

White paper

Advisory services and the digital transformation of healthcare

Choosing the right advisory partner
to drive value creation

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Value
Partnerships

Edition #05



Executive Summary

Pressure continues to increase on healthcare providers worldwide. Multiple factors are at work: e.g. aging of populations, the increasing importance of patient experience, shortage of qualified clinical staff, and margin pressure. In this environment, the efficiencies that digitalization promises are no longer luxuries. They have become necessities.

Success with digitalization of systems and processes may well determine financial stability for healthcare providers in the future. In this environment, the value of savvy, knowledgeable, and experienced consultants from the medical technology industry has never been higher. Healthcare enterprises are discovering that such consultants bring together the vital components of informed strategy, technological know-how, and expert implementation.

Imagine that a hospital purchases new technology, receives training on it, and secures arrangements for service and maintenance. That would typically be the extent of the institution's engagement with the supplier, vendor, or partner. But the complexity of healthcare operations today demands more: There is a need today for a partner capable of — and responsible for — looking at far-reaching challenges: Clinical excellence, operational efficiency, and financial performance across the institution, of course, but also the impact on staff and patients. How will these stakeholders manage the change?

Healthcare providers can help ensure their success in the implementation and management of technology by partnering with highly qualified consultants who can and will make an enduring commitment to seeing them through the lengthy and challenging process. In the healthcare industry, those consultants whose expertise and experience are enhanced by leadership in medtech innovation are especially well qualified to provide a fact-based strategic perspective and deep implementation know-how. Siemens Healthineers is such a partner, with innovative solutions like AI-Pathway Companion, a decision support tool that integrates multiple data sources to help clinicians devise precise, personalized treatments for patients. The result of working with such consultants is a framework for a range of services, strategies, and solutions that can help healthcare providers optimize operations, expand capabilities, and prepare for a strong future.

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Introduction

Today, healthcare providers everywhere are under pressure to do more with less. That pressure is increasing every day. Multiple factors are at work:

1 Patient populations are evolving.

Populations are aging globally. By 2030, the number of people in the world aged 60 years or more is expected to approach 1.5 billion. By 2050, the number is expected to reach 2 billion. In the U.S., the population over the age of 65 is expected to grow from about 50 million today to nearly 100 million by 2060.¹ Urbanization is another factor at work. More than half of the world's population now lives in cities.² Urban health systems are finding it difficult to keep pace with their growing constituencies, particularly in places where rapid urbanization is resulting in living situations not conducive to health or budget restrictions prevent an investment in additional hospitals.³

2 The importance of patient experience is growing.

Patient consumerism is more important than ever as medical costs and insurance premiums rise and patients actively pursue the best value for their investment in healthcare. In addition to requesting excellent value, patients also want process efficiency and a positive environment. Tolerance for time-consuming processes or delays is declining. Today, quality in healthcare includes not just clinical effectiveness and safety, but also sound, patient-centric processes — a good experience for the patient.⁴ Success in delivering on a quality patient experience is now a key differentiator for healthcare providers.

3 Qualified clinical staff are in short supply.

The availability of qualified staff is increasingly challenging for the healthcare industry. In a recent survey, 58% of healthcare executives said they were extremely or very concerned about finding job candidates with the right skill set.⁵ Those candidates who are well qualified expect to be better compensated. Moving forward, the gap between workforce demand and supply is projected to widen, rising to vacancy rates as high as 30% on average in 2025 due to the labor force growing more slowly and becoming both older and more diverse.



4 The cost of providing care is rising overall.

Due to the issues above, and others, providing care is becoming more expensive and more challenging. Devices, drugs, and services are all becoming sophisticated and increasingly expensive. In this demanding environment — and despite it — it is the healthcare provider's responsibility to consistently deliver the highest standard of care while also garnering top marks for quality and patient experience. Optimizing the core medical and non-medical will soon be essential for organizations to survive, and even more to excel.

