Technical Brief Series

Vue Motion: Carestream's Enterprise Access Viewer

Connecting technologies, physicians, and patients

ABSTRACT

To improve productivity and minimize patient exposure to ionizing radiation, healthcare providers' use of medical imaging must be prudent and efficient. The cornerstone of such efficiency is technology that provides broad access to patient reports and images, enhancing communications among physicians and patients, while protecting patient data. Embedded seamlessly in an EMR system or operating remotely on a web-enabled device, Carestream's Vue Motion viewer exemplifies this balance of access and data protection. Using HTML 5 technology allows Vue Motion to launch from virtually any web browser, enabling the transmission of requests to a server that retrieves the data, processes it, and transmits the image. Carestream's Vue Motion provides on-demand access to patient images throughout and beyond the healthcare enterprise. It is simple to deploy and maintain, with little training required. And it is easily adapted to work with healthcare IT systems already installed.

THE INFORMATION GAP

The most crucial aspect of every radiology report is the image. Yet, referring physicians and other clinicians typically see only words—the written reports and conclusions dictated by radiologists. Some radiology information systems, such as the Carestream RIS, allow the embedding of images in reports. Even then, however, referring physicians generally see only selected views of the images.

To meet this challenge, clinicians may receive digital images stored on portable media, such as CDs. Providing digital images this way represents an improvement over film; still, like film, CDs must be physically delivered, risking damage or loss. In addition, there's no guarantee that referring physicians will be able to actually see the CD images—due to the multitude of viewing software applications, file formats, hardware configurations, security settings, and types of media in use today.

Noncompliance with the DICOM (Digital Imaging and Communications in Medicine) standard or corresponding IHE (Integrating the Healthcare Enterprise) profile is also a concern. These problems may delay the delivery of appropriate clinical or surgical care and could potentially have a detrimental effect on patient outcomes.[1]

Minimizing cost and radiation.

Providing easy access to patient images can cut down on the ordering of duplicate, unnecessary imaging exams. This helps contain rising healthcare costs and minimizes the exposure of patients to radiation.

These potential benefits were documented in a study of patients transferred from one hospital emergency department to another. When a system for uploading CD images was implemented at Brigham and Women's Hospital in Boston, the rate of redundant imaging exams for transferred emergency patients fell by 17%.[2] If the results from the Brigham study are extrapolated to the 2.2 million patients transferred between emergency departments in the U.S. each year, the study indicates that importing images to PACS would result in 484,000 fewer CT scans.

Direct access to images using the web rather than CDs might broadly extend these benefits—not only across the U.S. but to all segments of medical practice.

An electronic bridge.

Electronic access to reports and images promises increased efficiency and a high likelihood that the images will be readable. This promises to benefit the

patient, whose therapy or intervention might begin more quickly, or whose concerns might be alleviated sooner.

Radiology has long sought to develop networking solutions that support the easy and widespread transmission of images.[3,4] However, setting up networks with separate access to PACS has proven challenging.[5]

The need for software and hardware dedicated to image transmission and processing bogs down the retrieval and display process. Moreover, the additional effort and time expended by the physician reduces efficiency and productivity; this runs counter to the Obama Administration's recent initiative to streamline healthcare. This initiative has increased interest in making medical images part of the electronic medical record.

Designed to encourage the use of medical information systems, the initiative encourages, as part of its "Meaningful Use" criteria, the exchange of "key clinical information" among healthcare providers. Radiology has yet to be formally included in this initiative; however, if it is, it will likely increase the digital transmission of medical images—the cornerstone of modern diagnosis and decision making.

INTEGRATING INFORMATION SYSTEMS

The ideal solution is to make patient data and images stored on the RIS/PACS integral parts of the electronic medical record. Successful integration depends on finding a way to merge the operation of multiple medical information systems—particularly EMR (electronic medical records) systems, but also hospital information systems such as RIS and PACS.

One answer is the "zero-footprint viewer," so-named because, like a web browser, it does not require software installation on the user's device to process and display data.

Simplicity is the key to the success of zero-footprint viewers. Unlike dedicated viewers, which may require extensive training to run software to process data, zero-footprint viewers use an enterprise-based server to handle this function. An intuitive interface complements the simplicity of the no-footprint design, allowing immediate use by just about anyone familiar with web browsers and the Internet.

The Missing Link.

Simple to deploy, simple to learn, and simple to use, the zero-footprint viewer is designed to serve as an intermediary between the RIS/PACS and EMR, affording referring physicians convenient access to their patients' images.

To fulfill this potential, the viewer must be available remotely to enhance physician access to all PACS images. It must allow embedding in an EMR system, to provide access to reports and images alongside the patient's other medical information—without requiring the user to open a new application and leave the medical record. Moreover, the viewer must provide access to DICOM, as well as non-DICOM image related data, such as JPEG images and PDF documents.

The viewer's use must not be restricted to a single IT-system or facility, but offer extensive compatibility to provide secure access to images across and beyond the enterprise—for physicians and patients alike.

