MedTech Industry Leverages Platform as a Service (PaaS) to Overcome Hurdles, Capitalize on Big Data and Truly Embrace Digital Transformation

Models to accelerate your go-to-market strategy

In partnership with

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Healthineers

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FROST & SULLIVAN

contents

1 - INTRODUCTION AND OBJECTIVE

The MedTech and pharma industries are addressing several challenges, such as changing healthcare delivery models, declining revenue growth, increased cost to bring innovation to market and competition from technology companies. To overcome this, MedTech and pharma companies must move beyond only supplying drugs or devices and evolve to become solution providers across the patient care continuum. They are expanding their offerings across the care continuum to offer holistic solutions from admission to follow-up, leveraging digital delivery and collaboration models to focus on the patient.

Several digital tools and technologies that complement core drug and device products are enabling this transition. They help stakeholders better manage patient health and outcomes through secure connectivity, access, management and analysis of data. This has the potential to offer significant cost benefit, thereby successfully achieving the quadruple aim of healthcare.

The objective of this white paper, commissioned by Siemens Healthineers and researched by Frost & Sullivan, is to examine the digital transformation landscape within the MedTech industry and recognize the role of healthcare data. This white paper aims to:

- Elucidate the advantages of a platform approach for managing healthcare data from multiple sources.
- Leverage applications that enable MedTech companies to offer value to healthcare providers, professionals and patients beyond their products and services, and contribute to improved outcomes.

For any MedTech company driving digital transformation efforts to stay ahead of the innovation curve, several critical questions need to be answered to ensure that the transition is smooth and aligned with the overall goal and vision of the company:

- **What factors drive digital transformation within the industry, and on which key opportunity areas does a MedTech company need to focus?**
- **What will be the key challenges associated with digital transformation, and does a MedTech company have the capabilities to address these challenges?**
- **Should a MedTech company continue to focus on its core competencies and build/partner for additional capabilities that a digital transformation effort entails?**

Platform as a service (PaaS) allows users to leverage a subscription-based data and cloud computing service without the complexity of building and maintaining the infrastructure. PaaS allows users to access, develop and run applications, and accelerate digital transformation using a single platform, reducing the time, effort and resources needed to drive such transformation.

The white paper also discusses the various platform approaches that are available today to support MedTech vendors in making the right choice to drive improved outcomes for their digital transformation efforts.

2 - INTRODUCTION – ACCELERATING NEXT-GENERATION INNOVATION IN THE HEALTHCARE INDUSTRY

- *MedTech and pharma companies are looking at digital transformation to continuously innovate and remain relevant in the market while advancing their core competencies.*

- *Data generated in the healthcare industry largely remains in silos, which makes it difficult to access and utilize for clinical decision support and performance management. It requires a significant investment of time, money and resources to access data securely and compliantly.*

- *A compliant solution that provides seamless access and connectivity to healthcare data to meet multiple industry needs will be an asset to healthcare industry stakeholders.*

The healthcare industry continually transforms as a result of changing patient demographics, rising costs, shifting competitive focus, changing roles of stakeholders and increasing convergence among industry segments and technologies. While this transition has created a complex, evolving and expanding ecosystem, it also generates a vast array of opportunities for healthcare industry players to improve their contribution in terms of value and enhanced patient outcomes.

MedTech and pharma companies are transitioning beyond biopharmaceuticals, medical devices, and equipment to provide end-to-end solutions across the patient care continuum. The key is to support proactive, predictive, and personalized care delivery and management while also striving for business sustainability. This involves enabling better outcomes, improving patient and clinician experience in care pathways, reducing healthcare costs, removing inefficiencies in workflows and maximizing the convergence of capabilities.

Healthcare data enables the industry to achieve this, and in a bid to stay relevant and differentiate services, many MedTech and pharma companies have embraced digitalization. Digitalization is now universally seen as an enabler of this transition as healthcare companies strive to enhance value creation for their customers, partners and themselves. With the availability of several digital tools and technologies, the healthcare industry aims to accelerate the utilization of healthcare data for process improvement, product development and solution value proposition enhancement while looking at new monetization models.
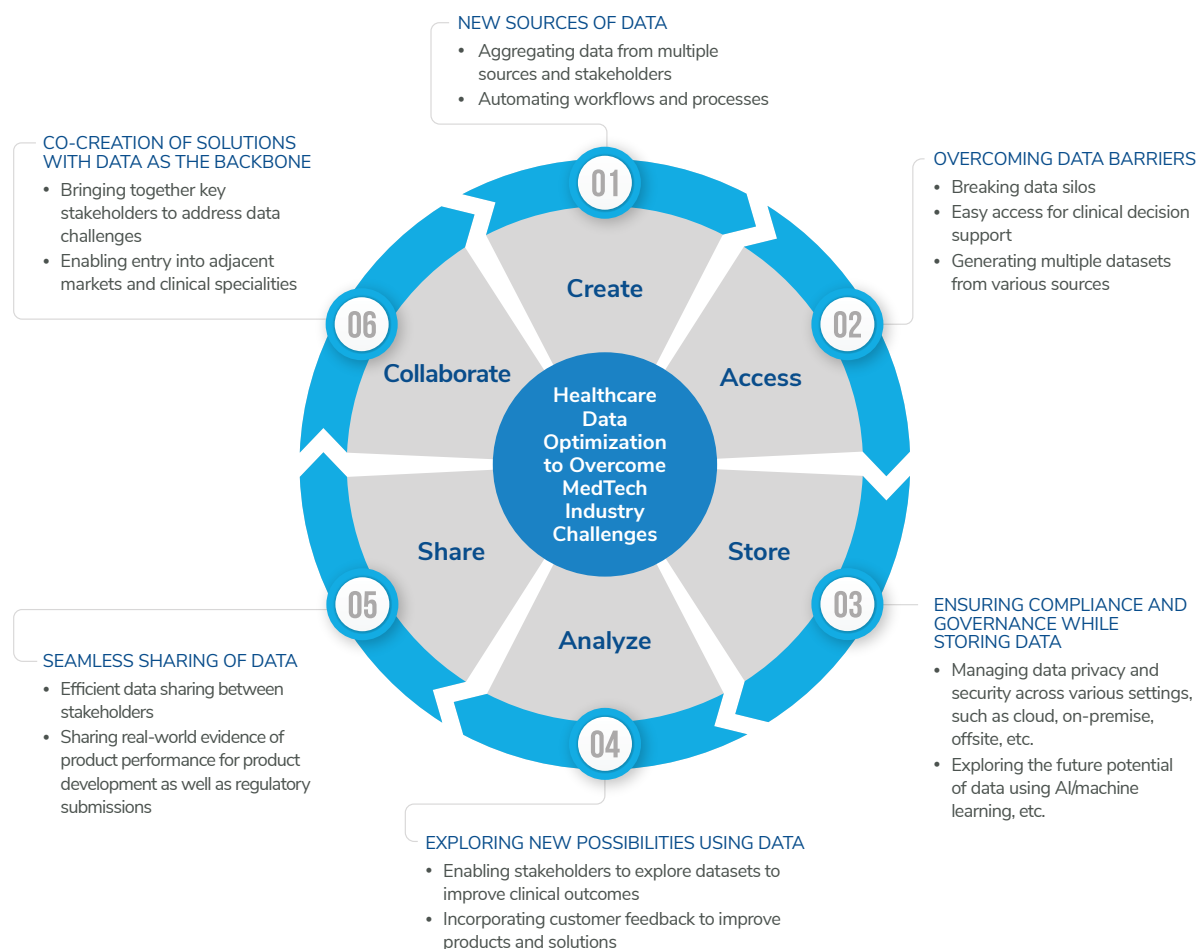
Addressing MedTech Market Challenges by Leveraging Digitalization

Medical equipment and device companies are under considerable pressure, as the typical time to market for a new product can take three to seven years.[1] Furthermore, part of the onus of optimizing costs and resources in care pathways falls on MedTech companies.

To stay on top of the innovation curve and help ecosystem players make a bigger contribution, MedTech companies have to increasingly look at the following:

- **Accessing and deriving value** from the vast amounts of **data generated** from equipment, devices/sensors, patients and the clinical interactions at various care sites.

