



Nowadays, no radiology conference would be complete without a discussion on turf battles. The rapid development and broad acceptance of cardiac CT has exceeded expectations, and both radiologists and cardiologists are incorporating this technology into their practices. Educational courses on cardiac CT are in high demand and well attended by both radiologists and cardiologists. Many hospitals consider purchasing the latest generation of multislice CT scanners to remain in the game and retain part of the technical revenues associated with cardiovascular imaging.

Radiologists typically harbour a number of resentments when they see the increasing number of cardiologists moving into the cardiovascular CT field. They generally believe that technical understanding and sophistication should be the defining attribute when defining who should control

integrate results with patient management. They feel that cardiovascular CT – under their control – will help them to better control their patients and that they should be the logical heirs of this modality.

In addition they often regard CT imaging as a mandatory tool to increase revenues in a declining reimbursement environment. However, depending on the

potentially unnecessary therapeutic measures, such an approach raises overall healthcare costs, or if early diagnosis and treatment might prevent disease and therefore save costs, remains controversial. Since radiologists usually depend on referrals, they are less susceptible to self-referral issues. Given that radiologists generally have imaging expertise that cardiologists lack, e.g. better

knowledge of peripheral vascular anatomy or nonvascular pathology in the chest, it appears justified that radiologists are required to also read all CT studies for potential nonvascular findings.

On the basis of this analysis, it should be clear that a simple duplication of a practice model for cardiac CT to be operated separately by cardiologists and radiologists offers no real

competitive advantage for either side. A joint model, based on true teamwork, with the idea of division of labour and responsibilities, could yield a mutually successful strategy. Both physicians and patients might benefit from an interdisciplinary approach that utilises both cardiologists and radiologists to make treatment decisions.

Turf wars

By **Stefan G Ruehm MD**, Associate Professor of Radiology and Director of Cardiovascular CT at the David Geffen School of Medicine, University of California Los Angeles (UCLA, USA)



A battle zone: Coronary CT angiography. As a viable alternative to conventional catheter angiography, the latest Dual Source 64-slice CT technology (Somatom Definition, Siemens) for example, presents robust, non-invasive cardiovascular images

imaging technology, and rely on the comprehensible perception that cardiologists may lack knowledge about CT technique and equipment, radiation physics and safety. Radiologists are often frustrated that other medical professionals frequently do not share this perspective. Many radiologists view cardiologists as the group of physicians that has already taken from them coronary angiography, echocardiography and increasingly renal and peripheral artery interventions. They perceive the cardiologist's interest in cardiac CT as just another example of infiltrating their turf.

On the other hand, cardiologists feel that they have more expertise in invasive coronary angiography, better understanding of cardiac anatomy and pathology and better understanding of the clinical implications of normal or abnormal findings of a cardiac CT study, so they can find the best way to

political environment of medical practice, governmental action has increasingly been noticed in regulating who can own and operate imaging equipment in order to avoid the practice of unlimited self-referral.

A detached view of turf issues allows a less emotional assessment. Although turf issues may be initiated by technologic innovation, they are basically not about technology alone, but rather about how the technology can be implemented in an existing business or medical practice model. As a general concept, technology by itself has limited value until it finds a place in a business model or, in other words, until someone is willing to pay for it. Since the radiology practice model relies so heavily on technology, both radiologists and cardiologists need to understand the interaction of a new technology with a medical practice model, a relationship that is not always intuitive. CT is an example of a new technology that has revolutionised radiology. The main reason for the successful implementation of CT was that radiology could integrate CT into its business model without major difficulty. Interestingly, CT was initially marketed to neurosurgeons. However, CT failed to find a home in their business model since neurosurgery could not incorporate this high-cost technology, compared with radiology with its generally large-scale imaging operation and wide base of referring physicians. Consequently the successful adoption of CT enabled the integration of MR imaging without major problems.

Cardiologists commonly control a large number of patients with potentially significant amounts of yet undiagnosed cardiovascular disease. CT as a non-invasive modality can be utilised to examine these patients. Cardiologists might be tempted to employ a variety of treatment strategies when they find even asymptomatic disease in various vascular areas. Whether, due to

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NEW

The EOS digital x-ray unit

Traditionally, radiography systems have an X-ray tube at one end, film-screen cassette or detector at the other, a table between, and perhaps a mounted assembly on a U-arm or chest stand. Visitors to the French firm Biospace Med's stand at RSNA 2006, in Chicago, were therefore intrigued to be shown the *EOS digital X-ray unit* - a radical new digital radiography design that resembles a department store dressing room.

Biospace Med explained that the EOS linear-scanning architecture begins with a pair of X-ray tube and detector assemblies, positioned at 90° right angles,

much like a dual-head cardiac gamma camera. 'These assemblies are mounted on vertical rails and slide up and down during an examination, with the patient standing or sitting inside the system at a point where the X-ray beams from both assemblies intersect.'

Designed for orthopaedics, the EOS low irradiation 2-D and 3-D digital X-ray scanner covers the body from head to toe. With patient in a standing position, the system scans two simultaneous, perpendicular planar X-ray views to provide the clinician with cor-



Step inside: the EOS

Accuvix XQ upgraded

Accuvix XQ, made by Korean firm Medison (pioneer of the first commercial real-time 3-D US scanner) has been upgraded and re-released as Accuvix XQ Prestige 07. Since its launch in 2003, this equipment has been continuously improved and the firm reports it is now considered a 'next-generation ultrasound diagnostic system with future standards'.

Medison adds that, during its debut at ISUOG 2006, Accuvix Prestige 07 attracted keen support among international visitors due to its Spatial Compound Imaging (SCI), which achieves striking enhancement of 2-D image quality; 3-D Compound Imaging (3-D CI), which dramatically improves image quality of C-plane - a drawback of current ultrasound diagnostic systems, and the 3-D Auto-Contour, which realises fast 3-D, thereby setting new standards for premium ultrasound systems and helping to produce

more precise and convenient diagnosis.

Accuvix XQ Prestige 07 has various advanced probe functionalities, such as

129,024 channels, Clip Cine Store

and easy-to-handle User Interface.



Accuvix XQ Prestige 07

responding digital planar radiographs and a 3-D bone envelope image.

A 2-D spinal examination can be performed within 5-10 seconds; a full body scan in under 25 seconds. The manufacturer also points out that patient irradiation is 5-10 fold below the dose received during conventional CR or DR examinations.

'High image dynamics allow the simultaneous observation of soft and bone tissues,' Biospace Med points out, adding: 'The 3-D bone envelope, calculated using a proprietary technology, can be derived from the two digital radiographs for the spine, knee and hip. It replaces the 3-D image obtained from highly irradiating CT multiplanar digital imaging.'

Developed in collaboration with ENSAM/LBM (Laboratoire de Biomécanique de l'Ecole Nationale Supérieure des Arts et Métiers), Paris, and ETS/LIO (Laboratoire de recherche en Imagerie et Orthopédie de l'Ecole de Technologie Supérieure), Montréal, the EOS has successfully undergone clinical trials at the Hôpital St Vincent de Paul, Paris and Hôpital Erasme (Brussels) within an EU-funded programme.

The EOS will be in sale from mid-2007.

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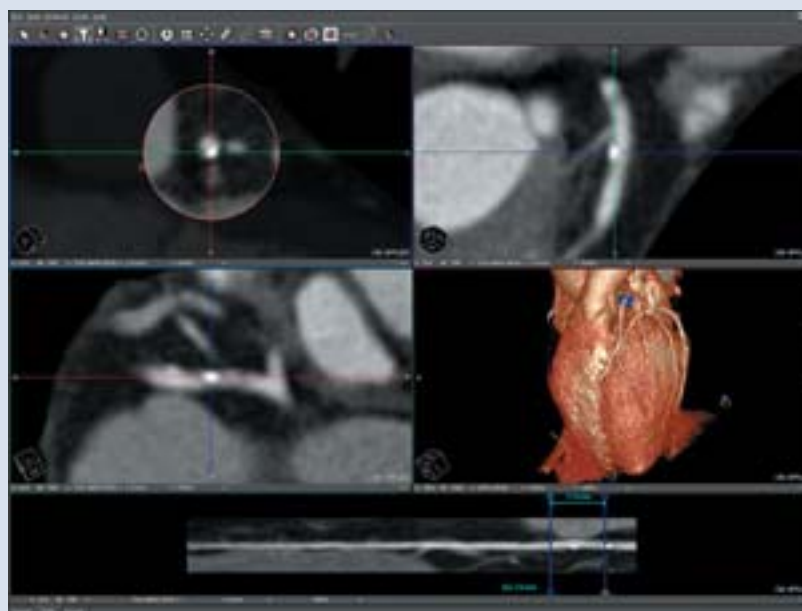
Integrating clinical applications and promising new levels for image quality

Coronary artery analysis: just a few clics and the software automatically tracks the arteries, enabling assessment of the vessel lumen, calcifications, and adjacent structures

Mercury Computer Systems, which describes its products as: '3-D to the Core solutions that empower the transformation of the medical imaging workflow, from acquisition, reconstruction, and visualisation, to distribution and management', will present its full *Visage* range for OEMs at ECR 2007. The company reports that this presentation aims to demonstrate the level of image quality and performance now needed to cope with the huge data volume generated from multi-slice CT and CT/PET scanners as well as new clinical applications within the diagnostic process.

Acquisition

'Our next-generation digital MRI receiver has breakthrough noise reduction technology', Mercury reports. 'The *Visage MR* is a high-bandwidth, analogue-to-digital receiver board with four times the resolution of current-generation MRI receivers, coupled with an extremely high sampling rate; thus it allows shorter scan times and higher patient throughput. *Visage MR* incorporates breakthrough phase stabilisation technology that virtually eliminates phase error-induced noise in MRI images and MRI-specific noise-reducing technology that significantly improves signal-to-noise ratios (SNR) in MRI images compared with existing offerings in the marketplace.'



Visage CS cardiac package

Reconstruction

Also on show will be the company's 100X accelerated Spiral CT reconstruction with the Mercury Cell Accelerator Board (CAB), its latest Cell Broadband Engine (BE) processor-based product. 'The CAB is designed to deliver an unprecedented 180 GFLOPS of performance and an amazing 25 GB/s memory bandwidth in a single PCI Express ATX form factor card for embedded medical OEM applications,' Mercury points out.

Advances in 3-D and 4-D visualisation

The firm reports that its medical 3-D and 4-D visualisation and analysis includes '...blazingly fast study-loading with 2000-slice dataset start times measured in seconds, real-time high definition volume rendering without the drastic down-sampling and contour artifacts common to other implementations. Our state-of-the-art volume visualisation solutions deliver breakthrough levels of image quality and accelerated rendering - all on

scalable, commercially available standard GPU platforms.'

At ECR 2007, the firm will demonstrate its *Visage CS Thin Client/Server*, with complete 3-D PACS workflow integration and enhanced 3-D capabilities, including a Cardiac Analysis Option featuring quantitative and visual analysis of cardiac dynamics using 4-D multi-slice CT data to assess functional parameters as well as coronary artery analysis. Additionally, *Visage CS* will feature improved bone removal and vessel visualisation tools that greatly improve the performance and simplicity of CT angiography workflow.

