

Tech Trends 2021 | Deloitte Insights

Tech Trends 2021

Life Sciences perspective

The technologies that enhance our organizations and our lives are more powerful (and more essential) than ever before. Forward-thinking life sciences organizations understand the technological forces that surround them and look for ways to harness them for the benefit of consumers and patients alike.

On the pages that follow we provide a life sciences-specific take on [Deloitte's Tech Trends 2021 report](#), spotlighting the accelerating technology trends most likely to cause disruption over the next 18–24 months. We explore which trends may be most relevant as well as how ready life sciences organizations are to take advantage of them.

From the rise of strategy and technology becoming inseparable to the rapidly disappearing boundary between the physical and virtual worlds, the trends we explore could have profound implications for business, life sciences, and society in the months and years ahead.

Tech Trends 2021

Peering through the lens of the life sciences industry

Relevance and readiness scale:

We looked at each trend and assigned a value from one (low) to five (high) based on the trend's relevance to and readiness of the biopharma and medtech sectors.

Relevance:

How impactful would it be if biopharma and medtech organizations adopted the trend?

Relevance	Biopharma:	1	2	3	4	5
	Medtech:	1	2	3	4	5

Readiness:

How ready are biopharma and medtech companies to adopt the trend?

Readiness	Biopharma:	1	2	3	4	5
	Medtech:	1	2	3	4	5

Strategy, engineered

As business and technology strategy become increasingly inseparable, technology choices bear a greater role in enabling—or potentially constraining—organizational strategy.

- That's why strategists at life sciences companies are turning to advanced strategic platforms equipped with advanced analytics, automation, and AI.
- These tools are being used to continually identify internal and external strategic forces, inform strategic decisions, and monitor outcomes.



Getting started

- **Diversify your perspective:** Form cross-functional strategy teams to analyze data from multiple angles and separate the signals from the noise.
- **Sense faster, act sooner:** Companies tend to set strategy in three-year operating plans. Amp up your ability to sense market or sentiment shifts in real time to keep your strategy dynamic.
- **Make AI about strategy, not technology:** ROI matters. Implement AI based on use cases and business drivers to maximize investment returns.

Trend in action

On the biopharma front, we're seeing companies use advanced analytics to rapidly attract new customers, refine brand messaging, and adjust channel spend. In medtech, companies are using AI-powered devices to perform surgeries—and harnessing the data they generate to power entirely new business models.

Relevance	Biopharma:	1	2	3	4	5
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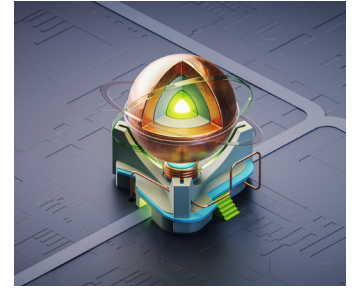
In the life sciences arena, technology can significantly shorten the time from strategic insight to action—enabling companies to continually see what's coming, capture the opportunities that matter most, and keep their strategies evergreen.

—Sheryl Jacobson, principal, Deloitte Consulting LLP

Core revival

As the C-suite increasingly views technology modernization as an imperative to enable strategic change, pioneering IT leaders are embracing new approaches, technologies, and business cases to revitalize core assets.

- Some pioneering life sciences companies are beginning to use clever outsourcing arrangements to reengineer traditional business cases for core modernization.
- Likewise, some are exploring opportunities to shift core assets to increasingly powerful platforms, including low-code options.
- Finally, many are advancing their “platform first” strategies by addressing technical debt in ERP systems and migrating nonessential capabilities to other platforms.