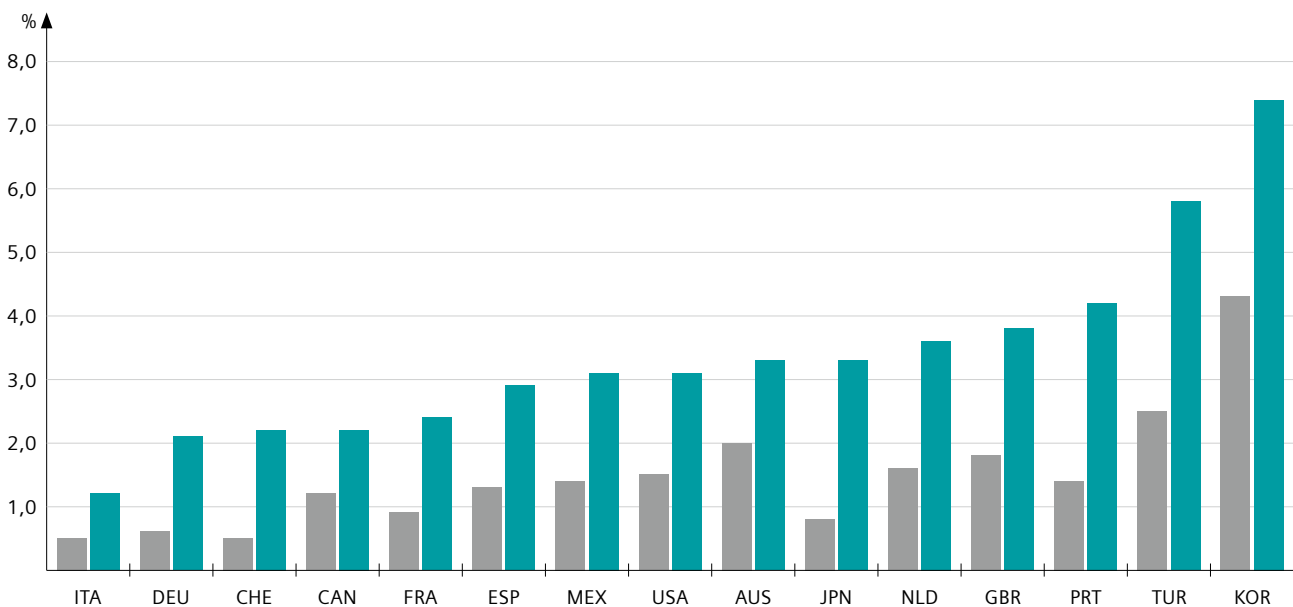


5 Healthcare spending has outpaced economic growth.

Around the world, spending on healthcare is on the rise. In nearly every instance, the growth of spending on healthcare is outpacing the growth of GDP per capita. In some cases, healthcare spending is growing more than twice as fast.