Mercury also points out that its *Visage PACS*, a web-based, scalable, enterprise-grade image management system, now features '...powerful new functions that enable flexible arrangement of multiple viewers, powerful new options for side-by-side comparison, as well as hanging protocols. *Visage PACS* is fully integrated with Mercury's 3-D thin client technology, offering consistent and efficient image and database access through both 2-D web viewers and 3-D thin clients.'

At ECR 2007, Mercury Computer Systems will be in Expo C, booth # 343

Imaging for everyone and every facility

Ludger Philippsen,
Senior Manager at
Sony Healthcare,
says modular workflow
solutions are 'the future'

"Even in today's increasingly digitised radiology environment, hard copy imaging remains an invaluable diagnostic and communication tool for medical professionals. However, up to now the design of radiology imagers has been largely limited to centralised, large, all-in-one systems that are shared between many departments. Not only do these offer more capability than most practitioners will ever need, they also do not offer the on-demand, customised performance that the modern hospital requires.

Flexible solutions

Sony has taken a radically different approach to radiology imaging, offering small, even personal, dedicated imagers that provide maximum quality with incredible space and efficiency savings. The latest range of *Sony Digital Radiology Imagers* is designed with the practitioner in mind, to give them the freedom to pay only for what they need and make maximum savings on capital investment, space and running costs.

Able to produce monochrome and colour paper, as well as blue diagnostic film hard copies the range can be tailored and matched to specialist applications.

Workflow efficiency

The biggest innovation, however, is in efficiency. Sony's Digital Radiology Imagers offer practitioners next-to-application, mobile printing, which allows quick access to film and paper hardcopies and saves valuable time and manpower during the diagnostic process. This specialised and modular concept provides enormous workflow advantages: rapid diagnosis, improved time management, on-demand printing and tailored output for every need.

It is this aspect of the Sony range that marks a break with traditional centralised imaging workflow. The aim is to move towards a more flexible and more efficient vision of radiological imaging, in which practitioners are not beholden to a large and often cumbersome central system. Sony believes the future lies in small, versatile and fast imagers that enhance radiology facilities' patient treatment capability.

Whether specialised in CT, MRI, CR/DR, nuclear medicine or working with PACS, our range offers easy connectivity and advanced architecture design, to allow users to take full advantage of both current and future modality trends. Even the format size can be varied from 8"x10" up 14"x17" imaging, offering an even wider range of option at radiologists' fingertips.

Maximum performance, minimum space

Sony's Digital Radiology Imagers also have the smallest footprint in their class, further enabling convenient and time-saving next-to application installation, in even the smallest environments. The latest designs can be installed vertically or horizontally for even greater unique space saving capability.

However, size does not belie their performance. Sony has led the development of dry thermal print technology for the past 25 years; all its radiology imagers feature automatic Image control technology to provide high contrast, high-density images with superb clarity and sharpness. All

colour paper images are coated with a special laminate for enhanced durability and reliability.

Furthermore, with no wet processing, darkroom or chemicals involved in the processing and using digital thermal technology rather than complex and mainte-

nance-intensive laser optical components, the company's products offer the benefits of small size, low power use and minimum maintenance.

Dramatic changes are afoot in the medical imaging market. Watch this space..."

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Discovering Toshiba

Toshiba Medical Systems Corporation is a global medical solutions company covering research and development, manufacture, sales and service for medical diagnostic X-ray systems, CT scanners, magnetic resonance imaging (MRI), ultrasound, nuclear medicine systems, as well as healthcare IT systems and radiation therapy equipment. Daniela Zimmermann, of *European Hospital*, recently visited Toshiba's massive manufacturing factory based in Nasu, an industrial area located 150 km north of Tokyo. Toshiba Corporation is one of Japan's biggest leading companies - just as Siemens is in Germany. The medical business is one of the core businesses of the entire Toshiba organisation; it is a rapidly growing and promising business segment.

At Nasu factory, which is noticeably clean and organised, lots of eager, busy people are engrossed in their work. Innumerable products awaited deliveries after system assembly and strict quality control tests.

As the No.1 supplier of diagnostic medical systems in Japan, Toshiba manufactures more equipment than offered in Europe, e.g. clinical laboratory systems and Healthcare IT solutions.

Daniela next travelled to Toshiba's global head office, a high-rise building located in the heart of Tokyo (far right), to interview

Masamichi Katsurada, President and CEO of Toshiba Medical Systems Corporation worldwide and a former chairman of the Japan Industries Association of Radiological Systems (JIRA)



Masamichi Katsurada



Daniela Zimmermann: What trends do you foresee in healthcare in the next five to ten years?

Masamichi Katsurada: It is most important to envision our future. Fundamentally, in any country - Japan, the USA, those in Europe - social security expenditure and aging population are most challenging. Roughly half of social security expenditure is for healthcare. All the developed countries are struggling with this, trying to improve healthcare efficiency and quality. Humans are the same everywhere, striving for better life, better healthcare, resulting in healthcare cost increase.

In short, the recent global trend towards cost containment for social security and medical treatment is changing the medical environment. In addition, developed countries must properly manage healthcare related issues for their aging populations, while developing countries usually focus on establishing basic medical care facilities.

To satisfy the wide range of medical requirements, we always endeavour to maximise clinical value. We use our advanced technologies to provide clinically high-value-added solutions over the entire process of medical care from preventive medicine and screening, to diagnosis, to treatment, and to follow-up. We also contribute to the containment of medical care cost and to the improvement in medical service efficiency, as well as to the enhancement of the quality and safety of medical care by providing optimal solutions for



the needs of the market, i.e. for the needs of the medical care field.

Our philosophy is summarised in our slogans 'Made for patients', 'Made for you' and 'Made for Life'. Our goal is to contribute to medical care and to society by providing clinical value.

Does Toshiba offer financing to doctors, clinics, or hospitals?

In Japan we have a financing company. Also in the US, our own financing company is in operation.

In Europe we offer finance with different models and partners depending on countries.

Finance is one solution for our customers. Let's talk more about our business. In Japan, we not only offer diagnostic imaging systems, but we're also in the hospital solutions business, providing excellent after sales service. The Toshiba Group has a lot of experience and know-how in PC business, IT solutions business and home electronics

and so on. By utilising these resources, we strongly promote healthcare IT solutions business in Japan. Because of differences in healthcare systems and languages, we have alliances with healthcare IT firms in the US and Europe.

Is China a market for your IT?

China has huge potential but is also challenging. Their social system is different from western countries. I think we have opportunities in China; bit by bit we are developing and establishing IT software there. In the next five to ten years, there will be many changes in the healthcare environment and the way they will use technology for screening and so on, and then IT will also be important. We are looking in that direction.

What kind of role does the European market play for Toshiba?

The European market is very important for us, as well as the US market. We started our

business in Europe around 1970. Today there are 27 EU member states and, beyond that there are 41 countries in Europe, including Russia, where Toshiba is doing business. We established Toshiba Medical Systems Europe B.V. in 1981.

On the basis of a well established customer base in Western Europe for more than 35 years, we are now expanding our market share also in Eastern Europe and the CIS, with particular emphasis on the new EU member states, where substantial growth in GDP and healthcare investments are expected. We will contribute to healthcare in these countries.

Our defined mission in Europe is to contribute to healthcare in Europe, establish, grow and maintain market leadership and customer satisfaction in four main imaging modalities: Ultrasound,

CT, MRI and X-Ray, which are important in the medical imaging field. We are seeking to achieve this mission through consistent and clear communication of tangible performance benefits and demonstrated product innovation leadership in combination with strong and continued investments in our European customer support infrastructure.

Through close clinical cooperation with leading universities and luminary sites across Europe, and through many kinds of alliances with European enterprises, we continue to develop our product capabilities to meet and exceed the changing needs of the European customers and markets. Currently, we are experiencing a strong focus on 'clinical outcome' and 'Life cycle cost & -management' objectives, which are central elements of



CT (above) and ultrasound research and development at Nasu

quality assurance and cost containment programs under implementation in several EU member states.

In summary, it can be said that the size and complexity of the European market, in combination with high standards of healthcare and academic expectations, provide Toshiba with ongoing challenges that requires us to remain at the forefront of competitiveness and thus are essential to the sustainability of our global success.

Let's discuss molecular imaging. What does Toshiba think about this development?

Our business activities are focused on medical systems, IT systems, and healthcare solutions that contribute to the entire process of medical care from preventive medicine and screening, to diagnosis, to treatment, and to follow-up. We feel that molecular imaging can make significant contributions in a variety of areas. We plan to employ molecular imaging to provide individualised medical care by developing new technologies in various areas such as DNA-based diagnostic techniques, in vitro diagnostics, and clinical application software for diagnostic imaging systems based on molecular imaging. We are participating in the national projects and collaborative research programs with universities and will continue to invest our resources in this field.

Toshiba is at the very high end of technology with its 256 slices CT and the 3-Tesla MR. What is your strategy to implement those technologies in the global market, and what is your strategy to combat competition?

We are using our technological leadership to advance global collaborative development of these new technologies, including clinical applications, with the goal of providing the highest possible clinical value.

In the field of CT, we are conducting the 'CorE64' global multicentre research project in collaboration with nine leading healthcare institutions in seven countries. In this global research project, we have been evaluating the results of CT coronary angiography obtained using our Aquilion 64-slice CT system, and comparing these results with those obtained by conventional coronary angiography using cardiovascular X-ray systems. This research is yielding significant results.

We believe that 256-slice CT will be a great breakthrough that will revolutionise the conventional CT studies. We have started the clinical development of this new technology in collaboration with clinical researchers. The keywords include 'extremely low dose' and 'whole-organ perfusion'.

Currently, we are also conducting a global collaborative research project in the field of MRI. Our superior technology has led to the expansion of our MRI system sales. These technologies include high-speed cardiac scanning by parallel imaging, world No.1 silent scan technology, and outstanding clinical applications such as Fresh Blood Imaging (FBI), which can depict blood vessels without contrast medium. As for the 3-T MRI, we have continuously performed its basic research and development and are considering the time of release. Currently we are developing a commercial 3-T

system, which we, as a leading supplier of MRI systems, will promote globally.

We provide leading ultrasound imaging technologies such as myocardial strain imaging and Micro Flow Imaging. We have a large diagnostic X-ray system line-up that covers the full range of clinical applications. Our recently released FPD vascular system with multi-access C-arm has quickly gained an excellent reputation worldwide. In addition to medical imaging technologies, we also provide IT services to improve efficiency in healthcare activities.

Another of our priorities is research and development for future healthcare technologies,

such as a surgical robot and Computer Aided Diagnosis (CAD) systems.

Why did your MRI enter the German market so late?

MRI involves significant investments and costs, therefore business volume is important. We need volume to fully support our customers and provide excellent service and maintenance. Only recently did all pieces of the puzzle come together for us, hence the renewed MRI activities in the German market.

Japanese companies are known worldwide as being very IT and technology oriented. What strategy does Toshiba have to guide clients and enhance communication with them?

Although IT and technology are areas in which we are extremely competitive, our primary strategy is to build on our technological leadership to develop medical systems that provide the highest possible clinical value to our customers in actual medical practice building on our technological leadership. We always place the greatest importance on building long-term relationships with our customers. Based on this policy, we have enjoyed close relationships with our customers in Europe since we first began operations there 37 years ago.

In the future, we will continue to invest aggressively in sensor, detector and systems integration

technologies, since these are core technologies, in which we have extensive experience. To maximise clinical value, we will continue our research and development with a focus on actual clinical practice. In Europe, we also plan to further strengthen our partnerships with medical institutions by conducting collaborative research and so on.

