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The Second Annual State of Healthcare Technology Management Insights Report

7 Data-Driven Opportunities to Reduce Operating Costs and Improve Clinical Availability

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Letter from the CEO

Why the Future of HTM Depends on a Proactive Approach to Managing Asset Uptime

As never before, healthcare providers are being asked to do more with less. Rarely has the reimbursement landscape looked so chaotic, with deep cuts to federal health programs projected in the next few years and private insurers constantly re-evaluating their business models and contracts.

Providers will be asked to make the impossible routine: keep their doors open and their quality high even as the available money shrinks and the potential demand grows due to changes in the longstanding and evidence-based public health recommendations that could lead to unpredictable increases in admissions.

On the other side of the ledger, the cost of labor, equipment, parts, and supplies is being buffeted by inflation, changes in tariff policy, and those increases could make the difference between a razor-thin profit and a significant loss for a provider already under pressure.

In this highly constrained environment, every medical device from a Magnetic Resonance Imaging (MRI) machine to a bedside infusion pump becomes mission-critical. Each asset needs a holistic view of its health: attention to prevention; ways to detect small problems before they become big, costly ones; and strategies for addressing those problems to preserve availability and quickly resolve downtime in the most efficient and cost-effective manner possible. Healthcare Technology Management (HTM) professionals are realizing they must move beyond "break-fix" models for managing equipment and focus on the diagnosis and understanding asset health. When devices are down it can cost systems their revenue, reputation, and patient satisfaction.

According to a PartsSource study from 2023 featuring fifteen hospitals, most hospitals self-manage up to 30 internal and external software systems related to device maintenance, many of which are siloed and underutilized, resulting in significant inefficiencies. Inconsistent diagnostic procedures across proprietary vendor platforms can increase equipment downtime between 20% to 40%. The financial impact is substantial, as downtime costs the average health system between $20 million and $50 million annually. As health systems strive to protect revenue, optimize resources, and improve patient throughput, the industry demands a new approach to enterprise asset availability.

Fortunately, today's devices are better equipped than ever to tell us how they are "feeling" because of tighter integration with IT and leaps in artificial AI intelligence. Advanced data analytics can take that information and help our customers formulate a management plan for keeping all of those devices operational for patient care.

I am proud to say that PartsSource is leading the industry in developing tools to monitor and maximize the health of our customers' devices. Asset Uptime is healthcare's first data-driven technology solution to enable clinical operations and supply chain teams to manage the health and maintenance of equipment across federated multi-vendor, multi-modality, and multi-site care environments. Asset Uptime provides HTM teams the tools to proactively manage equipment health, automate service response, and improve clinical availability.

We are privileged to serve the HTM leaders who strive to deliver excellence in an increasingly complex and rapidly evolving environment. This year's conversations highlight your ability to balance the mission of providing quality care while strengthening the financial health of healthcare organizations. Your expertise, innovation, and commitment ensure healthcare continues to operate reliably and efficiently.

PartsSource remains dedicated to supporting your work with evidence-based, technology-enabled solutions that simplify operations and enhance outcomes. Together, we are ensuring healthcare is always on.

Sincerely,

Philip Settimi, MSE, MD
President and Chief Executive Officer

We welcome your thoughts, look forward to your questions, and invite you to join us as we leverage data to empower positive outcomes for the healthcare industry.

Contact us at
partnership@partssource.com

Learn More **About Asset Uptime**

"Healthcare Technology Management (HTM) professionals are realizing they must move beyond "break-fix" models for managing equipment and focus on the diagnosis and understanding asset health."

-Phil Settimi, MSE, MD; President and Chief Executive Officer, PartsSource

2025 HTM Leader Survey

Goals and Challenges

Our second annual State of Healthcare Technology Management Insights Report survey reflects discussions with HTM leaders about some of their most pressing challenges, including:

- Immediate concerns around asset data gaps
- Increasing cost pressures driven by economic uncertainty
- Persistent supply and price volatility
- Growing complexity and cost in equipment service
- Rising shortages in the labor market

Several healthcare leaders shared their insights and experiences in one or more of these areas, and you will see their stories throughout the report.

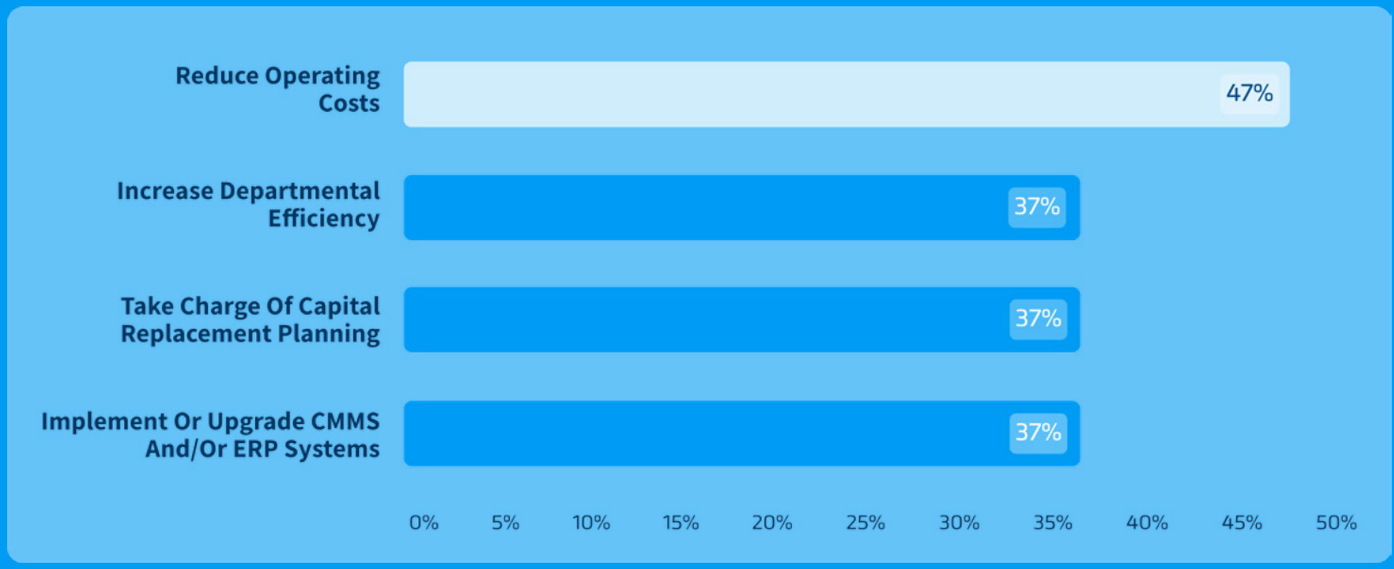
PartsSource partners with more than 5,000 hospitals to keep their medical devices and imaging equipment operationally ready while helping them use every dollar to maximum effectiveness.

The year's conversation with industry experts focuses on the complexity of the HTM landscape and rapidly evolving environment where HTM professionals must prioritize asset availability to promote both quality of care and the financial health provider organizations.

These discussions found HTM leaders are striving for operational efficiency, strategic use of data to monitor asset health, and a fully staffed and well-trained workforce, all while working to find ways to take out costs without sacrificing quality.

Respondents' most urgent goal is the need to control and reduce costs. To meet this goal, healthcare leaders are focusing on increasing department productivity and efficiency, getting a better understanding of future capital expenses, and improving the data they rely on to make these key decisions.

What have HTM leaders identified as top goals for 2025?



Over 47% of respondents have prioritized reducing operating costs as a top goal. Other goals include increasing their department's efficiency, taking charge of capital replacement planning, and / or implementing or upgrading a Computerized Maintenance Management System (CMMS) or enterprise resource planning (ERP) system, with each goal receiving 37% response.

When asked about the challenges impeding their desired progress against 2025 goals, the top challenges remained consistent to 2024. For the second consecutive year, the industry labor shortage was identified as the top challenge to achieving survey respondents' 2025 goals, followed by challenges influencing internal leadership / peers.

The support requested by respondents from their organization's leadership corresponded with their challenges: 32% of respondents cited better strategic alignment with clinical and supply chain peers in their organization surrounding equipment and service purchasing strategies, 26% sought approvals to add staff, and 11% requested additional resources for training.

"To meet this goal, healthcare leaders are focusing on increasing department productivity and efficiency, getting a better understanding of future capital expenses and improving the data they rely on to make these key decisions."

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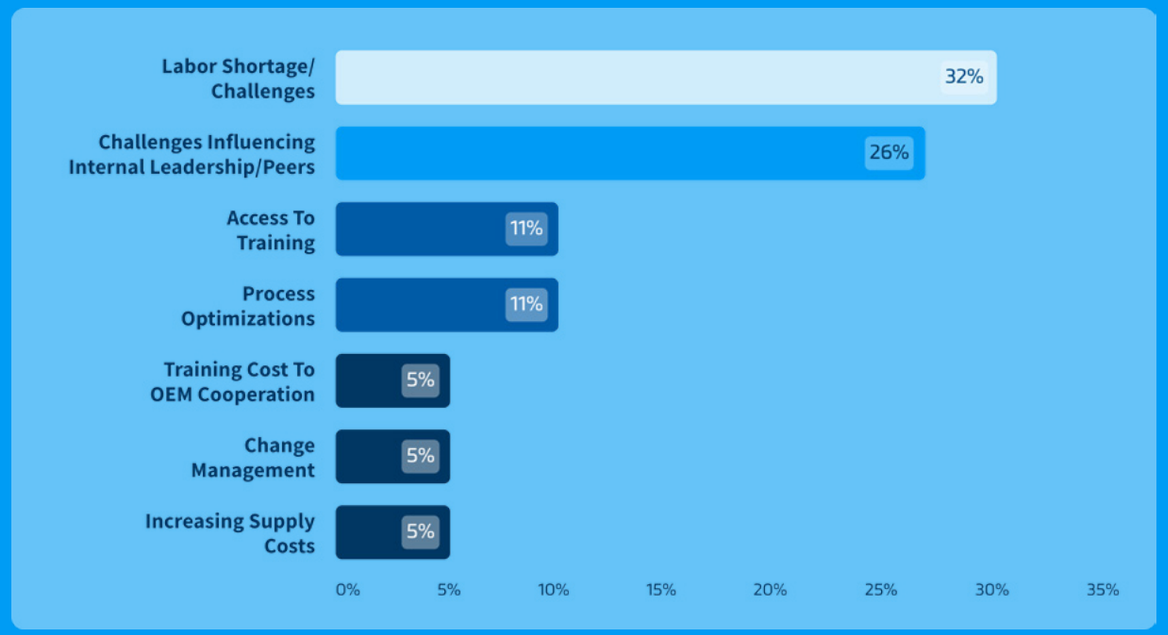
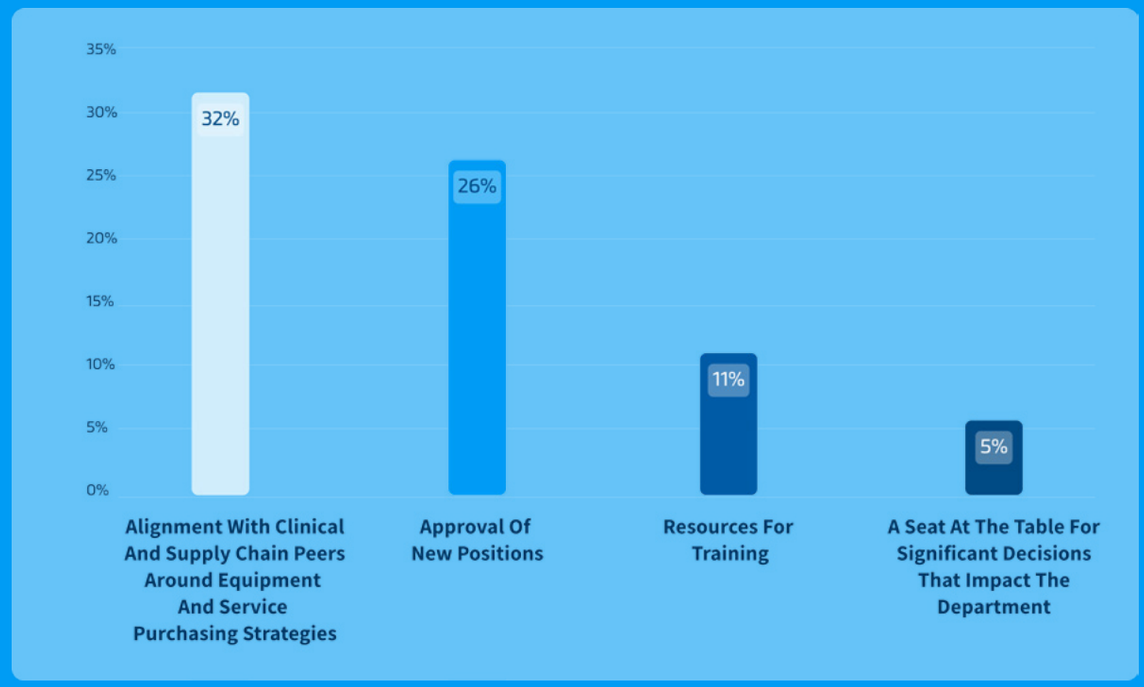
What are the most significant challenges in meeting their goals?



What is the support most needed from health system leadership?



Key Findings

Key Findings

HTM continues to operate at the center of a rapidly shifting landscape. In 2025, leaders are navigating intensifying cost pressures, persistent supply volatility, and rising complexity in equipment service, while also facing labor shortages that threaten future workforce readiness.

At the same time, the promise of predictive analytics, integrated data, and innovative training solutions offers a path forward to strengthen resilience, control costs, and improve asset performance.

As we listened and learned from our HTM community this year, key findings emerged. These findings highlight the barriers limiting HTM performance today, as well as the strategies, innovations, and investments leaders are adopting to move from reactive operations toward proactive, data-driven, and future-ready programs.

Core Findings and Takeaways

- Data Gaps are Limiting HTM Leaders From Reaching Potential
- HTM Leaders are Grappling with Intensifying Cost Pressure
- Persistent Supply and Price Volatility are Spurring Demand for Novel Sourcing Strategies
- Complexity and Cost Challenges are Increasing for Healthcare Equipment Service
- The HTM Labor Shortage is Accelerating a New Wave of Innovation in Workforce Training and Development

Key Findings:

Data Gaps are Limiting HTM Leaders from Reaching Potential

While HTM leaders understand equipment downtime directly erodes revenue, disrupts care, and strains staff, most lack the robust data analytics and predictive insights needed to prevent it. Fragmented data, limited visibility, and insufficient predictive capabilities keep many organizations locked in a reactive "break-fix" cycle. Emerging solutions – such as integrated telemetry, advanced analytics, and asset health records, are demonstrating strong potential to improve uptime, optimize resource allocation, and extended asset life, but adoption remains limited.

Supporting Data and Insights:

- Only 6% report effective systems to predict maintenance needs to enable proactive work to reduce downtime.
- Missed procedures from downtime can cost health systems more than $100,000 per month.
- Real-time analytics can reduce repair costs by 25%$^{+}$ by shifting service to non-clinical hours.
- Accurate service histories can help avoid costly, unnecessary equipment upgrades.
- According to one Glassbeam study, facilities can double or triple scan capacity, driving revenue gains with real-time scheduling data.
- Integrated telemetry and workflow automation enable proactive uptime management, improving asset availability, and patient satisfaction.

Learn more in **Improving Asset Availability** (pg 19)

Key Findings:

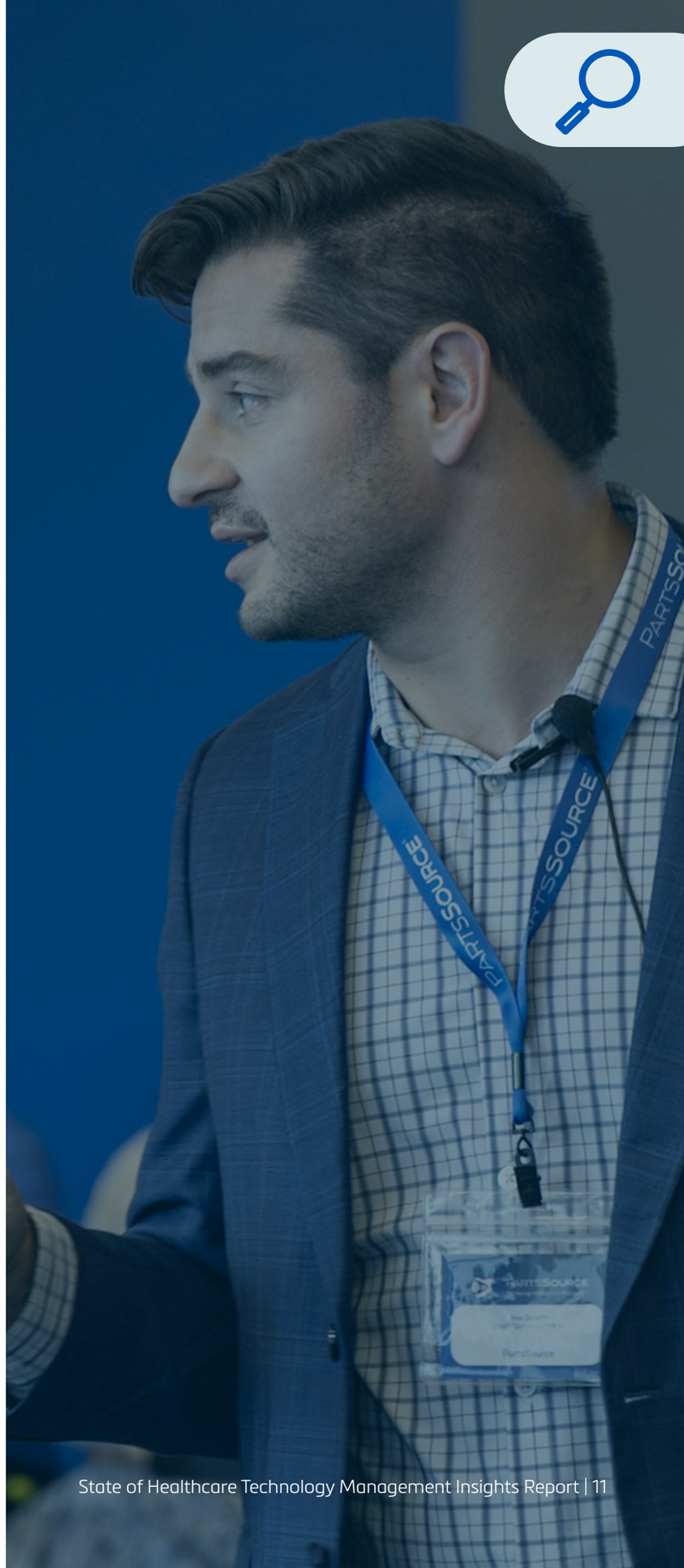
HTM Leaders are Grappling with Intensifying Cost Pressure

HTM leaders face a convergence of financial pressures in 2025, with medical parts inflation outpacing the broader economy, looming tariff changes creating supply chain uncertainty, and reimbursement challenges squeezing margins. The complex, low-frequency nature of many parts purchases makes pricing unpredictable, and these cost uncertainties, along with unrelenting revenue pressures, are prompting health systems to extend asset lifecycles and delay capital investments. While some organizations are turning to service agreements, guaranteed in-stock programs, and cost-effective formularies to stabilize expenses, there is still more that can be done.

Supporting Data and Insights:

- Inflation in medical parts remains approximately 160bps elevated compared to the Consumer Price Index (CPI).
- About 50% of medical parts come from countries impacted by pending tariff changes which could easily drive-up prices by 10% to 20% over the next six months.
- 90% of parts purchases are under 500 items/year; 80% are under 2 items/year, making price tracking and budgeting difficult.
- Health systems are elongating capital replacement cycles to preserve cash, extending asset life instead of replacing equipment.
- Tariff uncertainty and reimbursement cuts (Medicare, Medicaid, 340B) compound budget pressure.
- Cost stabilization strategies include strategic service agreements with expense caps and shared savings, procurement of compatible parts with guaranteed quality, and a formulary of vetted, cost-effective parts.

