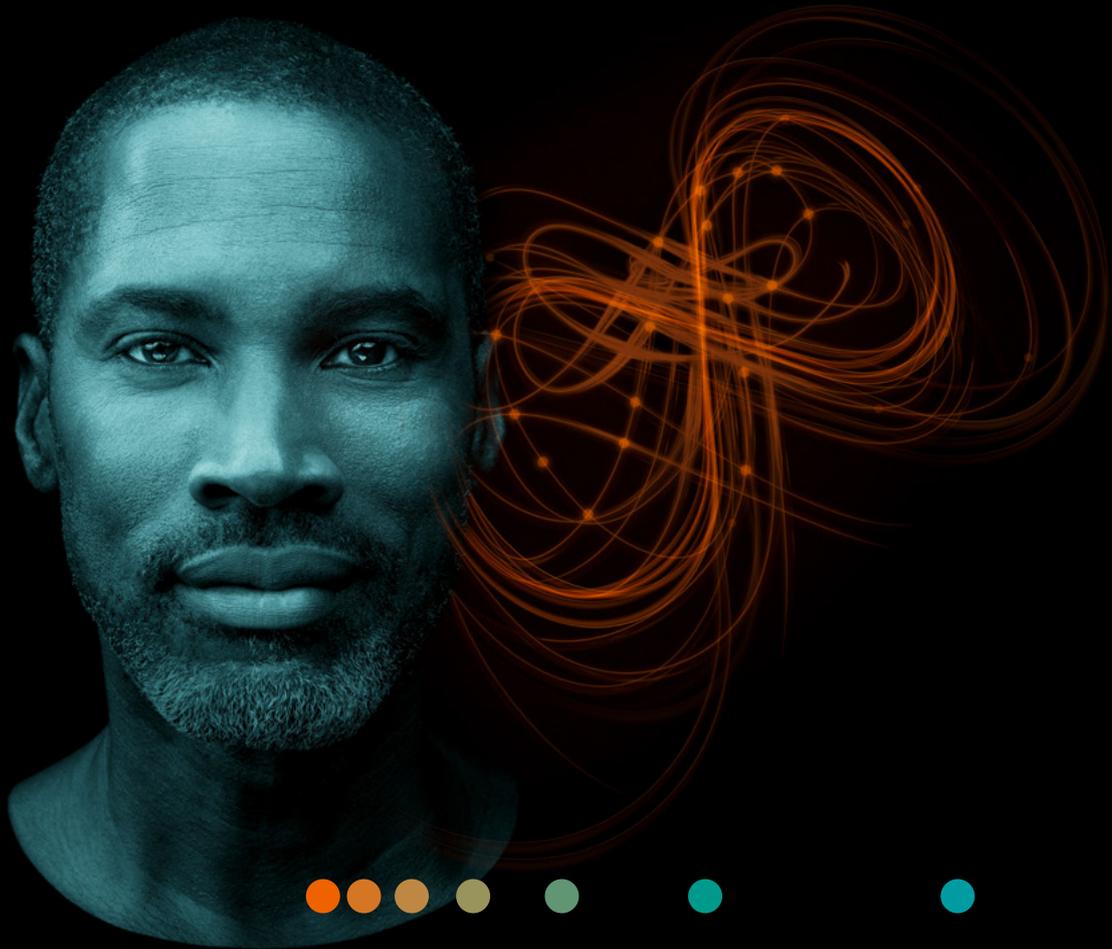


White Paper

Improving medical technology management through Value Partnerships

A new approach for healthcare provider organizations

siemens-healthineers.com/value-partnerships



Executive Summary

Value Partnerships™ are the enduring relationships that Siemens Healthineers forges with customers in order to optimize operations, expand capabilities, and advance innovation within healthcare enterprises. One of the areas where optimization can transform care delivery and improve patient experience is in the holistic management of medical technology. This whitepaper gives readers an overview of the ways Value Partnerships can enable effective and efficient technology management for healthcare providers.

Medical technology has become the 'central nervous system' of healthcare, informing and guiding the majority of care-related decisions. Machine learning and other AI technologies will continue to expand the importance and effectiveness of medical technology. This more powerful and complex nervous system requires expert technology management to keep it running at full potential.

