GE Healthcare

Moving Beyond Break-Fix Maintenance: Holistic Healthcare Technology Management

by Scott Elston
General Manager, Comprehensive Service

Amidst a healthcare climate barraged by costs and complexity, an optimized healthcare technology management program, that balances both cost and quality, can seem out of reach. But with external market pressures and internal challenges, health systems have found that the best strategies are ones that embrace change, rather than resist it.

This renewed thinking has challenged longstanding practices and reinforced a truth that healthcare leaders know all too well: A break-fix approach to medical device maintenance isn't working, and it's time we move beyond it. Innovative health organizations are taking a more integrated approach that addresses the entire equipment lifecycle and technology infrastructure, evolving their traditional and fragmented break-fix service models into a more holistic view of healthcare technology management (HTM).

Key takeaways

Health systems can achieve sustainable savings, improved asset utilization and scalability by transforming their break-fix equipment maintenance model into a technology-enabled Healthcare Technology Management (HTM) program.

The three pillars of a holistic HTM program are:

- Service Model Optimization – Technology-enabled service model, tailored and aligned to your priorities for efficient operations, reduced costs and enhanced quality.
- Integrated Asset Management – Optimized asset utilization and return-on-capital investment, with a data-driven focus on the entire equipment lifecycle.
- Sustainability & Innovation – Ability to evolve and adapt to changing industry challenges while sustaining program gains, meeting regulatory requirements for safety and compliance, and addressing cybersecurity.

To enable data-driven insights and decision-making within this framework, an enterprise-wide flow of clean asset data through different operational and financial processes is needed.

A Perfect Storm of Pain Points

No single force of change has contributed to the evolving healthcare ecosystem, but rather, a perfect storm of financial and operational pain points together calls for a more comprehensive path forward.

Financial Pressures

The shift to value-based care, reimbursement rate impacts, and higher costs have challenged systems to be more cost-effective and resourceful. Rising expenses have come at a breakneck pace: Hospitals will grow their expenditures an average of 5.7 percent per year between 2020 to 2027, up from 4.8 percent in 2019.[1]

Now more than ever, quick fix cost-out actions won't cut it. It's increasingly difficult to find savings because systems have already exhausted their options. Instead, systems that take bigger, more strategic swings to drive out costs are the ones that see the most success. But there's a catch: It requires a fundamental shift in the way they think about and pursue cost reductions. Often, that shift manifests in the sustainable development of new programs and approaches to asset management.

The Supersystem Effect

Consolidation has driven mergers and acquisitions (M&A) activity at an unprecedented rate. As disparate entities form fragmented supersystems, they have trouble realizing the benefits of their scale.

Supersystems must blend together cultures, processes, and programs in a short amount of time, which results in decentralized, ad-hoc asset management decisions that can't scale with the next merger.

Within those challenges lies opportunity. Through a standardized, scalable healthcare technology management plan, organizations can gain efficiencies from their size in smarter, more sustainable ways. When that happens, systems can fully capitalize on their established status while staying prepared for the next M&A.

Proliferation of Assets & Data

Proliferation of assets and related maintenance is a key driver for increased healthcare costs. Many problems derive from the model itself: Service programs with disorganized inventories, complex distributions, and no protocol or bandwidth for data upkeep are inadequate to provide and sustain value.

Too often, hospitals invest in unneeded assets based on gut feelings or anecdotes, rather than demonstrated need. Over the last 15 years, the number of assets per bed has jumped by 62 percent while utilization of those assets remains at 40 percent. The rest of the time, the equipment is in hallways, lost, idle, sitting in patient rooms with no patients or hoarded by nurses out of necessity.[2] Simply put, most U.S. healthcare systems have acquired more assets then they truly need to deliver quality care and are too often using those assets inefficiently.

This raises concerns not only about capital and rental costs, but also about issues such as labor inefficiencies from locating or disinfecting equipment or security vulnerabilities from increases in networked assets. Medical device security, in particular, is an ever-increasing threat. According to a HIPAA Journal study, in 2018, 82 percent of hospital technology experts reported significant security incidents. The average price tag per data breach was $3.86 million.[3]

An efficient asset management program gets at the root of the problem, which may not always be inventory related. With processes optimized, health systems can make data-informed, cost-effective decisions about their mobile fleet without rushing to purchase new assets at every opportunity.