Learn more in **Economic Landscape of HTM** (pg 15)



Key Findings:

Persistent Supply and Price Volatility Spurring Demand for Novel Sourcing Strategies

While pandemic-era supply chain chaos has eased, medical parts availability remains below pre-Covid stability. Ongoing global trade uncertainties, particularly around tariffs, are contributing to backorders and potential price increases. Imports from China, a major source of medical parts, have dropped sharply, raising concerns about continued delays. Meanwhile, hospitals stocking up on high-usage items like preventative maintenance (PM) kits, batteries, and accessories are further tightening supply, driving both competition for parts and upward cost pressure.

Many organizations delay operational change amid uncertainty, but waiting only worsens challenges ahead. Those prioritizing efficiency, visibility, and innovation now will emerge stronger beyond today's headwinds.

Supporting Data and Insights:

- Overall imports from China down approximately 30% since 2024, with confirmed impact on medical parts availability.
- Backorder levels remain above pre-pandemic norms across product categories.
- Increased hospital demand for high-usage preventative maintenance (PM) kits, batteries, and accessories is compounding shortages.
- Provider responses to volatility include:
    - Rate freezes with original equipment manufacturers (OEMs) to offset price hikes.
    - Bulk purchasing and inventory holding of ready-to-ship parts.
    - Procurement of OEM-compatible and vetted, cost-stable parts in high-usage categories.

Learn more in **Translating Trends to Impact** (pg 33)

Key Findings:

Complexity and Cost Challenges are Increasing for Healthcare Equipment Service

As healthcare technology management becomes more complex, service costs are rising due to fragmented vendor relationships, inconsistent service standards, and inefficient maintenance practices. Many organizations juggle multiple OEM contracts, unpredictable repair expenses, and escalating parts costs - challenges compounded by the need for specialized labor and rapid response times. To control costs and complexity, leading systems are moving toward integrated service models, standardized performance metrics, and technology-enabled maintenance strategies that improve efficiency and equipment uptime.

Supporting Data and Insights:

- Providers currently manage an average of 146 service contracts, but some systems can exceed 200.
- With providers managing numerous contracts and vendors, pricing inconsistencies are often missed, with some full-service agreements for the same equipment model varying by up to 470%.
- Fixed or capped pricing models and clear response metrics help prevent unexpected cost spikes.
- Usage- and risk-based PM scheduling minimizes downtime and focuses resources on high-priority assets.
- Integrating core systems to centralize asset data automates workflows and enhances visibility into performance and warranty coverage.
- Case study examples show a 15% to 25% service cost reduction in year one when multiple vendors are consolidated into a single comprehensive agreement, alongside improved uptime and response times.

Learn more in **Eliminating Complexity & Cost** (pg 54)

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Key Findings:

The HTM Labor Shortage is Accelerating a New Wave of Innovation in Workforce Training and Development

According to the Department of Labor, *Bureau of Labor Statistics Occupational Outlook Handbook,* technician retirements are accelerating and the demand for medical equipment repair is projected to grow by 18% over the next decade. To address this disparity, HTM leaders are investing in advanced, scalable training methods to close critical skills gaps. Hands-on and interactive learning remain preferred, but virtual reality (VR) training is emerging as a cost-effective, flexible addition that can deepen the expertise of technicians and improve knowledge retention. Early adopters are reporting faster onboarding, broader access to complex skills, and greater workforce readiness despite staffing constraints.

- 63% of this year's survey respondents cite the costs / time / travel savings compared to traditional methods as a key benefit of using VR for training purposes, 53% value reusability for refreshers.
- 42% of survey respondents cite limited content availaiblity as an on obstacle to implementing VR training and 37% indicate an uncertainty about ROI.

Learn more in **Training to Upskill Teams** (pg 68)

Supporting Data and Insights:

- 42% of HTM leaders report developing and upskilling biomedical technicians as a top priority.
- 67% are considering VR training methods for their staff, 11% are currently using, and 5% are in pilots.

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Economic Landscape of HTM

Managing Price Volatility for Long-Term Stability

Economic Landscape of HTM

PartsSource Point-of-View with Alex Gedeon, Chief Operating Officer and President of Enterprise

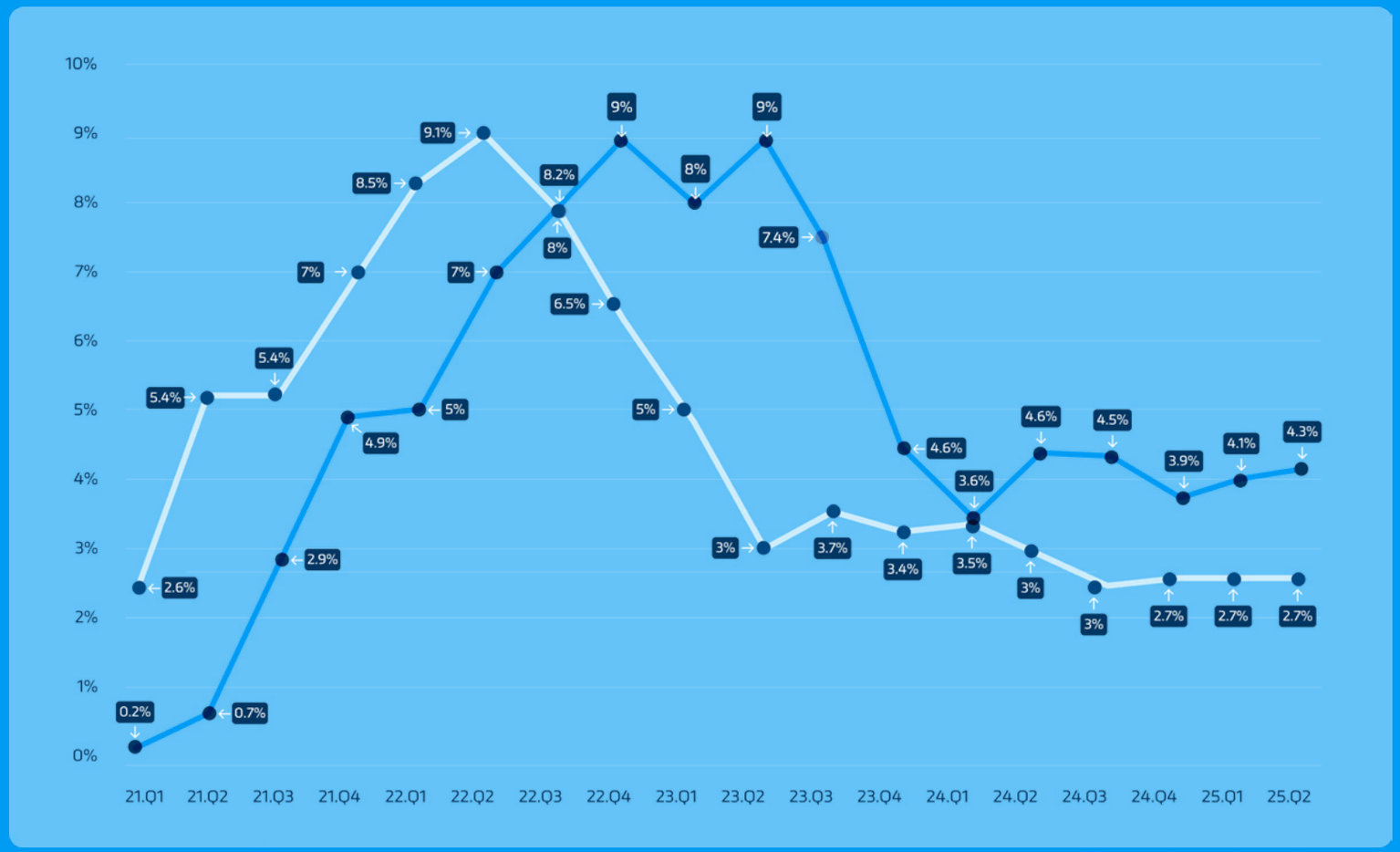
"While resiliency of the parts supply chain is always a top HTM concern, 2025 presents some unique challenges," says PartsSource Chief Operating Officer and President of Enterprise, Alex Gedeon. One of them is the shifting landscape of federal policy surrounding tariffs, which would impact medical parts made outside the United States.

"It continues to be a dynamic situation, though we have seen supply chains remain quite resilient, especially as short fuse deadlines have pivoted to longer runways," Gedeon says.

Inflation in medical parts remains approximately 160bps elevated compared to the CPI, as has been the case since mid-2022. Global supply chain pressures remain the primary cause of persistent parts price inflation. The uncertainty over tariffs changes the parts acquisition landscape in several ways. "Manufacturing began to shift away from China several years ago to other Asian countries and Mexico in response to tariffs imposed during the f irst Trump administration, so in many ways, the supply chain had already started to adapt to a more hawkish trade stance towards China and the recent tariffs have only accelerated that movement," Gedeon says.

Even so, he does not expect a significant shift to domestic production in the near term. “Suppliers do not know if these tariff shifts are going to be permanent, so it is tough for them to make relatively large capital investment decisions to build or expand manufacturing capacity in the US,” he says. Many are sitting on elevated inventories of pre-tariff goods and may have already increased prices somewhat in anticipation of a tariff-induced squeeze on profits.

Total Inflation (All Modalities)



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While the impact of tariffs will have an impact on medical devices and parts, the healthcare industry overall is facing possibly significant revenue cuts for major federal and state programs such as Medicare, Medicaid, and the 340B hospital drug pricing program.

These cuts are in addition to providers' annual struggles to maintain tenable reimbursement levels from commercial insurers. "Tariffs are certainly a concern, but they should be viewed as part of an increasingly challenging operating environment for healthcare providers," Gedeon says. "Reimbursement changes are top of mind for many systems across the country."

Gedeon says supply chain issues for medical parts are particularly complex because the network of suppliers and parts is expansive. "80% of replacement parts will be purchased two times or less by a typical health system, and 90% of those purchases will be under $500. It is not like consumables, where annual purchases might number in the thousands or millions. It is very complex to manage and predict."

In light of the uncertainty created by the dynamic tariff backdrop many health systems are considering elongating their capital purchasing cycles and deferring investments in new technology until the economic situation becomes more clear. "They are focused on a defensive balance sheet posture, which includes deferring capital asset purchases," Gedeon says.

PartsSource customers have an opportunity to ensure their supply chain is stable, cost-effective, and resilient amid these changing dynamics by taking advantage of several measures that the company has adopted to add resiliency to the supply chain. "Many of our partners are leveraging PartsSource PRO® Service, a solution that consolidates fragmented service agreements and provides a tech-enabled, evidence-based service approach that capitates their expense while sharing back savings," Gedeon says. "They are able to maintain certainty on what they spend and if the cost comes in lower, we share back the savings." PartsSource has also put its own balance sheet to work to improve resiliency and price stability for the PartsSource PRO client community. They have increased their warehouse and inventory footprint by over 500% to reinforce stability and ensure mission-critical components are ready to ship. PartsSource has also created a formulary of cost-effective, high-quality parts to ensure and drive enterprise-wide compliance of purchasing rules.

Alex Gedeon,
Chief Operating Officer and President, Enterprise, PartsSource

> *"In light of the uncertainty created by the dynamic tariff backdrop, many health systems are considering elongating their capital purchasing cycles and deferring investments in new technology until the economic situation becomes more clear."*
>
> *-Alex Gedeon, Chief Operating Officer and President, Enterprise, PartsSource*

Opportunity 1: Improving Asset Availability

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Most HTM leaders are keenly aware of the negative ripple effects on their organization when equipment is down. Patients, staff, and schedules get shuffled to accommodate, the organization loses revenue, and everyone's satisfaction plummets. The larger or more specialized the equipment, the greater the impact. While a bedside monitor or infusion pump can often be shifted from another room, a malfunctioning CT scanner may require diverting patients to another facility.

That awareness is not always shared by the C-suite, notes Rich Jones, Chief Executive Officer of Glassbeam, a PartsSource Company, which applies machine learning to predict and prevent medical equipment downtime. Jones spent 35 years managing advanced imaging facilities, working for two national providers prior to joining Glassbeam, "Most CEOs think you do not lose money because you can rebook the patient," Jones says. HTM leaders realize that every cancelled slot is potentially lost revenue. In his previous role, he estimates his organization lost $500,000 in revenue every month on equipment downtime. "A patient would be prepped for image-guided surgery, anesthesia would be given, and then the machine would not be working. That was considered acceptable. But every second an asset is not being used costs the system a significant amount of money."

Glassbeam is the industry leader in medical equipment analytics and remote monitoring. Glassbeam's powerful software translates raw machine data into real-time, actionable insights that help to detect issues early, reduce unplanned downtime, and optimize utilization across an equipment fleet. HTM leaders can now gain visibility to the health of mission-critical assets, enabling better decisions and improved operational efficiency, demonstrating the full value of HTM teams.

Rich Jones,
Chief Executive Officer,
Glassbeam, a PartsSource Company

"If you can take action before your services get distrupted, it changes how you operate. Imagine a world where engineers are not running from one fix to another, but where service can be scheduled in a controlled manner."

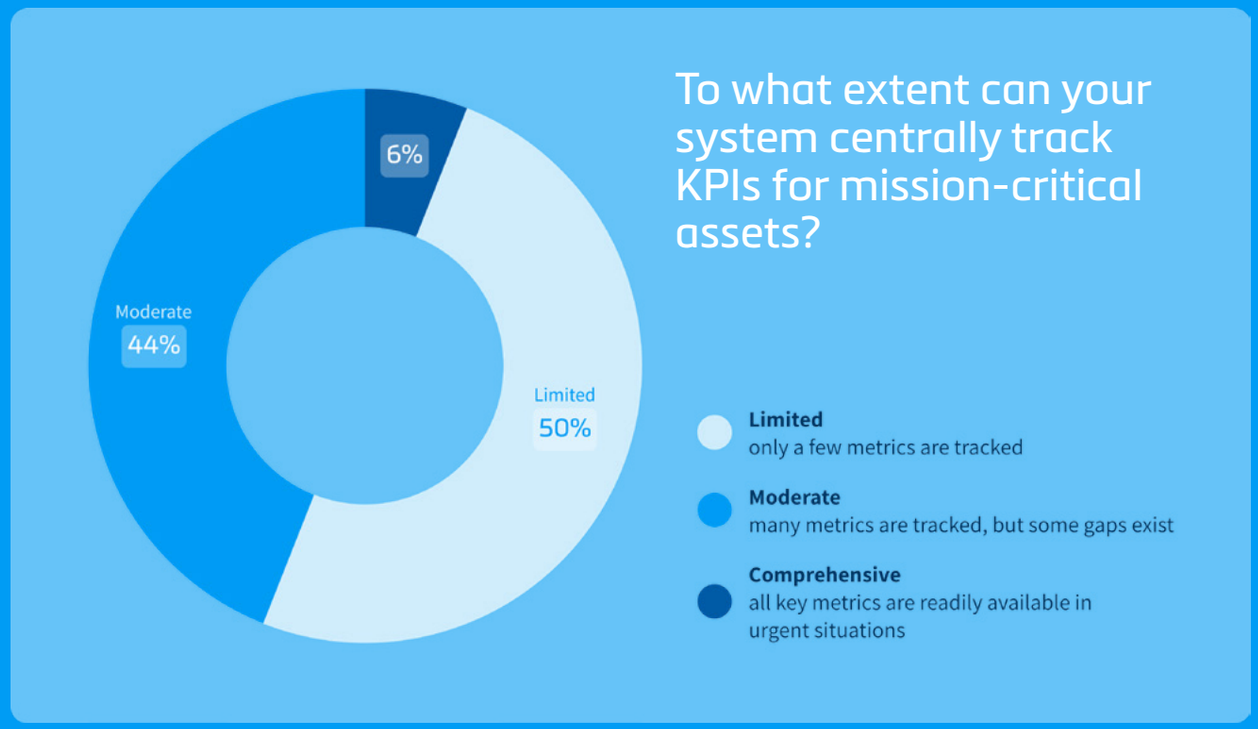
-Rich Jones, Chief Executive Officer, Glassbeam, a PartsSource Company

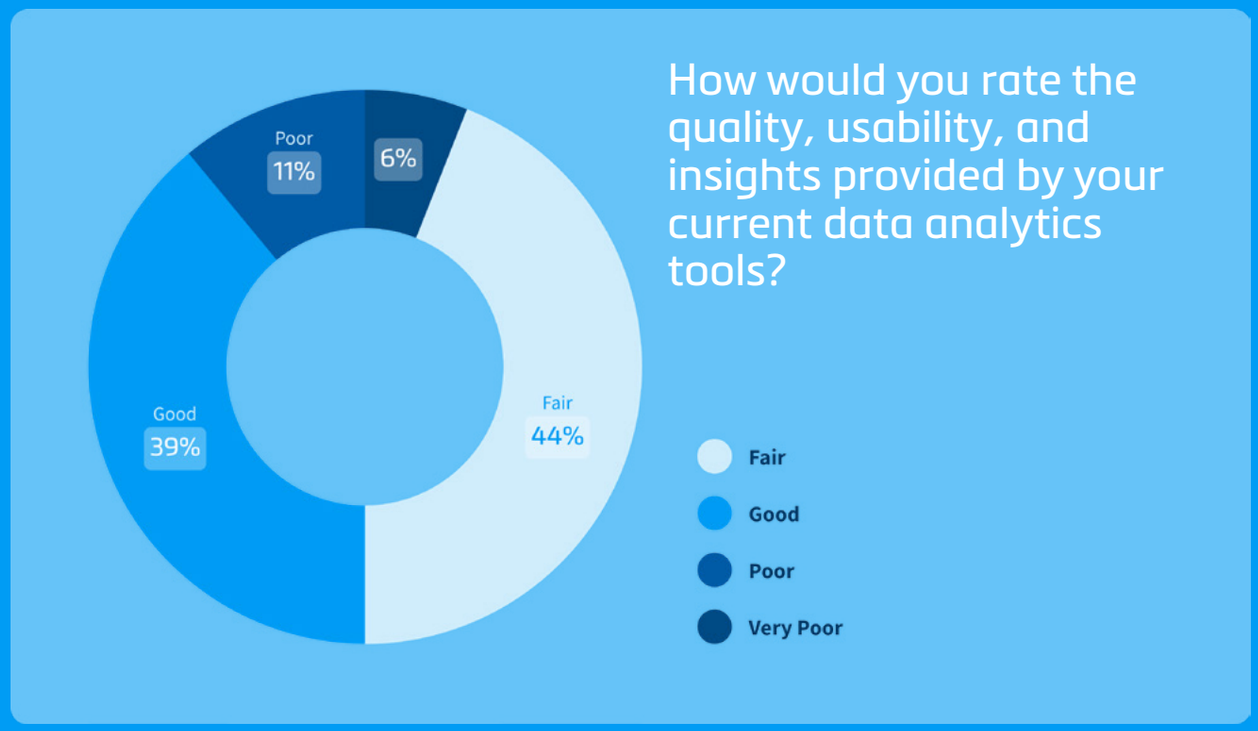
Current State of Asset Availability Analytics

Quantifying the cost is challenging, but doing so can highlight the value of investing in the analytical capabilities needed to make those calculations. Nonetheless, responses to this year's survey show major gaps in those capabilities. While all survey respondents said they have at least some ability to track key metrics on their assets, such as unplanned downtime, problem frequency, and service delays, a mere 6% say they have a comprehensive system in place. Half said they can track only a few metrics, and another 44% track "many" metrics but say information gaps still exist.

Not surprisingly, respondents overall were not happy with the quality, usability, and insights provided by their current data analytics tools. None rated their current tools "excellent," and only 39% rated them as "good," with 17% calling them either "poor" or "very poor."

The survey results reveal that most healthcare leaders view their current data analytics and reporting tools as underperforming. Only 39% of respondents consider their analytics tools and reporting to be Good. 44% of respondents rated their analytics tools and reporting as Fair and 11% rated them as Poor. This indicates significant room for improvement.

