

Global Medical Imaging Equipment and Informatics Outlook and Growth Opportunities, 2024

**Rising Demand for Primary Care,
Increasing Investment in
AI-based Image Analysis
Solutions, and Rapid Adoption
of Enterprise Imaging in
Multiple Specialties are Driving
the Medical Imaging Industry**

**Global Transformational Health
Research Team at Frost & Sullivan**

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Author: Anannya Sinha

Analysis Highlights

Analysis Highlights

2023 Highlights	Rising demand for primary care, high prevalence of chronic diseases, and high footfall in screening centers drove industry growth in 2023. The year marked an increasing focus on oncology and precision imaging, indicated by the growth of computed tomography (CT), mammography, and molecular imaging. In addition, the imaging informatics industry was largely driven by medical image diagnosis and visualization solutions due to the rising demand for fast and accurate diagnosis.					
2024 Predictions	2024 predictions for the industry include partnerships between outpatient diagnostic imaging centers and retail outlets, rising adoption of multimodal imaging, increasing use of point-of-care (PoC) ultrasound in primary care, growing adoption of enterprise imaging among digital pathology customers in the United States and Europe, and significant traction for AI-as-a-service.					
Growth Opportunities	AI for predictive analytics during equipment maintenance, sustainability for magnetic resonance imaging (MRI), AI-based image processing and interpretation, and enterprise cloud-based imaging informatics are the growth opportunity areas for vendors in the medical imaging equipment and informatics industry.					
Future Outlook	The focus on providing personalized care through precision imaging, the increasing shift to nonhospital settings, healthcare providers' rapid adoption of cloud infrastructure and AI, and the focus on AI-based imaging algorithms for cardiology will provide opportunities for the medical imaging equipment and informatics industry.					
Project Scope	Study Period	2021–2028	Practice Areas	<ul style="list-style-type: none"> • Medical imaging equipment • Medical imaging informatics 	Geographic Scope	<ul style="list-style-type: none"> • North America • Europe • Asia-Pacific (APAC) • The Middle East and Africa (MEA) • Rest of the World (RoW), which comprises Latin America (LATAM)
	Base Year	2023				
	Forecast Period	2024–2028				

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Source: Frost & Sullivan

Forecast versus Actuals

Frost & Sullivan Predictions for 2023	What Actually Happened: 2023 Highlights
Marketplace platforms in radiology will be in the spotlight, enabling software-as-a-service (SaaS)-based solutions.	<ul style="list-style-type: none"> In 2023, marketplace platforms for AI-based medical imaging applications gained momentum. Companies such as Butterfly Network and Sectra launched in-house marketplace platforms or collaborated with AI-based solution providers, respectively.
Investments in AI-based radiology will slow down.	<ul style="list-style-type: none"> The number of funding deals reached pre-pandemic levels for AI-based radiology. Investments recorded a decline of about 50% in 2023 from 2022. Most of the funding was gained by medical imaging companies located in North America and APAC.
Visualizing outcomes by unifying data from medical imaging and anatomical pathology will become mainstream.	<ul style="list-style-type: none"> Integrated diagnostics gained momentum in 2023. Among the several FDA approvals in medical imaging, Lunit received FDA approval for LUNAR AI, which integrates data from pathology and mammography imaging.
C-arm procedure volumes in US-based ambulatory surgical centers (ASCs) will grow by 20%.	<ul style="list-style-type: none"> Post-pandemic, ASCs in the United States performed more than half of all outpatient surgical procedures using medical imaging equipment. Day surgeries for orthopedic, vascular, and cardiac clinical areas drove growth.
Medical imaging workflow solutions will triple their cloud adoption.	<ul style="list-style-type: none"> Cloud deployment experienced significant growth in enterprise imaging IT deals to overcome radiologist workflow challenges. Enterprise imaging IT companies (Sectra, for example) reported that the major share of deals in medical imaging informatics solutions were cloud-based¹.

¹ <https://store.frost.com/wip/PF13-01-00-00-00>

Source: Frost & Sullivan

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Top Predictions for 2024

Strategic partnerships between outpatient diagnostic imaging centers and retail outlets will double in the United States.

The increasing adoption of multimodal imaging will facilitate integrated care and breakdown silos within imaging departments for oncology care.

Point-of-care ultrasound (POCUS) will see higher utilization in the primary care segment.

The adoption of enterprise imaging among digital pathology customers in the United States and Europe will increase.

AI-as-a-service will gain significant traction.

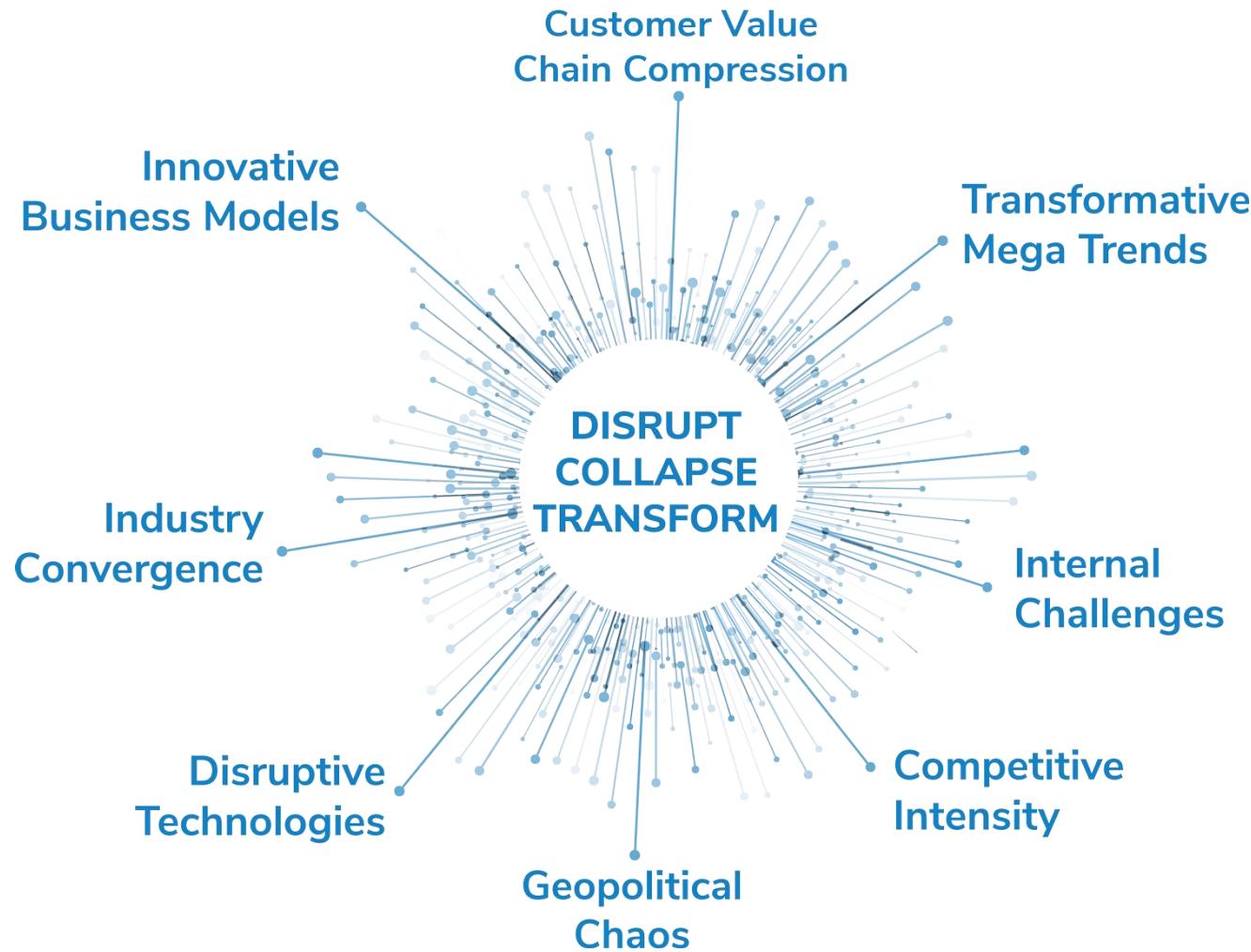
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Source: Frost & Sullivan

Strategic Imperatives

Why is it Increasingly Difficult to Grow?

The Strategic Imperative 8™: Factors Creating Pressure on Growth



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Source: Frost & Sullivan

The Strategic Imperative 8™

Innovative Business Models A new revenue model that defines how a company creates and capitalizes economic value, typically impacting its value proposition, product offering, operational strategies, and brand positioning.	Customer Value Chain Compression Customer value chain compression as a result of advanced technologies, internet platforms, and other direct-to-consumer models that enables reduction in friction and the number of steps in customer journeys.	Transformative Megatrends Global forces that define the future world with their far-reaching impact on business, societies, economies, cultures, and personal lives.	Internal Challenges The internal organizational behaviors that prevent a company from making required changes.
Competitive Intensity A new wave of competition from start-ups and digital business models that challenge the standing conventions of the past, compelling established industries to re-think their competitive stance.	Geopolitical Chaos Chaos and disorder arising from political discord, natural calamities, pandemics, and social unrest that impact global trade, collaboration, and business security.	Disruptive Technologies New, disruptive technologies that are displacing the old, and significantly altering the way consumers, industries, or businesses operate.	Industry Convergence Collaboration between previously disparate industries to deliver on whitespace cross-industry growth opportunities.

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Source: Frost & Sullivan

The Impact of the Top 3 Strategic Imperatives on the Medical Imaging Equipment and Informatics Industry

SIB

Transformative Megatrends

- Mobile imaging equipment purchases are increasing to reach a wider patient base for disease screening programs and basic diagnostic tests. Owing to significant discrepancies in access to healthcare in marginalized communities, both established and emerging economies' public healthcare sectors will implement universal basic coverage.
- AI, 5G, and cloud technologies are changing work patterns in the healthcare industry and disrupting the ultrasound space.

Why

- In developing economies and remote communities with few trained personnel, equipment providers collaborate with healthcare institutions to provide options and solutions that are appropriate for their resources, assuring the availability and accessibility of portable equipment.
- Ultrasound equipment will incorporate AI, 5G, and cloud technology to streamline and improve diagnostic, treatment, and learning procedures.

Frost Perspective

Innovative Business Models

- The increasing use of ASCs for clinical procedures, such as orthopedic, spinal, and cardiovascular care, opens up growth opportunities for medical imaging equipment and informatics companies.
- However, as ASCs receive lower reimbursement than hospitals, traditional commercial models are deemed expensive for ASCs. Moreover, ASC-based doctors are more price-sensitive than those at hospitals.

- Owing to the limited availability of capital investment for nonhospital outpatient centers, medical imaging equipment and informatics companies offer flexible financial arrangements, such as managed equipment service (MES) contracts and pay-per-use models.

Customer Value Chain Compression

- Enterprise imaging IT companies integrate multiple medical imaging informatics solutions into one platform to provide a one-stop solution at the enterprise level.
- Medical imaging IT companies partner with multiple AI software companies to provide AI-based solutions along with their imaging informatics solutions.

- As healthcare consolidation intensifies, cloud-based enterprise imaging adoption will increase in the United States and Europe. Similarly, AI is rapidly being integrated into medical imaging workflow solutions, allowing radiologists to save time on operational tasks while also improving care quality.
- Sectra offers Sectra Amplifier Services, its AI-as-a-service business model that offers 30 medical AI applications from various suppliers for customers to choose from.

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Source: Frost & Sullivan

Growth Opportunities Fuel the Growth Pipeline Engine™



Source: Frost & Sullivan

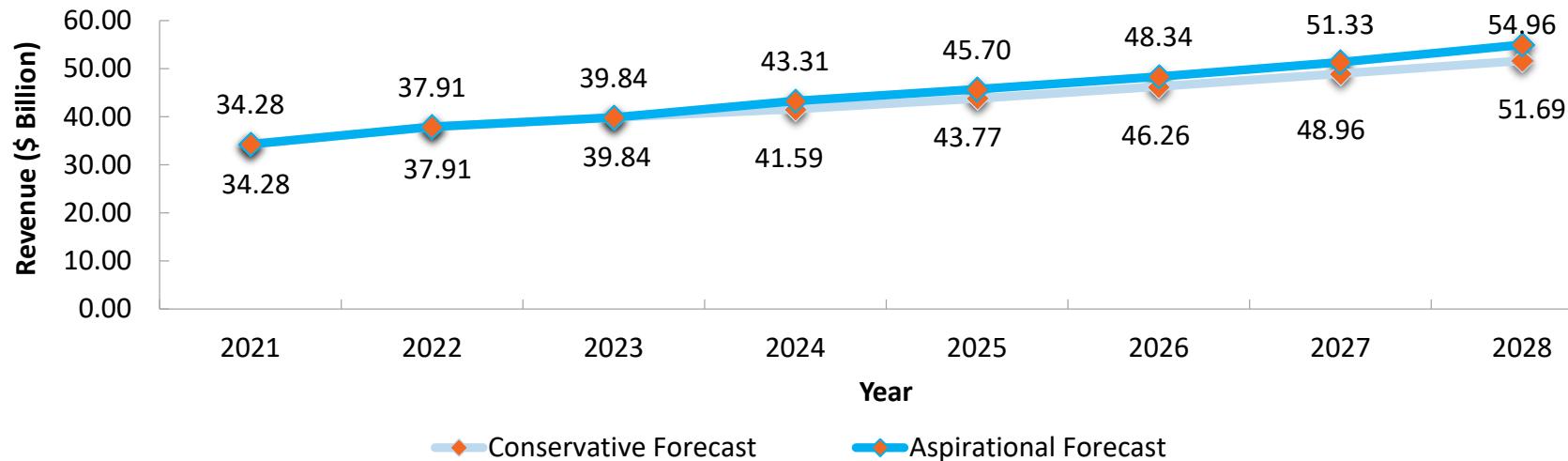
Growth Environment

Global Medical Imaging Equipment and Informatics Dashboard

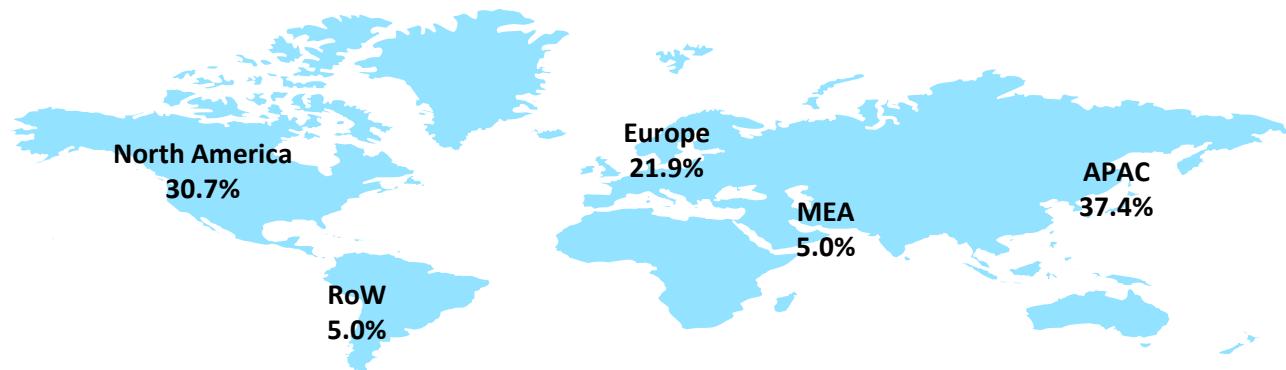
Medical Imaging Equipment and Informatics: Revenue Forecast, Global, 2021–2028

