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WHITE PAPER

Navigating the Inevitable

A Roadmap to Enterprise Imaging in the Cloud

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Introduction

Cloud technology is transforming how we live and work today. For healthcare providers undergoing long-term digitalization, the potential of cloud technology resonates, yet the complexities of adoption are daunting and difficult to navigate.

Nowhere is this more evident in healthcare than imaging informatics. A front-runner of healthcare digital innovation, the imaging sector has a complex legacy of on-premise, siloed, best-of-breed applications that interact with and influence every point of the care continuum.

Many providers have taken the positive steps of embarking on an enterprise imaging strategy, federating imaging service line applications, centralizing data management and transforming access for diagnosticians, care givers, and patients. Progress on this mission has been challenging however, in part due to an overreliance on aging on-premise applications and limited availability of alternatives.

Today, a new generation of cloud-based enterprise imaging solutions is emerging, offering a tangible route to cloud. In this paper, we'll identify the key characteristics of this new generation of cloud-based products and outline the key drivers and barriers to their adoption. Further, we'll describe the long-term transformative power that cloud offers for enterprise imaging and the future of healthcare provision, providing our view on the key considerations for providers navigating cloud adoption for enterprise imaging.

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Section 1:

DEFINING EI AND DIGGING DEEPER ON CLOUD OFFERING TYPES

The role of medical imaging in diagnosis and treatment has proliferated in the era of modern medicine. More recently, digital imaging use from multiple modality types has intensified across multiple acute hospital departments, especially in emergency medicine, surgery, dermatology, and cardiology. The recent COVID-19 pandemic has also intensified decentralisation of imaging acquisition and reading, with a growing share of imaging being conducted in non-acute settings.

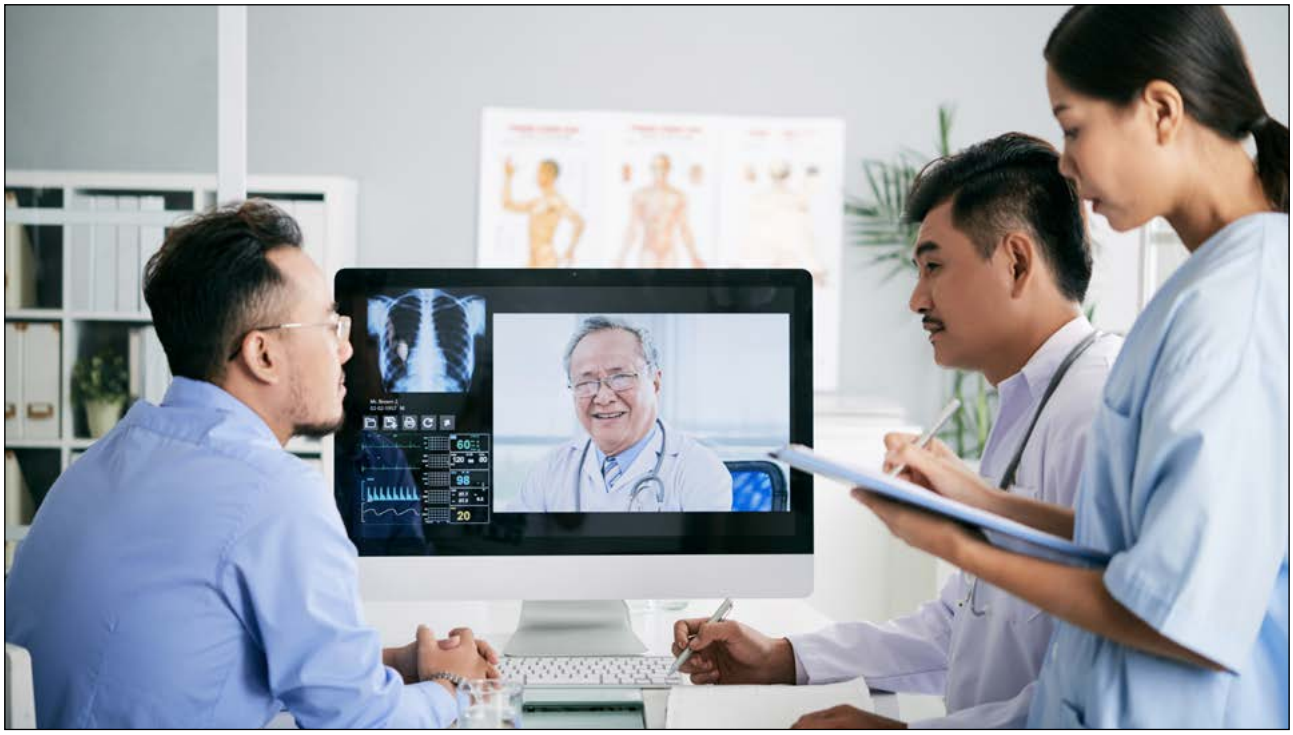
Because of this democratization of imaging, healthcare provider networks need a strategy to support the management and access to medical images and associated data across the enterprise. Many have therefore adopted an enterprise imaging strategy, defined as "a set of strategies, initiatives, and workflows implemented across a healthcare enterprise to consistently and optimally capture, index, manage, store, distribute, view, exchange, and analyze all clinical imaging and multimedia." (HIMSS-SIIM Enterprise Imaging Workgroup)