Value Partnerships provide effective, proactive technology management services that help healthcare providers deliver improved patient satisfaction, best-in-class clinical outcomes and optimized return on technology investments. From procurement to maintenance, from operational efficiency to financing, Value Partnerships enable improved financial, operational, and clinical outcomes for healthcare provider organizations.

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1 Medical technology: The central nervous system of healthcare

Nearly every patient pathway is touched by medical technology. Imaging, diagnostics, and other medical technologies have become the central nervous system of healthcare. Medical technology has opened the door to a more precise, personalized approach to care that puts the patient at its center.

But healthcare providers have to carefully manage their medical technology assets to get the most out of them. This is a complex task with clinical and financial implications across the healthcare enterprise. Moreover, it's a task that is getting more complex with time as powerful new technologies, like machine learning, add to the capabilities of the medical technology fleet.

Capital technology purchases are the largest investments in a typical budget cycle. Without clear insight into the return on technology investment, provider organizations run the risk of a mismatch between capacity of, and demand for, critical medical technologies.

Vendor-provided technology management solutions are often described in marketing literature in terms of 'risk transfer', 'performance guarantees', 'access to latest technology' and so on. However, this language doesn't get to the heart of what makes asset management work for provider organizations, or to the value of a robust technology management solution to providers and the patients they serve.

2 The technology management value chain

It is important to understand the phases of the medical technology management cycle. This makes it easier to define best practices in and opportunities for improvement in technology management.

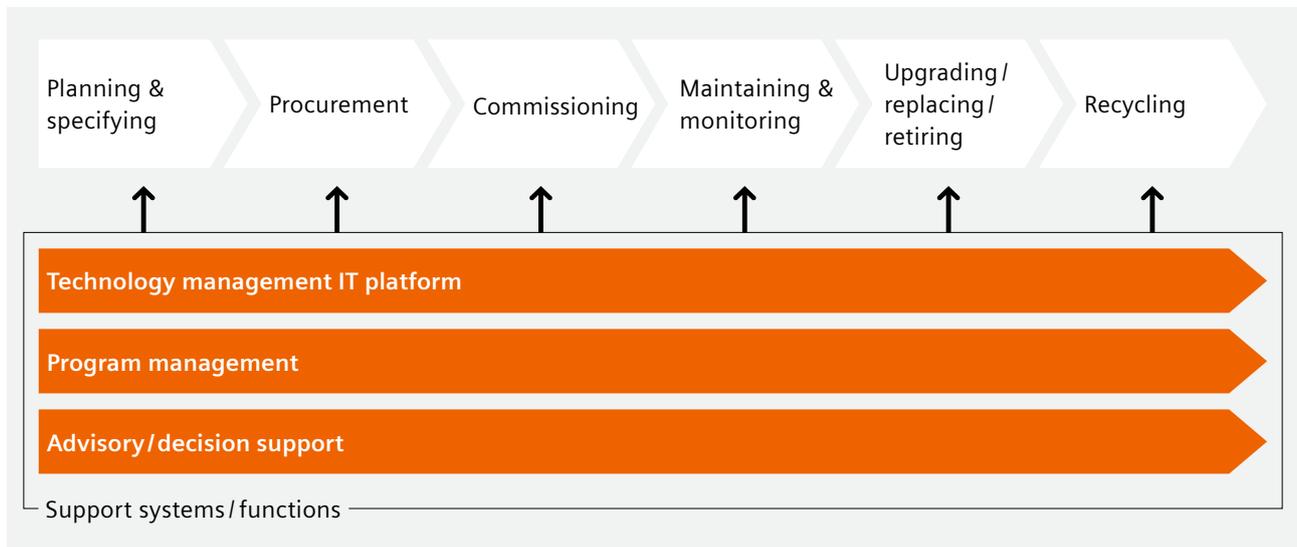


Figure 1: The technology management value chain and support systems/functions

Medical technology investment planning is a crucial first step. These investments have to satisfy current and anticipated future clinical and operational needs. Then a competitive procurement process results in asset(s) being installed and commissioned in the facility, together with initial user training.

