AGFA HealthCare

Enterprise Imaging 2030

From Data to Insight, From Insight to Impact

The Future of Imaging,
The Flow of Intelligence

That's life in **flow.**

White Paper:
Enterprise Imaging 2030

Executive Summary

By 2030, AGFA HealthCare's Enterprise Imaging (EI) will move beyond today's role as the imaging hub of healthcare to become the clinical intelligence hub: an adaptive ecosystem that not only consolidates and orchestrates imaging data but actively interprets and delivers insights in real time.

Unlike the fragmented silos of past departmental imaging systems, tomorrow's EI will function as an intelligence backbone, seamlessly connecting multimodal imaging, AI-driven workflows, clinical collaboration and patient engagement across every specialty and expanding health network. This shift — already taking shape in our latest releases — will enable health systems to achieve precision care delivery, operational resilience and regulatory-grade quality assurance.

AGFA HealthCare's vision is rooted in the strong foundation already established today: a proven platform supporting radiology, cardiology, pathology and beyond. By 2030, this foundation will evolve into an AI-native, self-healing, intelligence-driven ecosystem that empowers clinicians with context-aware orchestration and personalized guidance, and supports CIOs with secure, scalable, and resilient infrastructures.

This paper outlines AGFA HealthCare's framework, real-world scenarios and guiding principles for healthcare leaders and analysts, showing how Enterprise Imaging 2030 is not about reimagining from scratch, but rather about elevating the intelligence of what is already a trusted foundation.

The Imperative for a Next-Generation Enterprise Imaging Platform

From Modality Silos to Multispecialty Integration

Enterprise imaging, as defined by HIMSS-SIIM, refers to strategies that capture, manage, store, distribute, view, exchange and analyze all clinical imaging and multimedia content.

Historically focused on radiology, its scope today must include dermatology, cardiology, pathology, ophthalmology, endoscopy, point-of-care ultrasound and other imaging service lines.

AGFA HealthCare's Enterprise Imaging is still the most respected EI system designed from the ground up to meet these objectives.

Addressing Rising Data and Adoption Pressures

Global EI market projections indicate rapid growth: from USD 6.2 B in 2022 to USD 11.1 B by 2030 according to The Advisory Board, representing a 79% increase. Factoring in AI and clinical repository capabilities, this reflects rising investments in systems that go beyond image storage to orchestrate insights.

Enterprise Imaging will transform this massive influx of new data into the right information at the right time to the fingertips of users, supporting an even faster and more informed diagnosis.

Four Pillars of a Differentiated 2030 EI Platform

A differentiated Enterprise Imaging platform is defined by how intelligently it connects data, care teams and patients across the continuum of care. AGFA HealthCare frames this transformation through four foundational pilla

1. The Hub — Self-Healing, Adaptive Architecture

From an event-driven, serverless backbone that is resilient and scalable — supporting institutional growth, cross-regional or global deployment needs, and specialty expansion — the hub is evolving into a self-healing enterprise architecture.

This predictive resilience detects failures outside the system — whether in the network, through security threats or in external systems — before they occur, and self-corrects to compensate, supporting uninterrupted care delivery.

2. AI Evolution — From Narrow to Predictive Agents

AI is already an integral part of Enterprise Imaging today, enabled through RUBEE® and natively embedded within workflow orchestration, structured reporting and clinical decision support. By 2030, this foundation will evolve into a new level of adaptive intelligence that continuously learns, predicts and optimizes.

In the future, EI will deliver agentic, context-aware intelligence that understands user patterns, benchmarks performance across enterprises, and proactively recommends workflow improvements. It will act somewhat as a coach that analyzes how radiologists read, prioritizes studies based on clinical impact, and automatically aligns follow-up scheduling with institutional or guideline-based protocols. This evolution will transform AI from an enabler within workflows to an active partner in clinical performance and decision-making, amplifying expertise so that every case benefits from the collective intelligence of the enterprise.

3. Longitudinal Intelligence — From Patient Timelines to Digital Twins

Today's patient imaging timeline provides a powerful unified patient imaging health record. AGFA HealthCare will evolve this into a longitudinal intelligence layer, enabling chronic disease surveillance, predictive analytics and digital twin models that simulate disease progression and therapy response. This will move EI beyond visualization into proactive clinical decision support.

