrast-filled vessels



Dynamic flow evaluation with *syngo* iFlow changes the way you see DSA

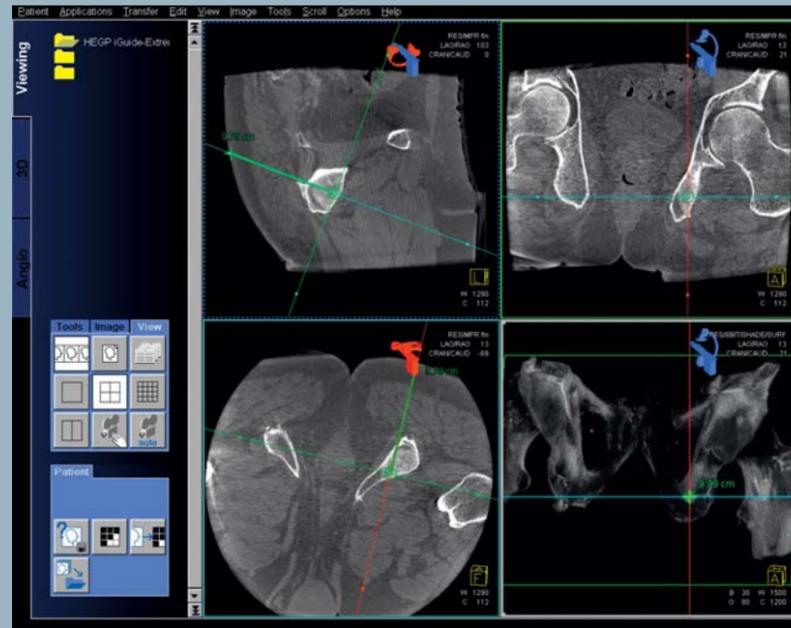
**Dynamic flow evaluation with *syngo* iFlow**  
*syngo* iFlow allows for the visualization of a complete Digital Subtraction Angiography (DSA) run in a full color single image, all at the press of a button. *syngo* iFlow provides a greater understanding of the contrast flow within the pathology, greater ease in visualizing the success of a procedure and assists the clinician in image review, use regions of interest to confirm successful treatment or identify regions with blood flow anomalies.

## Guiding you to better and faster outcomes

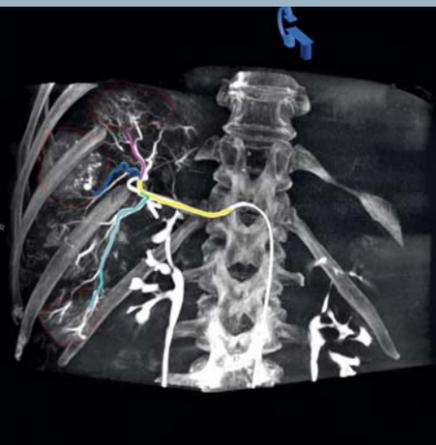
### Integrated needle guidance with syngo iGuide

syngo iGuide frees up your CT by facilitating efficient needle procedures right in the interventional suite. By taking you through its intuitive workflow, syngo iGuide clearly displays the length and angulation of the needle path and automatically positions the C-arm so you can plan the needle path, determine skin entry point, and control needle progression in one fluid process.

The integrated laser crosshair projected onto the skin enhances needle guidance by indicating the entry point to help position the needle more comfortably and precisely.