■ Health spending growth per capita
■ GDP growth per capita

Average growth rate of health spending and GDP per capita, 1990-2012



Source: OECD

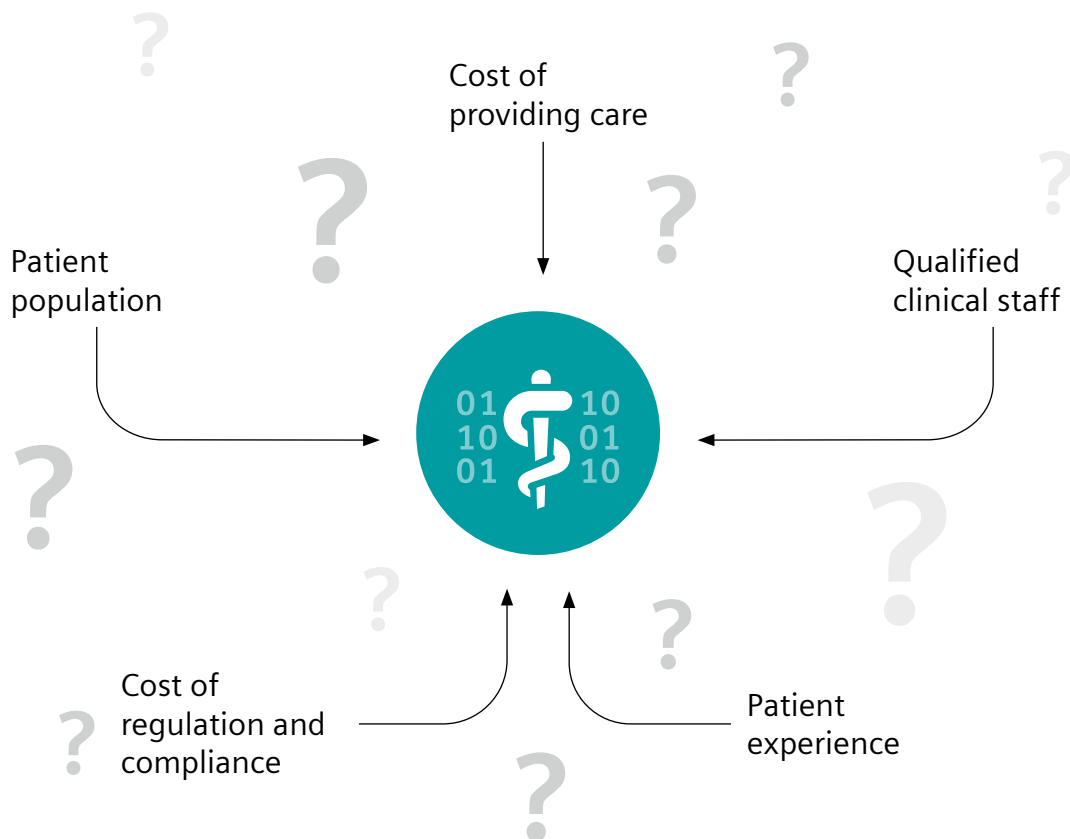
How digitalization creates impact

Digitalization offers numerous approaches to meeting today's healthcare's challenges. It can provide benefits of standardization, reduce the opportunity for human error, and introduce time and cost savings. But digitalization also involves the introduction of new processes, new tasks, and new questions. And an inefficient analog process becomes an inefficient *digital* process if it is not improved and adapted before it is digitally implemented.

With all the aforementioned factors in mind, healthcare providers should consider:

- Are you prepared to meet the challenges?
- Which partners can offer you qualified guidance?
- What does a trusted partner offer in this arena?
- What should that partner bring to the table?

The importance of finding the right partner to collaborate with a healthcare provider and support in the digital transformation of its organization cannot be overstated. That partner is critical.



How advisory services can help healthcare providers strengthen their operations

As healthcare becomes more complex and delivering healthcare services more challenging, the value of tech-savvy, experienced consultants is growing as well. Healthcare enterprises are discovering that advisory services offered by medical technology companies bring together the required components of informed strategy, technological know-how, and expert implementation.

These assets encompass clinical knowledge and experience with patient contact and services, elements that distinguish the business of healthcare from any other. The net result is a advisory partner combining the advantages of a knowledgeable insider with an objective outsider, a partner who is uniquely positioned to provide a holistic view of the endeavor and to provide insight and solutions for concerns like those summarized above.

Where healthcare providers need to keep pace with patient populations that are aging and increasingly insistent on an excellent patient experience, medical technology company consultants can advise on approaches to streamline clinical pathways and patient management. Rising costs and inadequate staffing are problems that can be mitigated through the improved efficiency that digitalization represents.

Future challenges are better understood and better met with advanced analytics such as predictive models. Medical technology company consultants are highly