4. Extensible Engagement — Intelligence in Every Hand

Today, Enterprise Imaging already provides secure, role-based access for patients, referring physicians and care teams.

Reports, key images and structured findings are easily available, supporting transparency, communication and collaborative decision-making.

This strong foundation will advance into a more intelligent and personalized form of engagement. Patients will receive curated summaries and visual explanations that make findings easier to understand and follow. Referring physicians will view interactive reports that include relevant context, trends and recommendations within their daily workflows. Multidisciplinary teams will collaborate through shared and interactive case views that bring together imaging, pathology and genomics in one environment. In this way, Enterprise Imaging is evolving into a platform that enables understanding, helping every stakeholder receive the right intelligence in the right format at the right time.

At AGFA HealthCare, we're pioneering a visionary, technologically advanced architecture designed to intelligently and dynamically enable optimized clinical workflows that will support every image-rich specialty across the extended health enterprise."

Rob Mayer
Chief Product Officer,
AGFA HealthCare

Emerging AI Technologies Powering EI 2030

The following emerging technologies illustrate how foundational models, workflow agents and language-driven interfaces will influence and drive the reshaping of Enterprise Imaging solutions from the inside out.

■ **Large Language Models (LLMs) in Imaging**

LLMs have moved beyond basic report translation to serve as potential clinical reasoning aids, contextual summarizers and conversational interfaces. They streamline image interpretation and documentation, integrating with guidelines (e.g., ACR BI-RADS®, ACR LI-RADS®), and generating lay summaries (Reference Link). Generative AI is currently helping radiologists with administrative tasks — improving efficiency without replacing clinicians (Business Insider).

■ **Vision Foundation Models & Multimodal AI**

Recent research has established zero-shot, multimodal diagnostic capability through vision-language models. For instance, Nature reported that VLMs integrating imaging and clinical data significantly improved diagnostic performance in acute pathologies.

These models offer cross-modality interpretation and generalization, potentially helping reduce reliance on isolated specialty models and enhancing scalability across institutional settings.

■ **Agentic AI & Workflow Automation**

Agentic AI goes beyond automation by learning from individual user behavior and combining it with enterprise-wide best practices to act as an intelligent workflow coach. Instead of simply executing tasks, these agents observe, adapt and recommend, helping clinicians optimize how they read studies, prioritize cases, or structure reports.

For example, an agent could detect that a radiologist consistently reviews follow-up CT scans later in their worklist, and suggest reordering based on urgency or patient risk. It could also integrate with scheduling systems to automatically track follow-up recommendations (e.g., "repeat CT in 3 months"), monitor compliance, and alert care teams or patients when overdue. This would reduce manual tracking burdens, prevent missed follow-ups, and support guideline adherence.

In the future, with the evolution of RUBEE® Orchestrator, these intelligent agents will not only handle routine assignments such as study distribution, QA flagging and workload balancing, but will also proactively coach clinicians and care teams, embedding continuous learning and performance improvement into Enterprise Imaging.

■ AI-Driven Structured & Synoptic Reporting

Large Language Models (LLMs) and multimodal models will help auto-populate fields in EI's structured, rules-based templates, cross-reference prior studies, and flag discrepancies in real time, helping reduce errors and improve compliance.

For instance, in prostate MRI reporting, an AI-augmented synoptic template may automatically populate ACR PI-RADS® scores, lesion dimensions and anatomical location based on image analysis and prior reports. In the future, such a system will cross-reference historical studies to highlight interval changes, flag missing or inconsistent measurements, integrate with treatment plans and effects, and prompt the radiologist if follow-up recommendations deviate from standardized guidelines. This will enhance reporting consistency, support compliance with quality standards, decrease the risk of omitting critical findings, and significantly reduce cognitive load on the radiologist.

■ Digital Twins & Predictive Imaging Models

In oncology, AI models are increasingly used to integrate imaging, histopathology and molecular data to support personalized treatment planning. For example, in the future, a multimodal AI tool could analyze a patient's MRI for tumor volume and diffusion characteristics, combine that with whole-slide pathology images to assess cellular architecture, and link the findings to known genetic markers extracted from the EHR. This cross-domain synthesis would enable early risk stratification and therapy selection, supporting the development of predictive digital twin models that would evolve over time. Studies in prostate and breast cancer have shown that such multimodal approaches can improve diagnostic accuracy and treatment response prediction compared to imaging alone (Zhang et al., 2023; PMID: 37657021).

