



# Radiology Work Transformed with the Next-Generation of Enterprise Imaging

The case for AGFA HealthCare's Enterprise Imaging Platform

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FROST & SULLIVAN EXECUTIVE BRIEF

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# Is Radiology at a Crisis Point?

The current picture of radiology shows immense pressures from all directions, requiring solutions and strategies to enable a better and smarter way to work and provide health services while improving daily experiences and work-life balance.

Burnout in radiology is growing<sup>1</sup>. In 2023, 67% of radiologists and 75% of technologists felt overworked or burned out<sup>2</sup>. The ratio of patients to radiologists is also expanding, which, along with staff shortages<sup>3</sup>, further reduces work-life balance and work satisfaction. Regarding shortages, the American College of Radiology reported more than 1,400 open radiologist positions in March 2024.<sup>4</sup> With patient populations requiring imaging growing, such as from Medicare enrollment, “there is a growing demand for imaging which outpaces radiologist availability, with new radiologist training not keeping up”.<sup>5</sup> One recent study showed that 81% of health systems reported a radiology technologist shortage.<sup>6</sup> According to the American College of Healthcare Executives (ACHE), workforce challenges have been hospital CEOs’ leading concern for three years in a row.<sup>7</sup> Overall, Hospitals and imaging centers are “trying to manage higher procedural volume without a larger workforce, and sustain employment at current levels”.<sup>8</sup> The imbalances in radiology are also not just tied to volume of procedures, but “exponential increases in the number of images generated by each examination”.<sup>9</sup>

Health systems are also growing in scale and footprint from expansions and mergers and acquisitions (M&As). For example, the overall volume of hospital and health system M&A deal activity increased by 27% year-over-year in 2023.<sup>10</sup> These provider network changes continue to shift from a few sites in a localized area to multi-state organizations. Radiology teams are more dispersed and perform work from multiple sites and location types (in-person and virtually). Aside from physical scale and internal complexity, larger radiology groups are also attempting to serve an increasing amount of customers.



**67% of Radiologists** and **75% of Radiology Technologists** feel overworked and burned out.<sup>2</sup>



**81% of Health Systems** are facing a shortage of Radiology Technologists.<sup>6</sup>



The **imbalances in radiology** are also not just tied to volume of procedures, but “exponential increases in the number of images generated by each examination”.<sup>9</sup>



# Requirements for Improving Radiology

Imaging leaders require solutions that enable a better and smarter way to work while improving daily experiences and work-life balance.

As part of solving their current mix of challenges, radiology stakeholders should think about these three focal concepts:

## Imaging Governance

Whether from M&As, the volume of imaging procedures performed, the volume of images per study, or the expansion of their affiliated ecosystem of partners, imaging leaders need to focus on and deal with imaging governance to manage the various dimensions of growth. Imaging governance requires the right convergence of solutions to ensure everything works cohesively and that systems and data are not locked in silos or otherwise hindered from optimal access and workflow. Growth of scale also requires that images from all sites in affiliated organizations be orchestrated effectively and in a way that is central to the radiology team.

## Clinical Workflows

Clinical workflows occur between staff members, patients, and across organizations and work environments (on-site, off-site/remote) and include physical and mental task sequences. The daily routine and reading experience in radiology are critical focus points regarding healthcare IT investments and implementation and their impact on staff engagement and work-life balance. If 43% of radiologist time is spent on non-interpretative tasks, including protocolling requisitions, supervising and monitoring studies, performing IGT procedures, or consulting with other clinicians, it's no wonder that workflow is a challenge.





