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POST-DIGITAL TECHNOLOGIES FOR NEXT-GENERATION PATIENT CARE

Life Sciences Technology Vision 2019

Accenture Life Sciences
Patient Inspired. Outcomes Driven.

SAY GOODBYE TO THE DIGITAL PAST

Many life sciences organizations have started experimenting with digital technologies to meet the needs and expectations of patients, employees and business partners.

In fact, 82 percent of industry executives agree that social media, mobile, analytics and cloud computing (SMAC) are now core components of their organizations' technical foundations.

These technologies are allowing industry players to regulate and treat diseases in new ways. Further, the convergence of New Science and new technologies is accelerating the approval of new medicines.

The acceptance of digital technologies for these and other purposes signals that we are entering a post-digital era. It's an era where:

- Digital capabilities that once set companies apart are now becoming increasingly common.
- New innovations will be powered by new technologies.
- Technology convergence is reshaping core treatments and making approvals and patient access easier and faster.
- The manner in which companies *use* new technologies will serve as catalysts for change.

97%

of life sciences executives agree that their organization's pace of innovation has accelerated due to the impact of SMAC technologies.

SAY HELLO TO THE POST-DIGITAL FUTURE

Some biopharma and medical technology companies are moving headfirst into the post-digital world. They are bringing advances in data, genomics and diagnostics together, as well as new methods, technologies and therapeutics to meet unmet needs and stave off disruptive outside forces.

We see this, for example, in what we call "New Science." New Science combines the best in science and technology —from genomics and biomarkers to companion technologies/diagnostics and delivery methods—to drive growth, improve R&D and clinical outcomes, and transform patient experiences. Voluntis is an example of a company embracing New Science by fulfilling unmet needs with patient-centric health solutions in which technology apps *are* the therapy.

The company's Insulia® solution uses real-time patient health information such as blood glucose readings to recommend the right basal insulin dosage at any point in time.[1] Recently, the company has teamed with AbbVie to bring digital therapeutics to the field of immunology to enhance the coordination of patient care.[2]

NEW SCIENCE NOW

Accenture Research found that New Science is projected to drive 54 percent of industry growth through 2022.[3] New Science:

- Involves a new mechanism, modality, indication or health technology that has been identified by the FDA or other regulatory entity as having met an unmet need, exceeding standard of care.
- Often requires a new technology device or diagnostics for development, or as a companion to treatment.
- Can be the technology alone.

TRENDSETTING

Accenture's 2019 Technology Vision revealed several trends that are collectively paving the way to the future of life sciences. These trends, described in the following pages, include:

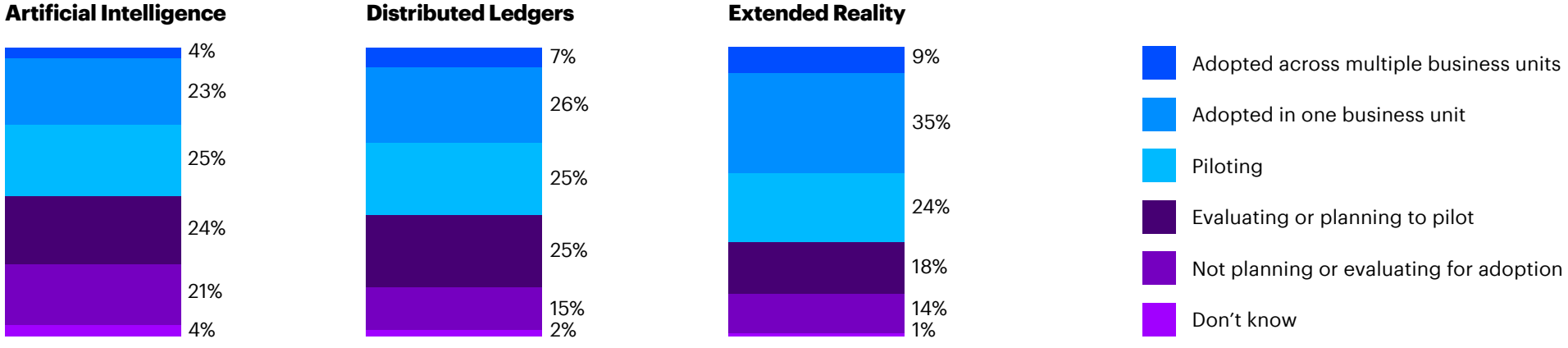
1. DARQ Power
2. MyMarkets
3. Human+ Workers

Adjusting to these trends will pose significant challenges for companies that are not planning for their impact. But for those that are ready, opportunities abound. Leading biopharma and medical technology companies will run toward, not away from, the changing technological and market landscape.

