AXIOM Innovations

The Magazine for Interventional Angiography and Cardiology, Radiography and Fluoroscopy

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SIEMENS
medical

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Editorial

Dear Reader,

Dr.-Ing. Norbert Gaus
President AX Division

This year's RSNA is special. A new era is about to begin. We not just talk about being innovative, we deliver innovations. We from the AX Division at Siemens Medical Solutions are proud to present a completely new product portfolio in interventional imaging and a new system for digital radiography. All our new products are designed to fulfill our customers' needs, let them treat with greater care, provide them with excellent imaging capabilities and keep them on the cutting edge of technology.

As procedures become more complex, the field of interventional imaging becomes ever more demanding. Seeing the finest vessels and devices as well as having 3D information at your fingertips is imperative for radiologists and cardiologists. The new Artis **zee**® family featuring Artis **zeego**® *, a multi-axis system, is designed for a wide range of interventional procedures. It offers improved image quality and significantly enhanced operability for physicians and technicians. Such advances are critical – and potentially lifesaving – during intricate heart, brain or abdominal procedures for which the new equipment has been designed. In surgery, the trend is towards minimally invasive procedures. Therefore excellent imaging capabilities are key to success also in the OR. In this complex environment Artis **zeego** with its flexible positioning and multiple park positions is the ideal system.

Our innovations also shape the market of digital radiography (DR). It started in 1998 when we introduced the first digital radiography system with flat detector (FD) technology. Since then, the FD technology has made its way into almost every radiography and fluoroscopy system. Wireless flat detectors are the basis of the next generation equipment. Our Ysio wi-D**, with wireless flat detector, is a new approach to digital radiography to improve productivity in the radiography department.

I kept this editorial short, because I know you cannot wait to turn the page and have a look at what is to come. Read all about the Artis **zee** Family, Artis **zeego** and Ysio wi-D in this special issue of AXIOM Innovations.

Enjoy reading AXIOM Innovations

(Dr. Norbert Gaus)

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* The information about this product is being provided for planning purposes.
The product is pending 510(k) review, and is not yet commercially available in the U.S. (510k pending)

** The information about this product is being provided for planning purposes.
The product requires 510(k) review and is not commercially available in the U.S. (Future 510k)

Visit us at RSNA 2007, Booth # 7713, Hall B and experience our innovations for yourself.

* Artis zeego is 510k pending

There's so much more to **zee**

The field of interventional imaging has never been more demanding. To see fine vessels and small devices is getting more and more important. Excellent image quality is a vital requirement for every system used in an interventional lab.

"See more, do more" is the philosophy of AX, the Angiography, Fluoroscopy and Radiography Systems Division of Siemens Medical Solutions when it comes to interventional imaging. After all, a radiologist or cardiologist can only treat what can be seen on the 2D fluoro or 3D images. By seeing more, such as vessel detail and device infrastructure, confident decisions for treatment can be determined and implemented.
To enhance patient outcomes and remain on the cutting edge, radiologists and cardiologists need an imaging solution that enables them to image and treat with greater speed, efficiency, and precision. Siemens' answer to these needs is an entirely new line of interventional imaging systems: The Artis **zee** family.
Artis **zee** has been specially designed to benefit doctors in various ways. It features a totally new digital imaging chain* that offers advanced image quality and advanced 3D imaging capabilities to enhance clinical decision making in the interventional suite. Its workflow improvements help clinical teams to treat patients more confidently and work more efficiently. What's more, Artis **zee** looks into the future. Choosing an Artis **zee** system, is an investment customers can make with confidence. The system platform is built for the future. It is designed for new applications and backed by one of the industry's most comprehensive customer care program.
The new Artis **zee** family offers a complete portfolio of systems for virtually every clinical need. Siemens offers biplane, ceiling-mounted, and floor-mounted systems for cardiology and in-

Artis **zee** for Interventional Radiology

Artis **zee** biplane

Artis **zeego***

Artis **zee** ceiling-mounted

Artis **zee** for Interventional Cardiology

Artis **zee** biplane

Artis **zeego***

Artis **zee** ceiling mounted

terventional radiology and multi-functional systems for angiography and fluoroscopy.

Ready to **zee** the future today?

Complimenting this already extensive product portfolio, the Artis **zee** family offers an exceptional highlight, the first multi-axis system with unprecedented positioning flexibility: Artis **zeego***.

There has never been anything quite like Artis **zeego**. Inspired by advances in automated manufacturing, Artis **zeego** is the first multi-axis system that can be positioned exactly the way it is needed and controlled with far greater ease and precision than any traditional floor or ceiling-mounted system. Artis **zeego** gives the user greater positional flexibility and broader coverage. One of its main benefits is large volume cross-sectional imaging with up to 47 cm in diameter offering a broader coverage of anatomy, e.g. an enlarged liver. In addition, the Artis **zeego** was designed with a variable isocenter. The clinician can adjust the working height of the system, reducing fatigue and backaches associated with fixed heights, long procedure time and lead aprons. Artis **zeego** can be parked compactly to give the clinical team easier access to the patient, making it an ideal solution for hybrid rooms.
Artis **zeego's** multiple axes create flexible projections and angulations from head to toe enhancing workflow efficiency. The SafeMove function enables the operator to maneuver the Artis **zeego** with confidence around the patient and accessory equipment, such as anesthesiology.