The Silver Tsunami

An entire generation of biomedical engineering expertise will retire soon, but there's not enough available replacement talent to draw from. An estimated 50 percent of medical equipment service engineers are expected to retire over the next 10 years.[4]

This forces a reset on thinking about retirement and retention. Hospitals with in-house service technicians may not have the labor pipeline to sustain that model in the future. Luckily, labor shortages happen alongside new technologies for remote diagnostics and proactive repair. Fifty percent of software issues can be diagnosed remotely.[2] Choosing an HTM partner who is investing in technology tools, technical training and a robust talent pool can provide an option to outsource or supplement your service labor needs, allowing you to focus on core competencies and patient care.

For organizations that choose in-house or hybrid models, it's imperative to tackle labor shortages from all angles: Invest in remote-fix technologies; develop training, tools, and compensation to incentivize retention.

So, What's the Answer?

Between rising costs, retiring workers, behemoth supersystems, and underutilized assets, it can be difficult to stay ahead of challenges without a robust strategy.

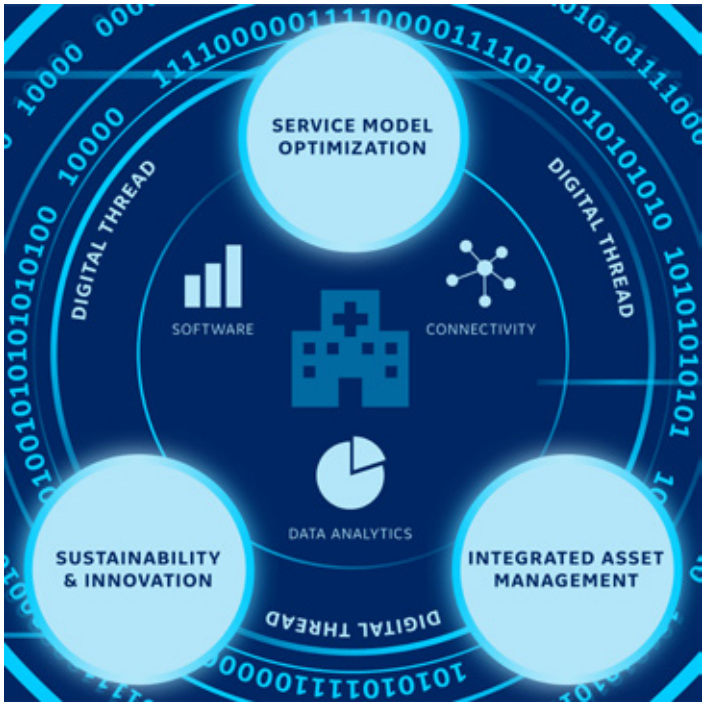
Systems, no matter their scale, need to reevaluate and bolster their approach to asset maintenance beyond break-fix. Progressive organizations know this, and they're searching for a better path forward to drive outcomes, cut costs, and boost productivity.

That path forward can be found through a holistic healthcare technology management program that evolves with and supports organizations through market changes, now and in the future

HTM: A Forward-looking Framework

A world-class HTM program has three core components: service model optimization, integrated asset management, and sustainability & innovation. When deployed holistically, they create a robust, comprehensive approach that navigates the challenges of today and tomorrow.

But more than that, HTM is a philosophy—one that requires a shift in mindset and an openness



to exploring bold new ideas. It also requires an acceptance that problems may have more underlying, deeper organizational issues that need tackling first.

The Benefits of HTM

A comprehensive HTM program maximizes quality, removes variation, makes better use of technology and talent, and realizes immediate and long-term gains:

- **Sustainable Savings:** Standardized process brings economic gain—as much as 10 to 15 percent in annual operational savings thanks to selecting an optimal labor and coverage model, right-sizing inventory and leveraging the latest support technologies.
- **Improved Utilization:** The right HTM model identifies areas of surplus and shortage so that equipment can transfer to areas of greatest need in real-time.
- **Program Flexibility:** Programs with scalable design can evolve with organizational needs, M&A consolidation, or whatever else tomorrow brings.
- **Actionable Data:** With usage data, leaders can make more informed and future-proofed choices around rental management and capital purchases.