TREND 1: DARQ POWER

> “Future-minded leaders know they will need not only every digital tool in their current arsenal to succeed, they’ll also need new ones. The next set of technologies every company will need to master? Distributed Ledger Technology, Artificial Intelligence, Extended Reality and Quantum Computing.”
>
> Accenture Technology Vision 2019

Life Science adoption of emerging technologies today, by stage:



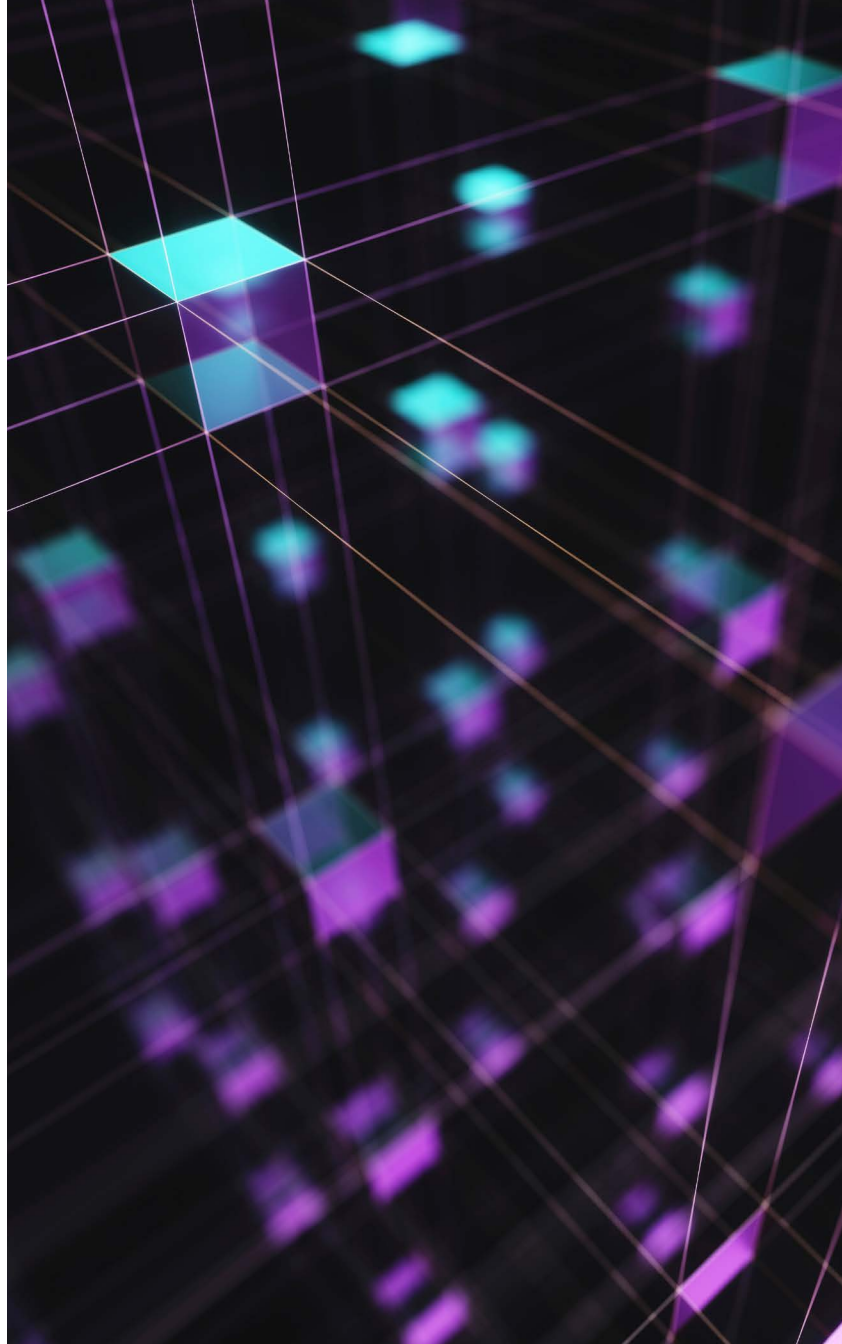
Source: Accenture Technology Vision 2019

