

Healthcare AI, Radiology solutions

A Real View of...The last mile in implementing AI

[Nuance Communications](#)

May 10, 2019



Nuance Healthcare Diagnostics Vice President and General Manager Karen Holzberger sat down with Nuance Senior Director of Product Management Sander Kloet to discuss the importance of addressing the “last mile” challenge in deploying AI for radiology, one of the key topics that he and other industry experts will cover at the RSNA regional course on AI on May 31 in San Francisco, CA.

Imagine that you are a busy professional whose very long days are packed with a mix of routine and critical time-sensitive tasks, each of which requires close attention and thorough and accurate paperwork. One day you learn that powerful new tools can help you get more work done in less time with improved quality and greater benefit to those counting on your expertise. But there’s a catch: to achieve these gains you must take time you don’t have to fit the new tools into your workday.

That’s the essence of the “last mile” challenge facing radiologists looking to leverage a growing number of AI diagnostic models and workflow tools to manage increasing workload volumes, maximize value-based reimbursements, reduce administrative burdens that contribute to burnout, and ultimately, improve patient outcomes. The ability to integrate AI tools into current radiology workflows seamlessly and intuitively is vital to realizing the benefits.

I recently sat down with Sander Kloet, who will lend his expertise in product design and implementation to the upcoming [RSNA regional AI course](#) by discussing the “last mile” challenge and the solutions and approaches to address it.

KH: What’s the “last mile” problem and what does it mean for radiologists and AI?

Sander: The idea of the “last mile” connotes the final leg of a journey originated in telecom and logistics to describe the work remaining to get to the intended destination or outcome. At the same time, it indicates that although there are still a few hurdles to clear the goal is within reach. In that sense it’s a highly motivating and energizing challenge.

When we think about the last mile problem for radiologists, we recognize that in order to realize the

potential AI has to advance radiology it must fit seamlessly into a radiologist's workflow and not be an add-on requiring extra steps. It must deliver both practical and clinical value as an integral part of how radiologists work. If it doesn't it simply won't be used.

The key from a product design perspective is to think comprehensively. For example, image characterization algorithms can be invaluable in helping radiologists identify pulmonary nodules or brain bleeds quickly. But those results need to be delivered before the radiologists has read the study and dictated the report, otherwise they have to take additional time to review the AI findings and modify their reports if needed. That also means making sure that image processing is optimized so that the AI results are available promptly alongside the images from the PACS and history from the patient's EHR. Those are complex issues but getting the workflow right is essential.

KH: How is access to AI models integrated into the workflow?

Sander: That's a two-part issue. The first part is simplifying the development and deployment of the many different algorithms that are needed to address the wide variety of modalities, exams, and specialties. A radiology department could potentially require over a hundred algorithms from dozens of developers, each addressing a specific diagnostic use case. Developers need to be able to reach users at scale to justify app development. Healthcare systems need to consolidate vendor access, so they don't have to establish relationships with every developer they want to work with. Adoption of AI-driven solutions will take a frustratingly long time if there's not a unified market where developers can reach large numbers of radiology users who can easily discover and purchase new models. That's where the Nuance AI Marketplace for Diagnostic Imaging comes into play. It's essentially an app store for AI diagnostic models and workflow optimization tools. It connects the 75% of radiologists and 6,000 healthcare facilities in the U.S. who use Nuance radiology reporting or image sharing solutions with AI algorithm developers in a collaborative marketplace, with a built-in feedback channel for continuous improvement.

The second part is that access to the AI Marketplace is integrated into the radiologist's workflow tools, the worklist, the PACS and the Nuance PowerScribe reporting system. That allows AI Marketplace clients to quickly evaluate and use the latest AI solutions and then seamlessly integrate the results into their current workflows.

KH: That covers AI model access, but what about enhancing workflow and augmenting radiologists' expertise with AI?

Sander: Yes, good question. Physicians know from past experience that new technologies that promised improvements instead impeded their ability to deliver quality care. It was a case of the doctors having to serve the needs of the technology instead of the technology serving the needs of the doctors. Our fundamental top-down mission at Nuance is to create technologies and solutions that not only get out of the way but really empower clinicians to do what they love – take better care of their patients.

Ensuring that access to AI models is seamless from within the PowerScribe workflow is one way. A great example of that is the FDA-cleared ICH detection application developed by Aidoc and deployed at the University of Rochester to prioritize unread exams. It analyzes CT exams indicating a suspected intracranial hemorrhage and then prioritizes them on the PowerScribe worklist for a radiologist's immediate attention when time-to-treatment is critical.

Another excellent example is the new PowerScribe One platform. It helps radiologists review and if necessary, edit AI results and automatically prompts the users with appropriate follow-up recommendation based on the ACR Assist™ clinical guidelines.

All of that is driven by our innovations in natural language processing and clinical language understanding (CLU) that actually understand the meaning and context of what the radiologist is dictating and correlating it with the AI findings. It recognizes and stores the narrative report contents as structured data, all without requiring the radiologist to change how they work or add additional steps. That's a very big deal because it can make every part of a report accessible to the EMR and to clinical data analytics. Now, incidental findings, follow-up recommendations, and many other radiology report elements can be leveraged and tracked in ways that previously were too difficult or impractical.

I think it's important here to note the importance of combining workflow-integrated access to AI with the collaborative feedback loop of the AI Marketplace. Access from within the PowerScribe desktop makes AI usable from a practical point-of-view. Giving radiologists and developers a built-in channel to share feedback on AI model implementation and results makes it truly useful. It enables ongoing refinement of AI models for improved accuracy and specificity and addresses radiologists' preferences and priorities. It creates a virtuous cycle that builds confidence and capability in the technology and fosters increased adoption.

KH: What should radiologists expect as we move forward on closing the AI last mile?

Sander: In a word, I would say "momentum." By that I mean accelerating progress toward widespread practical adoption in the near term. As I noted earlier, there are still multiple challenges ahead. For example, there will be issues connected to using AI including how reimbursements will be structured, and things like access to diverse training data to create robust diagnostic models. We also are seeing interesting report creation challenges resulting from data generated by AI that was previously impractical

to obtain by radiologists, and we look forward to collaborating with our clients to determine how to leverage all this data in reports in the future.

The growth and advancements we're already seeing with the AI Marketplace, PowerScribe One, and CLU are really making the destination more clearly within reach than ever before. We're also seeing work by multiple stakeholders on issues like reimbursements, for example, and by the ACR Data Science Institute on the data challenges. As you noted in a blog post late last year after the RSNA conference, there has been [a real sea change](#) in the outlook for AI within the radiology community. It's highly motivating.

Ultimately, where we end up at the end of that last mile is using AI to augment radiologists to enable them to work more effectively and efficiently, meaningfully address burnout, and most of all, improve patient outcomes.

KH: Thank you, Sander. It's exciting to hear the details of how we and the radiologists with whom we work closely are addressing these last mile challenges. Beginning on May 31, Sander will share these and other insights during RSNA's spotlight course, "Radiology in the Age of AI."

Tags: [Radiology AI](#), [RSNA](#)