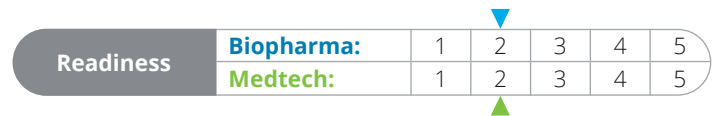
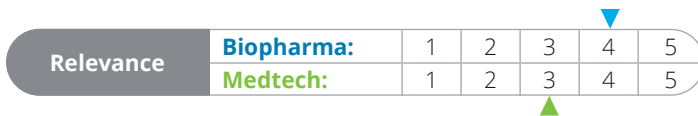


Getting started

- **Make the move to next-generation core operating systems:** Lift and shift legacy enterprise systems to the cloud securely to stay relevant and prepare for digital transformation.
- **Create open and interoperable systems:** Integrate your ERP platform with other systems—from CRM to clinical supplies to R&D—to accelerate and improve insights and decision-making across the enterprise.
- **Embrace an agile mindset:** Approach core assets enhancements with a product-centric, not project-centric, methodology to meet burning business needs more quickly.

Trend in action

Merck, a leading global biopharmaceutical company, deployed an enterprisewide cloud-based real-world data (e.g., medical claims, EMR, etc.) analytics platform called the “Real World Data Exchange” to advance product development and commercialization. Merck’s Real World Data Exchange is an open, API-first platform and serves a broad set of stakeholders, decreasing the time to insight-generation and fostering collaboration to positively impact all aspects of the product life cycle.¹



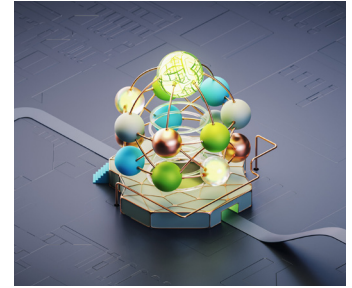
Core modernization is a competitive necessity for life sciences companies. It’s not just about tech adoption or cost savings. It’s about driving optimal patient experiences, gaining predictive and prescriptive insights, and executing with agility to thrive as business conditions change.

—Todd Konersmann, national leader for the Life Sciences Information Technology practice, Deloitte Consulting LLP

Supply unchained

Pioneering companies are using advanced digital technologies, virtualized data, and cobots to transform supply chain cost centers into customer-focused, value-driving networks.

- First, they are exploring ways to transform the supply chain cost center into a customer-focused driver of value.
- They are also virtualizing big data, making it accessible and interoperable across extended supply networks.
- Finally, some forward-looking organizations are using robotic process automation, wearables, and cobots to make physical supply chain environments safer for human workers.



Getting started

- **Get smart about demand-sensing:** Incorporate a wider range of customer, consumer, and patient data to match supply with demand more effectively. The current pandemic has highlighted how more sophisticated models and capabilities could help prioritize areas that have the greatest need.
- **Explore interoperability:** Tie information streams together to enable collaboration across your ecosystem.
- **Create a digital core:** Connect multiple streams of digital data to gain visibility into distribution networks and supplier inventory.
- **Tap new talent:** Augment traditional expertise with data science, technology, and design thinking.

Trend in action

One life sciences company invested in a data-driven platform and analytical solution for its global supply chain that allowed it to gain visibility based on data from multiple sources. The result? Inventory benefits are up from 10–15%, expedited shipments have been reduced by 5–8%, overtime costs have been reduced by 10–15%, and efficiencies due to backorder reduction have been improved by 2 percent to 4 percent.²

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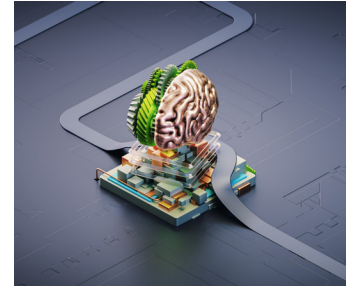
The last twelve months have evidenced the strategic importance of transformation across supply chains to create value both in the short- and long-term. The technology is ready to make the digitization of smart factory, interoperability, product strategy, planning solutions, and product engineering a reality.

— Matt Humphreys, principal, Deloitte Consulting LLP

MLOps: Industrialized AI

The era of artisanal AI must give way to MLOps—the application of engineering discipline to automate ML model development, maintenance, and delivery—to shorten development life cycles and industrialize AI.

- Sophisticated machine learning models help life sciences companies efficiently discover patterns, reveal anomalies, make predictions and decisions, and generate insights.
- As AI and machine learning mature, a strong dose of engineering and operational discipline can help life sciences companies overcome these obstacles and efficiently scale AI to enable business transformation.