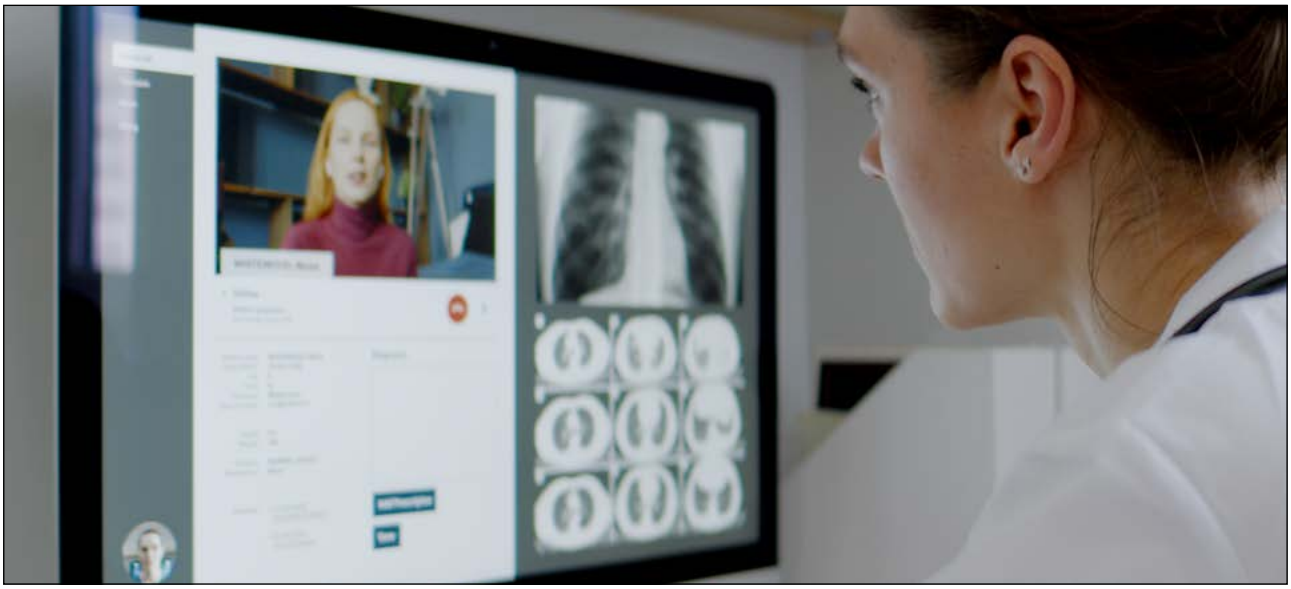
However, successful implementation of a robust enterprise imaging strategy is challenging, with few providers today having successfully implemented a mature EI strategy. There are multiple nuanced reasons for the difficulties in EI adoption at each provider, though common needs and requirements have resonated through our research on the topic. These can be summarised in three main themes:

ACCESSIBILITY: Given the growing role of imaging across the enterprise and in many care pathways, multi-stakeholder access is fundamental for health systems. However, with most legacy acute departmental IT systems and the enterprise EHR ill-prepared to support accessibility to imaging content, many clinical teams are reliant on manual processes to review patient data and imaging, creating inefficiency in care teams and risking the quality of patient care.

Furthermore, as healthcare providers recover from COVID-19, demand for an "access anywhere" approach to diagnostic and clinical data has intensified, especially with many key stakeholders working remotely. This, combined with a growing role of outpatient imaging and teleradiology, requires health systems to ensure EI deployments can cater for "decentralised imaging," supporting users in acute, outpatient, and remote settings.

COST: The complex and fragmented nature of acute healthcare IT networks requires IT





departments to manage an array of legacy and siloed applications, custom integrations, and migrations. Furthermore, maintenance and security across the enterprise is a huge undertaking, using up IT resources while also opening up networks to greater security risk. Combined, the technical IT considerations for maintaining disparate imaging-related applications is very costly, even before inefficiencies and cost of clinical stakeholder time is factored in.

CONSOLIDATION & GOVERNANCE: Healthcare systems continue to evolve, creating a substantial challenge in information governance across the enterprise. As part of this evolution, mergers and acquisitions have created larger and more complex systems, creating systematic points of difference between software applications and data siloes within the same organisation. Contracting, upgrades and stakeholder training for imaging applications are also resource-intensive and piecemeal, while operational insight on provision of care system-wide is limited.

Combined, these challenges cost healthcare systems millions of dollars each year, while also limiting stakeholders from providing higher quality care, as valuable imaging data is inaccessible, missing from care records or requiring manual retrieval. As reimbursement continues to move towards models based on care outcomes, the hidden costs to care systems can also spiral well beyond the identified inefficiencies.

WHAT ARE THE LIMITATIONS OF EI ADOPTION TODAY?

To solve many of these challenges and support a move towards EI, many healthcare providers are now considering alternatives to traditional "on-premise" deployments. In some cases, the process of EI adoption can be the main prompt for assessing cloud, while in larger systems the discussion on cloud adoption is often part of a broader enterprise provider IT strategy. When assessing cloud deployment for imaging IT and EI applications, there are multiple factors for a healthcare provider to consider. More flexible business models associated with cloud hosting services and a need to solve technical challenges associated with fragmented legacy applications (e.g., operational, or subscription-based contracting) are often the first areas of focus. However, there are more nuanced considerations that also can have a substantive impact on success for EI and wider cloud adoption.