Life sciences companies have repeatedly shown their willingness to invest in technologies like data analytics and genomics. While these investments will continue to be important, so will investments in "post-digital" technologies that are poised to change the game—namely **D**istributed Ledgers, **A**I, Extended **R**ealty solutions and **Q**uantum Computing (DARQ). Nearly three-quarters (71 percent) of life sciences executives believe the combination of these technologies will produce extensive or transformational change in their companies over the next three years. One example of how new technologies will transform the industry can be found in the US Food & Drug Administration's Drug Supply Chain Security Act (DSCSA), which calls for the creation of a system for identifying and tracing the distribution of prescription drugs in the United States by 2023.[4] Distributed ledgers will certainly facilitate the traceability and visibility that is required.

A number of biopharma and medical technology companies are beginning to use AI to streamline and optimize their drug discovery and development functions.

AI and machine learning can help teams process massive amounts of genomic, molecular, cellular and patient biology data to not only accelerate the identification of new compounds, treatments, biological targets, pathways and clinical trial participants, but also predict a new therapy's efficacy and safety.

Korea's SK biopharmaceuticals, for example, recently signed an agreement with twoXAR to speed the discovery and development of new therapeutics for non-small cell lung cancers. Under terms of the arrangement, twoXAR will apply its AI discovery technology to identify the initial candidate set and SK will then optimize a lead candidate with its internal AI drug design technology.[5]



Other companies are combining AI with cloud computing to test or model thousands of compounds at scale, thereby reducing the cost of drug discovery. Some are considering using distributed ledgers to authenticate and trace ingredients of every drug.

Quantum computing, while not as mature as the other technologies today, is expected to contribute significantly to the evolution of drug discovery and personalized medicine in the coming years.

Already, quantum computing software company 1QBit has released a solution, QEMIST, which allows researchers to accurately calculate and predict molecular structures before they are synthesized in a lab environment.[6] In addition, 1QBit's recent collaboration with Microsoft is expanding the potential of quantum simulation by allowing researchers to leverage open source software to create scalable quantum development environments.[7]

86%

of life sciences companies are experimenting with distributed ledgers, AI, extended reality or quantum computing solutions.

Biopharma and medical technology companies are also using new technologies to bolster their competitive agility—investing strategically in specific capabilities such as AI, machine learning, advanced analytics and big data management to drive growth, trust, and new and better forms of clinical care.

For example, Conversa Health has created a conversation platform that uses AI to automate virtual care services.[8] With its recent acquisition of Interactive Biosoftware, AI-based technology company SOPHiA GENETICS has gained access to software that enables clinical genomic data interpretation. The acquisition is expected to help clinicians better diagnose patients and accelerate the adoption of Data-Driven Medicine.[9]

There are several indications that others will soon follow today's leaders into the post-digital world. For one thing, regulatory agencies are presenting fewer obstacles to the adoption of new technologies and are, in fact, helping companies accelerate their technological evolution.

