



Value  
Partnerships

Edition #07

**White paper**

# How to create the ultimate diagnostic laboratory

Adapt to changing conditions and new opportunities and move beyond planning into operations.

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## Executive summary

Diagnostic laboratories face unprecedented challenges. Increased testing volumes, competition for qualified technologists, consolidation, and digitalization are key developments that every lab must address—many of which have only been intensified by the COVID-19 pandemic.<sup>1-3</sup>

Partnerships with leading medical technology firms can help healthcare providers meet these challenges more effectively. These companies are highly capable partners in planning and implementing complex laboratory projects.

Recently, more and more medical technology companies have moved beyond planning and implementation into operations. A range of operations solutions, from managed equipment services through full operational and staffing responsibility, are now available. In addition, medical technology partners offer expert operational and strategic consulting to help laboratories optimize their current operations, expand their capabilities, and advance the pace of innovation in their institutions.

These new challenges and innovations have given rise to new business models, including cost-per-test, cost-per-result, and performance-sharing contracts.

Real-world success with different kinds of labs, including health system central labs and independent reference labs, demonstrates the power of partnerships to transform care delivery and expand precision medicine. Below are examples of partnerships between Siemens Healthineers and diagnostic labs that have produced excellent outcomes, including:

- **DaVita Labs** (Florida, USA) meets its turnaround time (TAT) goals more than 99% of the time after implementing total lab automation (TLA) and lean workflow methodology.
- **Ankara City Hospital Bilkent** (Ankara, Turkey) transforms care delivery in a public-private partnership and offers the highest lab capacity in Turkey, with 100,000 tests daily.
- **Bernhoven Hospital** (Uden, Netherlands) prioritized accessibility to high-quality, affordable care with a 15-year Value Partnership to shape laboratory infrastructure and workflows.

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## New challenges demand new solutions for diagnostic labs

Around the world, diagnostic laboratories are facing ever-growing demand for their services. This rise in testing is driven by the aging of the population worldwide and the increasingly large array of in vitro tests available.<sup>1</sup> At the same time, there is increasing competition for qualified personnel; the number of newly certified laboratory technicians in the U.S., for example, falls far short of the number of job vacancies.<sup>2</sup> And, the COVID 19 pandemic has aggravated even more the issue of workforce shortage.

Reorganization and consolidation present novel challenges for the laboratory. Care networks are consolidating core functions, moving to a hub-and-spoke model in which most non-urgent tests are performed at a central laboratory supported by rapid response labs in hospitals, phlebotomy services, and point-of-care (POC) testing for certain conditions and patients (e.g., in-office HbA1c testing).<sup>3</sup>

There is also a movement to integrate “conventional” in vitro diagnostic labs into complete diagnostic centers, incorporating pathology, genetic, and molecular testing under a single roof. These transformations are geared

toward providing university hospital-level diagnostic services to a wider geographic area, so more patients can benefit from advanced diagnostics. Since this is a very complex undertaking, many healthcare enterprises are looking to industry to provide partnership and guidance to integrate these disparate but related services into a unified whole.

Additionally, like every other field of healthcare, the diagnostic laboratory is striving to digitalize both clinical and non-clinical processes and functions. Patients and providers now rely on digital tools to simplify test ordering, results reporting, and more. And the lab floor itself is increasingly networked and automated in order to increase productivity and decrease the cost per test through total laboratory automation (TLA). This is another key area where partnerships between healthcare providers and the medical technology industry have the potential to create value for patients, clinicians, and institutions.

This paper is dedicated to showing the ways in which these partnerships can help create the ultimate diagnostic center.

# Powerful partnerships drive development of modern diagnostic labs

Over the past few decades, relationships between healthcare organizations and medical technology firms have evolved from traditional vendor-customer situations into mutually beneficial and forward-looking partnerships. Those partnerships help guide healthcare enterprises through planning and implementation of diagnostic labs.