A poorly understood notion from many healthcare providers is that "cloud" is a broad term used interchangeably when describing imaging IT products. Most imaging IT applications available on the market today have been designed and built with on-premise deployment in mind, as almost all healthcare providers have traditionally deployed imaging IT applications within their own data centres.

Vendors are also at different stages of "readiness" for cloud, with most portfolios of imaging IT software built via a mix of in-house development,

acquisition, and white-label integration. Therefore, "branded" imaging IT platforms made up of diverse constituent application parts are not always based on same core technical platform. This approach to legacy portfolio aggregation over time therefore makes it complex and expensive to "re-architect" applications.

As "cloud" has gained momentum and focus on the minds of providers, many vendors with legacy portfolios have been compelled to offer a cloud offering yet have not done the hard yards to re-architect software to ensure it is optimised for cloud deployment. Instead, some have focused on provision of "cloud-enabled" products (also known as "lift and shift"), a half-way house approach to cloud deployment that takes legacy applications designed for on-premise use and adapts for use in cloud environments. This approach, while offering a faster route to cloud and some security benefits, often results in significant compromises in terms of performance, scalability, and cost.

In contrast, "cloud native" imaging IT software (designing applications specifically for use with cloud technology) usually requires more R&D

and technical investment, but leverages the true power of cloud technology, such as scalability, accessibility, and performance (see detail below).

Most vendors in the market are partially through this transition of their products and services towards cloud native. However, evidence from our research suggests that for some vendors with broad, multi-ology EI offerings, full cloud native portfolios are unlikely to be available for several years.

Competency	Cloud Enabled	Cloud Native
Access	Limited access by location, reduced application use and some data inaccessible	Access anywhere flexibility and full data availability and application functionality
Scalability	Built on legacy infrastructure placing high cost and forward planning for upscaling	Indigenous to the cloud, with near-limitless real time scaling and flexibility for providers, without impact on system or advanced planning
Security	Ongoing maintenance resource-intensive and de-centralised; higher threat risk to organisation	Centralised and consolidated security maintenance reducing risk exposure; hyper-scalers offer world-leading cybersecurity threat protection
Cost	Upfront costs can be lower, but ongoing cost of use, maintenance, security and scaling substantially higher, with net overall higher cost over standard terms	Comparable or higher-cost of entry, but substantially lower recurring costs for maintenance, security and upgrade. Greater ROI over standard term and higher intangible value (security, efficiency, performance)
Performance	Dependent on server-software configuration; can be slower than on-premise deployment in many contexts. Higher risk of system failure and outage.	Adaptive to system demand ensuring high performance for all applications and users, regardless of location. Applications designed specifically to leverage power of microservice architecture
Integration	Requires substantial software configuration and IT resources	No software/hardware configuration required

Therefore, providers should demand transparency and clarity in terms of development roadmap and availability of portfolio components today and the near future. Moreover, healthcare providers should also focus on prioritising which specific problems they are trying to solve and if their current imaging IT vendors will have the solutions required to support a transition to cloud.

Providers should therefore be clear in terms of their own broader cloud strategy and approach to cloud technology deployment, especially in terms of use of private versus public cloud options. This should include a robust assessment of technical and financial considerations, including:

- Local network infrastructure and bandwidth requirements (+ cost of upgrade to support public cloud deployment)
- Ongoing IT resources available for maintenance and integration
- Local regulations and data protection
- Specialist / best of breed application requirements (advanced visualisation, research-level tools)
- Data centre capacity and future investment plans / failovers, redundancies, co-location
- Requirements and readiness of other "mission critical" administration, operational and patient data systems (e.g., finance and billing systems, EMR, PHM, etc.)

Further, other industry sectors can also provide a useful case study when deciding on the best approach and value proposition of cloud deployment.

For example, the financial services sector could be viewed with similar equivalence to healthcare in terms of requirements: institutional, highly sensitive and confidential data; substantial interplay between public and private institutions; distributed access; B2B and B2C need. Yet many of these factors that have stifled adoption in healthcare so far have done little to limit adoption in the Financial Services sector. In fact, despite confidentiality challenges and a tight regulatory environment, cloud adoption has proliferated in the last decade, moving the sector well ahead of healthcare in digital maturity.

This shift to cloud occurred gradually however, with many financial services institutions taking the shift to cloud stepwise, leveraging the benefits of private and hybrid models of cloud architecture first, before progressing towards partnerships with public cloud providers. Consequently, healthcare providers should also look beyond the near-term benefits offered and focus more on the longer-term value created by cloud adoption. In many cases and contexts, full hosted cloud deployment should be a long-term aim with many steppingstones to achieve, as opposed to a "big bang" change.

It should also be noted that following our extensive research on cloud adoption, specifically for medical imaging (as outlined later in this paper), some functions of imaging IT applications are far better kept on-premise as part of a hybrid approach to cloud adoption, as opposed to shifting all aspects of EI straight to fully hosted deployment.