In addition, after-sales service and customer training programs are essential to ensure that the customers can always get the maximum out of their systems. We will strive to further improve our after-sales service and training programmes, which is very important for achieving the highest level of customer satisfaction.

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Toshiba's Activion T16 Multislice CT system

NEW



The Toshiba Activion™ 16 Multislice CT

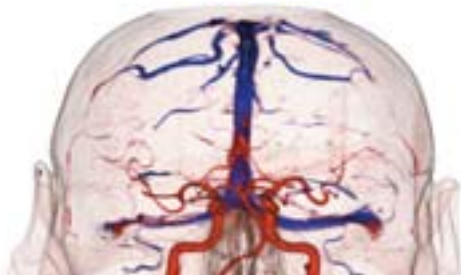
'Ready-Set-Go' – just three steps and scanning begins

The 'revolutionary' Activion16 Multislice CT system will be launched at the ECR 2007 congress Toshiba Medical Systems Corporation reports. 'The Activion16 offers fast advanced acquisitions through easy operation by just three steps: Ready (select the scan region) – Set (perform scan planning) – Go (start scanning),' Toshiba explained. 'The user is guided through each step of the scan planning, simplifying the process even further. The systems' design maximises both operator and patient comfort, allowing the operator to focus on the examination and patient, rather than on the system.'

Due to the incorporated 0.5 mm Quantum detector (used in all Toshiba 4- to 64-slice CT systems) with 350-micron isotropic spatial resolution and the industry's best low-contrast resolution of 2 mm @ 0.3%, the system ensures outstanding image quality in every examination at lowest X-ray dose, the report continues.

Extremely low-dose scanning, combined with a fast scan protocol and Quantum Denoising software, enables an entire lung of 30 cm to be examined in only 10 seconds, resulting in crystal clear, highest resolution images, further expanding diagnostic capabilities. This low-mAs scanning is a great benefit to patients, specifically children*.

The company further adds that its new 3-D volume rendering software ensures 3-D image generation is easy. 'Whereas self-



3-D CT chest angiography (Toshiba Activion™ 16 with SureSubtraction)

evident 3-D preset icons ensure easy operation and quick results, the optional Vessel View package offers additional functionality by generating curved multi-planar reconstructions used for CTA diagnoses.'

The newly developed subtraction algorithm SURESubtraction™ effectively removes bone structures, Toshiba continues. 'It ensures high-quality subtraction of scanned series and gets you the best out of a contrast injection because bone or metal can already be removed during the scan procedure. This option enables the user to distinguish calcifications from contrast medium in a more effective way, dramatically increasing the diagnostic value of the examination.'

*1 This technology is described in a report on "Low-dose imaging of the infant inner ear for which Toshiba received a Cum Laude award.

Visit Toshiba and view the Activion Multislice CT System at the ECR: Booth 316 (Expo C Hall).

Endovascular brachytherapy

Endovascular brachytherapy has been successfully modified by scientists at Isotopen Technologie München AG (ITM), solving problems of radiation exposure to Rhenium-188. The researchers are now producing Rhenium-188 with previously unknown high specific activity in a new type of generator, Isotopen Technologie reports.

The itm Rhenium-188 PTA solves the problems previously experienced with endovascular brachytherapy in the peripheral area. As there is a lack of suitable stents for the femoropopliteal area, restenosis following conventional PTA has been a big problem.

Rhenium-188 with very high specific beta-activity is administered via a radiation catheter immediately after dilatation of the stenosis. The radiation time is individually determined for the patient; it is generally between seven and ten minutes.

Using the itm Rhenium-188 PTA is simple, fast and safe, the firm reports. 'A special applicator ensures that doctors are not exposed to any noteworthy levels of radiation despite the high activity levels used.'

Rhenium-188 beta rays have ideal characteristics within the vessels and radiation levels drop quickly. Radiation penetrates to a maximum level of about

3mm so that only the vascular walls are selectively radiated. The procedure is carried out on an angiography table and there is no need to transport the patient to the radiotherapy department, the company points out.

A centring unit is not needed in the vessel with the itm Rhenium-188 PTA. The catheter centres itself within the vessel when filled with the isotope, so the radiation dose is also homogeneously distributed in vessels with irregular



The new Wolfram applicator is said to significantly reduce radiation exposure during Rhenium-PTA

configuration, Isotopen Technologie says, adding: 'Only 23% of long and complex femoropopliteal stenoses and vascular obliterations still remain open six months after PTA. With the itm Rhenium-PTA, the cumulative rate achieved after two years is around 46% of arteries treated.'

Flat-panel detector technology (FPD)



New and revolutionary applications reported

HeartSpeed with the direct-conversion Safire. Several hundred of these FPDs are now in use internationally

Shimadzu specialises in the production of advanced medical imaging systems and equipment, clinical diagnostic systems, including CT, digital subtraction angiography, cardiovascular systems, digital radiography & fluoroscopy systems, ultrasound and general radiography equipment. Now it has announced 'breakthrough applications' in cardiology systems, general radiology rooms and R/F rooms, that have used Safire, its advanced direct-conversion 43 x 43 cm (17 inch) flat panel detector (FDP). 'This produces distinct advantages in image quality and dose efficiency when compared with indirect-conversion flat-panel,' the firm reports. 'The direct-conversion technology creates clearer high-resolution images with less signal deterioration and reduced noise.'

For the clinical areas mentioned above, the company has produced new technologies such as Tomosynthesis, Dual-Energy Subtraction, Slot Radiography and Cone Beam CT.

Digital Tomosynthesis - Individual tomographic layers are stacked on top of each other and digitally compiled to create a volume reconstruction of the region of interest. Up to 90 exposures can be acquired in a single tomographic sweep, greatly reducing examination time. With Safire, large regions can be examined with significantly reduced X-ray dose, the firm points out. By incorporating this technology in a multifunctional R/F system, Shimadzu also enables tomosynthesis with patients in an upright position - particularly helpful for examinations of scoliosis or load-bearing joints (hips, knees).

Dual-Energy Subtraction - This recognises pulmonary nodules better, and is often

incorporated into new digital radiography systems. The technique exploits different physical properties of soft-tissue and bony structures affecting the attenuation of X-ray photons at different X-ray energies. During a single examination a 'low-energy image' and 'high-energy image' of the patient are captured. The construction of a pair of 'energy subtraction' images is obtained as a working result, says Shimadzu. 'One major advantage of DES is the clear depiction of calcification, thereby strongly supporting characterisation of pulmonary nodules.'

Cone Beam computed tomography CBCT - enables precise tumour treatment.

Cone beam (CBCT) imaging visualises vascular tree structures in 3-D. Used in cancer therapy, it allows the precise localisation of tumour zones as well as their treatment with optimum dosage. CBCT evaluation shows a 200% improvement in resolution when compared with current 128 slice CT scanners, while reducing total patient dosage by 90%, Shimadzu explains.

Slot Radiography - This technique is primarily used to examine scoliosis and lower limbs. Slot radiography enables the acquisition and reconstruction of so called 'long images', displaying a complete spine or lower limbs. Shimadzu reports that it introduces this technique with its multifunctional remote controlled R/F system. During an examination, a sequence of 5cm-wide slots is acquired, to avoid image distortion as a result of the diverging X-ray beam and to reduce scatter and dosage to a patient. After acquisition the individual slots are digitally reconstructed into a long image.

Shimadzu's products are on show at the ECR Expo C, booth 328 - or go to www.shimadzu.de

The impact of PACS

RADIOLOGISTS DIVERSIFY INTO NEW FIELDS

Sweden - PACS is pushing radiologists towards increasing specialisation, according to a new study - among the first to examine the impact of PACS on radiologists' careers - published in the *Journal of Digital Imaging* (27/12/2006). Dr Kent Fridell, of the clinical science, intervention and technology department at the Karolinska Institute, said the study is '...unique in both timing and scope' and, he added: 'The consequences to radiologists of introducing distributed radiology have shown that when analogue films are replaced with digital images viewed on a computer, radiologists' diagnostic practice also changes.'

In the study, work practice is defined as professional role, diagnostic practice, and technology in use. Dr Fridell found that, following the introduction of a PACS, radiologists tend to shift from a position of individual professional expertise to that of an actor in a network. 'As the flow of images takes new routes, new relationships are created between actors in the network,' he said. Prior to the advent of PACS, clinicians would meet with the experts - the radiologists - in clinical meetings, for example. But PACS has given clinicians access to images and, with this, their ability to read them improves, which in turn tends to turn the radiologist into a consultant.

Additionally, since digital imaging developed, reading X-rays has become more technical. 'Suddenly, radiologists' training shifts to greater exposure to technology courses rather than interpretive diagnostic techniques,' said Dr Fridell.

Initially, the increase in the technology focus can cause insecurity, as radiologists worry that their reading skills will become lower. However, the technology also provides superior ability to illustrate anatomic details using new digital techniques such as 3-D reconstruction, opening the door to specialisation.

For example, to help the neurosurgeon, the vestibulocochlear nerve could be imaged in full length by the radiologist. 'In this way, the radiologist has become a new and important advisor in discussions with the neurosurgeon,' Dr Fridell pointed out. This change in working practice makes radiology more specialised and creates new subspecialty opportunities, he added.

The 4th Hospital Manager Symposium

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ECR 2007

Experiences, advice and
discussions for radiologists
and managers

'Hospital managers frequently view radiology both as a devil and as an angel,' says **Professor Christian Herold**, President of ECR 2007, in his welcoming address to participants at European Hospital's 4th Hospital Manager Symposium.

The 'devil' view relates to radiology being a sophisticated speciality at the high end of technology-driven medicine, and thus frequently associated with high costs, he explains, adding: 'The 'angel' perspective is based on the notion that radiology stimulates improvement in hospital IT service, is also at the forefront of quality and risk management initiatives, and improves the quality of care through largely non-invasive or minimally invasive diagnostic and interventional procedures.'

'This now well-established Hospital Manager Symposium will examine the economic, organisational and managerial challenges related to radiology in a hospital environment.' Finally he advises: 'Come prepared for a lively and interactive session.'

Certainly *European Hospital's* selection of speakers, all experts in management, finance and information technology, promises to bear out the professor's prediction.



MANAGEMENT

Healthcare consultant **Harald Pitz PhD** is Vice President for Healthcare and Higher Education & Research at SAP AG.

Having studied computer science, with a focus in medicine, at the Technical University in Darmstadt, Germany, 1993 Dr Pitz received his PhD at the Technical University of Berlin. Before joining SAP AG, he was responsible for various IT related healthcare projects at the University Hospital, Frankfurt.



At the Managers symposium
Dr Pitz will discuss:

Consumerism – the impact on health- care business models and processes

Business models and business processes have radically changed in industries such as manufacturing and trading during the last few decades. This change has reduced costs through streamlining processes both within enterprises as well as significantly across enterprises by extending the value chain towards customers and suppliers. Cost reduction has freed up resources to drive innovation.

Market forces have had a significant role to drive this radical change. As a key player, consumer behaviour - shopping for the best price on almost every product or service - has made a major contribution to this. As all those changes wouldn't have been possible without strong IT support, IT has become strategic in enterprises, enabling efficiency through standardisation, and providing flexibility and adaptability to accelerate innovation in increasingly competitive environments.

