



RSNA Weathers Economic Storm

Late last month, as exhibitors and attendees prepared for the opening of the 94th scientific assembly and annual meeting of the Radiological Society of North America (RSNA; Oakbrook, IL), some industry analysts and observers expected a show climate even chillier than Chicago's traditional cold-weather welcome to delegates.

Initial forecasts suggested that this year's RSNA show could take a serious hit because of a variety of challenges now shaking the radiology community. In support of their gloomy outlook, analysts pointed to recent Medicare reimbursement cutbacks, the numbing effect of the economic downturn on hospital plans for buying capital equipment, and the insistence of many public policy analysts that 'overuse' of imaging is a significant contributor to rising healthcare costs.

In other industries, trade events are reporting both exhibitor resistance and no-shows of companies that have already paid their exhibit fees. Yet, when RSNA released its audited registration figures, the show did remarkably well considering the current state of the economy. RSNA 2008 featured all the major players in the sector, as well as a solid representation of mid-size and smaller companies. Together, the exhibitors conveyed the impression of continuing vibrancy and commitment to developing the products, equipment, systems, and services that have made imaging one of the most technologically advanced sectors of the medical device industry.

"I thought the show was as busy as ever," says Diane Wilkinson, an imaging sector analyst with market research firm InMedica (Wellingborough, UK). "The major players still had huge exhibitions. The mid-size and smaller companies had booths of similar size to those they have had over the past two years."

The six-day event ran from November 30 to December 5 at Chicago's McCormick Place. According to RSNA, professional attendance was 27,586—down less than 1% from last year. Similarly, the number of exhibitors (724) and the amount of space devoted to product and equipment displays (513,650 sq ft) were each down by only about 4%.

Whatever decreases the show suffered this year, the differences may have been imperceptible to attendees. "The show included a third hall this year," notes Wilkinson. "Since the other two halls didn't seem particularly spread out, it seemed as though the number of exhibiting companies is increasing—or that exhibitors are opting for larger stands."

In this regard, Wilkinson cited the examples of Terason Ultrasound, a division of Teratech Corp. (Burlington, MA) and a leading manufacturer of compact, portable ultrasound systems; and iCRco Inc. (Torrance, CA), a manufacturer of digital imaging systems. "The booths of both companies seemed significantly larger than last year," says Wilkinson.



Wilkinson: Same as it ever was.

Sector Leaders Show Off

With plenty of new and refined technologies on display, the top companies in the imaging sector didn't disappoint attendees at this year's RSNA meeting. Following is a summary of technologies featured by leading imaging manufacturers.



GE's Discovery PET/CT 600 scanner.

Sector leader **GE Healthcare**, a unit of the General Electric Co. (GE; Fairfield, CT), touted its 'Radiology Reimagined' theme as it showcased a number of new products in several imaging modalities and clinical support categories. New to the North American market, the company introduced its Discovery positron emission tomography/computed tomography (PET/CT) 600 scanner, which is designed to enable earlier detection and accurate monitoring of disease by using molecular imaging technology in both its hardware and software. Optimized for oncology applications, the hybrid system unites the high speed and high resolution of GE's BrightSpeed CT with the motion-management capabilities of GE's Discovery PET system. The resulting system offers improved lesion detection, reduced radiation dose, faster scans, and increased throughput.

The sector's number-two company, **Siemens Healthcare**, a division of Siemens AG (Munich, Germany), set up a theater-like environment called Innovations@RSNA, where attendees could explore the company's latest advances in computed tomography, mammography, magnetic resonance, molecular imaging, and ultrasound. Featured products included the Somatom Definition Flash, a new dual-source CT scanner that employs two x-ray tubes that simultaneously revolve around the patient's body. The unit requires only a fraction of the radiation dose of typical CT scanners. Siemens claims the fastest CT scanning speed in the industry. The company's new system can complete a scan of an entire chest region in just 0.6 sec, or an entire heart in just 250 ms—less than the time required for half a heart beat. A full body scan of a six-foot, six-inch patient can be completed in less than five minutes. The speed of the system is especially suited for examinations of moving organs such as the heart or thorax, and for emergency room settings where scans were often not performed due to time pressures. In addition, the system will improve CT imaging of pediatric patients, who will no longer have to be sedated since they can be moving and the system will still obtain a clinically valid and reliable scan. The Somatom Definition Flash will be commercially available in the first quarter of 2009.