Section 2:

SIGNIFICANCE OF CLOUD ADOPTION FOR EI

To support healthcare providers assessing the value of cloud deployment for EI, we have outlined some of the fundamental considerations that should be addressed ahead of a decision. While there are substantial benefits from adoption of cloud technology, every provider has a unique mix of legacy architecture, operational aims, stakeholder group, and mix of care services. Unique priorities and circumstances should be considered.

RETURN ON INVESTMENT (ROI) - UPFRONT COST VS LONG-TERM VALUE

ROI should be assessed in several ways and over various periods, balancing potential short-term savings with longer investments and vice versa. Given that many EI adoption strategies at healthcare providers can span up to a decade, stakeholders should be wary of over-zealous bias towards short-term benefit. More specifically, ROI should be assessed in terms of impact in several ways:

- IT cost consolidation, reducing FTEs and infrastructure costs for managing on-premise data centres
- Predictability of monthly costs and ensuring the provider only pays for what they need / use
- Risk reduction for lowering the potential security risk / ransomware impact on broader services mitigated by a move to a more secure architecture
- Tangible operational and care benefits calculated (e.g., improvements in performance, accessibility from remote locations, reduction in administrative and clerical resources for manual data consolidation)

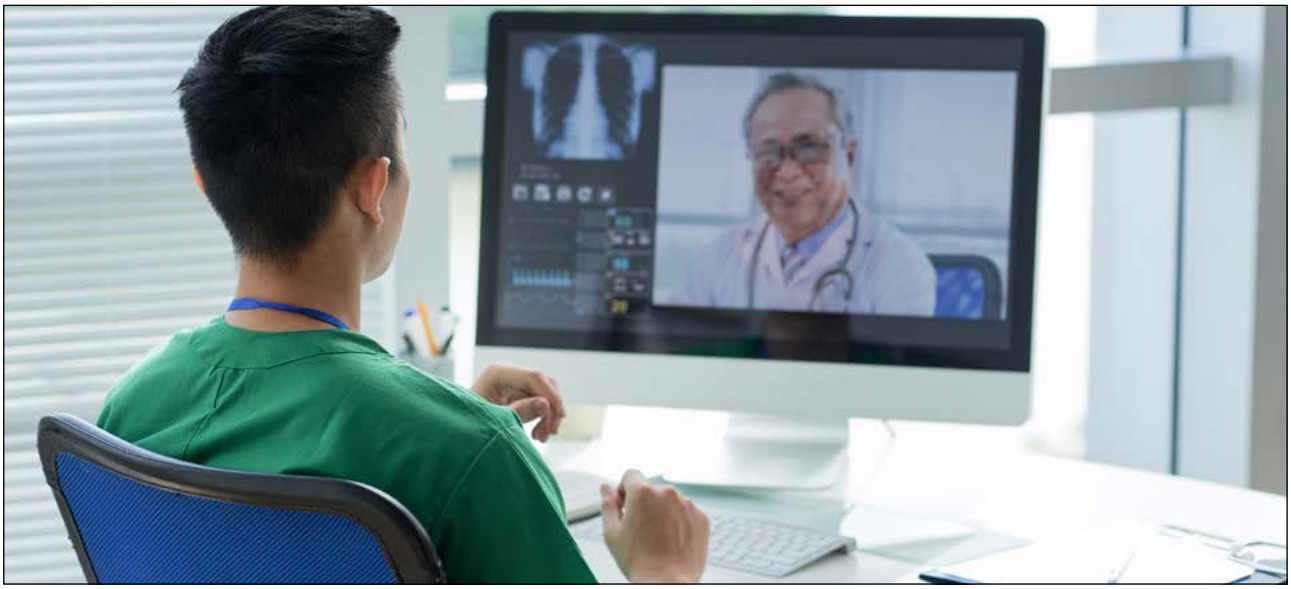
Intangible cost benefits from care efficiency improvements (data accessibility and utilisation of clinical resources, etc.) and overall impact on provision of care services and care outcomes

While not all these considerations can have a financial figure apportioned, the weight and impact in terms of short and longer-term ROI to the provider should be captured and scored to support decision making and procurement focus. Moreover, this will also help healthcare providers home in on

key priorities and "pinch points" in their EI strategies, thereby ensuring initial phases of deployment have substantive impact.

CYBERSECURITY AND LOWERING RISK

Healthcare institutions remain the most targeted in cyberattacks of all industries, with new ransomware stories breaking weekly. Traditional on-premise deployment of imaging IT applications piecemeal have made dealing with cyber-threats a massive undertaking for IT departments. Such is the breadth and complexity of active and inactive legacy applications. Therefore, the process of EI consolidation toward centralised enterprise imaging platforms has an inherent net positive impact in improving cybersecurity, as the volume of maintenance security tasks is reduced with a common platform. However, leading public cloud providers are already investing billions of dollars in cybersecurity, far more than a single healthcare provider could invest in protecting its own data centres. As such, it is inevitable that cyber security competency with new hosted cloud technology offerings, when deployed correctly, will surpass that of an on-premise deployment. Alternatively, if an organisation is not ready to transition to a full hosted deployment, hybrid options can support provision of "fail-safe" support that limit disruption on frontline healthcare services in the event of a ransomware attack or major cyber-threat event.