Why hasn't all that happened in healthcare? In nature, healthcare in terms of diagnoses and treatment is something people need and nothing people want. Health insurances are covering the majority of the cost so no patient really looks at costs or better prices. Due to a lack of incentives, individual stakeholders, such as provider organisations, insurances or pharmaceutical industries, have not driven cross-organisational change. Thus, so far, consumerism as a key market force in many industries has been limited in healthcare.

However, we expect this to change significantly over the next years, and strong signals already exist in the healthcare market. Today, provider
continued on page 8

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continued from page 7
organisations, for example, publicly speak of competition and gaining market share; this would have been perceived as unethical years ago. Cost pressure, caused through ageing population and increasingly expensive treatments drives process efficiency in all kinds of organisations. However, similar to industries such as manufacturing and trading, the patient being transformed into an informed consumer will again play a significant role.

Well-being through prevention, attractive environments, and information is something people want and increasingly expect, as well as higher cost awareness, as co-payments and payback schemes increase. This will lead to patient centric processes, which will reach beyond hospitals to the collaborating stakeholders. Collaboration will require information sharing, enabled by privacy laws protecting the data and patients' rights. In fact, the patient might become the owner of his/her data and decide about its distribution and use.

Healthcare organisation will increasingly adopt measures, such as process standardisation, outsourcing etc. to increase efficiency, centre around patients and collaborate with others. IT will need to become strategic to accomplish this in a competitive way. Currently the IT industry is investing in service oriented architectures to enable that change."

Dr Jaeger will demonstrate how to ...

Take a new approach to hospital management

Look in the crystal ball and share risks with suppliers

Rising from the ashes – lessons learnt from six years of turnaround process of one of the largest hospital providers in Europe.

When the Vivantes project was launched, by merging 10 hospitals and 14 nursing homes previously run by the regions of Berlin, nobody knew whether that experiment would work. Putting together more than 5,000 beds at 10 sites in Berlin – a mixture of ancient buildings and new architectural experiments of the 1980s – was a challenging idea, with many sceptics. Now, six years later – and after a period close to bankruptcy – Vivantes has shown that you can have efficient structures and operations as a non-private hospital provider.

Over the last years, Vivantes reduced costs of about 250 million euros, while increasing cases treated by a couple of

percentages. Being one of the most efficient hospitals in Berlin – in one of the most competitive hospital markets – is a good starting point for further growth.

Centralise administration processes and specialised medical services – the outcome rewards the struggle

Centralization, standardization and specialization – all principles run against people wanting to keep everything like it is and has been. But it is worth the struggle. Seeing new consultants coming in with a new attitude towards professionalism and also quality parameter outcomes rising due to centralized provision of specialized care (e.g. first line breast cancer treatment with remote adjuvant therapy) highly reward the effort to start the ignition.

Look ahead - yes, there is a scientific way to gaze into a crystal ball

Nothing is as sure as the future

Hartwig Jaeger MD PhD, is Director for Corporate Development of Berlin-based Vivantes - one of Europe's biggest hospital groups. There he works on business opportunities for hospitals based on internal and external factors such as demographics and technical development.

Dr Jaeger is a medical doctor (for his PhD theses he worked on molecular mechanism of biliary cholesterol secretion). His gained experience in the business side of healthcare during his five years as a consultant with McKinsey.

In 2005 he joined Vivantes, which runs 5,000 hospital beds at nine hospital sites in Berlin.

These serve around 200,000 in-patients and 300,000 out-patients annually. Vivantes also runs nursing homes for about 2,000 inhabitants and engages in specialised out-patient clinics.



– true in medicine. Illness is largely driven by age and lifestyle – as well as genetic predisposition. Taking the current onset of in-patient treatment (i.e., prevalence and incidence) and extrapolating it by taking the demographic changes into account, clearly gives a precise glimpse of what we will face in the future. We did that prognosis for Berlin and discussed both outcome figures and influencing trends (e.g., new treatment opportunities) in our medical boards. Based on fact-driven information we have planned future case volumes and structures as well as the staff necessary to serve those needs of the population.

Change your clinicians' perspectives – let them talk to local GPs, but in a focused way

Most in-patient cases come via general practitioner (GP) referral. So, the GP is mainly the gatekeeper for which hospital to choose. The influence of patients' choice will increase, but the GP is the key – at least for the time being. We asked our consultants to talk to the GPs – on a more systematic and regular basis. We helped them to identify who sends more, or less, patients by using monthly statistics. Furthermore, based on demographic data, we were able to prioritise the list of GPs to see – those with high patient potential and little Vivantes market share are top of the list. That sounds easy in theory – but getting that effort to life is not. **Change your perspective – in everyday business, take the patient's viewpoint**

4th HOSPITAL MANAGER SYMPOSIUM AT ECR 2007 Management, IT and finance for hospitals and radiologists 10 March 2007, Austria Center Vienna



Presented and organised by:



Programme

Welcome address and introduction by Professor Christian Herold, President of ECR 2007
Moderation by Dr Wolfgang Brandtner, Austria

Session 1 – Management

- **Consumerism – impact on business models and processes in healthcare**
Harald Pitz, MD, Vice President Industry Business Unit Healthcare, Higher Education & Research, SAP AG, Walldorf, Germany
- **New approach to hospital management – look in the crystal ball and share risks with suppliers**
Hartwig Jaeger, MD, PhD, Director for Corporate Development, Vivantes GmbH Berlin
- **Business intelligence in healthcare – turning strategies into action**
Jan Schillebeeckx, MD, Head of Radiology at Imelda Hospital in Bonheiden, Belgium
- **Efficiency and ethics in hospitals – a contradiction?**
Stephan Feldhaus, MD, Head Corporate Communications Department, Siemens Medical Solutions Group, Erlangen, Germany

Session 2 – IT

- **Key trends in medical archive systems**
Bernard Algayres, EAMER Business Manager, Eastman Kodak's Health Group, Herts, UK
- **Local and national IT-concepts in hospitals: e.g. MIS/KIS/RIS/PACS/DACS**
Rainer Braunschweig, MD, Director of the clinic for diagnostic imaging and interventional radiology, BG-Kliniken Bergmannstrost, Halle/S, Germany
- **Secure and effective archiving of clinical data with Hitachi Content Archive Platform**
Georgios Rimikis, MD, Manager Solution Strategy, Hitachi Data Systems GmbH, Dreieich-Buchschiag, Germany

Session 3 – Finance

- **Polish private radiology institutions – management and financing conditions**
Jacek Brzezinski, MD, PhD, Clinical Research Director, Helimed Diagnostic Imaging, Katowice, Poland
- **What financing models does the healthcare market need and what do leasing companies have to offer?**
Sabine Eidmann, Med Finance, Compendium Leasing (Deutschland) GmbH, Unterföhring, Germany
- **Advantages and disadvantages of financing models for healthcare investments – with a special focus on private funding**
Nikos Maniadekis, MD, General Manager & President of the University General Hospital of Iraklion, Crete, Greece
- **Healthcare Fundraising – You will get what you ask for!**
Peter Fletcher, Director of Philanthropy at the University Hospital Birmingham, UK

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A graduate of Leuven University and specialist in vascular imaging, from 1983 until last year, consultant radiologist **Jan Schillebeeckx** was the Chairman of the Imelda Hospital in Bonheiden, Belgium. In addition, from 1996–1999, he also served as Chairman of the Belgian Professional Society of Radiology. His Board Certifications include the KBVR (Belgian Society of Radiology); RSNA (Radiological Society of North America); ECR (European College of Radiology); EuroPACS Society (of which

he has been a Board member); SCAR (Society of Computer Assisted Radiology), and the ACR (American College of Radiology).



Dr Schillebeeckx's focus at the symposium will be: Business intelligence in healthcare Turning strategy into action

Business Intelligence is a process that enables hospital management to understand and formulate their business strategy together with the objectives and measurements that support it. While the term 'Business Intelligence' is often confused with IT software, it is a management process that uses IT.

This presentation will show how managers can make best use of IT investments by following the business intelligence process. The aim thereby should be to define and verbalise the existing business strategy and to attach

the right objectives and Key Performance Indicators (KPIs) to it. Through data mining of existent IT systems, followed by a data validation procedure, management can gain a much better transparency of their actual business processes, such as handling of scheduling, waiting times, billing etc

The speech will demonstrate how continuous Business Intelligence has helped Imelda Hospital, in Bonheiden, Belgium to keep its yearly productivity increase high, along with patient and staff satisfaction. This will be

Dr Feldhaus will discuss

Efficiency and ethics in hospitals – a contradiction?

After an apprenticeship as a butcher, **Dr Stephan Feldhaus** studied philosophy, theology and economics at the universities of Munster, Rome, Zurich, then gained his PhD in theology from Munich's Ludwig-Maximilians-University. Following this he worked at the university as an assistant in the catholic-theological faculty.

He was head of the scientific editorial department of the *Bioethics/Ethical Economics* magazine in Munich from 1992–98, when he also was a freelance at the *Rat von Sachverstaendigen für Umweltfragen* in Wiesbaden (a council of experts for environmental matters).

Up to 1998 he also held lecturing positions at Munich, Weihenstephan and Eichstaett universities.

His scientific work regarding ethics focused on economic,

environmental and energy technology issues, and has been documented in various publications.

In 1999, Dr Feldhaus joined Siemens AG, in Erlangen, where he became responsible for the Internal Communications department of the Power Generation group. In 2001, he was made head of *Group Communications* and also represented Power Generation in the Economic Council of Siemens AG.

He was appointed head of Employee Communications and Market Communications within the Corporate Communications department at Siemens AG's headquarters in Munich, in 2005. Since October 2006 he has headed the Corporate Communications department of Siemens' Medical Solutions Group.



Current market research clearly shows that patients mainly care about quality – that is not new. But how do they really feel about hospitals? What is their main concern? And what do they base their first impression of a hospital on? A qualitative market research revealed in detail how patients and their relatives feel about hospitals. Not surprisingly, anxiety leads all emotions and hardly allows an unbiased perception of information. Getting beyond that feeling of fear is key – there are many ways to demonstrate that the hospital tackle that issue seriously.

Innovate co-operation – take your suppliers on board, and share risks

PPP is a modern buzzword in hospital management – but what comes next? Is 'sale-and-lease-back' the answer to short term investment barriers? Who pays the bill in the long run? Looking at different industries where high volume investments are common, what can we learn from them? Clean-room technologies for chip production or drug research labs and manufacturing sites, these all use an 'open book' for fair compensation.

Hospitals could follow this, possibly by starting with medical product suppliers. Instead of paying for each item or each service (i.e. usage), we can see a risk sharing approach, as we have in the DRG compensation system. We, as a hospital provider, are reimbursed by case, not by every service or syringe used on that case. Why don't we also have suppliers who get reimbursed by case? Combined with an 'open book', i.e. sharing insights about real cost structures and adding capital costs and surpluses, that trust-building partnership could be the next S on the curve.



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complemented with a comparison of operational data in another hospital (in a different country and with a different scale). The aim of this comparison is to show how hospitals can differ substantially when it comes processes and business ramifications.

The objective of this presentation is to show how the business intelligence process will almost certainly unearth huge gaps between the management's perceptions of business processes with the real picture on the ground. By understanding the real situation better, managers can make intelligent decisions to close those gaps."

INFORMATION TECHNOLOGY

Georgios Rimikis PhD is responsible for the strategic development of enterprise storage solutions and their marketing at Hitachi Data Systems in Germany.