- Making **data relevant, analyzable** and **actionable** for **clinical decision-making** to generate higher outcomes and improve performance.

- Ensuring **compliance** with **regulatory mandates** for **consent, privacy** and **security** while developing and managing infrastructure to access, store, share and collaborate with healthcare data.

Figure 1: Maximizing the Potential of Healthcare Data to Address MedTech Industry Challenges

NEW SOURCES OF DATA
- Aggregating data from multiple sources and stakeholders
- Automating workflows and processes

CO-CREATION OF SOLUTIONS WITH DATA AS THE BACKBONE
- Bringing together key stakeholders to address data challenges
- Enabling entry into adjacent markets and clinical specialities

OVERCOMING DATA BARRIERS
- Breaking data silos
- Easy access for clinical decision support
- Generating multiple datasets from various sources

SEAMLESS SHARING OF DATA
- Efficient data sharing between stakeholders
- Sharing real-world evidence of product performance for product development as well as regulatory submissions

ENSURING COMPLIANCE AND GOVERNANCE WHILE STORING DATA
- Managing data privacy and security across various settings, such as cloud, on-premise, offsite, etc.
- Exploring the future potential of data using AI/machine learning, etc.

EXPLORING NEW POSSIBILITIES USING DATA
- Enabling stakeholders to explore datasets to improve clinical outcomes
- Incorporating customer feedback to improve products and solutions

01 Create
02 Access
03 Store
04 Analyze
05 Share
06 Collaborate

Healthcare Data Optimization to Overcome MedTech Industry Challenges

1   Drugs, Devices, and the FDA: Part 2: An Overview of Approval Processes: FDA Approval of Medical Devices, Gail A.Van Norman,M.D.,

Embarking on the Digital Transformation Journey Needs Vision, Resources and the Right Partner Ecosystem

MedTech companies have always had the difficult decision of where to spend their R&D dollars and time, either on prioritizing developing their core competencies and solutions or on their digital infrastructure and analytical capabilities, as both are essential for long-term business growth. Not all firms have the funds to do both or the skill sets to develop capabilities in **healthcare data management, develop algorithms** for analyzing data, or the **right partner ecosystem** to leverage, **collaborate, co-create and share risk**. These visionary firms may not have experience setting up **governance and compliance structures** to use clinical data conforming to regulations.

> **MedTech firms embracing digital transformation need to recognize the following:**
>
> - Digitalization is not only about establishing digital infrastructure. It also requires a **scalable and agile approach** to bring together various components, functions and participants across the value chain while reducing time to market.
> - There are several gaps across the MedTech value chain as clinical workflows are not always optimized, pointing to the need for **integration** between stakeholders and the health system.
> - **Relevance** and **longevity** of digitalization efforts are critical, and transformation must account for suitability and returns on the internal business needs as the market evolves.

Developing and maintaining a digital ecosystem to realize the multiple benefits of data, analytics and collaboration with appropriate partners requires specific internal capabilities and considerable planning, time, resources and effort. **A platform offers a cloud-based ecosystem for secure access and data sharing among multiple stakeholders and is enabled by digital tools and applications. It also provides an avenue for like-minded firms to collaborate, which is essential to any digital transformation**.
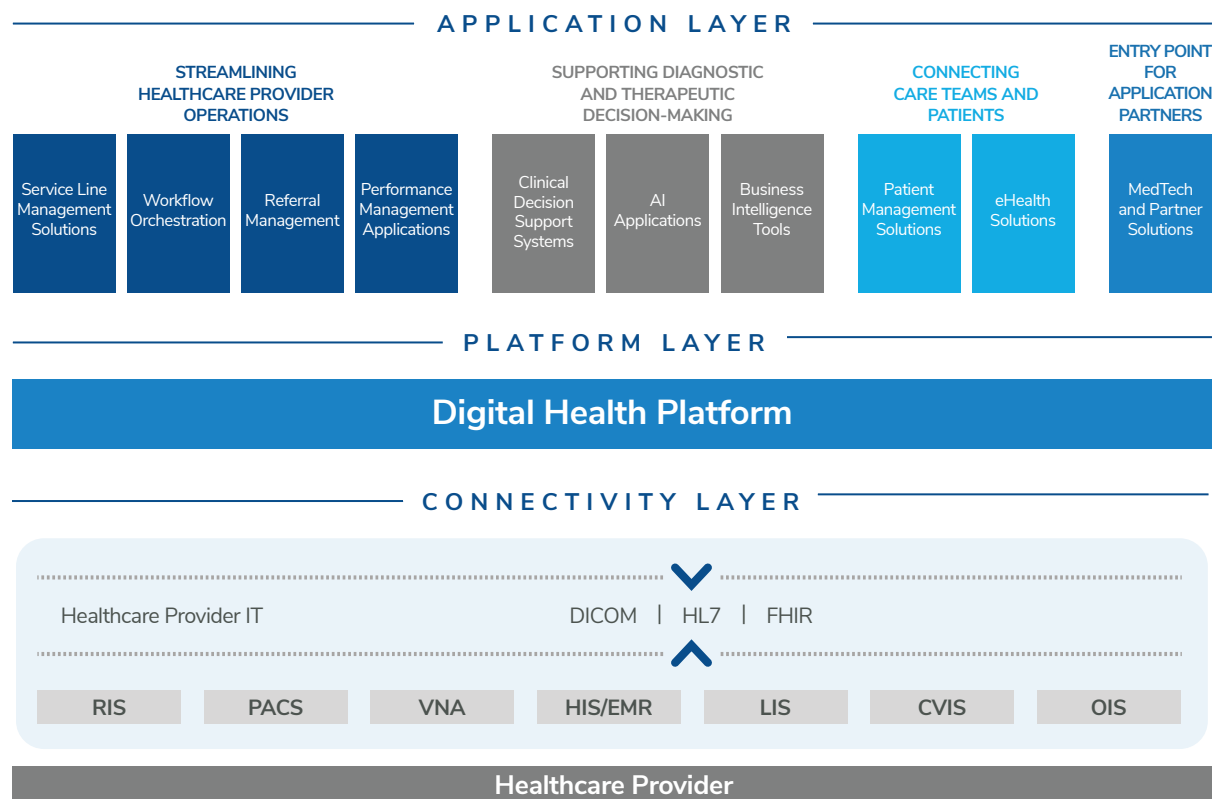
CASE IN POINT

Digitalizing for seamless workflow automation and accelerated orthopedics implant manufacturing.

An orthopedic implant manufacturer ideally needs to collaborate with clinical specialists, access medical images, use applications to model and visualize products before actually manufacturing prototypes, and then use the **data** *to feed back into the* **product refinement process***. All this needs* **infrastructure** *that allows for the* **secure access** *and* **sharing** *of* **clinical data** *among multiple stakeholders and sites. Equally important is the access to and use of applications that offer the capability to evaluate clinical images in terms of segmentation, contouring, etc., without necessarily owning or developing these in-house.*

Achieving these objectives internally may prove difficult for a MedTech vendor, and there is potential to address these challenges using a platform approach.

Platform as a service (PaaS) allows users to leverage a subscription-based data and cloud computing service without the complexity of building and maintaining the infrastructure. It allows the users to access, develop and run applications, and unify digital transformation using a single platform, reducing the time, effort and resources needed to drive transformation.