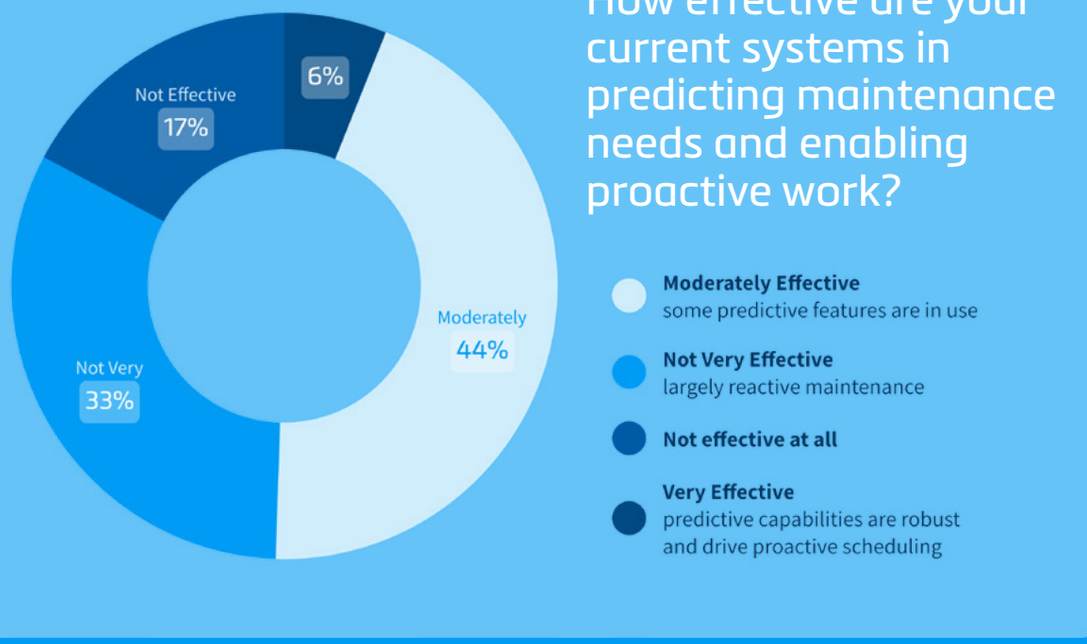




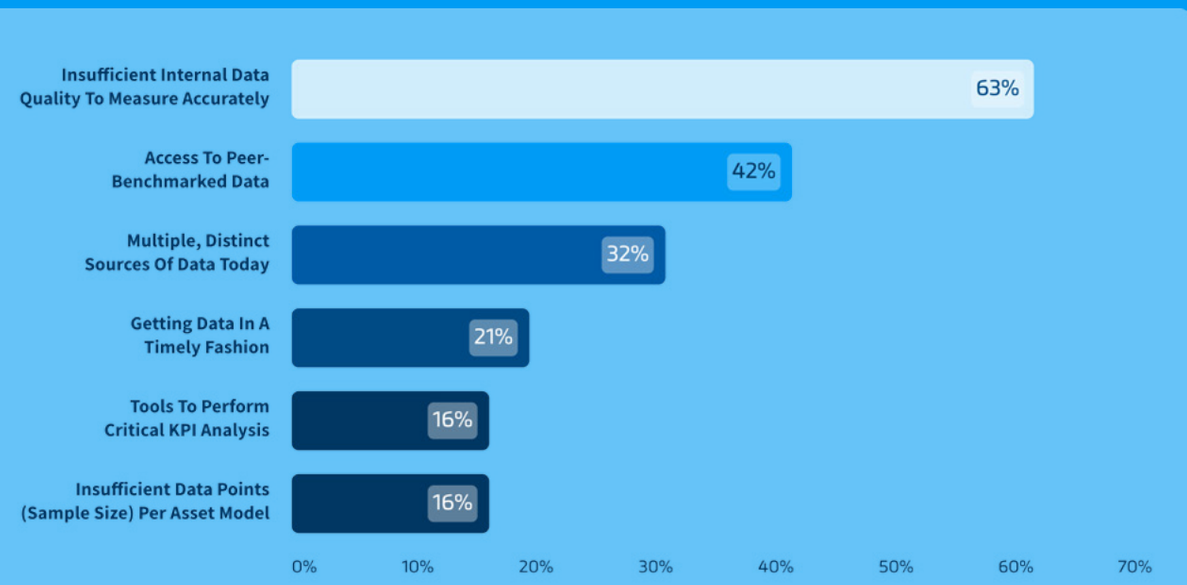
This data suggests that many organizations lack the robust, user-friendly, and insight-driven analytics needed to support effective decision-making and service management. Limited usability and fragmented data visibility may be constraining leaders' ability to drive operational efficiency and improve asset performance. Strengthening analytics platforms to deliver actionable insights in real time represents a clear opportunity for progress across the healthcare technology management landscape.

Respondents' ability to predict maintenance needs and downtime, enabling more efficient use of resources, is extremely limited. Only 6% reported robust and actionable predictive capabilities, while 17% said they had no such capabilities and another 33% said their capabilities are not effective and keep them largely mired in reactive maintenance.

How effective are your current systems in predicting maintenance needs and enabling proactive work?



What are the top challenges to measuring, monitoring, and analyzing critical asset KPIs?



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Escaping the "Break-Fix" Cycle

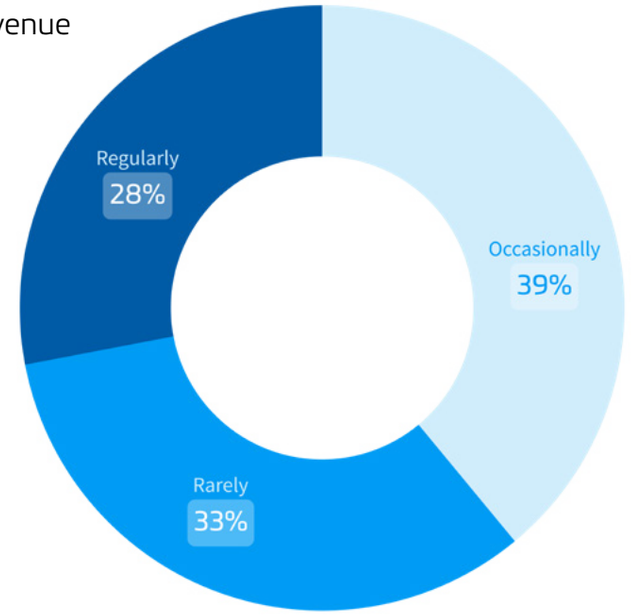
Over 67% of respondents for both instances of 65% said they draw historical data from a CMMS as a learning tool to drive continuous improvement in maintenance practices, procedures, repair efficiency, and/or team knowledge. Of the 65% of respondents who access CMMS data, only 28% said they use that data regularly and almost 33% review it rarely.

Glassbeam's Rich Jones says the data is there to help HTM shops escape the "break-fix" cycle that has prevailed for decades, if they have the tools to harness it. Glassbeam service analytics solutions work in the background, pulling log files from each asset and running them through algorithms to identify anomalies that point to future problems. "Hospitals and independent service organizations (ISOs) can evaluate that asset before it goes down and can do that service in off hours," Jones says. "If you can take action before your services gets disrupted, it changes how you operate. Imagine a world where engineers are not running from one fix to another but where service can be scheduled in a controlled manner.

Every time a replacement can be done on non-scan hours, it can save 25% or more on the cost, and across a system, those savings add up."

Moreover, HTM leaders can estimate both parts and service repair costs more accurately when they have a clearer picture of their repair patterns. "If you do not know the facts, you typically buy more than you need and it is really an expensive insurance contract on your assets because you do not understand your risks," Jones says.

Those log files, combined with data from scheduling and billing systems and other sources, can also boost revenue by pointing to more efficient ways to schedule and use assets. For example, an outpatient center may book a patient for 30 minutes of scan time when the actual scan takes only 10 minutes, because it uses unreliable data from its electronic health record system to determine procedure length. Glassbeam system uses data sources that update in real time, rather than when the clinician gets around to making an entry. A center could double or triple its capacity with better data, with extra revenue contributing to the bottom line, Jones says.



How frequently does your organization use historical data from your CMMS as a predictive tool?

Occasionally
Searched and used by individuals when issues arise

Rarely
Only reviewed on an ad hoc basis

Regularly
It is a core part of our learning and improvement process

Community Insights

How WakeMed Health and Hospitals is Improving Equipment Uptime through Asset Visibility and Telemetry Capabilities

George Reed, Director of Clinical Engineering at Wakemed Health and Hospitals in Raleigh, NC, has a new PartsSource Command Center front and center in their main department work area. The Command Center allows the department to view all operational requests including parts quotes, returns, exchanges, warranty repairs, depot repairs, on-site labor requests, and more. The Command Center provides a quick heads-up view for managing daily operations.

In addition to the Command Center, they have also implemented Asset Uptime that provides service level data on approximately 300 imaging assets and 11 Continuous Renal Replacement Therapy (CRRT) devices that allow clinical engineering leaders to address support issues, driving faster turnaround of critical assets back to their clinical customers. Asset Uptime uses three colored kanban categories that help them quickly see the status of these key systems: red = hard down, yellow = limited operating, and blue = PM scheduled.

The Command Center and Asset Uptime views enhance their highly data-driven daily huddles and their weekly production / accountability huddle to prevent any work orders from sitting idle with no activity for more than 7 days. The only acceptable reasons for a work order to exceed the 7+ day metric are for pending parts orders, vendor scheduling, equipment availability, or awaiting paperwork.

On a humorous note, when they went live with Asset Uptime, it immediately revealed a lag related to timely work order documentation closeout, but this became a win as Asset Uptime helped them to immediately identify and address any lag in work order documentation. Other Asset Uptime customers have observed the same phenomenon.

Additionally, using the Asset Uptime tool, Clinical Engineering teams will be able to share work order / equipment status in real time with relevant stakeholders who need detailed information regarding the operational status of equipment as the work order progresses through a downtime event and to notify clinical leaders once a device is returned to an operational state. This will eliminate the human factor that can add to a delayed response to clinical staff.

Jack Dellostritto receiving the WakeMed Pyramid Society Award from George Reed and Dallas T. Sutton, Jr.

George Reed,
Director of Clinical Engineering,
WakeMed Health and Hospitals

Asset uptime is a bold, evidence-based initiative being developed by PartsSource that will transform clinical asset management.

Asset Uptime is healthcare's first data-driven technology solution to enable clinical operations and supply chain teams to manage the health and maintenance of equipment across federated multi-vendor, multi-modality, and multi-site care environments. PartsSource has co-developed this innovative solution with its alpha partners, five forward-thinking healthcare systems representing a total of 87 hospitals.

George Reed's department manages about 38,000 devices in three main hospitals totaling more than 900 beds, plus four stand-alone emergency departments and over 180 medical practices. Wakemed is growing and currently planning for a 65-bed acute-care hospital, a 160-bed behavioral health center, and multiple urgent care centers, which together will add several thousand more devices to the inventory. His staff of 25 is stretched as thin as anyone's, but the PartsSource Command Center is allowing them to operate more effectively and efficiently.

To enhance the effectiveness of Asset Uptime, Wakemed has engaged with Glassbeam to add asset telemetry technology to the monitored inventory, adding the ability to predict repair and maintenance needs and track the effectiveness of its HTM operations.

"It will change our dynamics for everything," Reed says. "We will be able to track the CT room temperature, humidity, coolant flow rates, and equipment error codes, all of which will help us not only diagnose errors, but also to predict and hopefully prevent some downtime events. The intent is this software and hardware will allow clinical engineering teams to see and act on pending events quickly and remotely by scheduling a service response in off hours or with enough advance notice that clinical staff can gracefully shift their patients and resources, minimizing clinical impact."

Reed is excited about the potential impact of significantly increasing asset uptime with better insight. "If a hospital has five CT scanners and one goes down, it is impactful, but not as critical as the impact to a site with a single CT," he says. "Not only can you not see scheduled patients, but you also cannot see emergency patients that may present either. Your facility goes on diversion, which can take up to four hours to get off that diversion after the CT has been repaired. Think about all the patient dissatisfaction, the revenue you lost, and the additional cost of transporting patients by going down for even an hour, and that compounds in multiple ways."

Asset Uptime will provide HTM teams the tools to proactively manage equipment health, automate service response, and improve clinical availability.

This breakthrough technology aggregates asset telemetry from connected devices and systems, standardizes workflows by ingesting and normalizing disparate data signals, and introduces the first Asset Health Record, a centralized repository that stores and visualizes critical data across vendors and modalities. By initiating and automating event-based workflows for parts and service, HTM teams can act faster and smarter. The result is higher equipment uptime and greater clinical capacity.

Reed says, "At the beginning of our journey with Asset Uptime, I had the chance to discuss the new initiative with our CMO, and it was interesting how the concept, process, and deliverables were so obvious that he was already thinking about where this platform can take WakeMed."

"Asset Uptime will provide HTM teams the tools to proactively manage equipment health, automate service response, and improve clinical availability."

-George Reed, Director of Clinical Engineering, WakeMed Health and Hospitals

Insights in Action

- **Proactively manage downtime to protect revenue:** Missed procedures due to equipment failures can cost health systems hundreds of thousands monthly.
- **Consider the comprehensive impacts of downtime:** Some executives believe that patients can simply be rebooked, missing the full financial and operational toll, but that does not capture the patient dissatisfaction, the potential impact on the system's reputation, and future patient choice on healthcare provider.
- **Prioritize data analytics:** Only 6% have comprehensive analytics; most struggle with fragmented data and limited visibility to asset status.
- **Implement predictive tools to reduce costly repairs:** Real-time analytics enable proactive maintenance, saving 25%+ of costs by servicing equipment during non-clinical hours.
- **Avoid unneccesary upgrades with better data:** Accurate service histories help justify extending asset life and resisting vendor-driven replacement cycles.
- **Improve scheduling to increase scan volume:** Real-time insights reveal undersused scan time, enabling centers to increase patient throughput.
- **Embrace a praoctive approach to uptime management:** Combine on-asset telemetry, CMMS data, and workflow status to enable smarter staffing, fewer delays, and higher patient satifaction.

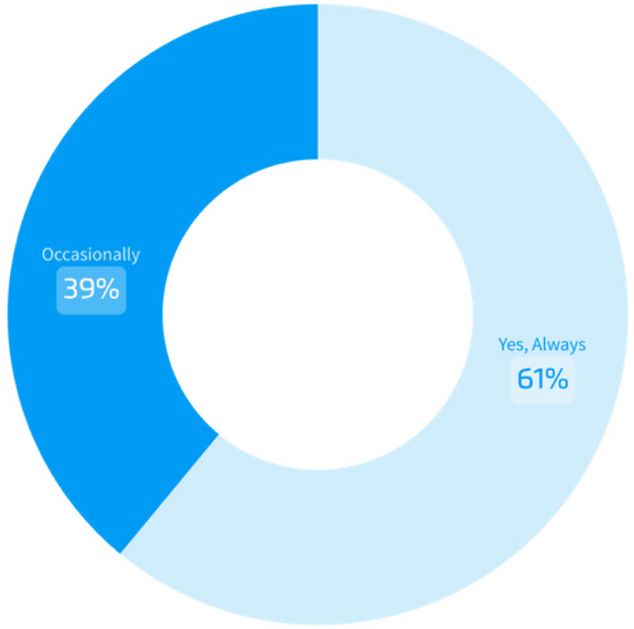
Opportunity 2: Optimizing Cost and Quality for Parts Procurement

Opportunity 2: Optimizing Cost and Quality for Parts Procurement

In the 2024 State of HTM Insights Report, the conversation around parts procurement centered on balancing quality return rates (QRRs), cost savings, and urgency when deciding between OEM and OEM-compatible options. Providers learned that data-driven decision-making—considering return rates, availability, and cost—could challenge long-standing assumptions about always defaulting to OEM parts.

In 2025, this discussion takes on greater relevance. With parts inflation outpacing the broader economy, supply volatility intensifying, and financial pressures mounting across healthcare, the ability to optimize cost and quality in parts procurement is no longer just a best practice — it is a necessity. HTM leaders must leverage evidence-based insights, technology-enabled procurement platforms, and flexible sourcing strategies to ensure they are securing the right part, at the right time, for the right value.

All respondents were at least somewhat open to sourcing parts from OEM-compatible suppliers, 61% of respondents said they always evaluate OEM-compatible sources, and the remaining respondents source OEM-compatible parts for specific modalities. When they do use OEM parts, half said it is because of their organization's policy and half said they believe OEM quality is superior. Of note, none said that clinician preference dictated use of OEM parts.



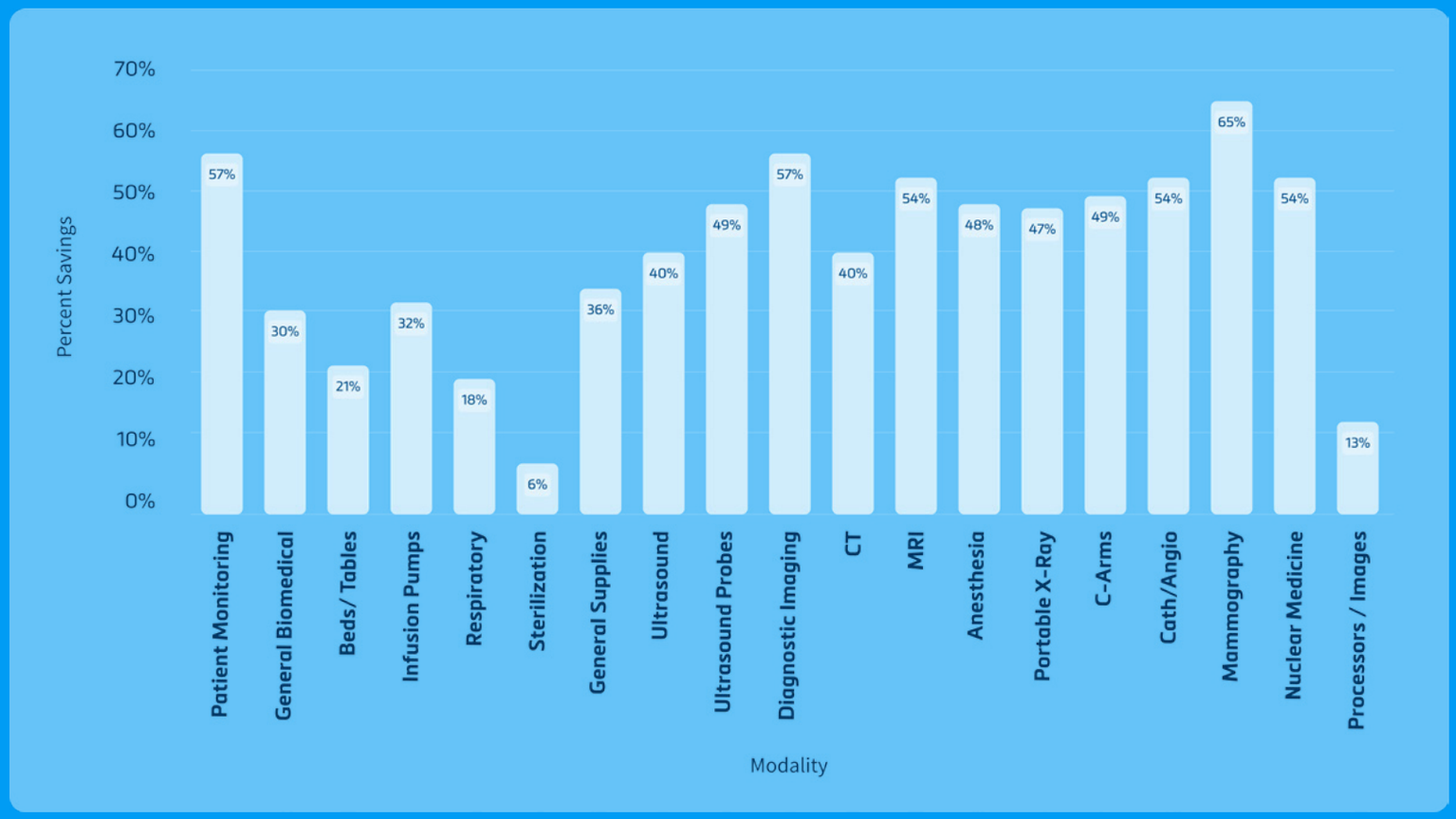
Do you source parts from OEM-Compatible providers?

- Yes, I always evaluate alternative options when available
- Yes, but only for specific modalities

PartsSource data shows that the savings on vetting OEM-compatible parts can be substantial and often have better or comparable quality return rates.

"HTM leaders must leverage evidence-based insights technology-enabled procurement platforms, and flexible sourcing strategies to ensure they are securing the right part, at the right time, for the right value."