A physics graduate from the University of Heidelberg, he received his PhD at the University of Karlsruhe, and began his IT career in 1992, as a product manager, then head of product management and purchasing of storage systems in Europe, for Comparex Information GmbH, Mannheim. Later, as a marketing manager at IBM Germany GmbH, Dr Rimikis was responsible for co-operations with independent software vendors in Europe, the Middle East, and Africa (EMEA).



Dr Rimikis will be discussing:

Secure, effective clinical data archiving with the Hitachi Content Archive Platform

Advances in clinical technologies have enabled healthcare professionals to increase the quality of healthcare as well as improve the overall patient experience. As these technologies are implemented, integration of information technology within the clinical infrastructure is critical to providing a comprehensive solution. That is, a solution that not only supports clinical workflow, but delivers highly available, uninterrupted access to data and all kinds of applications. The ongoing adoption of new clinical technologies places increased demands on the healthcare IT infrastructure, underlining the need for reliable, flexible storage solutions that can scale as required.

Hitachi Data Systems has defined a new approach to the active archive market, which combines industry-leading Hitachi storage with open standards-based archiving software. The Hitachi Content Archive Platform establishes an active archive environment - a single online repository that enables protection, search, and retrieval across fixed contents and other content types.

Fixed content means that an item reflects a particular real-world event that happened at a point in time - for example, an X-ray image of a broken arm, an e-mail message, or a completed digital video. For the item to remain valuable in the future, its content must remain fixed to accurately reflect the original state.

At the EH symposium, Dr Algayres will discuss:

Key trends in medical archive systems

There is a clear trend towards regionalisation of healthcare institutions. In search of better investment models, large networks of hospitals and diagnostic imaging centres are consolidating their IT networks. Government initiatives, such as the UK's Npfit, the USA's RHIOs, or Canada's Infoway, extend the scope of such consolidation to countries. Large projects, together with the adoption of heterogeneous PACS in multiple locations, are bringing new challenges for enterprise-wide image and data management systems: despite the heterogeneity of source systems and their geographical distribution, users expect that information will flow transparently through all locations and data distribution will be anywhere at anytime.

Simultaneously modern medicine is increasingly asking for fast, easy access to all data related to a patient. Specialty practices (cardiology, oncology, mammography, etc) require access to a global view of a patient's record to properly assess the situation. Newly designed systems must be able to

aggregate, at a user's access point, various data comprised of both DICOM image data and non-DICOM objects (e.g. waveforms from electrocardiography; cine files, e.g. echocardiograms, etc).

Healthcare is experiencing an exponential growth of digital information, where storage and long term archiving will create unprecedented economic challenges. Regulatory requirements (e.g. HIPAA in the USA) impose stringent data protection and retention periods that exceed the lifetime of storage systems. However, not all data is evenly concerned by such constraints: evidently, orthopaedic and breast cancer screening images have very different lifecycle and retention periods. New archival systems include intelligent algorithms to secure and optimise storage usage, as well as long-term data preservation features to cope with media obsolescence.

New architectures are needed, to cope with massive amounts of data and increasing requirements for reliability. Grid-based archival technology is coming to healthcare. This allows archival features to be provided to any application on an 'as-needed' basis. A grid is incrementally built from entry-level hardware and provides high reliability by constantly adapting to a changing environment.

The first PACS generations are clearly no longer adapted to these trends. They have generated infrastructures composed of

Bernard Algayres PhD is a Business Manager for Europe, Africa and the Middle East, for Eastman Kodak's Health Group. As an engineer, his technical expertise in IT includes software development and systems integration, and includes a focus on storage and archival systems over the last decade.

He was involved with the design of the Carestream VIParchive, Kodak's leading healthcare information management system, from its inception. Today this system is installed in over 200 healthcare centres worldwide.



'information islands', where not only the storage is dedicated to each subsystem but also information access is restricted. New paradigms of information management systems are emerging that support the interconnection of multiple medical sources (Modalities, PACS, EPRs) across territories, allow the aggregation of data and related indexes for better access, and intelligently manage their lifecycle.

The presentation at the symposium will describe projects that exemplify those trends and will explore some of the key functions provided by new generation medical archive systems.

For the past decade, **Rainer Braunschweig MD** has been Director of diagnostic imaging and interventional radiology the clinic at the BG-Kliniken Bergmannstr. in Halle/S, Germany. Prior to this he was Senior Consultant and Assistant Professor first at the University of Tübingen, then at the University of Munich.

His specialities include interventional radiology, traumatology, gastroenterology, orthopaedics, digital radiography, CT, MRI, and quality assurance



At the symposium, Dr Braunschweig will speak on ...

Local and national IT concepts in hospitals HIS/KIS/RIS/PACS/DACS

During the last 10 years IT-technology in hospitals caused a high level of interest from both the clinical and economical perspective. Work-flow and financial benefits are possible. To integrate hospitals with, for example, different levels of their clinical departments to functional healthcare clusters, it will be worthwhile using IT for:

- work-flow improvement
- ensured archiving (short and long)
- communication and consultation
- patients transport and particularly to develop health care much more efficient.

Method - We are complete digital for administration (HIS) integrated diagnostics (RIS/PACS) telemedicine (e.g. teleradiology) and for regional and national healthcare units.

We use a local raid-based archive (PACS) including a high-speed network (inclusive wireless LAN), HIS for administration and billing and a central digital national archive

(DACS). The central online archive is EMC-Centera; it is public network based and also provides communication with each of the included hospitals.

Results - Using IT we have improved patient care generally. And, working with the same staffing level, we have increased the numbers of patient more than five times. As far as the process time for each patient is concerned, on average we decreased from 12.8 days down to 7.8 days.

Using teleradiology we have included over 10 hospitals for consulting, being on call, patient movement and specialized healthcare.

Conclusion - As a strategic and management tool, information technology (e.g. HIS/RIS/PACS/DACS) is one of the most efficient approaches to ensure healthcare quality, as well as workflow and financial benefits.

This is true for local hospitals with complete digital environment as well as for regional and nationwide hospital groups.

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BOOK

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FINANCE

Sabine Eidmann Dipl Soz worked for, or headed, departments in finance firms (e.g. Deutsche Leasing AG) for 25 years - 15 of these as a specialist in risk management. In May 2005 she became area sales manager at Philips Medical Capital GmbH. One year later she became Director of the Healthcare Business Unit at Compendium Leasing (Germany) GmbH, where she mainly deals with customers in the clinical sector and medical practices specialising in structured business finance. Sabine Eidmann points out that Compendium Leasing,



which has a track record of 25 years in Germany for individual leasing offers, belongs neither to a bank nor manufacturer. Its refinancing is conducted through capital markets, an independence that, she says, enables creative and new 'off the beaten track' concepts.

At the symposium Sabine Eidmann will discuss the type of financing models available and necessary to boost hospital profits and will present:

What leasing companies can provide

Both income and expenses adversely affect profitability for German hospitals. In combination, they reduce the scope of investments, although these are necessary to cut costs and increase revenues. The actual hold up of investments is said to amount to around €50 billion. In many hospitals expenses exceed revenues because treatment costs are far too high due to a lack of modern equipment and processes. There is a clear trend: On a long-term basis, the government will only provide the political framework in which an increasingly market-oriented hospital system will develop.

A recent study by RWI/admed showed that a fifth of all hospitals face closure within the necessary reform process. The hospital that survives is the one that uses intelligent strategies for both internal and external situations, drawn from modern management methods; financing; marketing; cost structuring and revenue generation. It is of minor importance whether the hospital is public or private, or a charity.

To keep up competitively, sufficient financing for necessary investments will be a fundamental requirement for future hospitals.

Two major trends are obvious: Hospital financing will change fundamentally, shifting from public subsidy financing to classic credit financing. In the future hospital, the decision of whether to invest, or not, will have to be calculated by its professional managers, following fundamental and objective cost-advantage evaluations. In all aspects of business economics, including the costs of interest and amortisation, whenever a result is positive investment should be seriously considered.

All professionals in a hospital must participate in that decision process.

Privately-owned hospitals give an impressive example of how this should work - their investments are profit-oriented, free from governmental and political regulations, and meet with remarkable success. They often use leasing as an external financing source for their investments.

Leasing for medical equipment and IT includes a variety of contract models; each should be

evaluated to find the one that best fits a hospital's individual needs. The classic well-known method of public bidding can be transformed to a catalogue of financing specifications tailored to a hospital's needs. In particular, the exchange of medical equipment at several stages of the planned amortisation period must be considered - normally at the end of the assumed period of usage, but earlier exit scenarios should also be taken into account. In this field, leasing is advantageous compared with a

loan, because the VAT in leasing is only applied on the effective wear and tear.

Modern instruments of leasing resolve the hold up of investments in a combination of classic loan financing for buildings and floating capital and leasing to finance tangible goods. An advanced financing strategy will enable hospitals to shift from traditional institutions that present treatments to patients, to modern companies that meet the demands of their customers."



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*T. Cupples, J. Cunningham and J. Reynolds, "Impact of Computer Aided Detection in a Regional Screening Mammography Program," AJR: October 2005; 185:944-950

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Healthy fundraising efforts can prompt great corporations as well as rich and poor people to give money for hospital needs.

Depending on the target set, such donations pay for anything from a restful patients' garden to an MRI scanner and even new wards and buildings. 'In the United Kingdom the healthcare sector is one of the fastest growing areas for fundraisers and a significant number of healthcare facilities are employing full time fundraisers,' says **Peter Fletcher FFIA CFRE** *.

Peter Fletcher speaks as an expert. His working life began in the motor trade in Australia, but he soon chose to enter a Salvation Army Training College to become a minister, a role in which he gained early experience as a fundraiser.

From 1990-92, as Residential Director of the Salvation Army's Red Shield Appeal, in Victoria, he co-ordinated the Annual Doorknock appeal, liaising with the media, undertaking speaking engagements, and much else. All of this resulted in the raising of an astonishing \$3,000,000 in both years of his directorship.

In 1992, as Resources Development Officer for the Uniting Church Synod of Victoria, his tasks included managing fundraising appeals for special programmes for overseas aid. From 1995, in succession he worked as Fundraising Manager for the Anti-Cancer Foundation, Muscular Dystrophy Association and the Royal Adelaide Hospital.



During the latter, he instigated an award-winning Major Gift Campaign. This raised around \$5,000,000,000 – 'one of the best campaigns of its type seen in Adelaide,' Peter himself exclaims.

Today Peter Fletcher is Director of Philanthropy at the University Hospital Birmingham Charities in the UK.

He is also a frequent speaker at Fundraising Conferences in Canada, America, New Zealand and Australia. Now living in the UK, he is a member of the Institute of Fundraising (UK), Chair of its Midlands Region division, and Chair of its Hospital Special Interest Group. Peter is also a member of the Association for Healthcare Philanthropy (USA) and an associate member of the Association of Fundraising Professionals (USA).

Peter was also the founding Programme Director of 'Madison Down Under'; a four-day workshop for Fundraisers based on the Association for Healthcare Philanthropy's Madison Institute at Wisconsin, USA: 'Arguably the best and most intensive fundraising workshop in the South East Asia region,' he points out. He also continues to be a welcome participant in other fundraising training courses and workshops.

Given his expertise, and particularly his responsibility for this large healthcare facility's business plan, Dr Maniadakis has much to impart on the pros and cons of

Leasing, private investments, private equity, PPP and fund raising

Given the dramatic changes in healthcare delivery over the past half century - which include the dawning of our electronic age - healthcare costs are rising in an exponential manner, all of which challenges healthcare managers' abilities to plan and fund new investments. Traditionally this has involved private money and equity.