Figure 2: Relevance of the Platform Approach to Drive Healthcare Digital Transformation

APPLICATION LAYER

STREAMLINING HEALTHCARE PROVIDER OPERATIONS				SUPPORTING DIAGNOSTIC AND THERAPEUTIC DECISION-MAKING			CONNECTING CARE TEAMS AND PATIENTS		ENTRY POINT FOR APPLICATION PARTNERS
Service Line Management Solutions	Workflow Orchestration	Referral Management	Performance Management Applications	Clinical Decision Support Systems	AI Applications	Business Intelligence Tools	Patient Management Solutions	eHealth Solutions	MedTech and Partner Solutions

PLATFORM LAYER

Digital Health Platform

CONNECTIVITY LAYER

Healthcare Provider IT	DICOM	HL7	FHIR

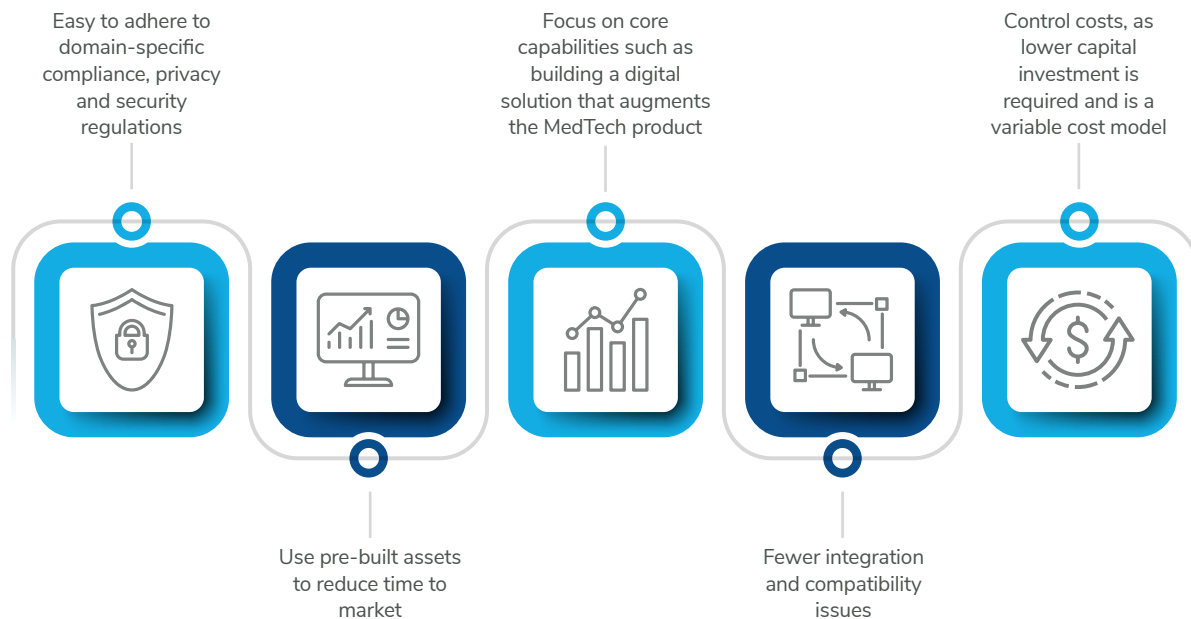| RIS	PACS	VNA	HIS/EMR	LIS	CVIS	OIS

Healthcare Provider

Most healthcare data management use cases are industry-specific with requirements to access imaging, pathology, and clinical data or, in many instances, machine-generated data. MedTech stakeholders that are considering a platform would benefit from collaborating with one that has domain-specificity and is incubated and managed by another experienced MedTech organization.

> " Data is in silos and to optimize clinical pathways, all stakeholders need to work together by co-creating and co-opeting. In other words, data needs to be accessed, processed, stored, analyzed, and shared in a secure and compliant manner for it to be useful to different stakeholders. PaaS is one of the enablers for driving this integration. MedTech companies can accelerate their digital transformation efforts by leveraging first-mile connectivity to a hospital ecosystem and last-mile access to data offered by the teamplay digital health platform."
>
> **—Max Milz, Senior Partner/Senior Vice President at Siemens Advanta Consulting**

A MedTech-specific platform offers vertical domain expertise from a market access and connectivity perspective, access to relevant data, specific applications for that sector, and experience on the security and regulatory compliance requirements. Partners that join can focus on the development of their core solution and value proposition.

Figure 3: Advantages Offered by a MedTech-specific PaaS

Easy to adhere to domain-specific compliance, privacy and security regulations

Focus on core capabilities such as building a digital solution that augments the MedTech product

Control costs, as lower capital investment is required and is a variable cost model

Use pre-built assets to reduce time to market

Fewer integration and compatibility issues

Leveraging a MedTech PaaS platform offers medical equipment and device companies the **flexibility to continuously adapt** to evolving market needs, optimizing investment in time and resources while being guided by an experienced partner that has done a lot of the legwork to get the platform fit for purpose. In a highly competitive market, MedTech companies must focus on **accelerated product development** while partnering with the best PaaS provider to help realize their overall digital transformation goals.

> **The majority of MedTech companies have a strong product presence. However, what they also need is to transform to a sustainable service model. Co-opetition is gathering prominence in MedTech and pharma, and all stakeholders stand to only benefit from integration. PaaS will become very relevant in this context, thus positioning teamplay digital health platform uniquely, with its domain-specific expertise and digital transformation capabilities."**
>
> *—Dr. Thomas Friese, SVP Digital Platform, Siemens Healthineers*

3 - teamplay digital health platform -
PROVEN AND COMPLIANT PaaS PLATFORM THAT ENSURES OUTCOMES

- *Siemens Healthineers utilized its domain expertise to **build a digital asset in 2012** to stay ahead of the innovation curve and continues to invest several million annually on the platform.*

- *teamplay digital health platform offers **first-mile connectivity to hospital ecosystems and last-mile access to data** that enables partners to focus on their core competencies and co-create applications.*

- *MedTech companies can leverage the **tried and tested compliant platform** from Siemens Healthineers to achieve quicker market entry, optimizing time and effort, without having to build competencies internally.*

Siemens Healthineers continues to invest and grow in its core focus areas of imaging, diagnostics, and advanced therapies and is continually building capabilities to ensure data access and connectivity while assuring compliance and security. There is a significant focus on driving forward digital transformation, and the company provides easy access to more than 40 transformative and AI-powered applications for data-driven decision support from Siemens Healthineers and curated partners.
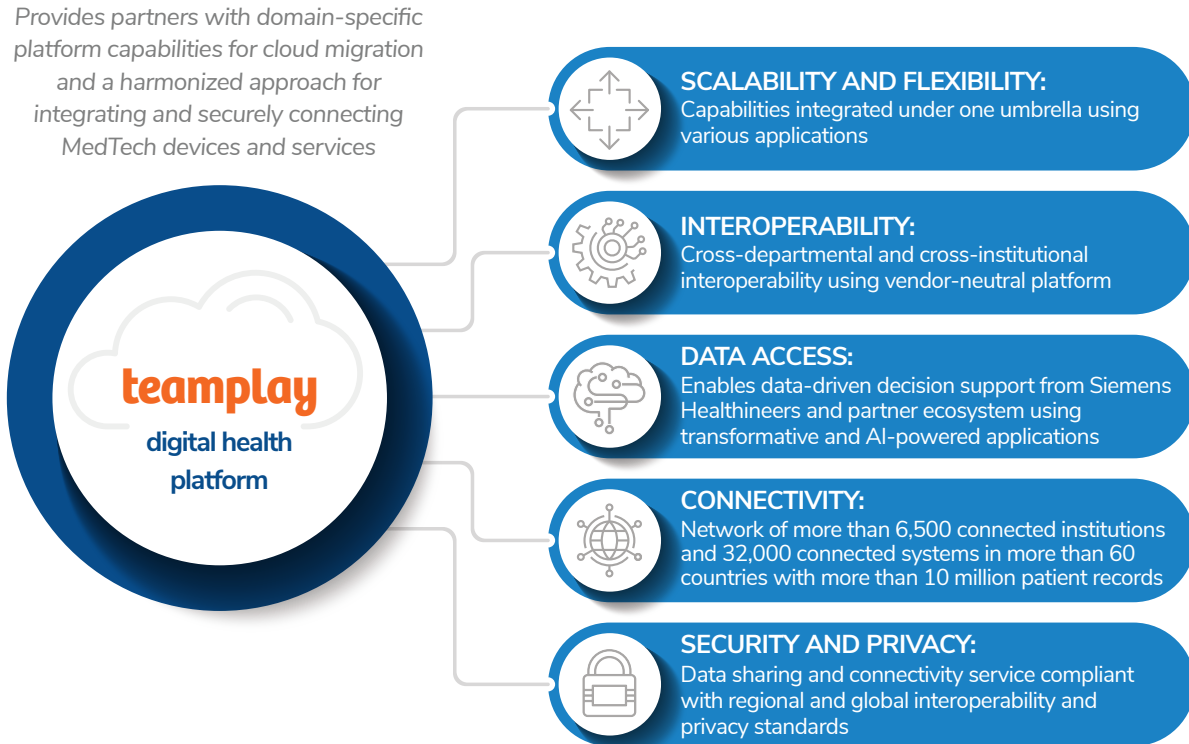
Siemens Healthineers embarked on its digital transformation journey six years ago and invested significant time, resources and capital to develop its **teamplay digital health platform** (hereinafter referred to as teamplay). It realized its vision of **creating a truly global digital ecosystem** and **managing the vast amount of healthcare data generated** from devices and its pool of installed equipment. Siemens Healthineers leverages its years of experience in **imaging and diagnostics** to build a platform and systematically **expand it across multiple functionalities**. The platform brings together a strong diagnostic and therapeutic core and specialized digital offerings. teamplay also benefits from the **geographic reach** the company has in terms of the product line and breadth it offers, as well as the global geographies in which it operates.