Aspirational CAGR, 2023–2028 = 6.6%

Conservative CAGR, 2023–2028 = 5.3%



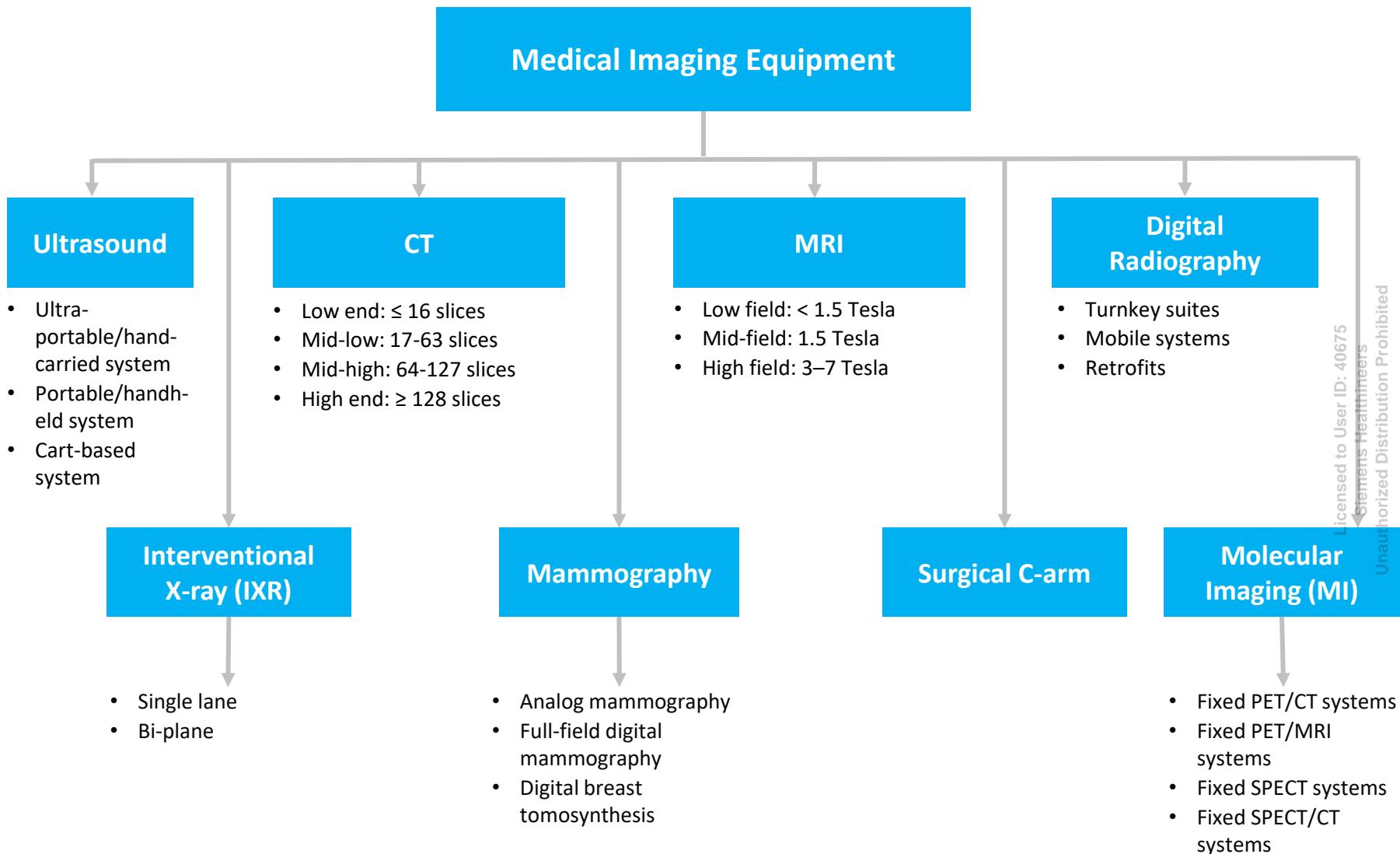
Medical Imaging Equipment and Informatics: Industry Share by Region, Global, 2023



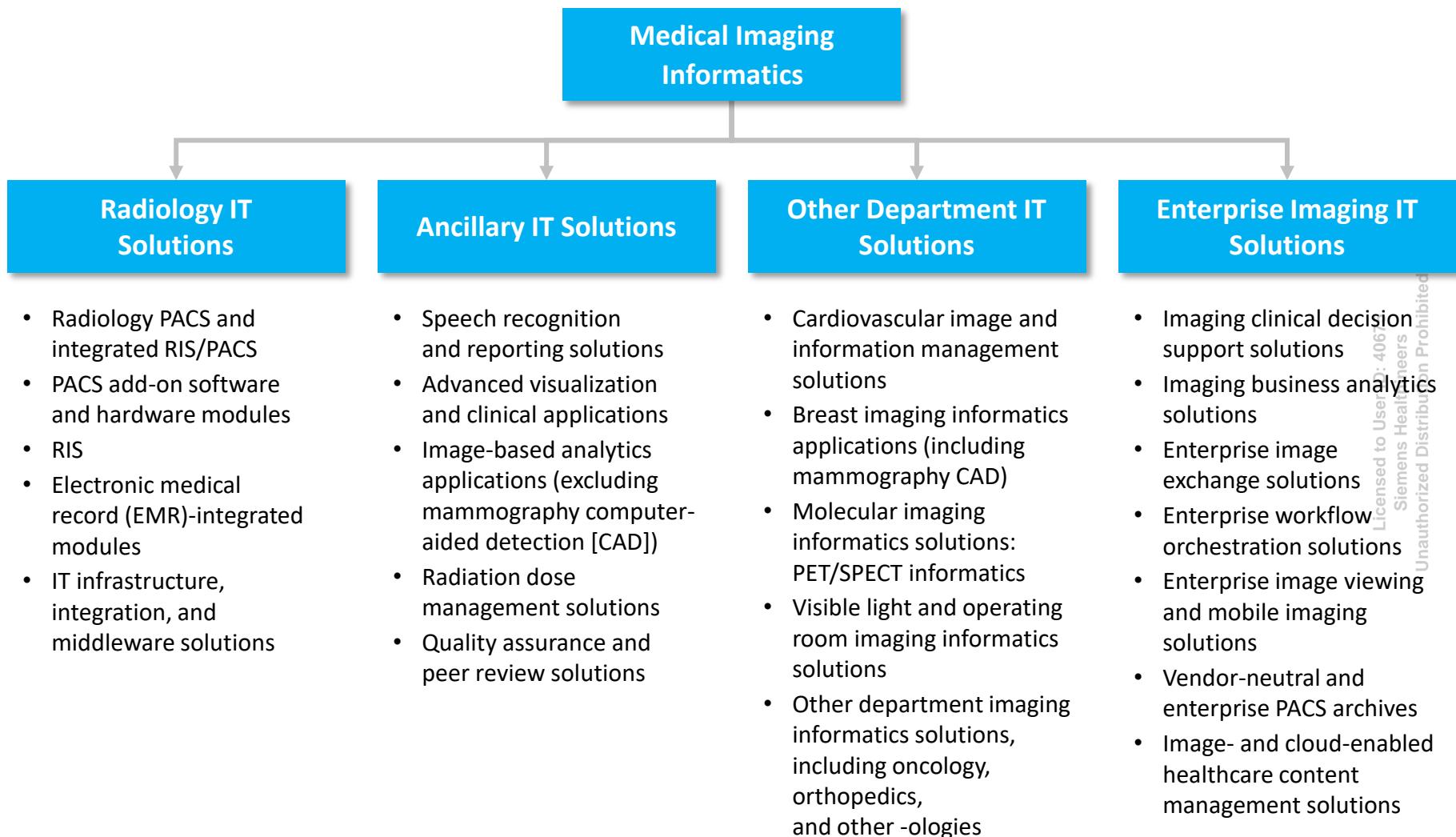
Note: All figures are rounded. The base year is 2023. Source: Frost & Sullivan

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Medical Imaging Equipment Segmentation



Medical Imaging Informatics Segmentation



Key: The forecast only focuses on the segments, that is, radiology, ancillary, other department, and enterprise imaging IT solutions.

Source: Frost & Sullivan

Growth Environment

- The medical imaging equipment and informatics industry's revenue increased by 5.1% in 2023, mainly driven by the rising demand for primary care, the high prevalence of chronic diseases, and the high footfall in screening centers. In addition, rising government spending on healthcare, increasing procurement of imaging equipment, and high adoption of AI-based imaging solutions drove imaging equipment growth.
- Post-pandemic and 2023 revenue indicated supply chain improvements for each medical imaging modality at different points in time. Revenue for 2021 and 2022 showed high MRI procurement and the normalization of IXR and surgical C-arms in 2023. Demand for mammography and molecular imaging also increased in 2023. Frost & Sullivan anticipates that medical imaging equipment procurement will stabilize over the next few years, until 2028.
- In recent years, the adoption of mobile imaging systems, such as portable ultrasound and portable X-ray machines, has increased, driven by the need to reach a wider patient base for disease screening programs and basic diagnostic exams as part of patient care.
- North America, Europe, and some parts of APAC are focusing on women's health, including breast cancer screening, and offering pre- and post-pregnancy care. The increased use of mammography, ultrasound, and imaging solutions has enabled appropriate care and treatment for women.
- Meanwhile, both public and private companies across the world are investing in medical imaging R&D to improve portability and facilitate outpatient diagnostic procedures and home-based diagnosis.
- The increasing volume of medical imaging data generated in multiple specialties of hospitals and clinics is driving the need for efficient and integrated medical imaging data management/workflow solutions at the enterprise level—from image acquisition and storage to analysis, sharing, and reporting.

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Source: Frost & Sullivan

Growth Environment (continued)

- While enterprise imaging adoption is still in the nascent stage in the United States, Canada, the United Kingdom, the EU4, and Japan are the major adopters. However, its usage will increase significantly as countries throughout the world experience radiologist burnout and healthcare consolidation.
- Multiple challenges, such as radiologist burden and inefficient imaging operations, have intensified the need for effective medical imaging workflow solutions, including speech recognition and reporting and workflow orchestration solutions, driving medical imaging informatics industry growth.
- Cloud infrastructure and AI are 2 other key levers driving informatics growth, and they are seeing increasing adoption among healthcare providers as they enable security, automatic updates, accessibility, and ease of medical imaging workflows.
- Healthcare subspecialties are increasingly adopting imaging informatics solutions according to their specific requirements; digital pathology, for example, requires precise and high image resolution to detect lesions and cardiology requires accurate and fast diagnosis.

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Macroeconomic Factors

Top 10 Trends for 2024

Trend	2023 Estimate	2024 Forecast	Trend Direction
As key economies lose growth momentum, a mild global growth slowdown from 3.0% in 2023 to 2.6% in 2024 is anticipated.	GDP: 3.0%	GDP: 2.6%	
Headline inflation will continue to decline, and H2 2024 will shift to rate cuts for advanced economies.	CPI: 6.9%	CPI: 5.8%	
Rate cuts will cap upside dollar gains in H2, and weak regional growth will weigh on EUR and EM currencies and get a boost from Q3 2024 onward.	\$/Euro: 1.09	\$/Euro: 1.10	
A moderate unemployment uptick is anticipated, and positive expectations over market sentiment will support labor hoarding.	4.5%*	4.7%*	
Q1 2024 OPEC+ oil production cuts are expected, and Brent prices are likely to average \$83-\$85/barrel.	Brent: \$82/barrel	Brent: \$83-\$85/barrel	
The need for economic resilience will bolster cross-border and cross-industry partnerships within critical minerals supply chains.	N/A	N/A	Used to User ID: 40075 Unauthorised Distribution Prohibited
An economic slowdown is anticipated amidst discretionary spending pullback and elevated interest rates in North America.	GDP: 1.1%	GDP: 0.4%	
A moderate growth pick-up in Western Europe is likely as inflation headwinds ease gradually, with the rebuilding of fiscal buffers expected to take precedence.	GDP: 0.5%	GDP: 0.7%	
Non-oil growth driven by economic diversification will limit the pullback caused by a slowdown in global oil industries in the Middle East.	GDP: 1.7%	GDP: 2.7%	
Emerging economies will drive growth momentum in Asia, and fiscal measures will support China's economic recovery.	GDP: 4.5%	GDP: 4.0%	

*Advanced economy unemployment rate

EM: emerging market

Source: Frost & Sullivan

Top 10 Growth Opportunities

1

India and ASEAN will continue to be expansion hotbeds with relatively high GDP growth rates.

2

The combination of falling inflation and rate cuts in the baseline scenario will drive discretionary expenses.

3

A strong dollar in H1 2024 will boost US travel, and weaker emerging market currencies will benefit exporters in H2.

4

Cross-country migration will create eLearning opportunities, and the gig marketplace will gain prominence.

5

GCC oil production cuts will spur non-oil diversification movement.

6

Electric mobility, semiconductors, and green industries will be the key benefactors of the growing critical minerals industry.

7

Fiscal support in the United States will provide sizable investment opportunities.

8

A services-led economic recovery will bolster opportunities in healthcare, green energy, and tourism in Western Europe.

9

Stabilizing credit conditions and inflation will support investment inflows in the Middle East.

10

Building multi-industry manufacturing capabilities will bolster export potential and lead to sustained economic momentum in Asia.

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Source: Frost & Sullivan

Global GDP Growth—As Key Economies Lose Growth Momentum, a Mild Global Growth Slowdown from 3.0% in 2023 to 2.6% in 2024 is Anticipated

Economic Trend



- Global growth momentum is losing steam, but a modest recovery is expected in H2.** Growth is slowing amid pressures from ongoing wars, elevated inflation and interest rates, persistent high debt, and modest consumer spending. However, inflation will ease and revive demand, and this and other factors will support growth in H2 2024. H1 GDP growth is expected to reach a modest 1.9%, but H2 is likely to grow robustly at 2.8%.
- Advanced economies are forecast to register a meager 1.0% growth in 2024 compared to 3.8% for emerging markets and developing economies.** Frost & Sullivan forecasts a near-zero or below 1% growth rate for several advanced economies, in addition to Q1/H1 contractions. Meanwhile, stronger growth in Asia will bolster global growth momentum. It is worth noting that growth slowed by 0.4 percentage points for both groups from 2023.
- The anticipated weakening of consumer demand will remain a critical growth restraint through 2024, and it will be especially prominent during H1.** Given that demand typically responds to inflation with a lag, high inflation is likely to exert downward pressure on purchasing power in 2024 and result in growth pullback, notably in Q1 and Q2.

