

# MARKET INSIGHT

**The Time is Now for Enterprise Imaging  
Solving Provider Challenges in a Changing  
Healthcare Environment?**

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Healthcare across the globe is in a phase of digital transformation, striving firmly to improve aspects of cost, quality, and outcomes, leveraging information technology and digital components as part of evolutionary change. Medical imaging is not an exception to this shift, and is a large part of the digital data component in healthcare. Today, nearly all specialties generate images and clinical reports ranging from radiology images, visible light images, ECG waveforms, digital pathology, lab results, multi-media contents – JPEG, PDF, documents, videos, emails, and mobile apps data that need to be archived electronically and made accessible via the electronic medical/health records (EMR/EHR). The crucial need to securely access and analyze all data along the patient care journey is driving the need for a new generation of image and data management technology. This ultimatum has resulted in the emergence of the concept called enterprise imaging to consolidate medical images from multiple information systems, clinical archives and multiple imaging specialties for rapid retrieval and display.

So, what is enterprise imaging? What are the benefits to healthcare providers and imaging facilities? Why it is important? Why is now the time for enterprise imaging?

## WHAT IS ENTERPRISE IMAGING?

Enterprise imaging solution encompasses systematic tools to seamlessly obtain, organize, store and deliver medical images and other longitudinal patient information from distinct healthcare information systems for reading and reporting on a single viewer. A complete enterprise imaging solution comprises of 4 vital components: A universal image viewer, clinical workflow tools, collaboration tools and neutral storage layer. Today, healthcare providers are witnessing medical imaging branch out decisively into multi-departmental and enterprise-wide imaging, as medical imaging data from other specialties are growing in breadth, depth and in discrete data formats resulting in data management complexities. The critical need to integrate and consolidate patient information from distinct clinical repositories is driving a paradigm shift towards enterprise imaging solutions.