## Planning

Health system CEOs and laboratory directors are not just looking to build facilities that are adequate for current conditions. As mentioned earlier, the demand for diagnostic laboratory services is on a steady growth curve, driven by increasing (and aging) populations and an expanding menu of tests. Thus, leaders of healthcare enterprises seek solutions that will position them to serve their patients through expected changes while providing the flexibility to address unforeseeable developments in medicine and markets in the future. Medical technology companies that have robust consulting capabilities help their partners prepare for the future and make wise strategic choices before ground is broken or hardware is shipped.

**Medical technology partnerships help providers address the following critical planning needs:**

- 1 Demand analysis:** Measure current needs and anticipate future needs.
- 2 Stakeholder engagement and feedback:** Use surveys, workshops, and interviews to ensure the needs of administration, clinicians, technicians, and patients will be met by the proposed lab.
- 3 Iterative layout design and optimization:** Help healthcare organizations find the “sweet spot” that optimizes efficiency and workflows while providing a positive working environment.
- 4 Long-term business planning:** Offer guidance and solutions for logistics, finance, staffing, reimbursement, and other considerations.

## Implementation

The best-made plans depend on flawless implementation to achieve their full potential. And compared with traditional healthcare consultancies that focus mostly on strategic guidance, medical technology firms have a considerable advantage: extensive experience in implementation of laboratory projects.

Some firms have decades of lab implementation experience, which can help prepare healthcare institutions and the clinicians and technologists who work there to adopt new workflows, hardware, and digital technologies. Education and training on the new laboratory and its associated systems are of paramount importance in managing this process. Technology companies that offer change management services ease the transition to new physical spaces, hardware and software, and workflows. This kind of practical implementation experience differentiates medical technology firms from traditional consultants.



# Expanded possibilities with ongoing operational partnerships

Planning a diagnostic laboratory to address the needs of the next 20 years is not a one-time event. It is impossible to foresee every new technology, policy change, or health crisis that will emerge in the near future. An ongoing strategic partnership gives healthcare enterprises the flexibility to identify and adapt to changing conditions and new opportunities.

## Shifting from capital expenditures to operating expenditures

Building, upgrading, or refitting a modern diagnostic lab is a large and complex undertaking. Traditionally, this kind of effort would involve substantial capital expenditure for laboratory equipment (analyzers, automation systems, and software).

There are several ways that medical technology companies can help their partners shift from capital expenditures to operating expenditures. Long-term partnership agreements entail proactive monitoring of laboratory equipment coupled with maintenance, software updates, and timely unscheduled repairs as needed. This type of partnership may also involve a built-in equipment refresh agreement.

Some technology partners offer more robust partnerships in which the technology partner assumes responsibility for the laboratory's operation.

## Strategic and operational consulting partnerships

Ongoing consulting partnerships can help healthcare providers transform care delivery and expand precision medicine. Medical technology partners offer both strategic guidance and operational optimization, so that providers can improve existing operations, expand the range and volume of services offered, and advance innovation within healthcare organizations.

### Examples of technology-enabled services for lab



Providing technology to match the clinical portfolio: biochemistry, microbiology, genetics, hematology, urinalysis, blood gas, transfusion medicine, pathology



Supplying reagents and other consumables



Contracted support services: uptime services



Staff training



KPI reporting: turnaround time, utilization, adverse events



Core business functions: logistics, purchasing, IT, management reporting

Strategic consulting is key to managing institutional transformation. Dedicated change management experts can guide healthcare providers through the challenges of today and tomorrow. Strategic consultants within medical technology companies can take advantage of a depth of technological, implementation, and clinical expertise that is difficult for traditional consultancies to match.

Operational consulting helps partners get the most out of their laboratories and staff. There are a variety of arrangements that can suit a wide range of needs and budgets, from short-turnaround workshops to scheduled performance checkups with follow-up recommendations and high-impact lean workshops driven by key performance indicators that generate continuous improvement. Medical technology partners are uniquely qualified to help providers optimize their labs and maximize the value they deliver.