Artis **zee** floor-mounted

Artis **zee** multi-purpose

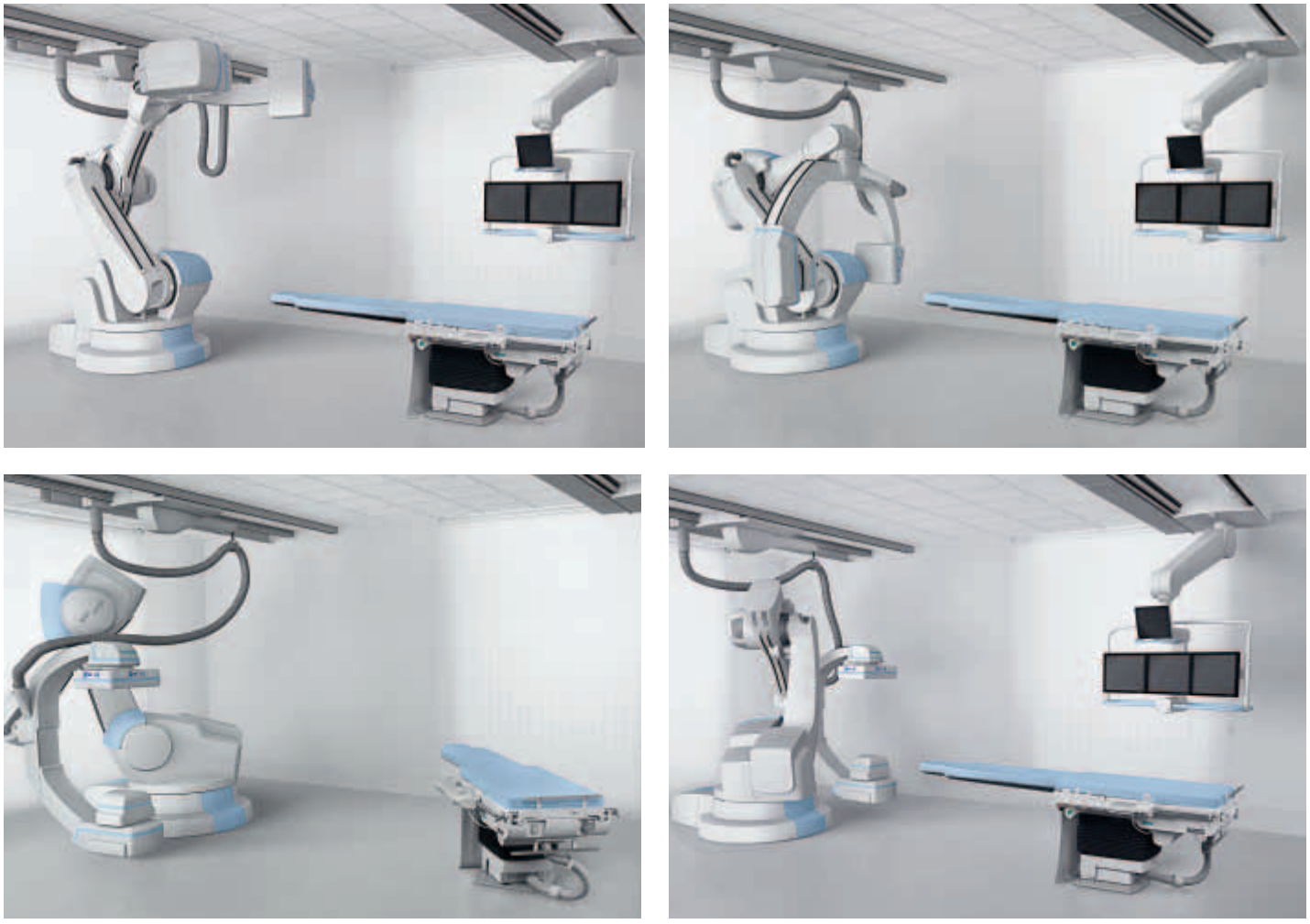
Artis **zee** floor-mounted

Artis **zee** Magnetic Navigation

A dedicated system for the Operating Room

Financial responsibility is foremost on the minds of healthcare administrators. A hybrid OR room fosters the multidisciplinary approach to comprehensive patient care and management. Situations arise where the clinical team must quickly shift from an endovascular procedure to open surgery, a hybrid room eliminates the need to transfer the patient to the OR and increases workflow efficiency and patient care. But whatever the procedure, Artis **zeego**'s flexibility and advanced ergonomics enables clinicans perform with more efficiency, precision and comfort. Artis **zeego** helps make the most of available space available in the OR. It can be parked in a variety of positions, so surgeons have more work space and better access to the patient. The system can also be combined with an endovascular OR table, which enables a 15° tilting heads up and heads down, 15° lateral tilt for optimal patient positioning. Since Artis **zeego** is floor mounted, it easily meets laminar flow and other sterility requirements.

* 510k pending



Artis **zeego*** offers the most flexible park positions to stow the system out of the way when it is not needed.

A new level of imaging

The Artis **zee** family features a new multi-host imaging system designed for acquisition and post-processing with high system reliability. The dual host architecture makes it an ideal platform for the future and opens up new multi-tasking applications for simultaneous imaging. Image quality is a vital requirement of an interventional suite, excellent imaging capabilities are a matter of course for Siemens Medical Solutions. And this is not only limited to 2D acquisition and fluoroscopy, but is also available for 3D imaging right at the tableside.