- Improved data centre security and lowering risk of cyberattack (compared to on-premise)
- Variety of cloud-based "fail-safe" and redundancy options possible to minimise disruption if main primary system remains on premise (e.g., beyond disaster recovery – clinical viewer and archive access in read-only mode, etc.)
- Helps reduce cost of IT resource in house to run manual security maintenance on fragmented / legacy applications
- Faster route to protecting and securing applications, data, and key assets in the event of acquisition or merger with another health network
- Helps with risk reduction for remote accessibility, streamlining route to "access anywhere" for all imaging and associated data – opens potential for new care models or access to new clinical and diagnostic talent pools.

THE FUTURE OF CARE PROVISION

Given the length and impact of EI adoption, healthcare providers should also consider the future needs of the health system and the impotency of architecture and cloud technology to meeting these needs. Imaging is expected to remain at the forefront of diagnosis yet become evermore entwined with a host of data and other diagnostic tests and technology (genomic data, radiomics, artificial intelligence, analytics, consumer health data) to provide more personalised, precision medicine. Operational improvement is also required to meet this this new era of care, better utilising resources and supporting multidisciplinary pathways. Providers should therefore consider the feasibility of providing a robust EI platform that can scale and adapt to support this evolution, with particular focus on:

- Multidisciplinary care models and supporting "data liquidity" within system – accessibility and interoperability
- Home reporting access (report from anywhere)
- Exchange and workflow with a wider network of stakeholders (outpatient imaging, teleradiology, multidisciplinary care teams, intra-network collaboration, CROs, and clinical trials)
- Operational workflow and efficiency tools and predictive analytics
- Patient portal access to care records and rich imaging dataset

For some providers, these innovations and changes in care provision may feel far removed from the short-term challenges of cost management and basic accessibility issues. However, decisions on IT investment and deployment choice near-term will also have substantive impact on the cost and speed of meeting the future demands of care. In particular, cloud technology offers a raft of unique competencies (elasticity, scalability, and adaptability) that will also help healthcare providers more easily tackle this evolution.

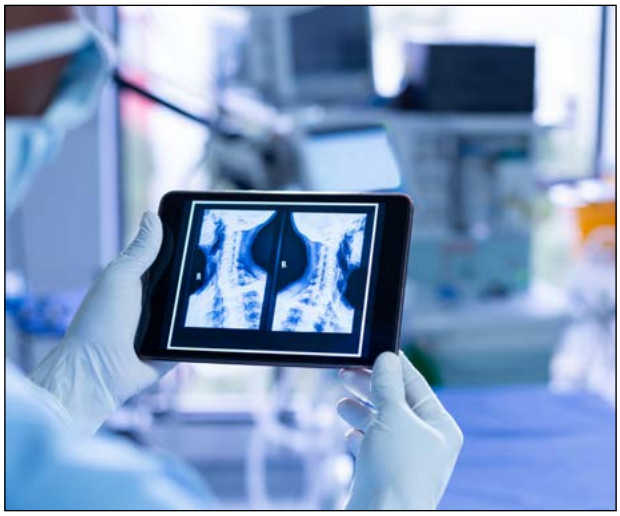
DATA OWNERSHIP

Alongside cybersecurity concerns, data ownership remains one of the major barriers many healthcare providers continue to wrestle with when considering cloud technology partnerships. In particular, the data governance and confidentiality standards of PHI by public cloud companies has often been mooted as an area of concern. Given the broad commercial value of PHI, especially in the burgeoning preclinical and drug development sectors, third party use of PHI is often a barrier to providers moving to hosted services.

Regardless of the deployment model for EI selected, healthcare providers should focus on ensuring any agreement includes robust terms over data use with third parties. Providers should also however factor in the "risk" element for retaining data on-premise in their own data centres; as outlined in the section above on security, third party hosted offering (i.e., software vendor or public cloud vendor) can offer substantially better data security.

DATA COMPLEXITY, CONSOLIDATION, AND INTEROPERABILITY

Providers are also challenged by scale and complexity of imaging and associated data; data governance is very difficult when managing a network of legacy applications. Therefore, providers should factor in that any shift to cloud will involve data migration and consolidation, itself a costly task for large, complex, unstructured data siloes. In fronting up to these challenges, IT and clinical leaders can also establish a "minimum standard" for future application interfaces,



creating a more streamlined and controlled route to integration for new diagnostic and clinical applications.

This is also a substantial undertaking that requires understanding stakeholder needs, mapping out data access priorities (supporting a roadmap of EI consolidation also), and planning to ensure data governance policy will support the future needs of research, advanced technology deployment, and precision medicine initiatives as outlined above.

This process and cost in terms of resource and investment may appear expensive when viewed in a short-term context. However, for health systems to support new outcome-based care models, limit the need for massive future infrastructure investment, and provide a firm foundation and support IT administration overhaul, it is a necessary and fundamental investment.

Furthermore, the growing development and use of artificial intelligence will place more and more importance on the availability and hygiene of this data. By consolidating and scaling up imaging data sets, healthcare providers can build data lakes of rich, real-world imaging data for research to better inform new care pathways and inform better population health strategies, while opening new commercial opportunities. This directional shift is also exemplified by the recent work of associations such as RSNA and SIIM on building industry and provider consortiums to drive the democratisation of imaging data through the creation, adoption, and incentivised use of standards-based cloud exchange and data harmonisation.