As funds are not usually readily available, leasing represents a good alternative option, especially for medical equipment, because costs can be spread over years and advances in technology can also be followed.

More recently, the public sector has used the private/pubic partnership to develop large investments, drawing the initial funding from the private sector. This has advantages: the cost is spread over years and usually

private firms are better at delivering projects on time and on cost compared with the public sector.

Donations could be a big source of income – certainly some prominent institutions receive large amounts of money annually – but this is not the case for the great majority of hospitals.

Overall, different funding methods present advantages and disadvantages, and are more suitable for certain types of projects.

When implementing healthcare projects, it is important to seek other points of view, looking beyond the purely financial. For example, in many cases considering the cost-benefit of new projects not just in money terms, but also in terms of the life years gained for every euro spent in new investments.



Nikos Maniadakis BSc MSc PhD is General Manager & President of the 800-bed University General Hospital of Herakleion, in Crete. Including the University of Crete Medical School, and with a €200 million annual budget; 2,500 employees; buildings covering 115,000m² and serving 400,000 patients annually, the hospital is one of the biggest healthcare facilities in Greece.

Dr Maniadakis holds an Oxford University Certificate in Advanced Methods of Economic Modelling Analyses [2000], is the author of many publications and he lectures in Greece and Britain. He is a member of the Royal Economic Society of England; Operational Research Society; Productivity Analysis Research Network; International Health Economists' Association; International Society for Pharmaceutical Outcomes Research, and the International Society of Technology Assessment in Healthcare.

Peter's theme and advice for our hospital management visitors will be

Healthcare Fundraising – You will get what you ask for!

Over many millennia people have supported healthcare in many forms - from the 'Good Samaritan' in the Bible, to the elderly lady who died five years ago in Birmingham and left \$1.3 Million to a hospital for Cancer Research.

Healthcare fundraising is nothing new. For hundreds of years before the introduction of the NHS almost every hospital in the United Kingdom was built with 'Public Subscription' or Fundraising. Generous individuals gave large and small amounts in support of their local hospital and its mission in their community. Around the globe there is an increasing interest in the amount of involvement that philanthropic donations can have on the bottom line funding of healthcare.

In a world where the cost of technology is often outstripping the capacity of finance managers to pay the bills, hospitals are looking at their communities to support this vital community service. Globally, most hospitals receive donations from grateful patients and relatives; as a thank you or a memory. However, there is a significant need to make this an organized, professional and intentional activity, rather something that is just left to chance that it 'might' happen.

Having said that, fundraising principle number one is that it should be more about people than it is about money and the aim of all this activity should be

to develop a bond between the organization that needs funds and the people, often grateful patients, who have the ability to support. The most important person in this exchange is not the doctor; it is not the finance manager, or even the CEO or the fundraiser, it is the potential supporter who has the ability to make a gift.

Working in a hospital environment is to work in a place of miracles where every day people are in some form getting their lives back and are grateful to the medics, allied health professionals, healthcare scientists, administration and also the porters and ancillary staff. This 'good will' can be turned into significant support for the organization, but it needs to involve everyone.

Fundraisers are not so much raising funds for an organization but involved in creating a change of culture, so that an organization can articulate its needs to a public who are receptive to being asked for support. Fundraising is not just a financial exercise, but an organizational commitment to 'Change the World' and giving people an opportunity through their gifts to be part of that change.

* CFRE: Certified Fundraising Executive. FFIA: Fellow of the Fundraising Institute – Australia. ** Details: www.institute-of-fundraising.org.uk

At the Symposium, Dr Brzesinsky will describe

Diagnostic imaging and financing private diagnostic facilities in Poland

Over the past few years a steady growth in the number of private diagnostic facilities has been seen. Observation reveals few dominant trends in this process.

Let's focus first on the origin of such facilities. Despite the involvement of some major multinational firms, companies based in the Polish capital hold the bulk of this market. Large or small, these companies represent two different philosophies in terms of operation: one being limitation of costs to maximise profit; the other is uncompromising quality, even at some cost to profit margin. In between, there is some balance between these two attitudes, but that is in the minority. So far the 'ultimate quality' approach seems to have the upper hand. In some cases the result is so successful that even medical universities decide not to purchase their own equipment but to outsource diagnostic imaging altogether.

Refunds for services from the National Health Fund remain a burning issue. At the moment the NHF is refunding examination costs for hospitalised patients and

co-funded examinations, where primary health care facilities share the cost of out-patient examinations. In the past, the role of diagnostic imaging in the efficiency of the medical process has been underestimated, in some cases to such an extent that some diagnostic exams were not funded unless referral was after a hospital admission. This was far from efficient. Nowadays, awareness of the importance of diagnostic imaging is growing, which is reflected by the increasing number of screening studies sponsored by local authorities. Of course there are issues to be resolved. One is the inadequate number of procedures limited by contract, leading to long waiting lists. Another important issue is the case of procedures performed over the contract. Private and public diagnostic entities are required to stay within limits of the contract. However, on the other hand they are obliged to perform every procedure in life threatening circumstances. Obviously this results in exceeding the number of examinations, leading to vigorous disputes with the NHF, sometimes



Jacek Brzesinsky MD PhD is Clinical Research Director at Helimed Diagnostic Imaging, based in Katowice, Poland.

ending in court.

Fortunately these are not the only sources of finance for diagnostic procedures. Over the years a more or less constant percentage of patients, on a level of 10%, have examinations financed by private insurance companies or with their own funds. Also worth mentioning is the ever expanding involvement of private diagnostic centres in an increasing number of pharmaceutical trials.

What about the future outlook? It is extremely optimistic. More and more projects to expand private diagnostic centres are being financed with European funds. At the moment the number of such beneficiaries is already quite substantial. Also there is growing awareness, even at the lowest levels of local authorities, that early diagnosis resulting from a timely diagnostic procedure is highly beneficial and therefore important. We can look forward with confidence to the future and expect a steadily growing market share of private companies in the business of diagnostic imaging.

ON SHOW AT ECR 2007

The world's first wireless & radio controlled injector with Bluetooth technology



Accutron MR

Launching its newest *Accutron series* injector, *Medtron AG* proudly reports that the injector's high levels of accuracy, efficacy, and safety result from fifteen years' experience in development,

the intensive research of the expert team, their close follow-up of imaging modalities and, finally, their experience in addressing end-user input and needs.

The company's new *Accutron MR*, for example, is the only totally wireless injector on today's market. Its batteries, which run the shielded motor, need only an overnight charge to provide regular operating power for several days. 'Wireless Bluetooth technology was chosen for its higher compatibility with MR field environment to allow direct control of all injection parameters and operation via the remote control,' Medtron adds. 'The same one page touch-screen controls the injection head. Using the exclusive ELS (Easy-Loading-Syringe), even night shift can benefit from this easy handling. Sticking to the latest MR imaging

suites and protocols, the *double head Accutron MR* brings the widest scope of injection capacity up to 3-Tesla.'

Reporting on the development of its *Accutron CT single head*, Medtron explains that the aim has been to optimise the injection work-flow, cost effectiveness and patient comfort, whilst also presenting users with the same quality of standard contrast CT protocols.

Future developments

Examination times, shortened by IT and Computer Assisted Diagnostics (CAD), require a deeper integration and simplified management of contrast media injection for the imaging sequence, Medtron points out. To this end, along with many large imaging corporations, the company is involved in the



Wireless display installation

CANopen project (already available for its double-head CT injector, the *Injektron CT 2*).

The company predicts its projects will result in the next generation of CIA425-approved injectors, which will communicate with and be fully controlled by imaging software, so that injection parameters can be automatically adapted to the image acquisition sequence.

Medtron will demonstrate the new Accutron range at this year's European Congress of Radiology. Extension Expo A, # 16.

Time-saving breast biopsy tools

NEW



'The large range of accessories includes adaptations for customary vacuum guns. The biopsy unit can be tailored to various software systems. A co-ordinate system will be available shortly.'

Noras points out that, being modular, this system is more cost-effective for newcomers. 'The different components (Post&Pillar or grid system, 4-ch coil) can be assembled according to the user's needs and the accessories can be adapted to his biopsy system.'

The CPC 8-ch phased array multipurpose coil - 'This 2x4ch coil, provided with an adjustable holder, offers high-resolution image quality and has been designed for parallel imaging. As it enables a great number of imaging applications - carotid artery, jawbone, ears, eyes, as well as movement studies of all articulations - this device



Precision and clarity in details thanks to high resolution

represents a cost-saving examination solution. The development of customised holders for the musculoskeletal system is also possible. The MR-safe trolley with instrument table, LED light and vacuum pump for fixation mats can also be used to store the CPC coil and various instruments,' Noras adds.

View the Noras range at ECR, Expo A, booth 125.

MR-guided interventional breast procedures have increased dramatically over the last few years. Noras MRI Products, of Hochberg, Germany, is an established specialist manufacturer of instruments and accessories for this field. At ECR 2007, the company will demonstrate two systems. **The Noras MR breast puncture system** now has 4-ch phased array coil. 'The wide access - medial, lateral and cranio-caudal - permits punctures in the whole breast volume without time-consuming patient repositioning,' the company explains, adding:

Mobile positioning table takes heavyweights

NEW

Prognost XPE tables take patients up to 230 kg



To gain approval from US and other global markets, Provotec GmbH & Co KG, of Espelkamp, Germany, increased the patient load of its *Prognost XPE* tables.

A bucky table is an inexpensive tool in the X-Ray department, Provotec points out. 'However, due to the increasing use of movable stands, especially combined with digital image receptors, further requirements to the patient positioning table do arise. Along with tabletop movements in XYZ directions, to optimise the advantages of movable stands, table movement is desirable with a patient in the room.'

The *Prognost XPE* is a mobile patient positioning table with motorized elevating and floating

tabletop, which allows variable patient positioning as well as optimal use of modern X-ray tube/image receptor combinations.

'Not having a line cable makes the *Prognost XPE - Akku* particularly comfortable,' Provotec says. 'A rechargeable battery (accu) supplies sufficient energy to moving patients to the desired working heights. While one accu supplies energy to the table, another is loaded in the loading station. This is very user-friendly, because the accus can be changed simply and quickly and without a tool. Even if charge signals are overlooked and the accu is "suddenly" empty, changing it takes only seconds. The loaded accu can be removed with one



hand from the loading station and replaced in the *Prognost XPE - Akku*, against the empty one. Using a fixed working height, but the advantage of a mobile table with the floating tabletop, *Prognost XP* is the right choice. Neither line cable nor electricity is necessary.'

Additionally, all versions can be equipped with a moveable Bucky, or cassette holder under the tabletop.