Three Pillars of Successful HTM

Pillar One: Service Model Optimization

The right service model for a healthcare organization depends on their objectives, size, culture, geographic distribution, scale and need for standardization. Done well, model optimization leads to more efficient operations, cost reductions, and enhanced quality.

There are a wide range of effective labor models—from fully outsourced to in-house and hybrid blends of both. And it's not just about dollars and cents. Many other factors deserve consideration:

- **Culture:** Bold results require bold changes and a cultural appetite for new ideas. Regardless of the labor path you choose, organizations must enable and embrace transformative change. Leaders must be willing to champion those changes when others resist them.
- **Size and History:** To some extent, size and history dictate model options: For example, it's more difficult to make an in-house model work efficiently without scale, a proven history of building experienced teams, and the labor force and investments in support tools and technology to sustain success.
- **Vision and Philosophy:** Developing your people is an important organizational objective, but do you want to be known for your excellence in clinical engineering or for delivering world-class patient care? Obviously, the latter. But even that can come in conflict with your make vs buy philosophy, so it's important to sort out your priorities when selecting the right model.
- **Preference:** Model selection takes place at the intersection of trust and control. Organizations need to ask themselves what model is the best fit for them culturally, financially and operationally. If an organization is interested in outsourcing, they should feel confident that they are choosing an experienced partner that will help them grow according to their future goals.

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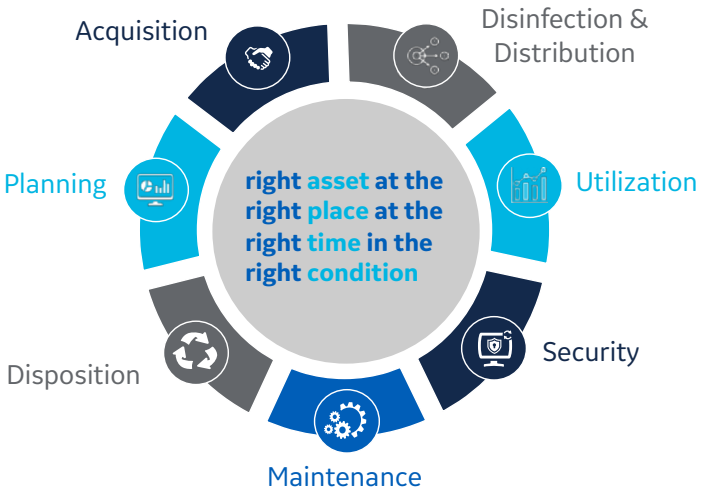
QUESTIONS TO ASK

- How well is our current model meeting organizational needs?
- Am I confident that I know our true spend on maintaining and servicing biomedical and imaging assets?
- Are we going to have the talent pool to sustain our current model?
- What data are we using to determine the right mix of quality, uptime, and cost savings in our service model?
- Is it time we start radically rethinking what we're doing?

Pillar Two: Integrated Asset Management

Optimizing inventory at an enterprise level can have immediate and long-term benefits and help systems focus more on the middle (and most important) part of the clinical asset lifecycle: actual utilization. This can be done through integrated asset management, which helps clinicians find the right asset, in the right location, in the right condition, at the right time.



The process manages the entire equipment infrastructure across the care continuum to tackle waste drivers and inefficiencies. To do this successfully, it requires a high-level assessment and collaboration from diverse stakeholders across the asset lifecycle, from planning and acquisition to distribution, utilization, maintenance, and disposal.

The benefits go well beyond cost, though that's a significant factor. By making assets easier to find and use, it improves satisfaction and productivity among clinicians, who can spend more time at the bedside focused on patient care. Additionally, it gives leaders real-time data about asset usage for more informed capital decision-making.

When considering the optimal asset mix, consider these factors:

- **Underlying Causes:** A well-equipped asset strategy considers the root cause of waste—often, it's more related to process than products.
- **Location Tracking:** Real-time location system (RTLS) can streamline fleet distribution and help clinicians locate and manage assets, such as infusion pumps or respiratory equipment.
- **Disinfection and Distribution:** The need to disinfect and redistribute equipment takes frontline caregivers away from the bedside and priorities. The right asset program should include scalable processes to reduce downtime and put assets back into service more quickly after each patient encounter.
- **Data-Driven Planning:** Asset strategies should revolve around data. Choose a program that enables data-driven analysis so that you can buy what you need. Pillar Three: Sustainability & Innovation

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- How much time per shift does our clinical staff spend looking for assets?
- What data are we relying on to determine if we have the right number of assets? How do we know when we need more and how much to order?
- Is our mobile asset utilization where it needs to be?
- What role does technology play to enhance and sustain our process efficiency?