Siemens's Somatom Definition Flash dual-source CT scanner.



Philips's Achieva 3.0T TX MRI scanner.

with MD Buyline (Dallas, TX). "We should see growth in the market for 3.0T units within the next two to three years."

Philips Healthcare, a unit of Koninklijke Philips Electronics NV (Amsterdam, The Netherlands), and number three in the medical imaging market, also manufactures products for every modality and had a major presence at RSNA. The company introduced the Achieva 3.0T TX, which the company says is the industry's first magnetic resonance imaging (MRI) scanner to use multiple radio-frequency (RF) signals to automatically adjust to the patient's anatomy. The system provides for enhanced image uniformity and consistency, while completing scans 40% faster than conventional MRI systems. Philips says the Achieva system is suited for demanding applications such as spine and breast imaging.

The availability of 3.0T MRI units was a top-drawing item at this year's RSNA show. "Users are interested in 3.0T units, as most of the coil hardware is now readily available—at least at the 16-channel level," says Beverly Schierer, RT, vice president of research and analysis

Toshiba America Medical Systems Inc. (Tustin, CA), an independent group company of Toshiba Corp. (Tokyo) and a leading multimodal imaging manufacturer, announced its Radiance Plus breast imaging suite, which is available on the company's Vantage Atlas and Vantage Titan MRI systems. The new multichannel Radiance Plus breast imaging coil optimizes magnetic resonance mammography on the Vantage systems by creating a higher signal-to-noise ratio that results in clearer images. Toshiba says that features of the new systems greatly improve patients' MRI experience by reducing discomfort and claustrophobia, and decreasing acoustic noise by up to 90%, making them the quietest such systems on the market.

Toshiba's focus on breast MRI was indicative of a trend that included several of the sector's largest companies. "Breast MRI was a headline again this year," says Schierer. Beyond Toshiba, "additional companies such as GE and Siemens Healthcare are partnering with Sentinelle Medical Inc. (Toronto) for their imaging tables and coils." Toshiba also highlighted ultrasound technology capabilities to address this segment with improved imaging, diagnostic capabilities, and productivity.

Carestream Health Inc. (Rochester, NY), the former Kodak Health Group, which was acquired in April 2007 by parent Onex Corp. (Toronto), generated a great deal of buzz at the show. The company introduced what it called the first-ever SuperPACS architecture designed to integrate multivendor, multisite picture archiving and communication systems (PACS) into an efficient enterprise solution. Carestream says the new infrastructure will also enable healthcare facilities to share patient information and enhance collaboration among clinicians, ultimately improving the quality of patient care while simultaneously boosting productivity and resource utilization. The Super PACS architecture is currently a work in progress, but will be available for order in the second quarter of 2009.

Advanced technologies made their presence felt in a variety of imaging sectors occupied by major manufacturers. "In general imaging, the new portable multipurpose detectors were a headlining item," says Schierer. "These products come either wireless or with a cord, depending on the vendor. The advantage of the products from some vendors, such as Carestream, is that no retrofit is needed."

"Digital technology has entered the market and is steadily becoming the standard of x-ray systems, as well as 3-D imaging for ultrasound, higher slice counts for CT, increased tesla for MRI, and hybrid systems for nuclear medicine," says Kamran Zamanian, PhD, a medtech analyst and partner with iData Research Inc. (Vancouver, BC, Canada). "As the imaging market becomes saturated, both physicians and



Schierer: Watching the

manufacturing companies will be looking for ways to create more value in the market.

detectors.

“One way to achieve this is by further segmentation and specialization of the medical imaging market,” says Zamanian. “This is being done in the form of using the systems for different clinical applications or creating completely new, dedicated systems. Breast ultrasound and breast MRI are examples of two procedure types that are expected to grow in numbers over the next five years.”

“The major ultrasound players highlighted their product lines with an emphasis on the advantages of the modality’s high accuracy imaging with reduced expense,” says Schierer. “Companies emphasized productivity and specific market segments such as women’s health, including breast imaging.

Among featured ultrasound products, Siemens highlighted the Acuson S2000 automated breast volume scanner (pending FDA market clearance) to optimize patient care and throughput in breast imaging in the clinic, imaging center, or hospital. Toshiba highlighted its technology capabilities to address the breast imaging segment with improved imaging, diagnostic capabilities, and productivity. And GE emphasized the breadth of its ultrasound product line to meet the varied performance requirements and price levels—from laptop platforms to premium-level console platforms—and highlighted its most recent platform, the Logiq E9 with real-time ultrasound fusion technology.