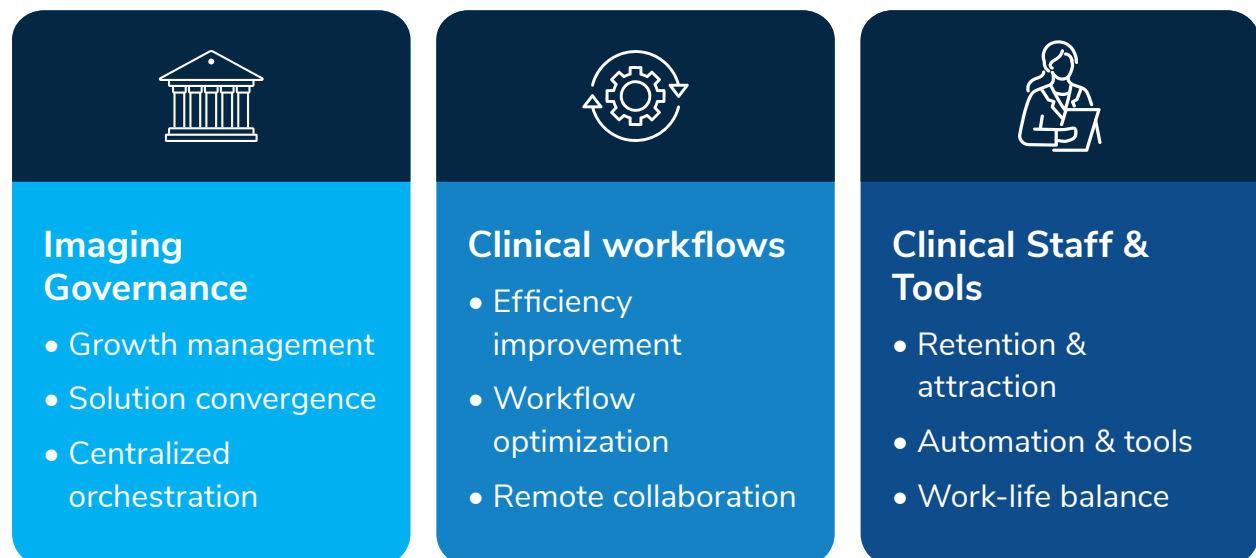
Technology investments should enable, improve, and optimize workflows and efficiency and not hinder them, as the goal of technology is to help radiology teams overcome the various challenges they are currently facing. When it comes to the volume of imaging studies and workload, it is not just about pure numbers. It is also about the complexity of addressing the entire range of study types that populate the worklist and doing so without radically expanding the number of hours required to perform that work. Part of the workflow goals is enabling collaboration with radiology informatics and applications in the best environment available to do so, which is within the same platform.

## Clinical Staff & Tools

Healthcare organizations want to retain and attract staff, and work structure, and available tools and infrastructure (e.g., technologies, applications, automation) are a part of achieving that. It has been demonstrated directly that hybrid models (e.g., mixed remote and on-site work) and teleradiology models improve radiology turnaround time and address staff burnout. The flexibility to work remotely or on-site as needed appeals to radiologists seeking a better work-life balance, increasing job satisfaction. It also allows healthcare providers to tap into a broader talent pool as geographic location becomes less of a limiting factor. As healthcare organizations and groups become more expansive, the ability to have radiologists geographically dispersed with multiple reading groups reading for multiple customers is a benefit. Furthermore, via the right tool investments, the ability to automatically send the right study to the right radiologist in the network is also key to improving work and performance.

