

Digital imaging moves far beyond radiology

From cardiologists to dentists, physicians clamor for digital images with integrated processing

By: [Merlina Trevino](#)

As the digital imaging mantra—images available any time, anywhere—begins to permeate the hospital enterprise, vendors are hearing the call for digital image management from specialties outside of radiology.

This year's RSNA meeting will showcase products with new image processing capabilities that not only target other specialists but also aim to improve their communications with radiologists. Orthopedics, neurology, neurosurgery, internal medicine, oncology, vascular surgery, histology, and cardiology are heavy users of imaging information, and their practitioners need full-fledged image acquisition, viewing, and image processing capabilities, said Henri "Rik" Primo, director of marketing and strategic relationships at Siemens Medical Solutions.

"Most specialties in medicine rely on images as essential tools for guiding and evaluating patient treatment," he said.

Several vendors will unveil new products and upgrades at the RSNA meeting that result from their acquisition of informatics companies with a focus in specialties other than radiology.

Agfa Healthcare will demonstrate the results of its recent Heartlab acquisition. The company can now integrate cardiology, radiology, and enterprise PACS, said Ray Russell, executive director of marketing. While the core elements remain the same for all the products, each has different tool sets, depending on the physician using it.

McKesson's acquisition of Medcon is reflected in its Horizon cardiology system.

"We are very interested in watching growth out into enterprise. We're very excited by areas of integration between radiology and cardiology, and we'll be demonstrating some of those technologies at the RSNA conference," said Joe Biegel, vice president of product management and marketing at McKesson Medical Imaging.

Additionally, the company will show incremental releases to its flagship radiology products, the Horizon radiology workstation and Horizon radiology medical imaging product lines. It will also highlight incremental improvements to its Web-based RIS.

"Imaging continues to be pervasive in all medical specialties. We're seeing a lot of business with cardiology and orthopedics and other specialties that also need PACS," said Peter McClennen, president of Amicas.

The Amicas PACS offers functionality to radiologists, cardiologists, neurologists, and orthopedic surgeons, McClennen said.

In addition to a new version of its EXAM-PACS, CoActiv will introduce EXAM-PACS-ORTHO, the orthopedic version of the product.

"As more orthopedic practices and departments abandon expensive and limited-value film-based exams in favor of the more precise, less expensive, and faster CR and DR systems, they will require a PACS designed specifically for their use," said Ed Heere, president of CoActiv Medical Business Solutions.

Offerings that continue the march out of the radiology department include GE Healthcare's Centricity AW suite. The work-in-progress features cardiology postprocessing tools for RIS/PACS, said communications manager Andrea Kozek.

IDX Systems will showcase the Imagecast PACS for cardiology, in addition to its Imagecast PACS for radiology.

While some PACS companies concentrate solely on the radiology department, the iSite PACS from Philips Medical Systems focuses on the entire healthcare enterprise, according to Mark Reis, director of marketing communications with the global PACS business unit at Philips.

With its acquisition by Philips, Stentor has become Philips' PACS business unit, and Philips has developed an enterprise product based on Stentor's iSyntax technology. Philips plans to expand its expertise into cardiology, dermatology, and other "-ologies," Reis said.

Swedish company Sectra Imtec will introduce its integrated Cardio PACS to the North American market. The company's 3D add-on is also new to that market, said Staffan Bergstrom, vice president of marketing for Sectra.

Several other vendors plan to showcase PACS and informatics capabilities that take other specialties into account. Orthocrat will debut a thin-client system for use throughout the entire institution. It will also introduce OrthoMacro, which allows orthopedists to build measurement protocols and define their own tools for specific clinical tasks.

SmartPACS will highlight an upgraded STARPACS that offers a digital imaging environment for dental and orthopedic departments, said Bob Blake, vice president of sales at SmartPACS. The company is also grooming its INFINITT PACS to go beyond radiology with applications in cardiology, PET/CT fusion, brain CT perfusion, and brain angiography subtraction.

The information management products that Kodak will feature at the meeting are tailored for cardiology PACS as well as radiology PACS and for other DICOM and nonDICOM applications across the enterprise, said Ken Rosenfeld of Kodak's Healthcare group.

Merge eMed will highlight its integrated RIS/PACS business and clinical workflow products combined with specialty clinical visualization software. These include PET/CT fusion, mammography, orthopedics, virtual colonoscopy, calcium scoring, lung nodule detection, and 3D fetal imaging, said Beth Frost-Johnson, senior vice president of marketing.

