

Visage 7: A Revolutionary High-speed Viewer

BY GREG THOMPSON

In a world of PACS and enterprise imaging, the performance of the enterprise viewer often takes a back seat. For Brad Levin, an imaging veteran of more than two decades, it's a mystifying mindset since the diagnostic workstation (viewer) is literally the front seat of a radiologist's day-to-day existence.

Levin joined Visage Imaging as general manager for North America because he recognized that its technology defined a refreshingly new paradigm, bringing the viewing interface



Brad Levin

to the forefront and into the 21st century. While other viewers stagnated, Visage Imaging broke from the pack and innovated Visage 7, a breakthrough enterprise-imaging platform powered by server-side processing. Visage 7 delivers user-customizable, multi-display, protocol-driven interpretation for radiologists, clinical access for referring physicians, and mobile access for all imaging stakeholders.

In addition to supporting the complete set of traditional diagnostic imaging modalities, Visage 7 enables interpretation of digital mammography (FDA 510K and IHE Mammography Image Profile), digital breast tomosynthesis (DBT) and PET/CT, as well as advanced visualization modules for neurology, oncology, and cardiac analysis. It's an impressive list, with native code, and it's all combined with tremendous speed.

"Speed is something everyone instantly recognizes with our application," he says. "When radiologists sit at their diagnostic workstation, they don't care about the infrastructure of the PACS. They don't care about the ancillary systems. They are interrogating images over and over again, and they need to do it in a sophisticated and frequently time-sensitive way."

In the case of a stat read from a remote site, timeliness is always a prime consideration. If radiologists must wait to access current images and their related priors, and wait for technologist-generated reconstructed views from a sepa-

rate advanced visualization workstation, it can cause workflow problems—not to mention detrimental effects on patient care.

Anything that delays the diagnostic report should be avoided, and Levin contends that Visage 7 beats the competition on speed, all while maintaining cutting-edge quality. "What if someone presents in the emergency room, and it's a stroke case where time is brain," he says. "The stroke protocol is in place, and the patient is put on the CT scanner. The clock is ticking. The faster the stroke team gets a clinical opinion, the faster they can decide on pharmaceuticals and save brain. Radiologists not only need immediate access to those images, but they also need a complete set of powerful tools for interpretation."

Server-side Processing

The power for all that speed comes via optimized algorithms in different layers of the platform. According to Malte Westerhoff, PhD, chief technology officer, Visage Imaging, the crucial rendering engine is powered by fast and scalable 'server-side' image processing. "The adaptable streaming engine provides smooth, interactive streaming even over 'thin



Malte Westerhoff, PhD

pipes' and in wide area network [WAN] scenarios," says Westerhoff, who also serves as general manager of Visage Imaging GmbH in Europe.

Essentially, the thin-client, intelligent streaming does not require the movement of DICOM payloads. As a result, the DICOM payload never leaves the Visage 7 server, only the necessary image pixels are streamed to requesting client devices, and thin-slice volumes are pre-processed at the server. This innovative approach eliminates DICOM routing to workstations, and in seconds delivers incredibly fast display of current and related prior imaging studies regardless of

the size of the datasets.

The workflow layer integrates traditional PACS-style 2D viewing, workstation-type 3D viewing, post-processing, and fully transparent thin-slice reporting. It's an approach that Westerhoff describes as a "revolutionary and much more efficient reading experience for the radiologist, which allows for customized clinical review for referring physicians, and 'anywhere access' via our mobile client—with all of it supported by the same core technology stack for technology simplification."

Levin calls it "leveraging horsepower on the server-side," which is possible since Visage 7 is essentially streaming the data. "We are able to stream a two-slice CR or a CT with 6,000 thin slices, for example, right to the reading radiologist's desktop, in seconds with the entire study available," he explains. "Over the LAN or WAN, Visage 7 presents a single desktop, multi-display view that incorporates traditional 2-D images from CT, as well as linked multi-planar reconstructions (MIP/MPR)—generated on-the-fly at the server, and streamed in any protocol including priors and multiple modalities.

"Today's conventional workflow has techs performing reconstructions, then sending secondary captures back to PACS as separate series," continues Levin. "Some have called this barbaric, and we agree. Visage has finally laid this workflow to rest."

Introduced in 2009, Visage 7 has enough of a track record that prospective clients can evaluate, without the uncertainty of a brand new product. "It remains at the forefront of technology, but it does not have the immaturity of an initial release," says Westerhoff. "At RSNA, and in the coming year, we will show and release a number of new workflow options, such as additional support for cardiology, push notifications to your iPhone/iPad in our Visage Ease mobile app, a number of new integration interfaces, and tighter integration options with VNAs. Our platform also is ideally suited for teleradiology and cloud PACS scenarios, where we are introducing a number of back-end features that will enable the provision of cloud PACS services more efficiently."

Integrating With PACS

At least half of all existing PACS are using tools within the viewer component that were designed 5-10 years ago, a situation that Levin says is less than ideal. "It's a shame," he says. "Radiologists read for eight to 10 hours a day, and ironically the technology they use most, the viewer, has not evolved. Radiologists want the best possible viewer they can get their hands on, because that's the primary tool of the trade."

One of the challenges of getting PACS from a single vendor is that it's difficult for one vendor to excel in all the different facets of a PACS. Instead of getting the best possible viewer,

archive, and workflow tool, radiologists have largely been forced to settle for average across the board. Levin bridges this functionality gap with an optimal Visage 7 viewer that is 'agnostic' to the systems that surround it.

Bridging multiple RIS and PACS is no easy task, but Westerhoff and Levin made it a priority, and the engineers responded. "Institutions at the tipping point in the life cycle of their PACS now have options," says Levin. "Visage 7 can ride on top of existing PACS to replace the viewer they have been using all these years and provide a better reading experience for radiologists and differentiated results access for referring physicians."

Even larger facilities and delivery networks that are investing in vendor neutral archives (VNAs) to centralize image storage can upgrade to a comprehensive viewing experience for diagnostic, clinical, and mobile use cases. "We can go into these complex systems that have a hodgepodge of infrastructure, with countless image viewers for this and that," explains Levin. "We can sit on top of these RIS and PACS systems. If they have a VNA and EHR, we can integrate to those as well—and provide a single powerful viewer for reading radiologists and referring physicians—regardless of where patients were imaged in that system. Moreover, Visage 7 also supports non-radiology 'ologies' via the attachment of non-DICOM images to radiology studies."

Ultimately, the theme circles back to speed, a precious commodity that affects workflow and patient care. "The one commodity that affects everyone is time," muses Levin. "If we could create additional time, imagine what that could do for health care providers. We consider time a precious commodity that we can positively influence for reading radiologists, referring physicians, and for the patients they serve. If you give radiologists back their time, you become a hero. You provide the opportunity to do more with the time they have."

Whether it's 30 seconds saved per CR study, or tens of minutes saved for complex studies like MR or PET/CT, the savings quickly add up over the course of a typical shift. "It's the ability to read more and have instant access to all priors whether you're local or remote," concludes Levin. "It's the ability to derive more intelligence from the imaging data, so that the subtle rib fracture you don't easily see in 2D is 'clear as day' in the volume rendering generated on-the-fly. Other approaches don't offer that level of insight, so quickly, with a single powerful viewer. Not only are we providing better care, but we are giving radiologists back time—and that is a commodity in short supply."

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