Pillar Three: Sustainability & Innovation

After investing resources to drive out inefficiencies and financial waste, any world-class HTM program needs to have the rigor and governance to sustain results over time. Without sustainability, savings start to erode as the industry inevitably moves in new directions.

It is also imperative for any world-class HTM program to consistently look around the corner to new market dynamics and challenges so that the program can continue to evolve and adapt to meet those new challenges head on. A great example of this is cyber-security: 10 years ago, this was not a top-of-mind concern but now it is almost a requirement for any HTM program to have a carefully considered plan for medical device security. HTM programs need to anticipate and adapt or run the risk of becoming irrelevant and ineffective.

Enter the third pillar of a holistic HTM program: sustainability and innovation. It is a strategically necessary way of adapting to changing needs, cost pressures, external threats, and regulatory requirements so that economic gains, performance and quality continue over time.

When building sustainable HTM models, there's a lot to consider, from regulatory changes and medical device security to ongoing innovation:

- **Program Governance:** A sustainable program ensures that financial and quality outcomes consistently meet goals. Good governance relies on program managers, steering committees, quarterly business reviews, and compliance audits to review ongoing metrics for continuous improvement.
- **Resource Management:** Sustainable models create lasting savings through smarter capital planning, ongoing asset management, and more efficient use of technology, time and talent.
- **Forward-Looking Innovation:** Future-proofed HTM models account for ongoing investments in training, technology, and innovation, such as asset tracking, predictive diagnosis, and cybersecurity.

QUESTIONS TO ASK

- Are we prepared to navigate the unknowns of the next five, 10, or 20 years? Are we adapting to new market trends real-time?
- What have been some of our previous challenges with sustaining results, and how can we standardize to solve them?
- Are we regularly reviewing metrics for program improvement? Do we have access to those metrics and are we looking at the right ones?
- Do we have the right governance in place to ensure long-term success?
- Does our HTM program leverage technology to enable long-term sustainable success?
- How did our HTM program handle the challenges of COVID-19? Is our program prepared for the next crisis?

Pulling it all Together: The Digital Thread

For an HTM program to deliver maximum benefit, health systems should follow proactive and data-driven technology planning, as opposed to reacting to perceived needs.

As the "know more, spend less" adage implies, data is the undercurrent of a holistic HTM program, and insights can serve as a major tool to reduce operational and capital expense. But how can you optimize asset management based on rigorous, data-supported evidence?

It starts with clean, comprehensive data. Finding, maintaining, and using that data requires:

- **Standardization:** Centralizing data inputs and recording mechanisms can systematize data to build long-term capital replacement plans that account for current and projected needs, organizational goals, and local market dynamics.
- **Transparency:** Organizations need full transparency into equipment inventory and usage across the enterprise. This requires comprehensive physical asset inventorying, as well as a computerized maintenance management system (CMMS) to make data more visible, understand asset value, and drive lifecycle management.
- **Usage Insights:** Real-time location systems (RTLS) show when, where, and how often equipment is used. Tracking this data can inform long-term capital purchase decisions and streamline reallocation for maximum utilization. Pair utilization data with patient data to find actual need. Together, those two insights help organizations make more coordinated decisions both enterprise-wide and at specific facilities.

HTM Transformation in Action

A 23-hospital Catholic health system sought to transform from a break-fix service model to a strategic HTM program that could be simple, standardized, and scalable as they prepared for upcoming acquisitions.

Guided by the three-pillar approach, the health system deployed RTLS technologies at 13 of its acute-care facilities to find assets and track utilization. With those insights, the system could transfer equipment from surplus to shortage areas, based on demand.

Their HTM transformation also involved a standardized and outsourced model of disinfecting and distributing mobile medical equipment (MME) so that clinical staff could always have clean assets available close to the point of care on every floor.