Getting started

- **Inject engineering discipline:** It's time to shift from addressing one-off use cases to industrialization at scale.
- **Industrialize services:** Industrialize MLOps—via platforms, a hub, or center of excellence—to manage the AI portfolio from ideation to implementation and enable functions/domains to accelerate their insights and drive economies of scale.
- **Keep seeking and scanning:** Constantly evaluate the marketplace for external partners who can integrate with your organization.
- **Double down on data:** High-quality data is the lifeblood that sustains MLOps and drives predictions and insights.

Trend in action

Leading life sciences companies are crafting enterprise MLOps strategies that span operating and engagement models, partnerships, platforms, tools, and investments. With these elements in place, they're developing robust deployment frameworks, offering MLOps as a service, and transforming how they can enable each of their functions to glean insights into their business. The key to success is to have a unified experience, automated training, comparison, and monitoring to improve performance and discover insights.

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The journey toward MLOps has just begun, but this space is moving very quickly. Companies that stay on the cutting edge of MLOps—and make the right investments in capital, time, and people (including the operating model)—can shorten development cycles and accelerate innovation. Those who don't will grapple with scale challenges, operational inefficiencies, and lack of speed to insight.

—Aditya, Kudumala, principal, Deloitte Consulting LLP

Machine data revolution: Feeding the machine

To achieve the benefits and scale of AI and MLOps, data must be available for native machine consumption, not humans, causing organizations to rethink data management, capture, and organization.

As part of a growing trend, life sciences companies are deploying new technologies and approaches including advanced data capture and structuring capabilities, analytics to identify connections among random data, and next-generation cloud-based data stores to support complex modeling.

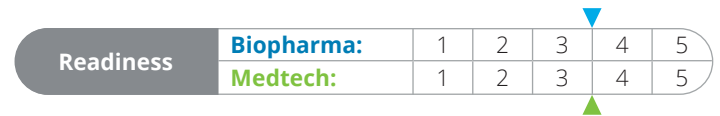
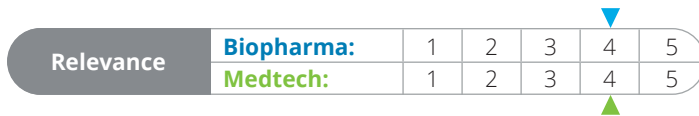


Getting started

- **Establish a foundation and governance:** Capturing, storing, and managing the right data and context is critical, since insights depend on access, context, and quality.
- **Invest in data partnerships:** Consider how new sources of data beyond your enterprise may yield fresh insights.
- **Build for scale:** Start to shift from a siloed view to a cross-domain, enterprisewide perspective that encompasses internal and external data sources.
- **Create a differentiated user experience:** Ask yourself: How can data be leveraged to improve the experience of employees, patients, or customers?

Trend in action

If you're a life sciences company, you're also a data company—and machine data is key to accelerating insights and building a competitive advantage. Life sciences companies are climbing the machine learning maturity curve. With new data approaches and technologies, one pharma company has significantly reduced data capture and management cycle time. Another company has automated cross-domain insights, freeing up staff for more strategic work that can inform breakthroughs and enhance patient care.



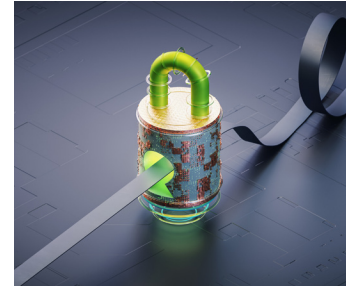
If you want to understand why this trend is incredibly relevant to life sciences companies, look no further than COVID-19 vaccine development. Companies shattered previous vaccine development records due to their ability to capture, store, process, and analyze machine data.

—Aditya Kudumala, principal, Deloitte Consulting LLP

Zero Trust: Never trust, always verify

A zero trust cybersecurity posture provides the opportunity to create more robust and resilient security, simplify security management, improve end-user experience, and enable modern IT practices.