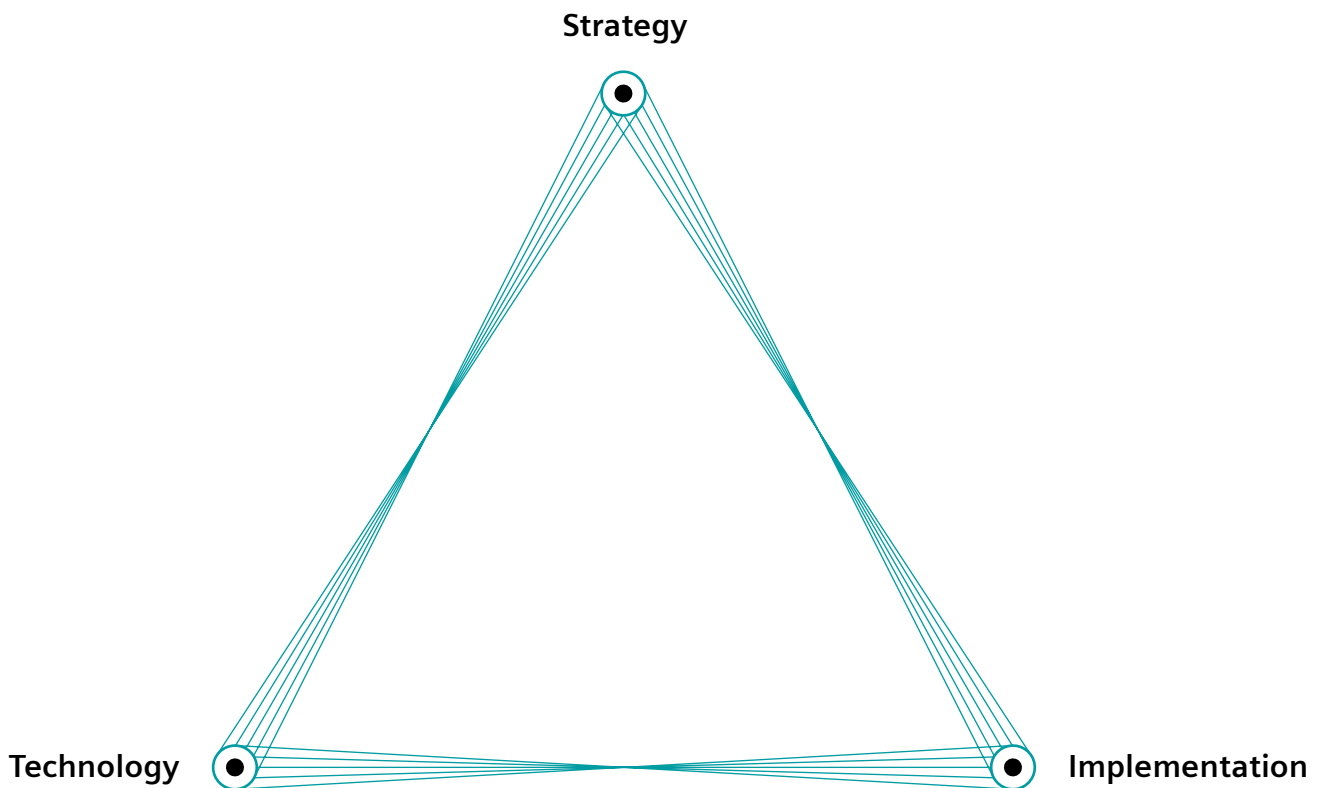
qualified to structure and run such models. Similarly, digital twins can simulate various infrastructure and process for an enterprise – even the most complex ones – and reveal the way forward to workflow optimization. As efforts like these strengthen a healthcare provider, it becomes a more attractive place to work and gains advantage in the competition for staff.

Siemens Healthineers, for example, can provide you with an analysis of your enterprise's entire treatment pathway, from diagnostic imaging, through therapy, to the delivery of therapies to patients, as well as solutions powered by information technology, innovative engineered products, and artificial intelligence. The solutions are applied by healthcare specialists, enabling you the benefit of their expertise.

While it offers enormous potential, digital transformation is also a complex undertaking. Success requires a thorough understanding of an institution's starting situation, the national health economy, and the financial impact of the measures under consideration. Additionally, it requires deep expertise in existing digital solutions, implementation, and change management. Failure in any of these can doom the project. Effective partners for a healthcare provider pursuing the benefits of digitalization must then deliver expertly on strategy, technology, and process implementation.

“Medtech companies are in a sweet spot — they can offer the framework for a range of strategies and solutions that help healthcare providers thrive in challenging times, unlock value and drive future-proof transformation.”

Sören Eichhorst, Global Head of Value Advisory Services, Siemens Healthineers



Strategy

Strategy should encompass short-term, medium-term, and long-term planning in a balanced combination. It should be developed with an experienced partner who can help stakeholders sort out short-term measures from long-term vision. It starts with process optimization and prioritization.

Process optimization is the prerequisite for a productive engagement. This is about defining with an experienced partner which processes should be addressed first.