Details: www.provotec.com

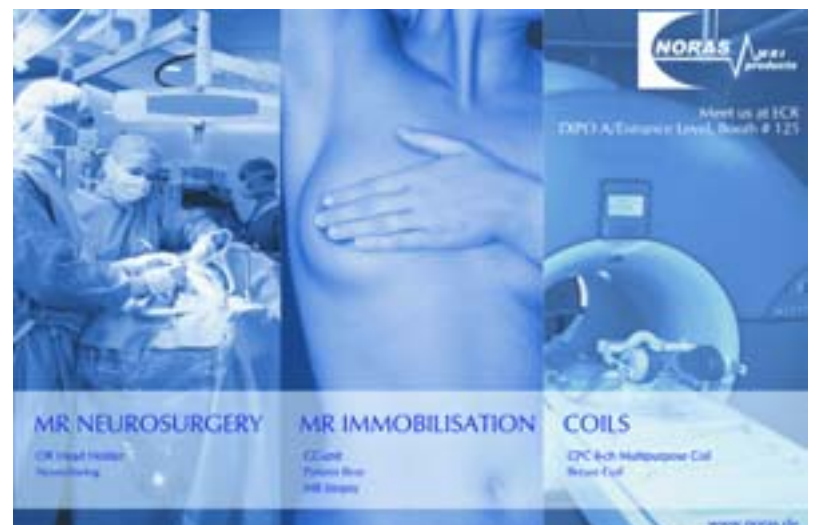
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www.provotec.com

... develops, manufactures and markets X-ray generators, bucky tables, wall stands, buckys and cassette trays for radiology (Bucky-Systems), also Systems with DR-Detectors.

Spare parts are also available for PICKER radiographic systems

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Come and find out!
ECR 2007
Booth 330
Expo C

RG: This is not simply another technology; you need a comprehensive understanding of many technologies and sciences to be able to master it. You need to understand not only how the equipment works, but also to understand (and have) biology and chemistry technologies. Many years ago, when we realised we needed this knowledge to pursue the road to molecular imaging and other things.

identifies areas showing inflammatory conditions that could potentially be cancer. It's just like PET. It's an MR image; it works like a PET but there is no injection. It is another way of thinking about molecular imaging. We are the only ones who can do whole-body imaging that can perform a PET-like application.

Right now we are working on tracers to identify new degenerative diseases and cardiac conditions. As the research

But if you want to find out specifically whether it is benign or malignant, and what kind of tumour, you have to use a more specific tracer. That's where it will lead – to the identification of specific kinds of cancer with much more certainty and sensitivity. That means you'll be able to find cancers much earlier, when they are smaller, and also be more certain of what the disease is. And it's now possible to significantly regress the disease

than 90%. At phase four it is 20%. It's similar with colon cancer.

So, by using molecular imaging with specific tracers and using PET/CT technology, you can identify tumours when they are very small, and this offers a greater chance of impacting it.

It's the same with cardiac disease. In Europe and the United States, 65 million people have heart problems but no symptoms. They don't have a clue that they are 'the walking wounded'. If we

trying to address disease-specific challenges. It's not about making equipment faster, greater, smaller – it's about what the big disease challenges are and what we need to do to address them. That's what defines our work today.

You can't abandon equipment development – you have competitors.

No, but equipment will evolve to adapt to diseases. Ultimately, what are doctors for? To identify diseases; so if we can meet the challenge of diseases, doctors will buy our equipment, not equipment from somebody else. Because of the focus on disease, equipment will evolve; think about the VCT (volume computed tomography). We are trying to resolve a big cardiology challenge: How can I have consistently good images of the heart? To do this, you have to image the heart over a very short time. So we developed a product to image the heart in five beats and it is a big success. If you pursue the strategy of resolving disease, your product will be developed to that end and it will be much more successful than if a bunch of engineers simply developed a product.

Among other things, we are focusing mainly on three areas that are very important to us: cardiology, oncology and neurodegenerative diseases. MR can be used for cardiology, along with CT, ultrasound, PET, cath labs and even X-rays. All these technologies have been adapted and focused on one disease. Adapting the technology according to the disease is, I believe, an important strategy. If you concentrate on Early Health, which means seeing earlier and diagnosing earlier so you can treat earlier, you should be able to continue that strategy with existing systems. Of course, new products to tackle these three major diseases will also come on to the market.

Molecular imaging

What is important from a molecular imaging standpoint is that it improves sensitivity and specificity. We need to understand the behaviour of cells and molecules, the way they react to certain stimuli that are created via another chemical component in the body such as an imaging agent, and tracers.

EH: Have there been any significant advances at GE since we last spoke on this subject?

It's an evolution and will continue to evolve. Only a few months ago, for example, we received approval to use DaTSCAN to identify dementia with Lewy Bodies.

This is a new use for DaTSCAN. You have to differentiate Parkinson's disease from other tremors, because if you use the same treatment, you can actually cause more damage. It differentiates between Parkinson's and Essential Tremor. With DaTSCAN you can now identify dementia with Lewy bodies, as well as Parkinson's disease. This is important, because treatment is specific to each condition.

A great application we have is a whole-body imaging MR that

GE was the first to undertake molecular imaging development on a large scale. 'You have to be a very special company to work in this discipline,'

Reinaldo Garcia, (right) President and Chief Executive Officer of GE Healthcare International, pointed out, when we asked for an update on his company's progress in this field



continues and the indications are validated and approved, they could be used to identify specific diseases using our imaging agent in conjunction with a PET machine. Now, we know what we're doing on the imaging side; we can optimise the equipment, and, because of that, we can optimise the imaging agent. That's why we're now able to develop this product.

Where could this development lead?

For PET applications, for example, FDG (fluorodeoxyglucose) is currently the generic kind of isotope that identifies tumours.

and change the outcome for the patient. If you don't treat people, most likely they will die. You can in many cases remove the cancer either surgically or by chemotherapy. If the cancer is metastatic and has already spread to other parts of the body, it is more difficult and in many cases impossible to treat. If it is caught early, you can manage it and there's a high probability of eliminating it. The earlier you find a tumour, the greater the chance of treating it. Studies have shown that if you catch breast cancer at phase one, the patient's chance of survival over the next five years is more

can identify them early, they could receive a simple treatment to prevent coronary disease or a heart attack. That's where our technologies are becoming more critical.

Politicians should be alerted to these cost factors.

Yes. If I have a heart condition and am heading for a heart attack, I could take drugs to eliminate that probability; they'd cost me \$1,500 a year. If I don't know about my condition, then have a heart attack and survive it, treatment would cost more than ten times the \$1,500. It is far less costly to address the problems earlier. Keeping things under control and never allowing me to have a heart attack is just one example that shows how significantly less expensive this is.

Along with molecular imaging equipment, what else might GE launch in the next five years?

We won't deviate from this path of Early Health. This is an important strategy, one that really defines the way we invest our money in R&D, the way we operate and the way we communicate. Everything I have been talking about has been about Early Health. We are really

CARDIOVASCULAR IMAGING COMMUNICATION BUT NO CONSENSUS

ML: The recent consensus paper by American radiologists and cardiologists will make their co-operation much smoother and improve the quality of cardiovascular imaging. Are relevant European professional associations also trying to formulate standards so as to end the eternal bickering between cardiologists and radiologists?

EvdW: Obviously, we've been discussing unified and clearly defined procedures in Europe – for years. So far, we have not been able to arrive at a pan-European solution. However, at local level there is an increasing rapprochement between cardiologists and radiologists. In my institution there is a constant exchange between ourselves and radiology colleagues. We have defined internal procedures that satisfy both sides and we co-operate closely. Most other hospitals handle this in a very similar way. What we don't have is an agreement that is valid for all countries, but at the same time takes into account the requirements of the individual countries, and even hospitals. That's the problem. In principle, cardiologists and radiologists agree that the best outcome, and best possible interpretation of images require joint efforts and exchange. The disciplines are linked – that's a fact that physicians must

internalise. Therefore, in the Netherlands we are about to create a special training in cardio-radiology - or radio-cardiology. This means that, at the end of his training, a cardiologist will spend a year in radiology and vice versa.

Another step forward is the fact that the professional associations, ESC (European Society of Cardiology) and the ESR (European Society of Radiology), organise joint congresses and seminars. Also, we should not forget nuclear medicine, another discipline with which we closely co-operate. That way the ECS guidelines for CT and MR and nuclear radiology came about in co-operation with the other associations and are recognised by them.

This sounds very harmonious, so why are there still disagreements?

The guidelines alone are not sufficient. We need standard protocols for quality assurance that also can be applied at local level. Moreover, some crucial issues remain to be solved: Which physician will scan which patient? How will the reimbursement be handled?

In terms of reimbursement, the DRGs will help, but they are not yet completely formulated and are currently still rather discipline-oriented. To me, a 50:50 split

The US finally did it: radiologists and cardiologists got together to draft guidelines for cardiovascular imaging procedures and define quality standards. However, Europe still awaits a binding consensus to end internal squabbles in hospitals. *Meike Lerner, of European Hospital, discussed this situation with Professor Ernst E van der Wall MD, (right) Head of the Department of Cardiology at Leiden University Medical Centre, in the Netherlands, and Vice President of the ESC (European Society of Cardiology)*

Among a multitude of commitments, award-winning cardiologist Prof. Ernst E van der Wall is ESC Vice-President. He is also a founding member of the American Society of Nuclear Cardiology (ASNC), Society of Cardiovascular Magnetic Resonance Imaging (SCMR), edits the International Journal of Cardiovascular Imaging, is an Associate Editor of the Journal of Cardiovascular Magnetic Resonance Imaging, and Editor-in-Chief of several other journals including the European Journal of Nuclear Cardiology and the Journal of Heart Disease, etc.



seems like a just solution.

In terms of responsibility, it's also difficult to clearly define competencies. In my opinion, generating images is, in principle, a radiologist's task, albeit in close co-operation with the cardiologist. The interpretation of images should be done jointly. But who should have the final say? The cardiologist knows the physiology of the heart, knows the patient and considered the scan necessary in the first place. The radiologist quite justifiably says: 'I am more than a photographer. I've studied medicine and I'm the

specialist when it comes to interpreting images.' Consequently, the radiologist should assess which further procedures might be indicated for the patient and he or she should analyse the images with the cardiologist. The cardiologist, in turn, should be the one to formulate the diagnosis. This is a rather theoretical solution of the problem which, in every day life, obviously often leads to a stalemate.

The definition of procedures and responsibilities as well as standard protocols is the goal we

ultimately want to reach together with radiologists and nuclear medicine specialists – as well as with surgeons. There is one thing we cardiologists must not forget: imaging procedures in cardiology are here to stay only if we co-operate closely with radiologists.

Despite all disagreements, the intensive discussions were fruitful and we are making progress. I'm convinced we will have a European consensus paper by 2010. The groundwork has been laid in our joint congresses and with the routine updates of our guidelines. I am very optimistic.

NEW FOR EUROPE

Light therapy supports diagnostic imaging

Colourful lighting: not only enhancing, but able to instruct patients in the CT scanner



'In our private centre we try to live a new dimension in diagnostics,' Dr Alth explained. 'This means we provide a comprehensive range of equipment of the latest generation for digital X-ray, digital mammography, ultrasound, CT, MRI and radiotherapy. Moreover, we are the first in Europe to offer light therapy support – which our patients embrace enthusiastically.'

Asked how that novel system works, he pointed out that many

patients feel very uncomfortable during MRI and CT exams, and sometimes they have specific problems - such as claustrophobia. 'So we opted for *Ambient Lighting*, a dynamic lighting concept by Philips. It's designed to create a soothing atmosphere in the examination environment. *Light creates wellness* is the motto of this concept. A patient being moved through the scanner can look at a harmonious play of pastel colours that soothes and

relaxes him, or her, and detracts from the actual examination. The *felt* scanning time is shorter, the play of colours reduces fear and makes patients feel secure and at ease.'

