Demand for quick access to volumetric imaging studies is growing among referring physicians as well as radiologists in their offices or homes. In response, suppliers of 3D visualization software are speeding the delivery of large imaging data sets to distant sites outside the radiology department. These vendors are also adding to their suites of advanced image processing tools by including such options as segmentation and sculpting. Vascular and cardiac analysis are of particular interest.

Barco

Since acquiring 3D imaging software leader Voxar, Barco has been developing advanced visualization applications in addition to its main fare of large-screen clinical display systems. The company has introduced tools that accelerate access to volumetric studies at the desktop and across the enterprise, adding a cardiac application that automatically visualizes and analyzes the anatomy and function of the heart.

Graphics processing units (GPUs) optimized to accelerate 3D processing bring multiplanar reformatting (MPR) and targeted volumetric reconstructions to the desktop in real-time and on the fly, providing image refresh rates in excess of 20 frames per second.

Voxar 3D Enterprise, commercial distribution of which is pending in the U.S., allows quick access to volumetric studies comprising more than 2500 images. Access will be available from any PC in an enterprise. It can be seamlessly integrated into an enterprise-wide PACS to unify workflow.

Voxar 3D CardiaMetrix, a work-in-progress, is an integrated suite of cardiac modules that visualizes and analyzes 2D, 3D, and 4D images of the heart. The software automatically analyzes coronary arteries and calculates coronary artery calcium scores, providing up to six phases of dynamic 4D cardiac analysis, and automates left ventricle analysis and reporting.

TeraRecon

In keeping with its concentration on enterprise-wide image management, TeraRecon has launched an enterprise-class 3D server and rendering engine and new workflow technology.

AquariusNet VLE can reconstruct as many as 30,000 images concurrently. It has four 4-gigabyte VolumePro 1000 rendering boards capable of segmenting and editing CT studies of 2000 to 3000 slices, as well as MR angiography studies.

EliteAccess combines TeraRecon's AquariusNet distribution and image management system with the Aquarius Workstation. EliteAccess links users with high-end workstation processes such as multimodality overlays with manual registration, quick cubic viewing of regions of interest from the inside and outside, 3D measurements on oblique planes of double-oblique MPRs, and curved planar reformats for measuring vessel distances.
3Mensio Medical Imaging

The Netherlands-based software development company has applied the latest generation GPU-based graphical cards from the 3D computer games industry to medical imaging. To its flagship product 3viseo, which was launched at the 2004 RSNA meeting, 3Mensio has added segmentation and sculpting capabilities. The company also has worked with Planar Systems to create an investigational stereoscopic system that adds depth to 3D volume-rendered images.

The 2.0 version of 3viseo includes advanced 3D manipulation tools such as one-click segmentation and sculpting. It features MPR, MIP, color and gray-scale volume rendering, interactive color and opacity control, orthogonal as well as oblique and double-oblique viewports, multiple clip planes, and linear as well as angular and region-of-interest measurements.

The 3viseo work-in-progress stereoscopic system integrates 3viseo software into Planar's StereoMirror technology and its SD1710 stereo display. The StereoMirror technology and stereo display have been used outside medical imaging for such applications as complex modeling visualization, aerial photogrammetry, and computer gaming to produce high-quality stereoscopic images. These images are displayed on a monitor consisting of two 17-inch active matrix liquid crystal displays positioned at a 110° angle and a semitransparent StereoMirror. When viewed through polarizing eyeglasses, images on the monitor are stereoscopically separated, adding depth.

Viatronix

The company has released enhancements that integrate CAD into its virtual colonoscopy and CT lung analysis software as offshoots of its commercial agreements with vendors that supply computer-aided detection systems. Viatronix also has upgraded its V3D-Vascular system for analyzing coronary and other blood vessels.

With CAD software onboard, the V3D visualization platform allows users to view colon or lung CAD marks during a virtual flythrough of the colon or real-time volume rendering of CT lung images.

V3D-Colon makes use of the latest generation of dual-core processes to provide detailed 3D examinations. The virtual colonoscopy module also has improved image quality and frame rates for 3D images, flythroughs, movies, and interactive examinations.

V3D-Vascular automatically detects and segments the carotid arteries and prepares 3D volume-rendered, MIP, and x-ray cine images.

Vital Images

In keeping with its goal of distributing advanced visualization and analysis solutions across the healthcare enterprise, Vital Images has linked its Vitrea 2D, 3D, and 4D imaging software to an Internet-based access viewer. Together these technologies allow users to review imaging studies, conduct advanced analysis, and make diagnostic decisions from PC or notebook computers at remote locations, including doctors' offices and physicians' homes. The company also has enhanced ViTALCardia comprehensive cardiac image and analysis software.

The ViTALConnect Web-based analysis and distribution system makes it possible for several physicians to interact with the same Vitrea volumetric data in real-time. ViTALConnect transmits volumetric studies with Vitrea image quality and speed and incorporates software that enables communication and clinical collaboration between radiologists and referring physicians.

ViTALCardia offers CT Cardiac, General Vessel Probe, Cardiac Functional Analysis, VScore for coronary artery calcium measurement, and Automated Vessel Measurement for quantifying stenosis.

Disclosures: