Moving from an enterprise imaging strategy to a **data integration strategy**

Throughout every patient journey, images are used to help diagnose, inform, and contribute to a patient's health record. Whether these images are a result of traditional diagnostic and treatment modalities or visible light, and regardless of where and why they were generated, one key to better patient outcomes is turning the information the images provide into actionable insights and disseminating those insights efficiently and effectively throughout and beyond the enterprise.

However, often patient information and image data is disparate and scattered: between points of data generation and points of data consumption; across departments such as radiology, cardiology, oncology, surgery, dermatology and laboratory; and across locations, such as general practitioner offices, outpatient imaging centers and local and regional hospitals. While an enterprise imaging strategy moves imaging data throughout the organization, a data integration strategy also recognizes that the full value of imaging data is only realized when it follows the patient throughout the care journey and is easily consumed at the point of care.

The challenge of integrating image data in patient records

A myriad of challenges makes integrating and disseminating image data difficult. First, the volume of images – including unstructured, visible light images -- used throughout healthcare enterprises is large and continues to increase exponentially.

Parallel to the increase in volume is an increase in the size of image data. Important innovations that have helped improve utility -- such as thinner slices in MR, spectral CT imaging, or 3D breast imaging – have also increased image data size.

A third challenge is that the landscape is dynamic. Healthcare system expansion and consolidation means that hospitals and associated clinics may have disparate legacy systems that were never designed to work together, beyond some minimum DICOM or HL7 communication.

Finally, workload is increasing throughout the enterprise, and many departments are short-staffed. Physicians have little time to shift to different viewing stations and learn become proficient at multiple interfaces. IT staff time is constrained too, so solutions must operate – and interoperate – reliably and efficiently, while also keeping data secure.

The goals of a data integration strategy

For image data to reach its full potential in contributing to an enterprise's data lake and thus to patient care, a data integration strategy must fulfill three goals:

1. **Provide meaningful insights,**
2. **Streamline workflows, and**
3. **Advance secure access.**

Advance quality of care and support population health by integrating data into meaningful insights

When data is integrated in a meaningful way, it yields insights that advance the quality of care. A comprehensive data integration strategy should include image data management, collaboration tools that promote multi-disciplinary communication for enhanced care planning and coordination, governance regarding who is accessing data and for what reasons, and compliance with cybersecurity standards and privacy guidance. Diagnostics data should follow the patient along a care journey, while analytics data deliver clinical decision support based on best-practice institutional knowledge, population health predictive models, and medical guidelines. Analytics can also help organizations improve operations by providing objective measures of workflow and performance.

Streamline workflows to enhance workforce efficiency

Multiple user interfaces, complex systems that require extensive training, and slow retrieval of information presented with suboptimal clinical context all hamper workforce efficiency. A data integration strategy should include single sign-on across applications, so users no longer need to toggle between multiple log-in URLs and remember multiple passwords. Single sign-on streamlines the user experience and supports cybersecurity efforts.

Additionally, a data integration strategy should include adoption of AI-enabled tools to contribute to efficient workflows. These tools can support staff from patient scheduling through follow-up and from automating repetitive tasks to analyzing workflows.

Last but not least, a data integration strategy should include change management tactics for getting buy-from end users, particularly clinicians who are generating or consuming data.

Advance access from a single institution to broader cross-hospital networks and enterprises

In this rapidly changing healthcare landscape marked by healthcare organization mergers and expansions and evolving regulations to remove barriers to data exchange while maintaining patient data privacy, healthcare providers need a data integration strategy that is agile, scalable and always right-sized -- expanding with the organization without major growing pains and scaling to new departmental needs and organizational priorities. It also must be able to adopt new innovation easily as well as be easily maintained.

It also must be based on shared architecture and deliver the cybersecurity and serviceability that make true integration of clinical and operational data, workflow and reporting possible. Cloud technology provides easier deployments across departments and enterprises and supports new business models and alliance strategies.

More than a technology roadmap – a new path to precision care

When integrating data is approached as a technology problem alone, organizations miss the opportunity to implement strategies that can contribute to their overall vision, mission and maturity on the path to providing greater quality care. To ensure that healthcare providers' data integration strategy serves patients throughout their journey, organizations need a strategic partner that brings expertise in data integration from imaging to broader informatics. Indeed, the same values and expertise that inform a sound image data integration strategy can be applied to other areas of integration. A partner that is able to provide guidance about both the technical points of integration as well as the clinical insight into how data is consumed will help an organization forge a path that makes data a catalyst for both personalized, precision care and enhanced population health..

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