But this is only the beginning of the value chain. The longest step in the chain, and the step where a lasting partnership is of critical importance, is technology maintenance and performance monitoring. This phase continues for as long as the asset is in use. The focus should be on continually improving asset performance. At the end of an asset's life, an informed decision is made whether to upgrade, replace or retire; outmoded medical technology assets are recycled.

Throughout the cycle, every medical technology asset or equipment fleet is supported by an IT platform, such as the computerized maintenance monitoring system (CMMS). Technology management partners also provide program management and advisory work at every step of the value chain.

Healthcare institutions that manage their own medical technology might overlook important advisory and management functions, because they lack in-house expertise in these specialties. These functions are critical for efficiency and value because they connect the value chain phases together into a cohesive and continuous program, and ensure they are an integral part of the healthcare provider operation.

3 Best practices in technology management for healthcare providers

Best practices in technology management go far beyond simple hardware and software maintenance (Commission, 2017). They begin before the purchase agreement is signed, and continue throughout the medical technology lifecycle.

Making informed, optimal purchasing decisions

Improved visibility of current and future capacity needs can help providers maximize their capital budgets. A recent whitepaper from Frost and Sullivan found that healthcare facilities are over-equipped by 20-30% on average (Sullivan). One way to realize savings is to manage technology investment strategically at the enterprise level, rather than taking a departmental approach. Departmental budget structures may lead some physicians to over-purchase in order to preserve current funding levels. A trusted technology management partner can offer guidance that will benefit the healthcare provider's financial health.

Keeping track of assets

A real-time location system (RTLS) can help healthcare provider organizations keep track of their medical technology. Given the scope of healthcare enterprises, many provider organizations struggle to keep track of which assets are available at any one time and where they're located. Effective asset tracking can improve efficiency and quality of care - learning from the industrial and consumer goods industries and bringing technologies such as RTLS to the healthcare sector.

Driving continuous improvement

Effective technology management partnerships provide ongoing monitoring and optimization of processes and performance to ensure that providers' technology fleets are a good match to capacity needs. These partnerships help providers anticipate changing needs, rather than react to new conditions.

Healthcare providers are focused on patient care, and generally lack the time and expertise to focus on workflow improvements which can improve both the quality of care and the overall patient experience. LEAN processes are a way to optimize operations and cut waste. In general terms, LEAN methodology assesses a process, identifies the steps in the process that produce value, and reduces or eliminates any steps that don't add value. Healthcare providers and medical technology vendors can partner in using LEAN methodology to enact rapid and sustainable process improvements in healthcare.

Getting the most out of digital technology management

A technology management IT platform is vital to the clinical and financial performance of a busy healthcare provider. Real-time dashboards alert service teams and healthcare management to take action before issues arise, and display success against service performance indicators. Remote monitoring of assets also enables preventive action and rapid responses as needed. Smart digitalization makes technology management simple, efficient and cost effective.

Analyzing technology performance and utilization

Insight into technology performance enables effective operational decision-making and, in turn, improved service delivery. For example, if there is high demand for CT scans from the ED, an under-utilized CT scanner in the radiology department can be made available, provided a workflow is in place to enable its use. Real-time asset performance information, backed up with regular reports that highlight trends, maintenance needs, and suggested improvement actions, enable efficient decision-making and significant savings.

Unlocking staff potential with training and education

An effective clinical and technology training program is vital to healthcare enterprises. An IT platform to manage and monitor training for clinical staff and in-house technical/ medical engineering staff is a best practice for a modern provider organization.

Having a customized, holistic, monitored training program in place is essential as user errors cause large hidden costs within many healthcare provider organizations (Kluver). Repeated procedures, incorrect diagnoses and inappropriate treatment all compromise the quality of care and strain healthcare institutions' finances. IT-enabled education programs helps providers avoid errors and improve quality and efficiency of care.

4 Value Partnerships: The Siemens Healthineers approach to technology management

Value Partnerships are enduring relationships between Siemens Healthineers and healthcare providers. They offer a comprehensive range of services, strategies, and solutions to optimize current operations, expand capabilities, and prepare for the future of the healthcare enterprise. While they typically span 7-15 years, the length of engagement is determined by the provider organization's needs.