Large Volume *syngo* DynaCT*

There are completely new imaging capabilities available with Large Volume *syngo* DynaCT. For the first time in the industry it is now possible to acquire an extended volume with a flat detector. Due to the higher amount of data acquired, a larger anatomical area of 47 cm in diameter and 18 cm in height can be covered. This extended field of view, enabled by the large volume, is especially important when performing liver tumor treatment with chemoembolizations. Better coverage of the abdomen plays an important role when imaging obese patients. Needle work such as biopsies and radio frequency ablations can now be done with full orientation, since the skin entry as well as the target point can be visualized in one image.
Portrait *syngo* DynaCT offers an extended field of view with a 35 cm diameter and a 25 cm height which is especially suitable for spinal applications such as vertebroplasties, kyphoplasties, lumbar punctures and CT myelographies.

syngo iGuide*

A new application available for the entire Artis **zee** family is *syngo* iGuide. It is a useful tool to plan needle procedures

* 510k pending

Imaging from head to toe.

Head access to the patient from all sides.

such as biopsies, radio-frequency ablations and vertebroplasties directly in the angio suite. In cases of obese patients and complex needle position planning, the angio suite provides better access than a conventional CT. *syngo* iGuide provides three easy steps to needle planning and positioning. By taking the user step-by-step through its intuitive workflow, *syngo* iGuide allows the user to plan the needle path and the skin entry point, and control the needle progression in one fluid process.
By moving needle procedures from the CT scanner to the interventional suite the CT is freed up for more diagnostic cases.

syngo iPilot*

syngo iPilot provides a simultaneous display of a live fluoro image and a matching 3D reconstruction to facilitate guidance during interventions. The system updates dynamically to movements of the C-arm, table and source-to-image distance changes to facilitate efficient workflow during interventional procedures. *syngo* iPilot enhances decision making and improves confidence during complex procedures by providing enhanced imaging capabilities that aid in verifying interventional treatment for example in the placement of coils into an aneurysm. Also, patient movements can be manually compensated.

From 2D to 4D in Cardiology

The Artis **zee** family portfolio also features dedicated C-arm systems for interventional cardiology and electrophysiology. In this special field of intervention, excellent image quality is key. Imaging a moving structure such as the heart has always been a challenge. Now, with the Artis **zee** imaging system, outstanding image quality is provided from 2D fluoroscopy and 3D imaging and even a 4D image application where the time phases of the heartbeat are taken into account. In 2D fluoroscopy, features like advanced temporal filtration use an intelligent motion detection algorithm. This technology separates moving from non-moving structures in real time to improve the clarity of therapeutic instruments. Intelligent noise reduction enables high image quality during live fluoroscopy and acquisition by significantly reducing quantum noise without an increase in dose.
Stent meshes can be difficult to see, especially in obese patients or when steep angulations are used. But IC Stent* uses the balloon markers of the deployment balloon as reference points to shift and match images. Those images are then integrated to improve the signal-to-noise ratio to significantly enhance the visibility of stent meshes. For 3D applications, *syngo* IC3D helps to accurately measure lesions in the coronary arteries by using two projections. From these projections, a 3D model is generated so that a vessel can be rotated freely in space to precisely assess a lesion's diameter profile and the degree of stenosis. It also enables accurate measurement of lesion length to simplify appropriate stent selection.
The latest application, *syngo* DynaCT Cardiac, widens the 3D spectrum to 4D. By using rotational angiography and special reconstruction algorithms, *syngo* DynaCT Cardiac creates CT-like images of the beating heart right in the cath lab. During acquisition, it can use an ECG-triggered mode to collect image data to acquire only images from the same heart phase. With this feature it is now possible to reconstruct 4D images of the heart and its vessels in the cathlab.

Enhanced workflow

As demand for interventional procedures increases, so does the need for the clinical team to work more efficiently. Artis **zee** meets the challenge with new, ergonomically designed controls that streamline workflow through every phase of care delivery. All 3D applications can be operated directly from tableside and displayed on the in-room display system together with previously acquired CT or MRI images.
The new tableside user interface* improves the workflow during the procedure. Its new smaller design offers easy-to-read *syngo* icons for quicker selection of task-cards. The new mouse-like control combined with the user interface is easier to operate. Due its modular design, it can be flexibly positioned to maximize operator comfort. For cardiology procedures a special task card has been included to provide direct access to the features required for cardiac imaging needs.
The new menu-driven workflow enables faster acquisition 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. Previous manual steps become automated. Operator instructions are shown in real time on the data screen of the display system and guide the operator through different stages of the 3D acquisition.
The operator can also select from a wide range of user-defined presets to ensure

* 510k pending

Better access from all sides, even during emergency procedures.

fast and consistent results, including high contrast results in real time, and soft tissue results at the tableside.

A confident investment

A new interventional imaging system represents a substantial investment for any healthcare enterprise. The Artis **zee** family was specifically designed to provide value for your investment today and in the years ahead.

Artis **zee**'s advanced 3D imaging capabilities enhance the decision-making of clinicians and facilitate faster and more effective procedures. Its ergonomic controls streamline workflow and improve patient throughput. Its ability to generate cross-sectional images enables clinicians to perform pre- and post-surgical imaging in the OR and frees up the CT suite for other diagnostic cases.