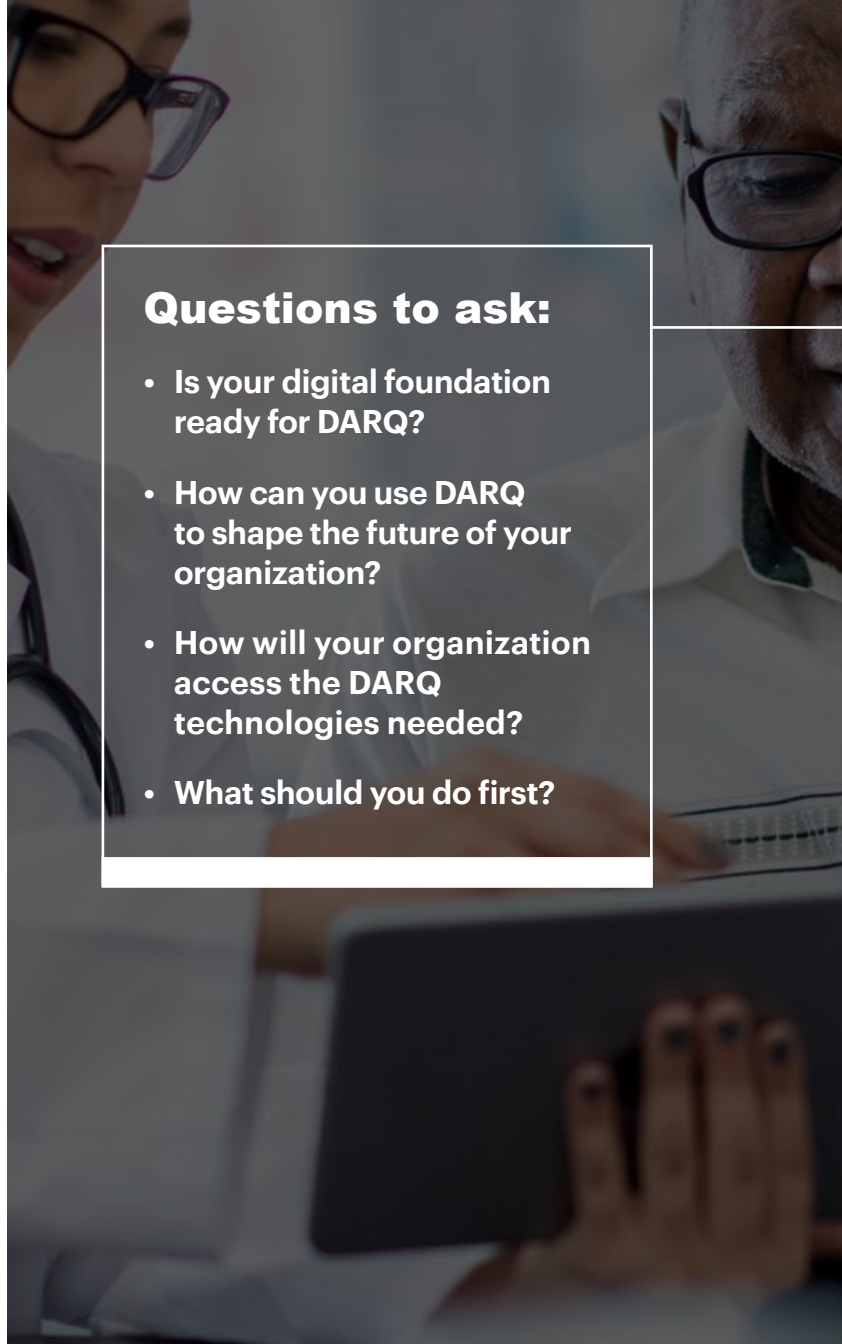
The US Food & Drug Administration (FDA), for example, has developed policies to assist in the development of software-as-a-medical-device solutions. In addition, it has recently proposed a total product lifecycle-based regulatory framework to manage modifications to AI and machine learning-based technologies,[10] and is also asking for volunteer companies to test a new pre-certification process.[11]

Beyond drug discovery and development and clinical care, DARQ technologies are enabling improvements in back-office operations.

Extended reality solutions applied in a lab, within training programs, or even in meetings between medical reps and physicians provide a simulated environment that mimics the real world.

Distributed ledgers can reduce costs and improve efficiencies by enabling data sharing across a common network. McKesson Corporation, AmerisourceBergen Corporation and Premier Inc. recently joined a working group, dubbed MediLedger, with an eye toward using blockchain technologies to automate and accelerate contract reconciliation and chargeback processes.[12]

AI can play a critical role in a number of areas—from marketing and forecasting to predictive maintenance. Amgen is piloting an AI tool to identify patterns in manufacturing deviations that human analysis would never find.[13] Merck KGaA deployed sensors in factories and in warehouses across its supply chain to gain a real-time view of operations. Machine learning techniques, when applied to these operational insights, allowed the company to create more accurate demand models and achieve a 99.9 percent service level to hospitals.[14] Even AI-enabled natural language processing solutions can help. Accenture has found that AI-enabled voice-to-text transcription solutions can improve efficiencies among a nursing staff by more than 50 percent.[15] Similar solutions—and benefits—are available to life sciences companies.



Questions to ask:

- Is your digital foundation ready for DARQ?
- How can you use DARQ to shape the future of your organization?
- How will your organization access the DARQ technologies needed?
- What should you do first?

