MACH7

CLOUD IMAGING

THOUGHT LEADERSHIP · MACH7 TECHNOLOGIES

Ahead in the cloud.

How the migration of imaging data to the cloud is reshaping healthcare — and what it means for the future of enterprise imaging.

By Eliot Siegel, MD · Non-Executive Director, Mach7

ABOUT THE AUTHOR

New horizons: the cloud is reshaping healthcare.

Dr. Eliot Siegel is a prominent thought leader in radiology, imaging informatics, and the application of artificial intelligence in medicine. He is Professor and was formerly Vice Chair of Information Systems at the University of Maryland School of Medicine, Department of Diagnostic Radiology, and formerly served as Chief of Radiology and Nuclear Medicine for the Veterans Affairs Maryland Health Care System in Baltimore. He holds adjunct professorships in computer science and biomedical engineering at the University of Maryland.

The migration of imaging data and patient information to the cloud is a central topic in healthcare and imaging informatics. Despite the challenges that must be addressed, market research indicates growing acceptance of cloud solutions among healthcare IT professionals, who are increasingly adopting the cloud for hosting and managing patient imaging data.

The increasing adoption of the cloud has driven customers toward a Software-as-a-Service (SaaS) business model. However, varying definitions of cloud strategies and SaaS pricing structures create confusion and potential risks for adoption. As these models mature, imaging IT vendors will need to prioritize transparency and market education to help providers understand the implications of this transition. In my experience, cloud service providers offer secure and proven technologies, and trust in these platforms among IT professionals is generally increasing.

BY THE NUMBERS

The US is leading cloud adoption in imaging.

45%

of the US radiology IT market used cloud-hosted solutions in 2023 — the most willing adopter globally

65%+

projected US adoption by 2028, significantly exceeding the global average

30+

years since the author helped build the world's first filmless digital radiology department

Signify Research Imaging IT Core Service World Report 2024.

Perspectives

Over 30 years ago, at the Baltimore VA Medical Center, we established the world's first filmless digital radiology department. Within a few years it became clear that the radiology department was at the forefront of digital transformation — the hospital's only true digital network. IT departments soon reasserted control over storage and networking, directing radiologists to concentrate on clinical workflow.

That dynamic has evolved to where expertise in data storage, communication, security, and management is largely centered within healthcare IT's vendor-neutral archives (VNAs) and cloud solutions. Today, hospitals partner with enterprise imaging experts like Mach7 Technologies to confidently manage and distribute images within and outside the hospital — consolidating imaging into the patient record for easy access that supports clinical workflows and diagnostic reading.

THE DRIVERS

Why the cloud, and why now.

A key driver is the cloud's ability to enhance data aggregation by hosting patient and imaging data with automatic syncing — eliminating the need to query systems or workstations for updates.

Once a cloud environment is established, connecting it to other cloud environments breaks down barriers to information flow, improving the availability and access of complete patient imaging records. This connectivity creates opportunities to improve efficiency, reduce costs, and enhance clinical outcomes.

An intelligent system could create storage levels and enable clinical image lifecycle management, with read/write rules and decisions based on study type, retrieval frequency, and compression ratios — providing substantial clinical value while supporting cost management.

From a clinical standpoint, essential aspects of a cloud strategy include promoting access to images anytime, anywhere, on various devices — without dependence on individual workstation specifications or application licenses.

Adding role-based tools further enhances the user experience and supports the growing trend of remote diagnostic reading. By providing immediate access to PACS, AI applications, and digital dictation without relying on network or workstation processing power, the cloud has the potential to transform medical imaging informatics.

Security and cost remain central concerns. Organizations have invested heavily to establish stable, secure, performant networks — including storage and archiving hardware often tied to proprietary third-party ecosystems. Current analysis of costs and security requirements is leading organizations to move to the cloud, or at least to investigate it further.

CLOUD-POWERED ENTERPRISE IMAGING

Centering the data around the patient.

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> I define enterprise imaging as the ability to access all imaging and patient data regardless of the acquisition source, location, or image type. Enterprise imaging should free clinicians from computing requirements that restrict them to a specific workstation or location.
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> **Eliot Siegel, MD** — On defining enterprise imaging

The cloud offers significant benefits by providing a service that stores, manages, and seamlessly delivers data to clinicians within their normal workflow, irrespective of location or user device. Ultimately, the goal is to optimize patient care.

The transition to the cloud, combined with comprehensive access to a patient’s medical and imaging history, centers the data around the patient. A true model — where data follows the patient rather than requiring the patient to search a fragmented system — would significantly improve the patient experience.

Consider the Chesapeake Regional Information System for our Patients (CRISP), a regional health information exchange in my Maryland network. It stores and shares patient medical information to connect providers and improve care, enabling the community to share data securely to reduce costs and improve outcomes.

Cloud enablement can achieve a similar function — using standards to collect patient information from disparate facilities and sources, giving clinicians a more robust, comprehensive view of each patient’s healthcare journey. Over time, best practices and standards will evolve to serve the entire “enterprise.”

THE ROAD AHEAD

Strengthening healthcare's future foundation.

I believe the inclusion of all medical images in the electronic health record (EHR) will eventually become a standard requirement, accompanied by regulatory rules for storage, lifecycle management, and access. Standards for information storage and sharing will need to build upon foundational technology from companies like Mach7.

As mandates for the capture and access of multi-specialty imaging increase, providers will rely on their cloud and healthcare IT partners to ensure clinicians have a complete view of the patient's imaging history as a standard part of the medical record.

The question of how to curate and consolidate patient data in the cloud remains. How will clinical workflows be supported by cloud offerings, and what implications will this have for enterprise imaging's evolving definition?

I anticipate cloud innovation that aligns with the visions of healthcare IT providers. Mach7's unique expertise and history in developing software for the enterprise position the company as a catalyst for cloud transformation. Providers offering deployment flexibility and focusing on interoperability will be best positioned to support cloud adoption.

> As healthcare professionals, we have a unique opportunity to guide this journey — facilitating information sharing and collaboration across the continuum to foster greater efficiency, higher performance, and ultimately healthier outcomes.

MACH7

LET'S TALK

Lead your cloud transformation.

The utilization of the cloud will undoubtedly continue to grow. Mach7's expertise in software for the enterprise positions us as a catalyst for that transformation — enabling improved patient care and healthier outcomes.

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References

Third-party figures and claims cited in this paper, with their original sources.

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