Teamplay Cloud Platform Brings Health Data Out of the Dark

Healthcare is one of the fastest-growing segments in the "Digital Universe." IDC analysts put it like this: In 2013, if the entirety of healthcare data were stored in a pile of iPads, that stack would be nearly 5,500 miles high—reaching 3 percent of the way to the moon.

By 2020 that stack of tablets would be more than 82,000 miles high—now more than a third of the way to the moon. That's a 48 percent annual growth rate.
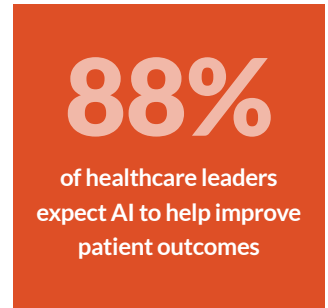
A significant source of this data comes from the expansion of the Internet of Medical Things (IoMT). Today there are more than 500,000 types of connected medical devices—from imaging equipment and point-of-care (POC) analyzers to implants and wearables—that deliver data to independent healthcare databases and networks.

But the ability to analyze this data has not grown at the same rate, creating a crucial information gap. Although healthcare providers now have a wealth of medical data at their fingertips, they face major challenges in aggregating it and drawing meaningful insights.

This data is often siloed in different systems, subject to regulatory and legal requirements, and delivered in a variety of formats, making it difficult to manage and search—and thus analyze. For these reasons, 80 percent is considered "dark data."

Medical researchers, providers, and hospital operations are looking to advanced analytics for insights into improving workflow efficiencies and reducing costs. A recent survey of healthcare leaders shows that 37 percent already use AI and 88 percent expect it will improve patient care.

These challenges and opportunities are driving the need to move both data and applications from on-premises—where it's costly to store, share, and analyze—to cloud-based systems and services.

88%

of healthcare leaders expect AI to help improve patient outcomes

How a Healthcare Platform Can Improve Patient Outcomes

These trends prompted Siemens Healthineers to build a new kind of data infrastructure in the cloud. Its teamplay cloud platform is designed to connect healthcare providers to applications, aggregated data, and AI tools.

"This creates a solution rich with hospital and health data, backed by data scientists, AI application developers, and researchers," said Jeffrey Schaefer, Senior Manager of Strategic Alliances and Partnerships for Siemens Healthineers.

Today the platform comprises more than 4,000 connections—in hospitals and imaging centers, for example—and 19 solution partners. And these numbers are growing every day.

It provides an open and secured environment to share, access, and analyze data—fostering innovation and collaboration across the healthcare continuum. The platform serves a wide spectrum of clinical, operational, and financial needs, and is evolving with new applications built by Siemens Healthineers developer partners.

"Together, we have a single goal in mind—to improve patient outcomes and reduce costs by leveraging data and intelligence in innovative ways," said Schaefer.

Data Aggregation and Insights

Ranging from X-RAY, CT, MR, and PET scanners, data is aggregated in the cloud. This shared platform enables healthcare providers to exchange information with peers and analyze that data with applications from Siemens Healthineers and third-party solution partners.

The apps are accessible through a digital marketplace—helping institutions select offerings for either cloud or on-premises deployment as shown in **Figure 1**.

Collect healthcare data and run near real time analytics at the edge intel

Interventional angiography
Computed tomography
Magnetic resonance imaging
In-vitro / in-vivo diagnostics
Molecular imaging

Surgery
Urology
Mammography
X-ray imaging
And more...

Store big data, enable AI and machine learning, and share globally in the cloud intel

