A PRESCRIPTION TO FACILITATE DIGITAL TRANSFORMATION

FOR HEALTHCARE ORGANIZATIONS

US SIGNAL®

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HEALTHCARE IT: STUCK IN THE MIDDLE

It's a contradiction of sorts.

Amazing things are happening in the world of healthcare, powered by advanced technologies.

Brain-to-computer interfaces are showing promise in helping people with paralysis recover lost motor control. Bioengineers have cleared a major hurdle on the path to 3D printing replacement organs.

At the same time, healthcare IT is struggling.

Some of it stems from the pandemic, which has stressed human and technology resources alike. There are the usual budget issues, talent shortages, and competing priorities. There's also the matter of healthcare information — its privacy, security, accuracy, and flow.

Digital transformation (DX) plays a role as well — in terms of creating challenges for healthcare IT and helping to solve them. That's the focus of this eBook.

CHANGE IS UNDERWAY

Ready or not, the healthcare industry has had to embrace digital transformation (DX). The pandemic made sure of that by pushing patients, providers and payers onto virtual platforms almost overnight — platforms that IT has been responsible for implementing on top of everything else on their to-do lists.

It's also because that's what consumers want. Increasingly, patients expect healthcare services to be delivered similarly to those they get from financial services, retail, and other industries — on-demand, virtual if possible, and tailored to their preferences.

In addition, there's pressure from payors. Insurers are driving a shift to valuable-based care (VBC), forcing providers to focus on positive patient outcomes rather than the number of services given. Digital tools, like AI-enabled analytics, are essential because they can help optimize care without compromising costs.

Yet another driver — competition and not just from other providers and payors. The Big Four tech companies — Alphabet, Amazon, Apple, and Microsoft — are accelerating their pursuit of the healthcare market with consumer-first, tech-focused approaches.

According to a *Forrester report* measuring healthcare satisfaction, website and mobile app experiences were more important to consumers than premiums, rates and fees.

ACCELERATED DX IS MANDATORY

In some ways, adopting the latest and greatest technologies in the healthcare industry can even be considered a matter of life and death. Afterall, many of the new and in-the-works innovations have the potential to save lives or, at the very least, improve patient outcomes. Case in point: AI is helping to rapidly detect sepsis, a leading cause of hospitalization and death worldwide, and facilitate early intervention.

Digital technologies can also improve operational decision-making, which in turn can enhance the quality and efficiency of care and patients' access to it. For example, they can:

+ Lower the rate of medication errors. Software can flag inconsistencies between a patient's health and drug prescriptions, alerting health professionals to potential medication errors.

+ Enhance patient flow. Data-driven insights can aid in making triage, admission, and discharge decisions, facilitating the provision of the right care to the right patient at the right time.

+ Optimize staffing and scheduling. AI can help predict resource needs and provide recommendations for optimal staffing levels and for scheduling procedures in operating rooms and radiology suites.

+ Enhance supply chain management. Internet-connected trackers can locate supplies in real time, while automated processes can reduce supply chain and inventory management-related costs.

ACCORDING TO *GARTNER*, BY 2025:

+ As part of the hospital at home trend, 40% of healthcare providers will shift 20% of hospital beds to patients' homes through digitally enabled hospital-at-home services, improving patient experience and outcomes and reducing the cost of care.

+ A digital commerce platform and marketplace for healthcare services will connect 20% of all consumers, payers and providers, enabling these groups to search for, access or deliver healthcare on demand, bypassing hospitals, clinics, and offices.

