

White paper

The next generation of Public-Private Partnerships (PPPs)

A transformational approach to grow lifetime value in healthcare

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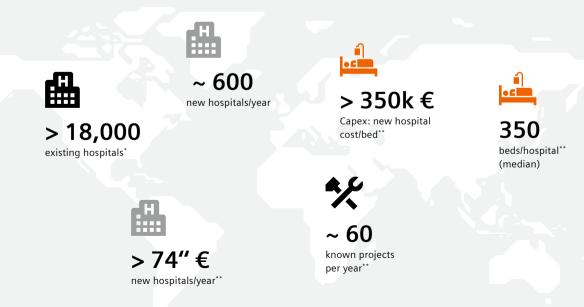
Executive Summary

In today's global market, the expectation that a country can finance and operate its public health system entirely through the government may not be realistic. In recent years, many nations have implemented healthcare models that incorporate public-private partnerships (PPPs) between government agencies, healthcare organizations, and industry partners (including MedTech companies) to improve care delivery. As each nation faces unique challenges and circumstances in healthcare, these partnerships can take on many shapes and sizes.

PPPs describe long-term service or infrastructure agreements between the public and private sectors. ^{1,2} These partnerships combine the strength of government purchasing power with the innovation of private industry. ¹ In healthcare, the collaboration represents a significant cost-savings opportunity for healthcare and government stakeholders. These are also complex agreements that require support from financial organizations and partners, and potentially collaboration with provider groups, technology companies, and construction companies. ¹

PPPs have had a positive impact on international healthcare and have been adopted by many governments. MedTech companies offer value and resources to prospective public partners looking for innovative solutions. This whitepaper presents the role and benefits of these partnerships in healthcare.

Global market for new hospitals



^{*}Eustad, OECD

^{**}Source: www.construction.globaldata.com



"At Siemens Healthineers, we deliver value through quality and innovation. We are a trusted partner in PPP projects for the public sector. PPP projects are about working together very closely 'hand in hand'."

Natalia Korchakova-Heeb, Global Lead for Public-Private Partnerships and Greenfield Hospitals, Siemens Healthineers

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Background on PPPs

Characterized by shared investment and responsibilities, PPPs exist in multiple industries to provide energy, transportation, communication, clean water, sanitation, and services related to those deliverables. ^{2,3} PPPs are increasingly applied also in social infrastructure sectors, particularly for delivery of health services. ⁴ Following the introduction of Sustainable Development Goal. 3 "Health and Well-Being" as one of the 17 Sustainable Development Goals (SDGs) established by the United Nations, the success of PPPs in the healthcare market has become a priority. ^{5,6} Many countries have adopted PPP models for healthcare given the benefits of these partnerships, such as access to finance, innovation, and a means to achieve SDGs.

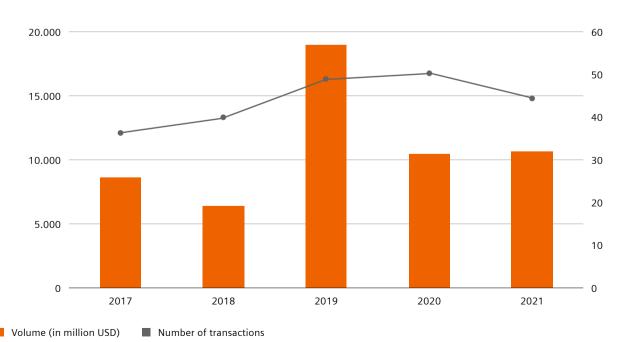
In healthcare, PPPs can include the construction of a new facility from the ground up (greenfield); renovations to an existing project (brownfield); and/or significant renewals, refurbishments, or expansions (yellowfield). Governments may collaborate with one or more private partners to help

with financing, designing, building, maintaining, operating, or delivering a healthcare project. Most healthcare PPPs fall into three categories:⁷

- Infrastructure-based models to build or renovate a facility or part of a health system
- Discrete clinical services models to expand capacity and drive innovation in healthcare organizations
- Integrated PPP models for a comprehensive combination of these services

Regardless of the size or type of partnership, the public sector can benefit greatly from the knowledge and expertise of its industry partners. MedTech collaborators must have the capability to guide public agencies and healthcare organizations toward innovative healthcare solutions for improved outcomes. Siemens Healthineers offers innovative approaches and perspectives for customers interested in developing PPPs.