Intuitive needle procedures with syngo iGuide



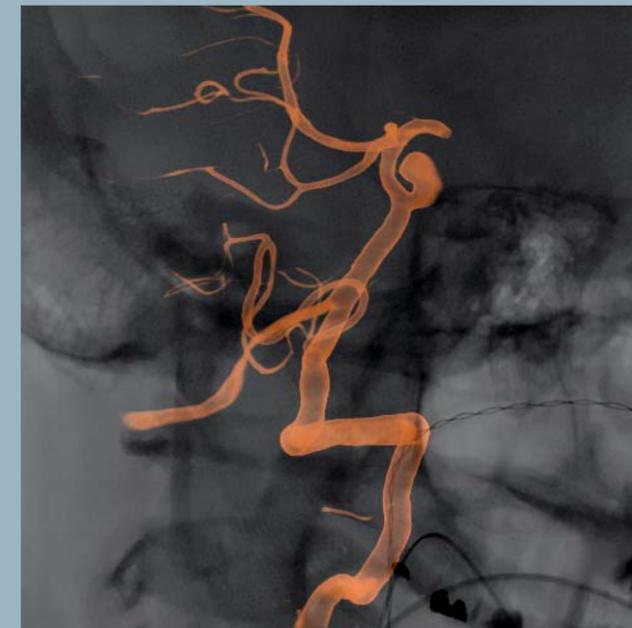
Faster embolizations with syngo Embolization Guidance



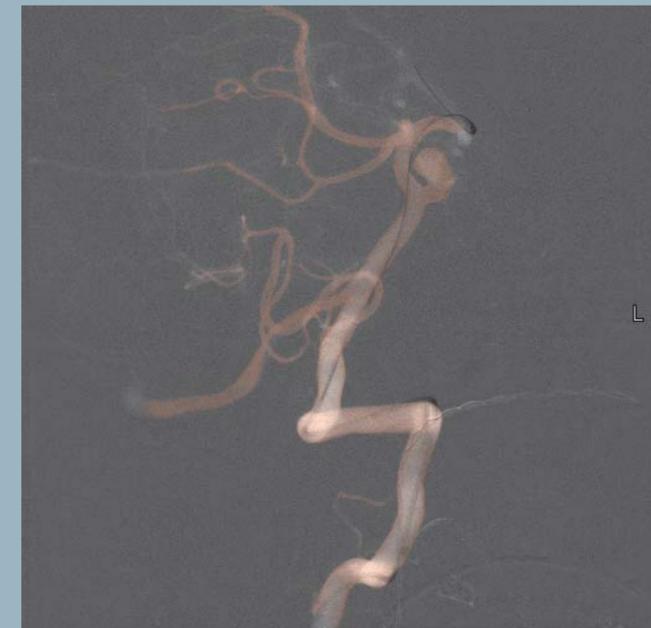
Overlay of tumor and feeder segmentation with live fluoroscopy using syngo iPilot

### syngo Embolization Guidance improves your planning and guidance

syngo Embolization Guidance facilitates minimally invasive embolizations by simplifying treatment planning and delivery as well as monitoring outcomes. By accelerating interventional procedures, it also helps reduce contrast medium and dose.



syngo iPilot overlays a 3D volume while using fluoro



syngo iPilot while using roadmap

### Effective guidance with syngo iPilot

syngo iPilot provides a simultaneous display of the live fluoro, roadmap or acquisition image and a matching 3D reconstruction to facilitate guidance during interventions. The system updates dynamically to movements of the C-arm, table, zoom, and source-to-image distance to facilitate efficient workflow during interventional procedures. syngo iPilot is invaluable for:

- Enhancing decision making
- Improving confidence during complex procedures
- Aiding in verifying the results of neurological and other interventions, such as the correct placement of coils in aneurysms

# Life is precious Take CARE

We greatly CARE about dose reduction. Our CARE (Combined Applications to Reduce Radiation Exposure) package reduces radiation dose for patients and clinical staff while still providing high image quality and diagnostic confidence.

### Dose saving

**CAREvision** provides variable fluoroscopy frame rates. Pulse frequencies can be adapted to clinical needs: from 30 p/s in variable steps down to 0.5 p/s.

**CAREfilter** is a specially designed copper prefiltration system that automatically adjusts the filter to the patient's anatomy.

**CAREprofile** allows radiation-free collimator and semitransparent filter adjustment using the last image hold (LIH) position as reference.

**CAREposition** enables radiation-free object positioning. The graphic display in the LIH image lets you pan the table or C-arm position without using fluoroscopy.

**Low-Dose Acquisition**, a dedicated acquisition protocol, can achieve dose savings of up to 67%.

**Low-Dose syngo DynaCT** provides 3D images at the lowest possible dose levels. For neuro applications, it can achieve an effective dose of 0.3 mSv.