TECHNOLOGIES ENABLE PATIENT-CENTRIC CLINICAL TRIALS

Mobile technology and clinical trial company Science 37 has developed a "siteless" model that enables patients to take part in clinical trials from the comfort of their homes. Study materials and drugs are shipped to patients, along with an iPhone that enables them to connect with the study team via a customized telemedicine app. Recently, Science 37 worked with AOBiome to assess the safety and efficacy of a new acne medication. The trial confirmed the drug was safe and effective. It also confirmed the value of a truly customer-centric approach to clinical trials. With this technology-enabled approach, Science 37 was able to cut the time typically needed to enroll patients in a study of this scale by 50 percent. It was also able to make study participation available to a broader and much more diverse set of patients. This resulted in a 4-fold increase in minority involvement in this trial.[16]

TREND 2: MYMARKETS

> “As people’s lives become more and more personalized through technology, creating a world with a multiverse of realities and moments, companies must reinvent their organizations to capture those opportunities as they come. That means viewing each moment as if it is an individual market—a momentary market. Miss the moment, and there is no second chance.”
>
> Accenture Technology Vision 2019

In a world where customer demand is communicated instantly and gratification is expected immediately, life sciences companies have the chance to take a leading role in the reshaping of the healthcare industry.

Doing so will require tremendous agility and the ability to integrate customized services and real-time delivery. Businesses must deliver precisely what people want with increasingly specific personalization for the circumstances of the moment.

Digital twins, now used most commonly in manufacturing, may soon help life sciences companies achieve the agility and hyper-relevance they need. Take, for example, Heidelberg University Hospital, which worked with Siemens Healthineers to introduce digital twins to patient care.

In one instance, a cardiologist used a digital model of a patient's heart to test the efficacy of different placements of a pacemaker's electrodes.[17] This is just the beginning of "in-the-moment" personalization in healthcare, where technology can ultimately create whole "living" models of individual patients to evaluate potential outcomes of different treatments.

88%

of life sciences executives agree that integrating customized services and real-time delivery will usher in the next wave of competitive advantage.

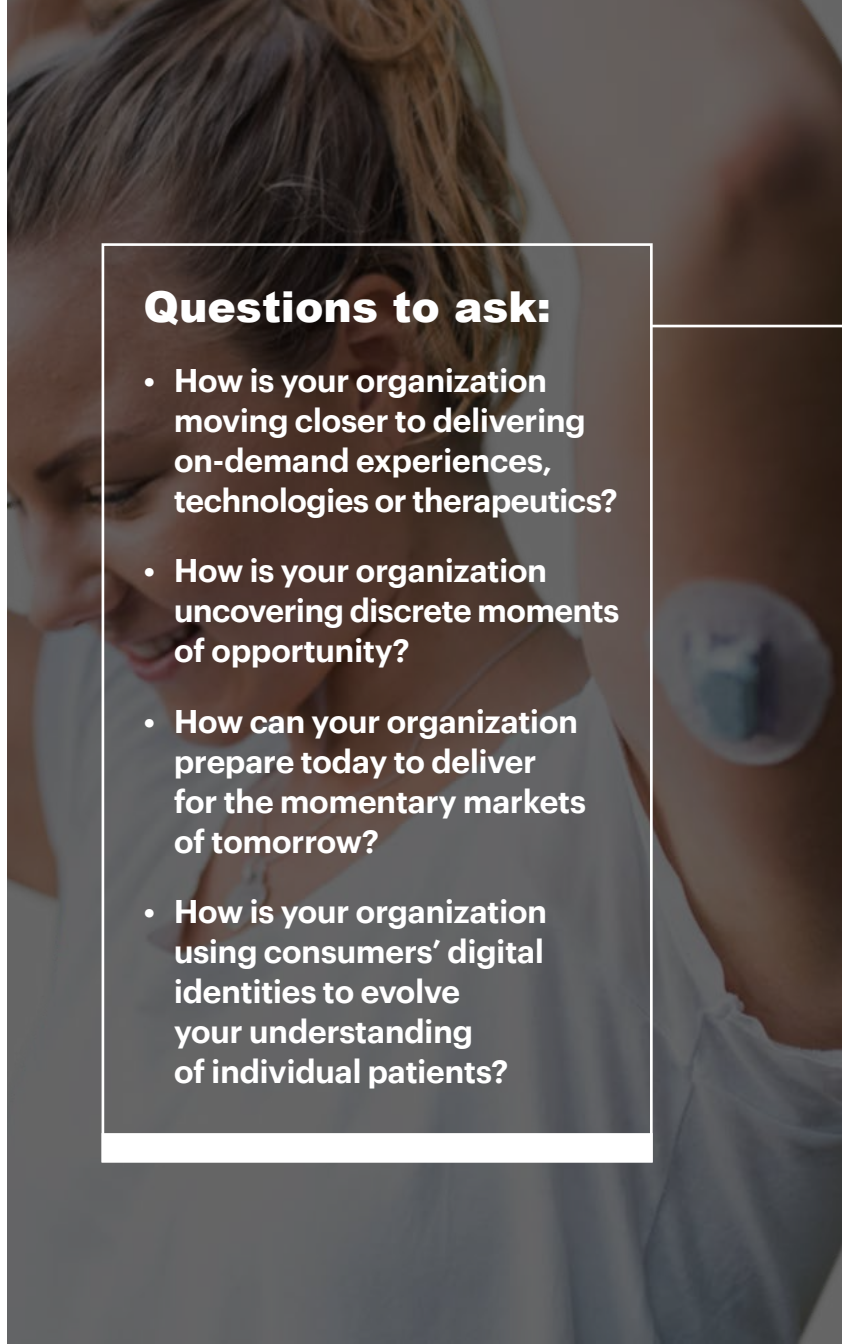
Of course, the successful use of new technologies like digital twins depends on data—and the appropriate use of that data, in accordance with local informed consent laws, such as the EU General Data Protection Regulation (GDPR).

