RadiologyToday

THE MAGAZINE OF DISTINCTION IN RADIOLOGY

THE FUTURE OF PATIENT IMAGING

MACH7 TECHNOLOGIES IS EMPOWERING CLINICIANS TO ENABLE **EXCEPTIONAL PATIENT CARE**

MACH7
Independence through Innovation

Unifying all your images and solving your integration needs under one universal viewing platform

The Enterprise Imaging Integration Problem

Healthcare has undergone a fundamental shift over the past decade. It is no longer the case that a single department, like radiology, cardiology, or wound care provides care for the patient. Instead, healthcare professionals need an accurate and comprehensive view of a patient's medical history to develop the most well-informed patient care plan possible. This includes having access to all the relevant imaging in a patient's record.

Consolidating image data from every modality, system, and department across the enterprise can be an incredibly time-consuming task, especially for large hospital systems with multiple facilities and geographic locations. This challenge can be addressed with a viewer that can intelligently aggregate and display data from across the entire healthcare enterprise, independent of a centralized repository. Doing so ensures care providers can quickly access the data and images they need, improving their efficiency and diagnostic confidence, ultimately resulting in better patient outcomes.

An Innovative Solution

The fundamental challenge to Enterprise Imaging is not overcoming a viewing problem. Instead, it is overcoming an integration problem. The **Mach7 eUnity Enterprise Diagnostic Viewer** was designed with a key assumption in mind: in practice, no single system contains all patient images. As a result, healthcare organizations need an imaging solution capable of querying multiple systems at the same time for relevant patient images.

This problem is twofold: first, systems need to be capable of finding and federating all the needed relevant data; second, due to proprietary vendor platforms, not all imaging systems and data repositories structure data in the same manner. Thus, systems must be built with the ability to query data despite structural differences. Few enterprise viewers on the market today can seamlessly solve this problem in the way the Mach7 eUnity Enterprise Diagnostic Viewer does.

Mach7's eUnity is:

· Highly interoperable, with full integration to most front-end clinical systems

· Accessible from anywhere, on any device with HTML5 capabilities to support remote reading*

· 100% diagnostic quality - all of the time

· Ready to support your cloud, research, and AI strategies

· Modular, intuitive, and flexible to meet your needs

restrictions may apply, please refer to the eUnity User Guide for details.

This video highlights the innovative features of the Mach7 eUnity Enterprise Diagnostic Viewer.

Why Integration Matters

The eUnity Enterprise Diagnostic Viewer provides the capability to integrate to disparate departmental systems and intelligently aggregate relevant patient records from all of them, creating a more holistic view of a patient's medical history. This can impact clinicians and patients in three distinct ways:

1. Improves clinicians' efficiency in making decisions;
2. Reduces time to patient diagnosis and treatment;
3. Provides a greater degree of diagnostic confidence.

The ability to intelligently aggregate patient records and medical images from different departmental systems and geographic locations provides tremendous value and allows healthcare organizations to leapfrog the work involved with consolidating usable data into a single repository - meaning physicians can have a more comprehensive view of a patient's imaging history *now* rather than later.

One of the greatest impediments to enabling enterprise-wide access to relevant images is time. It can take years to migrate and merge imaging data into a repository such as a vendor neutral archive (VNA). This is especially true for large multi-department, multi-site healthcare networks that may, in some cases, even span multiple regions, and is exacerbated by mergers & acquisitions (M&A) and the adoption of new modalities and technologies.

An enterprise diagnostic viewer like eUnity can provide the ability to integrate with and display images from the data silos across the enterprise without the need to first migrate and consolidate the data. To the end user, this "virtual aggregation" can provide seamless, nearly instantaneous access to all relevant prior images - thus giving physicians the information they need to make the best, most well-informed treatment and care decisions for their patients and maximizing their outcomes.

Unite Your Imaging Today with eUnity

The eUnity Enterprise Diagnostic Viewer is built on the premise of delivering a universal viewer for all clinicians with role-based tools for referential viewing or primary reading.