Average Savings on Refurbished and Tested Aftermarket Replacement Parts Compared with New OEM Replacement Parts



Community Insights

How Jackson Health System Drives Cost Savings with Parts Formulary and Artificial Intelligence

As the public safety-net health system for Miami and Miami Dade County, Jackson Health System (JHS) must make every dollar go as far as possible. To that end, JHS uses artificial intelligence (AI) to help plan capital asset related acquisitions as strategically as possible with precise evaluations of how the current fleet is performing and how JHS's experiences compare with industry benchmarks.

Charles Berberette, JHS's Senior System Director of Biomedical Engineering, wanted to validate the accuracy of the AI tools available to him. He was aware of news reports about misleading or false conclusions, i.e., hallucinations, generated by some forms of AI. "I spent eight hours validating the first report, and I was shocked at how accurate it was," he says. Now, he feels more comfortable trusting the technology to help him generate strategic capital asset planning reports to present to the JHS management team. "We can determine how we want those reports to work and how to standardize them and use AI to export code, so we do not have to reinvent the wheel every time," Berberette says.

He used an AI tool to run a customized cost savings analytic on a specific set of equipment, pulling the information needed for reports and analytics from the available tools. "It has been a breath of fresh air," he says. "Our teams are starting to embrace it. AI is going to help us be more efficient and save us labor resources for other projects and process improvements."

JHS, a taxpayer-funded integrated delivery network, operates Jackson Memorial Hospital, which is one of the largest single hospitals in the country as measured by number of licensed beds (1,488).

"JHS uses the PartsSource Visual Analytics feature to evaluate and select the best purchase option. PartsSource Visual Analytics provides data and insights that help JHS make these decisions and recommend improved courses of action."

Charles Berberette,
Senior System Director of Biomedical Engineering,
Jackson Health System

Emilia Nelly Faraj Hernandez,
Biomedical Engineer,
Jackson Health System

JHS is also a hub for specialized pediatric services, one of the busiest transplant programs in the country, and a top-rated trauma center where Army surgeons train before being deployed to war zones. Berberette and his staff also oversee health technology at the system's three community hospitals and numerous other facilities and outpatient sites.

JHS uses a variety of data sources, including PartsSource PRO, ECRI, and OneSource Docs. PartsSource PRO provides JHS with cost and quality reports for parts in the Performance Line formulary, customized purchasing rules that guide buyers to pre-selected preferred products, as well as benchmarking data from across the industry. JHS maintains all functional devices, even if they are no longer supported by the vendor.

According to Biomedical Engineer Emilia Nelly Faraj Hernandez, JHS uses the PartsSource Visual Analytics feature to evaluate and select the best purchase option. PartsSource Visual Analytics provides data and insights that help JHS make these decisions and recommend improved courses of action. PartsSource assisted JHS in finding replacement lights for its morgue that had specific installation requirements. A quote, including installation, was provided by PartsSource within one day. Customized purchase reports from PartsSource PRO data resources help justify equipment replacement decisions. These reports factor in cost, time in service, and remaining effective useful life. Examples of items evaluated for replacement include defibrillator batteries, common failure parts, and other devices. The decisions are directly linked to improved outcomes and quality of repairs.

"Our teams are starting to embrace it. AI is going to help us be more efficient and save us labor resources for other projects and process improvements."

- Charles Berberette, Senior System Director of Biomedical Engineering, Jackson Health System

Charles Berberette,
Senior System Director of Biomedical Engineering,
Jackson Health System

Emilia Nelly Faraj Hernandez,
Biomedical Engineer,
Jackson Health System

Insights in Action

- **Prioritize cost and quality together:** Use vetted OEM-compatible parts to achieve substantial savings while maintaining equal or better-quality return rates.
- **Challenge policy and perceptions:** Address organizational rules and perceptions of OEM superiority, since neither are rooted in performance data.
- **Adapt sourcing strategies now:** Respond to rising inflation and supply volatility by implementing evidence-based, flexible procurement practices.
- **Leverage AI for efficiency:** Validate and deploy AI tools to improve capital asset planning, save labor resources, and standardize reporting across the health system.

Opportunity 3: Translating Availability Trends to Impact

Opportunity 3: Translating Availability Trends to Impact

While the cataclysmic supply chain disruptions of the Covid-19 pandemic have largely subsided, backorders on medical parts have not returned to their very low, pre-pandemic levels. Supply volatility is likely to continue or even increase for parts that come from other countries because of the uncertainty surrounding tariffs, says Michael Van Derveer, Vice President of Supplier Solutions and Operations at PartsSource. He cites data showing that overall imports from China are down almost 30% since 2024 (as of Q2 2025). For further discussion of tariffs as they relate to pricing, (see page 17) "This means the supply of parts is limited or delayed, and we have confirmed with our suppliers that this drop is prevalent in the medical parts space."

Michael Van Derveer,
Vice President of Supplier Solutions and Operations, PartsSource

"We have seen recent interest from hospitals in increasing their inventory position of high-usage preventative maintenance kits, batteries, and accessories, which compounds the problem because there is both limited supply and a run on demand."

-Michael Van Derveer, Vice President of Supplier Solutions and Operations, PartsSource

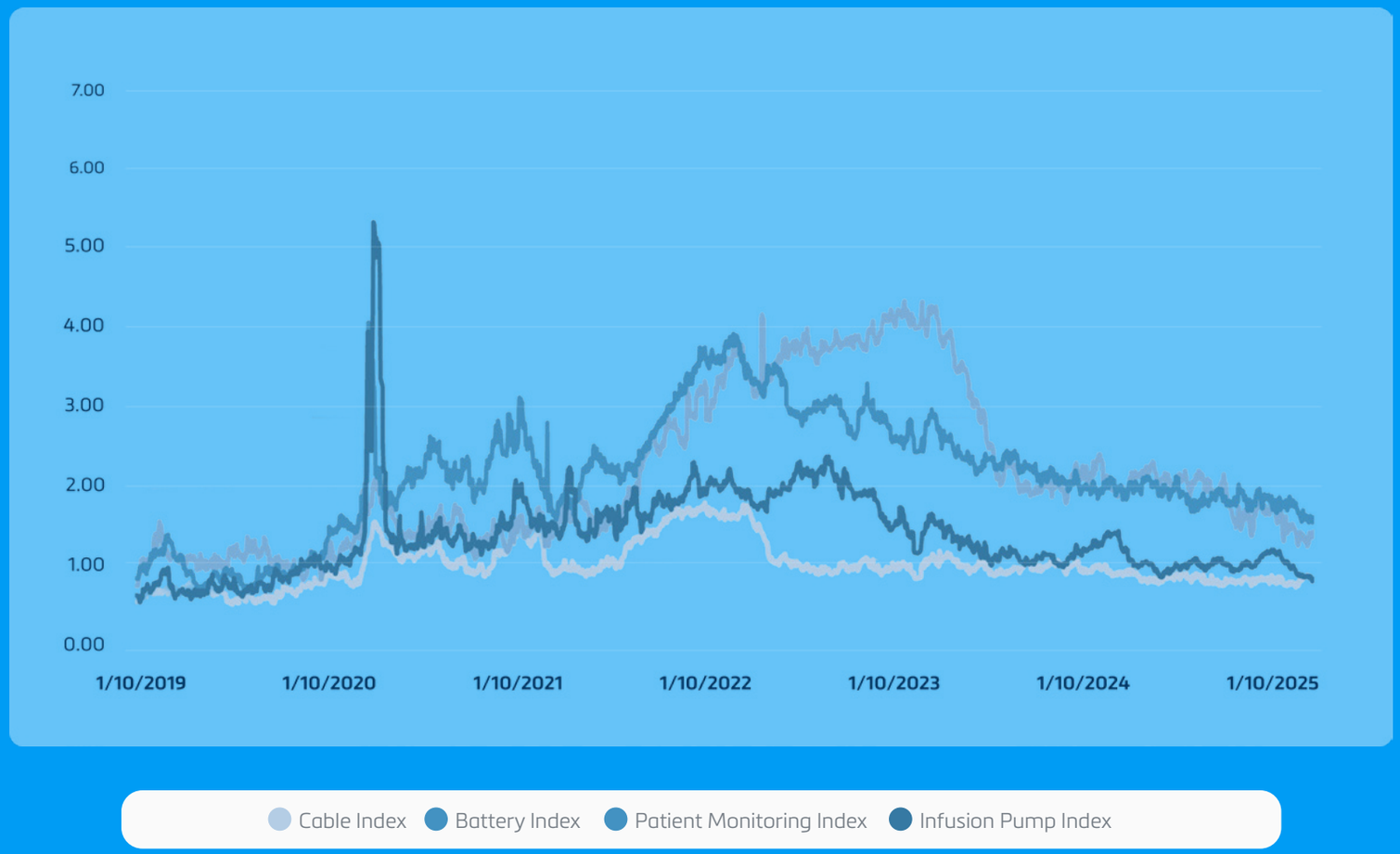
PartsSource monitors the ongoing state of backorders in the medical parts supply chain using our proprietary data. The Backorder Index provides a score on part availability at both the market and individual modality (see chart on page 35) levels, with higher numbers representing higher frequency of backorders.

Supplies might become even tighter as providers prepare for the worst. "We have seen recent interest from hospitals in increasing their inventory position of high-usage PM kits, batteries, and accessories, which compounds the problem because there is both limited supply and a run on demand," Van Derveer says.

PartsSource has taken several steps to improve supply chain stability for its customers, including:

- Negotiating rate freezes with OEMs to slow the impact of price increases.
- Purchasing high-usage parts in bulk, starting in November 2024. "We are using our capital to secure inventory for our PRO Parts customers, and we are holding it in our warehouses or the OEMs' warehouses and displaying items as in stock and ready to ship," Van Derveer says.
- Launching the Performance Line series of vetted parts that meet the company's standards of quality, availability, and price. "We are expanding the Performance Line into PM kits, filters, hoses, and other high usage products," Van Derveer adds.

With COVID in 2020 as a reference point, one can observe that backorder issues peaked in late 2022 / early 2023 and have been falling steadily ever since but we are still not at pre-COVID levels.



Community Insights

PartsSource Point-Of-View: How Using Data Can Drive Smarter Choices and Higher-Quality Alternatives

HTM teams are under constant pressure to reduce costs while maintaining the highest standards of care and equipment uptime. Historically, many leaders have relied almost exclusively on OEM parts, believing this to be the safest option. But today, HTM professionals have more choices - and more data - than ever before to guide their decisions.

PartsSource created the Performance Line to give health systems a reliable, evidence-based alternative in categories where availability, cost, and turnaround time matter most for high demand parts, including batteries, cables, and sensors. Every Performance Line part is rigorously tested, FDA-compliant, and guaranteed in stock, providing HTM teams with trusted options that balance quality, cost, and speed.

"Performance Line was designed to give HTM leaders choice," explains Dan Holton, Vice President of Product Management - Parts Portfolio at PartsSource. "We provide the data to everything from return rates to warranty coverage and availability, so customers can make informed decisions that align with their operational and financial goals."

Whether choosing OEM or Performance Line parts, HTM leaders need confidence that every product meets the highest industry standards. That is why Performance Line products undergo the same types of bench testing, regulatory review, and validation that OEM parts do.

"This is about empowering HTM teams to make decisions with confidence. It's not about choosing one path over another—it's about having multiple high-quality options and the data to back them up."

- Dan Holton, Vice President, Product Management - Parts Portfolio, PartsSource

Dan Holton
Vice President, Product Management – Parts Portfolio, PartsSource

Holton adds, “What matters most is that the part performs as expected, meets regulatory requirements, and supports patient safety. With Performance Line, customers can see the data that proves these products deliver that level of quality—while also helping them save.”

The real value of alternatives is not just about lower prices, it is about enabling a more resilient and flexible supply chain. By integrating Performance Line into a parts formulary, HTM teams can:

- Reduce downtime risk by avoiding long lead times and back orders.
- Ensure consistent procurement practices across sites.
- Realize sustainable, evidence-based cost savings.

As Holton puts it: “This is about empowering HTM teams to make decisions with confidence. It’s not about choosing one path over another—it’s about having multiple high-quality options and the data to back them up.”

As healthcare supply chains continue to evolve, PartsSource believes that data-informed decisions and transparency are key to success. By combining OEM and high-quality alternative options within a comprehensive data-driven framework, HTM leaders can balance cost, quality, and availability without compromise.

"What matters most is that the part performs as expected, meets regulatory requirements, and supports patient safety."

- Dan Holton, Vice President, Product Management - Parts Portfolio, PartsSource

Dan Holton
Vice President, Product Management – Parts Portfolio, PartsSource

Insights in Action

- **Anticipate supply volatility:** Track geopolitical and tariff developments, especially for overseas-sourced parts, and adjust procurement strategies to mitigate import disruptions.
- **Prioritize high-usage, mission-critical inventory:** Identify PM kits, batteries, and accessories with high turnover, and secure stock in advance to avoid shortages.
- **Leverage supplier programs:** Partner with vendors that offer rate freezes, bulk purchasing, and OEM-compatible vetted product to stabilize costs and improve availability.
- **Implement centrally-managed purchasing:** Require centralized supply chain management software to manage parts orders to ensure optimal sourcing decisions on price, warranty, quality, and availability.
- **Use data to guide procurement:** Monitor order history, shipping urgency, and return rates to refine buying patterns and minimize expedited shipping costs.
- **Overcome resistance with results:** Share savings and quality metrics to build buy-in among staff and stakeholders, and drive procedural changes.
- **Continuously monitor compliance:** Track adherence to new ordering protocols and adjust processes as needed to maintain savings and reliability gains.

Opportunity 4: Reducing Expedited Shipping to Cut Costs

Opportunity 4: Reducing Expedited Shipping to Cut Costs

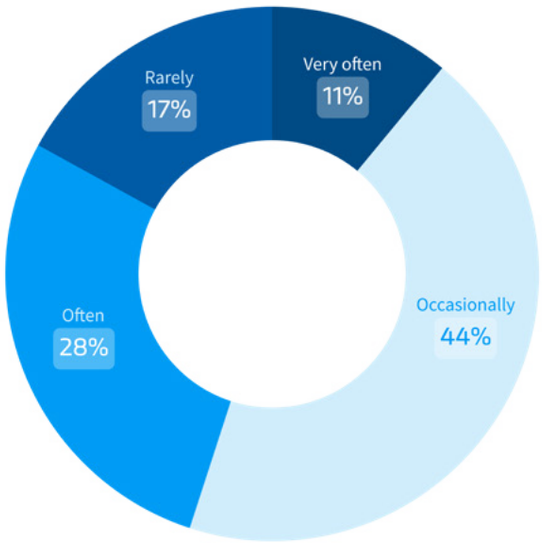
Overnight shipping has become a way of life in modern U.S. culture: a cheap or even free perk whose true cost, in dollars and environmental impact, is largely hidden from the end consumer. HTM operations are as vulnerable as anyone to the appeal of instant gratification, and it is easy to fall into checking the "overnight" box routinely. But those expedited shipments carry a real and significant cost, taking money away from training, new equipment, and salaries for new staff positions.

A PartsSource analysis of shipping patterns for its largest customers showed a wide range of overnight shipping on biomed and imaging products, from as low as 7% to as high as 28%, and their total spending on shipping ranged from 8% to 30% of their budget. Regular use of expedited shipping is often the driving cause behind the higher shipping budgets.

"Between Amazon in our personal lives and OEMs shipping us all warranty parts overnight, we are absolutely spoiled," says Edgar Newell, Assistant Vice President for Clinical Engineering at RWJ Barnabas Health, New Brunswick, NJ. "But I only have so many dollars I can spend and if we are spending it all on shipping, I cannot get other things that we need."

Significant Savings Opportunity

Increased discipline in the use of expedited shipping represents a significant savings opportunity for many HTM teams. 11% of survey respondents said that they use expedited shipping for most parts, and another 28% confessed to using it frequently. The remainder try to determine whether it is needed, though only 17% noted that the need is "rare."



PARTSSOURCE

How often does your organization need to expedite shipping for healthcare technology parts?

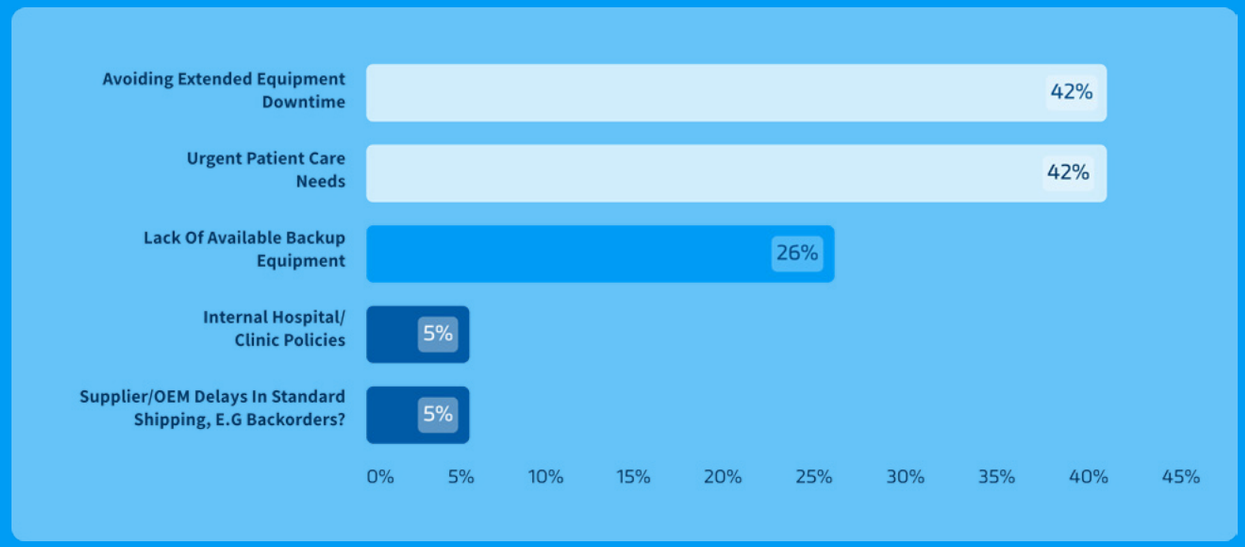
- **Very Often**
  Most orders require expedited shipping
- **Occasionally**
  We use expedited shipping when necessary
- **Often**
  We frequently use expedited shipping
- **Rarely**
  Only in urgent situations

Edgar Newell,
Assistant Vice President for Clinical Engineering,
RWJ Barnabas Health

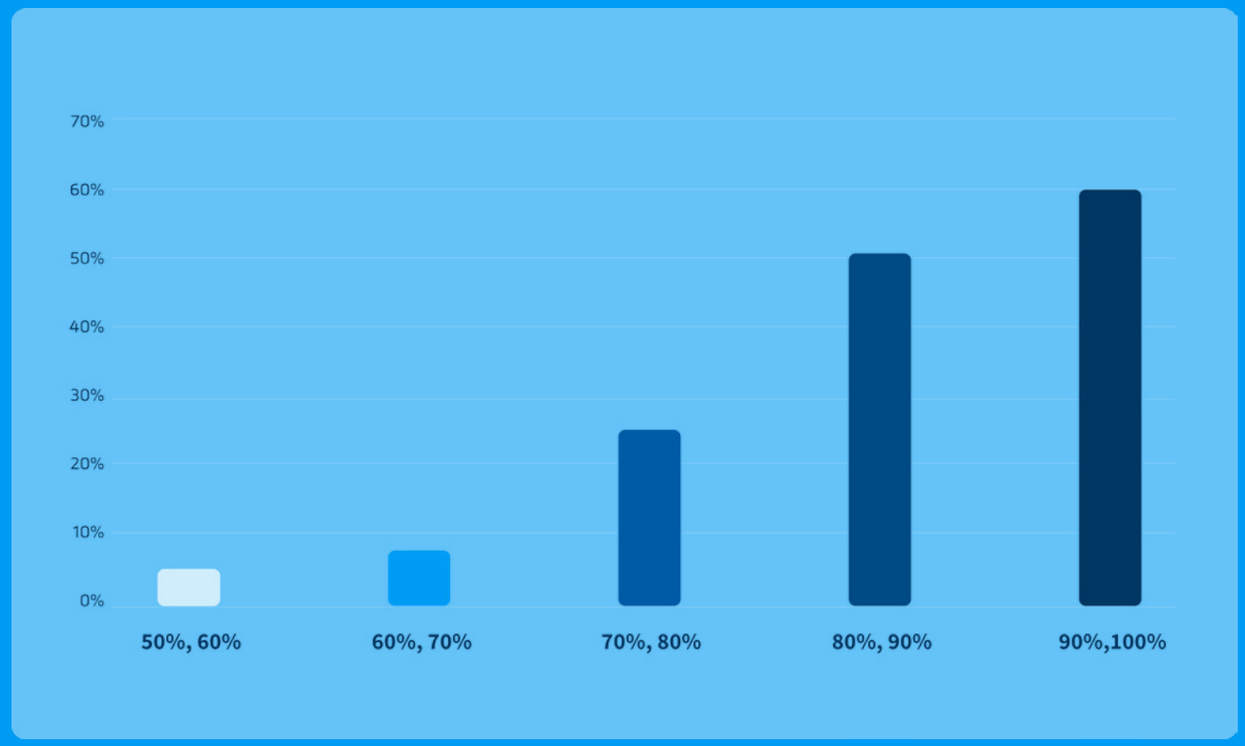
The most frequently cited reasons for choosing expedited shipping were to avoid extended equipment downtime and to address urgent patient care needs.