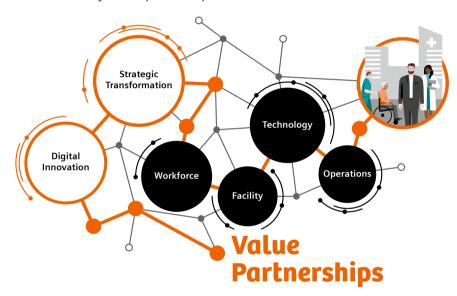
Global infrastructure finance value and volume 2017-2021



Evolution of MedTech in PPPs

Like much of the healthcare industry, PPP projects have shifted from transactional purchasing of medical technology to value-based models that prioritize quality of care and efficiency of hospital operations. Siemens Healthineers offers long-term, performance-oriented partnerships – so-called Value Partnerships – that provide a framework for value creation and sustainability. These partnership

engagements were first deployed in PPP projects in the UK over 20 years ago and have proved tremendously successful. They pull together a number of technology and service elements in a unique way for each project and enable a technology solution perfectly in line with the goals of the PPP concession.



Excellence Drivers

Strategic Transformation

We partner with you to help you prepare for the challenges of today and tomorrow through our expertise in strategic, financial, operational, and technology related consulting services.

Digital Innovation

We partner with you to co-ideate new approaches to optimize both clinical and operational aspects of healthcare enterprises by leveraging data, connected medical technology, and artificial intelligence.

Value Drivers

Technology

We partner with you to manage your current and future medical technology needs and create a strategy to help you to reach your specific goals.

Operations

We partner with you to streamline operations for rapid yet sustainable results with our expertise in workflow consulting and departmental performance optimization.

Workforce

We partner with you and offer lifelong education and workforce planning. We also provide short-and long-term workforce solutions – including remote staff solutions for scanning and treatment.

Facility

We partner with you to plan, design, visualize, and implement service lines, clinical departments, or entire facilities for brownfield or greenfield projects that foster a healing environment and enable state-of-the-art performance for years to come.

A transformational approach to grow lifetime value

For healthcare organizations and providers, patients are the top priority. Siemens Healthineers is dedicated to improving patient experience with optimized care for better outcomes.⁸ Our PPPs emphasize a combination of value related to money, people, and innovations:⁹



Value for Money

generate cost savings and benefits to maximize the economic, financial, and societal benefits of efficient and effective care.



Value for People

ensure quality care by enhancing value for patients, healthcare professionals, and communities. Our human-centric approach prioritizes facility planning, lifecycle management, asset performance, and staff experience and education



Value for Innovations

address the challenges facing healthcare professionals with innovative medical technologies, clinical insights, strategic vision, process optimization, and expertise in implementation.

Our projects are designed to be both cost-effective and cost-saving to maximize benefits to all stakeholders. We help our partners deliver high-value care for patients, enhance working environments, and provide educational opportunities for healthcare workers, and apply human-centric approaches to project management. Our unique combination of medical technology innovation, clinical insight, strategic vision, implementation expertise, and process optimization can help our partners thrive.

By prioritizing value-based procurement, Siemens Healthineers has embraced a holistic approach to public-private partnerships. This approach allows healthcare organizations to reduce operational costs and improve outcomes. Value-based procurement helps facilities justify larger upfront costs by quantifying the long-term implications and cost-savings opportunities provided by the technology or infrastructure improvements.¹⁰

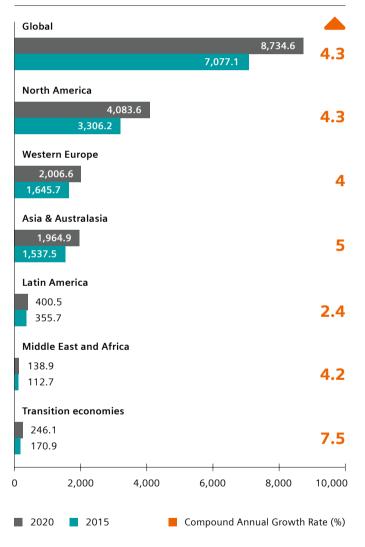
Digitalization in PPPs

Digital transformation has promoted connectivity and improved communication within and between health systems. ^{11,12} The COVID-19 pandemic underscored the global challenges facing healthcare, and accelerated digitalization efforts. ¹³ In this environment, the importance of digital expertise in MedTech partners cannot be overstated. ^{1,2,12} As healthcare becomes increasingly decentralized, digital technology has become vital for communication and connectivity. Digital transformation has led to new service offerings and turnkey solutions to keep pace with client expectations. ¹³