Decisions regarding the optimization of core processes should be made by maximizing the added value while keeping in mind both the highest potential to succeed and general timelines. *Digital twin simulations* of processes, like those used in manufacturing, can be helpful to simulate stress tests.

An experienced strategic planner is also required when introducing and using established digital solutions. Consider for example the standardization of integrated solutions and decision support for clinical pathways, communication tools to connect service providers, and localization solutions such as RTLS* tracking or central

digital dashboards to increase efficiency. There is tremendous opportunity and need for strategic thinking in healthcare today. Consider e.g. what the hospital of the future 2030 should look like. What technological requirements will healthcare providers need to meet in the next decade? How can an innovative health system be built? Who can help guide you and your team in planning your approach to a strong future? As the role of sensors, cameras, and robotic scanning devices increases; applications of Artificial Intelligence multiply; automation reshapes the healthcare provider's workday; and more and more care is provided in settings other than hospitals, answers to these questions are crucial.

Edition
#02

➤ Digital twin technology

Virtualized presentations of facilities and processes – have emerged as powerful tools for healthcare providers. They can reduce the time and expense of piloting different solutions and approaches in the physical world.

Technology

Healthcare is about people and the processes and insights that serve them. But today, technology is an essential tool in providing that service. Digital transformation allows networking across hospital boundaries with other hospitals, outpatient doctors and patients as well as the exchange of vital data and information. It should be thought of as the creation of a digital ecosystem in which various actors work together to achieve innovative solutions for patients.

The heart of a digital ecosystem is an open digital platform that overcomes the isolated application approach in terms of usage, departments, and indications and truly fosters a value-add offering. An open digital platform connects people and devices with data and applications (apps) that support integration of data from a wide variety of sources.

Digital ecosystems are a key requirement for digital transformation and are built on network structures. There are multiple possible network structures. They include:

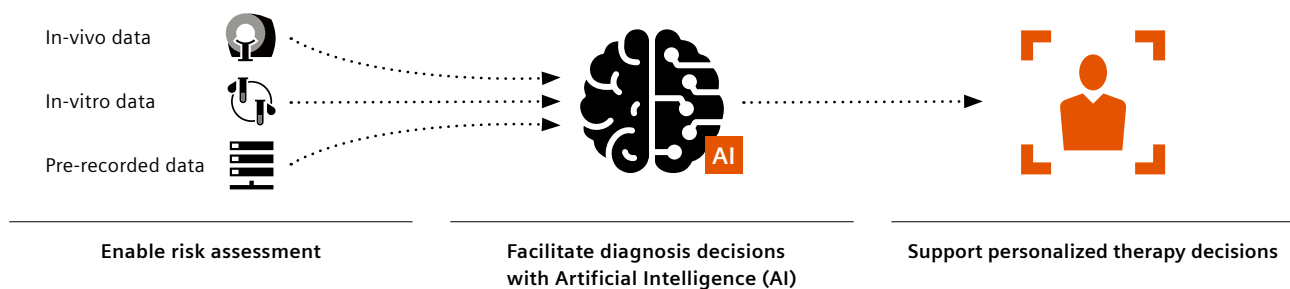
- Access to data within a clinic through a Vendor Neutral Archive (VNA) where data of different origins and different formats is consolidated and made available
- An electronic patient health record that provides all relevant information across hospital and network boundaries
- Use of secondary data such as DICOM / HIS / RIS / PACS via cloud-based data aggregation

An important aspect is the integration of existing isolated application solutions into comprehensive, end-to-end, defined clinical pathways. Here is where an enterprise's existing investment in technology can be maximized. For example, with appropriate tools, patients with heart insufficiency can be centrally monitored by a local hospital and managed at home via sensors.

If a hospital stay is necessary, patients can be coordinated through digital scheduling and reminder solutions. Patients are then accompanied on their clinical journey by standardized E-Health solutions. Patient flow can be

optimized through real-time localization of beds and consistent availability of patient data.

AI-Pathway Companion from Siemens Healthineers provides one example of the next generation in clinical decision support systems, cleverly integrating relevant data using artificial intelligence technologies to facilitate diagnosis and treatment decisions along disease-specific pathways. AI-Pathway Companion also works to personalize and standardize patient management, offering process improvement insights through cohort data analysis of key performance indicators.