Emergent Innovation

Building on the market opportunities for innovation, many other companies also showed off advanced products at RSNA 2008. Following is a sampling.

TeraRecon Inc. (San Mateo, CA), a leader in advanced image processing and 3-D visualization techniques, featured iNtuition an integrated workflow platform, and the AquariusNET Server, an enterprise-wide 3-D distribution and image management system. Aquarius iNtuition delivers workstation-class applications to regular PCs or PACS stations throughout the radiology department and enterprise through the convenience of a thin client platform. TeraRecon’s featured products at RSNA 2008 included advanced 3-D workstations and enterprise image processing servers, cone beam CT scanners, mini gamma cameras, and real-time volume rendering engines.

Fovia Inc. (Palo Alto, CA), a world leader in volume rendering technology featured its award-winning High Definition Volume Rendering (HDVR) software, which provides enhanced image visualization that results in improved clinical care. The software engine is scalable for the addition of more users, larger data sets, bigger rendering planes, and multiple CPUs. The software is compatible with Windows, Macintosh, and Linux platforms. Fovia says that HDVR can be easily integrated into radiology systems, allowing PACS companies, imaging modality manufacturers, and other medical imaging OEMs to easily, quickly, and cost-effectively integrate a best-of-breed 3-D solution.

Although RSNA is well known as a show for end-user capital equipment, Fovia was one of a number of component suppliers that apparently see the show as a viable venue for business development.

Bracco Imaging SpA (Milan, Italy) showcased its contrast imaging agents and solutions that meet medical needs and facilitate clinical solutions in what the company refers to as the key diagnostic imaging modalities.



Ultrasonix's SonixTouch EMed ultrasound system.

Ultrasonix Medical Corp. (Richmond, BC, Canada) introduced the SonixTouch EMed, the emergency medicine-specific version of its SonixTouch ultrasound system, a compact, portable diagnostic ultrasound system developed around the company’s OpenSonix platform. The user-friendly, reconfigurable touchscreen-driven system can generate premium-level image quality. The system can be configured for virtually any ultrasound application, and offers location flexibility with both battery power and wireless communication capabilities.

Traxtal Inc. (Toronto) introduced PercuNav 2.0, an upgrade to its image-guidance software, which offers greater functionality, connectivity, and ease of use. The company’s computer-assisted soft tissue navigation technologies provide interventional radiologists and sonographers with broad image-fusion capabilities available for soft tissue navigation and diagnostic imaging. Physicians can identify and mark areas of interest on CT or MRI scans, which can then be overlaid with live ultrasound for diagnostic scanning. The company says PercuNav is the only computer-assisted, image-guided diagnostic and interventional system cleared by FDA for all imaging modalities. The PercuNav system consists of the Traxtal Tx mobile system cart, PercuNav software, and a wide range of tracked, sensor-based instruments, such as biopsy devices, radiofrequency ablation introducers, and ultrasound trackers.

Amicas Inc. (Boston) introduced version 6.0 of its Amicas PACS, which combines the intuitive, easy-to-use, Web-based design of previous versions with major enhancements to the image-viewing toolset. Version 6.0 introduces the Halo viewer,



Traxtal's PercuNav 2.0 image-guidance system.

which complements the system's real-time worklist for advances in functionality aimed at increasing radiologist productivity and improving the quality of reading. The new patient record includes a complete view of the patient's current exams, relevant prior images and other exams, along with valuable clinical information such as orders, reports, and technologist comments. Version 6.0 can be fully integrated with existing Amicas PACS and supports both centralized and distributed reading models for access to imaging exams anywhere. Version 6.0 has received FDA clearance and is in beta testing at multiple Amicas customer sites. The company anticipates general availability in early 2009.



The QV-9000 digital universal radiographic system by Quantum Medical Imaging.

Quantum Medical Imaging LLC (Ronkonkoma, NY) showcased its enhanced QV-9000 digital universal radiographic system, which features a one-button automated positioning feature. All positioning motions of this C-arm type system are fully motorized and synchronized for maximum patient throughput. Once the exam is selected from either the modality worklist or directly from the digital radiography menu, the QV-9000 automatically moves itself into the position required to complete the examination, allowing for precise system positioning and faster imaging. The system is available in both floor- and ceiling-mounted versions.