Our experts are ready to help you create a true enterprise imaging experience that supports your health initiatives. Learn more and schedule a demo today at **www.mach7t.com**.

Unite your Imaging with eUnity:

· A future proof platform that gives healthcare professionals the ability to acquire, access and view all images within a patient's imaging record in one unified visualization experience.

· Intuitive, easily deployed, and reduces administrative overhead, allowing you to manage costs and gain immediate ROI.

· A vendor neutral, independent design with flexibility to integrate to all your modalities and imaging systems.

· Gives you the power to enact your custom workflows that are most important to your clinicians, thereby gaining efficiencies, improving productivity and enhancing patient care.

· Access all relevant imaging data from across the enterprise - supporting better care decisions and improved patient outcomes.
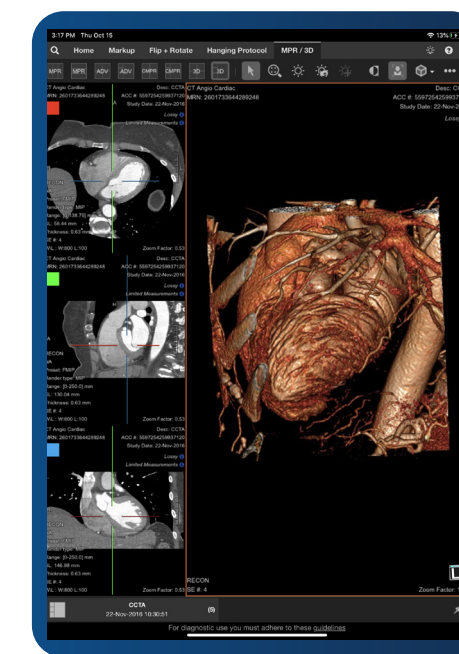
Learn more about the difference Mach7 can make to your healthcare organization today at mach7t.com.

University of Michigan Health-West: Transforming Patient Care with Mach7's eUnity Diagnostic Viewer

University of Michigan Health-West (UMHW) is a nonprofit multispecialty medical provider, part of the state's top-ranked health system. UMHW serves more than 250,000 patients annually across 30 locations, including a 208-bed teaching hospital in Wyoming, Michigan.

Recognizing Excellence in Technology and Patient Care

UMHW is recognized for its contributions to academia, technological innovation, and leadership in the use of cutting-edge technology across their healthcare system.[1] For over a decade, The College of Healthcare Information Management Executives (CHIME) has included UMHW on their exclusive "Most Wired" list as an organization that has adopted and deployed information technology to improve patient safety and health outcomes across the industry.

Erik Anderson, Regional Team Lead Clinical Applications, UM Health-West & Sparrow Health System elaborates on their strategy of leveraging technology to improve patient care:

> " We like to say that we use innovation to change care, and our care changes lives. Our patients are our number one priority, so when choosing healthcare IT partners, we only partner with those companies and solutions that we believe will be in the best interests of our patients. "
>
> *- Erik Anderson, Regional Team Lead Clinical Applications*

Empowering Patient Engagement and Physician Collaboration

A facet of the 21st Century Cures Act, signed into law in the United States in 2016, mandates that patients have timely access to their health information - including diagnostic results.[2] UMHW has readily embraced this challenge, utilizing Mach7 Technologies' eUnity Diagnostic Viewer for patient-facing applications, such as their patient portal, "MyChart". eUnity, a zero-footprint Universal Diagnostic Viewer and advanced visualization platform, is designed to seamlessly integrate into modern healthcare technology infrastructure. By image-enabling the patient portal, patients can easily view their medical images and reports, empowering them to take an active role in their healthcare journey.

Anderson emphasizes the impact of this integration: "Because the 21st Century Cures Act requires diagnostic results to be readily available and immediately shared with the patient, we required a solution capable of delivering images and results in real time. We use eUnity to drive this workflow and deliver on this promise. And patients, in turn, become more informed and involved in their direct care and treatment decisions."

