AR CONNECT
June 2024

Transforming Healthcare Imaging with Cloud Technology: The Time is Now

McKenna Bryant

A growing number of healthcare systems of all sizes are leveraging the cloud to securely store, manage, and share vast amounts of imaging data without being limited by on-premise IT departments and geography.

Besides enabling healthcare professionals to collaborate virtually and seamlessly, the cloud is helping many healthcare systems gain a competitive edge over institutions that still manage their data with legacy IT technology and departments.

Kieran Anderson, group publisher at *Applied Radiology*, recently discussed the transformation with Ryan Terry, managing director of Healthcare and Life Sciences at Google Cloud.

Healthcare systems, Terry said, are ripe for creating cloud-based data ecosystems to help accelerate and reduce the costs of delivering patient care. This is especially true with respect to medical imaging departments and clinics.

"Since the Covid pandemic, the barriers for data use have collapsed within organizations," Terry said. He added that, owing to its enormous scale, the cloud provides the opportunity not just to store vast amounts of imaging files, but also to create "an ecosystem of information" to provide context for higher-quality patient care.

"Because of its scale, the cloud gives one the ability to look at historical images as well as the data and associated analytics tied to that image, and other ancillary images that have similar characteristics. This gives a holistic picture to clinicians when they're making decisions," Terry explains.

One is cloud gives you the opportunity to collapse some of your costs for how you maintain that information, and two is that ecosystem of information that sits around the image itself now gives contextual information outside of the image itself, but also cloud because of its scale gives you the ability to look at historical images as well as the data and the analytics around that information tied to that image and other ancillary images which have similar characteristics to give a more holistic picture to that caregiver when they're making that decision.

The impact of the cloud

Referring to what he calls "collapsing the digital divide," Terry said cloud-based capabilities democratize access to subspecialists by allowing smaller and geographically remote systems to compete with large healthcare organizations. The cloud offers these facilities easy access to off-site subspecialists, regardless of where they are located, reducing the time it takes to move from diagnosis to treatment and thereby improving patient experience.

"The cloud helps narrow that gap between the communication divide and quality healthcare," he said. "It always comes back to the patient. The cloud gives radiologists tools so they can turn reports around faster."

However, Terry was quick to add that the cloud is not intended to replace radiologists. Instead, it is intended to help a facility's own radiologists deliver more accurate diagnoses faster and earlier in the patient care process.

"Ancillary data helps clinicians see things earlier," he said. "This enhances the overall quality of care by supporting an earlier diagnosis so clinicians can proactively treat a problem before it accelerates."

So we're seeing a drive for smaller systems also being able to leverage some of the capacity and scale of larger systems as well as not just your kind of urban centers, but your rural communities being able to leverage access to information through the cloud at a more cost effective manner. So they don't necessarily have to have a specialty at every single location. They could extend their infrastructure and their capacity for people. I think it's

Kieran Anderson, group publisher at Applied Radiology, recently discussed the transformation with Ryan Terry, managing director of Healthcare and Life Sciences at Google Cloud.

also taking and moving that care of that image forward in the process because earlier diagnoses is coming out, it's making this role of the imaging also, it's always been relevant. It's always been very important, but now that ancillary data is actually pulling it forward in the diagnoses process to see earlier things that images may not be showing information characteristics are making that image more relevant earlier on in the process.

Strategic partnerships with Google Cloud

Google Cloud partners with Optum to develop and offer specialized cloud-based solutions for healthcare systems. Terry believes Optum's scale and capabilities facilitate Google's ability to synthesize many kinds of information from disparate sources, including paper and digital records, to identify cost-effective treatment options.

Optum, he said, has "done that legwork to understand how to make data more readily accessible as part of the AI ecosystem they've built. Optum is ahead of the game in making a difference."

Cloud migration

Creating a sustainable strategy to reach short- and long-term goals can help bridge the gap between organizations' current storage solutions and future cloud-based capabilities. Timing is an important consideration, as investments in the cloud can take up to 18 months before achieving sustainable results by reducing costs or maximizing opportunities to capture more revenue.

Maintaining patient data throughout every stage of the process, from capturing to storing to sharing data remains, will continue to be a significant challenge faced by healthcare institutions. Terry said a clear understanding of the data's purpose and how to make that data more useful and proactive to deliver better care while maintaining high security is of paramount importance to cloud adoption.