Figure 1

## Three Focus Areas for Improving Radiology





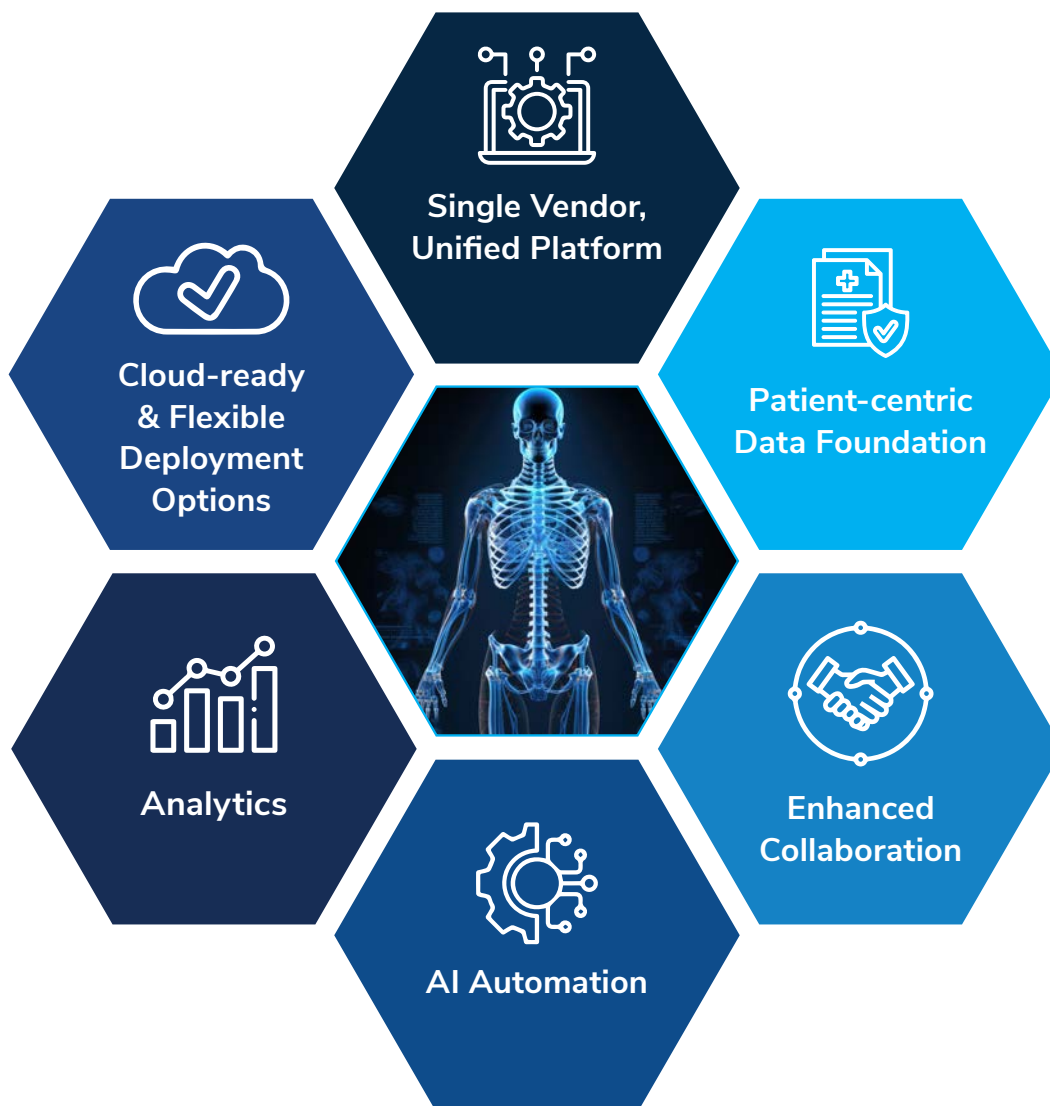
# Stepping Forward with the Next-Generation of Enterprise Imaging

A next-generation approach to enterprise imaging aligns with the imperatives and requirements providers are looking for to improve radiology.

Frost & Sullivan sees enterprise imaging as governance to define how imaging is perceived, accessed, and utilized by the healthcare organization and its stakeholders—internal or external—and provide direction on storage mechanisms, tools, and services that enable alignment to those definitions.

Figure 2

## Frost & Sullivan: Next-Generation Enterprise Imaging Attributes





Frost & Sullivan thinks next-generation enterprise imaging (Figure 2) provides these six attributes.