■ Explainable AI & Governance

Explainability and transparency are essential for the safe and ethical deployment of AI in medical imaging. As AI systems influence diagnostic decisions, clinicians must be able to understand *why* a model made a particular prediction or recommendation. A growing body of literature supports the integration of explainable AI techniques, such as attention heatmaps and natural language rationales. This will help improve clinician trust, support regulatory compliance, and facilitate real-time validation in imaging workflows.

Governance frameworks are also evolving. To comply with standards including the EU AI Act and the FDA's Good Machine Learning Practice (GMLP) guidance, future Enterprise Imaging platforms must support federated monitoring, version tracking of deployed models, and bias and drift detection mechanisms. These capabilities are crucial to maintaining model performance across diverse patient populations and over time, particularly as imaging protocols and clinical data shift.

> ❝ *AI, foundation models, and agentic workflows are not just theoretical concepts, they're already shaping the way we may engineer and validate the next generation of Enterprise Imaging. Our platform strategy envisions integration of explainability, reasoning and adaptive orchestration directly into the imaging workflow.*
>
> **Dan Brown,**
> Chief Technology Officer,
> AGFA HealthCare

Clinical Impact Scenarios:
Connect the Dots

By 2030, Enterprise Imaging will not only accelerate workflows but also intelligently and dynamically guide care decisions across the patient journey.

- **Breast Cancer Care:**
  Multimodal AI within EI will unify mammography, ultrasound and MRI findings, auto-generate structured summaries aligned with ACR BI-RADS®, and push personalized follow-up plans to both patients and referring physicians. Instead of simply delivering a report, the platform will act as a shared decision-support coach for the entire care team: radiologists, oncologists and primary care.

- **Virtual Tumor Boards:**
  Rather than assembling static reports, EI will stream radiology, pathology and genomics data into live, interactive dashboards. AI agents will surface guideline-based insights highlighting treatment options validated against the patient's digital twin, enabling faster, evidence-based and collaborative decisions.

- **Global & Remote Care:**
  In underserved areas, EI platforms will stream images securely to global experts, route cases based on urgency, ensure follow-up compliance, and coach local clinicians on best practices learned from international peers.