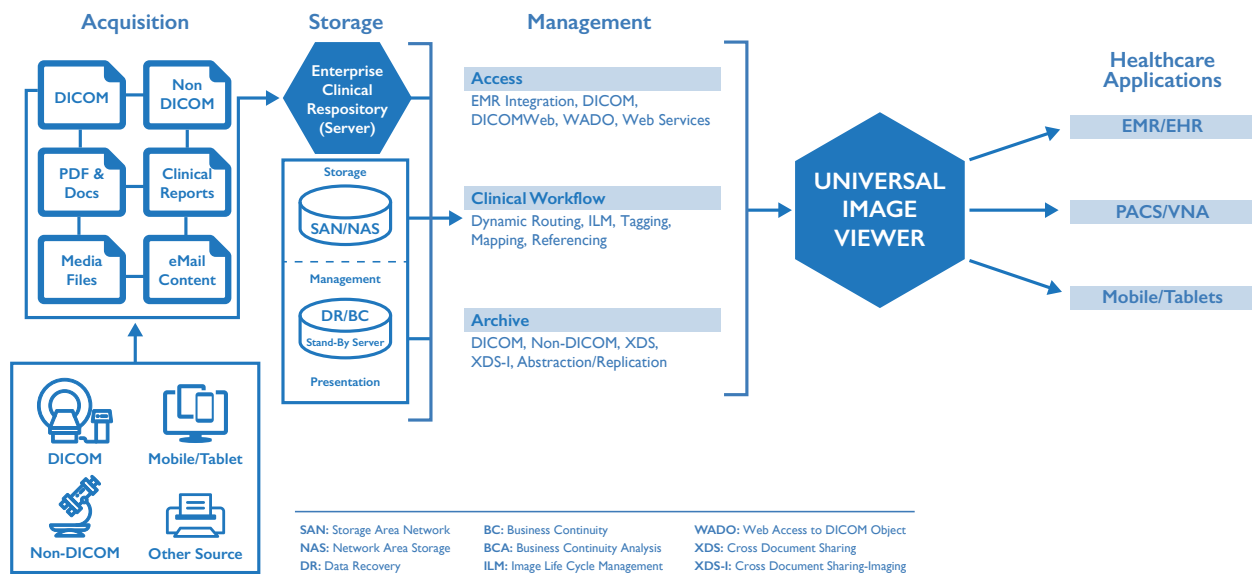
## ENTERPRISE IMAGING STRATEGY AND KEY BENEFITS TO HEALTHCARE PROVIDERS

Enterprise imaging strategy is a multifaceted approach being incorporated into many healthcare organizations of all sizes to simplify the process, reduce duplication, improve interoperability and ease the transition from volume- to value-based care. Since medical imaging facilities in many healthcare organizations work in multi-vendor, heterogeneous environments confronted with an older generation departmental based picture archiving and communication system (PACS), enterprise medical imaging strategy is the only way out to advance the facilities with a next-generation image management solution that is truly vendor agnostic, hardware and application independent. The influence of enterprise imaging on healthcare is magnified by the convergence of vendor neutral archives, universal viewing and cloud computing with big-data analytics capabilities. The consolidation of these three unique elements will result in the emergence of game changing multi-ology supported enterprise image management solutions.

### Key benefits to healthcare providers include:

- Enterprise imaging can provide doctors with a unique platform to collate and present all relevant clinical data in an appropriate context to have an engaging and meaningful conversation with the patients.
- By harmonizing patient medical records, images and reports, providers can create a single view of the patient - a longitudinal health record accessible virtually anytime, anywhere across the enterprise.
- With a universal image-viewing platform, healthcare organizations can work to image-enable their EMR/EHR, providing clinicians with the possibilities to access and display the patient medical images and reports from multiple imaging archives and information systems.
- Clinical workflow solutions provide configurable, patient-centric workflows that enable seamless exchange of patient health data across all departments in the healthcare enterprise.
- Clinical collaboration tools can have a big influence on patient centricity and personalization of care service by allowing clinicians to share images and insights with providers in and outside of the care delivery network and throughout the wider healthcare value chain.

### Enterprise Imaging and Data Management Solution



Source: Frost & Sullivan

## MEDICAL IMAGING, BIG DATA AND POWERFUL DATA ANALYTICS CAPABILITIES

Big data in medical imaging has the potential to be a valuable tool to improve care collaboration between radiology and other disciplines, but implementation can pose a tremendous challenge. The ability to draw health insights from massive volumes of medical imaging data can play a key role in developing deep learning algorithms to perform

data mining on patient medical images and implement predictive diagnosis tools. The applications can infer vital health information from complex heterogeneous data sources while understanding unstructured clinical notes in the right context to identify patients at high-risk, providing the right intervention to the right patient at the right time. This approach can potentially lead to new opportunities related to concepts such as integrated care pathways and population health management, deriving individual and community level health insights.

## THE MOST PRESSING CHALLENGE IS ACHIEVING A UNIFIED VIEW OF A PATIENT'S MEDICAL IMAGE



Due to the explosive growth in the generation of digital health data in recent years, providers are struggling to manage the massive amount of patient information, including medical images, which are extensively scattered across multiple locations, facilities and clinical repositories hindering healthcare objectives tied to the shift towards value-based care. As patient-centricity, personalization of care services and physician-patient digital engagement are becoming critically important goals of healthcare enterprises, the need of the hour is image enabling the healthcare enterprise with universal medical image viewers capable of displaying DICOM, non-DICOM images, clinical reports and content from myriad possible sources. At the same time, regulatory concerns regarding images, patient medical records and reports results in further complications.

## ACCESSING MEDICAL IMAGES IN A UNIVERSAL VIEWER ACROSS THE HEALTHCARE ENTERPRISE

There has been a constant evolution in the ideal universal image viewer from thick to thin clients, and more recently to zero-footprint viewers with expanded standard support that would feature simple HTML-5 based applications that have no dependency on any downloadable software, like Adobe Flash, Microsoft Silverlight and others, which is an important milestone to improving enterprise imaging workflow. The universal medical image viewer should support a broad range of imaging toolsets, basic display functionalities for static images, cine studies, and multi-media imaging objects from non-DICOM sources as well as both structured and unstructured report used in viewing imaging from multiple repositories.



**Image enabling the enterprise through a universal viewer can rapidly generate a patient's 360 degree view by seamlessly fetching critical data from many disparate and proprietary silos of patient information"**

**– Frost & Sullivan**

## WHAT TO LOOK FOR WHEN SEEKING ENTERPRISE IMAGING SOLUTIONS?

An enterprise imaging solution has the potential to enhance a healthcare organizations' clinical, financial and operational effectiveness. Healthcare providers must deeply articulate and quantify the organization's current needs and future business strategies to evaluate its ability to take on an enterprise imaging solution to unite departmental systems in a single enterprise platform. Therefore, state-of-the-art solutions with enterprise wide image management capabilities are needed to stay one step ahead amidst the drastically changing healthcare landscape.