At Siemens, an investment in the new Artis **zee** family marks the beginning of an important relationship that will last over many years. The award winning customer care program, Life, offers customers access to an array of programs and services that drive skill development, optimize productivity and support technology enhancement.

Right from day one, Siemens customers enjoy world-class onsite applications training, helping to ensure that they realize the full imaging and workflow potential of Artis **zee**. Dedicated e-learning helps to maintain knowledge levels, and offers access to useful tricks and tips 24/7. A wide range of international clinical workshops and fellowships are also available for radiologists and cardiologists.

Artis **zee** customers also benefit from the modern proactive service technologies including the Guardian Program™, which significantly reduces unplanned downtime by detecting problems before they occur.

Artis **zee** and Artis **zeego** have been designed with the future in mind, and Siemens is committed to sharing that future with customers who invest in Artis **zee** today. *syngo* Evolve for Artis **zee** allows customers to participate in future innovations via a managed upgrade program. So, from initial on-site application training, pro-active uptime and system upgrade management to expanding the clinical portfolio.

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Ready for the Future

With the new Artis **zeego**, Siemens Medical Solutions is first to market with an angiography system that delivers both outstanding imaging quality and greater flexibility.

Interview with
Prof. Dr. Maximilian Reiser

Artis Artis **zeego*** is a multi-axis, angiographic system for interventional procedures. It has more freedom of positioning to accommodate nearly all projections. Fluoroscopy can be performed easily on the patient from head to toe. With a flexible isocenter that enables the physician to adjust the exam table to the most comfortable working position, operation is easy and precise. The *syngo* DynaCT application has been expanded and can be used even more flexibly for 3D reconstruction, because a larger volume* is covered, expanding the view of the patient's anatomy. Not only are individual parts of the body imaged, but the entire abdomen. Images are acquired in landscape or portrait mode. In addition, Artis **zeego**'s flexible park positions make it ideal for hybrid rooms. The very first Artis **zeego** system in the world is located at the Institute for Clinical Radiology of the University of Munich. The institute is one of the largest of its kind in Germany. Its director is Prof. Dr. Dr. h.c. Maximilian F. Reiser. As former president and acting representative of the German Radiological Society and President of next year's European Congress of Radiology (ECR), he is one of the most influential radiologists in Europe. Siemens Medical Solutions spoke with him about his experience of Artis **zeego**.

* 510k pending

Prof. Reiser, your clinic is a specialty center for oncological interventions. You do hundreds of interventions every year. Now you have the first Artis **zeego** in the world. Why did you choose this system?
Oncology greatly profits from image-guided minimally invasive therapies. We hope that the greater flexibility and the extended park positions, better overview due to a larger acquired volume and excellent three-dimensional image quality will help us get even better treatment results. With Large Volume *syngo* DynaCT, we can now see entire organs, such as the whole liver. Moreover, lots of interventions are very complex. We deal primarily with patients that cannot be treated surgically. Either because the disease has progressed too far or vital anatomical structures are at risk or the patient's general condition simply won't allow open surgery. The more flexibility we have in caring for these patients, the broader the treatment options are, which reduces the burden on the patient. We also are dealing with many more obese patients. We should be able to take advantage of the larger field of view for access planning.

What oncological interventions do you perform most often and how important do you think image-guided tumor treatment is in treating cancer?
Many patients we treat with image-guided therapy have liver metastases, a hepatocellular carcinoma, a tumor in the lungs or kidneys. Most of the interventions are palliative in nature. We recently published a randomized study together with our oncological colleagues to compare the results of combined chemoembolization and radiofrequency ablation in treating hepatocellular carcinoma to the results from surgery. All study participants were patients who were also good surgical candidates. Therefore, we were not forced into choosing interventional therapy. The study showed that the results of both procedures were almost the same. I think that's very encouraging.

Do you think that image-guided tumor control and surgery will soon be on equal footing?
I can't really say yes or no. That will need to be decided on a case-by-case basis. For benign bone tumors and osteoid osteoma, radiofrequency treatment is the treatment of choice. It replaced surgical resection. The data from the study I just talked about is also interesting. But I do want to point out something else. When we have a three-dimensional view of the vessels, we can see what path we're on and how the tumor is being fed. We can then target precisely those vessels that are vital to the survival of the tumor. The excellent imaging also helps us verify if the spread of the embolizing agent in the desired manner. We're able to directly verify the success of the treatment. That's where I also see a lot of potential.

Artis **zeego** enables you to acquire and reconstruct images in both landscape and portrait format. This means you can see the entire spinal column. What do you think of this feature?

We're evaluating it, including for vertebroplasties, a minimally invasive procedure we use to stabilize osteoporotic and neoplastic vertebral fractures and reduce bone pain. Tumor patients are often pain free afterwards, are able to stand and undergo chemotherapy. Bone cement is used to reinforce bone lesions. None of the cement should get into the surrounding tissue. Having an excellent view during this procedure is essential. We usually perform the procedure under CT guidance. We're interested in seeing what capabilities the Artis **zeego** has to offer.

What do you think of being able to flexibly adjust the table with Artis **zeego**?

Anyone who has ever performed an intervention knows how important it is to work in the most comfortable and optimal position. Positioning is not trivial. We're looking forward to using this capability.