IT IS BUSY

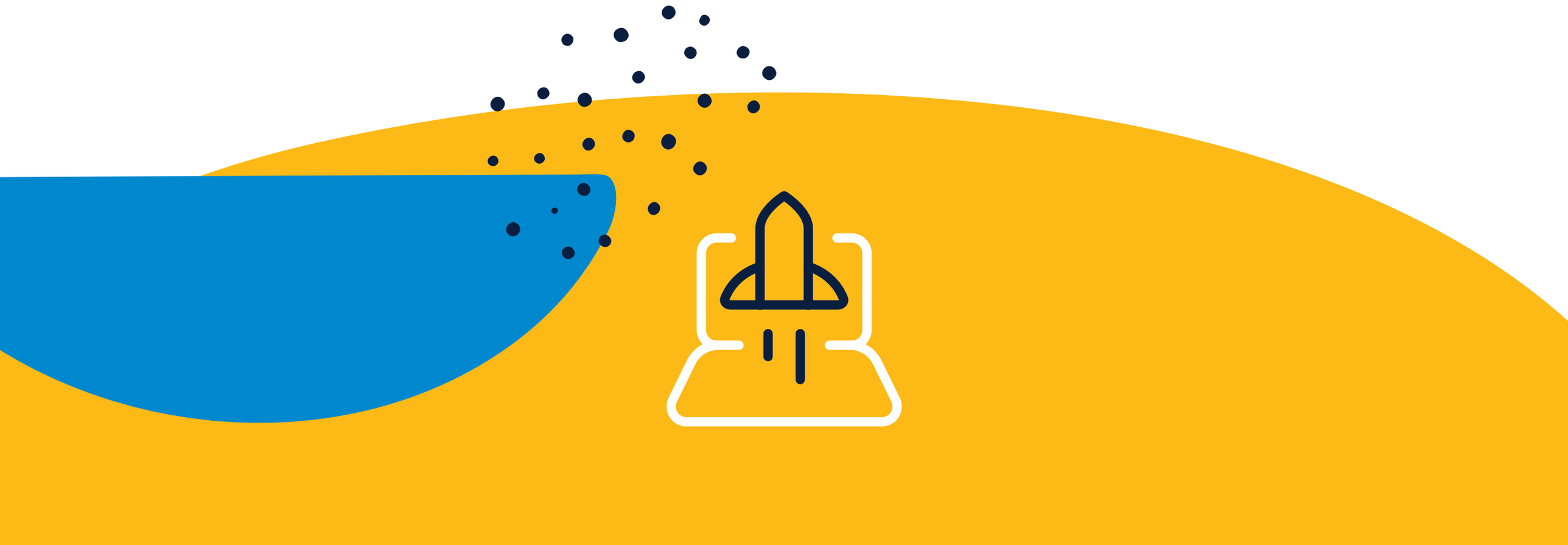
Regardless of the need or level of support for DX in the healthcare industry, someone has to do the actual work. Much of it falls to IT, and IT staffs typically don't have a lot of — make that any — free time.

They're already busy installing or upgrading and maintaining systems to collect, store, process, and analyze Big Data, as well as support telehealth applications. They're dealing with "Band-Aid repairs" and workarounds for fixing legacy solutions.

They're rolling out new software programs and mobile applications, upgrading existing ones, and providing training. On top of all that are the complexities that come with the consolidation trend in healthcare as institutions merge or are acquired. Disparate IT systems seldom integrate easily.

There's the constant battle against cyberthreats, and the need to meet regulatory requirements. Healthcare IT departments are also subject to many of the same pressures as their counterparts in other organizations: shrinking budgets and difficulty in hiring and retaining qualified staff.

Something has to give — or priorities changed or resources added. One solution is cloud services, which can ease the burden on healthcare IT departments while moving DX initiatives forward.



TAKE HEALTHCARE TO THE CLOUD

Robotic exoskeletons that help the paralyzed walk again. Biosensing contact lenses that detect glucose levels in patients with diabetes. Smartphone apps that allow users to take a selfie in order to screen themselves for a range of diseases. It's exciting stuff, and the cloud is behind much of it.

The cloud is providing the flexibility, scalability and high-performance computing power to support new digital healthcare services and solutions such as mobile health, smart connected health devices and AI-powered diagnostics. It's helping to accelerate medical and clinical research efforts. It's powering systems that can gather, process and store patient data — and help secure its privacy.

It's also facilitating innovation. With the cloud, users can start small and experiment. If the project works, it's easy to quickly increase storage, computational resources, and users, and even scale across geographies. If the project doesn't work, it can simply be shut down. There's no commitment to a long-term capital expense.