Trend Impact on Key Economies



United
States

The US economy will face challenges due to high inflation and interest rates, diminishing pandemic savings, rising household debt, and the resumption of mandatory student loan repayments. Annual GDP for 2024 will grow by a meager 0.8%, with Q2 to Q3 being notably slow due to slowing disposable income growth. This will be partially offset when inflation starts to dissipate in H2.



Euro
Area

Eurozone's GDP growth in H1 2024 will stay near zero. With an anticipated 0.9% GDP growth for 2024, a recession is likely to be avoided. However, significant regional constraints will arise from persistently high energy costs, wage growth impacting profitability, and a broader global economic slowdown.



China

GDP growth could slow to 4.3% in 2024 from an estimated 5.0% in 2023, especially due to Q1's expected weak growth of below 3.0%. The 2024 Chinese economic slowdown is likely to be due to subdued external demand, the Chinese property market crisis, tightened restrictions on high-tech exports imposed by the United States (which affect the technology sector), and a widening fiscal deficit.

Key: Data and analysis stand updated as of 20 November 2023.

Source: World Bank, The Conference Board, European Commission, Frost & Sullivan

Inflation and Interest Rates—Headline Inflation will Continue to Decline, and H2 2024 will Shift to Rate Cuts for Advanced Economies

Economic Trend



- Headline inflation is coming under control, with a sticky underlying core inflation.** Global headline inflation (including volatile energy and food prices) is expected to fall from 8.7% in 2022 to 6.9% in 2023 and further to 5.8% in 2024. Core inflation (excluding energy and food) will fall more modestly, driven by several factors, including labor market dynamics and the pass-through effect of formerly high energy prices.
- Inflation target achievements for advanced economies are deferred.** In developed economies, including the United States and the United Kingdom, headline inflation is not expected to return to target levels before 2025. In emerging market economies, such as India and South Africa, target levels are likely to be reached in 2023/2024 (South Africa achieved its targets in H2 2023).
- Economies will focus on interest rate cuts.** The global interest rate hike cycle appears to have ended. Advanced economies are expected to start cutting interest rates by H2 2024, while emerging market economies, such as Brazil and Vietnam, started cutting interest rates in 2023.

Trend Impact on Key Economies



United States

Headline inflation fell from 3.7% in September 2023 to 3.2% in October 2023 as per the latest reading, with inflation forecast to continue to trend lower in 2024. Inflation is only expected to return to the target level of 2% by 2025 or 2026. The key interest rate will be held steady at 5.25% to 5.50%, with a rate cut by Q2 or H2 2024.



United Kingdom

There was a marked drop in headline inflation from 6.7% in September 2023 to 4.6% in October 2023, which was especially helped by a fall in energy prices. Core inflation saw a slight decline in October 2023. The current 5.25% key interest rate will remain in place in H1 2024, followed by rate cuts starting H2 2024.



India

In contrast to emerging market economies, such as Brazil and Vietnam, which started cutting interest rates in 2023, India is expected to hold to a 6.5% key interest rate in H1 2024. Cuts are expected in H2 2024. India's rate cut timeline is likely to be synchronized with the United States.

Key: Data and analysis stand updated as of 22 November 2023.

Source: IMF, US Bureau of Labor Statistics, Office for National Statistics (UK), Frost & Sullivan



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Currency Trajectory—Rate Cuts will Cap Upside Dollar Gains in H2, and Weak Regional Growth will Weigh on EUR and EM Currencies and Get a Boost from Q3 2024 Onward

Economic Trend



- The strong dollar in H1 will weaken in H2 2024 due to an expected rate cut.** Continued geopolitical uncertainties, including high interest rates, will boost the dollar in H1 2024. However, expectations of a rate cut toward H2 will reduce some of the dollar's appeal.
- Euro and GBP will gain modestly amid the predicted fall in inflation and interest rates.** Weak Eurozone growth and high inflation rates will keep the euro weak in Q1 2024, with a predicted recovery in H2 2024 that will boost the average \$/Euro from 1.09 in 2023 to 1.1 in 2024. A weaker recovery in the United Kingdom will limit gains in the GBP until Q4 2024.
- Emerging market currencies will remain volatile in H1 2024, with some respite expected in the latter half of the year.** Modest gains are anticipated, driven by a flat (and expected H2 easing of the) Fed rate. However, the anticipated Chinese economic slowdown could partially offset emerging market currency gains, particularly affecting South African, Thai, and Latin American currencies. High dollar-denominated debt will continue to pressurize several emerging market currencies in H1 2024, including Egypt, Pakistan, and Argentina.

Trend Impact on Key Economies



China

In the short term, the yuan will be supported by an accommodative monetary policy that will stimulate demand and support growth recovery. After 2023's yuan rally, underpinned by the optimism surrounding the economic rebound, the forecast for 2024 is that the currency will stay flat at about 7.2 per US dollar, which is a marginal increase from 2023.



India

The rupee is likely to remain under pressure in H1 2024. An elevated US Fed rate, high crude prices, strong US treasury yields, and pre-election volatility will lead to a further slide. However, in H2, the rupee is expected to receive a boost, driven by anticipated Fed rate cuts and Reserve Bank of India (RBI) cuts toward the end of the year. The annual average INR/\$ will trend at INR 82 in 2024.



Japan

Elevated inflation coupled with sustained low exports and the earthquake-induced fall in sentiment will keep consumer and business sentiment subdued, causing the yen to depreciate at more than 145 per US dollar in H1 2024. Supportive fiscal and monetary stimuli and an expected drop in inflation could slightly boost the yen and result in an annual average exchange rate of yen 143 per US dollar.

Key: Data and analysis stand updated as of 29 November 2023.

Source: Frost & Sullivan

Labor Market—A Moderate Unemployment Uptick is Anticipated, and Positive Expectations Over Market Sentiment will Support Labor Hoarding

Economic Trend



- Job losses are expected, but the magnitude will be curtailed due to re-staffing challenges.** Slowdown conditions will moderately increase job losses. However, some employers will be cautious about layoffs, given the need to subsequently restaff. Talent shortages will continue to challenge IT/technology employers in advanced countries, opening up overseas employment opportunities in Eastern Europe and Asia.
- Advanced technology adoption will drive recruitment.** Technological advancements will increase hiring in the short-to-medium term, as technology could lead to market expansion, necessitating a larger workforce to meet the growing demand for orders.
- Demand for remote working opportunities is rising.** The share of remote workers is expected to gradually increase from about 13.0% in 2023 to more than 15% in 2024, indicating workers' increased inclination toward flexible job opportunities. Companies can use it as a competitive advantage to attract and retain skilled employees. The rise of AI and automation will free up time for tasks that rely on human abilities. As a result, demand for specialized skillsets will increase.

Trend Impact on Key Economies



United
States

The unemployment rate will hover at historic lows (3.5%) in 2024, indicative of continued labor market strength, despite economic headwinds. The average wage will decline, helping to curb inflation by reducing employer costs; this, however, might pose challenges for employees seeking higher salaries. Low attrition and a falling layoff rate will continue, leading to fewer job postings.



Germany

A weak economy and an influx of Ukrainian refugees joining the labor force will push the unemployment rate to 4% in 2024 from 3.3% in 2023. Falling labor productivity leading to increasingly limited availability of skilled workers will drive labor hoarding and subdued new hiring (at least in H1 2024).



Mexico

In January 2024, Mexico hiked its minimum wage by 20%. This move is a cornerstone of President López Obrador's policy to improve workers' lives amid slow inflation. Small businesses may face layoffs or reduced hours in 2024 due to increased labor costs until they reach operational efficiency over the medium term and offset the impact.

Key: Data and analysis stand updated as of 20 November 2023.

Source: IMF, World Employment Confederation Europe, Frost & Sullivan

Oil Markets—Q1 2024 OPEC+ Oil Production Cuts are Expected, and Brent Prices are Likely to Average \$83-\$85/Barrel

Economic Trend



- Q1 2024 OPEC+ oil production cuts will counter weaknesses in demand growth.** The Organization of the Petroleum Exporting Countries and its allies (OPEC+) has agreed to voluntary oil production cuts in Q1 2024, with Saudi Arabia making the biggest production cuts in the group. OPEC+ cuts will contribute to expectations of a balanced oil industry for 2024, especially with higher oil production in the United States and some tempering in demand growth expected for major oil importer China. The production cuts could extend beyond Q1 2024.
- Risks to oil supply will stem from tensions in the Middle East.** The possible escalation of the Israel-Hamas War into a larger Middle East conflict will disrupt oil supplies and cause oil prices to spike.
- Non-OPEC producers will generate higher oil output.** Higher oil production is expected from the United States, Canada, Brazil, and Guyana in 2024.

Trend Impact on Key Economies



Saudi Arabia



United States



India

Saudi Arabia applied 1 million barrels/day (bpd) of voluntary oil production cuts from July 2023, and this has extended into Q1 2024. Production cuts will dampen growth, but they will also stabilize oil prices, which are important in supporting the country's economic diversification efforts.

Oil production in the United States is expected to touch record levels in 2024 and 2025. In 2024, the country is expected to produce 13.21 million bpd. Higher oil well efficiency is the key factor contributing to higher production in the United States, despite the falling rig count.

India, an oil importer, saw its net oil and gas import bill dip by 21% from April to December 2023 compared to the previous fiscal, when prices shot up following the Russo-Ukrainian War. The expectation of almost the same crude oil price averages in 2023 and 2024 should contain India's import bill. However, any disruption in global oil supplies will result in an escalating oil import bill for the country.



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Critical Minerals Supply—The Need for Economic Resilience will Bolster Cross-border and Cross-industry Partnerships within Critical Minerals Supply Chains

Economic Trend



- Stable critical minerals supply needs will bolster green industry-centric trade deals.** Steady progress toward net-zero targets will warrant bilateral and multilateral trade deals centered on green industry supply chains. Manufacturing of solar panels¹, batteries², and wind turbines³ will be the major driving factors and beneficiaries of this trend.
- Sourcing diversification requires public and private cooperation, and the battery industry value chain is seeing increasing participation.** Key countries, including the United States, Canada, Australia, India, and the European Union, extended more policy support for critical minerals in 2023, and this trend will continue in 2024, with a focus on boosting public-private partnerships. Battery and auto manufacturers will see increased scope for collaboration in 2024 as relatively lower metal prices boost profit margins and generate scope for private investments in the EV batteries sector.
- To restrict China's monopoly, major countries are investing in mining and mineral processing.** To curtail China's dominance in processing rare earth metals, nickel, cobalt, lithium, and copper, the United States, Australia, Canada, and Indonesia are driving investments into mineral mining and processing.

Trend Impact on Key Economies



Australia

Australia is the world's largest lithium exporter, the second-largest cobalt producer, and the fourth-largest rare earth minerals producer. The country's Critical Minerals Strategy 2023–2030 prioritizes attracting international investments, and it has established a \$3.8 billion critical minerals facility.



China

In 2020, China's global share in energy transition materials processing, including rare earth minerals, cobalt, and lithium, stood at 87.1%, 64.7%, and 57.8%, respectively. The country is the largest producer of germanium and gallium, which are required in semiconductors and electronics. In late December 2023, China banned the export of rare earth processing technology through a national security-centric policy; nevertheless, its mineral processing prowess will continue to generate investment opportunities.



Indonesia

Nickel, copper, bauxite, and tin are some of Indonesia's natural resource strengths. Although the government has banned the export of these minerals, conducive local manufacturing policy support will create attractive foreign investment opportunities in the mining, EV, and clean and renewable energy sectors.

¹ Arsenic, germanium, indium; ² Cobalt, graphite, lithium, manganese; ³ Aluminum, rare earth minerals

Key: Data and analysis stand updated as of 2 January 2024.

Source: Australian Government, Energy Monitor, IEA, Frost & Sullivan

North America—An Economic Slowdown is Anticipated Amidst Discretionary Spending Pullback and Elevated Interest Rates in North America

Economic Trend



- **A lagging monetary policy is likely to result in an economic slowdown.** Canada's real GDP growth is forecast to slow in Q2 and Q3 2024, while the United States is expected to experience soft growth in H1 2024 as the months-long interest rate tightening cycle weighs on consumer demand and investment patterns.
- **Despite downward-bound inflation, interest rates will remain elevated through H1 2024, with possible gradual rate cuts in H2 2024.** Core inflation, although on a downward trajectory, has remained elevated. Coupled with the tight labor market environment, central banks will maintain high borrowing costs through mid-2024. A slowdown in growth will push banks to slash rates later in 2024.
- **Discretionary US spending will soften amid falling savings rates and loan repayment mandates.** As consumers tapped into excess savings in 2023, savings rates in the United States fell below the pre-pandemic average, and they will continue to decline. In addition, after pausing for 43 months, federal student loan repayments resumed in October 2023, which will be a key headwind to growth in the short and medium terms.

Trend Impact on Key Economies



United States

Following a 2.3% real GDP growth forecast in 2023, the US economy is likely to expand at a meager 0.8% in 2024. Shrinking savings pools, mandatory loan repayments, and elevated credit costs will cumulatively weigh on individual and business borrowings and drag domestic spending in 2024—a factor that beat expectations and remained robust in 2023. Although consumption is likely to stay in positive territory, the pace of growth will be slower than in 2023. Softening growth, both globally and domestically, will see the Federal Reserve cutting rates in the latter half of 2024.

Canada

Canada's real GDP growth was 1.5% in 2023, and it is forecast to be 0.5% in 2024. Real GDP is expected to remain on a downward trajectory in the first three quarters of 2024, with inflation, consumer debt pressures, and softer export growth acting as the key headwinds.

Western Europe—A Moderate Growth Pick-up in Western Europe is Likely as Inflation Headwinds Ease Gradually, with the Rebuilding of Fiscal Buffers Expected to Take Precedence

Economic Trend



- The region will witness a soft landing due to inflation moderation, which will boost consumption and investment.** Following a 0.5% growth in 2023, Western Europe is expected to witness a growth rate of 0.7% in 2024, as a gradual inflation reduction—particularly core inflation—will lead to a rebound in private consumption and investment inflows. However, geopolitical tensions and climate risks will continue to burden economic growth.
- Services-focused economies will recover faster than manufacturing-dependent economies.** As weak external demand conditions and volatile energy prices continue to weigh on manufacturing-reliant economies, such as Germany, countries with a stronger services and tourism base, such as Spain and Italy, will record a faster economic revival in 2024.
- Labor market constraints and an aging population will put additional strain on fiscal buffers.** A rapidly aging population and elevated labor shortages will exert further pressure on the fragile fiscal conditions in Western Europe in 2024. This changing demographic environment will alter investment and saving patterns in the region.

Trend Impact on Key Economies



Germany

Following a 0.2% GDP contraction in 2023, the German economy is expected to record a marginal recovery of 0.4% in 2024. Problems such as worker shortages (particularly in high-growth sectors), a subdued export market, and political turmoil will limit economic recovery. Moreover, budget constraints, including restoring a cap on new net borrowing and meeting funding gaps (mainly with cost savings), will slow economic recovery.



United Kingdom

As the British economy continues to reel under elevated inflation and a restrictive monetary policy, it will grow by a marginal 0.1% in 2024. Furthermore, the manufacturing sector's sluggishness will persist during the year amid weak global trade. However, conditions will improve from H2 2024 as easing price pressures and wage growth will support disposable income.