[1] Awards & Achievements - University of Michigan Health-West (uofmhealthwest.org)
[2] 21st Century Cures Act | FDA

UMHW's use of eUnity also facilitates collaboration among healthcare providers. Whether it's a primary care physician, a specialist, or a surgeon, eUnity enables them to access comprehensive imaging records from any device, anywhere. This capability is crucial in supporting UMHW's commitment to providing exceptional care, particularly in complex cases requiring multidisciplinary consultations.

Enhancing Clinical Workflows and Ensuring Continuity of Care

UMHW's dedication to excellence extends to its operational and clinical workflows. eUnity's zero-footprint, HTML5-based viewer promotes seamless integration with existing healthcare IT systems like EMRs, PACS, and VNAs. This integration ensures that imaging data is readily available to all authorized users, regardless of their location or type of device.

Casey Bartman, Systems Analyst II and PACS Administrator at UMHW, shares his experience with eUnity: "eUnity allows us to connect providers and patients in multiple workflows and situations. Whether it is a case of an unexpected injury, like a broken ankle, or a joyous moment like viewing a first ultrasound, eUnity provides the tools we need to make these experiences as smooth and impactful as possible."

eUnity also serves as a critical component in UMHW's continuity of care strategy. In the event of a downtime scenario where the primary PACS server is unavailable, eUnity acts as a reliable backup, ensuring that diagnostic imaging services continue uninterrupted. This peace of mind is invaluable, particularly in emergency situations where timely access to imaging can make a significant difference in patient outcomes.

Transforming the Patient Experience

At UMHW, the patient's experience is at the heart of everything. From enabling patients to access and share their images easily to supporting complex surgical procedures, eUnity is an integral part of the patient care continuum.

Anderson sums up the impact of eUnity on patient care: "eUnity is imaging at your fingertips. It's the window into imaging for both the provider and the patient. It is intuitive and gives our providers the ability to find the information they want, move around quickly in the application, and share images with their patients. This capability is crucial in ensuring that our patients feel connected to their care and confident in the decisions made."

Bartman adds a personalized touch to this sentiment: "When I broke my tibia plateau, I was able to download the DICOM files of my injury and even create a 3D print of my leg. This level of access and control over one's health information is powerful, and it's all possible because of eUnity."

UMHW's partnership with Mach7 exemplifies how technology can be utilized to effectively transform patient care. From empowering patients with access to their health information to enhancing collaboration among providers, eUnity plays a pivotal role in UMHW's mission to deliver exceptional care. UMHW will continue to build on its strategy to deploy and utilize innovative solutions like eUnity to improve health outcomes and enhance the overall patient experience.

Refer to eUnity User Guide for more information on device use and compatibility.

Revolutionizing Healthcare Data Management with Mach7's Vendor Neutral Archive (VNA)

Data Orchestration to Drive Better Patient Care

Welcome to the future of healthcare data management with Mach7's Vendor Neutral Archive (VNA), a transformative solution designed to unify and optimize imaging and diagnostic data across your healthcare enterprise.

A cornerstone of a modern data management infrastructure

Built upon years of industry expertise and technological innovation, the Mach7 VNA serves as the central hub for storing, managing, and distributing imaging and multimedia data within and across healthcare organizations.
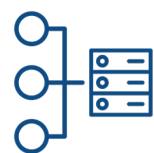
Bring patient images from disparate data sources and siloed systems together under one platform. Offers a comprehensive data management structure that supports diverse clinical workflows and enhances patient-centric care delivery.

Aggregate imaging data into a single secure repository. Integrates with other data sources to query and federate data from external systems to contribute to a more complete and comprehensive patient imaging record.

A new standard in enterprise imaging. Empowers healthcare organizations with advanced capabilities that enhance operational efficiency, promote interoperability, and ensure data integrity.