Overcoming data privacy hurdles is critical. The more life sciences companies know about their customers, patient segments or caregiving networks, the better prepared they are to deliver therapies, digital health solutions and policies that improve patient care and help make healthcare more affordable. One drug company, for example, is using AI to scour electronic medical records to find markets for rare diseases.[18]

Understanding how patients use current technologies can provide valuable insights into their usage of future digital health solutions.

The vast majority (84 percent) of life sciences IT and business executives believe digital demographics will give their organizations a new way to identify market opportunities for unmet patient needs. Further, 69 percent believe digital demographics will significantly or extensively expand the number of ways they deliver products and services.

Understanding patients' digital identities will become even more important as digital health tools become more common and more widely accepted. In 2020, Express Scripts will launch the industry's first digital health formulary—a curated list of technology- and software-enabled applications and devices that help patients prevent, manage or treat a variety of conditions, including diabetes and cardiovascular conditions.[19] This formulary will change the game for payers, who will be able to quickly assess a solution's therapeutic value, usability and cost effectiveness. Ultimately, the formulary will also help consumers navigate the growing number of digital health tools, giving them even greater control of their own health and wellbeing.



Questions to ask:

- How is your organization moving closer to delivering on-demand experiences, technologies or therapeutics?
- How is your organization uncovering discrete moments of opportunity?
- How can your organization prepare today to deliver for the momentary markets of tomorrow?
- How is your organization using consumers' digital identities to evolve your understanding of individual patients?

TREND 3: HUMAN+ WORKERS

> “Across industries and organizations, workers are incorporating technology to build on their own inherent skills and experience. The workforce is becoming “human+”: each individual is empowered by their skillsets and knowledge plus a new, constantly growing set of capabilities made possible through technology.”
>
> Accenture Technology Vision 2019

As life sciences companies expand their use of emerging technologies across the value chain, they will improve their ability to respond to momentary opportunities at scale. But only if they empower their workforces to use new technologies in innovative ways.

The move into the DARQ will require new skills and new roles—including oversight roles to ensure that companies are using new technologies in ethical, compliant and appropriate ways. Among the life sciences executives we surveyed, 44 percent believe that technology advancements will require at least 60 percent of their existing workforce to move into new roles in the next three years.

82%

of life sciences executives believe that increased employee velocity has increased the need for reskilling.

Not surprisingly, the technologies that are transforming the industry are the same technologies that will transform the workforce. AI holds particular appeal, with the potential to serve as an important co-worker, collaborator and trusted advisor to workforces across the organization.

In many cases, AI can take the operational burden out of the system so that workers can focus on the things that really matter—delivering solutions that help patients and providers improve health outcomes in more economically viable ways. For example, Ayasdi, a SymphonyAI company, applies machine intelligence to augment clinicians' care-related decision-making. The Ayasdi AI-enabled solution automatically analyzes thousands of patient procedures and electronic medical records to identify the clinical pathways that optimize patient outcomes at the lowest cost.[20]