Results:

- **$12.9M** in annual operational savings
- Asset utilization increase, from **38 to 71 percent**
- **Improved quality and transparency** of clinical asset inventory data
- **Data-driven capital planning** support
- **Increase in staff satisfaction** among clinicians

HTM Transformation in Action

A multi-state, 45-hospital rural health system wanted to drive significant cost out of their break-fix maintenance system, while at the same time continuing to experience the high-quality service their in-house biomedical team had been providing.

Focusing on the three pillars of a comprehensive, holistic HTM program, this health system transitioned to a fully outsourced labor model that provided improved operating efficiency, optimized asset utilization, and employment opportunities for in-house clinical engineering staff.

Results:

- 5-year total operational cost savings of almost **$30M**
- **Simplified billing** via consolidating ~130 vendor agreements/invoices into one invoice
- **Improved quality and transparency** of clinical asset inventory and service history data
- **Data-driven capital planning** support

Putting It Into Action

While steps toward transitioning from a traditional break-fix model to a new HTM program are as unique as health systems themselves, successful transformations take place over 12 to 18 months or longer and involve a comprehensive process of discovery, planning, action, and continuous improvement. When evaluating who to collaborate with on this journey, you should look for an HTM provider who can help you lower operational costs, will continually invest in service tools and technology, and can anticipate future industry challenges. You should also consider a proven partner with a strong track-record of enabling sustained success with other organizations.

Where to start? The first step of your transformational journey should be to seek a baseline assessment of your current service program that includes:

- **Discovery:** Understand your current financial state, specifically your biomedical and imaging service spend, including the "hidden costs" found throughout your organization.
- **Analysis:** Benchmark of your current program against industry standards and similar health systems to identify allocation breakdown of biomedical costs and devices per bed and insights on labor and inventory.
- **Recommendations:** Develop actionable recommendations on how to optimize your service program for enhanced quality, standardization and cost-effectiveness.

By the end of this assessment, you'll have the data and insight to prepare you for the journey ahead—transformation of your break-fix maintenance model into a world-class, holistic healthcare technology management program.

Closing Thoughts: Holistic HTM and the COVID-19 Pandemic

The world as we know it has been changing right before our very eyes. With the unprecedented COVID-19 outbreak we are seeing unparalleled impact on healthcare organizations, patient care and how we live our lives. The industry challenges referenced in this whitepaper – financial pressures, asset availability and utilization, overall quality and efficiency of care – have been amplified during the struggle with COVID-19. Finding effective and sustainable ways to address them are more critical than ever.

Financially, healthcare systems are being hit very hard – revenues from elective procedures are coming to a halt, imaging centers are being temporarily shut down, and the pandemic is taking priority over all other organizational imperatives. Costs are skyrocketing and organizations will need avenues to reduce and stabilize costs while not impacting the quality of care.

Availability of mobile medical assets has always been a challenge to those in the industry but practically overnight, availability of ventilators has become a world-wide topic being referenced by politicians and civilians alike. Having the right medical asset, in the right place, at the right time, and in the right condition is essential to efficient patient care. Healthcare organizations need an HTM program that will provide visibility to and enhanced utilization and management of these assets.

Finally, service needs will continue to evolve as a result of this crisis. Many organizations are seeking more remote service options to minimize the impact of more people coming into facilities. The threat of cyber-security breaches has intensified as “bad actors” are taking advantage of hospitals during this vulnerable time. Organizations will need HTM programs that can innovate and adapt to the new world – HTM programs that can leverage remote diagnosis and repair, HTM programs that can own and mitigate the threat of cyber breach, HTM programs that have the ability to flex and adapt to constantly changing needs.

In a post-pandemic environment, healthcare organizations can look to an optimized, holistic HTM program model as one of the central components to help manage costs, ensure assets are ready when needed and ensure overall preparedness for future challenges. These challenges are not new to healthcare but the recent experience of COVID-19 has brought their urgency top of mind.

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About the Author

Scott Elston is the General Manager of Comprehensive Service for GE Healthcare’s USCAN Service Business, responsible for building innovative healthcare technology management programs with clients across the U.S. With 23 years of healthcare industry experience, he leads his team to drive transformational change to help healthcare systems of all sizes achieve desired operational and financial outcomes. He holds an MA from Marquette University.

Imagination at work