Supports unique, complex study archiving, distribution, and customization requirements. Whether it's the need to route images to specific locations or providers, or the desire to reconcile, normalize, anonymize, update, or edit data, the Mach7 VNA gives administrators immense capabilities and flexiblity.

Changes with your deployment infrastructure strategies. Accomodates on-premise, Cloud or hybrid environments with a powerful data management and workflow orchestration technology built for the future.

KEY BENEFITS

» **Enhanced Clinical Decision-making** Provides clinicians with a unified view of patient imaging data, reducing diagnosis time, and enhancing diagnostic accuracy.

» **Operational Efficiency** Streamlines workflows and reduces administrative burden through automation and centralized data management.

» **Cost Savings** Optimizes IT investments with scalable, subscription-based pricing models that align with organizational needs and growth.

» **Interoperability** Seamlessly integrates with existing healthcare IT infrastructure, including EMRs, PACS, and enterprise imaging systems, ensuring interoperability and data continuity.

» **Flexibility and Scalability** Adaptable deployment options (on-premise, cloud, hybrid) and scalable architecture support evolving healthcare IT environments and data management strategies.

» **Independence from Vendor Lock-in** Healthcare organizations choose the best technologies and adapt to changing market dynamics without being tied to proprietary ecosystems.

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Unlock the Potential of Unified Healthcare Data with the Mach7 VNA

Real-time Data Updates: Updates to DICOM data are written directly to disk, ensuring immediate access to the latest patient information by authorized applications and users. This real-time access enhances clinical decision-making and reduces turnaround time for patient care.

Customizable Workflow Orchestration: Enables administrators to define rules and automate tasks such as data retrieval, routing, and study comparisons based on configurable triggers and metadata attributes. This customizable approach optimizes operational efficiency and reduces administrative burden.

Cloud Integration: Supports deployment in cloud environments, offering scalability, flexibility, and cost efficiency while leveraging cloud architecture for enhanced data accessibility and storage management. Cloud integration enables healthcare organizations to leverage advanced computing capabilities and storage solutions while ensuring data security and compliance.

Data Normalization and Integration: Normalizes data from various vendor systems and formats, ensuring consistency and accuracy for interoperability across different healthcare IT systems.

Security and Compliance: Built-in anonymization tools, robust access controls, and audit trails ensure data integrity and compliance with HIPAA and other regulatory standards.

Advanced Analytics and AI Integration: Facilitates integration with advanced analytics and AI applications, enabling data-driven insights and enhancing clinical decision support. AI programs leverage the Mach7 VNA's data repository for predictive analytics and decision support.

Why Healthcare Organizations Choose the Mach7 Vendor Neutral Archive (VNA)

» **Industry Leadership:** Backed by years of experience in healthcare IT, the Mach7 VNA is recognized for its innovation, reliability, and commitment to advancing healthcare data management.

» **Comprehensive Solution:** Offers a complete suite of tools for data consolidation, normalization, and orchestration, tailored to meet the complex needs of modern healthcare organizations.

» **Support for Modern Healthcare Ecosystems:** Aligns with the evolving healthcare landscape by supporting interoperability, cloud integration, and AI-driven analytics.

» **Proven ROI:** Delivers measurable returns on investment through improved operational efficiency, reduced IT costs, and enhanced clinical outcomes.

