

ECR 2016 in Vienna: Hall X5, Booth 12

## Innovative systems for radiology from Siemens

- **Faster MRI applications for neurology provide better diagnostic results**
- **First 3D images under natural weight bearing condition using robotic Multitom Rax X-ray system**
- **Broad range of clinical indications with smallest PET/CT scanner Biograph Horizon**
- **More precise image assessment with new tomosynthesis technologies**

This year's European Congress of Radiology (ECR) in Vienna will include innovations from Siemens Healthcare in the area of medical imaging and therapy. Siemens' products and solutions help healthcare providers worldwide deal with the challenges of changing healthcare systems. In times of tight budgets and increasing time pressure, Siemens solutions are geared to obtaining high-quality results in diagnostics and interventional therapy with maximum efficiency.

At ECR, Siemens Healthcare will introduce new applications that will reduce the time needed for MRI neuro examinations, increasing patient throughput and reducing costs per scan. In MRI, neurological imaging accounts for a majority of all examinations. A new application from Siemens Healthcare employs an innovative technique to acquire imaging slices simultaneously rather than sequentially – reducing routine acquisition times by up to 68% for diffusion tensor imaging.<sup>1</sup> This application – Simultaneous Multi-Slice – is first being introduced for brain examinations, bringing advanced techniques such as DTI and Bold into the clinical routine. Advanced examinations can be very lengthy, and Simultaneous Multi-Slice reduces scan times to lengths compatible with the clinical routine. While the application is initially being introduced for advanced brain examinations, Siemens sees great potential to accelerate further routine examinations of the brain,

orthopedics, and abdominal areas.

A further innovative application called GOBrain enables clinically validated, push-button brain examinations in just five minutes. Facilitated by Siemens' high-channel density coils and the unique MRI scanning software, DotGO, all clinically essential image orientations and contrasts are acquired at the push of a button. GOBrain was developed in collaboration with Athinoula A. Martinos Center at Massachusetts General Hospital in the U.S. Utilizing its key technologies, Siemens Healthcare is working with its collaboration partners to further clinically validate push-button, multi-contrast examinations for other body regions.

### **Robotic X-ray system Multitom Rax**

Multitom Rax (Robotic Advanced X-ray) now enables examinations in a wide range of clinical areas to be performed using only a single X-ray system for the first time, which makes examinations less painful and less time-consuming. "We see the Multitom Rax as a universal device that covers all aspects of X-ray diagnostics. You could call it radiology's answer to the Swiss army knife," says Prof. Michael Lell, Senior Physician at the Imaging Science Institute of the University Hospital Erlangen. The new system can be used in a wide range of applications, from radiography and emergency medicine to orthopedics, selected angiography or fluoroscopy, and can thus help optimize clinical work processes. The fact that the detector can be freely positioned means that quite different X-ray images, both static and dynamic, can be taken in a single room using a single system. The two ceiling-mounted arms on Multitom Rax can be moved into position automatically using robotic technology, and they can also be moved manually, servo motor supported, when required – to make fine adjustments, for example.

Now, for the first time, Multitom Rax makes it possible to take 3D images under the patient's natural weight bearing condition.<sup>2</sup> 3D images can be made of all areas of the body with the patient seated, lying down or standing. Images taken while the patient is standing are essential because for example knees, pelvis and spinal column appear differently under the influence of the patient's body weight compared to when the patient is lying down. As a result, 3D images acquired by Multitom Rax offer better diagnostic and planning certainty compared to those that do not reflect a natural weight bearing condition.

**Versatile PET/CT system addresses broad range of indications**

With Biograph Horizon Siemens is showcasing its latest positron emission tomography/computed tomography (PET/CT) innovation at ECR 2016. The system offers premium performance at an attractive total cost of ownership. Biograph Horizon leverages proven PET/CT technology to help providers address more clinical indications in oncology, neurology, and cardiology, while also introducing new efficiencies and cost savings.

Biograph Horizon enables physicians to visualize small lesions early with 4 mm LSO crystals that scintillate faster and have a higher light output than BGO crystals,<sup>3</sup> resulting in high resolution and better image quality, and enabling Time-of-Flight acquisition.<sup>4</sup> More detailed patient data can help clinicians more accurately stage disease and evaluate therapy response, contributing to more effective care pathways. As the smallest<sup>5</sup> PET/CT system with the lowest<sup>5</sup> power requirements, Biograph Horizon minimizes the initial capital investment and is a smart choice for institutions looking to replace their current PET/CT scanner, as the system will fit into virtually any existing PET/CT exam room.

**teampay to analyze data specifically and optimize hospital work flows**

The cloud-based network teampay of Siemens Healthcare makes it possible to assess the capacity utilization of imaging devices, the various work sequences and individual examinations in an uncomplicated and easy-to-follow way. The ability to compare<sup>6,7</sup> this data – in anonymized form – against values from similar healthcare providers with just a click helps achieve a more objective analysis of the actual situation. The offering Usage provides an overview of the performance data from the imaging modalities such as CT or MRI, including a daily usage report. This records the number of examinations per hour, the time and nature of the examination, total capacity utilization for the device and the parties performing diagnosis, as well as the time it takes to move from one patient to the next. This knowledge helps optimize hospital work sequences and employee workloads, cut waiting times for patients and lastingly reduce costs.

With the Dose offering, in addition to generating a precise listing of the doses applied, it's also possible to compare current values against national reference values, and dose values from other facilities and from similar examinations. Furthermore own KPI targets can be set and tracked. In this way, teampay helps

optimizing the dose used for patients, for specific examinations and diagnosis. The new additional teamplay offering Protocols<sup>7</sup> will make it easier to combine, process and analyze protocols. Protocols from selected Siemens computed tomography (CT) and magnetic resonance imaging (MRI) devices can in future be compared, commented on and archived. A sample protocol can also be transferred to other modalities for further use. Efficient protocol management using teamplay forms the basis for the standardization of work and examination sequences.