- 1) **Single Vendor, Unified Platform:** This entails a comprehensive suite that covers the full stack of enterprise imaging capabilities, such as a vendor-neutral archive (VNA), universal viewer, image sharing and exchange, reporting (including structured reporting), diagnostic modules, multi-ology applications, and workflow orchestration (worklist orchestration). Next-generation enterprise imaging is a comprehensive, unified platform and convergence strategy. Frost & Sullivan strongly advocates for the use of a best-of-suite platform for medical imaging informatics instead of fragmented and fractured departmental vendor builds.
- 2) **Patient-Centric Data Foundation:** An effective data foundation is the starting point for all current enterprise health IT goals. The right foundation establishes a holistic patient view by unifying, unlocking, and breaking down data silos from available enterprise sources to maximize data utility.
- 3) **Enhanced Collaboration:** This enables new and better ways for radiology teams to work, share, and collaborate as it supports hybrid and remote teams, teleradiology, and flexible and better orchestrated workflows along federated worklists. Capabilities aligned with this concept typically include the way images are accessed and exchanged, read by the most appropriate radiologist for each particular case, and support “anywhere, anytime” work.
- 4) **AI Automation:** AI automates diagnostic assistance and streamlines workflows, with applications curated by the enterprise imaging platform.
- 5) **Analytics:** These provide clinical and performance (business) analytics for informed decision-making and optimized operations.
- 6) **Cloud-Ready & Flexible Deployment Options:** These offer a mix of cloud, hybrid, and on-premises solutions that accommodate providers at various stages of digital and imaging maturity.





# AGFA HealthCare

## Delivering next-generation solutions with the company's Enterprise Imaging Platform

AGFA HealthCare's Enterprise Imaging is a next-generation platform that aligns with Frost & Sullivan's view of that concept's maturity, and it enables providers to improve radiology, radiology service lines, and their organizations as a whole.

The specific capabilities and choices in how AGFA HealthCare's offering achieves a next-generation value proposition (Figure 3) differentiate it in the provider market.

Figure 3

### Next-Generation Enterprise Imaging Alignment

| Next-Generation Enterprise Imaging<br>Frost & Sullivan Framework  | AGFA HealthCare<br>Enterprise Imaging |
|---|---------------------------------------|
| <b>Single, unified vendor platform</b> —Exemplifies a comprehensive suite of capabilities and one clinical database   |                                       |
| <b>Patient-centric data foundation</b> —Facilitates the ability to leverage enterprise patient data and images for the full patient view                                |                                       |
| <b>Enhanced collaboration</b> —Enables better ways for teams to work, share, and collaborate  |                                       |
| <b>AI automation</b> —Utilizes AI to automate diagnostic assistance and streamline workflows, with applications curated by the enterprise imaging platform              |                                       |
| <b>Analytics</b> —Provides clinical and performance (business) analytics to inform decision-making and optimize operations  |                                       |
| <b>Flexible deployment options</b> —Offers a mix of cloud, hybrid, and on-premises solutions, accommodating providers at various stages of digital and imaging maturity |                                       |



# AGFA HealthCare Enterprise Imaging

## Single, comprehensive platform

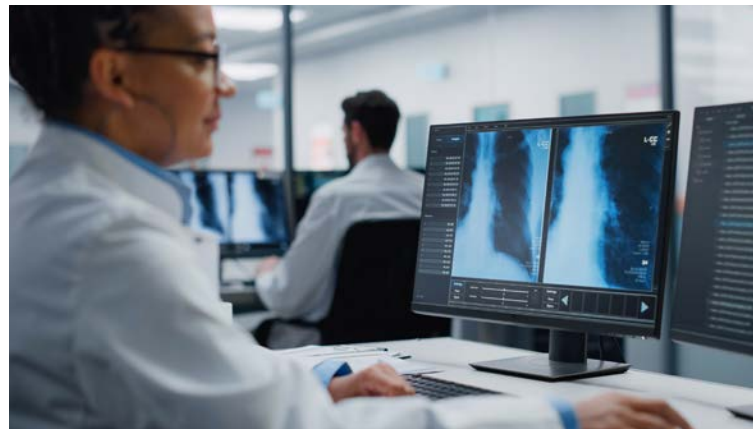
When radiologists and other healthcare team members can access the same platform and data set, the potential for effective collaboration significantly increases. The platform approach also enables seamless integration and embedding with an EHR, enabling care teams to access an Imaging Health Record™ for a comprehensive and consistent holistic patient view.

This environment facilitates real-time communication, joint decision-making, and shared insights across specialties. A collaborative approach ensures that all care team members work with the most accurate and up-to-date information, leading to more informed and cohesive patient care.