## Innovative business models

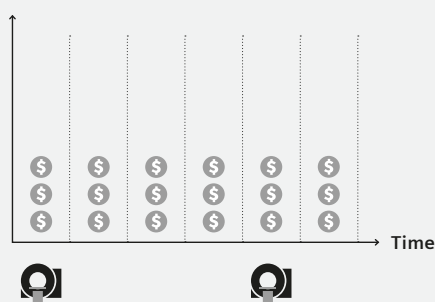
New technologies, new pressures on laboratories, and a shift from capital expenditures to operating expenditures have created a desire for innovative business models. A variety of business models present a tremendous opportunity for healthcare providers.

Many laboratories find value in pay-per-use models, such as cost-per-test or cost-per-result arrangements with a stipulated minimum number of tests or results. These arrangements can be beneficial for enterprises that experience predictable seasonal variations in test volumes, as they allow the lab to reduce expenses during low-volume periods.

Other institutions may prefer combining pay-per-use arrangements with performance-sharing contracts, which tie the technology partner's compensation to the performance of a given asset or service. Under these contracts, performance-based incentives are triggered upon reaching specified key performance indicators (KPIs). Performance-sharing partnerships may not be appropriate or even possible in all cases, but they are potentially valuable enablers for some institutions.

Because every provider faces different pressures and opportunities, smart, customizable, and flexible business models allow healthcare providers to increase access, deliver higher-value care, and maximize competitiveness. There are five essential business models to consider: unitary, pay-per-use, subscriptions, performance sharing and milestones.

Unitary payment model



### What is it?

Capital investments and service fees rolled up into a regular flat fee

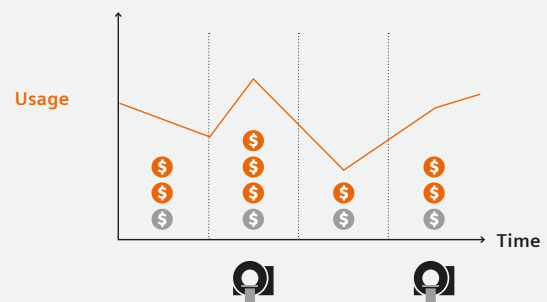
### Who's it for?

Providers seeking long-term, predictable and fixed payments to have stable cashflows

### Key advantages

- Financial stability/predictability
- Simplified vendor relationships
- Partnership with a leader in technology management

Pay-per-use model



### What is it?

Payment per scan/test/report

### Who's it for?

Providers who prefer a balanced cashflow and are seeking a partner who partly takes over utilization risk

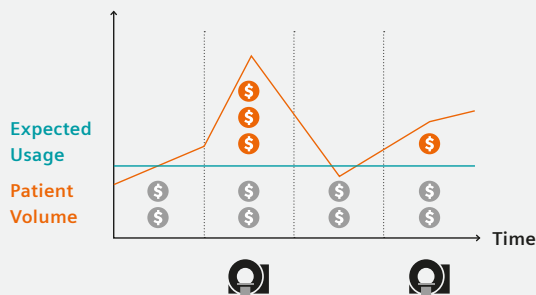
### Key advantages

- Avoids up-front capital expense
- Allows alignment of cashflows
- Partnership with a leader in technology management

**Legend:** \$ Non-regular payments    \$ Regular payments    Equipment delivery

*Note: the business models presented in this paper may not be available in all countries. Siemens Healthineers evaluates every potential financial agreement on its own merits and cannot give any assurance regarding the availability of any specific payment terms or other business model.*

### Subscription model



#### What is it?

Fixed payments for specified volume & variable payments for coverage fees at agreed-upon rates

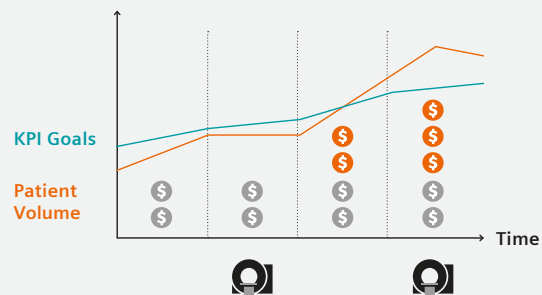
#### Who's it for?