Spain

Following 2.4% growth in 2023, Spain's economic growth is expected to slow to 1.3% in 2024. The reintroduction of European fiscal rules and the extension of measures that help citizens cope with high living costs in 2024 will strain government coffers and cause some growth pullback.

Key: Data and analysis stand updated as of 15 January 2024.

Source: European Commission, IMF, Frost & Sullivan

Middle East—Non-oil Growth Driven by Economic Diversification will Limit the Pullback Caused by a Slowdown in Global Oil Industries in the Middle East

Economic Trend



- Continued oil production cuts will dampen economic growth momentum in Q1 2024.** Propelled by waning global fuel demand, voluntary oil production cuts by major regional economies, such as Saudi Arabia, the United Arab Emirates (UAE), Kuwait, and Oman, will persist in Q1 2024, shrinking the Middle East's economic growth momentum during this period. However, growth is expected to rebound from Q3 2024, supported by increasing oil production, easing monetary conditions, and receding inflationary pressures.
- Growing diversification will foster the Middle East's non-oil economy.** Amid subdued oil industries, regional heavyweights, such as Saudi Arabia, UAE, and Bahrain, will accelerate the pace of economic diversification. The advancement of non-oil industries, including manufacturing, transport, tourism, construction, automotive, and real estate, will be at the forefront of economic growth in 2024, amid structural reforms, prudent macroeconomic activity, and growing capital expenditure.
- The Middle East will pivot toward Asia to gain traction.** A changing geopolitical landscape, combined with Asia's rising energy demand, large consumption markets, and robust economic fundamentals, will bring about greater Gulf-Asia trade and investment integration in 2024.

Trend Impact on Key Economies



Saudi
Arabia

Growth-oriented monetary and fiscal policies and increased investment inflows will drive the solid growth of Saudi Arabia's non-oil activities in 2024. As a result, the non-oil economy will significantly drive the country's economic growth during the year. However, risks such as subdued oil industries will cause some pullback, particularly in H1 2024.



UAE

Robust non-oil GDP growth, supported by the tourism, construction, real estate, and infrastructure sectors, will offset the setbacks caused by the slowdown in global oil industries in 2024. Moreover, investor-friendly business reforms and a stable banking sector will propel higher foreign direct investment inflow, private sector efficiency, and economic diversification during the year.



Qatar

Qatar's economy is expected to grow by a modest 3.0% in 2024 due to non-hydrocarbon sector growth, driven by strong domestic demand. Fiscal and current account surpluses, an expanding knowledge-based and inclusive private sector, and an accommodative monetary policy will underpin economic growth during the year.

Key: Data and analysis stand updated as of 4 January 2024.

Source: IMF, World Economic Forum, Frost & Sullivan

Asia—Emerging Economies will Drive Growth Momentum in Asia, and Fiscal Measures will Support China's Economic Recovery

Economic Trend



- Despite China's slowdown, Asia will continue to show resilience in 2024.** The Asian economy is expected to grow by 4.0% in 2024, with emerging economies from South Asia and Southeast Asia driving the growth momentum. Sustained domestic demand and easing monetary conditions will drive GDP growth in India, Malaysia, Vietnam, Indonesia, and the Philippines. However, the ongoing property downturn, subdued consumer confidence, and constrained liquidity will weigh on the Chinese economy.
- Pullback in China and regional political uncertainty will impact local currencies.** Moderate economic growth in China in 2024 could cap the upside currency gains of the country's key regional trading partners, including Japan and ASEAN. In addition, national elections in India, Indonesia, and Taiwan, as well as the US presidential elections, could introduce volatility in Asia's currency markets.
- Falling inflation will underpin monetary policy easing.** Declining inflationary pressures, particularly food inflation, will provide scope for monetary policy easing in Asia. An accommodative monetary policy will aid consumer spending growth, revive export potential, and facilitate high regional investment in 2024.

Trend Impact on Key Economies



China

Following a 5.0% economic growth in 2023, the Chinese economy is expected to grow by a modest 4.3% in 2024. Subdued business confidence, a persistent property market crisis, slowing external demand, and increasing local government debts will cloud China's economic momentum in 2024. However, fiscal reforms and the injection of economic stimulus will sustain growth.



India

Domestic macroeconomic stability, including financial sector resilience, strong consumer demand, and ample forex reserves, will support India's growth in 2024. However, geopolitical uncertainties (particularly those impacting the global energy and commodity markets) will lead to spillover effects in the form of imported inflation, high fiscal deficit, and trade challenges for India in 2024.



Vietnam

Sustained domestic consumption, elevated public investment levels, and a rebound in exports will propel the Vietnamese economy to record a 6.6% economic growth rate in 2024. Expanding sectors, such as infrastructure, construction, mining, and manufacturing, will strengthen the country's industrial base and provide large-scale employment.

Key: Data and analysis stand updated as of 4 January 2024.

Source: IMF, World Bank, ASEAN Main Portal, Frost & Sullivan

Impact Analysis: Transition from Hospital to Nonhospital Settings

Description

Developed markets in North America and Europe are struggling due to rising healthcare costs. They are reducing their expenditure by decreasing reimbursements for various hospital procedures, including medical imaging. This has contributed to an increased footfall for imaging services beyond hospitals, especially in outpatient centers, retail health clinics, and ASCs.

Impact

Payer policy changes in developed countries, particularly in the United States, have facilitated the shift in outpatient volumes from hospitals to ASCs, independent diagnostic centers, and retail clinics. In addition, as the industry rapidly implements the value-based care model, patient satisfaction has become an important criterion to measure care quality. Therefore, patient experience and perceived quality can have a significant impact on footfall at nonhospital imaging centers.

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Stakeholder	Description	Impact
OEMs	Manufacturers will focus on customizing their sales approaches for each customer segment, including ASCs and outpatient settings, where contractual agreements can be tailored based on a center's specific needs.	High
Providers	Hospitals will try to minimize the loss of outpatient surgical and imaging revenue by building their own ASCs or through M&As and partnerships with existing ASCs.	High
Patients	Patients will experience decreased waiting time, and they can avail of appropriate reimbursements for imaging services.	Medium

Source: Frost & Sullivan

Impact Analysis: Supply Chain Diversification

Description

Significant supply chain disruptions due to geopolitical tension, transportation challenges, and economic vulnerabilities indicate major weaknesses in the imaging equipment industry. Companies are fortifying their supply chains by streamlining the hub-and-spoke distribution channel to key geographic markets across North America, Europe, APAC, and RoW.

Impact

Equipment manufacturers are diversifying their supply chain networks at the geographic and supplier levels, partnering with reliable supply chain vendors to align with suitable delivery timelines, and implementing accurate and efficient demand forecasting to predict production schedules.

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Stakeholder	Description	Impact
OEMs	OEMs will continue to focus on identifying and leveraging alternative sources for the important components required for equipment manufacturing and implementing effective contingency plans in the event of a supply chain disruption.	High
Providers	To avoid delays pertaining to important imaging procedures, healthcare providers will focus on having wider and deeper visibility into inventories (actual utilization versus historical models).	Medium

Source: Frost & Sullivan

Impact Analysis: Geopolitical Tension

Description

Increasing geopolitical tension, including Russia-Ukraine, Israel-Palestine, and US/UK-Yemen, is creating economic instability and adversely impacting businesses in these regions. Furthermore, the economic sanctions imposed on these regions limit companies' ability to conduct business, negatively impacting their revenue.

Impact

Several medical imaging equipment and informatics companies operate and generate revenue in multiple countries, including the United States, the United Kingdom, Russia, Ukraine, and Israel, as well as in the Middle East, and are sensitive to global economic conditions. Economic instability due to the tension may reduce capital expenditure for healthcare products, services, and solutions, affecting companies' revenues. Further imposition of trade tariffs and the ban on import and export activities may lead to increased global economic uncertainty.

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Stakeholder	Description	Impact
OEMs	OEMs conduct business across the world, and these tensions may limit their ability to perform in these countries and also make it difficult to attract new customers and retain existing ones. In addition, trade tariffs and import-export restrictions may hamper their manufacturing and supply chain activities.	High
Medical Imaging IT Companies	Medical imaging IT companies that conduct business in multiple countries may have a lower impact than OEMs as informatics solutions do not face manufacturing or supply chain challenges.	Medium
Patients	Healthcare tourism will be impacted by the war in the aforementioned countries, leading to a reduced number of patients seeking treatment as well as surgical and diagnostic procedures.	Medium

Source: Frost & Sullivan

Impact Analysis: Commercial Success

Description

The growing aging population and the rising disease incidence across the world are driving medical imaging examinations and leading to massive patient data generation every day. These factors contribute to the high procurement of imaging equipment and imaging IT solutions to efficiently manage these datasets. China, Japan, and South Korea, for example, have demonstrated high adoption of AI-based medical imaging technologies to boost their clinical productivity and care quality.

Impact

Radiologist burnout, the growing burden on IT teams, cyberattacks, asset optimization issues, cost constraints, siloed imaging data, complex and inefficient workflows, and a range of disparate and, often, legacy systems are some of the challenges the imaging informatics industry faces. OEMs and medical imaging IT vendors are striving to address these challenges by accelerating the adoption of AI-based imaging informatics, enterprise imaging, and cloud infrastructure solutions to manage medical imaging operations effectively across the world.

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Stakeholder	Description	Impact
OEMs and Medical Imaging IT Vendors	OEMs and medical imaging IT suppliers provide personalized IT solutions to healthcare facilities to better serve their needs and develop long-term business partnerships.	High
Providers	Healthcare providers are increasingly turning to AI-based informatics, cloud, and cybersecurity solutions to manage growing imaging data volumes and accelerate internal workflow processes.	High

Source: Frost & Sullivan

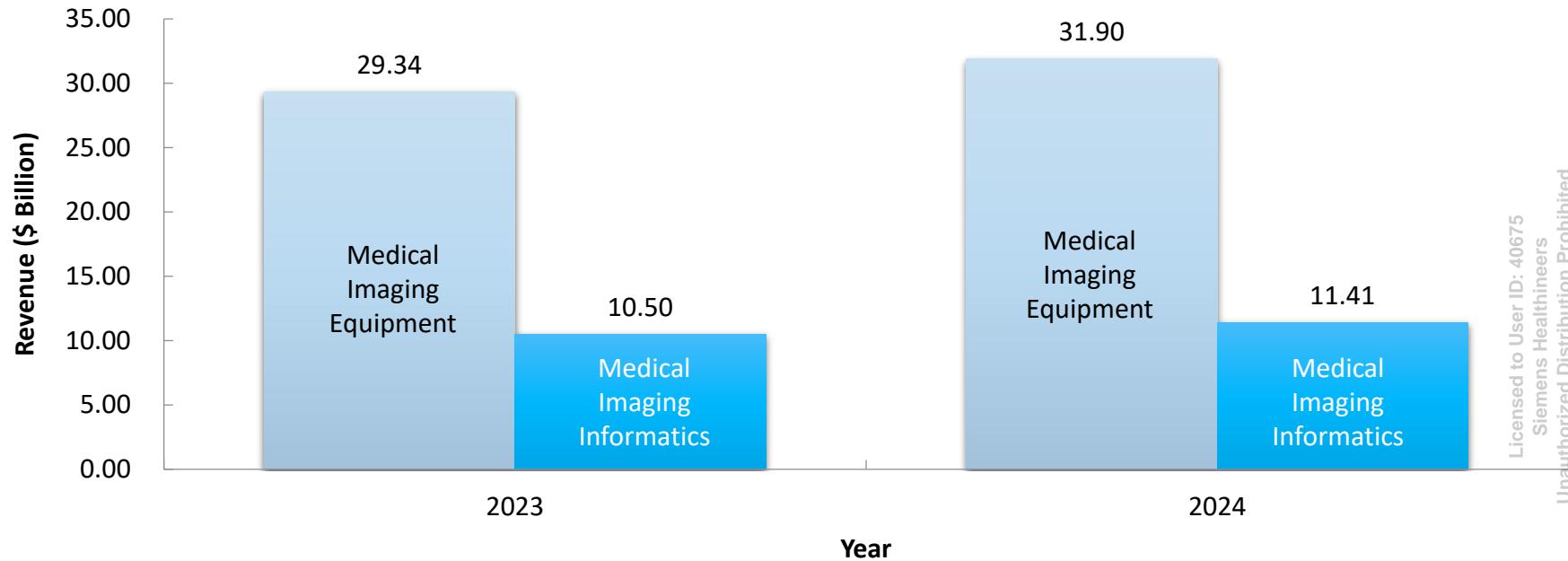
Revenue Trends—2023

Forecast Methodology and Assumptions

- The study presents a comprehensive analysis of the global medical imaging equipment and informatics industry in terms of industry potential and important industry dynamics.
- It uses secondary sources, such as Frost & Sullivan databases, in-house decision-support databases, annual company reports, scientific journals, and industry-related articles.
- The study includes global and regional estimates, and the forecast considers additional factors that impact the industry, including:
 - Regional policies, practices, and regulations
 - Overall industry potential and regional trends
 - Regional healthcare spending and revenue that manufacturers and service providers generate
 - For technology-related forecasts, the calculations are on a best-effort basis, given the limitations of obtaining detailed breakdowns on segment-wise data.
- Additional assumptions that Frost & Sullivan considers are as follows:
 - The vulnerability of industry numbers and forecasts to risks, including technological, regulatory, legal, and geopolitical uncertainties as well as currency rate fluctuations
- For imaging informatics, the forecast methodology considers supply- and demand-side dynamics, pricing, willingness to pay for solutions, and the presence or absence of policies that promote new digital technology adoption in the overall healthcare sector as well as within imaging.
- To arrive at the sales forecast, the forecast methodology considers the historical performance of regions in different segments.
- The revenue the study discusses includes new software licenses, software upgrades, new IT hardware, hardware upgrades, annual maintenance contracts, revenue from professional services, and usage-based revenue, such as operating expense models.