SciImage will unveil enhancements to its flagship PicomEnterprise software. The company also intends to introduce its document imaging suite and the latest editions of its viewing applications, including PET/CT fusion reading tools, an optional ECG management suite, and several electronic medical records and physician portal integration products.

Thinking Systems will showcase an integrated PACS that serves nuclear medicine, nuclear cardiology, PET/CT, echocardiography, x-ray angiography, and orthopedics, in addition to radiology.

"Multimodality PACS will be the buzzword to come," said Xiaoyi Wang, president of Thinking Systems.

Cedara will highlight several products that can be integrated into PACS, including I-ReadMammo, B-CAD, OrthoWorks, PET/CT Workstation, CalScore Review, Colon Review, and Lung Review.

Avreo will release its Interworks RIS, which has several new features, including an orthopedics package with templating.

DR Systems will present what it calls a unified PACS/informatics solution. It includes RIS, PACS, scheduling, radiology, cardiology, mammography, pathology, 3D image processing, and voice recognition

capabilities, among others. The newest features are automated Web-based scheduling, digital mammography reporting and tracking, orthopedic templating, and additional cardiology tools.

UltraRad is introducing its new version of UltraGATEWAY, a DICOM router. The company is also in the process of making several product enhancements to UltraSCHEDULE, a multimodality, multifacility scheduling program that sits on the front end of a PACS/HIS/RIS. UltraRad is currently expanding into orthopedics and will look to cardiology next year, said Stephanie Morris, sales and marketing director.

OVERCOMING OBSTACLES

The integration of all medical image-producing disciplines into the enterprise PACS environment is fraught with obstacles. Making the move outside of radiology means catering to the needs of many disparate specialties. Each must be able to view, distribute, and store its own medical images and exams and maintain control of its own procedures and practices.

Some vendors, while keeping an eye on the movement of digital imaging into the whole enterprise, still see the need for considerable work in the radiology arena.

"It's possible we may begin to look outside of radiology, but right now

we have no firm plans," said Wayne DeJarnette, president of DeJarnette. "In a couple of years, we may look into orthopedics. There's still a tremendous opportunity in this business to improve efficiencies."

DeJarnette, which has transformed itself from an end user product developer to an OEM supplier, will unveil Vistaware, a suite of products that is meant to integrate with the PACS used by the Department of Veterans Affairs. The technology will enable third-party PACS and PACS components to integrate with the Vista system.

NovaPACS will show its NovaPACS 6.0 SR3 software, its Cardio Viewer, the new NovaRIS 6.0, and the NovaWEB Lite Web viewer. While the company sells a cardio workstation and orthopedic tools, it does not want to lose its focus and dilute its efforts, said Bob Ahlman, executive vice president of sales.

CUSTOMIZED TOOLS

With the push for digital imaging beyond the radiology department, many discussions at the RSNA meeting will revolve around product customization for specific users. While many vendors will offer the same core product to different specialties, they will provide user interfaces that can be tailored to specific users. Customers are also pushing vendors to streamline workflow and improve communications with referring physicians.

Agfa will launch the sixth generation of its integrated IMPAX RIS/ PACS/speech technology, which was configured around the .net platform, Russell said.

"We designed our product around various personas. We can give a customized look to each individual clinician. A clinician can actually access the same data the radiologist uses to make diagnoses, but tool sets would be designed for the clinical applications needed by the clinician. The .net platform gives more flexibility than a pure thin or thick client," he said.

The company has also received numerous requests for vendor neutrality in its workstations. Purchasers of the MA 3000 can view full-field digital mammography images from various vendors, as well as other modalities such as breast MR or ultrasound.

Vision Reach, a new product from Amicas, provides a proactive way to communicate imaging study findings to referring physicians, McClennen said.

"The number one thing our customers are asking for, independent of PACS, is how we can help them build their business by serving referring doctors better," he said.

The product packages diagnostic reports with significant images and then e-mails the results to the referring physician.

Source Medical Solutions will unveil its SourceRad, a Web-based application that runs on a client's Internet-enabled PC. The company is also adding integrated image management and Web distribution to its RIS platform.

"Reductions in report turnaround time foster positive relationships with referring physicians and get claims out the door faster," said Joel Mezistrano, director of product management at Source Medical Solutions.

Intelrad will launch IntelViewer Workstation as a stand-alone product that is customizable by user and by modality. The company will also release new features for the IntelPACS reporting work list, including grouped procedures and reporting workflow manager.

Kodak will unveil Carestream for radiology, which features a common login and a similar user interface, look, and feel for all users and provides information sharing between physicians.