» **Customer-Centric Approach:** We partner with healthcare providers to customize solutions and support long-term success, ensuring alignment with organizational goals and objectives.
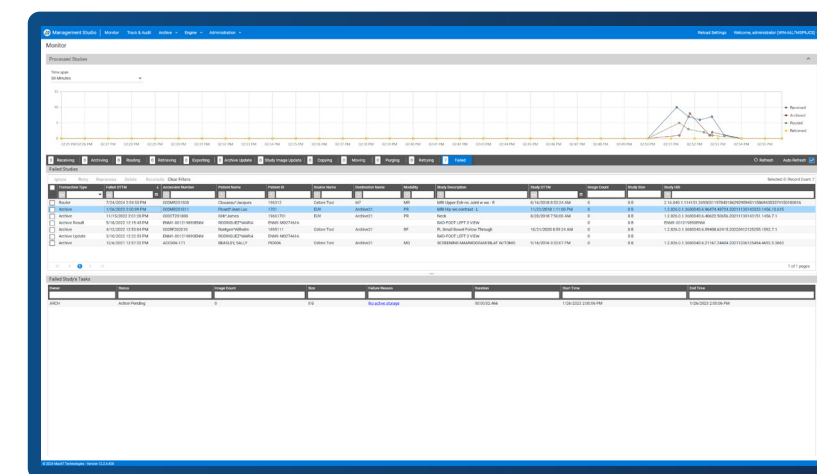
Join leading healthcare providers worldwide in harnessing the power of unified imaging data with the Mach7 VNA and transform your enterprise into a model of efficiency and innovation.

Learn More

Visit www.mach7t.com to explore how the Mach7 VNA can elevate your healthcare organization. Schedule a personalized demonstration with one of our imaging experts.

Ahead in the Cloud

Author: Eliot Siegel, MD | Non-Executive Director, Mach7 Technologies

New Horizons – The Cloud Is Reshaping Healthcare

Dr. Siegel is a well-known thought leader in the world of radiology and imaging informatics and artificial intelligence applications in medicine. He is currently Professor and was formerly Vice Chair of information systems at the University of Maryland School of Medicine, Department of Diagnostic Radiology, and formerly the Chief of Radiology and Nuclear Medicine for the Veterans Affairs Maryland Healthcare System, both in Baltimore, MD, as well as adjunct professor of computer science and biomedical engineering at the undergraduate campuses of the University of Maryland. He is currently devoting his energies toward the establishment of a national nuclear medicine and Theranostics practice, United Theranostics.

One of the predominant topics of conversation in healthcare and imaging informatics is centered around the movement of imaging data and patient information to the cloud. Despite the numerous challenges and needs that must be considered, recent market research suggests there is growing acceptance of cloud solutions among healthcare IT professionals. This is tied to increasing willingness to embrace "cloud readiness" for the inevitable rollout of cloud-hosted systems. According to Signify Research[1], the US is by far the most willing adopter of cloud-hosted solutions in Imaging IT with approximately 45% of the radiology IT market hosted on the cloud (either hybrid or hosted cloud instances) in 2023; by 2028, this is projected to increase to over 65%, well above the global average. We also know that, as cloud and subscription pricing models mature, imaging IT vendors will need to focus on transparency and market education to help providers navigate what this transition means for them.

Cloud service providers offer secure and proven technologies to support the growing trend of cloud-hosted imaging environments. There is a growing trust among IT professionals in these technology platforms.

Perspectives

Thirty-one years ago, at the Baltimore VA Medical Center, we created the world's first filmless digital radiology department. There, we installed public and private proprietary communication methods to link modalities, reading workstations and computers. After a few years, we realized that the radiology department was truly at the forefront of digital transformation. This dynamic has evolved such that the expertise around the storage, communication, security, and management of data is now centered more within healthcare IT's vendor neutral archive (VNA) and cloud vendors. Hospital IT staff can now leverage vendor solutions to serve modern imaging and informatics storage and data management needs for the entire enterprise while maintaining their focus on business proficiency, performance, and continuity. As a result, hospitals are partnering with enterprise imaging experts like Mach7 Technologies (Mach7) to facilitate the management and distribution of images across the health network with confidence. This allows for the consolidation of imaging with the patient record and easy access to support clinical workflows and diagnostic reading.

From a clinical perspective, some of the most important aspects of a cloud strategy are to promote access to images anywhere, anytime on multiple different devices in multiple different locations, all without relying on individual workstation specs or application licenses. Also, security and cost concerns are centered at the forefront of conversations about the cloud. Organizations have dedicated vast administrative resources and significant operational investments into creating stable, secure, and performant networks and structures to support clinical workflows.