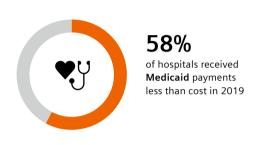
Services such as digital twinning give healthcare professionals a virtual representation of patients and a more complete understanding of their care. 14 Telemedicine keeps patients connected with around-the-clock clinical expertise to improve quality and reduce in-person patient census. 15 Real-Time location solutions (RTLS) allow organizations to track the location of assets, patients, and even staff in real time. 16 Remote scanning for magnetic resonance imaging (MRI) allows for quality diagnostic information with pay-per-hour services and virtual cockpits providing access to expert imaging professionals regardless of their presence onsite. 17,18 These applications of technology can improve the quality and efficiency of care delivery, but require partnerships between providers and industry for successful design and implementation. Healthcare has changed, and expectations have changed with it. Digital capabilities are essential to the future of healthcare. Organizations that partner with MedTech will be able to meet the challenges of digitalization more effectively than those who don't evolve.

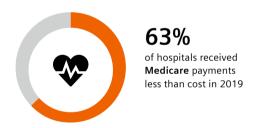
Healthcare spending (2015 - 2020)*

(in billion U.S. dollars)



Underpayment: Mismatch of cost and reimbursement received (U.S.)**









Although healthcare spending are continuously rising, the available healthcare budget is not, putting healthcare providers in a very uncomfortable situation. Due to decreasing financial resources, they have to find new ways to keep healthcare costs per patients as low as possible while still delivering high-quality medical services.

Partners for a Sustainable World

The international healthcare market has started to prioritize sustainable business practices, in keeping with trends seen in other industries. 19,20 MedTech companies offer innovative approaches to sustainability in healthcare, making them natural partners for providers and governments. At Siemens Healthineers, our Environmental, Social and Governance (ESG) strategy prioritizes responsible, ethical, and sustainable policies and practices. Environmental responsibilities include energy use, waste management, and climate change. Social responsibilities include labor relations, human rights, diversity and inclusion, and product liability. Responsible governance includes compliance, business ethics, controls, and procedures.

Smart and Green Hospitals

Our solutions include ESG frameworks and practices that focus on energy efficiency, sustainable materials, and a reduced carbon footprint. We prioritize sustainable activity across multiple critical areas of activity in healthcare:

- Procurement
- Design
- Construction
- Finance
- MedTech
- Operation
- Facility Management

For example, Siemens Infrastructure partnered with Royal Edinburgh Hospital in Scotland to design, supply, commission, install, and test a smart system. This collaborative effort between the project ventures, infrastructure, and banking divisions provided the financial, technological, and digital resources for construction of an emergency power management system. The project helped promote sustainability and prevent blackouts and power outages as the hospital goes green.

ESG figures prominently in Siemens Healthineers Goals for 2025

- 220 million patient touchpoints in underserved countries*
- ≥ 35% revenue from innovations brought to market in last 3 years
- 110 Al supported products on the market
- 130 kt net CO2 emissions from scope 1 and 2
- 26% women in senior management
- 8.5 employee engagement index, maintaining top 25% industry benchmark

*Based on 90 countries in scope: Defined by World Bank as low income and lower-middle income economies and SHS specific additions. Adherence to country-specific legal requirements can Improve quality of life through access to healthcare and innovation.



Like Value Partnerships, PPPs describe long-term engagements focused on value between two or more partners. However, they often involve government participation and can include agreements of all sizes. While some PPPs

can be described as Value Partnerships, not all Value Partnerships are PPPs. Below, we offer a few brief case studies of PPP projects for additional information.^{10,22}

University Hospitals of North Midlands, United Kingdom

The PPP capital of the world

Duration: 15 years, plus an additional 20 years

pending market testing

Scope: Technology management, PACS, 80

workstations and associated servers across

three sites.



University Hospitals of North Midlands, United Kingdom

Summary

The United Kingdom is considered the birthplace of PPPs, as this model originated there. ²¹ A PPP between Siemens Healthineers and the University Hospitals of North Midlands NHS Trust began in 2007 with radiography. The partnership included the provision and deployment of three magnetic resonance imaging (MRI) scanners and three computed tomography (CT) scanners, as well as two mammography scanners and the implementation of a breast care screening program. At the Royal Stoke University Hospital in Stoke-on-Trent, this partnership includes a technology management contract, as well as the installation of a picture archiving and communication system (PACS) and servicing for approximately 80 workstations and servers. ²²

The PPP between Siemens Healthineers and the University Hospitals of North Midlands NHS Trust has options for two 10-year extensions following market testing. Today, the partnership has expanded into the mobile app space. Having worked with the United Kingdom Radiological Congress on an MRI Scan app, Siemens Healthineers is now working with the University Hospitals of North Midlands to develop an app geared towards alleviating imaging fears in children.²³

Key services:

- Operated across three separate sites
- Provided technology management services
- Managed a picture-archiving and communication system (PACS)
- Installed corresponding PACS software to 80 workstations and associated servers

Bendigo Hospital, Australia

Exemplary public and private cooperation

Duration: 25 years

Scope: Automation, security, tailored services,

medical imaging, solar power, 50% equity.