**Here are a few important factors in terms of what providers should look for when considering an enterprise imaging approach:**

- Multi-modality, multi-ology imaging application layer equipped with universal viewer (zero-foot print) and multiple customizable workflows to efficiently integrate and leverage new data sources.
- Robust image management capabilities to migrate medical images and reports from multiple clinical repositories to one consolidated archive to offer a single point of access for EHR integration to generate a 360-degree patient view providing clinicians and support staff access to the vital data they need.
- Mobile medical imaging capabilities allowing clinicians to quickly capture and directly integrate visible light images, videos or notes with appropriate patient health records.
- Adherence to industry standards and profiles, to facilitate quick integrations and improve information access, regardless of the file format.
- Built-in encryption and authentication to prevent unauthorized access to content through meeting or exceeding FDA and HITRUST encryption standards for image and data storage.
- Efficient data back up and disaster recovery strategies aimed at overcoming healthcare data loss or file corruptions in the event of system failures.
- The inclusion of an Admin Console that makes it possible for first-level users to manage images and solve errors.
- Easy to use customer portal offering product tutorials, end-user training models, online interactive user manual, context sensitive training topics, 24/7 customer support and how-to videos to improve the end-user's experience.



**An enterprise imaging solution that is truly vendor agnostic, hardware and application independent can enable the highest level of business continuity and disaster recovery during inevitable component failures or interruption of services”  
– Frost & Sullivan**

## WHY IS NOW THE TIME FOR ENTERPRISE IMAGING?

Enterprise imaging plays a significant role in articulating the overall healthcare objectives to deliver tangible benefits to imaging specialties in terms of superior care quality and total cost of ownership. With the call for patient centricity, the focus of the medical imaging sector is rapidly shifting to value-based imaging and multi-object image management to ensure effective clinical content distribution throughout the enterprise. The best-of-breed solution offers healthcare organizations with an attractive image management capability to access, view, and share medical images across organizations, departments and providers. Enterprise imaging can enable connectivity in a healthcare enterprise, overcoming challenges to ensure the smooth flow of data enabling the transition to a digital workflow, resulting in significant productivity and cost savings. Healthcare organizations that want to leverage the benefits offered by enterprise imaging solutions should plan the deployment of these systems as a vital part of an enterprise imaging strategy aimed at supporting multi-ology image management.

### *State-of-the-Art System from a Single Vendor Consolidates All Patient Medical Images into One Clinical Repository*

While the curiosity of enterprise imaging is running high, healthcare organizations still face a daunting challenge: finding a single vendor offering a best-of-breed solution that addresses every facet of enterprise imaging to successfully implement a solution that brings clinical and financial benefits. Novarad has a long-established track record in implementing imaging solutions that afford many advantages in terms of healthcare data interoperability, content visualization, distribution and data management. Novarad's Ncompass enterprise imaging solution advances radiology imaging workflow by bringing in multi-specialty imaging and care collaboration capabilities, empowering healthcare providers to make an immediate impact to their imaging departments. Novarad's enterprise imaging strategy effectively ties the gap between what providers want and the organization's objectives. Novarad offers a team of clinical and IT experts to help enable enterprise imaging solution planning, implementation, service, and management of feature enhancements. With its multi-modality image viewing and powerful mobile imaging capabilities, Novarad's enterprise imaging technology platform empowers providers to access, collate and present all relevant clinical data in appropriate context to patients, helping them better understanding their medical conditions. To achieve true enterprise imaging, Ncompass offers simplified mobile (e.g. iPhone, iPad) acquisition workflow empowering clinicians to capture and integrate visible light medical images, video or notes with patient medical records. Images captured using web-enabled smart devices can be sent directly to an enterprise image archive and linked to the patient's EMR/EHR for immediate clinical reference. This app, called SnapView™ protects PHI by routing images from iOS devices direct to the Universal Archive entirely bypassing the mobile device's memory. Their use of Object Store in the Universal Archive means that data is always present in the right place at the right time – resulting in an ideal doctor / patient experience. Their NSA level security protects data in transit and at rest, prevents data loss and even if there is a breach, the information is indecipherable.

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