Medical Imaging Equipment and Informatics Revenue Forecast

Medical Imaging Equipment and Informatics: Revenue Forecast, Global, 2023 and 2024



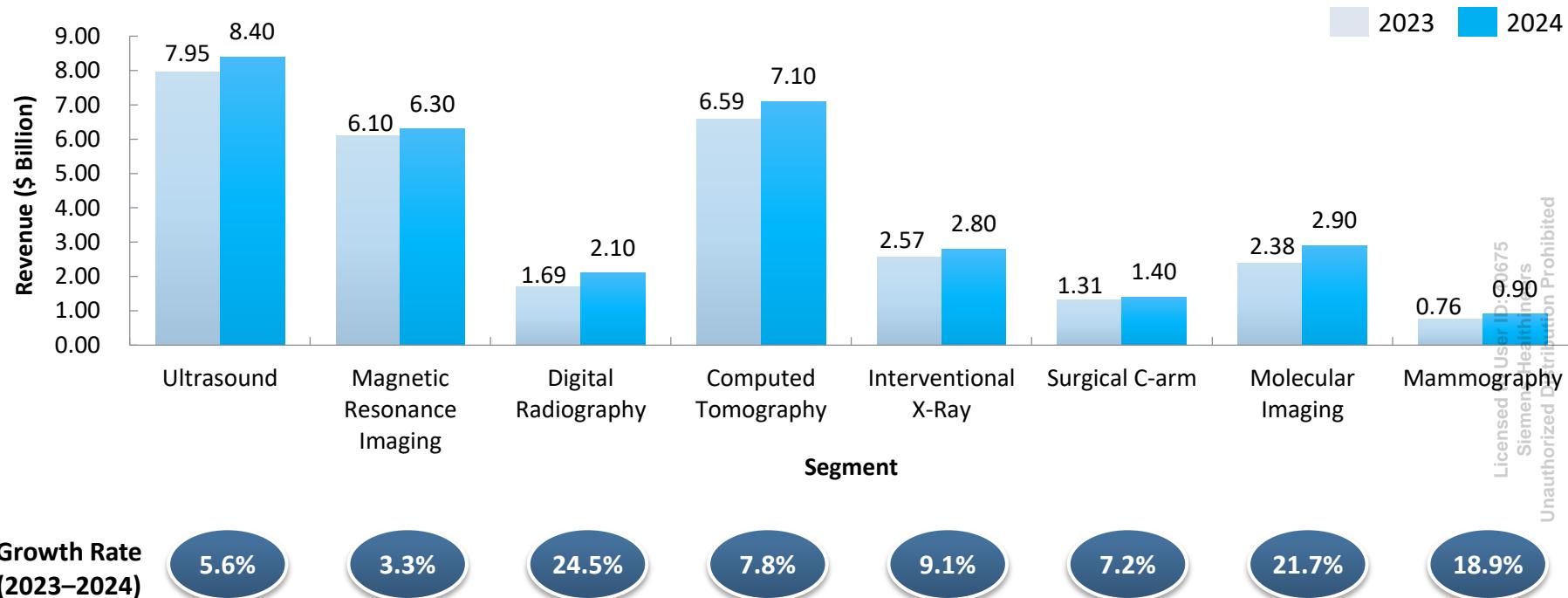
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Medical Imaging Equipment and Informatics Revenue	2023	2024		Aspirational Revenue Growth Rate in 2024
	\$39.84 B	Aspirational \$43.31 B	Conservative \$41.59 B	8.7%

Source: Annual reports of GE Healthcare, Siemens Healthineers, Philips Medical Systems, Canon Medical, Fujifilm Medical, and Hologic; Frost & Sullivan

Medical Imaging Equipment Revenue Forecast by Segment

Medical Imaging Equipment: Revenue Forecast by Segment, Global, 2023 and 2024

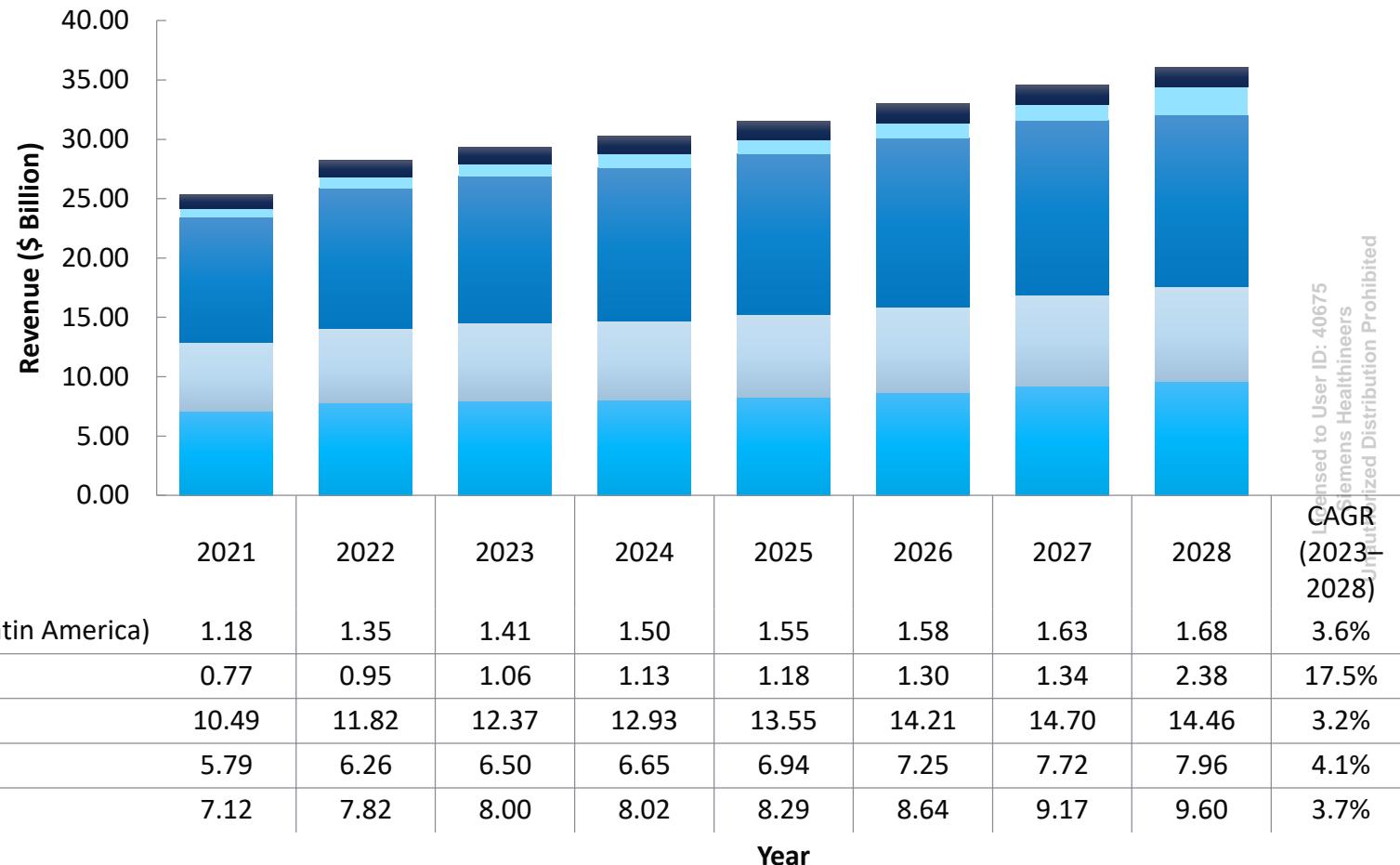


Medical Imaging Equipment	2023	2024		Aspirational Revenue Growth Rate in 2024
	\$29.34 B	Aspirational \$31.90 B	Conservative \$30.24 B	
				8.7%

Note: All figures are rounded. The base year is 2023. Source: Frost & Sullivan

Medical Imaging Equipment Revenue Forecast by Region

Medical Imaging Equipment: Revenue Forecast by Region, Global, 2021–2028



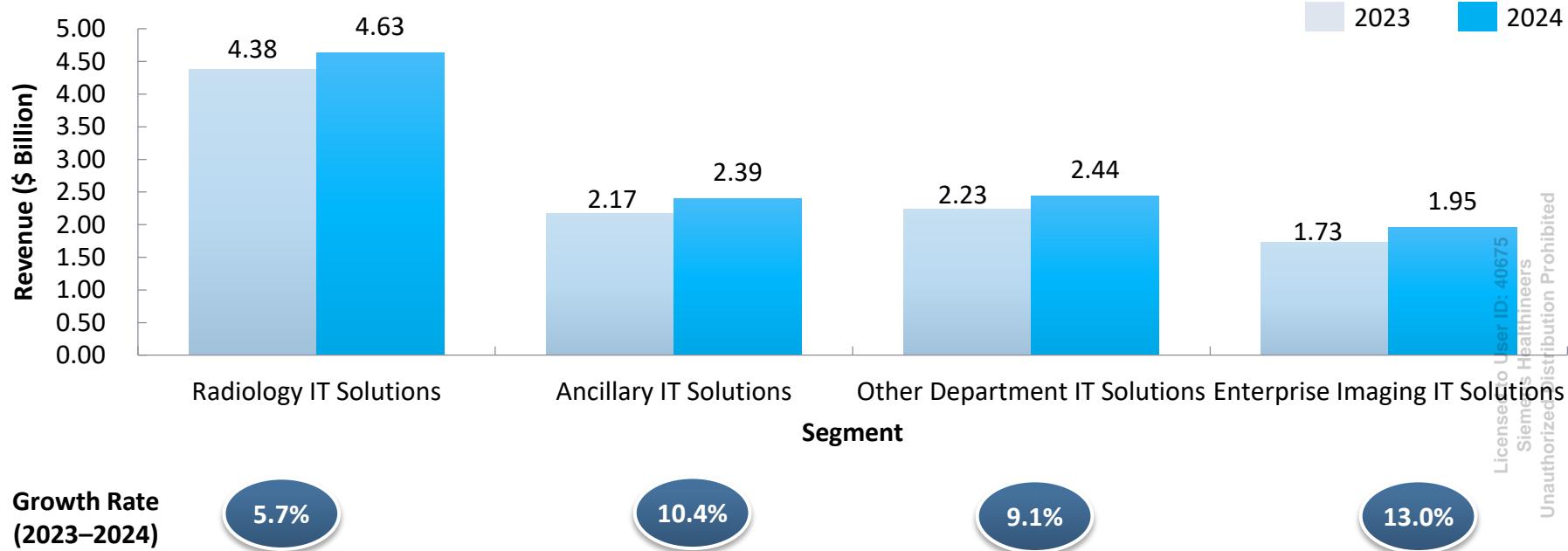
Key: The numbers are derived from the annual Frost & Sullivan's Growth Generator database. Post-pandemic and 2023 revenue indicated supply chain improvements for each medical imaging modality at different points in time. Conservative numbers highlight the actual industry scenario for equipment sales.

Note: All figures are rounded. The base year is 2023. Source: Frost & Sullivan

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Medical Imaging Informatics Revenue Forecast by Segment

Medical Imaging Informatics: Revenue Forecast by Segment, Global, 2023 and 2024

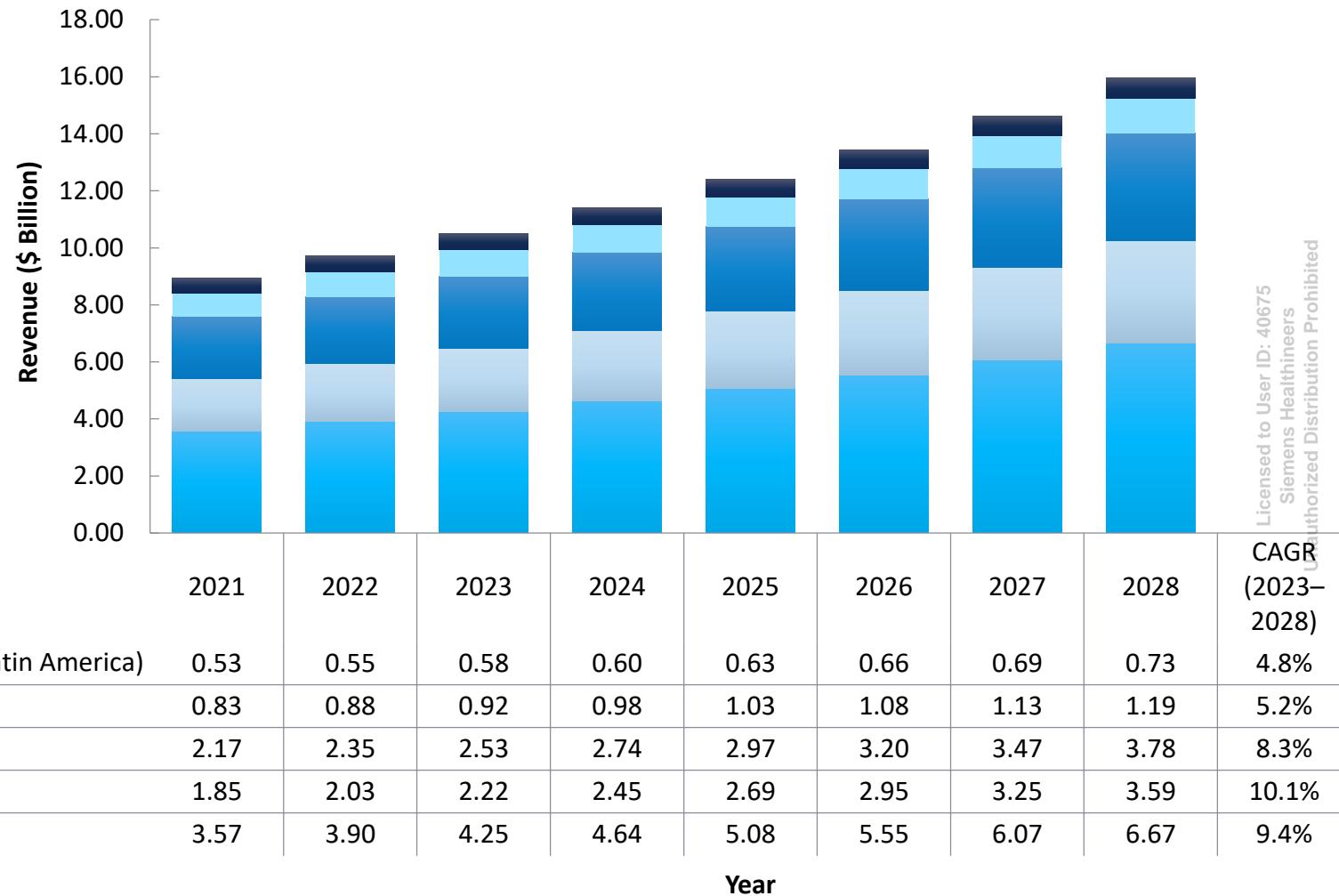


Medical Imaging Informatics	2023	2024		Aspirational Revenue Growth Rate in 2024
		Aspirational	Conservative	
	\$10.50 B	\$11.41 B	\$11.35 B	8.6%

Note: All figures are rounded. The base year is 2022. Source: Frost & Sullivan

Medical Imaging Informatics Revenue Forecast by Region

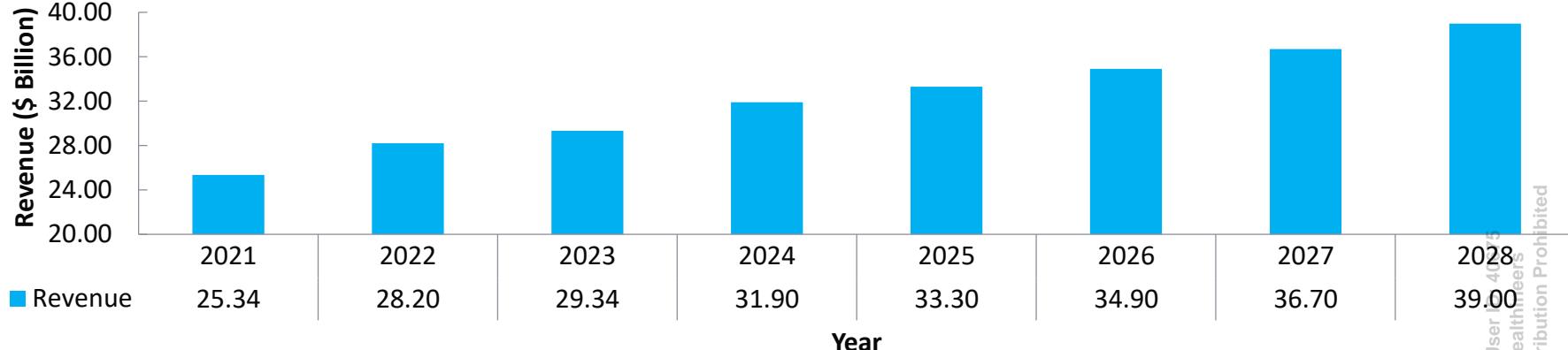
Medical Imaging Informatics: Revenue Forecast by Region, Global, 2021–2028