### Dose monitoring

**CAREguard** lets you define three threshold values (low, medium and high) for the accumulated skin dose. A warning sound and pop-up display on the system signal when a skin dose level is exceeded.

**CAREwatch** displays the dose area product and dose rate at the interventional reference point on the live display in the examination and control room.

**CAREmonitor** shows the accumulated peak skin dose according to the current projection in the form of a fill indicator on the live monitor. Any change to the C-arm, table, SID, zoom or collimator prompts the system to automatically update the calculation.

### Dose reporting

**CAREreport** is a DICOM-structured radiation report containing all patient demographic, procedure and dose information. With commercially available programs or in-house software, the information can be filtered for further processing such as dose analysis.

**CARE Analytics** is a non-medical tool designed to improve dose monitoring in interventional imaging. With it, relevant information such as dose area product, skin entrance dose and other X-ray imaging parameters can be presented in a table format for further analysis (e.g. statistical reports for dose data and related parameters).

# I zee CLEAR

During interventions, the single most important factor for physicians is to have clear clinical images to help them make the right decision for the patient. CLEAR offers a comprehensive range of applications with real-time processing to enhance image quality – without increasing the dose.

### The flat emitter advantage

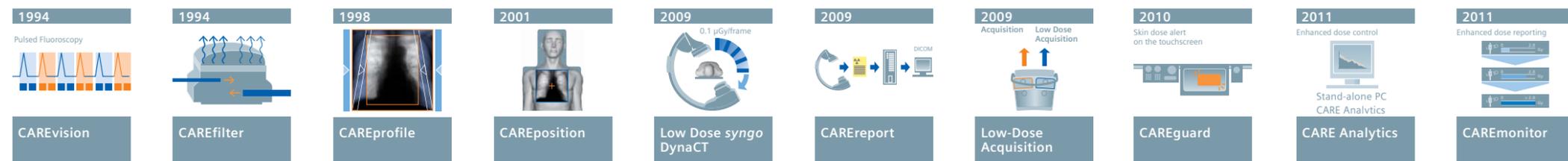
The new MEGALIX Cat Plus tube with flat emitter technology makes everything you see and do on an Artis zee look amazing. That's because it delivers more fluoroscopic power and for longer. With up to 250mA of raw power, it provides up to 40% higher tube current, which is especially helpful when treating obese patients.

**CLEAR** comprises an entire range of real-time processing tools to optimize image contrast and sharpness without increasing the dose.

- **CLEARcontrol** enhances the image creation process with a unique histogram analysis. It also optimizes brightness and contrast throughout the entire image for improved structure visualization near the diaphragm.
- **CLEARview** enhances overall image quality, especially when using low-dose imaging protocols with dose-adaptive noise reduction.
- **CLEARvessel** automatically detects vessel edges in the image and enhances their contrast. The result? Sharp vessel edges.

- **CLEARmotion** helps detect small structures and efficiently compensates for motion artifacts. The benefit? Optimal small vessel and guide wire visualization in the beating heart.

**CLEARchoice** enables preferred image quality selection during application. Whether you like sharper or smoother images, you can optimize your Artis zee to suit your preferences.



Timeline of Siemens innovations to reduce, monitor and report dose in angiography.

# Don't work harder than you have to

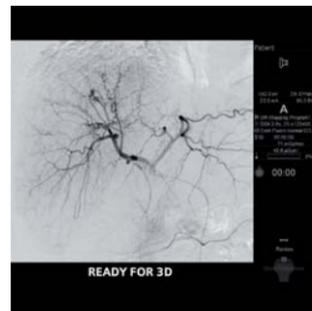
As demand for interventional procedures increases, so does the need for your clinical team to function more efficiently. Artis **zee** meets the challenge with new, ergonomically designed controls that streamline workflow through every phase of care delivery.



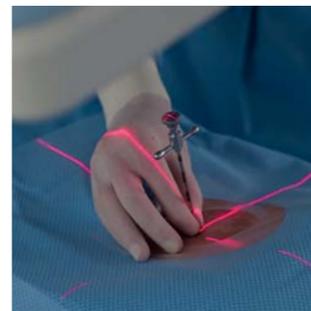
The Artis **zee** slimline full tableside control panel features intuitive *syngo* icons, which are easier to use.