From this year's surveys, it is clear that ground shipping dominates biomed logistics. The chart shows that 41% of providers ship more than 90% of their biomed orders via ground shipping, reflecting a reliable and efficient approach to mission-critical delivery. Only 3% of respondents reported to shipping between 50% and 60% of orders via ground.

What factors most often drive your organization to choose expedited shipping?



When selecting shipping options, what is your organization's preferred method when it comes to biomed?



PARTSSOURCE®

Analyzing Shipping and Stocking Patterns

Renovo Solutions, the national independent service organization from Irvine, CA, has whittled its use of overnight shipping down to 14% of total shipments, and to 7% for parts for biomedical equipment (imaging equipment parts tend to be more time-sensitive and therefore drive up the averages). Their reduction involved a two-step process, says Jesse Happ, Vice President of Logistics and Procurement at Renovo Solutions. Happ focuses first on identifying where expedited shipping is unnecessary, then educating the technicians responsible for ordering parts.

"There are some situations where speed is not improved by paying for expedited shipping," notes Happ. His conversations with shipping partners such as Fedex and UPS have revealed that some locations are so close to a warehouse or main shipping route that they will consistently receive their shipments overnight or in two days, even if they request only regular ground delivery. And the reverse is also true: a rural regional hospital can pay for expedited delivery and still wait several days, receiving the shipment at the same time it would have if it had not paid the overnight premium. Working with shippers to identify those opportunities can save significant dollars.

Once there is a clear picture of when to use expedited shipping by site, Renovo educates their technicians. "It is often assumed that our teams know about the hidden cost of shipping, but they are not informed of rate schedule for ground vs. priority overnight, and it is not on the forefront of their minds," Happ says. "We always ask, 'Are you going to fix this tomorrow? If not, why are you ordering overnight?'"

Renovo's customers' contracts are capitated so that their customers have a fixed budget expense for HTM services. This means Renovo covers the extra cost of overnight shipping, which is a powerful incentive for making sure it is used only when necessary. "Within our CMMS we track response time and turnaround time for repairs, and shipping is part of that scenario," he says. Happ also relies on the PartsSource Visual Analytics capabilities for future planning. His strategies include planning preventive maintenance months in advance to ensure that the correct kits are on hand and forward-stocking certain locations based on shipping costs to that location, historical need for certain items, and any plans to take over service and maintenance for equipment coming off an OEM contract.

Jesse Happ,
Vice President of Logistics and Procurement,
Renovo Solutions

"It is often assumed that our teams know about the hidden cost of shipping, but they are not informed of rate schedule for ground vs. priority overnight, and it is not on the forefront of their minds"

-Jesse Happ, Vice President of Logistics and Procurement, Renovo Solutions

Community Insights

How RWJ Barnabas Health Curbs "Urgent" Shipping to 4%

At RWJ Barnabas Health, the largest academic health system in New Jersey, the clinical engineering team reduced overnight shipping by more than 50%, but it took "breaking the mindset" on old habits. "Since most individuals placing part orders are not directly responsible for managing the budget, cost consideration may not always be top of mind during the ordering process," says Drianna Patel, Assistant Director, Clinical Equipment Management. With 14 hospitals and almost 5,500 beds and a department of 115 people, parts orders and shipping costs can add up quickly.

The first step in reining in overnight shipment premiums involved careful analysis of usage patterns to see which orders were truly necessary and which orders could follow standard shipping processes. "Do we really need it right now? Do we have spares?" asks Edgar Newell, Assistant Vice President of Clinical Engineering. "The vast majority of ordered parts were not critical and we had plenty of spares located, so we were not impacting our care operations."

PartsSource helped Newell identify where savings could be found. "PartsSource pointed out that we were requesting a lot of overnight shipping at 4:00 pm, when it was too late to ship out for the next day anyway," he said. The facility's location puts it within a day or two of the warehouse for many parts, so they were likely to arrive quickly, even at the least expensive shipping rate. Data from PartsSource's Visual Analytics intelligence also helped identify items used often enough that they could be maintained in stock and reordered when levels were low, averting the need for emergency reorders.

"People are more willing to do things when they understand the 'why' behind them, rather than just because I said so."

-Edgar Newell, Assistant Vice President of Clinical Engineering, RWJ Barnabas Health

Edgar Newell,
Assistant Vice President of Clinical Engineering,
RWJ Barnabas Health

Drianna Patel,
Assistant Director, Clinical Equipment Management,
RWJ Barnabas Health

"We noticed certain teams were ordering overnight all the time, and we identified subsets of parts that we could order ahead and keep in stock, such as power cords and batteries," Patel says. Bed maintenance, a particularly high-demand area requiring quick turnaround repairs, has been rethought so that each technician has access to stock parts that they replenish based on the demand of the facilities.

Shipping costs have become part of a "constant conversation" with technicians, Newell says. "People are more willing to do things when they understand the 'why' behind them, rather than just because I said so." While overnight orders remain on the honor system and there is no punitive element to the reduction effort, Newell has his managers talk with staff about why they need a part immediately. It helps that he has been able to use the savings to invest in more training for his team and in testing equipment for the devices they maintain.

"The staff wants to do a good job and be compliant," Patel says. "Empowering them to make those decisions often leads to better outcomes."

"The staff wants to do a good job and be compliant. Empowering them to make those decisions often leads to better outcomes"

-Drianna Patel, Assistant Director, Clinical Equipment Management, RWJ Barnabas Health

Edgar Newell,
Assistant Vice President of Clinical Engineering,
RWJ Barnabas Health

Drianna Patel,
Assistant Director, Clinical Equipment Management,
RWJ Barnabas Health

Insights in Action

- **Educate teams on shipping impact:** Technicians often are not aware of shipping costs; reduce unnecessary overnight orders by educating technicians to consider which orders are truly necessary to expedite and which orders could follow standard shipping processes.
- **Use data to evaluate shipping cost and methods:** Tools can allow customers to create defaults for shipping methods and provide visibility for leadership oversight.
- **Analyze location-based delivery patterns:** Some regions receive fast ground shipping given their proximity to shipping hubs, no need to pay for expedited delivery.
- **Use data to stock smarter:** Forecast demand, forward-stock high-usage parts, and schedule preventive maintenance to avoid emergency orders.
- **Communicate shipping savings outcomes:** Show staff how smarter shipping funds training and tools — empowering your staff leads to lasting change.

Opportunity 5: Optimizing Cost and Quality for Service

Opportunity 5: Optimizing Cost and Quality for Service

External service providers, including both OEMs and ISOs, are integral partners for most HTM programs, even those with substantial in-house capabilities. The number of such relationships varies significantly among survey respondents, but even the strongest in-house programs leverage external service providers.

Survey responses reflected a wide range of satisfaction levels, with less than half rating their experience as "very high" or "high," and 11% rating it "low."

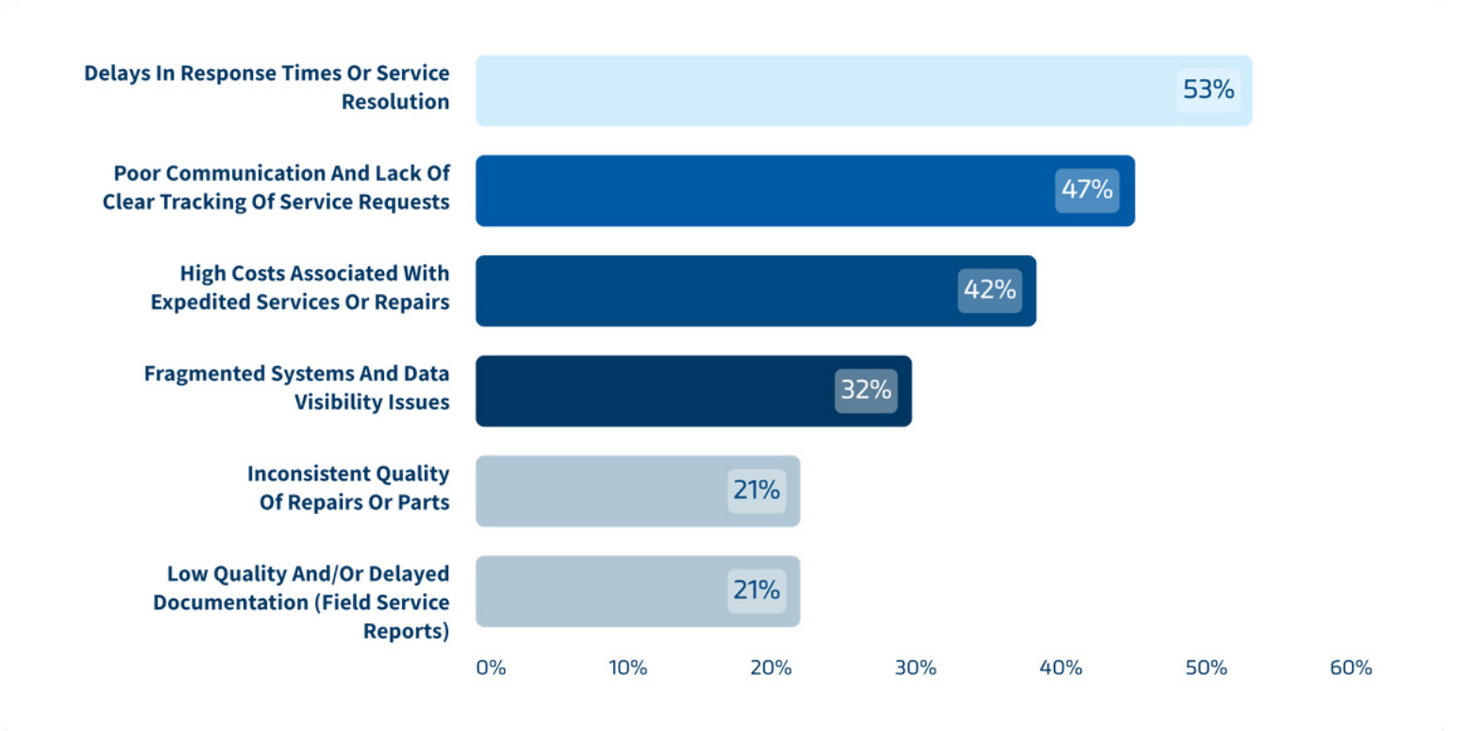
Respondents cited several recurring challenges that present opportunities for improvement across the service ecosystem. Over half noted that delays in response or service resolution occurred frequently.

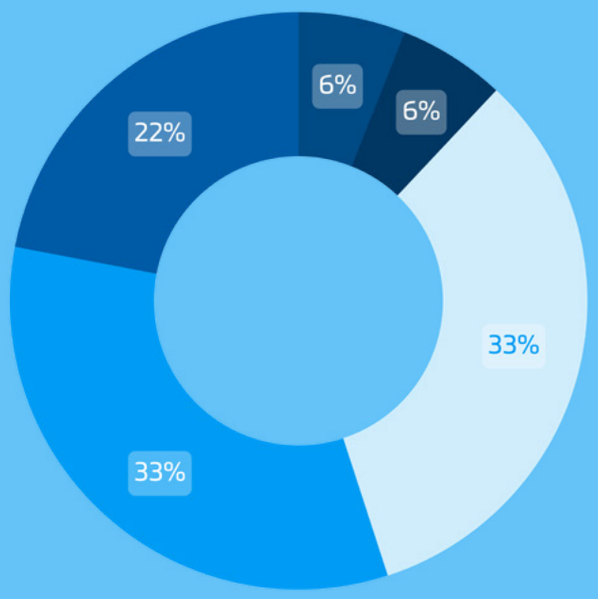
For both biomedical and imaging service requests, 55% reported response times exceeding 24 hours, and only 17% experienced completion within the same day. In some cases, 22% reported waiting more than three days.

Post-repair reporting timelines were also noted as an area for improvement, with only 17% typically receiving field service reports (FSR) within two business days, and 44% reporting FSRs taking a week or more to be delivered.

Additionally, 53% of respondents expressed a desire for stronger communication and clearer tracking of service requests, and 47% indicated that expedited service often carried significant additional cost.

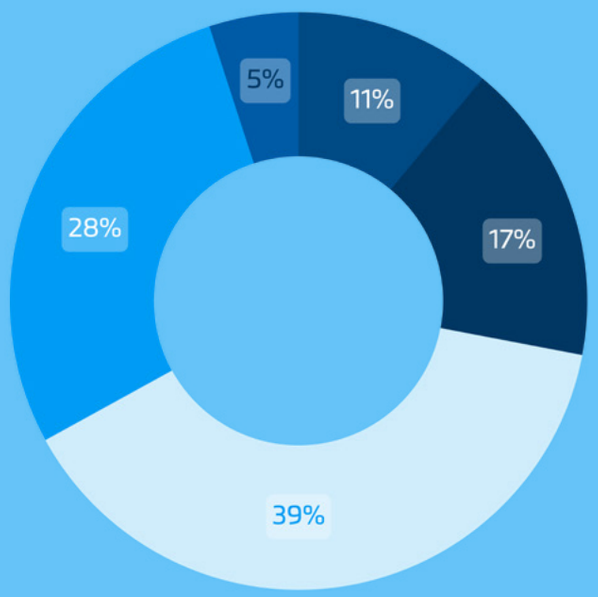
What challenges have you experienced most frequently with external provider service experiences?





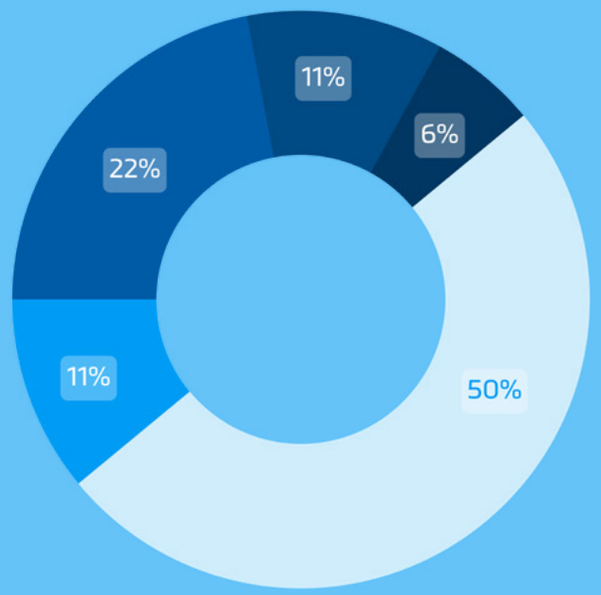
What is the average on-site response time for Biomedical service providers (ISO or OEM)?

- 1-4 hours
- 5-8 hours
- 9-24 hours
- Over 24 hours
- Over 48 hours



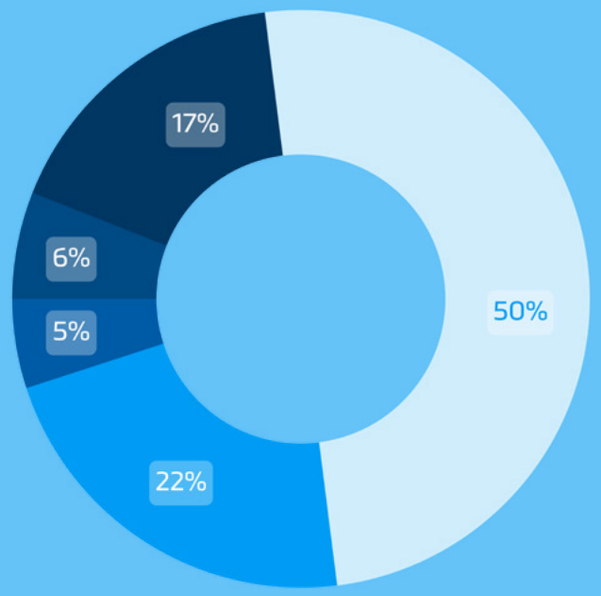
What is the average onsite response time for Imaging service requests with external service providers (ISO or OEM)?

- 1-4 hours
- 5-8 hours
- 9-24 hours
- Over 24 hours
- Over 48 hours



What is the average repair completion time for resolving Biomedical service requests with external service providers?

- 5-8 hours
- 9-24 hours
- Over 24 hours
- Over 48 hours
- More than 3 days



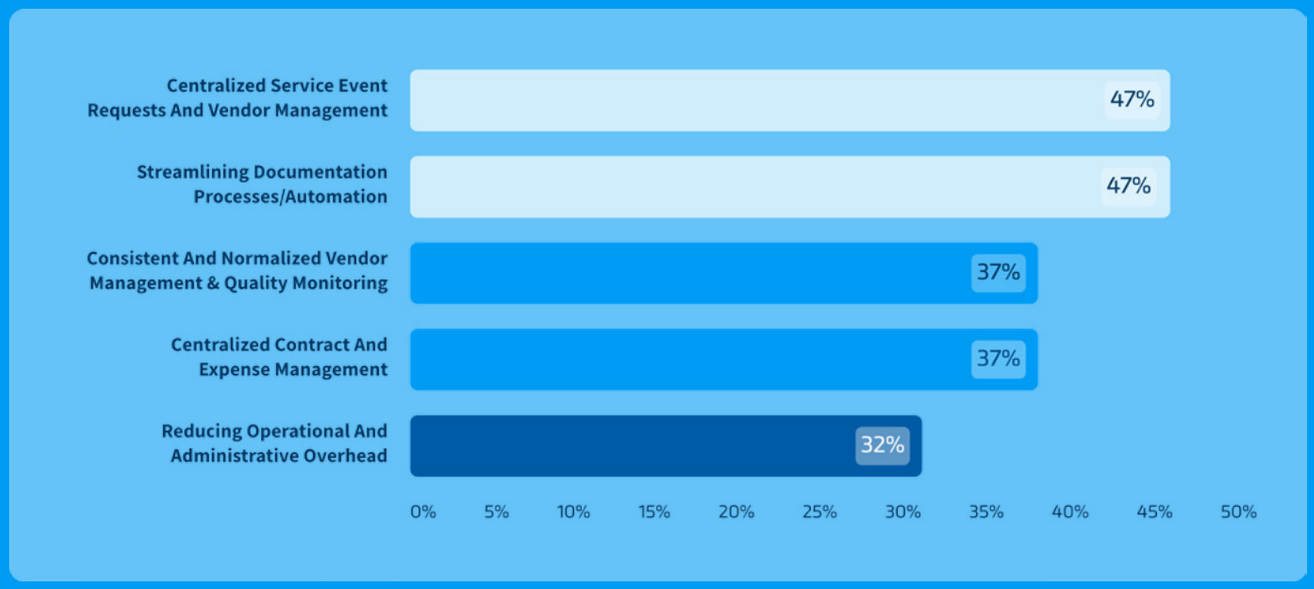
What is the average repair completion time for resolving Imaging service requests with external service providers?