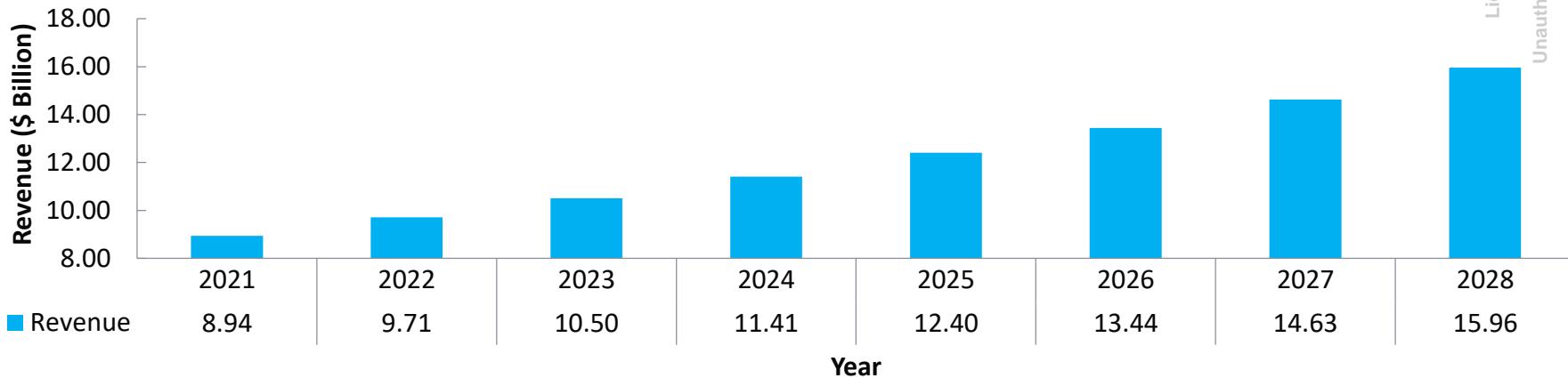
Note: All figures are rounded. The base year is 2023. Source: Frost & Sullivan

Medical Imaging Equipment and Informatics Revenue Forecast by Segment

Medical Imaging Equipment: Revenue Forecast, Global, 2021–2028



Medical Imaging Informatics: Revenue Forecast, Global, 2021–2028



Key: Aspirational forecast is considered for the segment share.

Note: All figures are rounded. The base year is 2023. Source: Frost & Sullivan

Forecast Analysis

- The global medical imaging equipment and informatics industry recorded a revenue of \$39.84 billion in 2023. In 2024, the industry's conservative and aspirational revenue will be \$41.59 billion and \$43.31 billion, respectively.
- In the medical imaging equipment space, ultrasound will continue to contribute the highest revenue in 2024 at \$8.4 billion, mainly due to affordability and ease of use, resulting in high adoption across all forms of healthcare infrastructure, starting from tertiary hospitals to small- and mid-sized hospitals as well as outpatient centers, retail health clinics, and at-home care models.
- Increasing POCUS use in primary care, emergency medicine, and critical care are among the emerging clinical segments for ultrasound that will further contribute to its revenue growth in the future.
- Digital radiography (DR) registered high growth in 2023 due to the growing focus on preventative care and the surge in screening programs globally. In addition, imaging services' transition from hospitals to nonhospital settings, such as outpatient care, will contribute to further sales of DR systems as outpatient settings will see higher patient volumes and cater to chronic care.
- 2023 marked an increased focus on oncology and precision imaging, which contributed to the rising procurement of CT, mammography, and molecular imaging. This trend will continue in 2024 as personalized care takes priority in the overall healthcare sector.
- MRI, IXR, and surgical C-arm registered slow growth in 2023 due to high procurement post-pandemic in 2021 and 2022, driven by the gradual resumption of elective and surgical procedures and the fulfillment of delayed procurements. High demand for MRI as diagnostic support in neurology will contribute to revenue growth for the segment in the future.

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Source: Frost & Sullivan

Forecast Analysis (continued)

- In medical imaging informatics, radiology IT holds the major share due to the high number of customers that continue to use PACS for medical imaging operations despite the steady growth of PACS replacement volumes. However, healthcare providers are increasingly shifting (either partially or fully) to enterprise imaging solutions, which will drive high growth during the forecast period. To keep up with this trend, Philips and other OEMs are collaborating with hospitals to provide enterprise monitoring-as-a-service along with informatics. Phillips signed a 10-year agreement with the University of California Irvine Health to provide enterprise monitoring-as-a-service¹.
- Furthermore, the medical imaging informatics industry is driven by medical image diagnosis and visualization solutions, as the demand for fast and accurate diagnosis is increasing due to the rising disease incidence, particularly cancer and infectious diseases.

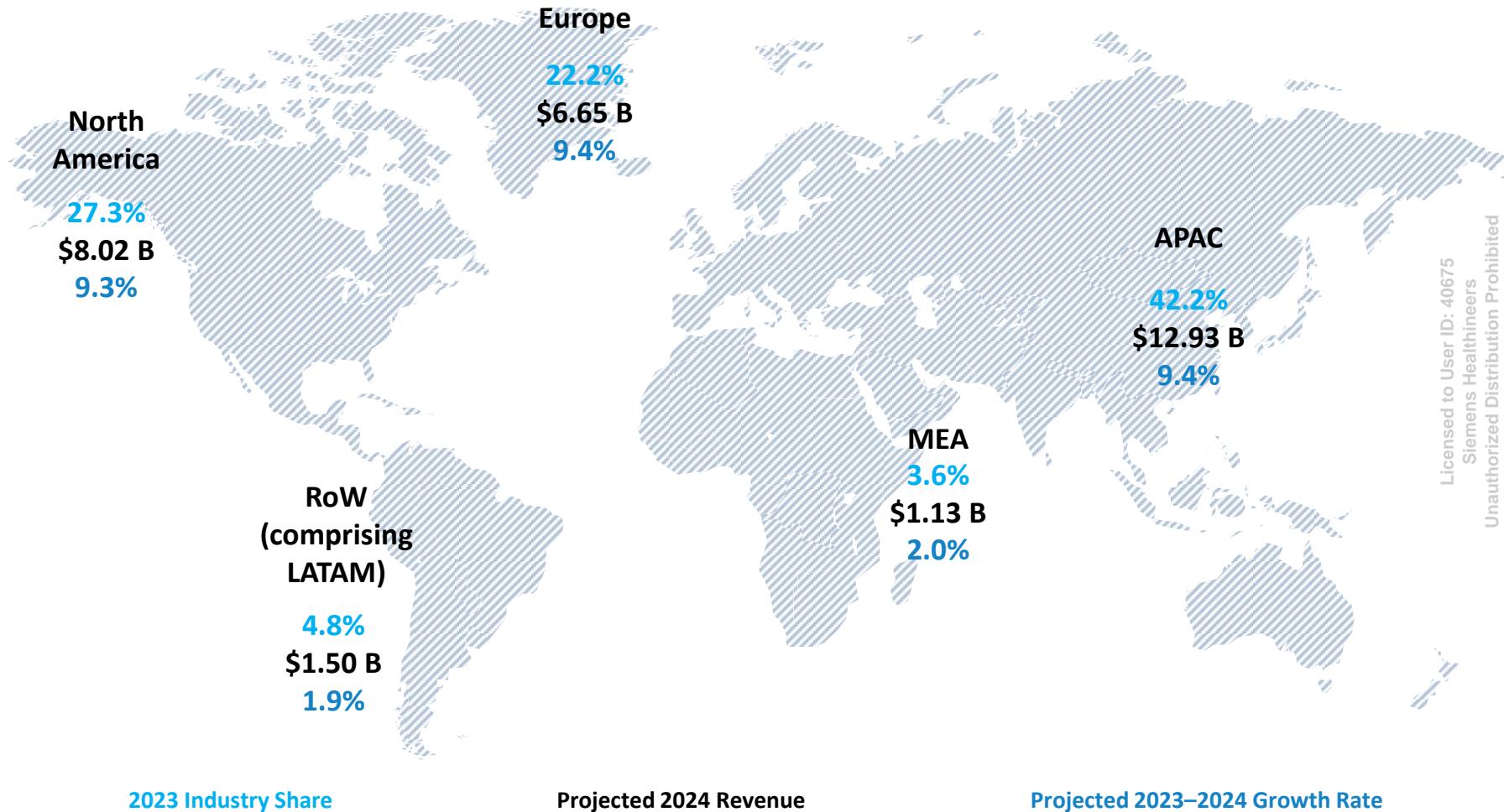
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¹<https://store.frost.com/wip/PF13-01-00-00-00>

Source: Frost & Sullivan

Medical Imaging Equipment Regional Trends

Medical Imaging Equipment: Revenue Forecast by Region, Global, 2023 and 2024



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Medical Imaging Equipment Regional Trend Analysis

North America

- High inflation rates and the shortage of a skilled workforce challenge the region. This is mainly due to the high demand for radiology services, the increasing patient volumes, and the capacity constraints.
- In addition, the Centers for Medicare & Medicaid Services announced pay cuts for radiologists: a 3% decrease for diagnostic radiology, a 4% decrease for interventional specialists, and a 3% decrease for radiation oncologists for 2024.

RoW (comprising LATAM)

- Demand for imaging services has increased due to growing concerns about chronic diseases. Increasing healthcare spending and rising investments from both local and multinational investors will improve imaging infrastructure in the region.
- In addition, the region will continue to see high adoption of portable imaging equipment, such as X-ray and ultrasound machines, to facilitate home-based care. Colombia and Mexico lead overall home-based care adoption in the region.

Europe

- The focus is on fortifying screening policies for oncology treatment, especially in the United Kingdom.
- Cancer patients with direct access to diagnostic imaging through primary care will drive X-ray segment growth.
- Increasing energy expenditure will result in surging operational costs of healthcare systems. Therefore, these systems opt to include sustainability features in their imaging fleets installed in various locations.

APAC

- Regional governments and medical imaging companies continue to focus on improving the region's healthcare infrastructure.
- Investments in AI-based medical imaging solutions in South Korea, Japan, and India, with an emphasis on X-ray, mammography, and MRI, are rising.
- Owing to the increasing focus on precision diagnosis for oncology treatment in the region, healthcare systems are leveraging advanced digital imaging to facilitate precision diagnostics and treatment.

MEA

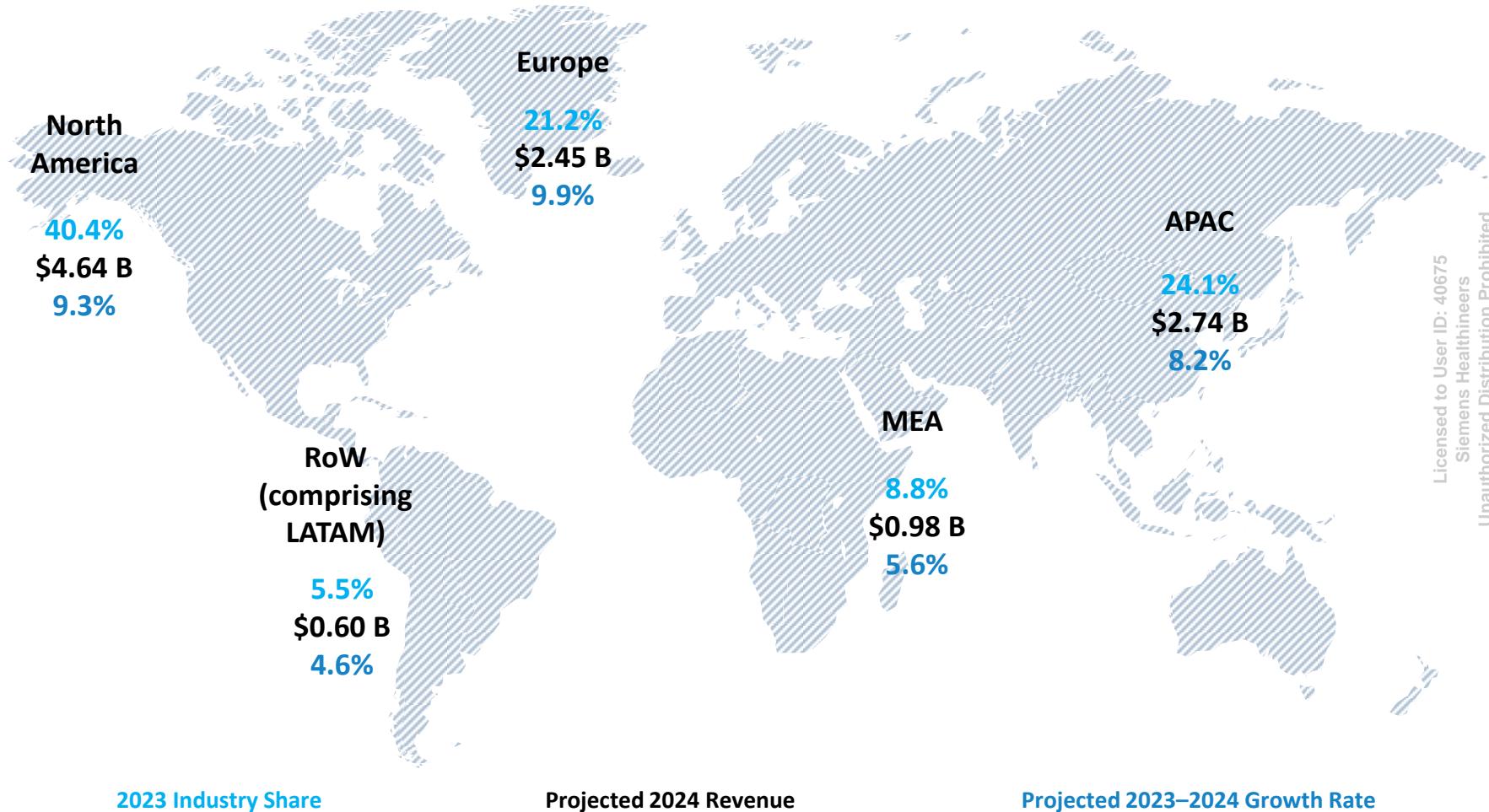
- Healthcare spending in the Middle East is predicted to rise, and the private sector will play an increasingly important role in improving medical imaging infrastructure.
- Public-private partnerships (PPPs) will increase to further develop primary imaging care and address rising patient volumes in secondary and tertiary care hospitals in the region.
- Africa will see investment growth pertaining to AI accessibility in diagnostic imaging. This mainly intends to target the challenges involving the critical shortage of trained radiologists in the region.