> **teamplay digital health platform empowers MedTech companies to tap into the potential of connected care by combining data from different sources and using near-real-time analysis and feedback to gain a better understanding of the performance of their products in the wider healthcare ecosystem."**
>
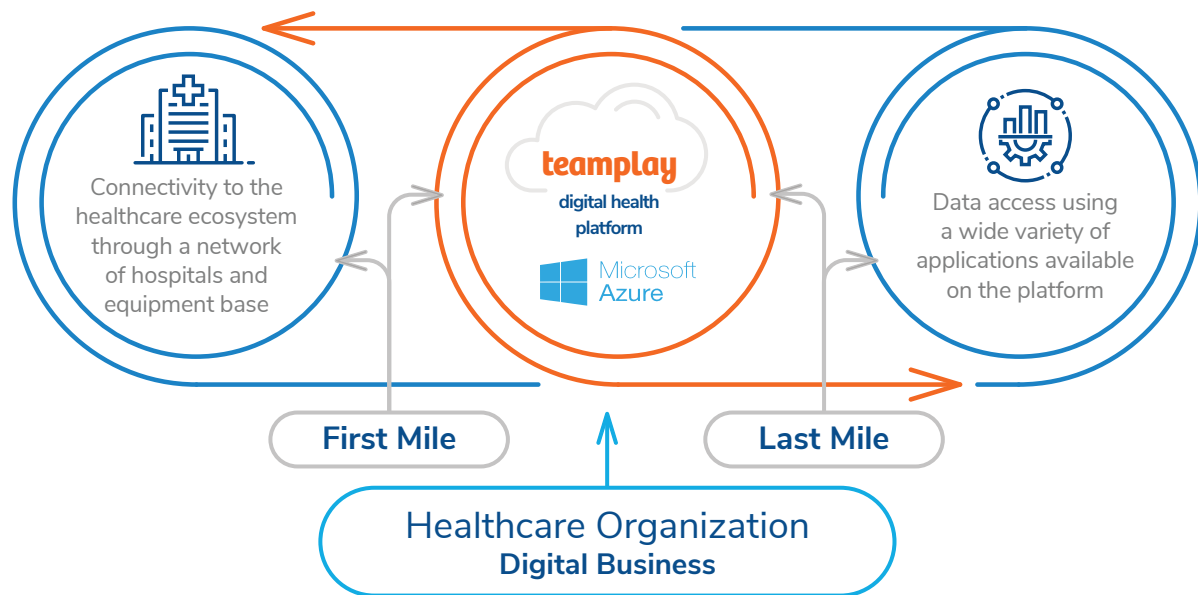> **—Dr. Jim Thompson, Sr. Director, Siemens Digital Industries Software**

Figure 4: Global Reach, Connectivity and Data Access Provided by teamplay digital health platform

Provides partners with domain-specific platform capabilities for cloud migration and a harmonized approach for integrating and securely connecting MedTech devices and services

teamplay
digital health platform

SCALABILITY AND FLEXIBILITY:
Capabilities integrated under one umbrella using various applications

INTEROPERABILITY:
Cross-departmental and cross-institutional interoperability using vendor-neutral platform

DATA ACCESS:
Enables data-driven decision support from Siemens Healthineers and partner ecosystem using transformative and AI-powered applications

CONNECTIVITY:
Network of more than 6,500 connected institutions and 32,000 connected systems in more than 60 countries with more than 10 million patient records

SECURITY AND PRIVACY:
Data sharing and connectivity service compliant with regional and global interoperability and privacy standards

The company has several use cases that can be used as templates for technology advancement, enabling partners to achieve their objectives by joining forces to leverage the scale effects. teamplay acts as **a technology accelerator for MedTech companies** entering this space, providing **first-mile connectivity and last-mile access**. MedTech companies that partner will also benefit from a **platform that has already been optimized by Siemens Healthineers** from a technical, application and regulatory standpoint without reinventing the wheel and, in turn, saving time, money and resources.

Figure 5: teamplay enables Seamless Connectivity between the Cloud and Healthcare Provider Ecosystem

Connectivity to the healthcare ecosystem through a network of hospitals and equipment base

teamplay
digital health platform

Microsoft Azure

Data access using a wide variety of applications available on the platform

First Mile

Last Mile

Healthcare Organization
Digital Business

USE CASE

Platform Responds Quickly to Market Needs.

Algorithms on teamplay platform enable faster lung scan, saving vital time.

Siemens Healthineers developed deep-learning algorithms, AI-Rad Companion, that leverage its years of experience in handling imaging datasets to automatically highlight abnormalities, segment anatomies and compare results to reference values. AI-Rad Companion was developed and trained using thousands of imaging datasets.

Siemens Healthineers leveraged teamplay digital health platform to enable its users, in their fight against the COVID-19 pandemic, to quickly adapt the AI-Rad Companion Chest CT algorithm, which uses CT scans to detect pulmonary opacities quickly. The company launched a prototype in April 2020 that was tested in two partner healthcare provider locations.

Chest imaging, X-ray in particular, plays an important role in patient management during the COVID-19 pandemic. Patient management and clinical decisions depend on clinical outcomes and imaging reports. The new member of the AI-Rad Companion family, the AI-Rad Companion Chest X-ray, automatically processes upright chest X-ray images (PA direction). Next to pneumothorax, pleural effusion and nodule detection, the AI-Rad Companion Chest X-ray[1] can indicate consolidations and atelectasis. According to research, the latter may be signs of pneumonia caused by the COVID-19 virus.[2]

teamplay digital health platform was highly instrumental in training the algorithm, as it required healthcare datasets for the program to run effectively. Furthermore, teamplay makes it easier to comply with global healthcare data, privacy and security regulations. ***Within four months, this tool's performance has been validated in collaboration with partner organizations and is ready for launch.***

Healthcare providers that have Siemens Healthineers Imaging solutions and AI-Rad Companion will have quick access to this tool.

1. AI-Rad Companion Chest X-ray is currently under development; it is not for sale in the United States and other countries. CE mark is available.
2. Cleverley, J., Piper, J. and Jones, M.M., 2020. The role of chest radiography in confirming covid-19 pneumonia. *bmj, 370*.

> **❝** By leveraging our AI expertise, we wanted to train and develop an algorithm to segment and assess the severity of COVID-19 based on CT imaging data sets. It is one of the effective ways to tangibly measure the progress of this disease. Mid of April, we made the first prototype available to our collaboration partners, and we received very positive feedback with regard to clinical applicability of this algorithm. Leveraging teamplay digital health platform allowed access to compliant, anonymized, and processed data sets that enabled [us] to curate and train the algorithm. It also made it possible to quickly deploy the prototype to partners that are using the AI-Rad Companion environment on the platform. Overall, it made gathering information on performance of the algorithm easier, and the time to market for the tool was quicker—nearly four months in total."
>
> —*Valentin Ziebandt, Head – AI-Rad Companion, Siemens Healthineers*

Benefits Offered to Partners Utilizing teamplay digital health platform

The platform's networking capabilities to collect data from medical devices across stakeholders enable partners to understand the potential of data generated by medical equipment and devices. The real-world evidence generated on product performance can enable MedTech companies to achieve radical improvement to introduce new products or incremental innovation to optimize an existing product portfolio. Beyond access to healthcare data, the platform also offers secure data transfer, enabling the collaboration of applications that allow healthcare companies to develop their algorithms for further studies, performance evaluations, etc.