Section 3:

ROADMAP TO TRANSFORMATION – ROLE OF CLOUD IN FUTURE CARE SYSTEM PERFORMANCE

Healthcare providers' focus on procurement for imaging IT has often been swayed by solving near-term challenges, many of which were identified in the earlier sections. While this creates a quick return for investment in cloud technology, the longer-term consequences are not always well understood or considered.

Instead, providers should be focusing on both the short term and long-term implications and suitability of cloud technology and consider if their initial investment will offer true value, both in terms of operational efficiency, cost and improving care outcomes long term. Often overlooked is how investment in cloud technology can be recouped by supporting and driving innovation in care quality and delivery. Such is the future importance of medical imaging in future care provision, the benefits, and savings of moving EI to the cloud can substantially offset initial spending.

Growing focus on multidisciplinary, care team collaboration, and integrated care Providers will require greater access and coordination of data flow within and between care teams. Cloud deployment and tech can support this push with improved access and streamlined data aggregation. For example, support for oncology tumour boards (multispecialty need): diverse content brought together from multiple departments of diagnosticians and clinical staff, a traditionally time intensive manual process.

Stakeholder impact: care quality; better utilisation of clinical resources; improved care quality; outcome-based care – financial benefits (C-suite, admin).

Precision Medicine and New Digital Departments (Pathology, Genomics, etc.) The nature of diagnostics is going to change, bringing together in vivo and in vitro diagnostic techniques towards a more powerful and more predictive, precision medicine approach. However, this requires far greater structure, data liquidity, and platform performance to achieve, due to the inherent characteristics of the data required (size of images and data, processing and compute need, etc.). While most providers are relatively early in this journey, this demands more of IT platform. Cloud offers a multitude of benefits that help support the adoption of new precision care models, namely compute power, access to storage, and microservice-based containerisation for high compute processes. For some providers it is too early to factor in initial cloud considerations, but it should be a growing focus that will shape preventative care and population health management strategy, making it financially critical for providers to prepare for this change as part of longer-term strategic frameworks for EI.

Stakeholder impact: care quality; IT resources; differentiation for providers (academics, research, attracting talent, diagnostic resource utilisation, and efficiency).

Emergence of AI and Analytical Tools

Artificial intelligence and advanced analytics are creating a new era of diagnosis, yet the last mile challenges of integration and deployment of AI in medical imaging remains unclear for many healthcare providers. When defining EI strategy, cloud technology should be considered to future-proof imaging IT and broader health platforms for the era of AI-supported diagnosis. Cloud can play a role in supporting providers adopting AI, which can have a major impact on care delivery:

- Streamlining AI integration, enabling a faster route to ai adoption at scale and across multiple diagnostic applications
- Ensuring the availability of rich patient data sets to support AI-based workflow tools, support patient triage and use of incidentals, and edge AI modalities in streamlining care decisions for acute patients
- Providing extensive compute power for advanced AI applications and supporting research at scale
- Automating manual tasks and offering clinical decision support tools for radiologists and other clinical stakeholders, thereby improving diagnostic efficiency, and reducing errors from clinician burnout

So far, most providers with traditional on-premise deployments of imaging IT have been forced to deploy AI as individual point solutions. Ultimately, deployment of AI in this way via customised integrations has limited impact, especially as results are often provided in unstructured .pdf documents. Cloud technology has potential to support streamlining integration and use of AI at scale, by not only driving data consolidation and governance (as described previously) but also in ensuring that workflow for AI use is scalable and provides tangible benefits in terms of care efficiency and care quality. While most providers are still early in the adoption curve for AI, there is a growing body of evidence to show that AI will play a major role in the future of diagnosis and care pathways.

Stakeholder impact: diagnostic resource utilisation; quality of care (fewer mistakes, better for patients) earlier detection preventative / screening / PHM angle.

Hybrid Models and Multi-Cloud

Most providers are still early in assessing and defining cloud strategy, with many factors influencing decisions. Given that many vendors' offerings in imaging IT are not fully "cloud native" and that many data governance undertakings require time and resources to truly leverage the full power of hosted cloud technology, a hybrid approach to cloud maybe a suitable stepwise strategy to consider.