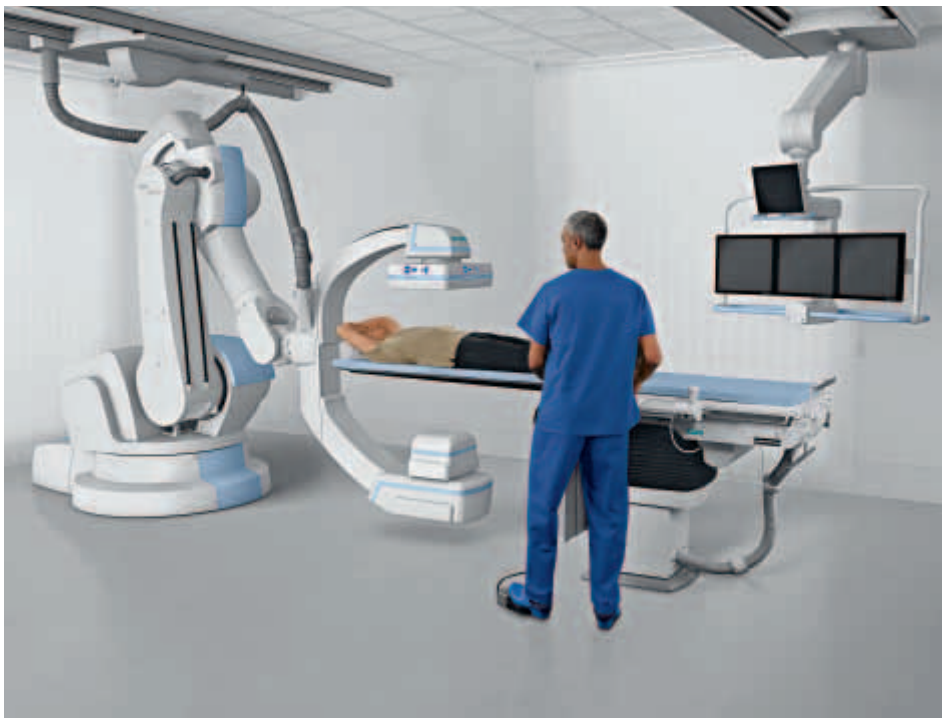
What's next for image-guided therapy? What kinds of innovation can we expect to see?

Ideas are coming out of stem cell research, molecular medicine and gene therapy. Let me explain. In interventions, we work specifically at the target site: treatment is very precise, quite different from a systemic approach. We embolize vessels and stop bleedings. We cut off the tumor by

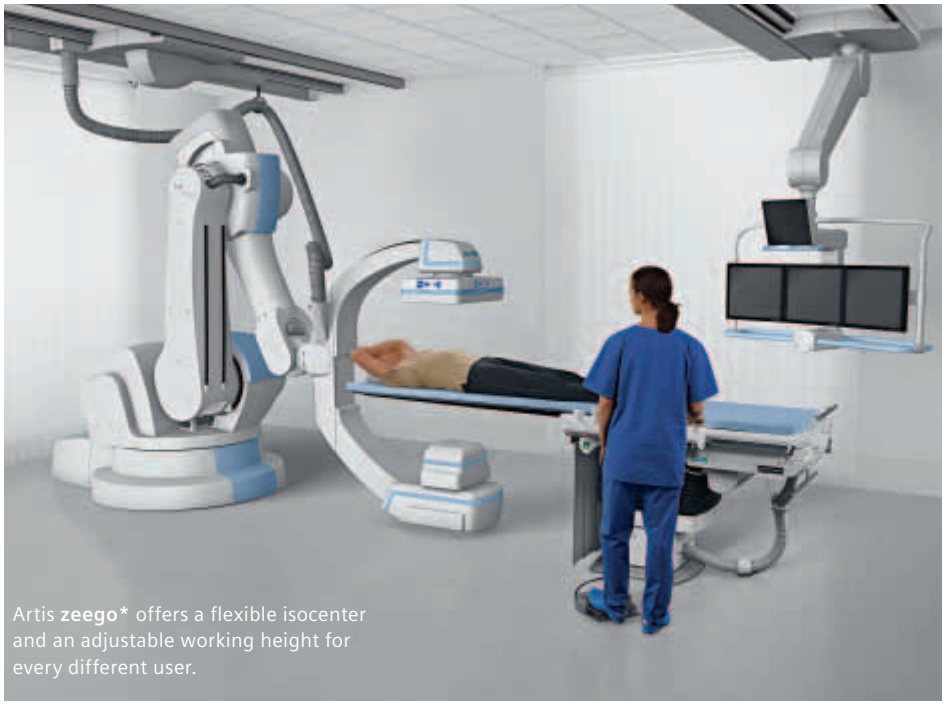
Prof. Dr. Dr. h.c. Maximilian Reiser
Professor of radiology and director of the institute for clinical radiology of the Ludwig Maximilian University of Munich. Prof. Reiser studied medicine in Munich, was professor of radiology at the Münster University Hospital and later professor and director of the Radiological Clinic in Bonn. For three years Prof. Reiser headed the radiology division of the German Institute for Standardization in Berlin. Since 1993 he is heading the radiology department of the Ludwig Maximilians University hospital in Munich. For five years he was member and vice chair of the board of directors of the hospital and is presently appointed as vice dean of the medical faculty. Prof. Reiser was awarded an honorary doctorate for veterinary medicine from the University of Munich. He is the author of over seven hundred scientific publications, a member and honorary member of many national and international professional societies, including the German Academy of Sciences Leopoldina. Prof. Reiser has been the recipient of numerous awards, including the Holthusen Ring from the German Radiological Society. He was President of the German Radiological Society and is currently its acting representative. Prof. Reiser additionally holds numerous offices at the European level.