Cloud-Powered Enterprise Imaging in Healthcare

You cannot have a thoughtful dialogue about the cloud without discussing "enterprise imaging." I view enterprise imaging as the ability to access all imaging and patient data regardless of the acquisition source, location or image type/format. Enterprise imaging should free clinicians from the constraints of computing requirements that tie them to a specific workstation or location. This is where the cloud can add real benefits in providing a service where data are stored, managed, and seamlessly served to the clinician as part of their normal workflow—regardless of location or user device.

The goal in all of this is doing everything we can as medical providers to allow for the best patient care possible. With the transition to the cloud, coupled with the allowance for full access and availability of a patient's comprehensive medical and imaging history, we make the patient the center of their data. In a true enterprise imaging model where the data follows the patient versus the patient having to search for information in a fragmented system, the overall patient experience would be improved dramatically - especially as it relates to access to their images and results. In Maryland, we have a regional health information exchange (HIE) system called the Chesapeake Regional Information System for our Patients (CRISP) where we store and share a patient's medical information with the goal of connecting providers with technology to improve patient care.[2] The mission is to enable and support the healthcare community of our region to appropriately and securely share data to facilitate care, reduce costs, and improve health outcomes. In an analogous manner, cloud enablement and the sharing of information via the cloud can perform a similar function by deploying health information technology solutions adopted through cooperation and collaboration.

Strengthening Healthcare's Future Foundation

I believe that eventually it will be a requirement that all medical images be part of the electronic health record (EHR) as a standard. With this will come EHR regulatory rules for storage, lifecycle management and access. As such, there will need to be standards for the storage and sharing of information that can build upon the foundational technology offerings available from companies like Mach7. As mandates increase around the capture and access to multi-specialty imaging, healthcare providers will need to rely on their cloud and healthcare IT partners to ensure they can bring clinicians a complete view of the patients imaging history as a standard part of the medical record.

Given Mach7's unique expertise and history with developing software built for the enterprise, this creates an enviable position for the company as a catalyst for transformation to the cloud. In general, imaging and informatics solution providers that allow for flexibility in deployment and place a focus on interoperability

will have an advantage in assisting organizations in supporting and adopting cloud services.

It seems clear that utilization and adoption of the cloud will continue its upward trend. The cloud is here to stay, and we have a tremendous opportunity as healthcare professionals to help with this journey by facilitating the goal of sharing information and collaborating across the healthcare continuum. This will assist with creating an environment for greater efficiency and higher performance while reducing costs and, ultimately, enabling better patient care and healthier outcomes.
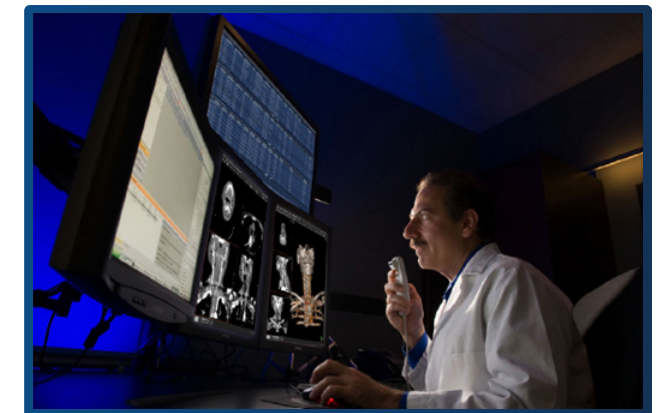
Footnotes:
[1] Signify Research Imaging IT Core Service World Report 2024
[2] https://www.crisphealth.org/about-crisp/

Healthcare professionals rely on Mach7 every day to support health outcomes and enhance patient care

Our **Enterprise Imaging Solution** is trusted by healthcare providers around the globe for viewing, managing, and orchestrating patient information and imaging data.

– **eUnity Universal Diagnostic Viewer**

– **Enterprise Data Management (VNA)**

– **Workflow Orchestration**

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