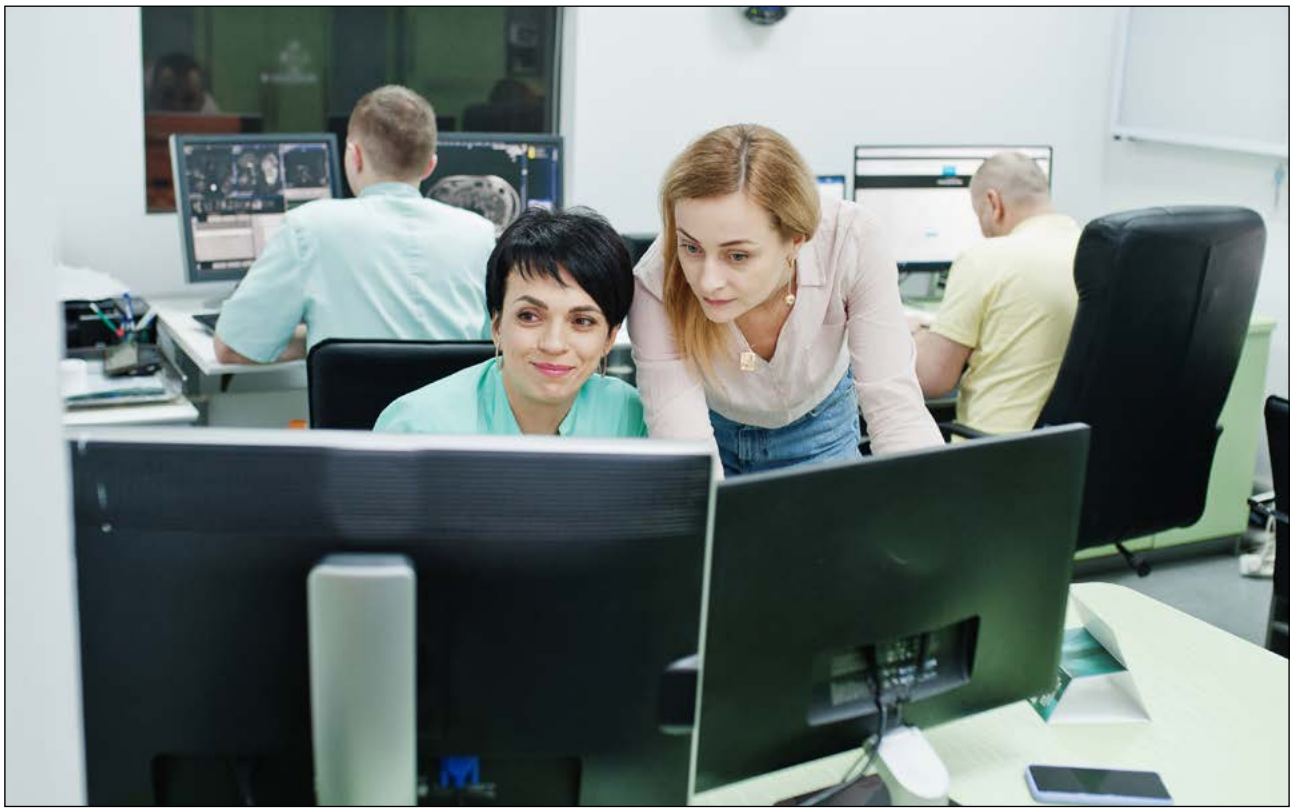
Additionally, some functions of imaging IT are inherently better suited to cloud technology than others, based on complexity, performance requirement and balance of cost-benefit for migration to cloud-based offerings. Fundamentally, providers should be open to a hybrid approach that places a premium on functional performance and a required standard of competency. This will ensure that over the long-term evolution of EI strategy, key front-line services will be supported by the most appropriate deployment type. Furthermore, this hybrid approach helps to de-risk initial investment in cloud technology, supporting the move to hosted offerings provides ROI before undertaking a full stack migration. Of course, this approach does also have some trade-offs in terms of benefitting from fully hosted cloud technology, though many providers are willing to accept this compromise to support longer-term benefit. The diagram below outlines, based on our research, the expected longer-term model for cloud adoption for each component for an imaging IT platform.

Stakeholder impact: lower risk of "all or nothing" approach; provides near term gains (access, streamlining workflow, operational visibility, etc.) w/o large-scale commitment to cloud across whole platform; more tailored to needs of organisation and can fit within the current spend plans of on-premises commitments. Allows IT and other key stakeholders to assess and create value proportion with real world evidence.

See chart on following page which outlines the expected long-term model of cloud-adoption for enterprise imaging components.

THE EXPECTED LONG-TERM MODEL OF CLOUD-ADOPTION FOR ENTERPRISE IMAGING COMPONENTS

Imaging IT Module	Expected Long-Term Model for Cloud	Notes
Core Diagnostic Viewer/ Reporting/ Diagnostic Workflow	Hybrid	Performance critical - will require balance between requirement for scalability and access (e.g., home reporting) and performance of heavy processing / compute tasks
Advanced Visualization	Hybrid	Performance less critical, though increasingly integrated with broader diagnostic UI/UX. Probable future "home" of more advanced AI tools, will require extensive compute access and bandwidth from cloud
Clinical/ Non-Diagnostic Viewer	Off-Premise, Private/Public	Limited performance required; access and scalability higher priority
Data Management (VNA, EDM)	Hybrid	Performance critical - hybrid model with next generation information lifecycle management to manage on-premise versus cloud two-way "traffic"; further evolution required for future AI compute and access demands
Image Exchange, Patient Portal	Off-Premise, Private/Public	Limited performance required; access and scalability higher priority
Operational Workflow and Intelligence	Off-Premise, Private/Public	Limited performance required; access and scalability higher priority
AI (Diagnostic applications)	Hybrid	Performance less critical, though increasingly integrated with broader diagnostic UI/UX. Ongoing access to large image library and balancing of compute demand still uncertain for scaled deployments



Section 4:

NAVIGATING INEVITABILITY– KEY STRATEGIES FOR PROVIDERS IN ADOPTING CLOUD FOR EI

Many healthcare organisations are already starting the process of assessing cloud technology and defining a roadmap towards adoption. However, each organisation also has a unique context of organisation needs, readiness for migration, and availability of capital and resources. As has been outlined in the above discussion, the transition to cloud can have wide-reaching benefits for healthcare providers in terms of care quality, operational efficiency, and IT network administration.