Providers who want to combine flexibility and stability

#### Key advantages

- Helps optimize cashflows
- May include guaranteed access to innovations at no additional software and support fee
- Partnership with a leader in technology management

### Performance sharing model



#### What is it?

Arrangement that ties payment to predefined key performance indicators

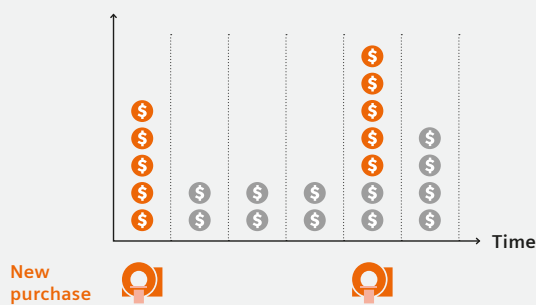
#### Who's it for?

Providers seeking partners for ambitious quality and efficiency goals

#### Key advantages

- Having "skin in the game" ensures that partners are committed to continually improve performance and share operational risks
- Partnership with a leader in technology management

### Milestone-based model



#### What is it?

Arrangement that offers regular payments based on the completion of milestone objectives e.g., technology roadmap and a services fee

#### Who's it for?

Providers with available funds to keep up with technology transformation

#### Key advantages

- Ensuring a short-term monetary allocation into an investment goal
- Payments tied to pre-defined technology roadmap

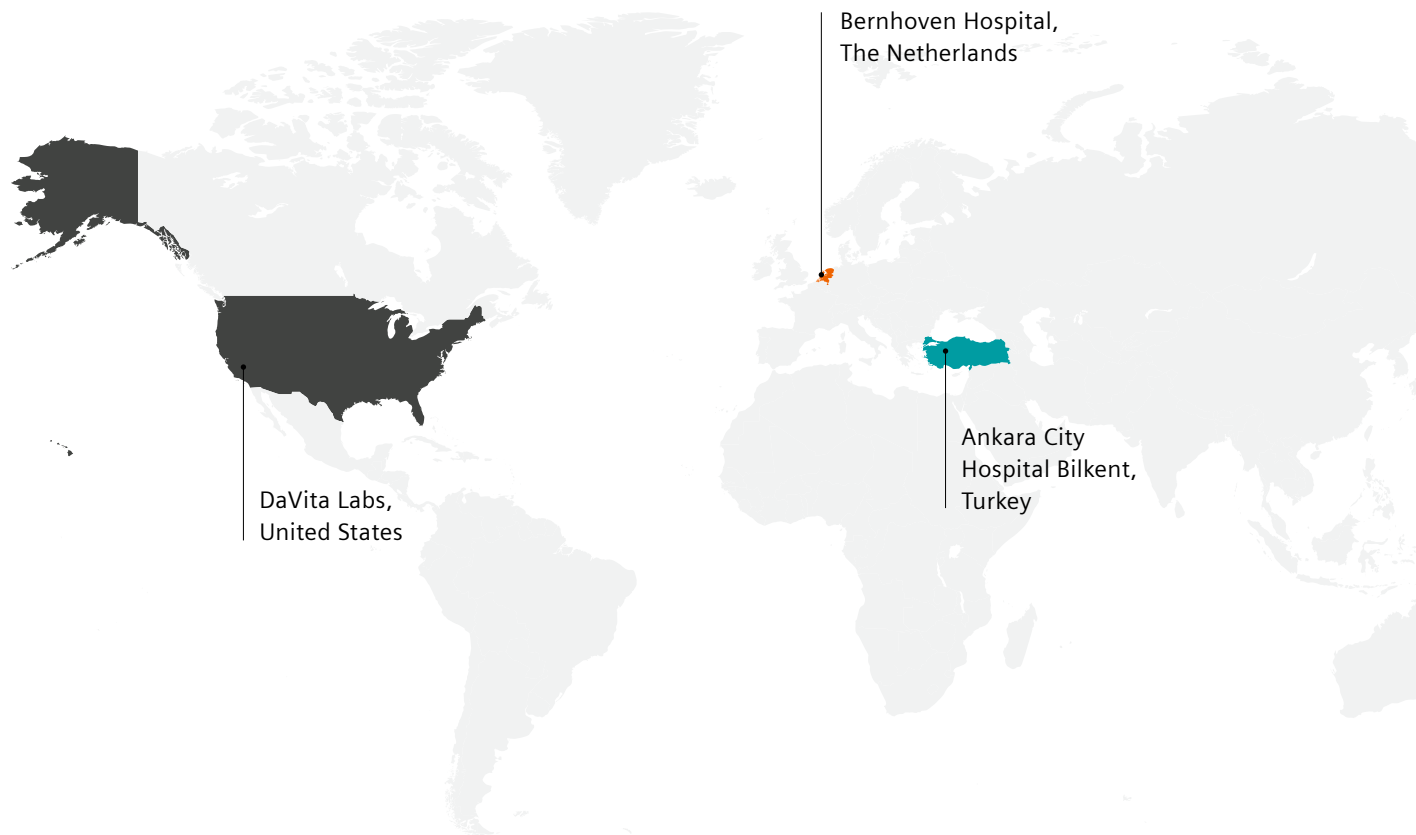
#### Legend:

- Non-regular payments
- Regular payments
- Equipment delivery

*Note: the business models presented in this paper may not be available in all countries. Siemens Healthineers evaluates every potential financial agreement on its own merits and cannot give any assurance regarding the availability of any specific payment terms or other business model.*

## Success stories

Below are examples of diagnostic laboratories in action with Value Partnerships.



## DaVita Labs, United States

Upgrading performance with total  
laboratory automation

Public/Private: Private

Capacity: more than 175,000 samples daily

Duration: 1 year



DaVita Labs

### Scope of Partnership

DaVita Labs partnered with Siemens Healthineers to create a new upgraded lab featuring total laboratory automation (TLA). The new lab had to provide timely and accurate test results for each of the 200,000 renal dialysis patients it would serve.

Siemens Healthineers worked with DaVita Labs to forecast demand and provide analyzers and automation modules accordingly. Key lab disciplines for DaVita included hematology, immunochemistry, and chemistry. Siemens Healthineers was also instrumental in developing and running extensive training for approximately 250 team members. This partnership paid off, delivering a smooth transition to the new facility, which handles an estimated average of 100,000 tubes daily and provides prompt, accurate results for patients with renal disease and their care teams.

### Key services

- Procured and installed new analyzers and technology
- Provided Aptio Automation to increase patient capacity
- Customized middleware to meet unique hematology requirements
- Change management consulting services (including education)

### Established Benefits

- Logged 3,600 training hours for the clinical lab staff
- Completed transition to new lab facility featuring TLA
- >99% of tests meet the goal for turnaround times (TATs)
- Achieve a high level of customer satisfaction

*“We recognized that medical technologists and laboratory talent in general are scarce resources. Which means that not only do we need to ensure that we’re deploying resources as efficiently as possible, but also that we create a differentially special workplace to retain that talent long term.”*

Keri Wagner, VP-Laboratory Operations, DaVita Labs

## Ankara City Hospital Bilkent, Turkey

A public-private partnership to transform care delivery

**Public/Private:** Public-private

**Capacity:** 100,000 tests daily

**Duration:** 5 years



Ankara City Hospital Bilkent

### Scope of Partnership

Developing a new, high-capacity, state-of-the-art laboratory was a key requirement of the ambitious City Hospital Bilkent project, a public-private partnership designed to give Turkish patients access to improved and expanded medical care. Siemens Healthineers played a central role throughout the design and implementation phases of the project, working in close conjunction with the hospital administration and general contractor.

