Enterprise Imaging Beyond Radiology
The need for a strategy around medical imaging as one clinical tool

Many healthcare leaders immediately associate medical imaging with radiology, which uses imaging for diagnoses and treatments. A typical hospital's radiology services produce 40% to 60% of medical images, according to John Memarian, Vice President of Medical Technology Imaging & Informatics for CitiusTech, which specialises in helping healthcare organisations accelerate their digital transformations.

But other specialties also depend heavily on medical images. "Cardiology, orthopedics, oncology, neurology, ophthalmology, dermatology—these and many other specialties all rely on images to treat the patients under their care, which makes medical imaging all-encompassing," said Memarian, whose clinical and technical experience includes more than seven years in both adult and pediatric imaging and surgical procedures.

Despite being a key clinical tool for so many disciplines, medical images in a patient file are still largely managed as a separate and unincorporated part of a hospital's IT ecosystem. A physician-ordered imaging scan is either performed in-house or outsourced, and the results are often

stored in an EMR as a link to the image in a separate storage space. Unless other physicians can access that EMR, they cannot see the images or physician's notes.

This siloed approach is the key obstacle to making medical images and imaging systems easier to use so that all physicians, regardless of location or specialty, can access their patients' images and results, reducing duplicate orders and saving time and money. Adopting this approach requires rethinking current strategies around your organisation's enterprise imaging. Specifically: Does the provider system have the right IT infrastructure to handle these high data loads, or do you dismantle existing data silos by transitioning into a cloud environment?

The cloud as the standard of practice

Medical images are large files that include meta-data and other data collected during patients' care delivery. Applying advanced technologies like machine learning and artificial intelligence to imaging data provides broader insights that can benefit individual patients and population health. To do so, however, organisations need the

right IT resources, including building or selecting cloud services like Amazon Web Services (AWS) that provide the necessary security, storage, and tools to analyze these large datasets.

The ability to move imaging and related informatics into the cloud is a major driver of healthcare's digital transformation, making cloud adoption a standard practice rather than simply an option. AWS and AWS partners offer services and solutions that migrate imaging to the cloud to lower costs amidst fluctuating storage needs, strengthen data accessibility, and facilitate compliance -- driving faster insights and better value.

But, Memarian warns, providers should not rush to adopt the cloud without an imaging strategy. "Before your move to the cloud, you need to know what you want from your cloud service and how the cloud provider will ingest, store, and make accessible your clinical images and the associated data. You need to know what services are provided beyond migration and storage to help you manage the data in both the short and long term," he said.

Any such strategy must include standardising data before the move to avoid overlap. Duplications and redundancy of data in the cloud wastes storage space and creates access difficulties for users.

Memarian also cautions that, despite widespread popularity, the cloud industry is still maturing. "I like to remind people that cloud vendors currently sell the vision of the product to come," he added. "The vision is where we want to get to, but the product may not be quite there. This is

where working with a trusted partner that understands short-term and long-term healthcare, healthcare imaging, and cloud services is vital."

Precision medicine and clinical burnout

One area that Memarian believes will benefit greatly from the modernisation of medical imaging and data is the adoption of precision medicine. True precision medicine moves from treating disease based on anatomical location to treating genetic abnormalities, regardless of the anatomical location. The application of precision medicine relies heavily on imaging and related patient data.

Oncology centres and healthcare providers treating individual patients can move beyond simply identifying similar lifestyle, genetic, and/or molecular profiles to understanding the images and the biomarkers associated with the patient. Better understanding and treatment results when a team of multi-specialty physicians contributes all relevant patient images and data to create a single uniform view of a tumor.

Beyond precision medicine, digital transformation improves imaging practices and clinical workflows by reducing manual work for clinicians. When clinicians can easily, immediately, and securely retrieve images and data stored in the cloud at the point of care, they save valuable time, improve efficiency, and enhance the quality of care. Medical imaging on AWS offers cost-effective, scalable on-demand capacity for the storage and archiving of petabytes of medical imaging data.

Investing in tomorrow's doctors, not just today's

When developing a modern medical imaging strategy, asking the right questions is crucial. Memarian advises initially focusing on the **whys** and **whats**. Why do a major upgrade? What will be the impact on care delivery? In what ways does this investment improve patients' and providers' quality of life? Then, decide how much the organisation is willing to spend to make that vision a reality. Those calculations should include the anticipated length of time to realise the return on investment, not only through added revenue but also through cost savings from efficiencies such as reducing overtime and relieving physician and staff burnout.

When recruiting, keep in mind that new physicians will be more attracted to your institution if you have the digital tools they need to work more efficiently. "The next generation of physicians wants technology to be part of their clinical care," he noted.

A strategic vision is vital for any healthcare organisation's digital transformation, and that vision should include plans for how medical imaging can bring more value across the enterprise. Medical imaging on AWS empowers radiologists, health systems, and research teams to increase the pace of innovation, unlock the potential of imaging data, develop more personalized approaches to care delivery, and improve cost and operational efficiency.

Learn more at www.citiustech. com/medicalimagingsolutions.

About CitiusTech

CitiusTech is a leading provider of digital technology and consulting services to payer, provider, medical technology and life sciences companies. With over 8,000 healthcare technology professionals worldwide, CitiusTech powers healthcare digital innovation, business transformation and industry-wide convergence for over 130 organizations, through next-generation technologies, solutions and products. Key focus areas include healthcare interoperability, secure data management, quality and performance analytics, value-based care, patient experience, medical imaging, connected health, payer-provider convergence, care coordination and population health management. CitiusTech's cutting-edge technology expertise, deep healthcare domain expertise and a strong focus on digital transformation enables healthcare and life sciences companies to reinvent themselves to deliver better outcomes, accelerate growth, drive efficiencies, and ultimately make a meaningful impact to patients. Learn more: www.citiustech.com.

About Amazon Web Services

Amazon Web Services provides a comprehensive and broadly adopted cloud offering. Over the past 15 years, AWS has been continually expanding its services to support virtually any cloud workload, and it now has more than 200 fully featured services for compute, storage, databases, networking, analytics, machine learning and artificial intelligence, Internet of Things, mobile, security, hybrid, virtual and augmented reality, media, and application development, deployment, and management from 81 Availability Zones within 25 geographic regions, with announced plans for 21 more Availability Zones and seven more AWS Regions in Australia, India, Indonesia, Israel, Spain, Switzerland, and the United Arab Emirates. Millions of customers—including the fastest-growing startups, largest enterprises, and leading government agencies—trust AWS to power their infrastructure, become more agile, and lower costs. To learn more about AWS, visit aws.amazon.com.

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