



Embracing Digital Transformation in Life Sciences Organizations

An enhanced patient/provider experience, accelerated innovation and increased operational agility are a few of the many potential benefits

Healthcare organizations – including the life sciences industry and other pharmaceutical, medical device and medtech organizations – have often been behind the curve when it comes to digital transformation. Industries such as finance, banking and retail have made significant advances in deploying technologies such as artificial intelligence (AI) and high-performance computing (HPC), while healthcare has lagged behind.

However, that is beginning to change. “While healthcare is still in the early stages of its AI journey, we are seeing pharmaceutical and other life sciences organizations making major investments in AI and related technologies,” said Tom Lawry, National Director for AI, Health and Life Sciences, Microsoft.

Lawry identifies three factors driving the increased interest in advanced technologies within pharmaceutical companies and life sciences:

- 1. Data is growing at an exponential rate, leading to a renewed focus on real-world evidence.** “When we look at the velocity of new data being created and diversity of data types, traditional ways of managing data simply can’t keep up,” he said.
- 2. Cloud capabilities are increasing the needs for predictive analytics in research and development.** “The cloud is no longer just a place to store data. With the intelligent cloud, organizations can do all kinds of interesting things with all types of data that were previously impossible or very difficult and expensive to do,” he said.
- 3. AI capabilities have moved out of the lab and into industry.** “AI capabilities for the real world are growing and deepening on an ongoing basis,” said Lawry. “Only a few years ago certain AI capabilities were possible but were not things that could be deployed on a repeatable basis at scale. We’ve reached a point where we have robust capabilities that can be deployed with agility and at scale in everyday practices in pharmaceutical and life science organizations.”



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As pharmaceutical and other life sciences organizations invest in and deploy advanced technologies, they are beginning to see benefits in diverse areas across their organizations. Companies are looking to incorporate automation and continuing smart factory investments to reduce costs in drug discovery, research and development, and manufacturing and supply chain management. Many life sciences organizations are also choosing to stay with more virtual approaches in the “new normal” – particularly in clinical trials and sales and marketing areas.

Enhancing the patient and provider experience

Clinical trial sponsors are continually seeking to make clinical trials faster and to improve the experience for patients and physicians. The COVID-19 pandemic has accelerated the adoption of decentralized clinical trials, with an increase in trial activities conducted remotely and in participants’ homes. In a [McKinsey survey](#),¹ up to 98 percent of patients reported satisfaction with telemedicine. In the same report, 72 percent of physicians surveyed reported similar or better experiences with remote engagement compared with in-person visits.

The shift of trial activities closer to patients has been enabled by a myriad of evolving technologies and services (e.g., electronic consent, telehealth and remote patient monitoring). The aim to use technology to improve the patient experience and convenience has also broadened trial access to reach a broader, more diverse patient population.

“It’s an interesting and exciting time right now,” said Keren Priyadarshini, Regional Business Lead – Asia, Worldwide Health, Microsoft. “It used to be that physicians were key. Now, suddenly, patients are feeling empowered by technology. Pharmaceutical companies and other life sciences companies are realizing they have to pay attention to the patient experience in addition to the physician experience.”

Enhanced patient experiences can be delivered in many different ways. One example of a life sciences product that leverages the intelligent cloud to directly affect the patient experience is the Tandem® Diabetes Care insulin pump. The Tandem® t:slim X2 insulin pump with Basal-IQ technology enables patients with Type 1 diabetes to predict and prevent the low levels of blood sugar that cause hypoglycemia.² The algorithm-driven, software-updatable pump improves the patient experience by automating chronic disease management and eliminating the need for constant finger pricks to check glucose levels.

Tandem was able to create and deploy this innovation by leveraging the AI and machine learning capabilities of the intelligent cloud. As AI and other technologies continue to advance, potential use cases will multiply. “Speed to value is going to continue to accelerate,” said Lawry.

In addition to enhancing the patient experience, pharmaceutical and other life sciences companies can leverage advanced technologies to improve relationships with providers. For example, COVID-19 is driving changes in the way companies interact with clinicians. Prior to COVID-19, 75 percent of physicians preferred in-person sales visits from medtech reps; likewise, 77 percent of physicians preferred in-person sales visits from pharma reps.³

Since the advent of COVID-19, however, physician preferences are moving toward virtual visits. Only 53 percent of physicians now express a preference for in-person visits from medtech reps and only 40 percent prefer in-person visits from pharma reps.⁴ That puts the onus on pharmaceutical and life sciences organizations to deliver valuable and engaging virtual visits to providers.