"The architecture allows users to access PACS tailored to their role in the organization. The user interface shows just what users need based on the role they play. The film librarian's interface will have a different look from the referring physician's, which will be different from the radiologist's," Rosenfeld said.

WORKFLOW IMPROVEMENTS

As more physicians demand access to digital images, streamlining workflow becomes even more critical for overworked radiologists. In response to increasing data overload, digital dashboards and workflow monitors are key elements of many new product offerings.

GE Healthcare will introduce Centricity RIS/PACS 2.1, featuring workflow improvements and integrated exam notes, and Centricity PACS 3.0 with a new radiology process management dashboard.

Siemens is also attacking the workflow problem with upgrades in roles-based workflow management, Primo said.

Emdeon plans to showcase its Intergy PACS at the RSNA meeting. According to Jennifer Meyer, vice president of corporate communications, radiologists will have access to PACS functionality from any location, local or remote, while referring physicians can review images and reports over the Internet. In addition, the company will feature the radiology navigator, which provides desktop integration of patient information found in the Intergy RIS with their images stored in the PACS.

Dynamic Imaging will introduce the work-in-progress IntegradWeb RIS/PACS. The single-desktop product includes a single user-interface/desktop and a unified dashboard with access to patient and business information. It integrates voice recognition, OrthoTools, 3D capabilities, and PET/CT visualization.

Neurostar will showcase its PACS in a Flash program that allows imaging facilities and doctors to go online with PACS capabilities by plugging in a USB Flash drive and completing an online registration form.

One company is tapping into the mobile computing market to improve workflow and increase access to radiology information. Medical Insight will display a distribution system that provides enterprise-wide access to complete PACS and RIS functionality. The system includes the use of mobile and wireless devices such as PDAs. The technology enables PCs to operate as workstations, with access to 3D functions.

"Clinicians and clinical staff have highly nomadic workflows. They need pervasive access to clinical data and systems," said Andy B. Dobbs, chief technology officer at Medical Insight.

INTEGRATED IMAGE PROCESSING

Another way to streamline workflow is to remove image processing capabilities from remote workstations and integrate them into a PACS. Moving beyond window and leveling, increasingly complex imaging data sets invite advanced 3D image reconstruction, multiplanar reformatting, maximum intensity projections, volume rendering, and many other image processing applications.

Agfa will introduce the second generation of its Musica image processing software, which will initially be integrated with CR. The company is seeing more demand for image processing, easily launched 3D imaging, and computer-aided detection for CT of the lung and breast, Russell said.

Intelrad plans to show its full set of new MPR tools, including double oblique MPR, in-plane reformatting, slice averaging, and accommodation for gantry tilt angulation and slice thickness variation throughout the series.

While integrating RIS and PACS was the big buzz at last year's RSNA conference, integrating postprocessing into the solution allows one more important piece of information to be accessed at a single workstation.

Brit Systems will demonstrate new features, such as 3D and improved MPR, that have been added to its Viewer products.

CoActiv will present its PET/CT fusion workstation image display, distribution, and archiving system. Radiologists will no longer have to move to a dedicated PET/CT viewing station for their integrated reading of fused PET/CT exams, said Ed Heere, president of CoActiv.

Fuji's Synapse product incorporates image processing into the diagnostic process.

Philips' iSite PACS version 3.5 features axial, sagittal, and coronal MPR/MIP and MPR slabs.

"Imaging is becoming extremely complex, and integrating advanced image processing tools is a strategic goal of all hospitals. From CR to DR to nuclear medicine and 3D imaging, clinicians are increasingly looking for advanced tools," Reis said.

The Sectra 10.2 PACS contains integrated MPR/MIP functionality. Sectra PACS for breast imaging will integrate CAD from R2. The company is also working on compression algorithms and visualization tools to enable navigation through large data sets, Bergstrom said.

Other new products that move toward image processing integration include Thinking Systems' PACS, which offers integrated PET/CT fusion, 3D/4D rendering, and MPR functionality.

Merge eMed will debut clinical applications (virtual colonoscopy, calcium scoring, lung nodule detection and 3D/4D reconstruction) that are now integrated with the company's eFilm Workstation Software.

PACS will become the imaging layer of the electronic health record as it provides imaging management to specialties throughout the hospital, Primo said. Users will have ubiquitous access to images and reports through this portal.

"In the imaging department, we will see radiology command centers that behave as truly integrated workstations, driving PACS, RIS, image processing, and speech recognition, as well as providing access to HIS, the EHR, and the Web," he said. "Radiologists will perform diagnostic reading for all departments that use imaging, without having to be there. We will see the imaging department without walls, with the radiologist virtually present whenever and wherever required."

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