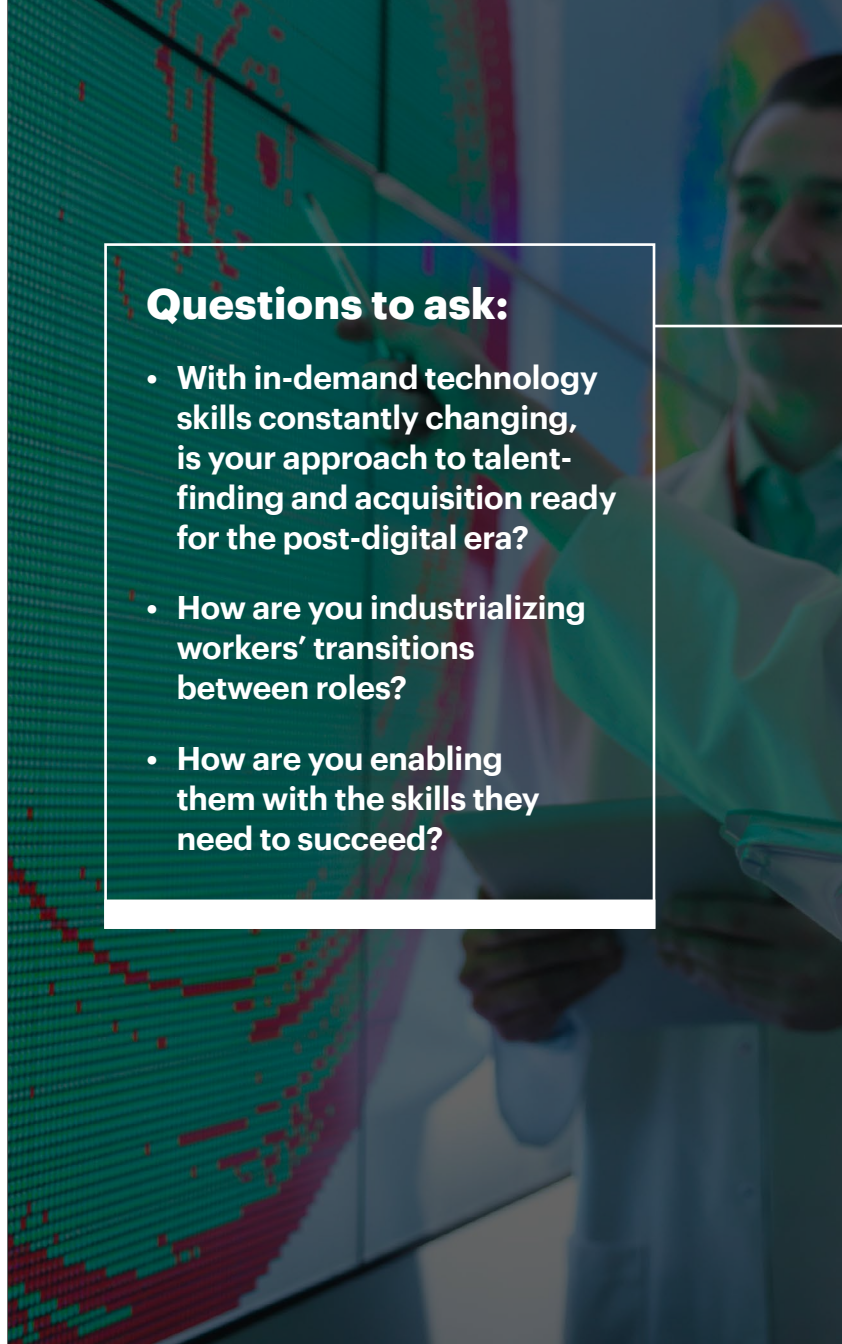
There are a number of other opportunities to use AI as a workforce enabler. Our experience shows that AI enablement could deliver up to 20 percent increases in work efficiency, along with up to 40 percent improvements in process accuracy. AI can accelerate the speed associated with getting MLR (Medical Legal Review)-approved content to patients or providers at the right time.

In marketing, AI can inform next best interactions. AI-powered solutions can also make sales reps more productive by, for example, scheduling meetings via self-learning algorithms. With AI taking care of pre-call planning and administrative tasks, the reps can spend more time engaging with physicians.

Creating a human+ workforce presents its own challenges. Chief among them is attracting talent that can not only build the organization's DARQ capabilities in areas like drug discovery and development, but also design and deploy the workplace solutions that will make workforces more efficient and productive.

All industries are looking for DARQ expertise and, understandably, many candidates find industries that are more technologically advanced more appealing. Our research revealed that 64 percent of life sciences executives believe their employees are already more digitally mature than their organization.

Finding, supporting and engaging the right workforce in the post-digital era requires companies to commit to a level of workforce investment that's on par with the investment in technology. New approaches to talent-finding and training will be needed to capture the full potential of their human+ workers.