IT teams also benefit from a platform that streamlines the enterprise imaging investment, which ties to installation/maintenance, security, support, cost, and other efficiencies versus multi-vendor builds.

## Federation

Federation solves issues of data silos and use challenges in the enterprise by yielding seamless access to all imaging data, regardless of storage, without the need to transfer files. This differentiates AGFA HealthCare from other market solutions that require physically moving data or manually combining data to create the necessary dataset. Federation also makes it easier for radiology stakeholders to access a more comprehensive view of the patient's medical history, previous imaging studies, and relevant clinical data via seamless access.



## Streaming

Radiologists should never compromise speed or quality. AGFA's native streaming approach means that pixels are streamed rather than physically moving data. Imaging demands streaming with blazing fast speed and full fidelity, instead of lossy compressed images. In the case of AGFA HealthCare Enterprise Imaging, this is made possible by a proprietary CPU-driven rendering technology that eliminates the need for a GPU, which is a unique approach in the industry. The company's streaming solution offers a unified work environment through a browser client, requiring minimal to no IT support, significantly improving the remote reading experience without burdening IT.



### Orchestrated workflow

With AGFA HealthCare's approach, imaging procedures can be read in the hospital as well as remotely, while distributing them to the appropriate radiologist for the job across the organization. Images at the organizational level, across the entirety of sites within a provider organization, are centrally dealt with and orchestrated for effective delivery of services. This capability delivers images across geographically diverse networks through a single intelligent worklist. AGFA's workflow orchestration capability is also native to the Enterprise Imaging platform, versus provider customers using a separate module for worklist orchestration. This approach enables superior orchestration of the reading and reporting process for greater value to the radiology team.

### Intelligence

The adoption of AI tools by radiology is a critical growth driver for AI in healthcare. In the case of AGFA HealthCare Enterprise Imaging, the RUBEE® AI product suite seamlessly integrates with Enterprise Imaging through clinical packages, a flexible platform, or tailored integrations, empowering radiologists to work smarter, not harder.

This simplifies and streamlines the overall customer experience dealing with the overwhelming AI imaging market while instilling trust. Powered by RUBEE, AGFA HealthCare's RUBEE AI packages provide a seamless experience fully embedded in the user's daily workflow, including for workflow orchestration, automation, precision reporting, and smart hanging protocols. Regarding imaging performance management, in-platform business intelligence (BI) removes the need to use other third-party BI applications, as seen with other vendors' solutions.

### Cloud

Provider organizations are not all the same regarding storage and hosting approaches, as each organization has unique requirements and goals related to imaging informatics, imaging digital maturity, and overall digital roadmaps. Regarding next-generation enterprise imaging, the best delivery approach is flexible and based on the specific health system's preferred imaging model (cloud, hybrid, on-premises). AGFA HealthCare exemplifies this with its Enterprise Imaging and Enterprise Imaging Cloud offerings. Its modular and scalable Enterprise Imaging Cloud solutions offer a carefree software operation experience that scales effortlessly as the organization's needs grow. Unlike other solutions, customers receive the same value from their platform regardless of how it is implemented. This includes beneficial attributes from a cloud-native solution, such as use of Kubernetes architecture for superior scalability and use of AI/ML, even if the Enterprise Imaging system is on-premises. Additionally, providing optional cloud software-as-a-service (SaaS) makes licensing and budgeting for customers more predictable, streamlining financial aspects of operations and potentially improving the total cost of ownership (TCO).



# The Last Word on Next-Generation Enterprise Imaging

With myriad challenges, trends, and forces converging on radiology, it is imperative that radiology teams rethink the how, where, and with what of their healthcare delivery approach. Solutions are required to help facilitate a better way in radiology across the network of sites, staff, and IT within provider organizations.

When you think about your healthcare organization's current needs, technology requirements, and desires for enterprise imaging solutions, consider the range of your imperatives and how they relate overall to imaging governance, clinical workflows, and workforce strategies (e.g., retention, work-life balance, technology support). Next-generation enterprise imaging is that one platform, one solution to support these different areas of need.