### **Innovative workflow design reduces complexity in ultrasound exams**

At ECR 2016 Siemens showcases new families of ultrasound systems which build upon a completely new user design. Following intensive user research conducted by Siemens Corporate Research across four key regions and over 170 usability sessions, Siemens developed a platform which reduces the complexity of ultrasound exams. Including customers' opinions ensured that the new systems are designed around the way clinicians work.

The Acuson S Family of ultrasound systems, HELX Evolution with Touch Control features innovative technologies that improve system operation and reduce user errors during examinations. A completely reworked user interface simplifies system interaction with up to 33% fewer keystrokes<sup>8</sup> and an intuitive touch display that helps eliminate unnecessary workflow steps. Advanced imaging technologies such as multi-modality image fusion and shear wave elastography are complemented with these newly enhanced workflow tools to increase relevancy and use in the clinical routine. These premium technologies further increase diagnostic confidence by enabling users to easily combine 3D CT and MR data with real-time ultrasound imaging.

Acuson NX3 and Acuson NX3 Elite ultrasound systems feature a simple, intuitive interface combined with innovative imaging solutions for examinations primarily in general medicine, obstetrics/gynecology, pediatrics and neurology. The Acuson NX3 offers three times more customizable keys to address the needs of different exam types, and enables faster workflow with up to 28% fewer keystrokes<sup>9</sup>. The customizable control panel and touch screen combined with Siemens advanced workflow innovations make it possible to perform certain routine anatomical measurements faster than traditional solutions. New Siemens-exclusive transducer

technologies enable high resolution superficial imaging and a 75% larger field of view<sup>10</sup> for endocavity imaging.

### **Two new features offer interventional guidance**

Siemens adds two new features to its established Pure platform, which simplifies the adoption and utilization of advanced features on the Artis zee, Artis Q, and Artis Q.zen angiography systems. Designed to aid in endovascular aneurysm repair (Evar), syngo Evar Guidance offers automated detection of vessel walls on computed tomography (CT) datasets as well as automatic placement of landmarks for 3D image guidance. Additionally, it suggests the optimal angulation of C-arms for precise deployment. Enabling better treatment of highly challenging chronic total occlusions (CTOs), syngo CTO Guidance automatically segments coronary computed tomography angiography (CTA) images in addition to providing procedural guidance.

### **New tomosynthesis technologies are making image assessment more precise**

In early detection of breast cancer, the accuracy of the radiological images determines how reliably a suspected tumor can be ruled out. Conventional mammography provides individual 2D images of the breast, so the tissue overlaps. With tomosynthesis, on the other hand, multiple images are taken from different angles and then displayed in slices, allowing the radiologist to “scroll” through them during the assessment. The individual slices reduce overlapping and thus facilitate a better diagnosis. High Definition Breast Tomosynthesis from Siemens Healthcare scans with a 50-degree angle which is the widest angle of all vendors and the largest number of individual images – 25 in all.

Using new technologies, Siemens Healthcare is now further developing the visualization of tomosynthesis scans. The new Empire technology<sup>11</sup> (Enhanced Multiple Parameter Iterative Reconstruction) allows the slices to be reconstructed more precisely with the help of new algorithms. This makes the images sharper and enables microcalcification to be identified and defined more clearly as either benign or malignant, depending on the shape, reducing the need for biopsy. Often, a 2D mammography scan is prepared in addition to a tomosynthesis scan in order to obtain a better complete view of the breast. Insight 2D<sup>11</sup>, a software generated 2D visualization of tomosynthesis, can replace the mammography image and thus reduce X-radiation dose during breast exams. Insight from Siemens Healthcare is

the first and only solution to offer 2D and well as 3D images<sup>11</sup>. The ability to view the tomosynthesis scans of the entire breast in 3D make it easier to identify the shape and distribution of microcalcifications and more complex tumors.

<sup>1</sup> Time measurements and images acquired on MAGNETOM Prisma together with Head/Neck 64.

<sup>2</sup> Option, only in combination with additional workstation *syngo X* workplace.

cannot be guaranteed. Please contact your local Siemens organization for further details.

<sup>3</sup> Pepin, et al (2004). Properties of LYSO and Recent LSO Scintillators for Phoswich PET Detectors. IEEE Transactions on Nuclear Science, 51, 3.

<sup>4</sup> Optional.

<sup>5</sup> Based on competitive information available at time of publication. Data on file.

<sup>6</sup> Availability of Benchmark option depends on a total minimum subscriber number to ensure customer's privacy.

<sup>7</sup> This information about this product is preliminary; it is under development, not commercially available, and its future availability cannot be ensured.

<sup>8</sup> This data is based on comparisons with the previous versions.

<sup>9</sup> This data is based on comparisons with competitor scanners using publicly available documents.

<sup>10</sup> This data is based on comparisons with the previous versions. See Datasheet "Transducers. Acuson NX3 Elite Ultrasound System." Results may vary according to examination.

<sup>11</sup> Empire Technology, Insight 2D and Insight 3D are currently under development and not commercially available. Due to regulatory reasons their future availability cannot be guaranteed. Please contact your local Siemens organization for further details.

The products/features (here mentioned) are not commercially available in all countries. Due to regulatory reasons their future availability cannot be guaranteed. Further details are available from the local Siemens organizations.

This press release and press pictures are available at

[www.siemens.com/press/ecr2016](http://www.siemens.com/press/ecr2016).

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September 2015, the company had around 348,000 employees worldwide. Further information is available on the Internet at [www.siemens.com](http://www.siemens.com).