Data minimization and privacy are the backbone of all core applications on the platform. teamplay is vendor-agnostic and based on standards rather than a proprietary solution, and can be extended to include new proprietary data sources from hospital source systems. Partners can benefit from flexible and scalable software deployment with hybrid computing by combining cloud and on-edge deployment to serve specific use cases. It also allows partners to share and collaborate through standardized interfaces between institutions and care settings. A large base of ecosystem partners within the broader Siemens Healthineers family enables partners to make inroads to a larger customer base.

CASE IN POINT

Strategic Partnership Drives Value Generation for Platform Users.

Leveraging core competencies of partners to increase agility.

The Microsoft partnership enables the teamplay digital health platform to successfully manage the increase in demand for capacity and scalability due to disruption from COVID-19. The pace of technology upgradation has shifted from 12-18 months to rapid changes on a quarterly or half-yearly basis. By combining MS Azure's platform capabilities with workflow management competencies of Siemens Healthineers, the platform offers high agility and resilience to cope with the rapid rate of technology advancement.

> **With teamplay digital health platform, we are joining forces to offer a higher level of technical and industry depth, achieved through an exponential augmentation of resources. Siemens Healthineers and Microsoft have identified the most important scenarios for our customers and developed use cases for technology deployment. This approach allows us to better engage with our customers and address their most pressing needs."**
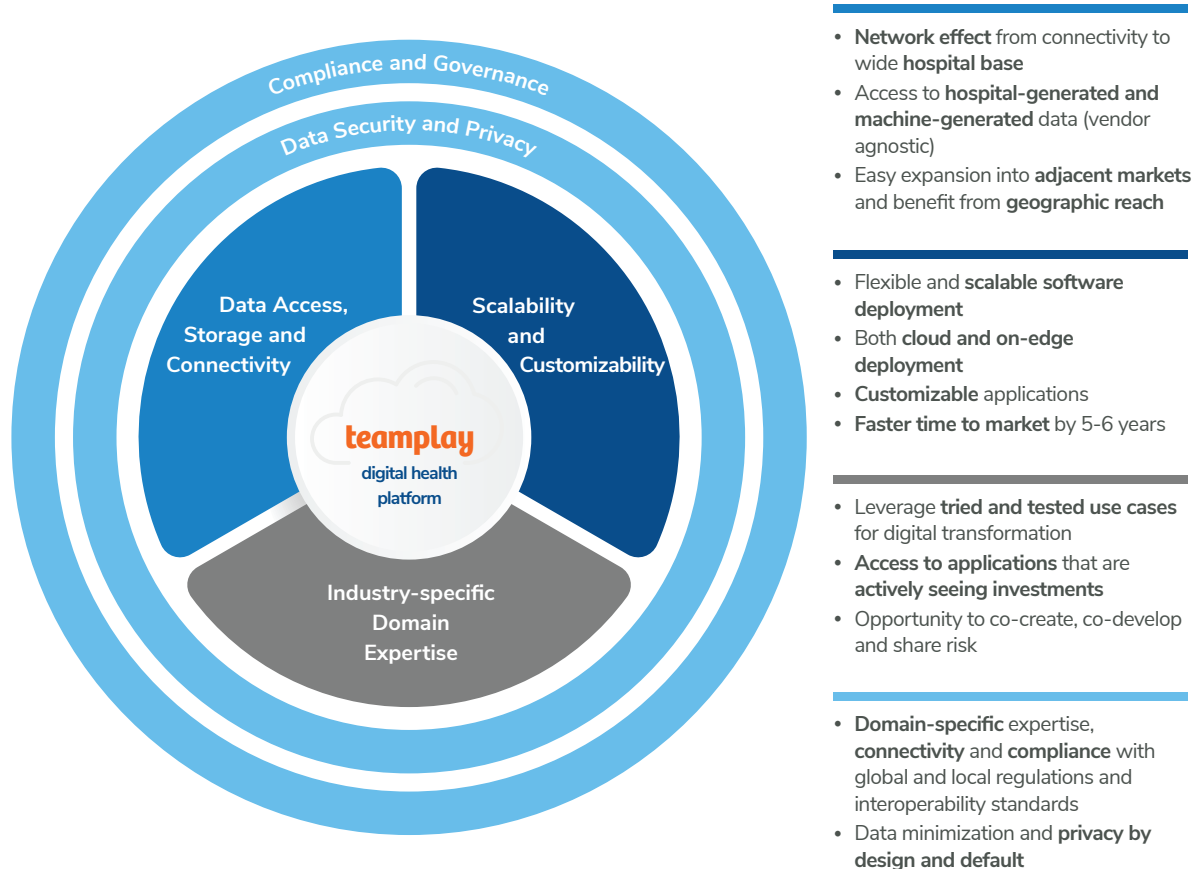>
> **—Casey McGee, *Vice President, Global ISV Sales at Microsoft***

The partnership with Microsoft Azure for cloud and platform capabilities allows Siemens Healthineers to offer partners scalability by:

- Providing continued access to the **latest technology**, beyond data storage and maintenance, for advanced capabilities such as **data authentication** and **compliance management**.
- Addressing the challenges of managing healthcare data by bringing together their core competencies, contributing to a **stronger applications** and **solutions portfolio** affiliated with the platform and **quicker time to market** for partners.
- Offering capabilities to **customize applications** on top of the pre-built platform and providing avenues for **co-creation, co-development** and **risk-sharing**.

teamplay digital health platform creates an ecosystem to leverage competencies that arise from the synergy between partners, creating an environment for co-opetition, co-creation and collaboration to solve industry challenges together and explore new opportunities.

Figure 6: Key Value Proposition Offered to Partners Implementing teamplay digital health platform

- **Network effect** from connectivity to wide **hospital base**
- Access to **hospital-generated and machine-generated** data (vendor agnostic)
- Easy expansion into **adjacent markets** and benefit from **geographic reach**

- Flexible and **scalable software deployment**
- Both **cloud and on-edge deployment**
- **Customizable** applications
- **Faster time to market** by 5-6 years

- Leverage **tried and tested use cases** for digital transformation
- **Access to applications** that are **actively seeing investments**
- Opportunity to co-create, co-develop and share risk

- **Domain-specific** expertise, **connectivity** and **compliance** with global and local regulations and interoperability standards
- Data minimization and **privacy by design and default**

As a MedTech-specific platform, the company offers vertical domain expertise and industry know-how, which differentiates Siemens Healthineers from horizontal platform capabilities offered by leading IT companies. The subscription model also allows users to spread the investment over time and generate higher returns, considering the head start the platform gives its partners. Overall, Siemens Healthineers has a clear vision of where it fits with partners by increasing fidelity and ease of use while decreasing time and effort for its partners.