Asked how the lighting is integrated into a clinical procedure, and whether it resembled a pre-programmed light show in a discotheque, Dr Alth said the interaction of the homogeneous general lighting system and the additional wall-

One of Europe's most modern radiology and diagnostics centres opened in Vienna-Donaustadt, Austria, this January. Built up from around six million euros raised by private investors, and now offering state-of-the-art technology plus medical expertise and patient-oriented services, the centre will readily compete with any university hospital. *Christian Pruszinsky*, our correspondent in Austria, asked **Dr Gunther Alth**, the centre's manager, and **Dr Friedrich Vorbeck**, how this centre differs from the rest

mounted LEDs is controlled manually, to be able to adapt it to individual situations. 'Another advantage is that we can communicate with patients with hearing problems via colour codes. In MRI or CT scans you often have commands such as "hold your breath" or "resume breathing". Now, for example, a green light, can tell the patient to breath again, while a red light tells him to hold a breath. That makes life easier not just for patients but also the staff.'



Drs Gunther Alth and Friedrich Vorbeck at the new centre

At the clinic, wellness seems to be a leitmotiv – from the reception through the waiting area to the hallways: generous light, pictures, and friendly colours... It's almost like in an art gallery, I remarked. Dr Alth was pleased. 'I'm happy that this is your spontaneous impression, because that is exactly what we wanted to achieve with our focus on superior service and where we consciously want to offer an alternative to the often quite depressing hospital routine. And indeed, we opened with a large Prachensky vernissage. Others will follow.'

On 700 m2 the management have installed a state-of-the-art equipment park for imaging diagnostics and plan to handle up to 500 patients daily. 'That's quite a task for the medical staff,' I suggested, but Dr Alth was not fazed. 'We have a team of top specialists and a board of experts that will support us with complex cases,' he said reassuringly. 'So, fast and accurate diagnoses are guaranteed.'

There are two famous Slovaks in the history of world radiology.

The Hungarian-German physicist *Philipp Eduard Anton von Lénárd*, (born: 1862, in Austria-Hungary – today Slovakia. Died: 1947 in Germany) won the Nobel Prize for Physics in 1905 for his research on cathode rays.

Vojtech Alexander, (born 1857 in Kezmarok, died 1916 in Budapest) founded radiology in the Kingdom of Hungary, and became one of the world's most influential radiologists. Among his many achievements, he described the development of tuberculosis. He owned the first X-ray apparatus in Slovakia. He also wrote Slovak poems.

Behind the Iron Curtain

The history of Slovak radiology developed alongside Czech radiology in the Czechoslovak Republic. Training of Slovak radiologists in specialised X-ray centres in Prague and Hradec Kralove, and their close co-operation, improved the quality of X-ray centres in Slovakia's state hospitals. Being in the east of Czechoslovakia, Slovakia has a slightly lower level due to having less equipment and personnel. From 1953, the government organised institutional post-graduate teaching for radiologists, radiographers and radiology technicians. Top quality radiology was centred in three towns, Bratislava (Slovakia's capital city), Banska Bystrica (central Slovakia), Kosice (an eastern Slovakia metropolis). In 1983, the Biomedical Research institute in Bratislava had the first CT scanner in the country, and two more were installed within two years. The three radiology centres produced completely adequate X-ray diagnoses. Routine X-ray diagnoses were carried out at different quality levels in the state hospitals and external departments.

Czech, Slovak, Hungarian and East German radiology societies enjoyed close co-operation. Few of us had the opportunity to visit radiology departments and congresses in

Slovakia was part of the Austrian-Hungarian Empire until 1918, when Czechs and Slovaks were brought together to form the Czechoslovak Republic. After World War II, and up to 1948, the country was still part of Europe, but then fell behind the 'Iron Curtain'. From 1989 it began 'knocking on the EU door' and entry was granted in 2003. Today Slovakia's population is around 5.38 million. To serve that number, the country has 340 radiologists and 1,100 radiographers. **Peter Bořuta MD PhD**, Professor of Radiology and Head of Radiology at Slovak Medical University, in Bratislava, and Director of the Imaging Diagnostic Institute in Trnava, reports.

SLOVAKIA

RADIOLOGY IN A SMALL CENTRAL EUROPEAN COUNTRY

western countries. However, from time to time we had a chance to present our results abroad (ICR, ECR, national radiological congresses).

Knocking on the EU door (1989 – 1993)

After the political movement, changes in radiology in our country also took place. The splitting of the Czechoslovak Republic created a separate Slovak radiology society, with lots of work on own management. We had to prepare radiology guidelines for the government. Changes in medical care were followed by changes in radiology. Privatisation came as a new phenomenon to our medical care. We were under pressure to find the best way towards effective radiology. We had to choose the best from a lot of data. Former personal contacts helped us to implement data from many training programmes organised by EAR and University hospitals (Vienna, Graz, Zurich, Freiburg, Heidelberg and many others).

Into the EU (from 2003)

Improvements in politics and economic reforms accelerated growth in the amount of radiology equipment. There is continuous exchange of old X-ray apparatus by state-of-the-art apparatus, up to CR and DR. Old-fashioned axial CT scanners have been replaced by MSCT. We have two cardio MSCT, one 64 row and one 2x32 row detector CT. Today more than fifty CT scanners are in use. Among 25 MRI units, we have nine open heart systems in private practice. We have six interventional X-ray centres.

Many of our X-ray departments have problems finding qualified radiologists. Lots of qualified personnel are leaving to find better paid jobs in EU countries. It is a very good indicator of our quality, but unfortunately brings us the serious problem of finding adequate substitutes.

In post graduate teaching we can accept some positive improvements and we add positive ideas from EU



A Cardio CT Aquilion 64 from Toshiba, at the Diagnostic Imaging Institute in Trnava



From left, at the Vitrea workstation: A Glezišova MD, Prof. P Bořuta and P Jánska MD

recommendations to our post graduate programmes.

Close co-operations with EAR, radiological societies of EU countries, and special teaching programmes (the Star programme organised by EAR, Schering, Siemens, SRS, SMU; the Hands-on Workshop organised by Heidelberg, EAR, Schering, SZU) are just a few teaching activities.

Attendance of the German-Slovak radiological association was also a step towards close co-operation to exchange data regarding radiological improvements, research, and teaching. To improve radiology, or standardise radiology in EU countries, visits by experts and the exchange of residents and students is a necessity.

The end result of close co-operation between radiologists at Heidelberg University, the private

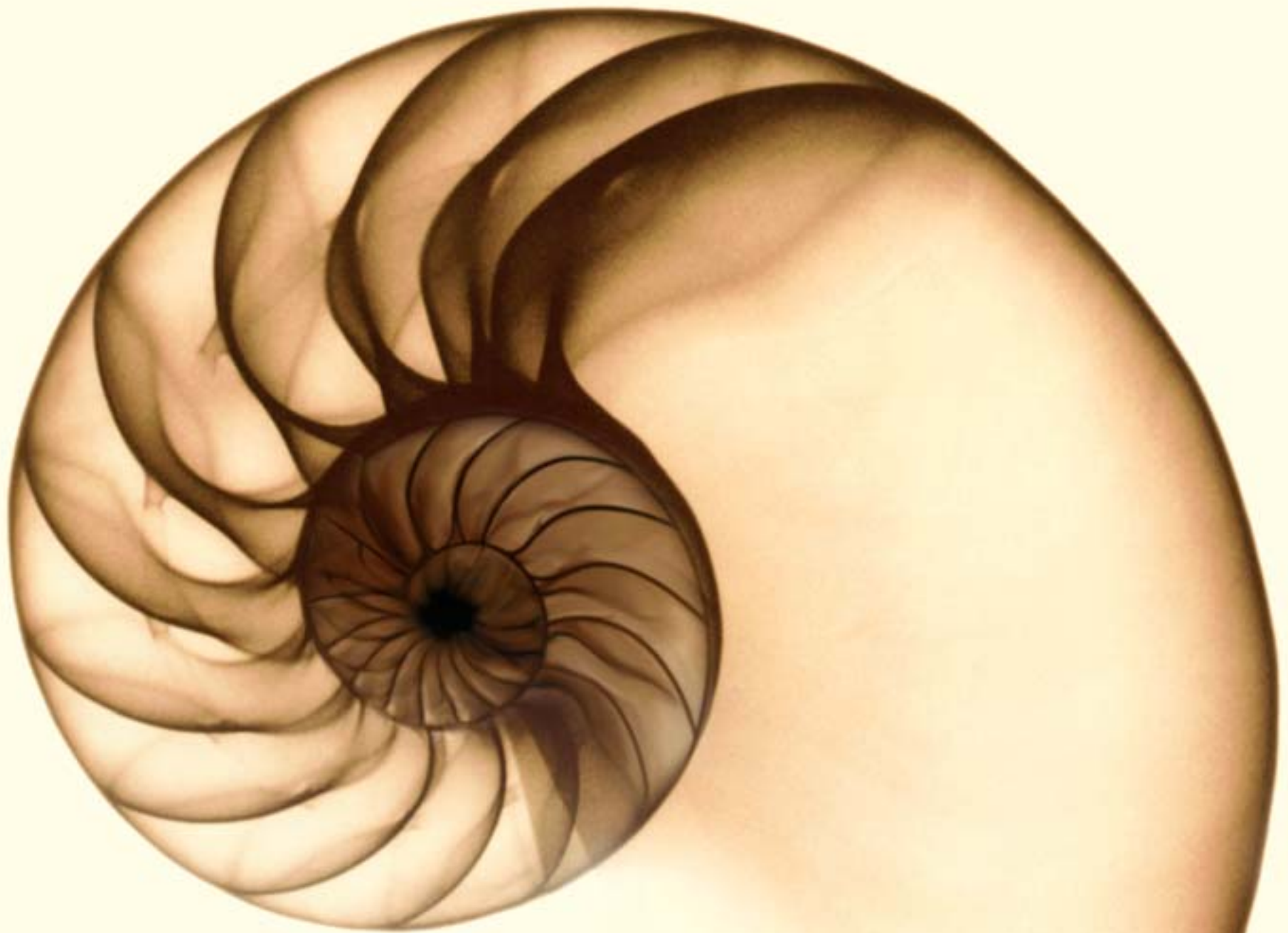


After Bratislava and Lucenec, the second MRI Hands-On Workshop was held at the Kosice Hospital.

The organisers, from left (dark suits): M Requardt, F Giesel MD MBA, H von Tengge-Kobligk MD, R Ringelband MD, with hospital personnel

radiology group Linz and the radiology group in Slovakia, is the Imaging Diagnostic Institute in Trnava. The first fully equipped X-ray department with CR, body ultrasound, mammography, 64 MSCT, with cardio and MRI, has been operating for a year. They use RIS and PACS to be more effective and improve results. Top qualified personnel, state-of-the-art algorithm, and a high level of room configuration, guarantee the highest level of radiology examinations and postgraduate teaching programmes for radiologists and X-ray technicians.

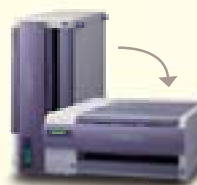
Slovak radiology has a good chance of becoming a qualified member of EAR.



Sony Digital Radiology Imagers Designed for every facility and every body



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As an experienced radiologist, you'll want the best possible equipment for your patients. The latest range of Sony Digital Radiology Imagers are smaller and faster than all-in-one products enabling you to benefit from optimum performance, cost and versatility.

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