After the inpatient stay, all the patient's data are transmitted through integrated digital solutions to the family doctor, who stays in contact for follow-up via telemedicine.

The added value of such solutions – which are already being implemented today for many indications – lies in the new approach of defining clinical pathways beyond departmental or even hospital boundaries, thus incorporating them into a holistic picture.

Implementation

Expertise and know-how in implementation and change management are essential to deliver the benefits of good strategy and technology. This is made clear by the fact that as many as 70% of change programs fail because strategy and technology are not properly implemented.⁷

Because change programs like those focused on digital transformation represent significant commitments, institutions should choose partners who will make significant commitments to them, partners who are willing and able to stand with the institution throughout the course of its journey toward change and help shoulder responsibility for success. Siemens Healthineers designed the Value Partnerships to meet this need.

Value Partnerships are enduring technology-enabled performance-based relationships between healthcare providers and organizations that offer medical technology services. While every Value Partnership is unique, there are factors they have in common: established trust, aligned objectives, defined incentives, an assembled portfolio, and the co-creation of innovation. These Partnerships offer the framework for a range of services, strategies, and solutions designed to help healthcare enterprises expand capabilities, advance the level of innovations in their organizations, and prepare for a strong future.

The value for hospitals and health systems

Imagine that a hospital purchases a piece of equipment, receives training on it, and secures arrangements for service and maintenance. That would typically be the extent of the institution's engagement with the supplier, vendor, or partner. But the complexity of healthcare operations today demands more:



- Has anyone examined how the equipment interfaces with existing equipment or procedures?
- How will various departments or individuals be impacted?
- Who is taking responsibility for the holistic view?

There is a need today for a partner capable of – and responsible for – looking at far-reaching concerns: Clinical excellence, operational efficiency, and financial performance across the institution, of course, but also the impact on staff and patients. How will these stakeholders experience the change?

Consider a radiology department, for example. In the context of a modern hospital, the decisions made and processes implemented around radiology will impact other departments and processes throughout the institution. While the radiology department's goals and issues are the starting point, they must align with the objectives and concerns of the institution as a whole, which include financial health, and the satisfaction of patients and staff. How exactly the various sets of concerns intersect may not be clear without careful thought and examination. Optimization for the benefit of the entire organization must be the goal to reduce unwarranted variation. And smart, forward-looking digitalization of operations is a vital means to address the big challenges like aging populations, rising costs, and tight labor markets.

Topics, trends and drivers in the healthcare sector

362 C-level executives⁸ of hospitals and patient care facilities in Germany have been interviewed about digitalization in healthcare:



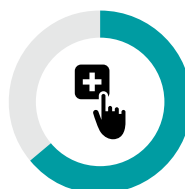
71%
Quality of patient care
will improve



64%
Hospitals will experience
cost savings



67%
Procedures and surgeries
will become **more efficient**



63%
Digital patient record is
the most important topic

Digitalization offers enormous potential at the health system level — up to 36 billion EUR in the EU German health economy, for example.⁹ Transformational advisory at the health system level focuses on care coordination, patient engagement, and the provision of value-based care. There are several early and noteworthy achievements available for consideration:

The electronic health records system in Austria, ELGA, which includes more than 5.8 million patients and their healthcare providers, is one example of a successful digital transformation at the health system level. ELGA demonstrably improved the quality of healthcare while simultaneously achieving cost savings by establishing a linked network of healthcare providers and processes. A similar system is being introduced in Switzerland. In Denmark and Estonia, digitalization has allowed for medical prescriptions to be sent electronically from doctors directly to pharmacies, which in turn deliver the appropriate drugs to the patients.

Israel provides an example of a health system that has successfully broken up its data silos. There the integrated system Clalit is at work serving the largest health

insurance provider with approximately 4 million insured. At the same time, Clalit also serves the largest hospital network in Israel. Clalit encompasses about 20 years of patient data, both clinical and administrative. The integrated database is used to inform continuous improvement and the further development of medical care, but its primary benefit has been in enabling the health care system to reduce the cost of care and improve its finances.