Someone should always ask how the information's used, how it's secured, how are they thinking about the ecosystem and the use of that information. A lot of it's culture though. A lot of it's understanding that the data has a purpose and how do we make that data more useful? How do we make that data proactive in how we deliver care? So taking a methodical approach and thinking about it from a, how do we start? How do we gradually work our way in a sustainable way that gets us to outcomes, both long term as well as short term helps bridge that gap for most organizations.

Barriers to cloud transformation

Terry said he believes a healthcare system's overall culture plays a significant role in the success cloud transition. This is especially true in organizations that are hesitant to change.

"The cloud is about transforming from legacy to advancing to the future," he said. "Looking at historical decisions can sometimes be a barrier to transformation because organizations feel bound by legacy. And cloud is really about transforming from legacy to advancing to the future. So taking that leap of faith to say, we can innovate. We can think differently. We can not necessarily hold ourselves

> ...transitioning to the cloud today will give healthcare leaders.the flexibility to move forward without taking on the financial burden of replacing outdated legacy infrastructure in the future.

to historical decisions, but now think of how they set a foundation for us to advance is really a major factor in how most organizations have made successful leaps versus those organizations who have struggled with cloud and seen it as a barrier for them, either from a cost perspective or a growth perspective is often not tied to their cloud strategy. It's tied to their desire to stay in their historical decisions."

Embrace the risk of adoption

Despite the great challenges of transitioning to the cloud, the risks of failing to make that transition are greater. Terry said that by not moving forward, healthcare systems risk losing – and failing to attract – top talent, while not taking full advantage of the larger pool of data offered by the cloud.

"Your system will be at a disadvantage if you wait to transition your data. You won't get the scale and capacity associated with all the benefits of that larger ecosystem of information, which will bring your organization into a new dynamic of patient care," he said. "At the end of the day, it's about treating patients. Because now it's not just storing the information, it's making that information actionable and relevant at the point of care."

He believes transitioning to the cloud today will give healthcare leaders, including those in medical imaging, the flexibility to move forward without taking on the financial burden of replacing outdated legacy infrastructure in the future.

Advice for the transition

Terry advises systems to create teams of C-Suite leaders, artificial intelligence (AI) and analytics experts, and even care providers to work toward the common goal of cloud adoption. He also advises staying focused on the goal of improved care outcomes while taking a methodical approach to cloud migration.

"The cloud gives you the flexibility to incrementally scale your business so you can evaluate and look at cost-benefit analysis, as well as outcomes for each investment that you make. It gives you a phased process so you can monitor and manage your cost, your return, and how your organization transitions throughout the lifecycle of the agreement and the cloud partnership," he said. "There are longer-term projects, which are more AI-driven or clinical outcome-driven that require more analysis. But you can do a lot of incremental things, including infrastructure data management, that helps build a combination of an innovative culture along with a sustainable foundation to grow."

"It's really important you have caregivers involved. The end users should understand what they're going to evolve to. At the end of the day, it's about treating their patients. So giving them access and input is really valuable. But I think often we'll see CFOs involved in the process as well, chief Medical Information Officers, and often AI or analytics teams, because now it's not just storing the information, it's making that information actionable and relevant in a point of time where it can be at the point of care when it's needed."

Future of the cloud

Supported by AI, Google Cloud assists health systems of all sizes to take their capabilities to the next level. Terry predicts the number of images being stored in the cloud will grow exponentially as healthcare systems implement combinations of on-premise and cloud environments, as well as multi-cloud capabilities.

"We certainly would love to see as many images in the cloud as possible because of the amount of data that it helps generate to help advance care," he said. "As long as organizations take an objective approach and think about how they're going to incrementally get to sustainability, our goal is to advance care in a cost-effective way so that our hospital systems, small clinics and remote read capabilities can all level up, so all boats rise."

it also really helps to collapse some of the divide, the digital divide and access to quality healthcare. The cloud really is helping support narrowing that field, that gap, that margin to facilitate that. This is a global problem, and it's one that Google's addressing through helping with the cloud to help collapse this overall time value and extension of the skill sets. Through supporting our partners and supporting the health systems and the caregivers, it's important that we maintain a neutral focus in this, and we're a supporting function, so we're never going to be a caregiver. We're never going to diagnoses. AI doesn't do that. It gives what's called probabilistic math, which gives you narrow margin of error, it reduces that margin of error and helps whatever the spectrum is the size of the facility, the amount of radiologists the organization have actually gets scale wherever they're at.