Just as important, the cloud is enabling organizations in the healthcare industry to convert capital expenses to operational expenses and reduce the labor and costs required for on-premises data centers. The result: internal IT resources, including staff, are freed up and can be focused on more strategic initiatives like DX and innovation.

LITTLE THINGS WITH BIG IMPACT

The tangible benefits of the cloud aren't headline grabbing like stories about 3D prosthetics or bionic eyes. Nonetheless, they are compelling enough for many healthcare organizations to take notice.

Here are just a few of the benefits the cloud offers:

Cost Savings
Capital expenditures are slashed because the cloud services provider (CSP) is responsible for purchasing and maintaining the infrastructure. Scalable cloud resources, paid for as operating expenses, can be used when and as needed.

Efficient Patient Scheduling
Cloud-based software enables those who schedule patient appointments to easily view provider enrollment status. That reduces enrollment issues, resulting in less patient wait time and greater patient satisfaction.

ER Triage
Cloud-powered telemedicine services enable ER patients to first be seen by a remote medical professional who, with the help of on-site nurses, can order tests or prescribe medications. This helps reduce long wait times and better prioritize urgent care.

Communication and Access
Cloud services enable anytime, anywhere access to applications and data. They also enable connections to a larger ecosystem of providers, payers, researchers, and others, facilitating greater collaboration.

Staffing
AI, robotics, IoT devices, and other cloud-powered technologies may help close skills and labor gaps for specific healthcare use cases.

Interoperability
Interoperability, powered by cloud solutions, makes patients' data available for easy distribution and for generating insights to aid healthcare delivery.

SAFER IN THE CLOUD

The nature of the data it deals with — patient records, Social Security numbers credit card details, and so on — makes the healthcare industry a prime target for cybercriminals. It doesn't help that healthcare organizations often have broad attack surfaces, given that they make use of a large variety of equipment, devices, and mobile applications.

This is another area where the can cloud can help. Reputable cloud services providers (CSPs) invest in top-of-the line security technologies and highly trained security professionals. Many also offer single-tenant private clouds, eliminating the worries associated with the multi-tenant variety.

The best among the CSPs that cater to the healthcare sector employ security best practices, such as depth-in-defense and zero-trust strategies. They conduct vulnerability and physical testing to ensure the integrity and security of their services. They also undergo annual audits for HIPAA compliance and will sign a Business Associate Agreement (BAA).

While IT security is a shared responsibility between healthcare organizations and their CSPs, the CSPs are the ones staying on top of the latest threats and vulnerabilities. They're also responsible for protecting the infrastructure that powers their solutions, including the compute, storage, and network subsystems, and the software (virtualization) layer.

CLOUD-POWERED DR

It's not enough for organizations in the healthcare industry to ensure the security and privacy of their data. They must be able to recover it — and for most, never lose access to it. Failure could result in severe financial penalties and, worse-case scenario, impact lives. Disaster recovery is also a compliance requirement.

According to the ***HIPAA Security Rule***, organizations classified as covered entities are required to establish and implement, as needed, policies and procedures for responding to any situation that could damage IT systems that contain electronic protected health information (ePHI). The same requirement applies to business associates as noted in the HIPAA Omnibus Rule.

Here, again, the cloud offers solutions — specifically Disaster Recovery as a Service (DRaaS). The CSP charges a recurring fee for replicating and hosting a healthcare organization's physical or virtual servers and providing failover to the cloud environment hosted by the provider if a disaster occurs. By employing true continuous data protection, a DRaaS solution can offer an RPO of a few seconds. Applications can be recovered instantly and automatically.

DRaaS — at least as offered by the better CSPs — includes proactive monitoring and handling of threats, and DR best practices that many healthcare organizations don't have the time or expertise to handle. Because DRaaS solutions are managed by CSPs, a healthcare organization's internal IT resources are freed up for other initiatives.

HEALTHCARE DATA STORAGE

By 2025, the healthcare industry will generate ***30% of the world's data volume***. Much of it will be unstructured data courtesy of technologies such as Internet of Things devices.