cauterizing its feeding vessels. We apply cellular poisons, radioactive substances or high frequency alternating current, which enables us to locally control the tumor. Experimentation with stem cells has also been going on for some time, with work having been done on the heart and the pancreas. Infarct scars have been repaired and islet cells transplanted. The more experience we gain, the wider the range of potential applications. It's only a matter of time. Then it will be the job of interventional radiology to place stem cells exactly where they are needed. I also expect contributions from molecular medicine. Consider target specific biomolecules. Some are administered systemically, others locally. An agent for inducing angiogenesis is a possible candidate for local application. It could be inserted in the wall of an infarct scar in an attempt to improve circulation. Not much can be said about genetic therapy at the moment. It's still too early, but we can certainly expect interesting things from this field as well.

Interviewer: Hildegrad Kaulen, PhD is a molecular biologist. After having studied at the Rockefeller University in New York and the Harvard Medical School in Boston, she has been writing for scientific publishers and newspapers in Germany since mid-90s.



"Anyone who has ever performed an intervention knows how important it is to work in the most comfortable and optimal position. Positioning is not trivial." **Prof. Dr. Dr. h.c. Maximilian Reiser**



Artis **zeego*** offers a flexible isocenter and an adjustable working height for every different user.

* 510k pending

A Tradition of Innovations

The changing landscape of flat detector technology and its integration with digital radiographic and fluoroscopic imaging solutions.

From 1998 to 2002, Siemens Medical Solutions introduced their first digital flat detector radiography solutions, the well established AXIOM Aristos family equipped with Trixell Pixium 4600 radiography detector. This first digital radiography portfolio contained different system variants with integrated flat detectors to cater to various radiographic imaging requirements in areas such as general and trauma departments.
The amorphous silicon flat detector greatly changed the radiographic routine and addressed the many challenges faced in conventional and computed radiography – among them dose, workflow and image quality. These issues have been scrutinized and discussed in many journals and the advantages gained with flat detector solutions are well accepted. However, with all the advantages gained with the flat detector, one challenge was positioning flexibility for certain specific examinations as the detector could not be removed from the system. An example is a common projection, an axial projection of the hip.
To overcome this limitation, Siemens launched the AXIOM Multix M family in 2003. These imaging solutions showcased a single, mobile detector in a digital radiographic system. This mobile detector could be inserted either into the table or wall stand or placed in direct contact with patients for free exposures. This solution resolved the limitation of detector handling flexibility while improving workflow. Also, it complemented our AXIOM Aristos range by providing a choice of solutions for various clinical and economical requirements.

Flat detectors in the fluoroscopy suite

Following the increasing acceptance of flat detectors in radiography, Siemens Medical Solutions realized that customers would get an advantage through the integration of flat detectors into fluoroscopy solutions.
At RSNA 2005, the new conventional dig-

MULTIX and VERTIX FD
The first flat detector digital radiography solution to be introduced by Siemens Medical Solutions.

RSNA 1998

AXIOM Aristos Family
AXIOM Aristos FX, a member of the Aristos family, is a solution with fully automated system positioning. The ceiling suspended detector and X-ray tube facilitate flexible positioning with a single flat detector.

RSNA 2002

AXIOM Multix M Family
This family offers the first fully integrated digital radiography solutions equipped with the mobile flat detector – delivering workflow efficiency and flexibility.

RSNA 2003

ital fluoroscopy system AXIOM Luminos TF optionally equipped with a mobile flat detector, was launched. This solution enabled users to utilize the mobile detector for radiographic projections instead of cassettes. This concept again brought many workflow improvements and enhanced utilization of the fluoroscopy system – allowing healthcare institutions to re-evaluate the investment of such high-end digital fluoroscopy systems.
Following the path of further detector developments, a new full-sized 43 cm x 43 cm (17" x 17") detector with fluoroscopic and radiographic capabilities was launched at RSNA 2006, replacing the image intensifier and the Spotfilm device. The remote-controlled AXIOM Luminos *d*RF equipped with this innovative detector revolutionized the workflow and throughput in a typical fluoroscopy room.

What is next on the horizon?

Following recent innovations in radiography and fluoroscopy, Siemens Medical Solutions continues to push the limits with creative imaging solutions. In response to a frequently asked question, Siemens is introducing the newest digital radiography system at RSNA 2007.
Ysio wi-D*, the new digital radiography system brings new meaning to workflow flexibility. It is equipped with the new generation radiographic detector in the wall stand and a wireless mobile detector (wi-D) in the table. This solution of one integrated detector and one mobile wireless detector makes it possible to meet the demands of high throughput and a wide range of radiographic applications.
Ysio wi-D, an innovative system that simplifies challenging routines, is designed for virtually any examination without limitations.
Just read on for more details on the latest in radiography and fluoroscopy at RSNA 2007.

AXIOM Luminos TF with mobile flat detector
Totally digital solution for both fluoroscopy and radiography. Greatly streamlining the clinical workflow for improved efficiency.

RSNA 2005

AXIOM Luminos *d*RF
Revolutionizing the fluoroscopy suite. 2-in-1 solution for fully digital fluoroscopy and radiography with an integrated flat detector for both dynamic and static imaging.