Siemens Healthineers and City Hospital Bilkent entered into a Value Partnership, under which the company will provide ongoing process optimization and staff training for City Hospital Bilkent.

### Key services

- Technology procurement and continuous process optimization
- Provided lab design, appliances, consumables, servicing, and maintenance
- Ongoing support to train and educate the laboratory staff

### Established Benefits

- Established the highest-capacity lab in Turkey
- Modern facilities enhance patient experience and comfort
- 50 million patients expected to benefit from services over 5 years

*"It was important for us to have a partner that not only came with enough experience in the hospital environment, but also was strong on technical innovation."*

**Hakan Adanali**, Director of Clinical Support Services, CCN

## **Bernhoven Hospital, The Netherlands**

**Long-term partnership for innovative  
laboratory services**

**Public/Private:** Public

**Duration:** 15 years



Bernhoven Hospital

### **Scope of Partnership**

Bernhoven Hospital in the Netherlands is committed to affordable and accessible care. To this end, the facility prioritized modern, automated, and innovative laboratory technology. A Value Partnership with Siemens Healthineers has enabled the organization to leverage digitalization, ensure high-quality care, and future-proof the laboratory.

The ongoing partnership allows the organization to deliver high-quality services and increase patient access with more efficient workflows. The state-of-the-art laboratory has further optimized clinical processes for improved care delivery and patient outcomes.

### **Key services**

- A 15-year Value Partnership to shape laboratory workflows, automation, and infrastructure
- Introduction of point-of-care solutions to bring laboratory diagnostics closer to the patient
- Future-proof care with the digitalization, robotization, and personalization of healthcare delivery

### **Established Benefits**

- First laboratory diagnostics Value Partnership in the Netherlands
- Innovative technology optimizes analysis for improved throughput and patient outcomes
- Partnership with Siemens Healthineers to automate workflows and standardize processes

*“Entering into a long-term Value Partnership with a medtech partner like Siemens Healthineers gives us the innovative power to further optimize our laboratory analysis process.”*

**Geert van den Enden**, Managing Director Bernhoven

## Conclusion

Diagnostic laboratories can form effective, mutually beneficial partnerships with medical technology companies such as Siemens Healthineers for planning, implementation, and even operation of labs. Siemens Healthineers has partnered with a variety of laboratories, including central labs serving hospital systems and independent reference laboratories, to design, build, and operate high-performing, efficient facilities that help its partners transform care delivery with rapid, accurate, efficient testing.

Siemens Healthineers goes beyond the typical partnership, offering long-term Value Partnership arrangements that help provider organizations offload the complexities of operating a lab to the company. Such partnerships include proactive monitoring and maintenance, as well as repairs as needed. The company can partially operate the

laboratory, as is the case with the new laboratory at Ankara City Hospital, Turkey, the largest in the country and a major step toward expanding precision medicine in Turkey. Siemens Healthineers even offers complete turnkey partnerships for healthcare enterprises.