> " teamplay digital health platform is built on Microsoft Azure. Our vision of a 'perfect storm' essentially describes bringing two strengths together: broad 'horizontal' platform capabilities from a leading IT player with domain know-how and industry intimacy, and deep 'vertical' platform capabilities from a leading MedTech player. Together, we can initiate a reinforcing cycle of creating best practices for the industry, combining a strong platform backbone with the ability to cover the 'last mile' and integrate into, e.g., healthcare provider settings—in essence, providing the right technology for the right purpose."
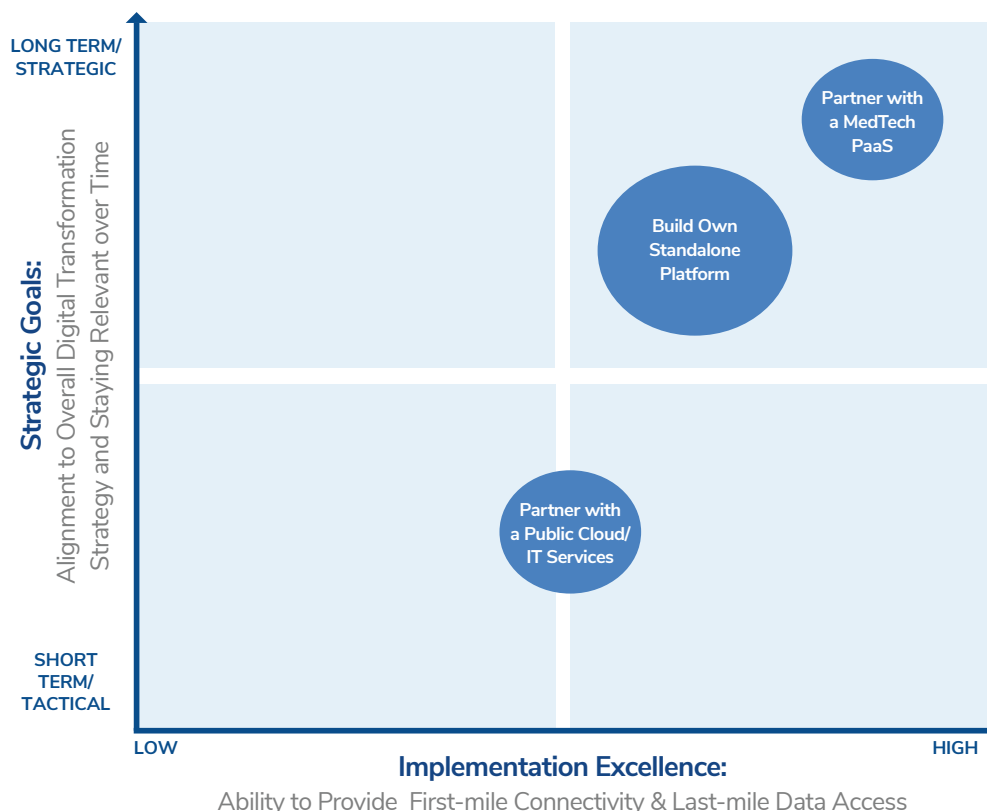>
> *—Dr. Christoffer Seubert, Head - Portfolio Management, Digital Health, Siemens Healthineers*

4 - PaaS ENABLES QUICKER AND EFFICIENT DIGITAL TRANSFORMATION FOR MedTech PLAYER

- *Digital transformation is an essential focus area for medical equipment and devices companies looking to accelerate innovation and stay ahead of the competition. Achieving **higher returns** in **optimal time, effort and investment** is essential.*

- *MedTech companies should focus on their core competencies and applications while navigating the complexities of digital transformation. **Leveraging an existing PaaS** will be a key enabler.*

- *A **domain-specific platform** enables stakeholders to collaborate with a partner that thoroughly understands the challenges of the MedTech market and has already invested in a **tried and tested PaaS** that provides an opportunity to **co-create** by **leveraging network effects**.*

MedTech companies embarking on a digital transformation journey should consider the following options when choosing a platform approach.

Figure 7: Platform Approaches: Investment and Benefits Summary

LEGEND: *The size of bubble indicates the time, resources and investment that a MedTech company needs to put in to achieve strategic and implementation excellence*

> " Data minimization and privacy is the backbone of teamplay digital health platform. Privacy by design and default is at the center of all our core applications. Siemens Healthineers aims to be an innovation accelerator when it comes to digital data driven services for healthcare. teamplay digital health platform provides core assets of access, connectivity and data models. With security and privacy at heart of the platform MedTech companies can concentrate on their core business, and rely on a proven platform to advance their digitalization efforts."
>
> *— Ruediger Bertsch, Head of teamplay digital health platform Architecture*

Building a PaaS is relatively challenging for MedTech companies considering the time, effort and resources required to drive the process from their end. Having recognized this earlier on, Biosense Webster, the global market leader in electrophysiology equipment decided to collaborate with Siemens Healthineers for a platform solution. Collaborating for platform capabilities has enabled Biosense Webster to effectively offer data access and analytics solutions to its customers, allowing them to derive outcomes from the vast amount of electrophysiology data that they collect.

Figure 8: CARTONET Application from Biosense Webster Enabled by teamplay digital health platform
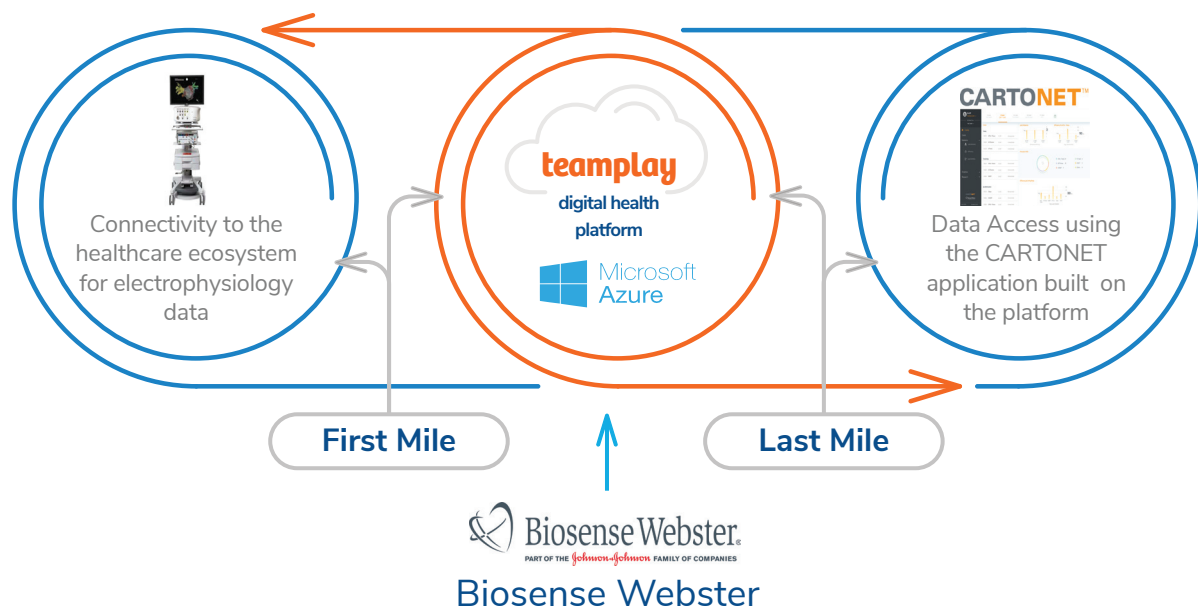
> " At Biosense Webster, the decision to add any new feature or products depends on customer needs. Nearly 2 petabytes of data is generated every year by our electrophysiology solution. We identified a gap in the amount of data being created and how it is made available (on-premise or remote), viewed, stored and evaluated as most physicians are still storing data in multiple devices and locations.
>
> teamplay digital health platform was the well-suited cloud-based solution for our customers because, as a MedTech company, Siemens Healthineers brings in clinical domain expertise, and their years of experience in building a platform was vital for this partnership. We find it easier to co-create and address complex challenges together with the flexibility and customizability that teamplay digital health platform offers us."

— Dr. Liat Tsoref, Director -R&D Collaborations and Acceleration, Biosense Webster

The capabilities that teamplay can offer compared to other PaaS options are:

- The platform enables MedTech vendors to **expand into adjacent markets and clinical specialties** and benefit from **geographic reach without having to go through extensive regulatory, compliance, privacy and security assessments. Healthcare data privacy is ensured by default and design, including compliance to GDPR, HIPAA and different interoperability standards (technical and semantical).**

- **The platform approach allows partners to leverage the potential of data** from existing networks, interconnections and customer base. This opens up **opportunities to collaborate** among partners and build applications together by leveraging the network effect.

- teamplay provides a **base to develop healthcare data** that can be used in the future for training AI/machine-learning algorithms, developing analytics tools, etc., and contribute to quicker turnaround when introducing cutting-edge features or applications.

> " Moving towards co-opetition means moving to create joint value, which makes a governance model extremely important. Key questions to consider include understanding which parties may participate in the ecosystem, how they create value, and how to divide it fairly. Governance is an essential ingredient to ensure trust among third parties, especially in a regulated industry like healthcare. In order to create value and to ensure fairness, the teamplay digital health platform seems to be at the right spot, making the right strategic moves to become a leading platform for the MedTech industry."

