Case Study

UCLA: Three Decades of Advancing Imaging Technology

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Osman Ratib, M.D., Ph.D., Professor and Vice Chair of Information Systems, Department of Radiological Sciences

Ranked by *Health Imaging & IT* magazine as one of the ten best hospitals in the country in 2003, the University of California at Los Angeles (UCLA) Medical Center serves more than 300,000 people each year from around the world. To assist with diagnosis and care, its busy Department of Radiological Sciences performs over 250,000 diagnostic radiological and nuclear medicine procedures annually at four different sites.

What may not be apparent on first observation, however, is that UCLA Medical Center has been both a pioneer and standard-bearer in developing picture archiving and communication system (PACS) technology. Its efforts to create a PACS system began in 1983, when very few other U.S. medical institutions had even begun thinking about the possibilities of digitized diagnostic images. By 1990, one of the first major, clinically successful PACS in the country was in use at UCLA.

As the medical center prepares to open a new 1,050,000-square-foot hospital in 2005, its fourth PACS upgrade is also under way. The upgrade includes implementation of newly designed, state-of-the-art radiology workstations, vital components of which are Planar's Dome C3® flat-panel displays.

Making the Best Choice

UCLA Medical Center's PACS processes, displays, and archives all images generated by the Department of Radiological Sciences, including radiography, fluoroscopy, ultrasound (including color Doppler), CT, and MRI. The 49 faculty radiologists also offer specialized services in breast imaging, cardiovascular radiology, emergency radiology, endovascular therapy, gastrointestinal radiology, genitourinary radiology, head and neck radiology, musculoskeletal radiology, neuroradiology, pediatric radiology, thoracic radiology, and ultrasonography.

Both the quantity and the variety of work that the department generates demand the best displays available to ensure optimal patient care. Therefore, the selection process was exceptionally thorough, with the medical center's PACS team working closely with staff from the Department of Radiological Sciences. Five Dome C3 dual displays from Planar and displays from two other vendors were evaluated over a three-week period.

Explained Sandy Johnson, R.T., clinical manager of PACS, "We created a scoring system and evaluation write-up. We scored the displays on sharpness, brightness, flicker, angle of view, and glare."

When the scores were in, the choice was Planar's Dome C3 flat-panel displays.

Building on a Strong Foundation of Innovation

For Osman Ratib, M.D., Ph.D., professor and vice chair of information systems for the Department of Radiological Sciences, the Planar choice came as no surprise. Viewed by many as a visionary in the medical uses of digital technologies and communications systems, Dr. Ratib spearheads the medical center's PACS strategy and development.

The role of groundbreaker in the PACS arena is one Dr. Ratib, his medical center, and Planar all share. For almost 14 years, they have worked together on digital image quality — from collaborating on the vision to delivering on new solutions.

"We have had a long partnership with the company at UCLA," said Dr. Ratib. "Dome C3 displays were one of the first, and we were one of the first in developing PACS technology. Back then, we needed certain things before they were even available on the market."

The relationship between the two organizations has been mutually beneficial as well as enduring, according to Dr. Ratib. "Our workstations benefited from the company's state-of-the-art technology, and the displays improved in the process. Planar has developed its displays and technology well, adapting to the specific needs of medical imaging in compliance with the high quality and brightness requirements for replacement of traditional film-based image interpretation," he asserted.

Streamlining Quality Assurance

UCLA Medical Center has workstations with Planar displays in all of its radiology reading rooms, sub-specialty areas, and 15 intensive care units at four sites. Maintaining the proper DICOM conformance (standard and required display calibrations) for 140 displays, which is checked weekly or bi-weekly, presents a huge logistical and resource challenge.

"For the Dome C3's, Planar replaced the puck traditionally used for monitor calibration with a calibration device embedded in the back of each monitor, and it calibrates the workstation. Software resides on each workstation that sends the calibrations of each monitor to a central workstation — this development is a major advancement and a very nice tool."

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Part of Planar's appeal is that Dome C3 flat-panel displays are equipped with built-in software, called Dome CXtra™, that allows PACS administrators to monitor and ensure the proper calibration of each display from one workstation. Each display communicates when it needs to be recalibrated, and an administrator can correct most problems remotely.

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Dome CXtra is based on Simple Network Management Protocol (SNMP), a commonly used protocol that makes integrating the software into existing networks relatively easy. In addition, quality-assurance options on the market that use protocols specific to their displays typically require dedicated servers; Dome CXtra, which does not require a dedicated server, has a significant impact on the affordability of Planar's overall display solution.

Improving Clinical Practice

The ease and efficiency with which UCLA Medical Center can now ensure the DICOM calibration of every display dispersed throughout the enterprise has also had an impact on clinical care. Consistently accurate calibration and image clarity lead to fewer mistakes and clinical care delays.

"For years, we have had problems with quality-control in this area," explained Dr. Ratib. "When the technologists used film, they looked at the film and reshot the diagnostic image if it was not good. In the digital world, the technologists need quality control stations to verify the images are appropriate."

"We have now deployed quality-control stations across the enterprise as part of our new PACS system. Almost all of the stations are equipped with Dome C3 displays," he continued. "In addition, the capacity to monitor remotely display calibration with Dome CXtra software increases the overall quality of the images obtained by technologists in different sections in all four sites of the medical center. This has greatly improved quality control at the technologist level."

Planar displays' ease of quality assurance and sleek design have also made it possible for many other medical areas — for example, ICUs, the emergency room, and many other clinical departments — to deploy Planar displays and take advantage of their high-quality diagnostic images in caring for patients.

"All the clinical areas continue to require higher and higher quality images. The beauty of the flat panels is that we can hang them on the wall in very busy areas. They are quite handy," said Dr. Ratib.

Emphasizing Responsiveness

Planar's responsiveness, proven over its extended relationship with UCLA Medical Center, helped confirm the choice. According to Johnson, "Planar is a top-of-the-line partner to work with."

During the three-week evaluation process, for example, the Planar team was attentive and on hand to make any necessary adjustments to their displays to optimize image quality for clinicians. Johnson said this ultimately gave Planar a competitive advantage over the other vendors and their displays.

Another example occurred during the medical center's recent deployment of its new GE Centricity PACS. A month or two before installation completion, a flaw in a small component manufactured by another vendor was discovered, and the component needed to be quickly replaced in some of the displays. "Our site is enormous, and we had been rolling out our PACS system section by section. I called Planar for help," recalled Johnson. "They were incredibly supportive, really on top of helping us. They immediately flew a team out to work with us. In terms of Planar's responsiveness, they were exceptional and continue to be exceptional."

Heading into the Future

The new, nearly 600-bed facility will combine the operations of UCLA Medical Center, UCLA Neuropsychiatric Hospital, and Mattel Children's Hospital at UCLA. When the doors open in 2005, the facility will have a fully integrated, state-of-the-art digital information system serving all areas of patient care.

Planar displays, so much a part of the medical center's past, will remain a vital part of its future.

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