RSNA 2006

Ysio wi-D
A brand new system in digital radiography, combining integrated and wireless mobile flat detectors for maximum workflow efficiency and flexibility.

RSNA 2007

* Future 510k

A new Dimension of Versatility

FD technology enters the fluoroscopy suite.

Fluoroscopy is one of the last modalities to introduce flat detectors. The main drivers for this development is the need for an increased versatility in utilizing a flat detector for radiographic examinations in a fluoroscopic room.

The mix makes the challenge

For studies where real time imaging is critical, such as swallow studies and examinations of the gastrointestinal tract, fluoroscopy is the modality of choice, making fluoroscopy systems to be standard equipment in every hospital. The wide applications range in a fluoroscopic room includes various contrast-media studies, as well as general radiographic work and even angiographic procedures. For that reason fluoroscopy systems are usually equipped with an image intensifier and a CCD camera for dynamic imaging as required for real-time studies. For acquisition of radiographic images many fluoroscopy systems are equipped with a Spotfilm device for cassette operation. In order to achieve optimal capacity utilization general radiographic work performed on a fluoroscopy system became a growing relevance in the past decade. Thus the requirement of high-resolution imaging and a more streamlined workflow were the key drivers for the first introduction of FD technology in the fluoroscopy suite.

AXIOM Luminos TF with mobile flat detector provides full flexibility for any projections.

Introducing workflow smoother than ever

As a first step – launched at RSNA 2005 – a mobile flat detector (mFD) was available for the AXIOM Luminos TF conventional fluoroscopy system. This 35 cm x 43 cm (14" x 17") detector enables digital image acquisition either in the table or wall stand, as well as free exposures. The mFD provides the high spatial resolution and necessary detail information as needed for excellent radiographic imaging.
The images taken with mFD are available on the imaging system of AXIOM Luminos TF within a few seconds. This smoothes and greatly shortens workflow because cassette processing and merging image on a PACS station are eliminated. Digital radiographic images such as decubitus view during a barium enema study will show up in the same patient folder of the fluoroscopic imaging system.
The results speak for themselves. One third of all AXIOM Luminos TF systems delivered worldwide are equipped with mFD.

Revolutionizing the fluoroscopy suite

Dynamic flat detectors have long since displaced image intensifiers on C-arm systems for angiography and cardangiography.

Brilliant image quality with a large field of view. Overview radiograph after a Barium enema.

AXIOM Luminos *d*RF revolutionizing the fluoroscopy suite.

The two key challenges faced by a flat detector in a fluoroscopy system are

- the need to perform dynamic sequences and real-time imaging to replace the image intensifier.
- fulfill requirements of general radiographic imaging such as high resolution and large field of view.

With the availability of a brand new detector that is able to perform dynamic as well as static imaging, Siemens was able to develop AXIOM Luminos *d*RF. This remote fluoroscopy and radiography system combines both imaging technologies in one system, eliminating image intensifier and cassette tray.

A new dimension of versatility

Since its launch at RSNA 2006, AXIOM Luminos *d*RF brought the worldwide market a new dimension of versatility and workflow to the fluoroscopy suite.
With its universal flat detector, the fully digital 2-in-1 system for fluoroscopy and radiography fulfills the needs of both imaging techniques. Therefore, it can be utilized flexibly based on examination mix – from classical fluoroscopy studies to radiography and even angiographic procedures – all fully digitally acquired with one and the same flat detector.

Larger, lower, faster

The large 43 cm x 43 cm (17" x 17") flat detector can cover about 50% more area than an image intensifier with a diameter of 40 cm (16"). AXIOM Luminos *d*RF delivers distortion-free images with consistent brightness distribution and a high resolution of up to 3,4 lp/mm comparable to a dedicated digital radiography system.
Based on medical indications, image resolution and hence radiation dose can be selected optimally from a variety of imaging modes to keep the dose level as low as reasonably possible.
The system architecture has also changed considerably thanks to the flat detector. Now the table can be lowered down to a comfortable 48 cm (19"), which allows easier patient transfer and positioning facilitating a new level of comfort for patients and staff.
Workflow steps for cassette processing are eliminated, significantly shortening examination time and also providing optimal integration into the clinical network.

The ultimate combination

Thanks to its versatility and workflow efficiency, AXIOM Luminos *d*RF can easily reach high utilization rates. It is suitable for changing examination mixes and thus a future-proof investment.
All these benefits were made possible by the combination of essential detector technology and sophisticated system design, demonstrating how the union of technology and medical equipment delivers brilliant clinical results, a smoother-than-ever workflow, and a new dimension of versatility.

But there is even more to come

Look forward to full flexibility for any projections with forthcoming system enhancements: the brand new wireless flat detector wi-D* and the new overhead tube support*. Even further broaden the clinical versatility of AXIOM Luminos *d*RF.