- 5-8 hours
- 9-24 hours
- Over 24 hours
- Over 48 hours
- More than 3 days

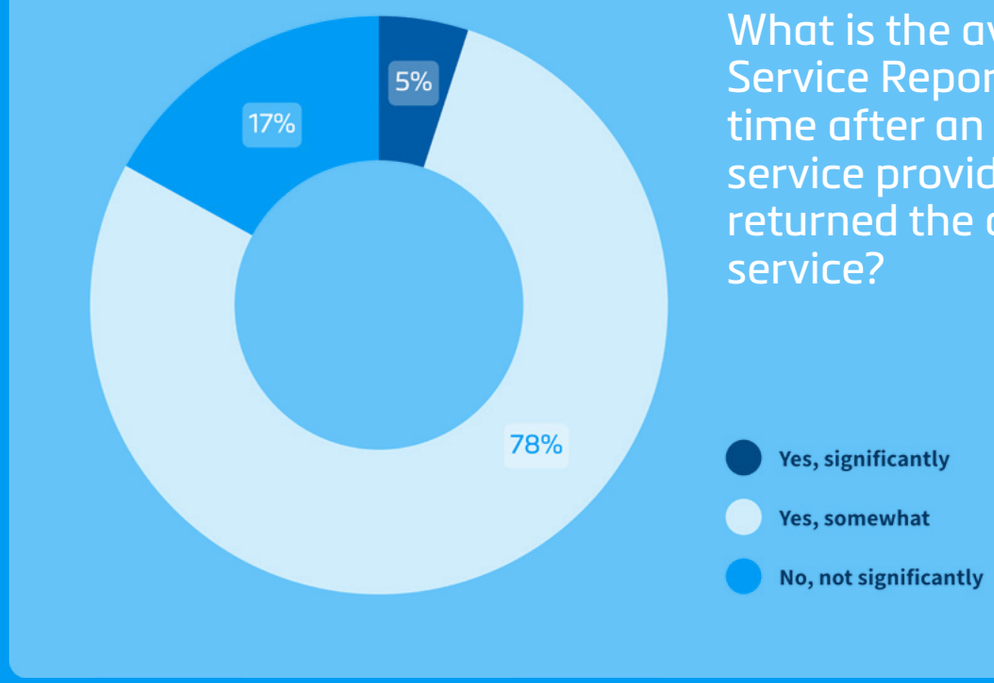
Clearly, there is room for improvement in optimizing the use of external service providers. Respondents were asked which strategies offer the best opportunities in this area. 47% of respondents said they saw potential in automating and streamlining documentation processes, and 47% wanted a system to centralize service requests and vendor management generally. 37% of respondents said centralized contract and expense management would help, and a similar number cited consistent and normalized vendor management and quality monitoring.

"47% of respondents said they saw potential in automating and streamlining documentation processes, and 47% wanted a system to centralize service requests and vendor management generally."

Which strategies offer the best opportunities for cost or operational optimization with external service providers?



What is the average Field Service Report receipt time after an external service provider has returned the device to service?



Community Insights

How UHealth at the University of Miami Optimizes its Service Strategy with Temporary Labor

In Anthony McCabe's three years as Executive Director for Clinical Engineering at UHealth at the University of Miami, in Miami, FL, his staff has doubled from 25 to 50 and he has added a third shift at the system's flagship hospital, the 560-bed UHealth Tower, to keep devices operating at peak uptime 24/7. Staffing that third shift was easier than he expected. "It turns out people do not like traveling during rush hour, so they were open to it," he says.

Nonetheless, trained technicians are as scarce in South Florida as they are in most places and there is intense competition for their services, with half a dozen major health systems within a few miles of one another.

To ease his path, McCabe has turned to PartsSource to contract temporary biomedical technicians to help with specific projects and newly expanded services. He estimates that being able to tap PartsSource for labor cut his ramp-up time for that third shift from two months to two weeks. "We are not set up for that net new work," so the contracted workers served two important purposes: first to demonstrate to UHealth leadership the need for more FTEs and then to give him breathing room to get the staff hired and trained.

McCabe anticipates that he will continue to add staff, and he expects to be at 53 potentially before the end of 2025. While some of that growth is due to the health system's aggressive expansion plans, McCabe also plans to move imaging service, currently handled through OEM contracts, in house. While that change would save money, McCabe says the main consideration is saving time. The best response-time commitment he usually can get on a service agreement is 24 hours, which he says is unacceptable for a facility that handles "the sickest of the sick."

"McCabe estimates that being able to tap PartsSource for labor cut his ramp-up time for that third shift from two months to two weeks"

Anthony McCabe,
Executive Director for Clinical Engineering, UHealth at University of Miami

"Our case mix level is very high, and when we are needed, we have to be there as quickly as the doctors do," he says. "First call resolution on most issues is at about 98%. When we have technicians who understand those devices, we can cover that first call. For instance, the platinum level service agreement on our sterilizers guarantees response within 24 hours, but we need to be able to call upstairs and have someone come in a couple of minutes." The health system has facilities spread across five counties, and in-house technicians, trained on multiple devices, are essential to ensure the most timely service. McCabe says he will still use OEMs or ISOs when there is a local technician in a location that is hard for his staff to reach quickly.

To develop his in-house service capabilities, McCabe is at the table during acquisitions of new equipment to negotiate the inclusion of training credits that will allow the health system staff to support equipment service and not rely on OEM service contracts. He supplements vendor training with independent training organizations like Radiological Services Training Institute (RSTI), a PartsSource Company, and with virtual reality training tools. His bargaining position is enhanced by the health system's policy of standardizing equipment as much as possible. Standardization simplifies many department activities including training technicians, assessing the performance of devices, establishing maintenance and repair patterns, and ordering parts.

For McCabe, who is working on a doctoral degree in business specialization in strategy and innovation, how service is handled depends on assessing risks, both to patients and to the organization, and building in the flexibility to address those risks. "A lot of people do not look at business continuity, but devices must be available for clinical use, and you need to understand the risk and business impacts when they are not," he says. "Have a plan and take time to build it. If you do not have one, you will put more resources into any incident that happens. That is where organizations struggle because they are locked into the resources they have."

"The contracted workers served two important purposes: first to demonstrate to UHealth leadership the need for more FTEs and then to give him breathing room to get the staff hired and trained."

Anthony McCabe,
Executive Director for Clinical Engineering, UHealth at University of Miami

Insights in Action

- **Maximize vendor partnerships:** Identify strategic partners to complement in-house strengths and expand service coverage.
- **Accelerate service response:** Set goals to achieve faster turnaround, moving more requests into same-day or under-24-hour resolution.
- **Factors to consider when choosing a service provider**: Response time, uptime, contract flexibility / current equipment service, and end-of-life support.
- **Streamline vendor management:** Implement centralized systems and automation to simplify contracts, documentation, and quality oversight.

Opportunity 6: Eliminating Complexity and Costs in Equipment Service

Opportunity 6: Eliminating Complexity and Costs in Equipment Service

The United States healthcare service market is massive and the landscape is deeply fragmented. Hospitals typically manage service contracts across OEMs and ISOs, each with its own pricing structure, terms, and reporting processes. This creates unnecessary costs, inconsistent service quality, and a significant administrative burden.

The Challenge of Fragmentation

Through our research with hundreds of hospitals, we identified the true extent of the inefficiencies that healthcare systems have to navigate.

We found that providers currently manage an average of 146 service contracts, but some systems can exceed 200. Over 75% of these contracts are considered "long-tail" and low value, yet they require disproportionate administrative oversight. On average, we learned that as many as 92% of facilities do not consistently monitor cost and quality of performance on these service contracts.

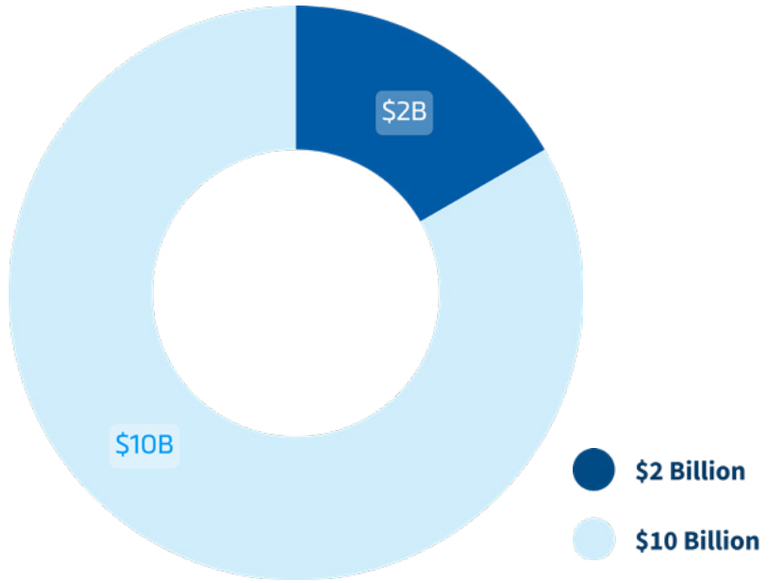
With so many contracts to manage, the cost variability is often overlooked. Even for identical models, contract pricing is highly inconsistent. One study found 63% of contracts for the same equipment model carried different prices, with some full-service agreements ranging from $4,275 to nearly $20,000, which reflects a variance of almost 470%. Vendor fragmentation means that hospitals can have up to as many as 55 separate vendors managing a fleet of approximately 1,000 different assets. When combined with inconsistent delivery and poor accountability, the end result is additional costs for providers.

The lack of standardized service processes can lead to up to 30 hours of additional downtime per event, with downtime costs reaching 20% to 40% of the value of an annual service contract. The result is higher service delivery costs, unpredictable performance, and a heavy administrative burden that limits HTM leaders' ability to focus on strategy and uptime

Shifting Customer Needs

Amid rising financial pressure and staffing shortages, HTM leaders are seeking new approaches that balance cost, uptime, and visibility. Progressive health systems are moving away from opaque, one-size-fits-all OEM service contracts and toward flexible, data-driven hybrid models that blend OEM, ISO, and in-house labor.

Leaders are integrating these new data-driven models while prioritizing several key factors. With continually increasing cost pressures, reducing service delivery cost and risk without sacrificing uptime is a top priority, along with simplifying vendor management across hundreds of sites, OEMs, modalities, and assets. Providers are also reducing costs by transitioning from reactive repairs to a more proactive, data-enabled service orchestration. As part of this streamlined process, organizations are also able to achieve transparency in pricing, entitlements, SLAs, and vendor performance.



$2B SAVINGS from more efficient approaches to medical equipment management

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The Maturity Curve in Service Programs

Health systems today sit at different points along the service maturity curve, ranging from fragmented, break-fix contracting to performance-leading organizations with integrated service, parts, analytics, and planning strategies. The most advanced teams leverage benchmarking and actuarial cost data to make proactive sourcing decisions, optimize risk, and hold vendors accountable for measurable outcomes.

The Opportunity Ahead

The evidence is clear: early adopters of data-driven hybrid models have achieved 15% to 25% cost reductions, 95% labor efficiency gains, and 2% to 3% improvements in asset uptime.

The opportunity lies in replacing today's fragmented, highly variable approach with a model that unifies service management across mission-critical assets. A data-driven hybrid model provides a single source of truth for service requests, entitlements, SLA compliance, performance analytics, and ROI. Harnessing aggregation power streamlines and rationalizes contracts, easing administrative burdens, and improving efficiency. This model also brings data-driven decision support that helps align service strategies with both clinical and financial risk, ensuring choices are grounded in evidence rather than guesswork. In addition, built-in vendor optimization tools enable organizations to track benchmarks, and continually improve performance, driving stronger outcomes across the board.

How HTM Leaders Eliminate Complexity and Decrease Costs

Standardization extends to contracts and SLAs, where organizations are applying uniform service terms across all equipment types to eliminate gaps and overlaps. Clearly defined metrics such as asset availability, response time, preventive maintenance compliance, and parts availability provide the benchmarks needed to hold providers accountable. Many health systems are also adopting fixed- or capped-cost models to prevent unpredictable spending spikes.

Preventive maintenance strategies are evolving as well, shifting away from rigid OEM schedules to usage-based or risk-based intervals. High-use and high-risk assets are prioritized, ensuring that the equipment most critical to patient care receives proactive attention.

Finally, data-driven analysis enables organizations to identify underperforming assets, which generate disproportionate service costs or repeated failures. Using data and an ROI assessment, health systems can accelerate replacement decisions. By bundling equipment and service purchasing, they further reduce long-term rates, while leveraging platform-wide data to improve supplier accountability and standardize performance across their network.

"The most advanced teams leverage benchmarking and actuarial cost data to make proactive sourcing decisions, optimize risk, and hold vendors accountable for measurable outcomes."

Community Insights

How Marshfield Clinic Reduces Costs and Expands Opportunities for its HTM Professionals with Strategic Use of Service Agreements

When Jay Olson, Director of Biomedical Services, joined the biomedical services team at Marshfield Clinic, in Marshfield, WI, almost a decade ago, he managed about 5,600 pieces of equipment within 3 different ambulatory care centers and 53 sites. Today he oversees more than 37,000 devices in 12 hospitals and dozens of clinics and medical offices throughout Wisconsin and parts of Michigan. Each of his staff of 25 is responsible for, on average, 1,700 devices, though imaging technicians may have 400 devices in their portfolio.

Even amid such rapid growth, Olson prefers to keep all service in-house and describes himself as "anti-contract." However, because any loss of staff to retirement or greener professional pastures can leave his operation vulnerable, he has developed ways to use vendor and third-party contracts strategically to fill gaps and allow his staff to acquire advanced skills.

For example, the departure of his only mammography technician put an essential and profitable service at risk if a machine went down. He entered into a PartsSource PRO Service agreement that cost significantly less than contracting with the manufacturer. This agreement includes mammography service and repairs for hospital and clinic-based devices and mobile mammography units. He also sent a new technician for in-depth training at RSTI, a PartsSource company. Olson estimates that having a trained technician in house saves him 60% over the cost of a full-service vendor contract, and he gains additional savings from RSTI training credits that come with the purchase of imaging parts from PartsSource.

That partnership has been a huge success," Olson says. The service agreement includes a shareback provision so that at the end of the contract year, Marshfield is credited a percentage of any service it has not used. Meanwhile, his staff is increasingly able to handle any frontline issue. In the second year of the contract, Olson used his $148,000 shareback credit to offset service expenses and pay for training.

"Olson estimates that having a trained technician in house saves him 60% over the cost of a full-service vendor contract, and he gains additional savings from RSTI training credits that come with the purchase of imaging parts from PartsSource"

Jay Olson,
Director of Biomedical Services,
Marshfield Clinic

Olson is committed to giving his staff a solid career path, so they are not tempted by another employer at a time when all healthcare providers are all looking for skilled technicians. “In rural healthcare, I cannot train the backup to the backup to the backup,” he says. He has established three levels of proficiency and expertise for both biomedical and imaging technicians and he makes sure they are receiving the training and hands-on experience they need to keep developing their skills and moving up.

Olson acknowledges that OEM service can be his best option for the estimated 20% of repairs on imaging equipment that are not simple troubleshooting, and he maintains good relationships with his equipment vendors. His own staff can handle maintenance, calibration, and minor repairs, which saves both time and money. “All the vendors would be coming out of a distant metropolitan area,” which can be a four-to-five-hour drive to Marshfield’s more far-flung locations. “If a CT scanner goes down at a critical access hospital, the timer starts because you are diverting patients and they may have to drive 45 minutes to another hospital,” he says. “Sometimes the fix is a simple reset switch and we have restored the asset within half an hour of the initial phone call.”

"Olson is committed to giving his staff a solid career path, so they are not tempted by another employer at a time when all healthcare organizations are looking for skilled technicians."

Jay Olson,
Director of Biomedical Services,
Marshfield Clinic

Insights in Action

- **Streamline contracts to eliminate waste:** Consolidate fragmented agreements and shift focus from low-value, resource-heavy contracts to reduce hidden costs and strengthen oversight.
- **Create a data-driven transition plan:** Bring low-dollar and low-risk services in-house.
- **Use evidence-based outcome data:** Leverage analytics to reduce and control contract costs and make service strategy decisions.
- **Evaluate contract strategy:** Measure asset-level service costs and performance to inform service strategy.

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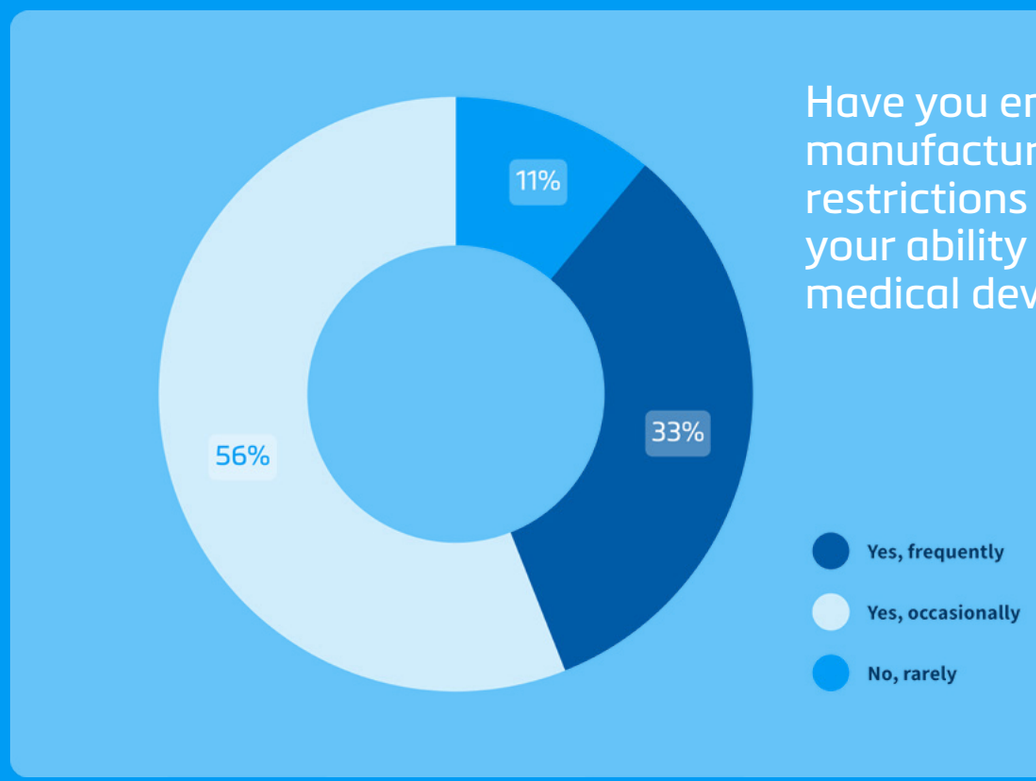
The Right To Repair: What it Means for HTM Leaders

The Right to Repair: What it Means for HTM Leaders

HTM programs often run into vendor-imposed restrictions on their ability to maintain and service equipment, also known as "right to repair." These measures include proprietary software locks, special tools to remove access panels, restricted access to documentation, and undocumented error codes that require a call to the manufacturer to fix. Many healthcare providers maintain OEM service contracts to help avoid these obstacles. Other options include handling maintenance in house or through an independent service organization.

89% of respondents reported that their ability to repair medical devices is impeded at least occasionally by manufacturers' restrictions, and 33% run into these obstacles frequently. No respondents were entirely unaffected by "right to repair" issues.