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Source: Frost & Sullivan

Medical Imaging Informatics Regional Trends

Medical Imaging Informatics: Revenue Forecast by Region, Global, 2023 and 2024



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Note: All figures are rounded. The base year is 2022. Source: Frost & Sullivan

Medical Imaging Informatics Regional Trend Analysis

North America

- North America is seeing the fastest adoption of cloud infrastructure, enterprise imaging, and AI-based applications.
- Hence, OEMs and medical imaging IT vendors target the region to increase their share; they develop their products according to the needs of customers in this industry.
- The increasing shift from hospital inpatient to outpatient settings, ASCs, and office-based labs (OBLs), especially in cardiology, is backed by CMS and other regulatory bodies.

Europe

- European countries focus on developing care coordination solutions and structured reporting for cardiovascular cases, which are continually rising in Europe. They aim to provide high-quality patient care and reduce paperwork for radiologists.
- Healthcare providers are inclined to adopt cloud infrastructure and enterprise imaging to provide patients with cost-effective and better clinical care. However, the cloud adoption rate in Europe for imaging informatics has been slow due to stringent patient data privacy laws.
- Nordic countries are making efforts to improve medical imaging operational workflows by integrating AI into imaging informatics solutions, backed by strong public funding and active private investors.

RoW (comprising LATAM)

- Economic growth in Latin America has led to steady and sustained improvement in healthcare spending in Latin America, especially in the major cities.
- The region is a relatively small market; nevertheless, it requires automated and efficient medical imaging informatics infrastructure, including teleradiology, to deal with the increasing demand for imaging studies and to reach inaccessible areas.

¹ <https://www.frost.com/frost-perspectives/middle-east-2023-top-5-trends-to-watch-in-healthcare-life-sciences-industry/>

APAC

- APAC countries, such as China, India, and ASEAN, are improving their healthcare infrastructure through public and private investments that will open up new growth opportunities.
- They are also focused on enhancing access to care in remote locations through teleradiology and mass disease screening programs through OEM collaborations, such as Fujifilm's partnership with the Indian government for tuberculosis population screening in remote areas in India.

Top 5 Predictions for 2024

Prediction 1: Strategic Partnerships Between Outpatient Diagnostic Imaging Centers and Retail Outlets will Double in 2024 in the United States

Trends/Themes

- At present, there are about 2,000 retail health clinics across 44 states in the United States. Imaging equipment, such as digital radiography, mammography, and ultrasound, is used as part of providing primary care in the country. Retail health clinics have gained popularity as patients prefer them because they provide rapid imaging services without the need for a prior appointment. They offer a shorter wait time; moreover, patients do not have to travel longer distances to reach these clinics.
- In addition, for CY 2024, CMS announced the continued reinforcement of the Appropriate Use Criteria (AUC) policy, which will limit reimbursements by making it mandatory for a physician or his clinical staff to consult a qualified clinical decision support mechanism (CDSM) before ordering an advanced diagnostic imaging exam. As a result, demand for affordable healthcare in nonhospital settings, including retail health clinics, is rising.
- In 2023, the US Preventive Services Task Force (USPSTF) reduced the recommended age for biennial screening mammography from 50 to 40. As a result, greater participation in breast cancer screening among women aged 40-49 is likely to boost footfall and demand for mammography equipment. The age group of 40-74-year-old females accounts for approximately 15% of the entire population and is predicted to increase mammography procedures by about 60% by 2023. In December 2023, RadNet announced that MammogramNow, its mammography screening service, would be available at several Walmart locations. The goal is to increase access to breast cancer screenings while also raising awareness about breast health.

Implications

- **OEMs:** As retail health clinics are increasingly positioning themselves as go-to facilities for imaging services, OEMs will customize their imaging equipment sales propositions based on a center's specific needs. In addition, OEMs and equipment vendors will address the challenges of expanding an existing retail health center or establishing a new facility in terms of care quality, financing, and integrating affordable imaging technologies.
- **Health Systems:** Hospitals and health systems will enter the retail health landscape through partnerships with retail chains to tap the growing customer-driven mindset prevalent in overall healthcare.
- **Patients:** Increasing out-of-pocket medical expenses and rising demand for imaging services among patients have created high demand for alternative sites for diagnostic imaging. Retail health clinics offer affordable care at lower costs than other care sites.

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Source: Frost & Sullivan

Prediction 2: Increasing Adoption of Multimodal Imaging will Facilitate Integrated Care and Breakdown Silos within Imaging Departments for Oncology Care

Trends/Themes

- The American Cancer Society states that cancer causes about 1 in every 6 deaths and is the 2nd leading cause of death (after cardiovascular diseases) worldwide. Medical imaging is an important part of cancer management due to the rapid progress of advanced techniques that allow the use of functional information to provide precise and effective cancer treatment. The segment has facilitated personalized patient-centric treatment and helped oncologists use a wide range of resources and innovation to generate the best patient outcomes.
- Demand for integrated care to extract quantifiable data from different modalities of radiology for better oncology treatment is rising. Hybrid imaging facilities have enabled increased collaboration between radiologists and nuclear medicine physicians to integrate positron-emission tomography (PET) with CT or MRI. In Europe, experienced and subspecialized radiologists must participate in mandatory multidisciplinary tumor boards at accredited specialized centers, especially for oncology consultations, to make proper treatment decisions.
- In 2023, United Imaging launched next-generation PET/CT systems along with an integrated molecular technology platform for whole-body imaging. AI technology was integrated into the platform.
- Meanwhile, GE Healthcare, Siemens, Philips, and United Imaging have forayed into the PET/MRI equipment space to redefine early cancer detection.

Implications

- **OEMs:** OEMs will focus on integrating different imaging equipment from different modalities to improve both diagnostic and treatment accuracy.
- **Health Systems:** With the appropriate throughput, these systems will help multimodal imaging gain a significant competitive advantage and a positive return on investment.
- **Care Providers:** Multimodal imaging enables better morphological imaging information; it helps care providers by facilitating precise treatment and improved clinical outcomes.

Prediction 3: POCUS will See Higher Utilization in the Primary Care Segment in 2024

Trends/Themes

- Demand from family physicians for a wide range of imaging services has increased. However, restraints such as longer waiting times, high screening costs, and a lack of transportation have exacerbated disparities in patient care. Therefore, the use of POCUS in primary care has surged to address care delivery shortages.
- The high procurement of POCUS is largely driven by an increase in disease prevalence, and the devices can cater to multiple diagnostic specializations and be integrated across all clinical applications due to simple and user-friendly tools, especially the availability of probes designed for a specific clinical condition.
- Furthermore, the inclusion of capabilities that facilitate at-home device use helps health systems streamline both clinical and administrative cost optimization strategies. The expansion of ultrasound to nonhospital settings requires that vendors develop training programs for users, including doctors, technicians, and physician assistants (GE Healthcare's PA program, for example), to ensure that these programs also reach developing countries.
- However, the uniform implementation of POCUS is limited due to a lack of appropriate ultrasound training and a workforce shortage. Formal training of practicing radiologists for POCUS devices will maximize its benefits in primary care settings.

Implications

- **OEMs:** OEMs and start-ups are developing POCUS that can be used in multiple clinical settings and a wide array of indications. This will be accelerated by investor funding and government grants that will intensify the competition in the industry.
- **Patients and Healthcare Providers:** Small, ultra-portable devices enhance patient comfort and make for easier regular checkups. In developing economies and remote communities with few trained personnel, equipment providers collaborate with healthcare institutions to offer options and solutions that suit their resources, ensuring the availability and accessibility of portable equipment due to its low cost.

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Source: Frost & Sullivan

Prediction 4: The Adoption of Enterprise Imaging Among Digital Pathology Customers in the United States and Europe will Increase

Trends/Themes

- Enterprise imaging consolidates images and other data across modalities into one location, enabling easier access to imaging and workflows. It is widely adopted in cardiology as it enables the presentation of complete patient information during physician review and is the key focus area for medical imaging IT companies.
- Enterprise imaging will see widespread acceptance in the digital pathology specialty as many hospitals are adopting the digital slide scanner technology. In terms of using digital pathology solutions, enterprise imaging customers in Europe will be the front-runners, followed by the United States. The United States will witness an upsurge in adoption after the FDA relaxes the approval process for combined scanner and software technologies, which are the core of digital pathology workflows. In 2022, 13 new current procedural terminology (CPT) codes meant to mainly track the use of digital pathology were released.
- Increasing cancer incidence across the world is driving cancer diagnostics growth to improve clinical productivity and the patient experience. Hence, healthcare providers will increasingly deploy digital pathology solutions for better cancer diagnosis.
- Four hospitals in France ordered Sectra's diagnostic imaging solutions for digital pathology to improve cancer diagnosis for their patients. Similarly, Clalit Health Services, a major healthcare provider in Israel that serves approximately 4.9 million people, ordered digital pathology solutions to serve its cancer patients.

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Implications

- **OEMs:** As several image informatics companies enter the industry, the number of digital pathology diagnoses will increase significantly. OEMs will also penetrate this segment. Effective 23 January 2023, Fujifilm acquired Inspirata, Inc., a US-based company that develops and sells software solutions for digital pathology diagnostics.
- **Providers:** Multiple US health IT vendors are making large investments to add digital pathology to their enterprise imaging platforms; they are also collaborating with digital pathology vendors.

Source: Frost & Sullivan

Prediction 5: AI-as-a-service will Gain Significant Traction

Trends/Themes

- Healthcare providers face multiple challenges in medical imaging operations, including radiologist burnout due to heavy workloads, increased burden on IT teams, siloed data in disparate systems, and complex and inefficient workflows. In addition, the cost of care must be reduced, while care quality and profitability must be increased. To overcome these challenges, medical imaging IT companies and OEMs are developing AI-based medical imaging solutions to better serve their customers.
- AI is being considered to automate the reading and interpretation of images, which can save radiologists' valuable time. Computer-aided algorithms can differentiate between normal and abnormal findings. Mass General Brigham, an integrated healthcare system in the United States, uses 50 such algorithms to detect aneurysms, cancers, embolisms, and stroke symptoms.
- OEMs and medical imaging IT companies are developing AI-based medical imaging solutions. GE Healthcare claims it tops the FDA list of AI-enabled medical devices with 510(k) clearances.
- In 2023, GE Healthcare received a \$44 million grant from the Bill and Melinda Gates Foundation to develop AI-assisted applications and tools for ultrasound technology. The company aims to improve healthcare screening by enabling faster ultrasound scans and guiding skilled workers to efficiently operate POCUS around the world, with a focus on low- and middle-income countries. This program will also create AI-assisted ultrasound algorithms to deliver better healthcare to remote areas.

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Implications

- Healthcare providers will collaborate with medical imaging IT companies to deploy AI in their diagnostic imaging operations; Canada's Trillium Health Partners, for example, signed a deal with Sectra to deploy AI-as-a-service in its diagnostic imaging operations.
- Medical AI technology in diagnostic imaging will be rapidly commercialized in multiple countries. Imaging IT companies and OEMs will collaborate with medical AI companies to integrate AI applications into medical imaging and informatics solutions.

Source: Frost & Sullivan

Medical Imaging Equipment Segment Outlook—2024

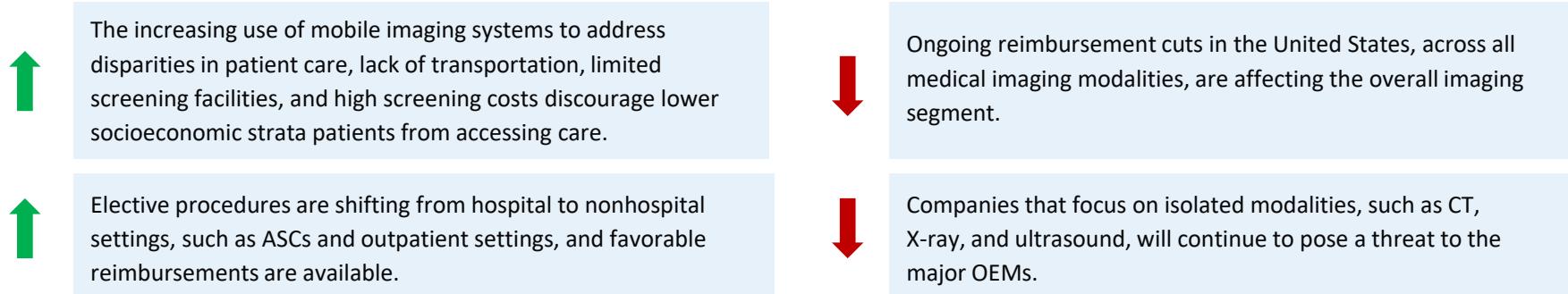
Industry Snapshot



- North America, Western Europe, and some parts of APAC register a higher penetration of medical imaging systems due to growing patient volumes and increasing focus on preventative care. However, compared to North America and Western Europe collectively, APAC leads imaging equipment sales, mainly driven by the growth of the private healthcare sector, attributed to the high installation of imaging systems.
- The growing number of new healthcare facilities and investments in APAC, LATAM, and the Middle East will boost the use of medical imaging equipment in hospitals, especially in tertiary care settings and universities.
- The public healthcare sector in both developed and emerging economies is focused on implementing universal basic coverage, as there are significant disparities in access to healthcare in marginalized communities. In developing economies and remote communities with few trained personnel, equipment providers collaborate with healthcare institutions to develop options and solutions that suit their resources, ensuring the availability and accessibility of portable equipment due to its low cost.
- Mobile imaging equipment procurement will increase with the growth of outpatient care settings and ASCs. Imaging vendors will adapt their offerings to outpatient centers and ASCs' needs.

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Drivers and Restraints



Source: Frost & Sullivan

Medical Imaging Informatics Segment Outlook—2024

Industry Snapshot



- The increasing number of diagnostic procedures performed across the world generates a large amount of patient data that is stored in disparate systems spanning clinics, hospitals, and universities. This data must be synchronized so healthcare professionals can conduct a thorough health examination. The demand for 360-degree patient information during physician review to make better, more informed clinical decisions is rising. The demand for better medical imaging workflow solutions to cater to the growing global diagnostic burden is also increasing.
- Healthcare facilities are consolidating, leading to complex medical imaging operations that require appropriate enterprise-level imaging data management solutions. Hence, OEMs and medical imaging IT companies are developing integrated enterprise imaging IT solutions to decrease costs, reduce complexities, and enable seamless collaboration among clinicians, both within the facility and beyond. Other disciplines, such as cardiology, pathology, and ophthalmology, also benefit from the flexible and consolidated enterprise imaging systems offered by medical imaging IT providers.
- Healthcare providers are quickly integrating cloud infrastructure into their imaging informatics solutions, which offers them financial and operational benefits through flexible payment models, constant updates, maintenance alerts, and 24/7 security solutions. Hybrid cloud is witnessing high growth due to the gradual adoption of cloud infrastructure across the world. Large technology companies, such as Microsoft and Google, are strategically focusing on cloud adoption and integration in medical imaging.