It's hard enough storing unprecedented amounts of data, much less doing so economically. Complicating matters is the fact that healthcare organizations must adhere to stringent regulatory requirements regarding data privacy, security, retention and access.

Cloud storage addresses the issues without requiring hardware or software purchases. Object storage, in particular, is ideal.

The HIPAA Privacy Rule requires covered entities, which includes most healthcare organizations, to apply appropriate safeguards to protect the privacy of protected health information (PHI). Object storage helps on the storage side by providing built-in security, resilient replication, and erasure coding.

Many state laws require healthcare-related data to be retained for years, yet be secure, searchable and accessible. The information typically doesn't require low latency or high performance, but does need durability to resist disk, node or site failures, and bit rot. That's what object storage provides.

In addition, healthcare information often includes large size files or data sets, such as X-rays and electronic health records. Object storage has native support for large data sets, and near-infinite scaling capabilities. It's also extremely cost-effective, a big plus for budget-conscious healthcare organizations. Many vendors offer it with "pay-only-for-what-you-use pricing.

COLOCATION AND THE EDGE

The cloud isn't the only infrastructure option that can ease the burden on healthcare IT staffs and support DX. Colocation in third-party data centers can as well.

Like the cloud, colocation employs predictable OpEx. It enables healthcare organizations to phase out of the data center business, while still maintaining control of their IT assets. Plus, many colocation facilities offer multiple high-quality networking options and a more robust power-per-square foot ratio than is typically available in on-premises data centers — an important consideration for powering advanced technologies.

Edge data centers, in particular, can play an important role in DX. They put computation and data storage physically close to where the data integral to advanced technologies is generated and used, as is the case with wearable sensors that record patients' health information in their own homes.

This optimizes network data traffic, increasing data transmission efficiency. At the same time, it reduces the size of the attack surface, improving security. It also yields increased bandwidth, which is more important than ever to accommodate increasing volumes of telehealth visits and clinical collaboration.

In addition, the capabilities of edge data centers can improve the delivery of various medical services. For instance, robotic surgeries depend on ultra-low latency computing and uninterrupted network access, which edge data centers supply. Edge data center services also lend themselves to drone deliveries of necessary medical resources, as well as lab samples.

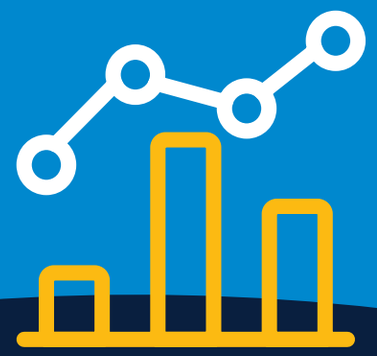
THE BENEFITS OF OUTSOURCING IT

The overwhelming number of challenges facing IT professionals in the healthcare industry makes a strong case for outsourcing, whether it's cloud services, colocation or managed services such as patch management or remote monitoring.

Routine IT maintenance tasks can be offloaded to a third-party vendor can free up valuable IT staff time to devote to more strategic initiatives. After all, it's hard for IT to focus on implementing DX projects when they're busy trying to roll out bug fixes.

Complex endeavors, like cloud migrations and DR, can also take up less IT resources if they're handled by a CSP with extensive experience with that type of project. They know what works and what doesn't work. CSPs have access to the latest technologies and experience using proven best practices. By having them take on a migration or DR project, a healthcare organization's IT staff can save time and money and be in a better position to realize positive outcomes.

One other big benefit from working with a CSP. Many have an array of products and services that can simplify business operations and other tasks, enhance IT security, optimize performance and more — and do so cost effectively.



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THE US SIGNAL ADVANTAGE

US Signal understands the IT needs of the healthcare industry and offers strategies and solutions to meet even the most complex of them. Our industry experience, ability to customize IT solutions, and our investment in HIPAA-compliant, audited IT infrastructure are among the factors that uniquely position us to help IT professionals develop, implement, and manage technology solutions that support and enable DX in the healthcare industry.

Learn what we can do for you.

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