When it comes to encountering manufacturer restrictions limiting their ability to repair medical devices, respondents a experiences ranged from:



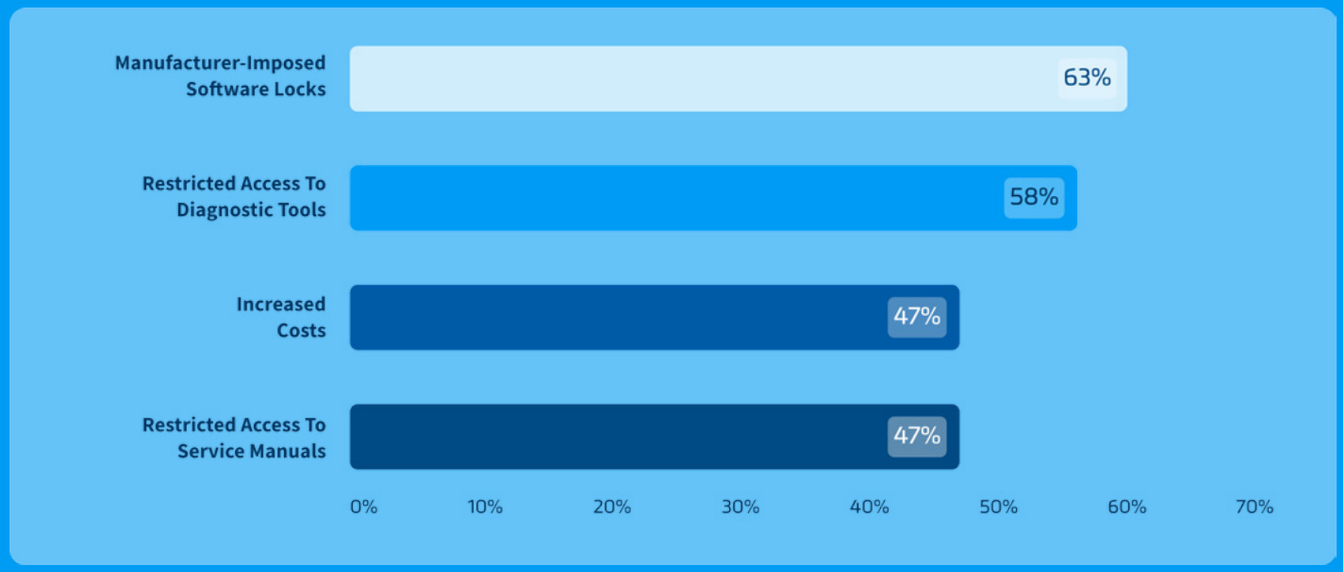
The most frequent obstacle, cited by 63% of respondents, was manufacturer-imposed software locks, followed by restricted access to diagnostic tools. 47% had experienced restricted access to service manuals, and 47% said their repair costs were increased due to manufacturer restrictions.

Over 80% of respondents said these restrictions have led to at least some increase in equipment downtime, with 5% reporting significant increases. None of the respondents said there was zero effect.

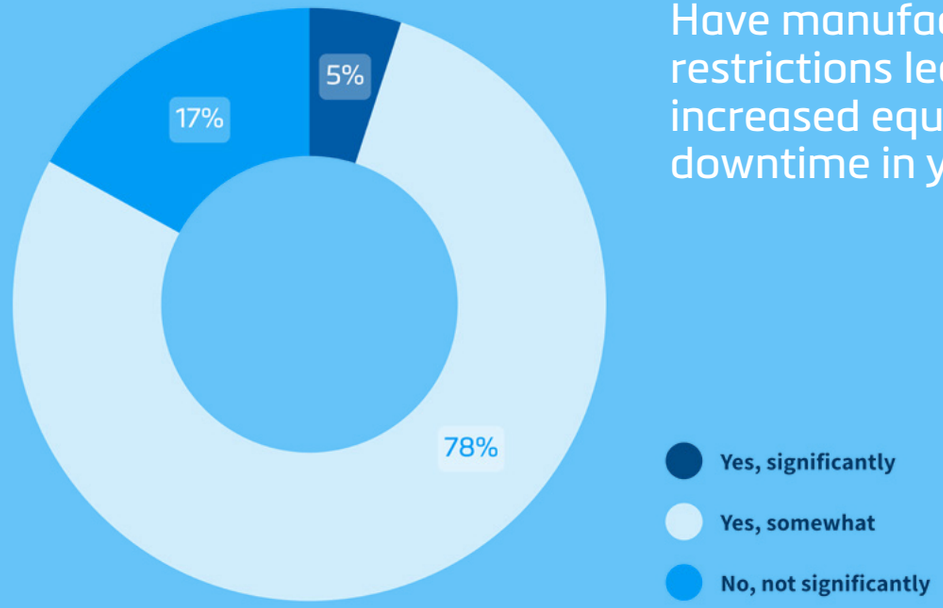
"Be proactive. Once you have learned how each OEM handles service key and access accounts, ensure you have an account with the OEM and that you can download all the required manuals, software, and drivers you will need before you need them"

-Todd Boyland, Chief Executive Officer, RSTI, a PartsSource Company

What challenges have you faced due to limited repair access?



Have manufacturer restrictions led to increased equipment downtime in your facility?



Momentum for the Medical Right to Repair

The right-to-repair movement, initially focused on complex automotive technology that uses computerized diagnostic tools, has spread to many technology-based products, especially cell phones and computers. It seeks legislation to remove those proprietary vendor protections for every type of technology, and it has had some notable successes that also apply to health technology. At least ten states have passed right-to-repair legislation, including Texas, Washington, and Connecticut.

One significant victory in October 2024: the U.S. Copyright Office under the Federal Trade Commission (FTC) issued new federal exemptions to the **Digital Millennium Copyright Act (DMCA)** that allow consumers and independent technicians to legally bypass digital locks on software so they can diagnose, maintain, and repair a variety of devices and equipment. These exemptions, which apply in every state, improve HTM professionals' ability to diagnose issues, access service manuals and diagnostic tools, replace parts, and perform software updates and resets.

The implications for patient care and safety are significant, including:

- **Faster repairs:** HTM teams can fix equipment more quickly without waiting for manufacturer service reps.
- **Reduced downtime:** Devices like ventilators, imaging machines, or infusion pumps can be brought back online faster.
- **Improved patient care:** More uptime for critical equipment means less disruption to treatment and diagnostics.

Hospitals may be able to reduce their reliance on OEM service contracts and may see more competition among third-party service providers. Both of those developments could reduce maintenance and repair costs significantly.

Whoever is responsible for maintenance and repair of medical devices must still follow all Food and Drug Administration (FDA) health and safety regulations and reporting requirements. These are not affected by the ruling.

Restrictions on modifying devices and circumventing safety features are also unaffected. Not all devices will be covered equally — some highly regulated or proprietary systems may still have legal or technical barriers in place.

Addressing Ongoing Challenges

Just because HTM shops are now allowed to repair and maintain their assets, that does not mean the vendors are required to make it easy for them to do so, notes Todd Boyland, Chief Executive Officer of RSTI, a PartsSource Company, the leading provider of diagnostic imaging training. But HTM teams and ISOs can address those challenges with complete information and solid training. “We have made a living for 40 years training OEMs and third-party engineers on how to effectively service imaging equipment,” Boyland says. “If half of what you hear about service access were true, we would not be in business.”

As a first step, Boyland recommends taking a complete inventory of all the equipment makes and models that an organization wants to service. Each one will have specific methods for service access and documentation access. For each, answer the following questions:

- Are there passwords for accessing service?
- Do those passwords change? If the vendor generates the passwords, the customer needs to know how often they change and the procedure for getting the new password.
- Is a service key required? It could be a physical key, such as a dongle or USB stick, or it could be an access code or other type of digital content.
- Is the service key licensed to an engineer, or to the serial number of the device, or to the healthcare system? If the key is licensed to an individual engineer, the organization will need to know the procedure for making sure ownership is transferred if the engineer leaves.
- How is the service key obtained?
- How long is the service key valid and how is it renewed?
- To access service documentation, does the OEM require registration to create an account? If so, how is an account created to obtain the documentation required for my specific systems?

Todd Boyland,
Chief Executive Officer,
RSTI, a PartsSource Company

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Boyland warns to not wait until you need service access to start this process. “Be proactive. Once you have learned how each OEM handles service key and access accounts, ensure you have an account with the OEM and that you can download all the required manuals, software, and drivers you will need, before you need them.”

Boyland says few providers think to negotiate easy access to maintenance and repair information as part of the purchase contract. “It definitely should be discussed during the acquisition process rather than after the sale, when you have lost all your leverage.”

He recommends keeping abreast of any legislation and regulations pertaining to the right to repair. “You do not need to be an attorney, but you should have a basic understanding of the landscape,” he says. One resource is the **Right to Repair** page at the U.S. Public Interest Research Group, a not-for-profit consumer advocacy organization.

Boyland says the changes in right to repair can help providers extend the life of assets that the vendor has decided not to support. One large OEM added a “safety upgrade” to an MRI machine that did not discernably improve safety but did prevent third-party service. “When that machine is at the end of its life, the customer is left holding the bag and the only alternative is replacement,” he says, but with the right training and knowledge and the new right-to-repair exemptions, a provider could continue to use that machine without OEM support.

“In our classes, we guide you through how to jump through all the hoops: which vendors have a service key, and how to get it, and which ones do not,” Boyland says. “Some OEMs do a good job convincing customers into thinking they cannot do it, but it is all about educating yourself.”

The right to repair continues to evolve as Healthcare Technology Management leaders work to balance the need for in-house, cost-effective, and timely repairs with the importance of strong OEM partnerships. Navigating this balance in an environment of shifting budgets and priorities demands strategic, data-driven, and evidence-based conversations.

Renovo’s Vice President of Logistics and Procurement, Jesse Happ, emphasizes the value of data in driving these discussions: “I think stepping outside the contractual conversations and the ability to provide quality data, like the kind of data and analytics you have access to as a PartsSource PRO member, can go a long way in helping to change the current industry model in a way that can benefit both the health care provider and their OEM partners.”

Happ is keen to remind both clients and OEM partners “as someone with a career of over twenty-five years as an HTM leader, I have overseen hundreds of millions of dollars in spend. I have worked with some of the best technical team members in the world and they represent the heart of our community and have one goal. That is to promote an environment that delivers safe and effective patient care.”

When data guides the conversation, new opportunities emerge for innovative, mutually beneficial solutions that ensure both parties can achieve their shared mission of delivering the highest quality care to patients.

Right to Repair **U.S. Public Interest Research Group**

Jesse Happ,
Vice President of Logistics and Procurement, Renovo

Community Insights

How St. Luke's University Health Network Exerts its Right to Repair to Balance Costs, Quality, and Vendor Partnerships

Mike Powers, Network Director of Biomedical Engineering at the 16-campus St. Luke's University Health Network in Bethlehem, PA, emphasizes a balanced and collaborative approach to the right to repair. Powers views this right as essential to maintaining operational efficiency and financial sustainability, particularly in challenging economic times. He advocates for the ability of device owners – or their qualified representatives – to service the equipment they own, provided they have appropriate training, use suitable parts, and maintain the distinction between repair and remanufacture.

"Finances are really driving us," Powers says. "We are focused on contributing cost avoidance to our organization's bottom line. If a device is still functional and safe even if it is no longer supported by the manufacturer, there is no reason to replace it unnecessarily. We need access to parts, service manuals, and software to keep these devices running effectively."

Powers oversees a team of 50 professionals, including biomedical technicians at each hospital and a field team responsible for doctor's offices, dialysis units, sterile processing departments, imaging and radiation oncology equipment across 11 counties in Pennsylvania and New Jersey. He notes that when vendors cooperate by providing manuals and parts, his team can handle most repairs efficiently. However, without such cooperation, servicing becomes significantly more difficult.

While Powers acknowledges that manufacturers have a legitimate interest in protecting their intellectual property and generating returns for shareholders, he believes this must be balanced with the rights of device-owners. "I want manufacturers to be profitable," he says, "But I also want a fair and collaborative relationship. I am willing to pay for access to the tools and information needed to maintain our equipment safely and effectively."

He finds it troubling that some manufacturer advocacy groups invest heavily in lobbying efforts to restrict the right to repair. For example, one such organization reportedly spent over $4 million in lobbying fees in 2024 alone. Powers believes these efforts can undermine constructive dialogue and hinder cost-effective healthcare advocacy.

"Some manufacturers are very collaborative – they will train us, sell us the parts and manuals, and support our efforts to maintain equipment safety. But it is critical to establish those expectations up front. I tend to avoid vendors who are unwilling to partner with us in this way"

-Mike Powers, Network Director of Biomedical Engineering, St. Luke's University Health Network

Mike Powers,
Network Director of Biomedical Engineering, St. Luke's University Health Network

Regarding patient safety, Powers stresses that concerns are often overstated and not supported by regulatory findings. He referenced the **FDA's 2018 FDARA 710 report** on third-party servicing, which found no evidence that such servicing poses a safety risk when performed with proper training and quality controls. He also notes that Quality Management Systems (QMS) are authored by manufacturers – not the FDA – and while they must meet federal requirements, they do not prohibit third-party or owner servicing (**see eCFR::21 CFR Part 820**).

Additionally, Powers cites that the Federal Trade Commission's report, "**Nixing the Fix: An FTC Report to Congress on Repair Restrictions**," as a valuable resource that highlights the broader implications of repair limitations and support a more open and competitive servicing environment.

Despite these challenges, Powers emphasizes the importance of partnership. He relies on vendors to provide service coverage during staff absences and regularly sends his team to manufacturer training programs. He also plays an active role in procurement negotiations, advocating for vendors who support in-house servicing capabilities.

"Some manufacturers are very collaborative – they will train us, sell us the parts and manuals, and support our efforts to maintain equipment safety," he says. "But it is critical to establish those expectations up front. I tend to avoid vendors who are unwilling to partner with us in this way."

Powers cautions against unauthorized software access or modifications, noting that such actions erode trust and damage long-term relationships. "If we are trying to build a relationship, we all have to be putting our best foot forward," he says. "The goal is to find ways to collaborate so that the whole ecosystem is healthy."

FDA's 2018 FDARA 710 Report

eCFR::21 CFR Part 820

Nixing the Fix: An FTC Report to Congress on Repair Restrictions

Mike Powers,
Network Director of Biomedical Engineering, St. Luke's University Health Network

Opportunity 7: Training Strategies to Upskill Your Team

Opportunity 7: Training Strategies to Upskill Your Team

HTM managers do not need the U.S. Department of Labor to tell them that biomedical, imaging, and laboratory service technicians are hard to find, though the **DOL's Occupational Outlook Handbook** confirms that job openings in medical repair are going to grow "much faster" than other occupations, with a projected 18% increase between 2023 and 2033. Many of those openings are due to retirement.

"Whenever I present to an audience of technicians, I like to ask how many people are getting ready to retire in the next few years. Often, half of the room has their hand raised," says Matthew Bassuk, Chief Executive Officer of NVRT Labs, a PartsSource Company, which designs VR training programs for medical device service. "The average tech is 51 years-old and many are pushing 60. The industry needs to leverage emerging technologies to backfill the skills that they are leaving behind."

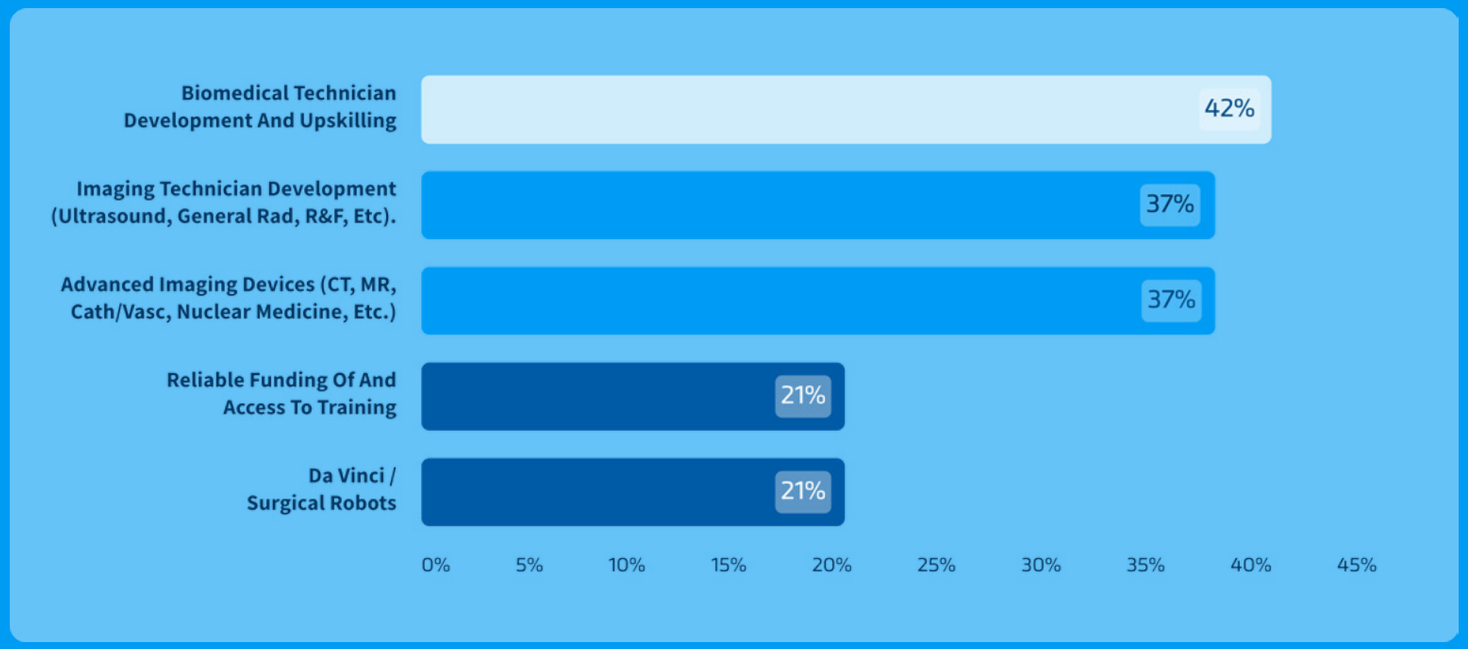
Given widespread shortages in qualified biomed and imaging technician, it is essential for HTM organizations to grow their ranks through effective training, and to find ways to keep skills sharp given upgrades in equipment and greater integration with computer systems.

Matthew Bassuk,
Chief Executive Officer,
NVRT Labs, a PartsSource Company

Training Priorities

Survey respondents expressed a wide range of training priorities, though the most frequent, with 42%, was developing and upskilling biomedical technicians. Imaging was also top of mind: 37% of respondents prioritized general radiology and ultrasound training for their imaging technicians, and 37% also cited training for advanced imaging devices such as CT and MRI scanners.

What are the most urgent training priorities you need support to achieve?



Effective training can take many forms: offsite multi-week classes with a vendor or a third-party training organization, on-site classes, "train the trainer" (where a few staffers take a formal course and return to their site to instruct everyone else), and, recently, VR and related technologies. Particularly with so many old hands retiring, HTM departments may be short of in-house experts who can share their hard-won expertise with new hires. When it comes to choosing training modalities, hands-on or interactive opportunities are a top criterion for 53% of survey respondents, followed by cost-effectiveness (47%). Course content that conforms to industry standards was mentioned by 37%.

"I encourage all forms of training," says Jesse Happ, Vice President of Logistics and Procurement at Renovo Solutions. Renovo builds a five-year training plan for each client based on what equipment is being serviced, when existing service contracts and warranties are due to expire, and what devices it might need to support in the future. The training plan could include self-study, third-party, peer-to-peer, and OEM courses.

The Promise of Virtual Reality

Because it combines relatively low cost and a rich training experience, VR training is sparking great interest among survey respondents. While only 11% are actively using it, 67% are considering it and another 5% have pilot programs in place.

Jesse Happ,
Vice President of Logistics and Procurement,
Renovo Solutions.

