

# Journal of Digital Imaging

## The Next Killer App

### What is the Biggest Development on the Horizon for Radiology Informatics?

Like so many 1950s sci-fi movies, predictions about the future of radiology informatics are likely to miss the mark entirely. People do not visit Mars in private spaceships or command humanoid-looking robots to perform our work. However, innumerable technological advances have completely changed the way that information is generated, processed, interfaced, and applied. Informatics as a whole is punctuated by progressive rather than revolutionary changes. The best way to understand the future is often to have a clear perspective of the past.

I transitioned to medical school from a fast-track career at Cisco Systems where I worked as an internetwork engineer supporting network operations for customers ranging from NASDAQ to local ISPs. When I entered medical school, I was shocked at how far medicine lagged behind Silicon Valley in the use of information technology. At Cisco, I could accomplish nearly every facet of my work without touching a piece of paper or leaving my cubicle. In contrast, the hospital seemed to be the land that information technology forgot. Ironically, my work at Cisco is very comparable to the practice of medicine. Both are information-based. There is no technical reason why the same efficiency and quality-enabling technologies in place at Cisco cannot be implemented throughout medicine, let alone radiology.

The impact technology has had on radiology is nothing short of radical. In fact, it is the ongoing freescale adoption of technology within radiology that attracted me to this field. Many of the advancements such as PACS, 3-D reconstruction, electronic teaching files, and fusion imaging are seen as being today's "killer apps." In reality, these have existed, at least conceptually, for well over a decade. Available computing power and

supporting technologies have allowed for the continual refinement of these tools. This refinement has brought about the incredible advances we see today. These tools will continue to mature as new applications are developed.

So what does the future hold? Medicine, like the Cisco world of networking, is about the derivation, processing, continual flow, and application of information. The quality of information at any point is dependent on the previous steps and the availability, quality, and utilization of preexisting data. The "killer app" is the ever-moving target of information acquisition, management, and delivery that ties the patient to the radiologist and clinician. Even within the most bleeding-edge radiology department, there is fracturing of available information. This limits the maximum potential utilization of the available data.

While a fully cohesive information system could take many forms, imagine the power of a system where every detail about a patient is accessible and manageable from a single console. Similar to Internet browser technology such as RSS (real simple syndication) that provides real-time news headlines, imagine if your PACS system actively retrieved and populated dynamic patient information. This would not only include a more complete patient medical record, but also actively updated real-time information. These could include items such as real-time patient location, current treating physician location (clinic, OR, office) and contact information, and real-time medication administration data.

Imagine clicking a single button to convey results on a study. Rather than simply displaying the ordering clinician's name (who might happen to be unavailable), the system automatically displays the covering physician's contact information and pages that clinician to the phone closest to

your workstation. When the covering clinician calls, his clinical workstation is immediately synchronized with your display thus allowing findings to be discussed in detail.

Does this scenario sound far-fetched? Years ago, when I left Cisco, it was possible to pack your desk phone in a suitcase and use it at a field office anywhere in the world (i.e., China). If the local number was called in the United States, the phone would ring in China. Application of current technology pieces like this would help bring the goal of an all-inclusive, cohesive, adaptive, and active information management “killer app” closer to reality (but only until the next improvement).

Radiology is an exciting field with limitless potential. As stewards of technology, it is our respon-

sibility to assist medicine as a whole with tools to increase, improve, and better utilize the information available to us. I look forward to this pursuit.

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