Together, these scenarios illustrate how EI will evolve from orchestrating data to orchestrating care itself: augmenting clinicians' work and their confidence, delivering proactive intelligence, reducing variability, and closing gaps across the care continuum.
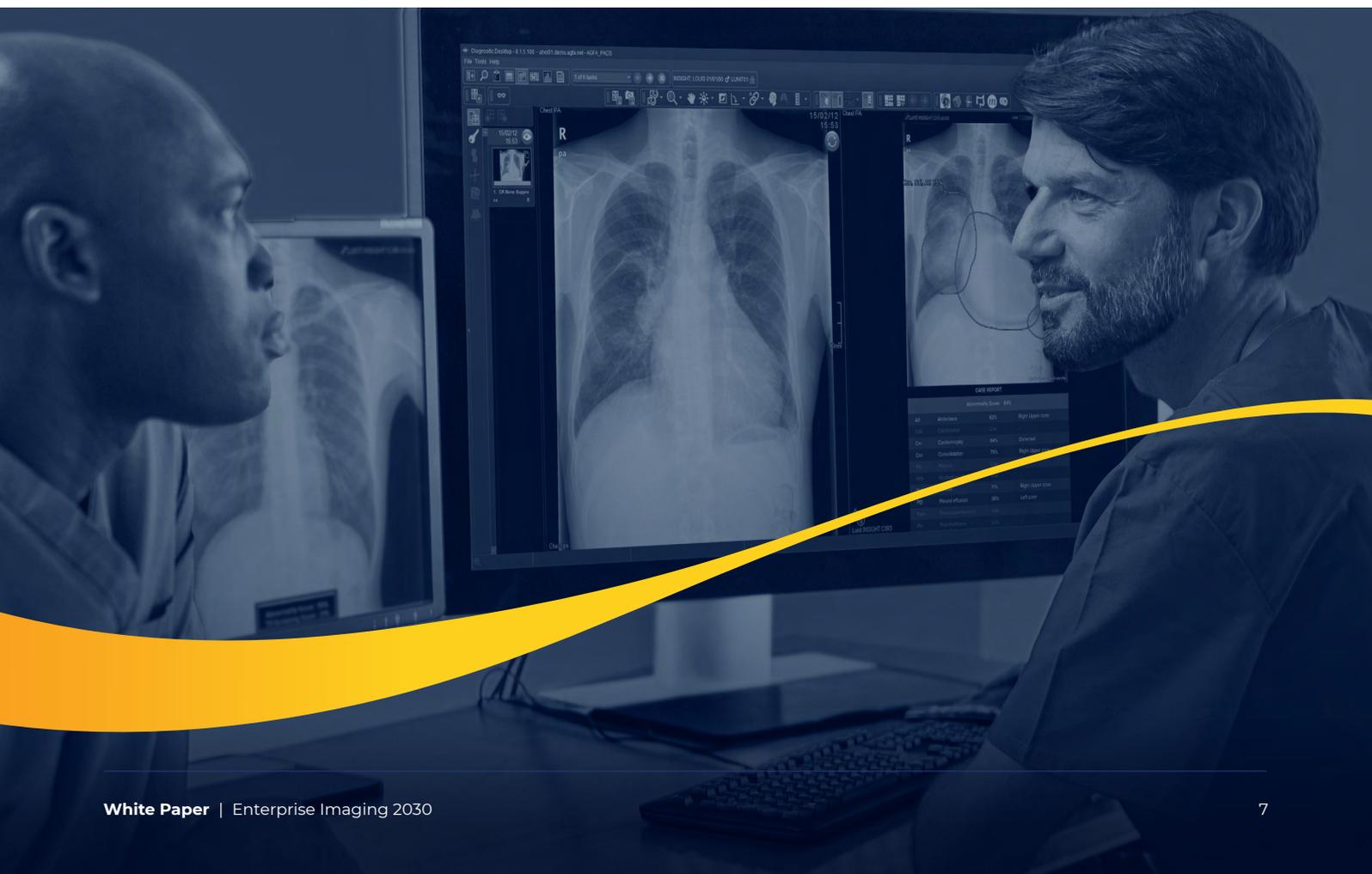
Operational & Workforce Transformation

Routine administrative tasks such as drafting reports, preparing summaries, and reconciling data across systems are increasingly automated with Enterprise Imaging, allowing radiologists to focus on what they do best, with interpretation, consultation and clinical oversight. New governance and roles will emerge to oversee ethical algorithm deployment, monitor system performance, and support cross-disciplinary workflows.

In teaching and research environments, Enterprise Imaging will evolve into an intelligent academic assistant. Through conversational analytics and embedded literature recommendation engines, radiologists and residents will be able to query cases ("Show similar MRI cases with histopathology correlation") or receive relevant publications and guidelines linked directly to the current study context. These features will help connect clinical care and continuous learning, allowing institutions to convert their imaging data into an active knowledge source.

Conversational analytics and business intelligence tools within EI will further support operational decision-making. Leaders will be able to ask natural-language questions such as, "How many follow-up CT scans for indeterminate nodules were completed within 90 days?" or "Which subspecialty readings show the highest turnaround time variance?" The system will be able to surface insights instantly, driving more informed resourcing, quality assurance and performance benchmarking.

Value Realization & Business Model Architecture

Clinical and financial evaluations must be closely coupled. AI's value assessment, whether reducing patient readmissions, preventing missed diagnoses, optimizing modality use needs, or restraining the administrative burden for clinicians will become the hallmark of evidence-based adoption and acceptance of AI tools. Capturing early wins in scarce resource domains and high-impact clinical areas (stroke, oncology, chest pain) will help build momentum for broader adoption. AGFA HealthCare has focused on AI's value realization since the inception of our AI strategy over 10 years ago.

> *Tomorrow's Enterprise Imaging leaders will be distinguished by their ability to connect data, people and care pathways, intelligently, dynamically and transparently. AGFA HealthCare's strategy is built around enabling this convergence, helping health systems unlock clinical and operational value through a platform-centric approach."*
>
> **Véronique Lessens,**
> Global Head of Strategy,
> Marketing, Communications,
> AGFA HealthCare

The Next Frontier - Multimodal Foundation Models, The Future Brain of Enterprise Imaging

A Paradigm Shift Toward Generalist AI in Imaging

Traditional radiology AI has largely focused on task-specific algorithms: one model for lung nodule detection, another for breast density scoring, and yet another for intracranial hemorrhage. While effective in narrow domains, these systems are unable to scale across the diverse imaging needs of a health system.