One way to do that is to leverage text analytics capabilities to enhance the provider information stored in the organization’s customer relationship management (CRM) system. For example, a rep setting up a visit with ‘Dr. X’ could run text analytics on publicly available resources on the web to identify on which specific topics Dr. X has been writing about and commenting. “All kinds of publicly available information can



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Accelerating research and development innovation

Advanced digital technology is also essential for accelerating the research and development (R&D) that is critical to the success of life sciences organizations. “Innovation is the lifeblood of life sciences,” said Priyadarshini. “If a pharmaceutical company doesn’t have new drugs in the pipeline, the business is going to fail.”

The deployment of advanced technologies such as the intelligent cloud, high-performance computing, machine learning and AI can accelerate innovation by increasing the efficiency of the process, reducing costs and reducing the amount of time it takes to get a product to market. For example, recruiting the right number of eligible participants for clinical trials can be time-consuming, inefficient and expensive.⁵ Now, with clinical trials-matching technology, which leverages natural language processing (NLP) tools, it is possible to match patient health records with clinical trial eligibility criteria efficiently and to scale.⁶

In addition to identifying appropriate candidates for clinical trials, digital tools can also make it possible for companies to conduct virtual or decentralized clinical trials. “Participants don’t have to show up to a particular location to participate,” explained Lawry. “They can use things like internet of things [IoT], monitoring devices and self-reporting. This dramatically improves the ability of organizations to get clinical trials going. In addition, digital clinical trials improve the likelihood of recruiting a diverse population that better represents the full population.”

By leveraging advanced technologies, organizations can also reduce costs. “One study estimated that operationalizing AI platforms across drug discovery and development workflows would result in improved productivity and cost efficiencies that would save more than 5 percent of what is currently being

spent to do those things,” said Lawry. “When you think about the billions of dollars being spent to do those things now, that’s pretty powerful.”

Increasing operational agility through resilient supply chains and intelligent manufacturing

The healthcare ecosystem is dynamic. For pharmaceutical and life sciences organizations to succeed in this everchanging environment, they must prioritize operational agility. Digital transformation is helping pharmaceutical and life sciences organizations increase their operational agility by enabling faster trial enrollment and faster time to market. Digital transformation also enhances operational agility by supporting resilient and intelligent manufacturing and supply chain processes.

The rapid changes in treatments, protocols and healthcare delivery that emerged during the COVID-19 pandemic brought the importance of operational agility to the forefront. The COVID-19 vaccine supply chain, for example, presented many challenges. One of the critical challenges for vaccine delivery was the ability to maintain the “cold chain” required to keep the vaccines viable. *Cold chain* refers to the infrastructure required to move temperature-sensitive vaccines from the site of production to the patient.⁸

The problem of maintaining – and documenting – the cold chain is where track-and-trace technology comes in. Supply chain track-and-trace technology involves IoT-enabled monitoring of assets (such as pharmaceuticals) as they move along a multi-party supply chain.⁹ IoT devices can be configured to record compliance conditions, such as a temperature range, and can document and notify the originator when a recording is out of range. Track-and-trace technology thus enables organizations to monitor supply chain conditions for products that require special handling.

In another example, when the pandemic struck, Medlab was able to transition many personnel to remote work using cloud computing. However, to support its specialized laboratory operations, it needed the additional capability of Microsoft Dynamics 365 Remote Assist on HoloLens 2 to improve time to market and ensure critical business continuity.¹⁰

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Advanced technologies are the future of pharmaceutical and life sciences organizations

Technologies such as the intelligent cloud, machine learning, AI, HPC and others are key to the future of pharmaceutical and life sciences organizations. The adoption of these technologies can help pharmaceutical and life sciences professionals address many of the critical challenges that impact their daily work.

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reduce costs?’” said Priyadarshini. “Digital transformation and the adoption of advanced technologies hold the answers to these challenges.”

To learn more about how pharmaceutical and life sciences organizations can benefit from digital transformation, visit microsoft.com/healthcare.

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