Bendigo Hospital Project, Australia

Summary

The PPP with Bendigo Health is unique because Siemens Healthineers acted as a technology management partner, while Siemens Financial Services came in as an investor. As part of the agreement, Siemens Financial Services acted as part of a consortium with the State of Victoria and Exemplar Health Consortium, providing 50% equity financing to construct the sustainable, energy-efficient Bendigo Hospital Project along with state-of-the-art imaging equipment and smart infrastructure. The arrangement included hospital operations, core medical solutions, and education.²⁴

Today, the 372-bed hospital project serves as an excellent example of cooperation between the public and private sectors.²³ It is considered a world-class healthcare provider, and, having successfully reduced greenhouse gas

emissions, it has since received multiple awards. In addition to the hospital project and in response to the COVID-19 pandemic, Siemens Healthineers worked with Bendigo staff to develop cloud-based remote patient monitoring system with the larger 724-bed Bendigo Health system. This has provided patients with security and access to care.²⁵

Key services:

- Siemens Financial Services provided 50% equity financing
- Siemens Healthineers installed state-of-the-art diagnostic imaging technology
- Siemens Smart Infrastructure provided automation, security, and a tailored services
- Facility was awarded the Victorian Development of the Year award for its sustainability

"The unique application of technologies represents the future of managing increased demands on the healthcare system. The teamplay myCare Companion 'Pandemic solution' gave greater and safer control to doctors and nurses over managing vital medical resources. We are proud to support Bendigo Health to leverage technologies that ensure patients have access to the right treatment and at the right time"

Michael Shaw, Managing Director, Siemens Healthineers ANZ

Bilkent/Ankara Hospital, Turkey

Partnering for the biggest PPP lab in Europe

Duration: 5-year contract

Scope: Design, technology, consumables, staff

training, and service and maintenance for clinical laboratory services.



Ankara City Hospital, Turkey

Summary

With 3,800 beds, Ankara City Hospital Bilkent in Turkey is Europe's largest healthcare complex, serving 25,000 outpatients daily.²⁶ A PPP with Siemens Healthineers delivered state-of-the-art technology and expertise for the diagnostic laboratory. This agreement provided technology, ongoing service and maintenance, continuous staff education and training, and laboratory design input for efficiency.²⁷

As part of the agreement, Siemens Healthineers supported the development of a unique campus, contained project costs while maintaining quality, and expanded laboratory disciplines to include biochemistry, microbiology, pathology, and other specialties such as a genetic lab and a tuberculosis lab. Siemens Healthineers provided highly automated laboratory services, standardized processes, and sophisticated quality management. Today, the Bilkent laboratory serves patients from both the hospital and across the country, performing approximately 200,000 diagnostic with potential of up to 300,000 tests daily with 220 laboratory staff members excluding physicians, who are employed by the Ministry of Health.²⁷

Siemens Smart Infrastructure also contributed to Ankara City Hospital to make it as an intelligent ecosystem that offers patients and staff the utmost in comfort and safety – while focusing on being sustainable and efficient.

The key point: the seamless integration and central control of 22 hospital subsystems through Desigo CC building management platform. It monitors and controls almost 800,000 data points enabling critical infrastructure to run smoothly – day and night. This project is a milestone for future healthcare enabled by energy infrastructure and smart building technology.

Key services:

- Educated, trained and provided laboratory technical staff
- Delivered value-added services, including procurement and process optimization
- Provided design expertise, equipment, appliances, consumables, and service and maintenance
- Facility now provides laboratory services for all disciplines

"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, CCN Group Board Member

Santa Lucia and Los Arcos del Menor university hospitals, Spain

Taking two hospitals to the next level

Duration: 15-year contract

Scope: Financing, services, and maintenance of

laboratory, imaging, information technology,

and communication technology.



The Santa Lucia and Los Arcos del Menor university hospitals, Spain

Summary

The Ministry of Health, Murcia, Spain faced increasing healthcare demands in the coastal areas of Cartagena and Mar Menor due to a growing population. They decided to invest in two new hospitals with a total of about 1,000 beds, and equip them with state-of-the-art medical technology.