Digital Ecosystem platform

Apps from Siemens Healthineers & Partners
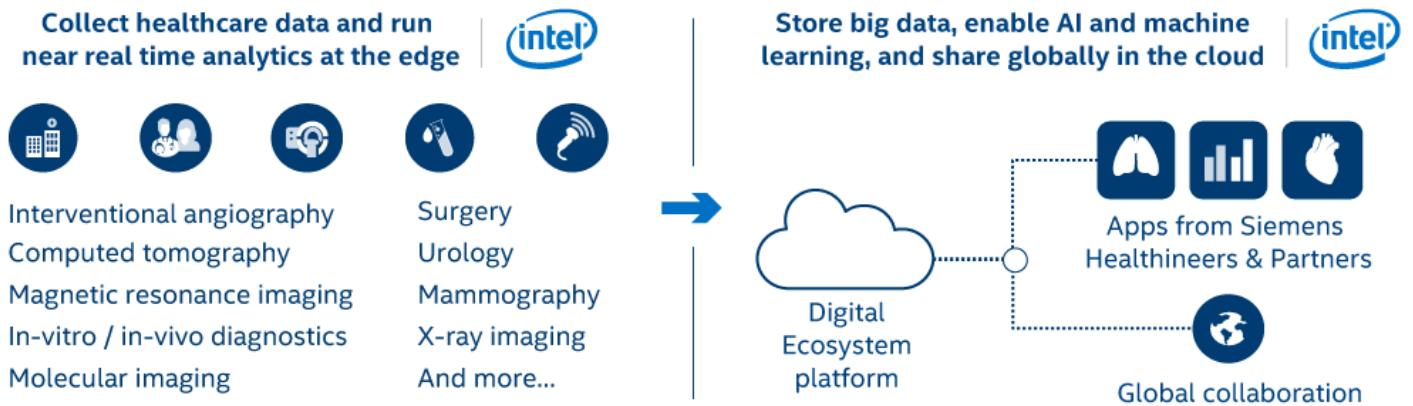
Global collaboration

Figure 1. Patient and hospital operational data aggregate into the platform for intelligence and insight that leads to better patient outcomes.

AMRA Medical is an international digital health company headquartered in Sweden and is a Siemens Healthineers partner. The company has developed the ability to acquire whole-body images from a rapid MRI scan, as well as a solution for automated image analysis. Multiple biomarkers are measured from a single scan, allowing for a simple, standardized, and patient-friendly approach to understanding complex disease pathways.

Through the teamplay cloud platform, researchers now have access to a range of individualized body composition measurements to support data observations and stimulate new hypotheses. The precision of the technology also allows researchers to better characterize patients at baseline and monitor interventional effects

Given the market-leading position in Diagnostic Imaging, much of the clinical data that feeds the teamplay cloud platform comes from Siemens Healthineers medical equipment, such as the company's imaging systems. But the platform is vendor agnostic and processes data from similar systems as well.

Powered by Intel®, Siemens Healthineers end devices may soon be capable of running AI applications directly on the device. This enables analytics at the edge and in the cloud to power AI and deep learning tools. Delivering such capabilities at the point of care can accelerate diagnoses by clinicians and treatment pathways, leading to better patient care.

The platform key capabilities enable healthcare teams to:

- Aggregate data from one of the largest sets of imaging health data

- Facilitate a wide range of reporting and analytics capabilities

- Allow secured processing of data

- Support flexible IT spending through subscription-based offerings

- Simplify procurement processes through a harmonized and managed IT infrastructure

- Evolve seamlessly with an open API structure

- Monitor performance and manage maintenance across a fleet of imaging devices

Big Data and Real-Time Analytics Depend on Powerful Technology

Processing massive data sets such as MRI scans requires high-performance computational capability. And efficiently moving that data requires fast compression, communications, and decompression.

Siemens Healthineers' teamplay cloud infrastructure uses data center-grade servers built on Intel® Xeon® scalable processors. With this family of processors, Siemens Healthineers and its solution partners can deliver the performance needed for demanding applications, security encryption/decryption, and fast communications compression/decompression.

In the end, Siemens Healthineers' teamplay cloud platform provides the foundation to build and deliver solutions to optimize business and patient outcomes **(Figure 2)**.

Improving patient experience by delivering outcomes that matter to patients

Expanding precision medicine by reducing unwarranted variations

Transforming care delivery by optimizing clinical operations

Figure 2. Siemens Healthineers' teamplay cloud platform is part of the overall digitalization strategy of Siemens Healthineers, bringing innovation to medicine, better care to patients, and insights to healthcare providers.

"We're focused on delivering results that center around improving patient outcomes, reducing operational costs, and, of course, increasing provider satisfaction. If doctors don't have the right data and the right tools at the right time, they simply can't provide great care," stated Schaefer.

Just the Beginning

Siemens Healthineers' teamplay platform serves a wide spectrum of clinical, operational, and research needs. As technology advances and AI moves from development to mainstream, it will continue to evolve with new members and applications. It provides an open and secured environment for digitalizing healthcare, fostering innovation, and collaboration across the healthcare continuum.

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