Another example of an already successful implementation of innovative solutions is the Mercy Virtual: this virtual telemedicine center, called “Hospital without beds,” houses a large team of doctors and nurses, but no patients. With highly sensitive two-way cameras, online-enabled instruments, and monitoring options in real time, the team cares for patients remotely. Patients might be in one of Mercy’s traditional hospitals, a doctor’s office, or even at home.

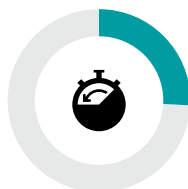
In some cases, it may be possible for existing insular solutions to be made part of comprehensive, end-to-end clinical pathways. Value Partnerships can provide the fresh perspective and unique insight that reveal such possibilities.

Telemedicine enhances interventional management for heart failure patients¹⁰



27%

higher rate of survival
in 1st year with heart insufficiency



26%

shorter retention time in clinics for
patients with heart insufficiency

Conclusions

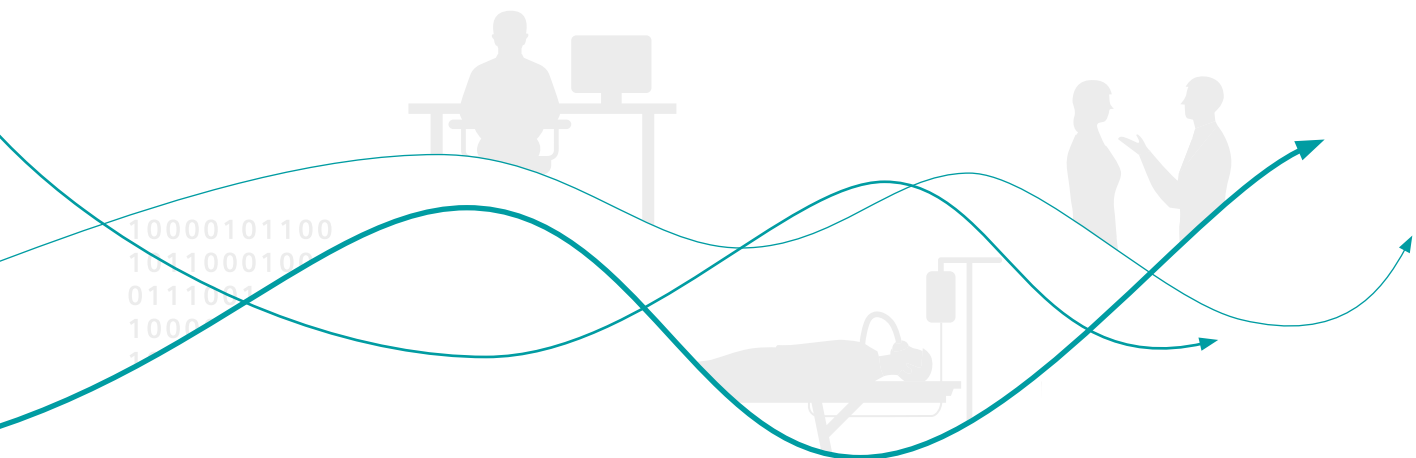
Digitalization in healthcare will lead to a fundamental redefinition of service delivery, one that will, it is hoped, benefit institutions, staff, and patients. But sustainable, impactful change cannot be achieved in a piecemeal or haphazard fashion or by means of shortcuts. Success requires the right strategy, the right technology, and expert implementation.

Healthcare solutions are often complicated, and so is the marketplace in which it operates. Partnering with a consultant provides tangible impact. Transformational advisory services can enhance Value Partnerships and are exceptionally qualified to deliver the insight and guidance that can make digitalization successful and allow healthcare providers to fully reap the benefits. Bringing technological, clinical, and process expertise to the engagement, such consultants go beyond business advisory to form active, ongoing collaborations with the healthcare provider's team and help them meet their goals into the future. Most importantly, they enable providers to deliver better outcomes at lower costs.

In choosing partners to help them implement and manage digitalization, healthcare providers should consider:



- Who has the required knowledge of digital assets and data?
- Who has deep clinical knowledge?
- Who understands healthcare professionals best?
- Who has a comprehensive understanding of patients and the patient experience?
- Who can provide value-added services like e.g. Real-Time Location Systems and Managed Equipment Services?
- Who is capable of overseeing digitalization end to end?