Varian Medical Systems Inc. (Palo Alto, CA) introduced its new OncoView image management and storage solution, an oncology-specific image management and storage solution designed to supplement a hospital's existing PACS by making it 'oncology capable' or to operate as a stand-alone solution for centers that do not have such a system. OncoView enables clinicians to retrieve or store important information within its own archive or within hospital PACS through industry standard communication protocols such as HL7 and DICOM, supporting paperless and filmless clinical operations that speed workflow and improve cost efficiencies.

MedQuist Inc. (Mt. Laurel, NJ) demonstrated its SpeechQ for radiology, an interactive speech recognition application in conjunction with RadWorkFlow, an enterprise solution for radiology professionals, developed by Inland Imaging Inc. (Spokane, WA), an operator of imaging centers. RadWorkFlow is ideally suited for radiologists who support multiple facilities and often have to access patient images in different PACS, by providing a single view of the studies awaiting their interpretation. When used in combination with SpeechQ, the radiologist's report turnaround time is significantly reduced, as the speech-recognized report is immediately reviewed and signed by the radiologist, and then routed through RadWorkFlow back to the requesting organization and physician.

Merge Healthcare Inc. (Milwaukee, WI) a leading medical imaging solutions provider announced the availability of its Merge Mobile technology on the iPhone and iPod touch handheld devices from Apple Inc (Cupertino, CA). Merge Mobile enables radiologists and other physicians location-independent retrieval of CT, MRI, x-ray and other images wirelessly. The system can be used to perform standard radiologic manipulations to guide decision-making, much like computer-based solutions such as PACS. The technology integrates advanced remote-rendering techniques, including multiplanar reconstruction, which eliminates downloading of large data quantities to the mobile device and enables near-immediate access to images. Using the iPhone's multitouch interface, users have access to features that include remote stack viewing, scroll, contrast adjustment, zoom, and pan. A secure communication protocol addresses privacy.

While there was plenty of glitz and fanfare at RSNA 2008, many vendors were also touting their more affordable solutions that were either scalable or could be easily upgraded to more sophisticated systems in the future—a move that reflected the realities of the current economic climate.

Higher Performance, Lower Cost

While these are tough times for the radiology market, industry analysts generally agree that the sector will recover along with the general economy. Growth will largely be fueled by a steady stream of new technologies that promise early and more precise detection of diseases while streamlining imaging protocols and procedures that result in better patient care, more efficient facility utilization, and lower cost.

In addition to the current and potentially protracted economic instability, iData's Zamanian sees a number of factors as deterrents to market growth. Key factors limiting growth include cuts in reimbursement for imaging services mandated under the U.S. Deficit Reduction Act, which took effect in January 2007; and the increasing availability of refurbished systems, which is cutting into the sales of new equipment.

Even so, Zamanian says, advances in technology will always be a driving force in the medical imaging industry, where there is a continuous focus on innovation. "Leading companies are constantly working to improve their products and develop systems with the latest, and highest performance technology,"

"At present it is the higher-priced modalities—specifically CT and MRI—that are suffering the most from the



Merge Healthcare's handheld imaging retrieval system.

economic downturn,” says InMedica’s Wilkinson. “But the downturn will also affect higher cost applications of x-ray and ultrasound, for example, in cardiology.”

As a possible exception, Wilkinson cites the hand-carried sector of the ultrasound market, which continues to make gains globally in spite of economic conditions. Demand for the systems is continuing to grow largely due to the fact that these affordable, flexible systems are suitable for a wide variety of imaging applications and locations.

“In general, x-ray and ultrasound are less affected by the recession because of their lower cost, ease of use, and flexibility,” Wilkinson adds “But there is a definite slowing in these markets, too.”

Wilkinson notes that in the current healthcare environment, the technologies that can facilitate changes in clinical pathways to eliminate unnecessary diagnostic procedures will have the greatest impact on the market over the next few years. Moreover, those modalities that dramatically reduce the cost of healthcare, while increasing patient throughput and diagnostic confidence, will dominate the imaging market.

As radiologists, physicians, technicians, and facility administrators left RSNA 2008 and headed into the uncertain market realities of the year ahead, there was no doubt that both radiology professionals and industry suppliers will be back in force at the next show, which is set for November 29 – December 4, 2009, at McCormick.

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