The new mouse-like control is easier to operate. Due to its modular design, it can be flexibly positioned to maximize operator comfort.



The new menu-driven workflow enables faster acquisition and display of 3D images. To improve efficiency, the system automatically moves into the start position, eliminating the need for the operator to select the position manually. High-contrast 3D results are available in real time, soft tissue results in less than a minute.



An integrated laser crosshair enhances needle guidance workflow with *syngo* iGuide by reducing radiation and procedure time.



The slimline control module allows the operator to get closer to the table for easier patient access

# Artis zee Large Display



With the Artis **zee** Large Display, Siemens features a full-color 56-inch medical-grade screen that lets you view multiple inputs simultaneously and provides over 200 layout configurations. Up to 12 different screen combinations can be directly selected at tableside and the image of clinical focus can be zoomed up to twice the size of a standard display. The Artis **zee** Large Display gives you the whole picture.

# Meet zeego, the world's most flexible interventional assistant



Artis **zeego**'s outstanding ergonomics enables you to perform interventional procedures with more efficiency, precision and comfort. It can be stowed away in a variety of compact positions to facilitate cleaning and make the most of the limited space available in the interventional suite.

Artis **zeego**, the first multi-axis system on the market, is ideally suited for interventional oncology and hybrid room procedures, offering more positioning flexibility than conventional systems. Variable working height adjustments make performing procedures much more comfortable for the clinical team. Also, the system's special park positions allow easier patient access.

**syngo DynaCT 360**, a unique feature of the Artis **zeego**, provides coverage of the entire abdomen, thereby enhancing interventional oncology procedures such as chemoembolizations, radioembolizations and RF ablations and abdominal applications such as EVAR.

# zee gives you the edge

Siemens UPTIME Services – a smart investment for a wide range of very individualized support offerings.

**UPTIME Services – solving tomorrow’s problems today**

At Siemens, systems and services go hand in hand. During interventional radiology procedures, imaging systems play an increasingly important role in providing critical support. With the development of digital solutions, there is a greater need for seamless workflows – and for high operational security. Our proactive service solutions help increase system availability, reliability and workflow efficiency. We also offer hands-on training, workshops and continuing education courses.

**Siemens Performance Plans – tailored to your specific needs**

Service and maintenance are crucial for preventing unscheduled downtimes and, thus, improving workflow. Our Siemens Performance Plans help you run your operations more smoothly – with predictable costs, less risk and greater efficiency. Individual needs call for individual service agreements. At Siemens, you can choose between a TOP, PLUS or PRO Performance Plan agreement as well as optional modules. You thus receive a solution with substantial benefits that best fits your requirements.