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Drivers and Restraints



The increasing adoption of AI in medical imaging workflows will drive the medical imaging informatics industry. According to the FDA, as of January 2023, more than 520 market-cleared AI medical algorithms are available in the United States. 58 are available for cardiology¹.



The increased work pressure on radiologists, resulting in burnout, is driving the adoption of informatics solutions in medical imaging to provide high-quality care and cater to their growing diagnostic needs.



Challenges related to data migration and integration due to interoperability issues impede cloud and enterprise imaging adoption of medical imaging informatics solutions.



Many hospitals across the world do not have access to all imaging modalities; in addition, they do not have architectural layouts to facilitate collaboration due to restrictive budgets. These act as significant barriers to collaboration.

¹<https://healthexec.com/topics/artificial-intelligence/fda-has-now-cleared-more-500-healthcare-ai-algorithms>

Source: Frost & Sullivan

Medical Imaging Equipment and Informatics Companies to Watch

Clarius Health

About

- Founded in 2014, Clarius Health has a footprint across North America, Europe, APAC, LATAM, and some parts of MEASA.

Unique Value Proposition

- The Clarius wireless ultrasound is integrated with AI-enabled voice control that allows professionals to adjust images during a scanning procedure.
- The company also offers advanced AI-based tools for musculoskeletal imaging (MSK) that are FDA-approved for use only in the United States. The tools enable real-time tendon assessment, providing clinicians with increased diagnostic confidence. Tools that support cloud-based databases, workflow, and reporting can be seamlessly integrated into these scanners.
- Clarius Marketplace enables AI integration with Clarius' ecosystem and allows users to purchase devices and membership plans through the site.

Tempus

About

- Tempus is a US-based biotechnology and precision medicine firm that leverages AI for drug discovery and genomic sequencing. Founded in 2015, the company has a large data library that comprises clinical and molecular data.

Unique Value Proposition

- Tempus aims to enable personalized care through intelligent diagnostics and derive personalized findings specific to each patient.
- In 2022, Tempus acquired Arterys to foray into the integration of medical imaging and pathology-based AI solutions.
- The company will be able to build radiology-pathology AI-based solutions using imaging data that Artery's FDA-approved AI algorithms gather from lung CT scans, chest X-rays, and brain and heart MRI scans.

Intelerad Medical Systems

About

- Intelerad is a medical imaging software solution company that strategically focuses on M&As to develop its product portfolio and increase its capabilities in the enterprise imaging space. Recently, it acquired Life Image and Ambra Health, its competitors, to strengthen its imaging informatics product portfolio, forming a \$1.7 billion company.

Unique Value Proposition

- Intelerad's cardiovascular information system (CVIS) offers a comprehensive suite of vendor-neutral software applications, integration tools, structured reporting, and cloud-powered healthcare data analytics to enable informed clinical and business decisions.
- InteleOne is the company's interoperability solution, and this cross-enterprise diagnostic imaging platform seamlessly links clinicians to patients' images and reports stored across disparate HIS, EMR, PACS, and VNA systems.

MEASA: The Middle East, Africa, and South Asia

Source: Frost & Sullivan

Growth Opportunity Universe

Growth Opportunity 1: Artificial Intelligence for Predictive Analytics During Equipment Maintenance

Opp. Size in 5 Years	\$100 M–\$500 M	Relevant End-User Industries for this Growth Opportunity						Applicable Regions
		Manufacturing	Mobility	Metal & Mining				Central & East Europe
		Energy & Environment	Chemicals & Materials	Information & Communications Technologies				South Asia
Timeline for Action	1 to 3 Years	Electronics & Semiconductors	Agriculture, Food & Nutrition	Govt and Public Sector				Western Europe
		Construction	Education	Healthcare & Lifesciences				CIS
		Consumer	Aerospace	Hospitality				North America
GO Base Year	2024	Retail	Defense	Banking & Financial Services				Latin America
								Africa
								Middle East
								Asia-Pacific

Frost & Sullivan has identified 10 Growth Processes that serve as levers for determining and evaluating new Growth Opportunities.



Source: Frost & Sullivan

Growth Opportunity 1: Artificial Intelligence for Predictive Analytics During Equipment Maintenance (continued)



Context and Definition

- AI can be effectively used to predict the likelihood of equipment failure or downtime before it occurs, without disrupting an imaging center's workflow. For example, an X-ray detector can detect known patterns of failure through algorithms that monitor them.
- Using AI as part of the predictive maintenance of equipment helps service teams anticipate and estimate when equipment maintenance should be performed. This makes service processes efficient and cost-effective for both parties involved in an MES partnership.
- AI-based predictive maintenance has demonstrated:
 - About a 30% decrease in unplanned downtime
 - Approximately 80% quicker resolution of service cases
 - Increase in equipment uptime
 - Increase in asset utilization
- To fortify its service and maintenance offerings, Siemens acquired Senseye to onboard the latter's predictive maintenance and asset intelligence solutions as part of Siemens' service offerings.



Call to Action

- OEMs and AI service providers should enter into partnerships to implement the latest technologies that help health systems predict equipment downtime due to faulty imaging systems.
- Healthcare providers should equip medical imaging departments and workflows with advanced technologies, which will enable them to perform all types of equipment maintenance, including predictive and preventive maintenance, within the premises.
- This will effectively reduce the expenditure associated with corrective equipment maintenance and disruption of diagnostic workflows in facilities.

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Source: Frost & Sullivan

Growth Opportunity 2: Sustainability for MRI

Opp. Size in 5 Years	\$100 M–\$500 M	Relevant End-User Industries for this Growth Opportunity			Applicable Regions
Timeline for Action	1 to 3 Years	Manufacturing	Mobility	Metal & Mining	Central & East Europe
GO Base Year	2024	Energy & Environment	Chemicals & Materials	Information & Communications Technologies	South Asia
		Electronics & Semiconductors	Agriculture, Food & Nutrition	Govt and Public Sector	Western Europe
		Construction	Education	Healthcare & Lifesciences	CIS
		Consumer	Aerospace	Hospitality	North America
		Retail	Defense	Banking & Financial Services	Latin America
					Africa
					Middle East
					Asia-Pacific

Frost & Sullivan has identified 10 Growth Processes that serve as levers for determining and evaluating new Growth Opportunities.



Source: Frost & Sullivan

Growth Opportunity 2: Sustainability for MRI (continued)



Context and Definition

- In a clinical setting, MRI consumes significantly more electricity than other medical imaging equipment. The Journal of the American College of Radiology (JACR) estimated the annual electricity consumption of a single MRI machine to be equivalent to 26 four-person households.
- In 2016, a study conducted by an independent researcher found that carbon dioxide emissions from MRI machines accounted for about 0.77% of global emissions, alongside CT. The study was conducted in 120 countries.
- Therefore, it has become essential to take the necessary steps to reduce emissions and decrease energy consumption while providing the best patient care. In addition, implementing the right sustainability measures will help hospitals and other health systems improve efficiency and reduce operational costs.
- OEMs such as Philips, Siemens, and GE are developing MRI machines that use lesser amounts of helium to reduce imaging departments' carbon footprints.



Call to Action

- OEMs should develop and implement sustainable measures during the design stage of MRI machine construction. This covers material selection, equipment design, manufacturing process, packaging, logistics, and disposal.
- Equipment manufacturers should also encourage the use of responsible disposal practices for aged MRI fleets.
- In addition, R&D efforts should focus on optimizing an MRI magnet's cooling power and ensure that cooling technology is used only when the system is in use.
- As physicians are significant commercial energy consumers, they can lead sustainability initiatives in hospitals or radiology clinics.

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Source: Frost & Sullivan

Growth Opportunity 3: AI-based Image Processing and Interpretation

Opp. Size in 5 Years	\$100 M–\$500 M	Relevant End-User Industries for this Growth Opportunity			Applicable Regions				
Timeline for Action	1 to 3 Years		Manufacturing		Mobility		Metal & Mining		Central & East Europe
GO Base Year	2024		Energy & Environment		Chemicals & Materials		Information & Communications Technologies		South Asia
	Electronics & Semiconductors		Agriculture, Food & Nutrition		Govt and Public Sector		CIS		
	Construction		Education		Healthcare & Lifesciences		North America		
	Consumer		Aerospace		Hospitality		Latin America		
	Retail		Defense		Banking & Financial Services		Africa		
								Middle East	
								Asia-Pacific	

Frost & Sullivan has identified 10 Growth Processes that serve as levers for determining and evaluating new Growth Opportunities.



Source: Frost & Sullivan

Growth Opportunity 3: AI-based Image Processing and Interpretation (continued)



Context and Definition

- The increasing medical imaging data volumes across multiple specialties in healthcare facilities drive the complexity of managing patient data, leading to inefficient workflows that impact both productivity and patient care.
- A radiologist shortage is being faced across the world. Radiologist burnout and recent CMS physician pay cuts are further intensifying the situation. More than two-thirds of the world's population does not have access to radiologists, making this a global problem.¹
- Another important challenge radiologists around the world face is a heavy workload to review medical images due to the rising number of imaging exams. As a result, medical imaging IT vendors and OEMs are focused on improving image management and workflow solutions through the use of advanced analytics and AI.
- 1 & 2. Frost & Sullivan. (2023, February 08). Growth Opportunities in the Global Cloud-based Medical Imaging Informatics Industry, Forecast to 2026. <https://store.frost.com/wip/K857-01-00-00-00>



Call to Action

- Medical imaging IT vendors can leverage AI for image analysis and interpretation for screening purposes in different geographies to cater to a large population. They can collaborate with specialty AI-based image analysis and diagnosis solutions vendors, such as Aidoc, Arterys (Tempus), iCAD, and Nanox.ai.
- Medical imaging IT vendors should focus on cloud-based medical image processing solutions that save images on the cloud, as healthcare providers are shifting to the cloud to avoid the high costs associated with on-premises image management solutions that require large storage space before processing. Frost & Sullivan expects cloud-based image analysis to record a 32% CAGR from 2021 to 2026.²
- Imaging IT companies should partner with advanced analytics/AI-based image analysis companies to reduce radiologists' workload and improve healthcare providers' clinical productivity. Philips acquired DiA Imaging Analysis, which specializes in AI-based ultrasound image examination, for nearly \$100 million.
- Similarly, Medis acquired Advanced Medical Imaging Development to enhance its post-processing solutions for X-rays, MRI, CT, IVUS, OCT, and ultrasound, and Blackford and AI4MedImaging entered into a partnership to automatically segment and quantify cardiac MRI measurements through Blackford's AI4CMR solution.

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Source: Frost & Sullivan

Growth Opportunity 4: Enterprise Cloud-based Imaging Informatics

Opp. Size in 5 Years	\$100 M–\$500 M	Relevant End-User Industries for this Growth Opportunity			Applicable Regions
Timeline for Action	1 to 3 Years	Manufacturing	Mobility	Metal & Mining	Central & East Europe
GO Base Year	2024	Energy & Environment	Chemicals & Materials	Information & Communications Technologies	South Asia
		Electronics & Semiconductors	Agriculture, Food & Nutrition	Govt and Public Sector	Western Europe
		Construction	Education	Healthcare & Lifesciences	CIS
		Consumer	Aerospace	Hospitality	North America
		Retail	Defense	Banking & Financial Services	Latin America

Frost & Sullivan has identified 10 Growth Processes that serve as levers for determining and evaluating new Growth Opportunities.



Source: Frost & Sullivan

Growth Opportunity 4: Enterprise Cloud-based Imaging Informatics (continued)



Context and Definition

- The increasing volume of medical imaging data generated by multiple specialties has created high demand for efficient image management solutions. Therefore, healthcare companies are increasingly adopting enterprise cloud imaging informatics.
- Healthcare providers are seeking cost-effective and integrated medical imaging informatics solutions that can address their operational and clinical challenges, including the growing burden on IT teams, the radiologist shortage, cyberattacks, asset optimization issues, and siloed imaging data in a range of disparate systems. To overcome these challenges, imaging IT companies have introduced unified solutions as part of their enterprise imaging strategies, though this approach remains relatively nascent.
- Owing to increasing consolidation in healthcare, the demand for more comprehensive enterprise imaging approaches that better address growth and scalability challenges while incorporating more flexibility and adaptability to each organization's unique scenarios is rising.



Call to Action

- Medical imaging IT companies should focus on providing a one-stop solution that includes image management solutions for entire organizations.
- They should also focus on deploying enterprise imaging informatics on cloud infrastructure to improve the scalability and accessibility of imaging informatics products and solutions.
- Healthcare providers should concentrate on offering improved patient care through better diagnostics, increased patient access, and improved privacy protection; accordingly, they can invest in such solutions.
- Medical imaging IT vendors should partner with large technology companies to expand the capabilities of their cloud-based imaging informatics solutions. Recently, Philips partnered with AWS to advance its PACS image processing capabilities and simplify clinical workflows and voice recognition.

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Source: Frost & Sullivan

Conclusions

Conclusions and Future Outlook

Healthcare providers will continue to focus on moving away from the one-size-fits-all approach to providing personalized care through precision imaging. Therefore, imaging modalities, especially CT, MRI, and molecular imaging, will see higher utilization in oncology.

The availability of favorable reimbursements for procedures at ASCs, patient preference for low-cost surgery, and the increasing ASC footprint have accelerated the shift from hospital outpatient departments (HOPDs) to ASCs.

Refurbished imaging equipment will be used as part of MES offerings to enable sustainability initiatives.

Hospitals and other healthcare facilities are interested in improving their clinical, operational, and financial productivity and will invest in technologies such as cloud infrastructure, enterprise imaging, AI-based imaging and informatics solutions, teleradiology, and remote scanning.

Investments in precision care, theranostics, and oncology will increase due to the high growth in cancer cases across the world.

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Next Steps

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Your Next Steps

Take the Growth Pipeline Diagnostic™

1

Have your Growth Team executives take the online survey for a high-level diagnostic on your growth capabilities

Participate in a customized Growth Pipeline Dialog™

2

Engage in a deep-dive discussion with our consulting team to understand new growth opportunities

Decide on Growth Pipeline Audit™ or GPaaS™ Solution

3

Connect with your Frost & Sullivan consultant to embark on the growth journey

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Why Frost, Why Now?

Our Expertise

EXPERIENCE

- 60 years of proven global experience
- Trusted partner of investors, corporates, and governments

COVERAGE

- Industry convergence through comprehensive coverage
- Global footprint to match client needs

ANALYTICS

- Innovation Generator™ driving 6 analytical perspectives
- Proprietary growth tools and frameworks

BEST PRACTICES

- Growth Pipeline Engine™ and Companies to Action™
- 10 Growth Processes: Best practices foundation

Client Impact

- **FUTURE GROWTH POTENTIAL:** Maximized through collaboration
- **GROWTH PIPELINE™:** Continuous flow of growth opportunities
- **GROWTH STRATEGIES:** Proven best practices
- **INNOVATION CULTURE:** Optimized customer experience
- **ROI & MARGIN:** Implementation excellence
- **TRANSFORMATIONAL GROWTH:** Industry leadership

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