Questions to ask:

- With in-demand technology skills constantly changing, is your approach to talent-finding and acquisition ready for the post-digital era?
- How are you industrializing workers' transitions between roles?
- How are you enabling them with the skills they need to succeed?

ARE YOU READY FOR WHAT'S NEXT?

The combination of New Science and new technologies is ushering in a new era of life sciences. It's an era of massive customer, employee and societal expectations. An era of momentary markets and global opportunity. An era characterized by relevance. Forward-thinking biopharma and medical technology companies are setting their course to this new reality today. Where will you go?

REFERENCES

1. http://www.voluntis.com/en/about-us
2. "AbbVie and Voluntis to develop companion digital therapeutics," Vuluntis Press Release, December 19, 2018.
3. Accenture, "New science: Biopharma's new growth engine," April 3, 2019.
4. https://www.fda.gov/drugs/drug-supply-chain-security-act-dscsa/are-you-ready-drug-supply-chain-security-act
5. "SK Biopharmaceuticals and twoXAR Sign Collaboration Agreement to Discover and Develop First-In-Class Treatments for Non-Small Cell Lung Cancer," Businesswire, April 17, 2019.
6. https://1qbit.com/qemist/
7. 1QBit, "Microsoft and 1QBit collaborate to Disrupt Materials Innovation with the 1QBit OpenQEMIST platform and the Microsoft Quantum Development Kit," May 31, 2019.
8. Accenture (Press Release), "Ayasdi Named Accenture HealthTech Innovation Challenge Innovation Champion," January 8, 2019.
9. "SOPHiA GENETICS Acquires Interactive Biosoftware to Drive Growth and Accelerate Data-Driven Medicine Adoption Around the World," PR Newswire, June 16, 2018.
10. US Food & Drug Administration, "Proposed Regulatory Framework for Modifications to Artificial Intelligence/Machine Learning (AI/ML)-Based Software as a Medical Device (SaMD)," April 2, 2019.
11. Dave Muoio, "FDA soliciting new volunteers to test drive its experimental Pre-Cert Program," MobileHealthNews, May 22, 2019.
12. Ana Alexandre, "Four Leading US Drug Companies Join Blockchain Project to Manage Chargebacks," CoinTelegraph, May 4, 2019.
13. Cynthia A. Challener, "Pharma Makes Moves to Leverage Artificial Intelligence," Pharma's Almanac, March 12, 2019.
14. Stephanie Glass (Aera Technology), "AI and the Evolution of Demand Forecasting," Medium, January 30, 2018.
15. Accenture, "Artificial intelligence: Healthcare's New Nervous System," 2017.
16. Jamie Holloway, "Siteless Clinical Trials Are Changing the Game for Patients," Science 37 blog, February 25, 2019.
17. Caroline Copley, "Medtech firms gets personal with digital twins," Business Insider, August 31, 2018.
18. Cynthia A. Challener, "Pharma Makes Moves to Leverage Artificial Intelligence," Pharma's Almanac, March 12, 2019.
19. Zoe LaRock, "Express Scripts has unveiled the first-ever digital health formulary," Business Insider, May 17, 2019.
20. Ayasdi website, "The Journey from Volume to Value-Based Care Starts Here."

Note

Unless otherwise stated, the statistics in this point of view represent life sciences respondents in the survey report "Accenture Technology Vision 2019."

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About Accenture Life Sciences

Accenture's Life Sciences group is committed to helping our clients make a meaningful impact on patients' lives by combining new science with leading edge technology to revolutionize how medical treatments are discovered, developed and delivered to people around the world. We provide end-to-end business services as well as individual strategy, consulting, digital, technology and operations projects around the globe in all strategic and functional areas—with a strong focus on R&D, Sales & Marketing, Patient Services and the Supply Chain.

We have decades of experiences working with the world's most successful companies to innovate and improve their performance across the entire life sciences value chain. Accenture's Life Sciences group connects more than 15,000 skilled professionals in over 50 countries who are personally committed to helping our clients achieve their business objectives and deliver better health and economic outcomes.

About the research

Each year, the Accenture Technology Vision team partners with Accenture Research to pinpoint the emerging IT developments that will have the greatest impact on companies, government agencies, and other organizations in the coming years. In 2019, the process included a global survey of 6,672 business and IT executives from around the world. Survey respondents included 130 life sciences executives in eight countries. This report's findings are based on analyses of their responses.

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