In 2010, Siemens Healthineers signed a 15-year Value Partnership with the Ministry of Health, Murcia to add new capabilities and scale up existing ones for two regional hospitals in Spain. The goal was to transform care delivery while maintaining quality and profitability. After five years, the results have exceeded all expectations: A 25% reduction in administrative costs could be achieved, 3.2 million EUR projected in savings and the need for patient rescheduling reduced to 0%.

The PPP with these state-run hospitals includes provision of more than 100 imaging systems, such as computed tomography (CT) scanners, ultrasound units, and mammography systems. Further, Siemens Healthineers set up all laboratories and provided an information technology (IT) and communication system across the two facilities. In addition to supporting the imaging, testing, and communication needs of these facilities, Siemens Healthineers also provides with an innovation guarantee that replaces older equipment with the latest medical technology.²⁸

Key services:

- Equipped the two government-operated hospitals with state-of-the-art medical technology
- Guaranteed innovation, updates, and replacements for all medical technology
- Assumed responsibility for the financing, service, maintenance of all equipment and IT systems
- Increased the quality of care and range of treatment and interventions for these facilities

"Having a single contract is a substantial improvement. This Value Partnership framework provides a value-add which has advanced the level of technological innovation in both hospitals."

Francisco Agulló, General Director, Former Spanish Ministry of Health, Murcia

Leveraging Experience and Expertise

PPPs offer significant opportunities for the international healthcare community. Partnerships with MedTech companies give provider organizations access to innovative solutions as well as the resources and support they need to accomplish their goals and improve the health of their local communities.

With the experience and expertise of an industry leader, Siemens Healthineers offers adaptable PPPs to fit any partner's priorities. Contact us today to explore your opportunities.

Are you interested to discuss your potential PPP project?

Contact Siemens Healthineers Enterprise Services to see how we can help you shaping the next decade of healthcare:

siemens-healthineers.com/ppp

ppp@siemens-healthineers.com

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Read more from our series on Value Partnerships and how to create more value for healthcare providers:

Technology management -

Healthcare enterprises continually strive to simultaneously optimize their operations, expand their capabilities, and advance innovation. Therefore, one of the most critical focus areas is the holistic management of their medical technology.



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Value Partnerships –

These game-changers help healthcare providers meet their challenges by digitalizing and transforming care delivery while expanding precision medicine and improving patient experience.



siemens-healthineers.com/ whitepaper-valuepartnerships



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.



siemens-healthineers.com/ whitepaper-digital-twin



Financing models -

Innovative financing models become a vital part to meet unique challenges for healthcare providers. The combination of expertise, financial solidity, and passion for creating value in healthcare separates Siemens Healthineers from other potential financial partners.



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Consulting services and digital transformation – How choosing the right consulting partner can help healthcare providers thrive in challenging times, unlock value and drive future-proof transformation.



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How to create the healing environment of the future –

Thoughtful, human-centric facility design can make a positive impact on patient and staff experience. Interdisciplinary team work, biophilic design, and new technologies are shaping the healing environment of the future.



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How to create the ultimate diagnostic center – 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. A range of operations solutions, from managed equipment services through full operational and staffing responsibility, are now available.



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The workforce of the future – Many factors are responsible for today's personnel shortages in healthcare. The magnitude of these issues is increasing and may require even more flexible staffing solutions in the future.



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Operational Excellence in Healthcare – A combination of clinical insight, medical technology innovation, strategic vision, implementation expertise, and process optimization capability helps healthcare providers develop and realize their key strategic goals and avoid unnecessary risks.



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Shaping the next decade in healthcare – COVID-19 revealed critical weaknesses in many health systems, but also accelerated adoption of important new technologies. A panel of experts from Siemens Healthineers discussed the lasting impacts these pandemic-driven adaptations were likely to have.



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A new frontier in affordable and accessible cancer care – Cancer centers must be equipped with the right resources to plan, implement, and optimize the delivery of affordable healthcare. Industry partnerships offer oncologists an opportunity to develop, maintain, and expand their practice capabilities to become centers of excellence.



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The products/features and/or service offerings (here mentioned) are not commercially available in all countries and/or for all modalities. If the services are not marketed in countries due to regulatory or other reasons, the service offering cannot be guaranteed. Please contact your local Siemens Healthineers organization for more details. 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.

The scientific overlay on the title is not that of the individual pictured and is not from a device of Siemens Healthineers. It is modified for better visualization.

Siemens Healthineers Headquarters

Siemens Healthcare GmbH Henkestr. 127 91052 Erlangen, Germany

Phone: +49 9131 84-0 siemens-healthineers.com