Technology management is a vital service within the Value Partnerships framework. Providers and Siemens Healthineers collaborate to develop a partnership around technology management that leverages the strengths and fills the gaps in the provider's existing technology management infrastructure.

Partnership Design

The first phase in establishing a Value Partnership around technology management is the partnership design exercise. This establishes shared goals and key performance indicators, as well as technology and service requirements. This initial engagement is the foundation of an effective Value Partnership between a healthcare provider organization and Siemens Healthineers.

The partnership design comprises five stages shown in Figure 2.



Figure 2: The Value Partnerships design methodology for technology management

Stage 1: Data collection and current state analysis.

Establishes baseline asset/fleet performance against international benchmarks, best-practices and future demand

Stage 2: Interviews and on-site visits.

Structured talks with key stakeholders identify the provider's strategic focus, clinical development initiatives and existing pain points.

Stage 3: Gap analysis.

A deep dive into asset use uncovers gaps between current clinical needs, benchmarks and medical technology operational capability/capacity. Filling these gaps is a critical near-term partnership goal.

Stage 4: Future state analysis.

A projection of procedure volumes, informed by thorough research and expertise, determines future asset operational requirements.

Stage 5: Conclusion.

The partners finalize longer-term partnership goals in a multi-vendor technology management roadmap that will ensure success.

A Value Partnership around technology management brings together the right blend of competencies under a single partnership contract, unlocking significant operational efficiencies (see figure 3). This enables a reduction in technology management costs and more efficient use of facilities and staff. This leads to greater staff satisfaction, better clinical outcomes and a more positive patient experience.



Figure 3: Value Partnerships around technology management results

For a deeper outline of the value drivers behind each step in the value chain of technology management and how a partnerships and the embedded support systems/functions drive performance, see the Appendix.

5 Program management for a successful partnership

Following completion of partnership design, Siemens Healthineers employs a comprehensive set of program management processes to ensure that the full benefits of the technology management partnership are realized.

The Value Partnerships technology management process framework and governance structure enable partners and other stakeholders (e.g. suppliers) to work efficiently

and effectively in a complex change environment. The tailored blend of service elements – including management processes, decision support, efficient maintenance workflows, and more – helps maximize the value of the delivered by the partnership.

Figure 4 outlines the sub-components of our technology management programs.