By contrast, multimodal foundation models are now emerging as the next frontier. Trained on large datasets of paired medical images and text (e.g., reports and clinical notes), these models learn to understand the semantic alignment between visuals and language.

In a healthcare context, this means models can:

- **Classify images** across multiple findings without needing pixel-level labels.
- **Draft radiology findings** by converting visual content into language.
- **Predict disease risks** by linking prior notes and imaging patterns over time.
- **Explain its reasoning** using aligned captions or references from source data.

Enterprise Imaging will move from being an AI-enabled system to an AI-enabling ecosystem, one that can host, govern and validate these powerful models safely across the enterprise. The platform will provide the multimodal data, interoperability and oversight that foundation models need to operate responsibly. In short, Enterprise Imaging will become the clinical and technological backbone through which generalist AI can deliver trusted, explainable and system-wide intelligence.

Why Multimodal Models Matter for EI 2030 and Beyond:

- **Scalability Without Task-Specific Retraining**
  Health systems need imaging AI that works across hundreds of findings and modalities. Foundation models adapt quickly, eliminating training overhead and validating multiple narrow models.

- **Rapid Deployment Across Institutions**
  The zero-shot capabilities of these models make them ideal for underserved, resource-limited or rapidly changing clinical environments where training data is sparse.

- **Seamless Integration with Clinical Context**
  Unlike traditional image-only models, these systems ingest notes, labs, and prior reports thereby making them more aligned with how radiologists and clinical users think and reason.

- **Transparency and Explainability**
  These models can generate natural language justifications or attention heatmaps, aiding clinical trust and compliance with regulatory expectations (e.g., EU AI Act, FDA GMLP).

The Road Ahead

As Enterprise Imaging platforms mature into intelligent ecosystems, multimodal foundation models will be central to:

- **Universal triage and interpretation**
- **Multispecialty collaboration across radiology, pathology and genomics**
- **Conversational AI for patient engagement and explanation**

These models won't replace radiologists; they will replace imaging systems that fail to empower radiologists and other clinicians with real-time, cross-domain, intelligent support, or to provide comfort, confidence and continuity throughout their diagnostic journey.

A competitive Enterprise Imaging platform will:

- **See the patient's entire journey,** not just the individual studies.
- **Embed AI deeply,** not bolt it on.
- **Govern ethically and transparently,** not remain a black box.

Enterprise Imaging must evolve into an orchestrated intelligence backbone powering multimodal diagnostics, AI-native workflows, and patient engagement. The future of Enterprise Imaging lies not in isolated upgrades, but in ecosystem-wide transformation, thereby merging data, teams and technology across the care continuum.

About the Author:

Dr. Anjum Ahmed (MBBS, MBA, MIS) is a seasoned healthcare IT professional with over 26 years of industry experience in health-tech innovations. As Global Chief Medical Officer, Dr. Ahmed leads the medical affairs activities, providing oversight to the pre- and post-market clinical risk assessment of AGFA HealthCare's solutions.

In addition, Dr. Ahmed advises the HealthCare Leadership and their teams in the development of solutions strategy, the clinical and medical aspects of technology innovation, and AI. Before his current role, Dr. Anjum worked at GE Healthcare for 12 years, implementing clinical and imaging IT solutions globally.

Dr. Ahmed's credits include such industry-first innovations as the conceptualization, development, and implementation of AGFA HealthCare's first AI projects, as well as best-selling books on AI and related case studies.

Selected References

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RUBEE® Orchestrator

RUBEE® AI

VLM clinical improvement:
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Explainable AI:
ScienceDirect survey

Advisory Board Webinar held 19 February 2025:
"Imaging market trends in 2025"

That's life in **flow.**

Experience Your Enterprise Imaging Future

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Discover how AGFA HealthCare's Enterprise Imaging platform can transform your operations—with smarter workflows, seamless integration, and scalable solutions all shown in a live demo tailored to your organization.

- Hear what our Customers Say

- Explore more

- Contact us