However, the move to cloud is not just a singular, enterprise decision; it has a multitude of consequences at all levels of healthcare provision. Therefore, the overarching strategy for cloud adoption in healthcare requires substantial buy-in from key stakeholders and a robust needs and impact assessment at all organisational levels.

In the context of enterprise imaging, imaging IT platform capability continues to expand and integrate imaging data from a wider base of clinical departments and care settings. Assessing the requirements and risks of deploying cloud is challenging and complex, yet at the same time, the potential transformative benefit from successful cloud deployment is magnitudes greater. Such is the reach of enterprise imaging today.

Leaders at healthcare organisations will each approach cloud deployment for enterprise imaging in a slightly different way, but should ensure the following common principles are adhered to:

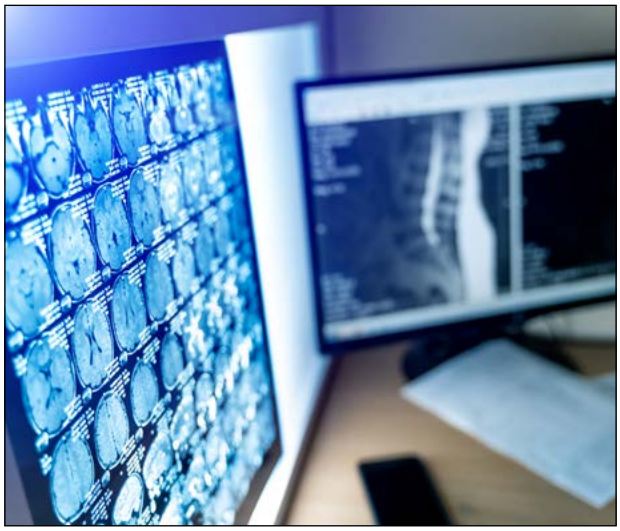
TANGIBLE AND INTANGIBLE ROI While many organisations may consider compromising with less-robust cloud offerings (such as cloud-enabled applications) in a bid to make short-term savings, ROI analysis should focus on a longer time period and assess the benefits of different cloud imaging IT platforms on both tangible benefits: costs and licensing, IT resources, maintenance, future scaling requirements; and intangible benefits: system performance and latency, accessibility impact on availability of clinical resources, support for multidisciplinary care teams. In many cases, this deeper analysis will point clearly towards cloud-native applications providing far greater overall

benefit, while also supporting IT administrators future-proof networks to lessen the impact of mid- and long-term requirements as care evolves towards personalised medicine and the deployment of emerging technologies such as AI.

SECURITY Given the increasing regularity and impact of cybersecurity threats to health systems, cybersecurity should be a fundamental consideration for all future deployments and strategies. While there has in the past been unease with the potential of third-party data ownership and access to institutional data, today many application and cloud providers have watertight polices with clarity over data use and ownership. Therefore, health system leadership should be proactively looking to de-risk cybersecurity threats by reducing manual security maintenance, streamlining IT application integration, thereby lowering the resource burden on IT administrators for security and leveraging the strength of security offering provided by cloud providers today, which far exceeds that of any health network.

BUSINESS MODEL Healthcare providers should also be fundamentally clear on their strategic aims for cloud adoption, viewing business model change and adoption of cloud-based architecture for imaging IT application deployment as separate assessments. Budgetary flexibility should not dictate technology deployment and vice versa. Many imaging IT software vendors offer a range of flexible contracting for on-premise deployments today, both on renewal and during existing contracts. Likewise, cloud deployments of all types can be deployed with a range of business models.

PARTNERSHIP Given the complexity nuances of cloud deployment for imaging IT, healthcare providers should also not approach the challenge alone. Instead, providers should look for a robust partnership with imaging IT vendors that can offer a "cloud-native first" approach to imaging IT (both in terms of availability of current applications and clear roadmap for future R&D and upgrades), clear and transparent pricing, evidence and case studies demonstrating a track record of successful deployment with similar health organisations and the scale and specialism to support long-term



deployment strategy for cloud in the nuanced context of the commissioning organisation.

Enterprise imaging is a strategic imperative many healthcare systems are facing up to today. Given its breadth and impact on the wider care system, EI strategy requires a substantive, detailed, and adaptive roadmap. Given the rapid development of cloud technology and changing needs of healthcare systems, it is clear that cloud technology will play an inevitable role as the foundation in enterprise imaging.

Healthcare providers should therefore become wise to the differences and compromises between deployment of cloud-enabled and cloud-native imaging IT applications and their potential impact on costs, IT administration, operational efficiency and, care quality. Furthermore, providers should assess imaging IT offerings against a long-term value assessment, including not just short-term cost, but also how these systems will help or hinder cybersecurity risk reduction, evolution of care provision, democratisation of data, and roll out of new technology.

When undertaking this assessment, providers should also have a clear understanding of its main focus and strategic aims of cloud adoption and look for a robust and trusted partner that can support its meeting of these goals and leverage the transformative power of cloud technology in imaging IT.

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