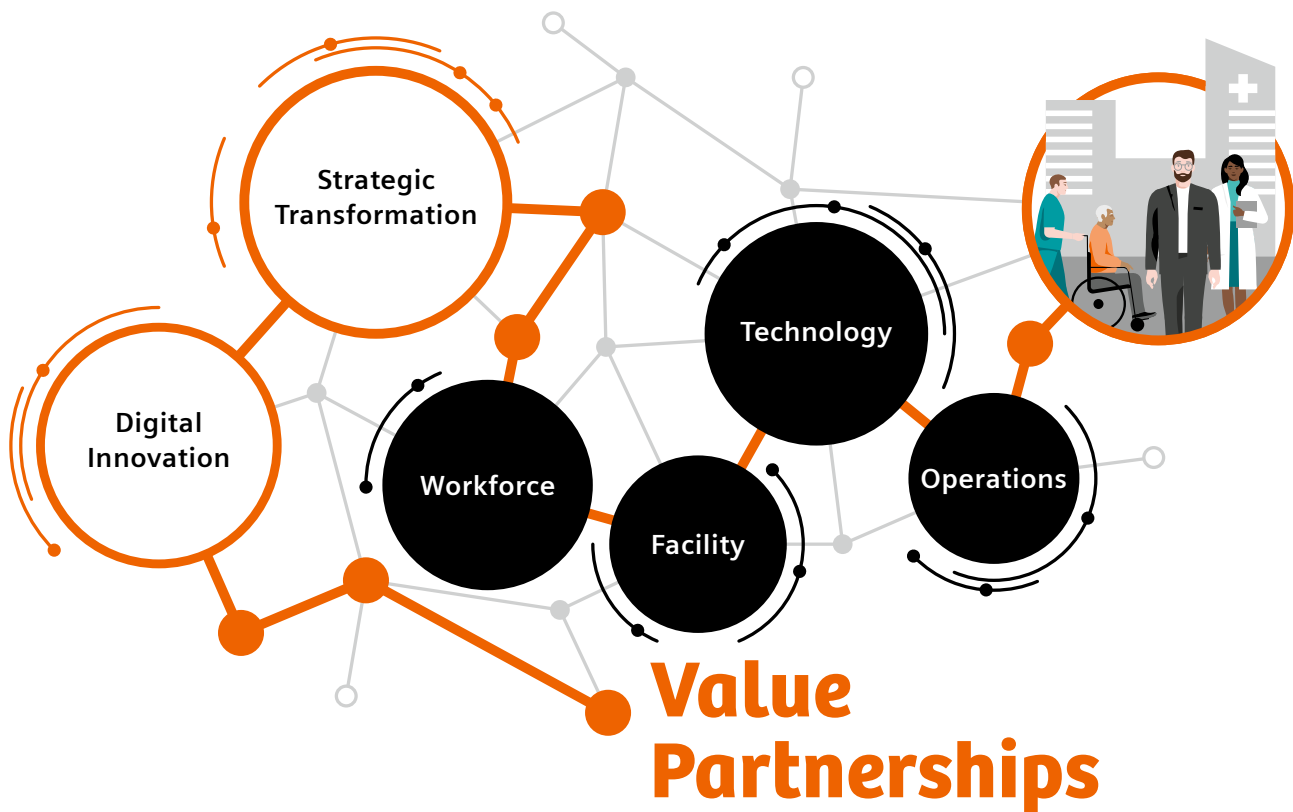
Siemens Healthineers is committed to building Value Partnerships with healthcare providers in order to provide tailored solutions that meet its partners' needs and create value both today and in the future.



## 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.

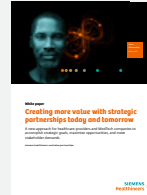
Value Partnerships drive value across your entire enterprise with focus on four domains: Technology, Operations, Workforce and Facility. Furthermore, together we enable breakthroughs through holistic and transformative initiatives such as Strategic Transformation and Digital Innovation.



# References

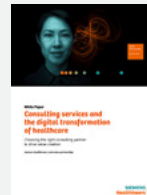
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## Related reading



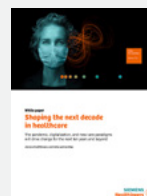
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**Siemens Healthineers Headquarters**

Siemens Healthcare GmbH  
Henkestr. 127  
91052 Erlangen, Germany  
Phone: +49 9131 84-0  
siemens-healthineers.com