Choosing the right enterprise imaging strategy means:

- Creating a strategy for and investing in the right vendor and solution to support enterprise imaging governance
- Catalyzing efficiency from the individual to the group level, considering workflow and preferences
- Enabling work experience optimization, radiology work-life balance, and downstream patient benefits

By embracing next-generation enterprise imaging, strategic imperatives become reality, enabling radiology to achieve desired clinical goals, operationally and financially, while directly improving the delivery of radiology services and patient care.

To learn more about AGFA HealthCare, AGFA HealthCare Enterprise Imaging and AGFA HealthCare Enterprise Imaging Cloud visit <https://www.agfahealthcare.com/enterprise-imaging-platform/>.



# End Notes

- <sup>1</sup> Reeves, K. (2023). Playing with Fire: Burnout Among Radiologists a Growing Concern. *Applied Radiology*; 52(6):30-33. Last accessed August 2024 at <https://appliedradiology.com/Articles/playing-with-fire-burnout-among-radiologists-a-growing-concern/>
- <sup>2</sup> Stempniak, M. (2023). Rising patient volumes and staffing challenges: 7 takeaways from a new salary survey of radiologists, techs and administrators. *Radiology Business*. Last accessed August 2024 at <https://radiologybusiness.com/topics/healthcare-management/healthcare-economics/rising-patient-volumes-and-staffing-challenges-7-takeaways-new-salary-survey-radiologists-techs-and/>
- <sup>3</sup> Nicola, G. (2024). How Will We Solve Our Radiology Workforce Shortage? *American College of Radiology Bulletin*. March 2024. Last accessed September 2024 at | <https://www.acr.org/Practice-Management-Quality-Informatics/ACR-Bulletin/Articles/March-2024/How-Will-We-Solve-Our-Radiology-Workforce-Shortage>
- <sup>4</sup> Ibid.
- <sup>5</sup> Frost & Sullivan. (2024) Top 5 Growth Opportunities in Medical Imaging and Informatics Market, 2024. Report PFD3-50, p. 7.
- <sup>6</sup> AHEC Blog. (2021). Radiology Staffing Shortages Nation Wide? Last accessed October 2024 at <https://aheconline.blog/2021/09/27/radiology-staffing-shortages-nation-wide/>
- <sup>7</sup> American College of Healthcare Executives (ACHE). (2024). Top Issues Confronting Hospitals. Last accessed October 2024 at <https://www.ache.org/learning-center/research/about-the-field/top-issues-confronting-hospitals/>
- <sup>8</sup> Frost & Sullivan. (2023) Global Medical Imaging Equipment and Informatics Outlook 2023. Report PE60-50, p. 30.
- <sup>9</sup> Brink, J., Hricak, H. (2022) Radiology 2040. *Radiology*. <https://doi.org/10.1148/radiol.222594>
- <sup>10</sup> Tague, B. (2024). M&A in Healthcare: 2024 Outlook. AlphaSense. Last accessed August 2024 at <https://www.alpha-sense.com/blog/trends/mergers-and-acquisitions-in-healthcare-outlook/>
- <sup>11</sup> Agency for Healthcare Research and Quality (AHRQ). What is workflow? Last accessed October 2024 at <https://digital.ahrq.gov/health-it-tools-and-resources/evaluation-resources/workflow-assessment-health-it-toolkit/workflow/>
- <sup>12</sup> Dhanoa, D., Dhesi, T., Burton, K., et. al. (2013). The Evolving Role of the Radiologist: The Vancouver Workload Evaluation Study. *J Am Coll Radol*, 10(10): 764-769.
- <sup>13</sup> Petscavage-Thomas, J., Hardy, S., Chetlen A. (2022). "Mitigation Tactics Discovered During COVID-19 with Long-Term RTAT and Burnout Reduction Benefits." *Academic Radiology*. <https://doi.org/10.1016/j.acra.2022.04.016>
- <sup>14</sup> Frost & Sullivan. (2024) AI-enabled Medical Imaging Market, Global, 2024-2028. Report PFIIF-50.

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