**A partner at your side**

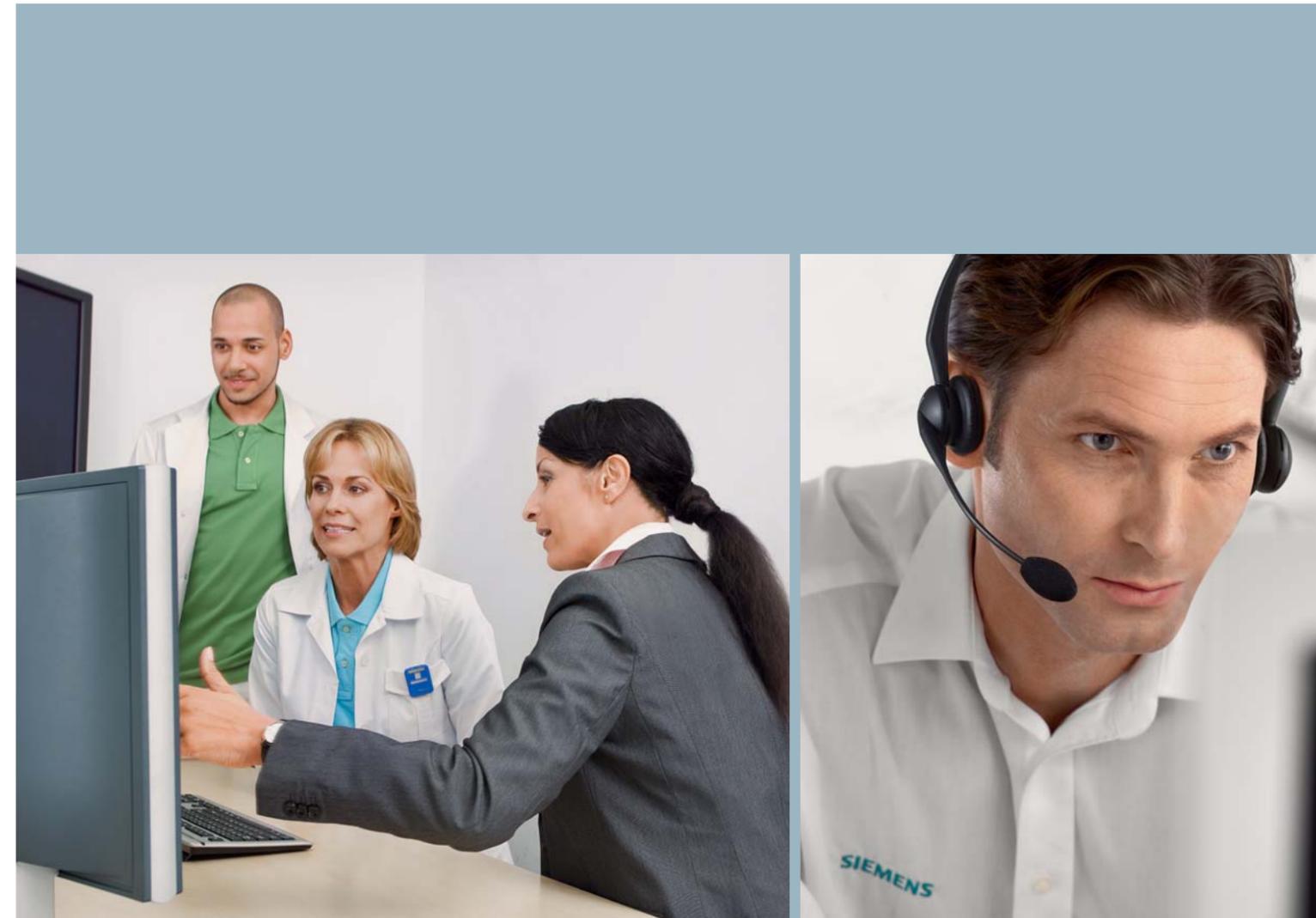
As a proactive service provider, Siemens UPTIME Services offers real-time remote monitoring and preventive maintenance of your Artis zee hardware and software components. The Siemens Guardian Program™ provides continuous real-time remote Artis zee system monitoring on an ongoing basis for possible deviations from defined parameters. It thus ensures a high level of system availability by detecting and resolving errors before malfunctions occur.

**Capitalize on a new dimension in system support**

All of our proactive services are powered by Siemens Remote Service, the efficient and comprehensive infrastructure for the complete spectrum of medical equipment-related remote services. Services that formerly required on-site visits are now available via data transfer, including error identification and immediate remote repair.

**syngo Evolve – a performance driver for your system**

Up-to-date hardware and software is essential for enhancing the performance and diagnostic quality of your Artis zee system. syngo Evolve helps you keep pace with rapidly developing technological advances and extends the lifespan of your system. Application and software updates as well as hardware upgrades enable higher workflow efficiency.



From on-site applications training to optional clinical courses, we can help you optimize your workflow and get the most from your Artis zee

The Siemens Guardian Program™ optimizes your workflow with proactive real-time system monitoring

# zee the possibilities



Siemens has been expanding the boundaries of radiology for more than a century. Over the decades, we have developed innovations that have made diagnostic imaging faster, and more effective, and that have enabled millions around the world to live longer lives. Artis zee is the latest illustration of that legacy of forward thinking. And as medical science continues to explore the possibilities of interventional imaging, Artis zee will be ready to help you translate that progress into higher levels of care.



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