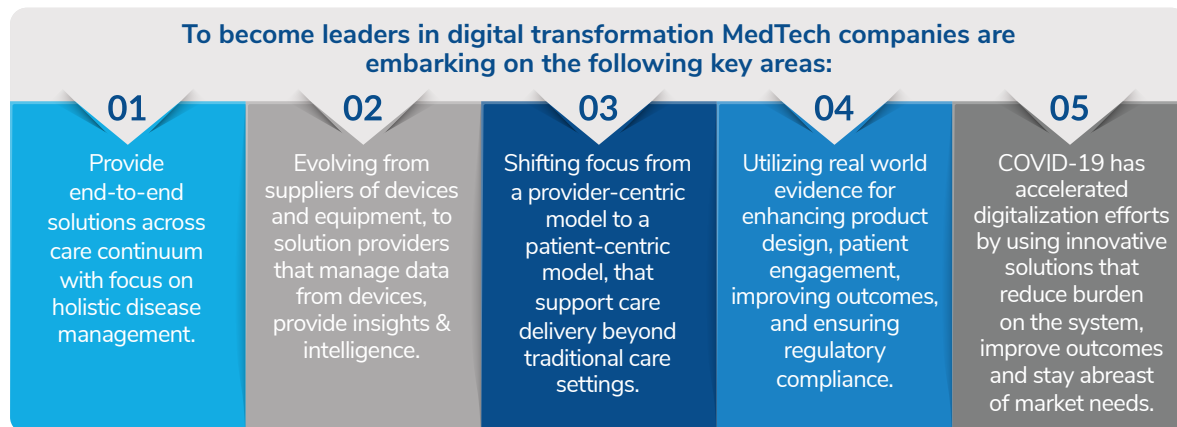*— Prof. Marshal Van Alstyne, Professor at Boston University and Research Associate*
at the MIT Initiative on the Digital Economy

5 - LAST WORD: MedTech PaaS ACCELERATES DIGITAL TRANSFORMATION

- *The platform offers significant value as a **unifier of healthcare data** to drive digital transformation efforts.*

- *A MedTech PaaS adds value to MedTech companies in their quest to achieve digital maturity with its **domain-specific platform that is compliant with multiple markets and regulations**.*

- *Collaborating with an established MedTech market leader that has platform capabilities ensures much-needed **scalability** by leveraging **infrastructure, proven business and technology models, data access, connectivity and geographical reach**.*

The transition to personalized and patient-centric care delivery requires MedTech companies to not only invest time and effort to address specific customer problems and challenges, but also reduce the lead time to market with new products or improve the current product portfolio. As a result, the long-term strategic goal of digitalization focuses on improving outcomes across the key functional areas of the MedTech value chain and stakeholders by identifying the most optimal business models and go-to-market strategies.

Figure 9: MedTech Digital Transformation Drivers

To become leaders in digital transformation MedTech companies are embarking on the following key areas:

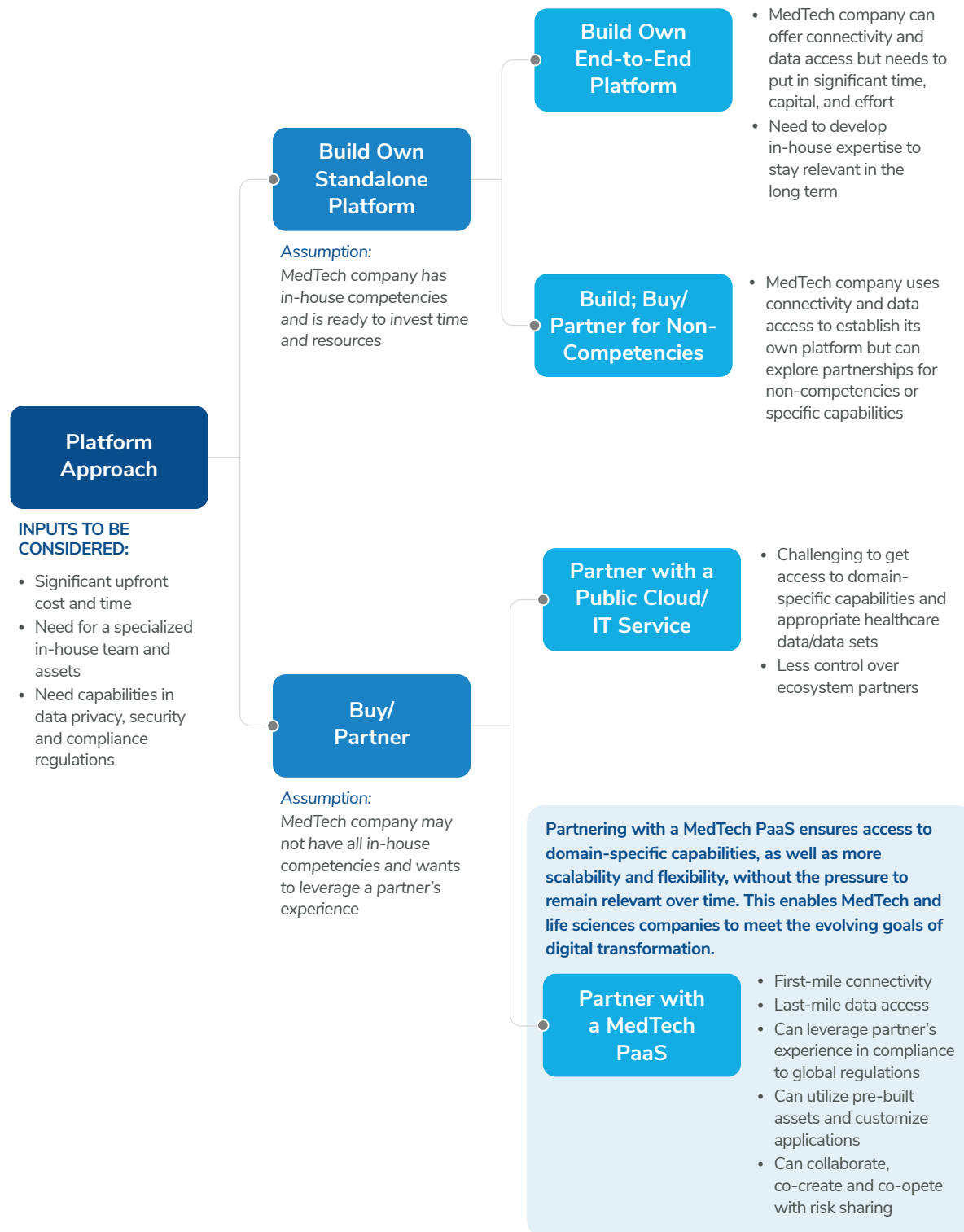| 01	02	03	04	05
Provide end-to-end solutions across care continuum with focus on holistic disease management.	Evolving from suppliers of devices and equipment, to solution providers that manage data from devices, provide insights & intelligence.	Shifting focus from a provider-centric model to a patient-centric model, that support care delivery beyond traditional care settings.	Utilizing real world evidence for enhancing product design, patient engagement, improving outcomes, and ensuring regulatory compliance.	COVID-19 has accelerated digitalization efforts by using innovative solutions that reduce burden on the system, improve outcomes and stay abreast of market needs.

Data is the backbone of digital transformation. MedTech companies can leverage a platform approach to unify data and build applications that drive outcomes for healthcare data management.