A Universal Solution.

Improved communications may be especially beneficial in emergency medicine. A study, conducted at the University College Dublin School of Medicine and Medical Science in Dublin, Ireland, found that handheld devices may be particularly helpful for emergency teleconsultation purposes—supporting detection of basic orthopedic injuries and intracranial hemorrhage.[6]

A zero-footprint viewer may prove valuable in other medical settings as well— notably in rural medical settings, where primary care physicians often need to consult with specialists such as neurologists. At facilities with electronic medical records, a zero-footprint viewer, embedded in the EMR system, could provide ready access to images in the context of other patient data. And, it could do so easily, without the training, expense, or time that would otherwise accompany the installation of interfaces between PACS and other information systems; this could potentially help drive the adoption of EMR systems.

THE CARESTREAM SOLUTION

Our Vue Motion zero-footprint viewer exemplifies an effective zero footprint viewer. It provides on-demand access to patient images, yet is simple to deploy and

maintain, works with IT equipment already installed, and requires no specialized training.

Widely compatible with mobile and personal computing platforms, Vue Motion allows widespread adaptability, just as its intuitive interface is proven to eliminate the need for specialized training. Vue Motion is inherently easy to understand, unlike dedicated and complex viewers requiring hours or days of training; while this training requirement may be expected in the radiology department when learning to use new visualization tools, it is very likely a deal-breaker for other departments and physician offices.

Vue Motion launches easily and quickly without requiring extensive computing power or requiring the user to log into another system. It leverages the PACS server to do the vast majority of the rendering, thereby significantly reducing the volume of data to be transmitted. And, because rendering is done on the server side, there are no data storage requirements on the zero-footprint side. This enables easy deployment of Vue Motion, as it requires no processing or archival software. The zero footprint also makes upgrading a snap, as software enhancements are done on the server.

In this way, Vue Motion affords easy access to patient images, reports, and other supporting data throughout and beyond the healthcare enterprise, enabling real-time collaboration among clinical users. It can be embedded seamlessly in an EMR system. Or, it can operate remotely, integrating with other healthcare IT systems to boost workflow.

Vue Motion is a true universal communications and productivity tool. Delivering reports, images, and other patient data to the referring physician, it focuses attention on pathologies, allowing the physician to visualize patient problems. And, it enhances communications, allowing the physician to more readily convey particular medical concerns to the patient.

A Look under the Hood.

Using HTML 5 technology , Carestream's Vue Motion zero-footprint viewer launches from a variety of operating systems and devices, using only a web browser. Requests are sent to a server, which retrieves the data, then processes and transmits the image. Consequently, Vue Motion requires minimum bandwidth—despite its high performance and rapid access to images.

Collaborative Workflow.

An intuitive user interface is employed to view enterprise patient data in DICOM, non-DICOM, and other supporting file types. Vue Motion further enhances collaboration by supporting the transmission of electronic sticky notes, critical results findings, and email messages with embedded links to relevant patient studies.

IT-agnostic.

Vue Motion bridges information technologies, just as it connects radiologists and referring physicians, physicians and patients. It is IT-agnostic, connecting not only to other vendors' PACS, but to DICOM archives and XDS repositories. Because this viewer can be easily integrated with diverse departmental systems, clinicians and referring physicians gain fast and easy access to patient data and images.

Vue Motion can be embedded in EMR and HIS portals to access images contained in the PACS, thereby image-enabling the enterprise. The viewer can be launched without calling up a separate application or logging into another system. Alternatively, it can be launched in a separate window without requiring a separate log-in, using a URL from within the system. Thus, it enhances the exchange of information and understanding of medical conditions. This potentially satisfies a key meaningful use criterion of the Obama initiative, by promoting the exchange of key clinical information among physicians.

To PACS and Beyond.

Vue Motion can be embedded in the Carestream Vue for Enterprise Workflow powered by SuperPACS™ Architecture, providing access to multiple PACS at different facilities. Vue Motion can be complemented by the Carestream Vue Archive, offering immediate and simple communication of images from a vendor-neutral archive to authorized physicians locally, regionally and nationally.

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While optimized to retrieve and display DICOM data, Vue Motion can display non-DICOM data, including JPG, AVI, DOC, and PDF files that may have been stored on Vue PACS or Vue Archive.

Encryption using the SSL (Secure Sockets Layer) protocol ensures data security. HIPAA compliance is supported through permissions tools that restrict access to referring physicians—so only they can see data pertaining to their patients. In addition, a built-in auditing tool tracks logins, data accessed, how data were used; it documents files viewed, who viewed them, and what was done with the data. Audit files can be exported into different formats, including Microsoft Excel for offline analysis.

What's next.

Carestream's Vue Motion provides the missing link between your PACS and other healthcare information systems, as well as between radiologists and referring physicians. To learn how this zero-footprint viewer can meet your needs, visit our website at http://www.carestream.com/healthIT.html.

CITATIONS

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