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Guest Editorial

Going Beyond DICOM

Enterprise systems integration will become increasingly vital to the successful management of patient care and the bottom line.

By Janine Broda

During the HIMSS 07 meeting in New Orleans, one thing was clear: Interoperability was the buzzword du jour. Unfortunately, something else was also abundantly clear: People weren't entirely sure how to define interoperability or how to achieve it.

With the creation of DICOM standards and \$2 billion spent on PACS implementations annually, why is interoperability still an issue? The answer: Despite its progress and success, DICOM isn't always DICOM.

That is not to suggest that DICOM has not had tremendous impact on the imaging world; DICOM has brought standardization to the transmission of medical images and associated data.

The goals of DICOM are to achieve compatibility and to improve workflow efficiency between imaging and information systems. This has largely been accomplished as a radiologist can sit down at an Agfa workstation and pull up images acquired on a Toshiba CT system, for example. However, because DICOM does not define system architecture or specify all functional requirements beyond transmission, compatibility often stops with image review.

PACS use DICOM for images, but often have proprietary structures for notes, overlays and other vital image criteria. This approach makes it difficult to impossible for other PACS or referral physicians' workstations to view the complete image file. Some RIS still use proprietary messages and files, making it arduous for other systems to receive critical information including patient history, orders and reports. Proprietary structures limit interoperability and lead to the inefficient delivery of patient care.

Integration over consolidation

Many large vendors — and even some health system CIOs — argue that the solution is simple: Consolidate to one PACS/RIS and you won't have any compatibility issues. While there are obvious commercial benefits to this approach, it is a natural by-product of communications problems inherent to implementations based on proprietary technologies and competitive pressures. It often forces facilities to settle for sub-par solutions with a single vendor providing

all components. Or facilities may rely on stopgap measures to achieve common communications across all operational areas — many times by moving personnel to follow the images from one workstation to another.

But what happens when your health system adds a new radiology practice or imaging center that uses a different system?

You may be right back where you started — with components that only partially communicate.

As health systems grow in size and complexity, enterprise systems integration will become increasingly vital to the successful management of patient care and the bottom line. To create an efficient interoperable information system for a health care enterprise, systems integration solutions must provide seamless connectivity and interoperability between diagnostic acquisition devices, PACS, HIS, RIS and their related information systems. Successful integration technologies must also address the need for an IHE gateway that serves as an appliance Web service to allow users to optimize higher level applications and still seamlessly interface in a mixed environment.

Invariably, when my company, Compressus, is brought in to develop a comprehensive integration solution, the site has worked with IT consultants to look at multiple sites using different PACS/RIS and to link them into an efficient operating network. In our experience, to create a true communications hub, the solution must support not only DICOM standards, but also HL7, XML, SSL, TLS and other standards to ensure HIPAA compliance in both procedural and security areas.

This approach enables users to control the flow of images, reports, messages, standard patient demographics and other important data for patient management between otherwise independent and disparate systems.

Sites gain the freedom to choose systems based on feature preference rather than to avoid integration issues. In essence, by mapping the data elements and bridging isolated islands of data, the software mediates interoperability between applications and creates a virtual integrated information system that adheres to the IHE technical framework.

Health care enterprise systems must create one seamless, integrated diagnostic network. Not only will this level of interoperability increase efficiency and save time and money — it is essential for eventual implementation of a standards-based electronic health record.

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