> **Technology plays a key role in our pursuit of making healthcare personal and precise. As the world slowly comes out of the COVID-19 crisis, there's increased appetite and appreciation for using digital tools and technologies globally. With teamplay digital health platform as a service model, we want to accelerate the digital transformations across the healthcare industry by offering a pre-connected, secure and compliant infrastructure to MedTech and pharma companies to march forward."**
>
> *— Manish Marotkar, Head - Platform as a Service Business, Siemens Healthineers*

Figure 10: Key Considerations for Choosing a Platform

Platform Approach

INPUTS TO BE CONSIDERED:

- Significant upfront cost and time
- Need for a specialized in-house team and assets
- Need capabilities in data privacy, security and compliance regulations

Build Own Standalone Platform

Assumption:
MedTech company has in-house competencies and is ready to invest time and resources

Build Own End-to-End Platform

- MedTech company can offer connectivity and data access but needs to put in significant time, capital, and effort
- Need to develop in-house expertise to stay relevant in the long term

Build; Buy/Partner for Non-Competencies

- MedTech company uses connectivity and data access to establish its own platform but can explore partnerships for non-competencies or specific capabilities

Buy/Partner

Assumption:
MedTech company may not have all in-house competencies and wants to leverage a partner's experience

Partner with a Public Cloud/IT Service

- Challenging to get access to domain-specific capabilities and appropriate healthcare data/data sets
- Less control over ecosystem partners

Partnering with a MedTech PaaS ensures access to domain-specific capabilities, as well as more scalability and flexibility, without the pressure to remain relevant over time. This enables MedTech and life sciences companies to meet the evolving goals of digital transformation.

Partner with a MedTech PaaS

- First-mile connectivity
- Last-mile data access
- Can leverage partner's experience in compliance to global regulations
- Can utilize pre-built assets and customize applications
- Can collaborate, co-create and co-opete with risk sharing

The advantages of partnering for a PaaS solution are evident. It is a more strategic and long-term option with the opportunity to collaborate, co-create and share risk. In comparison to building a platform, partnering provides scalability by optimizing time, resources and investment. While building a platform with a public cloud services provider, MedTech companies will still be required to network with hospitals for data access and arrange integration with devices and the healthcare IT ecosystem. However, partnering with a MedTech PaaS offers scalability in terms of access and connectivity and in the ability for the platform to evolve by onboarding new products, applications and vendors. It also offers the flexibility to upgrade to the latest technology, integrate with a wider network of devices and healthcare IT systems, and expand into new and adjacent markets. Partnering also makes it easier to streamline operations without having to establish an in-house development team and manage the regulatory and privacy requirements associated with healthcare data management.

> " Siemens Healthineers is strongly engaged in a wide spectrum of digital activities, from using AI to building applications for operational, clinical and financial benefits, to building platforms for data integration across the healthcare continuum. All these put us in a position to discuss and consult on comparable use cases along the data value chain—accessing, exchanging, processing, storing, analyzing and the commercialization of data. From a strategic point of view, teamplay digital health platform will continue to expand from its core focus on imaging and conquer adjacencies and multiple clinical specialities. It will be an exciting endeavor for us and our partners as this will put us in 'co-opetition' scenarios with our platform being the vehicle for collaboration and co-creation."
>
> *— Dr. Christoffer Seubert, Head - Portfolio Management, Digital Health, Siemens Healthineers*

Leveraging an existing MedTech PaaS provides infrastructure capabilities across multiple product lines and markets. It also offers expertise in managing MedTech-specific pain points from the experience of developing a platform specific to the industry's unique challenges.

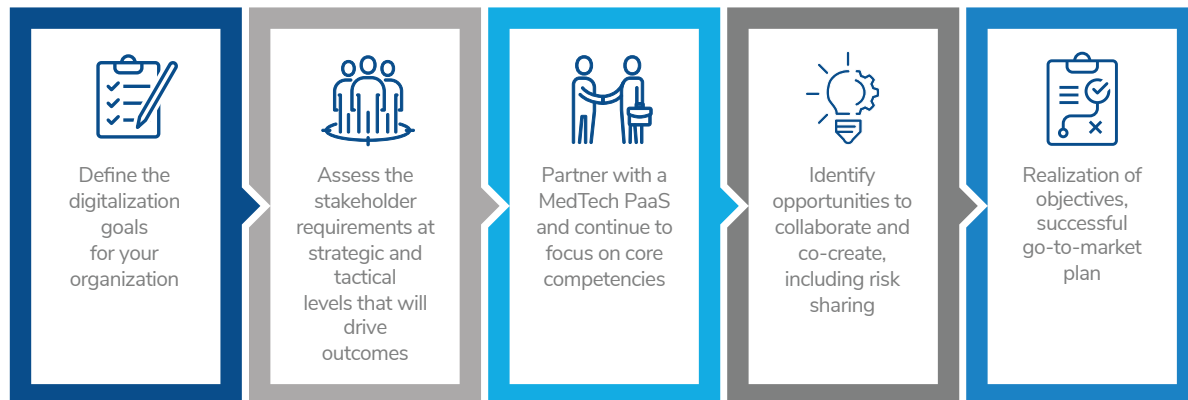**teamplay differentiates itself from other platforms through the following key attributes:**

- teamplay is a **mature** and **proven platform** supported by Siemens Healthineers' **vertical expertise** in imaging, infrastructure availability and customer base. It is the backbone to its **connectivity** and **data access** capabilities.

- The platform benefits from Siemens Healthineers' **tried and tested approach** to move into **adjacent markets** by leveraging the use cases from imaging as templates for technology advancement.

- teamplay platform's **breadth of health data availability** provides access to healthcare data generated from a wide variety of data sources. teamplay platform understands the pulse of actual hospital-generated data that can be used to drive digital transformation efforts and for performance evaluation of products that enable research and development and product value enhancement.

- With artificial intelligence and machine learning disrupting healthcare, Siemens Healthineers is currently best positioned to enable MedTech companies to access and aggregate specific datasets in a bid to be future-ready.

- Siemens Healthineers' expertise in global markets in the areas of **compliance** and **regulation** adds value to the platform, as data privacy while handling personal healthcare information is of paramount concern.

> " A platform model allows MedTech companies to leverage scale effects without having to do it themselves. Partnering with a MedTech leader like Siemens Healthineers is important because of its investment and commitment to advancing the platform strategy to continuously expand capabilities to include multidisciplinary use cases. Siemens has a long-term vision for teamplay digital health platform by offering not only a robust platform but also value-add services that make it a dependable and reliable partner."
>
> *— Dr. Thomas Hummel, Head of Strategy and Innovation at Siemens Healthineers*

Last Word: Key Ways for MedTech Companies to Benefit from teamplay digital health platform

MedTech companies must choose a partner whose vision, breadth and service align with overall digital transformation efforts. Partnering with an established MedTech platform services provider enables access to a compliant, secure, tried and tested platform and acts as a technology accelerator. By joining forces and leveraging network effects, the partnership offers the potential to focus on core competencies while collaborating to explore new and adjacent opportunities.

Define the digitalization goals for your organization	Assess the stakeholder requirements at strategic and tactical levels that will drive outcomes	Partner with a MedTech PaaS and continue to focus on core competencies	Identify opportunities to collaborate and co-create, including risk sharing	Realization of objectives, successful go-to-market plan

teamplay digital health platform offers the following key benefits:

- ☑ **Ability to connect and integrate data from various sources across departments and institutions on a vendor-, system- and device-neutral platform.**

- ☑ **Offers scalable deployment models with hybrid computing, combining cloud and on-edge deployment to serve specific use cases.**

- ☑ **Provides access to innovations and solutions in AI and digital health from Siemens Healthineers and curated partner network, and allows collaboration with peers and partners, enabling risk-sharing models.**

- ☑ **Opportunity to deploy and operate applications and algorithms globally by leveraging the platform infrastructure in a secured environment.**

Most importantly, by partnering with Siemens Healthineers, MedTech companies will have the opportunity to partner with a platform that is **continuously being invested in and ensures clinical credibility and business relevance**.

> **"** Our vision for teamplay digital health platform is to be the first choice for MedTech and pharma companies looking for industry-specific digital infrastructure to accelerate their digital transformation journeys."
>
> —*Manish Marotkar, Head - Platform as a Service Business, Siemens Healthineers*

NEXT STEPS

> Schedule a meeting with our global team to experience our thought leadership and to integrate your ideas, opportunities and challenges into the discussion.

> Interested in learning more about the topics covered in this white paper? Call us at 877.GoFrost and reference the paper you're interested in. We'll have an analyst get in touch with you.

> Visit our Digital Transformation web page.

> Attend one of our Growth Innovation & Leadership (GIL) events to unearth hidden growth opportunities.

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