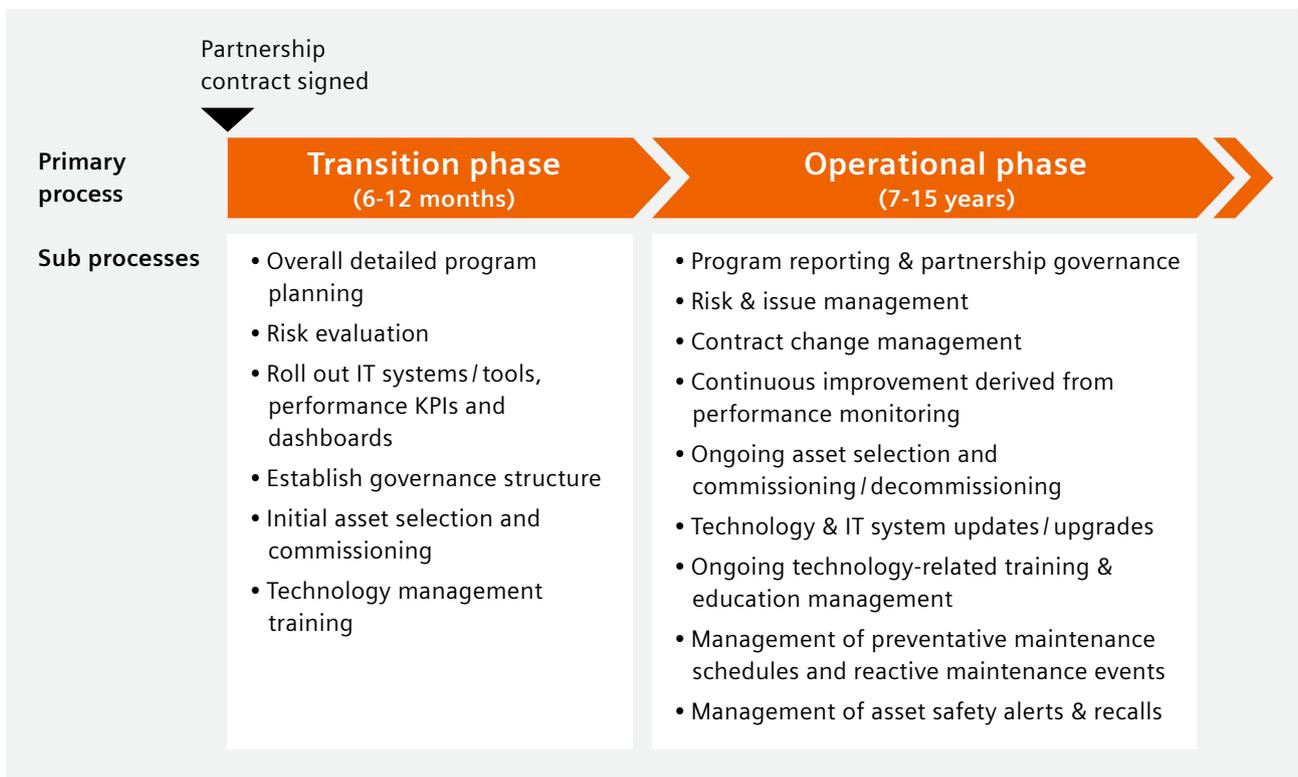


Figure 4: Technology management process framework

Critical activities like partnership design take place in the transition phase, which sets the stage for the enduring operational phase. The partnership delivers on its goals throughout the operational phase, usually for a term of 7-15 years. Joint program management and governance keep the partnership focused on creating value throughout the operational period.

6 Partnerships for financial stability

A clear benefit of technology management through a Value Partnership is medical technology cost stability over the life of the contract. This provides cash control advantages and budgetary predictability for healthcare provider CFOs.

Payment models fall into 3 broad categories, described in Figure 5.