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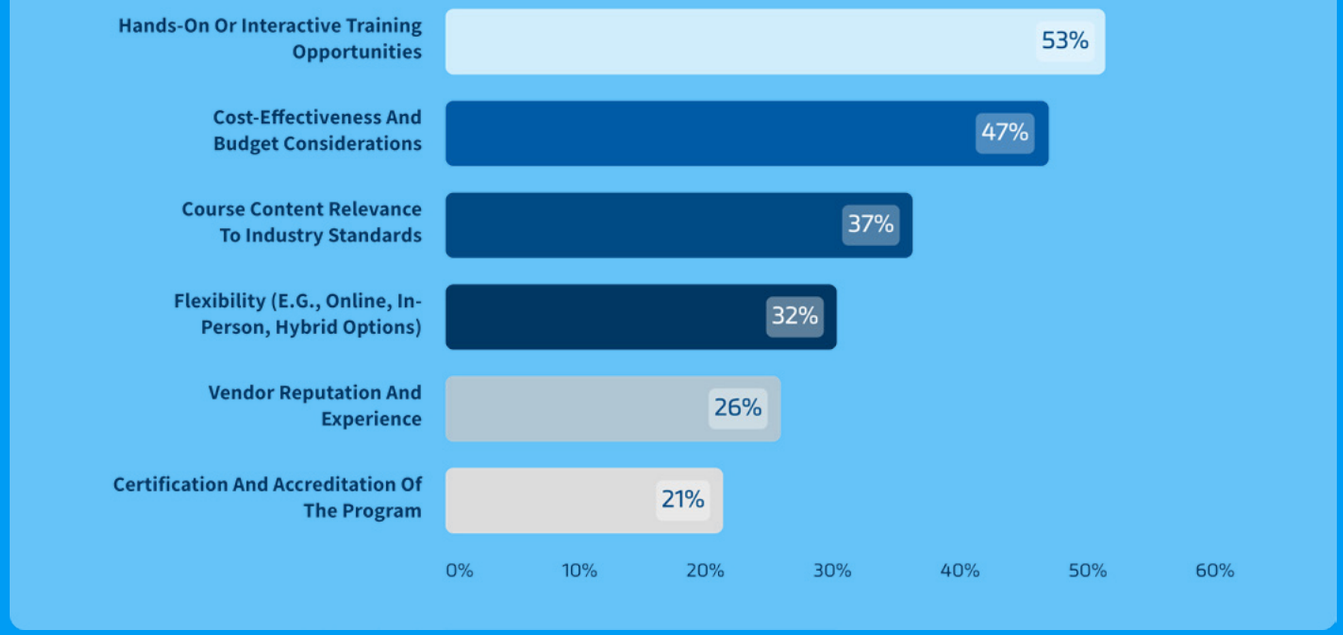
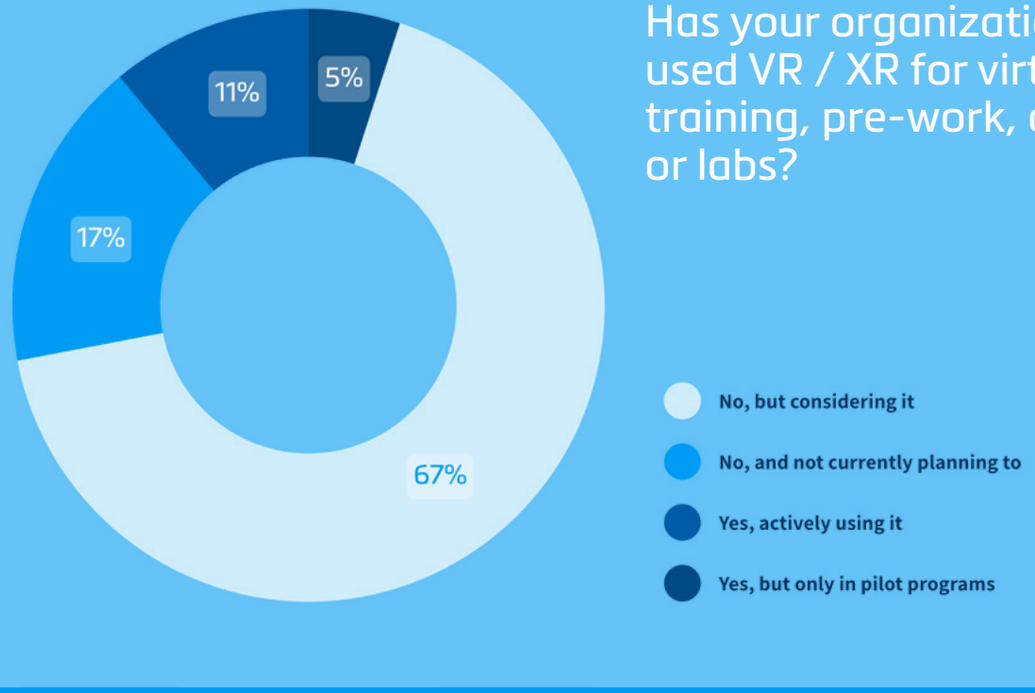
What are the most important criteria to your organization when selecting an HTM training program?



Has your organization used VR / XR for virtual training, pre-work, and/or labs?



63% of respondents said the top benefit of VR training is cost, time, and travel savings compared with sending staff to traditional offsite training.

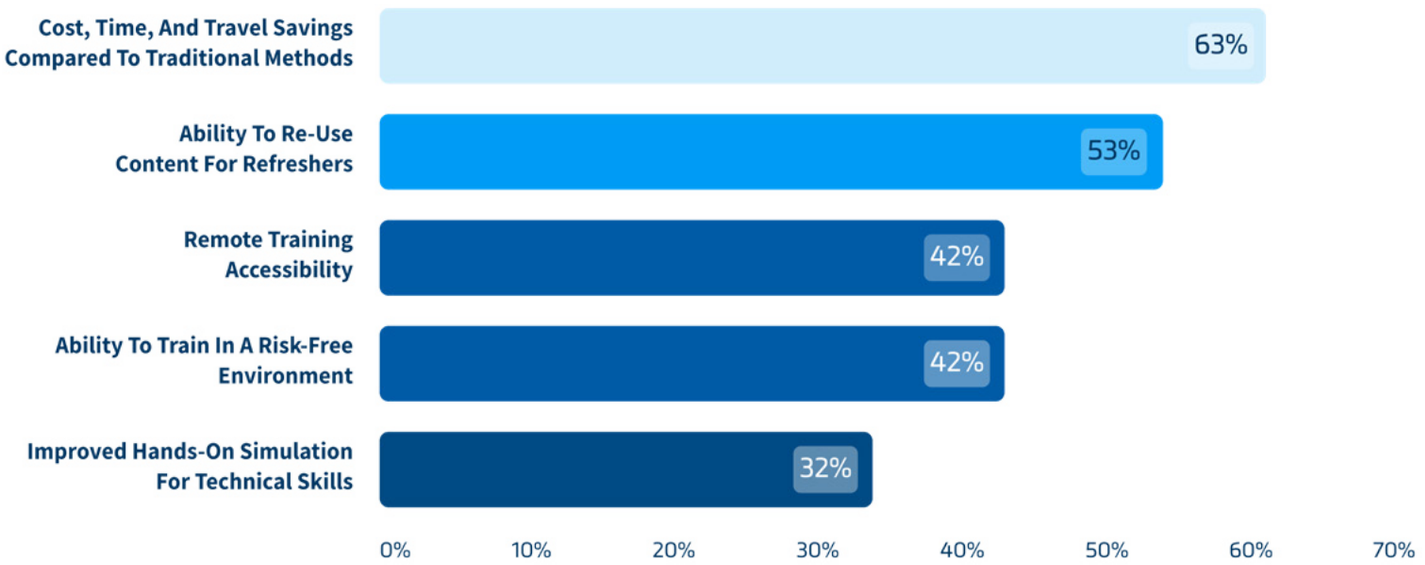
Another major benefit is flexibility: 53% said they appreciated the ability to re-use the content for refreshers, and 42% cited both the ability to train in a risk-free environment and the ability to train remotely.

Bassuk says his company's model of content development goes beyond what is provided by the manufacturer and taps the expertise of technicians who have been on the job for decades, making AR, VR (collectively called XR), and digital training delivery an effective substitute for instructor-led training. "Subject matter experts are one of our primary sources of content, and we work with Subject Matter Experts (SMEs) who truly understand their domain," he says. "Service manuals only get you so far. We also capture the experiential wisdom of the 30-year tech veterans because they have forgotten more about HTM than most of us will ever know. We embed that wisdom and experience into our content and we are using it to inform all our training tools."

Renovo's Happ is particularly excited about VR as refresher training. "Suppose you went to an OEM course five years ago and learned to replace a CT tube and the last time you did one was three years ago," he says. "If you go over the procedure with VR, everything comes back."

Bassuk agrees, stating, "Immersive simulations really shine when traditional training is too risky, costly, or rare. You do not get many hands-on reps with quarter-million-dollar X-ray tubes. With XR, we can provide realistic, virtual hands-on experience that studies show lead to significant long-term knowledge retention, plus the ability to repeat or refresh training whenever needed."

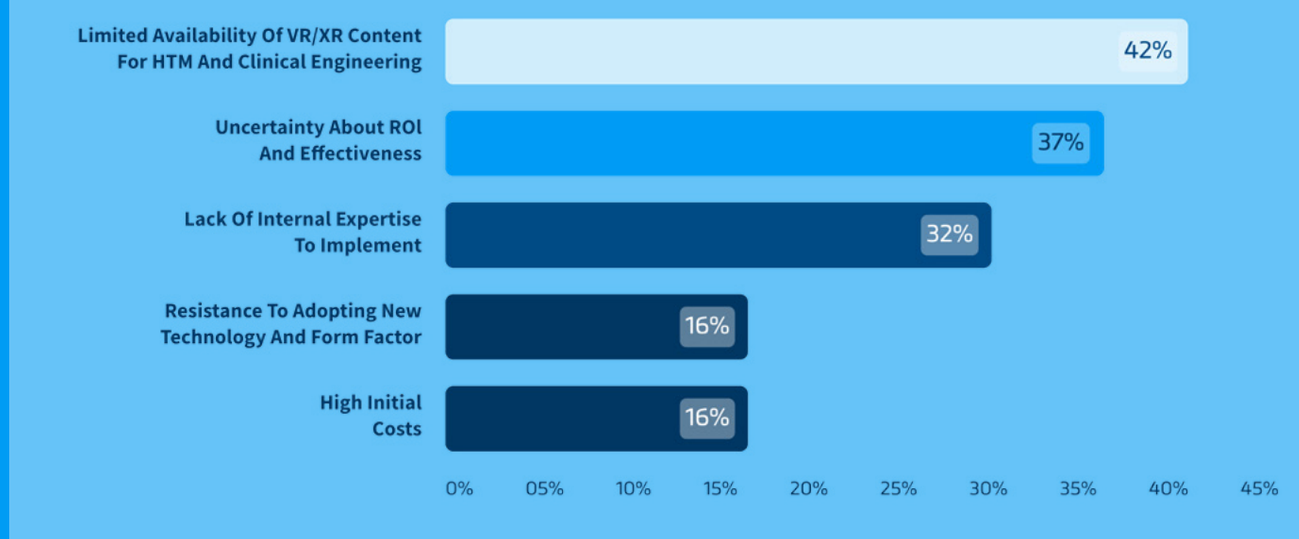
What do you believe are the biggest benefits to using VR / XR in healthcare training?



What is keeping more providers from taking the leap into XR-based training? While no single factor dominated, 42% of survey respondents cited limited availability of content and 37% referenced uncertainty about cost-effectiveness.

Bassuk notes that while VR has already proven to be a cost-effective training solution – especially for smaller HTM programs unable to afford offsite OEM courses – the real cost benefits are yet to come. “With the PartsSource platform, we are building a system where even a modest investment in immersive tools can unlock an entire library of high-quality, hands-on training and bite-sized respiratory content,” he says. Rather than paying five figures per technician for instructor-led OEM training, health systems will be able to deliver that same knowledge without staff ever leaving the facility. “It is not just about saving money, it is about unlocking scale,” Bassuk adds. “We are making advanced, standards-aligned training accessible, trackable, and repeatable – so that every dollar invested drives long-term workforce capability.”

What are the biggest challenges or barriers to implementing VR / XR training in your organization?



“We also capture the experiential wisdom of the 30-year tech veterans because they have forgotten more about HTM than most of us will ever know. We embed that wisdom and experience into our content and we are using it to inform all our training tools."

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Community Insights

How Methodist Le Bonheur Health System Integrates Virtual-Reality-Based Training to Boost Staff Skills

Jeremy Cook, Senior Director of Healthcare Technology Management at Methodist Le Bonheur Healthcare, based in Memphis, TN, has 90 staff but needs 100 by the end of the year to keep up with maintenance and repairs at its 583-bed flagship medical center, five satellite hospitals, multiple Imaging Centers, Physicians practices, and major for-profit repair businesses. “Training is the lifeblood of the clinical engineering department,” says Cook, who has been with the system for 29 years. “I achieve my metrics with highly trained technicians. Old-school technicians can troubleshoot medical equipment and repair it 80% of the time and they escalate to the OEM or third-party the other 20%. If I give my new techs effective training, I can get them to 100%.”

Cook has gone all in on VR training from NRVT Labs. “VR is a way for us to spread out much more training for less cost and great overall benefit,” he says, estimating that for most biomedical maintenance and repair processes, technicians can demonstrate competence after one VR session. Even for some more complex imaging services it is often “15 minutes and you are done.” VR has been especially helpful for getting technicians up to speed on devices that integrate with some type of information technology. “We staff light, for our three smaller hospitals it is a one-person show, and we cannot take that person away for days of troubleshooting with IT,” Cook says.

It helps that all six hospitals have largely standardized their equipment, minimizing the number of different devices that each technician must master.

Cook says lack of content is the biggest barrier to a full VR training operation, and he is eager for the company to develop more modules. Matthew Bassuk says they are expanding as quickly as they can, starting from a core library of 24 common devices and procedures. “We are working with our clients to figure out the Venn diagram of fleet equipment that everyone needs.”

Cook says his technicians love that the health system has made the VR investment and encourages all HTM shops to “jump into it.”

“You will be surprised at the staff / Associate satisfaction,” he says. “Standard classroom training will not go away for big iron, but for general biomed, if I could do everything with VR - I would.”

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Insights in Action

- **Technician shortages are accelerating:** The Department of Labor projects 18% job growth in medical repair roles by 2033, yet many openings stem from retirements. With the average tech age at 51, nearly half are nearing retirement, creating a critical skills gap.
- **Upskilling is a top priority:** 42% of HTM leaders prioritize developing biomedical techs, while 37% cite both radiology/ ultrasound and advanced imaging (CT/MRI) training needs, reflecting the growing complexity of equipment.
- **Hands-on training is preferred**: 53% of respondents say interactive, hands-on training is their top criterion, followed by 47% prioritizing cost-effectiveness, with 37% citing industry-standard course content.
- **VR training adoption is gaining traction**: While only 11% actively use VR, 67% are considering it and 5% are piloting VR programs. 63% cited top benefits being cost / time savings, 53% valued refresher training, and 42% noting safe, remote accessibility.
- **Immersive tech captures expert knowledge:** VR / AR training embeds decades of SME experience, helping bridge the gap as veteran techs retire. Studies show immersive simulations improve long-term retention and provide safe practice on high-cost equipment (e.g., $250k X-ray tubes).

Conclusion: Embracing the Future for Improved Outcomes

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The future of Healthcare Technology Management belongs to organizations that move beyond reactive maintenance and embrace technologies that enable a strategic, proactive approach. Hospitals and healthcare providers that use real-time data and advanced analytics to guide equipment decisions will gain a decisive advantage—improving clinical availability, reducing costs, and enhancing patient care.

The healthcare industry generates massive volumes of data, yet many leaders struggle to turn it into actionable insights and recommendations for improvement. HTM leaders, supply chain executives, and service decision-makers have the opportunity and responsibility to change that. By adopting technologies that deliver predictive insights, automate workflows, and measure performance in real time, you can anticipate needs, prevent downtime, and make smarter investments.

The second annual State of Healthcare Technology Management Insights Report from PartsSource proves the power of this approach, outlining seven data-driven opportunities to decrease operating costs and increase equipment uptime. These strategies are critical as healthcare navigates new market challenges and growing demands for cost efficiency and patient-centered care.

The data exists. The evidence is clear. The technology is ready. Future-proofing your HTM strategy starts now by proactively pursuing solutions that keep mission-critical assets available and performing at their best. Leverage technology for a smarter, more cost-effective HTM strategy. Leverage technology for a smarter, more cost-effective HTM strategy - and partner with PartsSource to create a roadmap that transforms your HTM operations, drives measurable results, and positions your organization for long-term success.

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Past State

- "Break-fix" model
- Dependence on OEM parts
- Dependence on OEM service contracts
- Vendor restrictions on right to repair
- Dependence on OEM training programs and "tribal knowledge" of experienced staff
- Using equipment until it fails, or replacing early because of clinician demands

Future State

- Holistic view of device health that uses device data, industry benchmarks, and advanced analytics to anticipate and prevent failure
- Validating the performance of OEM-compatible parts and buying based on quality, cost, and warranty
- Service primarily in-house with strategic use of ISO and OEM contracts to fill gaps
- Providers use legal and regulatory changes to negotiate with vendors for access to documentation and parts
- Training programs, independent of specific vendors, that harness “tribal knowledge” of many experienced technicians for general use, along with dramatic expansion in “hands-on” training opportunities through virtual reality
- Strategically extending the life of usable equipment as long as possible, using performance data to pinpoint the optimal time to replace.

An Optimistic Future

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At PartsSource, we are optimistic about the future of HTM and the power of shared purpose and community to shape its direction. By engaging today's industry leaders and gathering their insights, we have compiled key words of wisdom to help guide the path forward. We share these perspectives to spark new ideas, inspire action, and strengthen our collective ability to advance the field. We invite you to join the conversation by sharing your insights as HTM continues to adapt and prepare for challenges that are still to come.

Edgar Newell,
Assistant Vice President for Clinical Engineering,
RWJ Barnabas Health

"Make it about meeting the needs. Meet the need of your peers by serving the equipment. Meet the need of your team by keeping them fully engaged and giving them a 'why.' We are changing how we are thinking about the process and breaking the traditional mindset, so we can be practical for our future. This is about us working together, as a group, to do the best, and have the best solution in place, so that we can meet the mission."

Jeremy Cook,
Senior Director of Healthcare Technology Mgt,
Methodist Le Bonheur Healthcare

"The smartest thing you can do with virtual reality technology is to try it. It is not a big investment and you will be surprised at the associated benefit. I knew VR had promise because I wanted to show our staff and associates how we value their expertise."

George Reed,
Director of Clinical Engineering,
WakeMed Health and Hospitals

"No matter how large or small you are, you should be looking at your data so that you can be proactive instead of constantly reactive. Not only will it make your program more effective and efficient, but you can use the data to show your leadership the value that your program is delivering."

Charles Berberette,
Senior Director of Biomedical Engineering,
Jackson Health Systems

"Always ask questions, always be curious. If you are not sure, it does not hurt to ask. If you do not like something, ask for something different."

Anthony McCabe,
Executive Director for Clinical Engineering,
UHealth at the University of Miami

"Investing time to anticipate known failure modes and establish structured response plans strengthens organizational resilience. With clear checklists in place, issues can be resolved by a single resource rather than diverting multiple team members, ensuring both operational continuity and efficient use of talent."

Jay Olson,
Director of Biomedical Services,
Marshfield Clinic

"You have to look at your internal talent and really invest in them. The core of all of our operations are the technicians. And our success is based off their drive to do the training and be successful. Then reward them for that success."

Michael Powers,
Network Director of Biomedical Engineering,
St. Luke's University Health Network

"Let us build the trust between owners and manufacturers so that we can partner together to deliver faster, more economical service to our vulnerable patient populations. I'm trying to take care of my neighbors."

Jesse Happ,
Vice President of Logistics and Procurement,
Renovo Solutions

"Always challenge yourself and your teams. Is there something different out there that somebody else is doing that we could maybe integrate into our plans? Do not allow silos—always create communication streams to connect the different HTM professionals in your organization and encourage them to talk to people outside the organization as well."

About PartsSource

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PartsSource was founded on the idea that an evidence-based, digital approach to the healthcare supply chain can unlock better delivery, lower costs, and enhance clinical outcomes.

Today, PartsSource is the leading technology and software platform for managing mission-critical healthcare equipment, and is known for modernizing the medical technology supply chain with the industry's first and only clinical resource management platform.

PartsSource serves 5,000 hospitals and 15,000 clinical sites across the United States and is committed to innovating to reduce the cost of healthcare and elevate clinical availability across the sector.

With decades of proprietary data, PartsSource is transforming the medical equipment supply chain to create greater financial, labor, and clinical capacity for top providers.

15,000+
US Clients

100,000+
Assets Under Mgmt

850,000+
Events Managed

10,000+
Global Suppliers

5,000+
Nationwide Service Network

Learn more about PartsSource:

- PartsSource Announces Healthcare's First Multi-Vendor, Multi-Modality Asset Health Record to Increase Clinical Uptime for Multi-Site Providers, Co-Developed through Health System Partnerships
- PartsSource Named Newsweek's List of the Top 200 America's Most Loved Workplaces in 2024
- PartsSource Opens New Customer Experience Center to Help Healthcare Providers Increase Mission-Critical Asset Availability and Improve Equipment Service
- PartsSource Named to The Healthcare Technology Report's Top 25 Healthcare Software Companies of 2025:
- PartsSource CEO Phil Settimi Named to The Healthcare Technology Report's Top 25 Healthcare Software Executives of 2025:

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