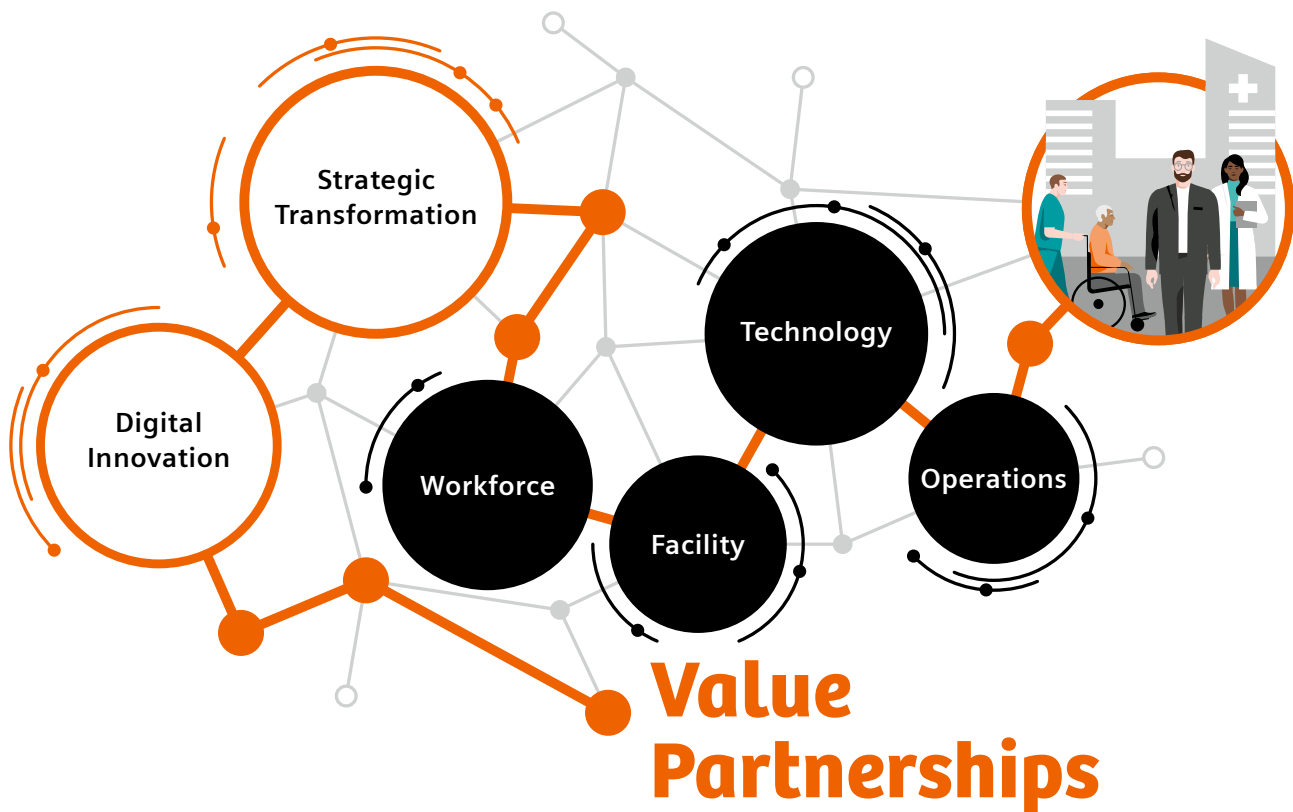




About Value Partnerships

Siemens Healthineers Value Partnerships are long-term, performance-oriented, collaborative engagements. We bring a combination of clinical insight, medical technology innovation, strategic vision, implementation expertise, and operational excellence to the table for you. As trusted partners, we help you formulate and achieve your strategic goals, increasing enterprise-wide value.

Value Partnerships drive value across your entire enterprise with focus on four domains: Technology, Operations, Workforce and Facility. Furthermore, together we enable breakthroughs through holistic and transformative initiatives such as Strategic Transformation and Digital Innovation.



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The results described herein by customers of Siemens Healthineers were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption), there can be no guarantee that other customers will achieve the same results.

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