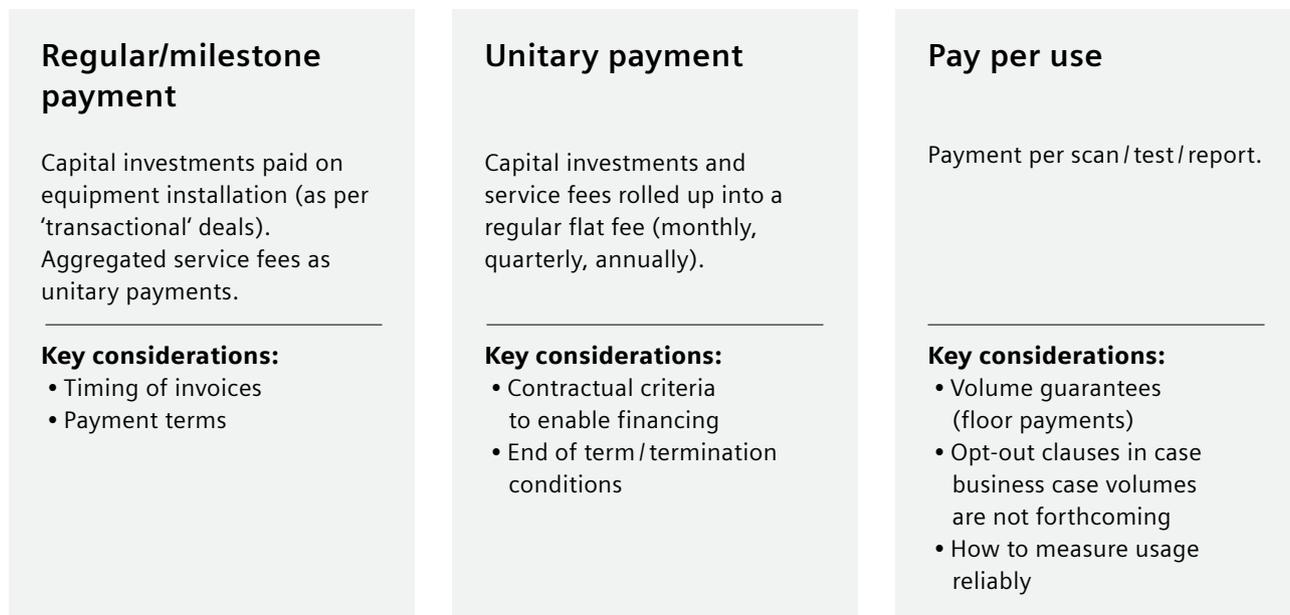


Figure 5: Technology management service payment model categories

Milestone and unitary payments are the most common models for technology management programs. The pay per use model is challenging to build and relatively rare (except in laboratory technology management deals, owing to larger variable costs in diagnostic labs). Siemens Healthineers works with its partners to develop contracts and payment models that best support the goal of maximizing technology availability.

Value Partnerships might also contain risk/benefit sharing arrangements. Shared investment in the success of the healthcare venture can improve financial outcomes, quality of care, and patient experience.

7 Efficient medical technology management: Five takeaways

This white paper has sought to demonstrate that:

1. A robust medical technology management program is a critical component of a successful healthcare enterprise
2. This necessitates a strategic, forward-looking approach to technology planning and spending
3. Partnerships with a technology provider enable sustainable success in technology management through long-term commitments and deep understanding of every step of the technology management value chain
4. These partnerships enables both parties to work toward common goals – sharing risks and benefits if appropriate
5. Effective partnerships can transform care delivery by increasing efficiency, reducing costs, and improving patient care

Technology management from Siemens Healthineers is built on a bespoke Value Partnership that deploys the resources, tools and governance needed to monitor and improve asset performance at every step in the value chain.

What makes Siemens Healthineers different?

- 170 years' industry experience as a leader in technology, service and business innovation
- Unique partnership-driven approach to technology management
- Operational excellence dedicated to continuous improvement
- Commitment to collaboration, shared vision and patient-centric goals
- Successful technology management partnerships built over 25 years in 14 countries on 5 continents

The Siemens Healthineers technology management approach is tried and tested. As the role of medical technology continues to evolve, we look forward to developing this collaborative business model further with healthcare providers all over the world.

To learn more about Value Partnerships around technology management [click here](#) or go to: [siemens-healthineers.com/value-partnerships](https://www.siemens-healthineers.com/value-partnerships)

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Appendix

	Planning & Specifying	Procurement	Commissioning	Maintaining & monitoring	Upgrading / replacing / retiring	Recycling
Value drivers	Right-sizing assets based on current/ future clinical and operational need.	Quantitative and qualitative asset selection criteria.	Planning for minimal disruption and patient impact. User training and education.	Asset availability (uptime) and performance. Continuous improvement programs.	Decisions based on clinical relevance, asset performance & service costs.	Re-sell capability.
Technology management IT platform	Historical specification data.	Historical service performance data.	Data input quality and decision support governance.	Service performance data: call-handling, parts supply, asset reliability. Remote monitoring. Preventative maintenance scheduling. Performance reporting.	Service performance data. Parts supply data. Asset reliability data.	
Program management	Aligning varied needs of stakeholders.	Aligning varied needs of stakeholders.	Ensuring timely achievement of quality and budgetary targets.	Driving continuous improvement. Ensuring stakeholder engagement. Controlling performance.	Aligning varied needs of stakeholders.	Managing decommissioning and the commercial impact.
Advisory/ decision support	Analyzing current and future demand (based on asset use, future trends and clinical strategy). Business case analysis.	Assessing 'best-of-breed' technology options. Supplier offer value analysis.	Designing tailored clinical user training.	Ongoing data-analysis for performance reports and stakeholder engagement. LEAN process improvement workshops. Business case monitoring.	Usage and service performance analysis to support decision-making.	
Other tools	Asset clinical usage data sources (e.g. RIS/PACS, machine data).	International procurement databases (e.g. ECRI).	Training management system databases.	Asset clinical usage & performance data sources: RIS/PACS, location data (for mobile assets), training data, activity-based cost information, revenue or reimbursement data. LEAN tools (e.g. rapid-improvement-event workshops).		

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