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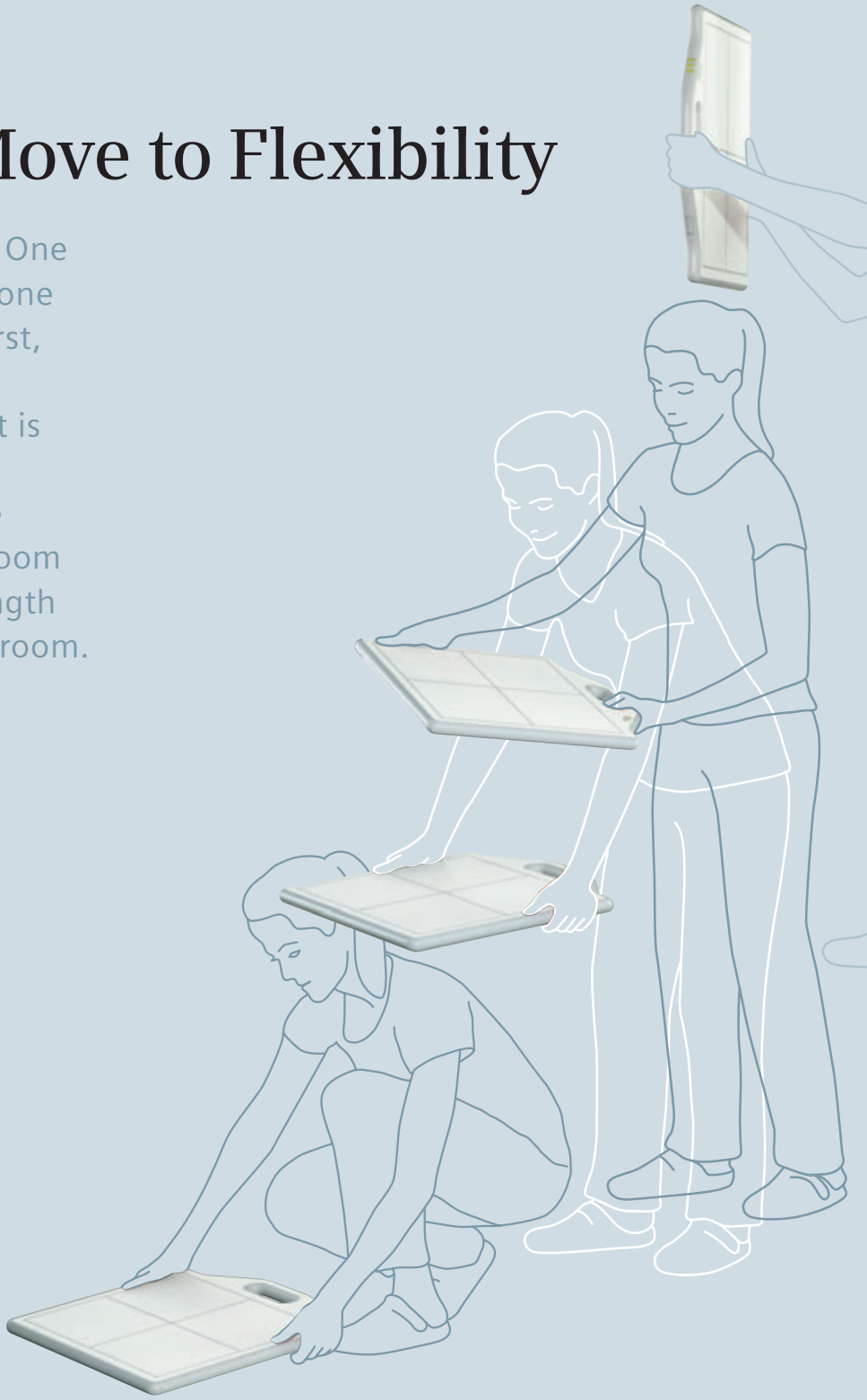
* Future 510k

Ysio wi-D – A Move to Flexibility

So what's in a mobile detector? One may ask, after all, it has been done before. Plenty we would say. First, let's take a look at this mobile detector, not only is it mobile, it is wireless. This means enhanced handling and positioning of the detector anywhere within the room without constraints of cable length and furniture placement in the room.



More importantly, the ingenuity of the design, besides being wireless, includes a battery pack and weighs less than 5kg (11 lbs). Naturally, it has to be suitably robust for daily handling in the clinical environment, and sufficiently water-tight for safety and hygiene reasons. This new and innovative wireless mobile detector, known as wi-D* at Siemens Medical Solutions, will be introduced at RSNA as the new digital radiography system, Ysio wi-D*.

Ysio wi-D is an exciting partner to complement Siemen's proven universal digital radiography system, AXIOM Aristos MX. It provides the best of both worlds with an integrated detector in the wall stand and the wi-D in the table that can be removed for lateral and free exposures when required. This design delivers optimal flexibility in detector utilization to cover nearly all radiographic projections. For the new generation detector in the wall stand, acquisition of long spine and legs will be available along with new applications.

* Future 510k

This newest addition has many features for workflow enhancement – full automated system positioning linked to organ programs for fast system positioning, a touch-screen user interface for greater convenience of imaging parameters modification and with the latest generation of detectors, Ysio wi-D will be primed for future clinical applications. In the landscape of flat detector integration with radiographic systems, Siemens has have now arrived at a solution that addresses many of the earlier requirements – image quality, dose savings, workflow enhancement and one of the last frontiers, detector handling flexibility. These requirements are now addressed in Ysio wi-D, a solution that brings technology to clinical relevance.

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Tube housing with multi-functional touch-screen user interface of Ysio wi-D*

Multi-purpose wi-D – for use in table or lateral and free exposures

Ysio wi-D, the latest digital radiography system that combines two different detector designs for optimal workflow enhancement.

Charging station for wi-D

wi-D in the charging station

* Future 510k

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