- Zero trust is rooted in the concept that no device, network, or user is inherently trusted, even when considered “internal” to the enterprise.
- In zero trust architectures, every access request is validated based on all available data points, including user identity, device, location, and other variables.
- Data, applications, workloads, and other resources are treated as individual, manageable units to contain breaches, and access is provided based on the principle of least privilege.

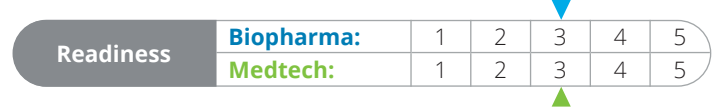
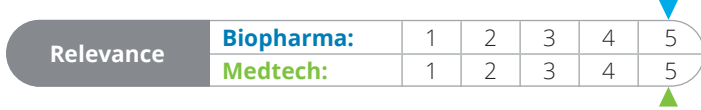


Getting started

- **Decide what zero trust means to you:** Relevant applications can vary by business unit, by region, and by situation.
- **Set the scope to fit your business:** Evolution-based approaches, where implementation happens in stages, have higher success.
- **Determine if you have what it takes to get started:** Foundational capabilities that span identity and access, device telemetry, event correlation, and network controls will drive adoption at scale.
- **Think broadly:** Zero trust is a collection of capabilities and concepts that can be applied to reduce business risks in the aspects of modern and ubiquitous enterprises.

Trend in action

The ongoing need to extend access to applications and systems to its broad external ecosystem spurred Takeda to begin a journey toward a zero trust-based security architecture. With a zero trust approach, the company aims to reduce superfluous system access and reduce the avenues that could be exploited in a future cyberattack. It also looks to gain policy-based controls so that their people have access only to needed resources.³



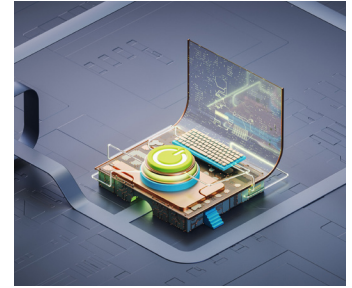
Life sciences organizations likely have the foundational capabilities they need to get started on the journey to zero trust. The key is not to overthink the complexity and over-scope the implementation. Better to focus on smaller, phased projects that can deliver incremental results quickly.

—Keith Brogan, managing director, Deloitte & Touche LLP

Rebooting the digital workplace

The digital workplace represents a fundamental shift in the way work gets done. Organizations are embracing technology to optimize individual and team productivity, collaboration, and the employee experience at large.

- Life sciences companies may be able to overcome the digital workplace’s deficits and ambiguities by more intentionally embracing its positive aspects, including the data generated by workers’ tools and platforms.
- As on-site workspaces and headquarters evolve, organizations can use this data to create thriving, productive, and cost-effective offices that are seamlessly interwoven with the remote experience.

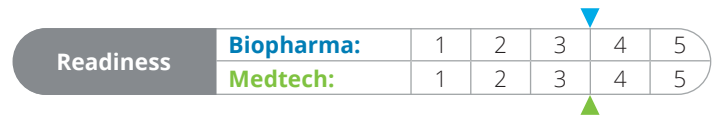
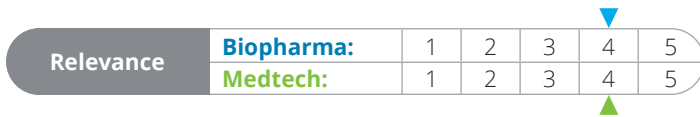


Getting started

- **Don’t revert to your old ways:** Leverage the advancements you enacted during COVID-19 to embed better ways of working.
- **Keep culture vibrant:** Explore strategies for sparking innovation and replicating unplanned employee interactions in a hybrid environment.
- **Share knowledge:** Harness the power of digital collaboration tools to fuel knowledge creation and sharing that strengthens organizational connectivity.
- **Dive into workforce data:** Glean insights into what work is being done and how people are doing it to bring out the potential in every worker.

Trend in action

Life sciences companies are doubling down on hybrid work environments that blend the best aspects of remote work and on-site collaboration. They’re crafting flexible models that cut real estate costs, improve employees’ work/life balance, boost productivity, change the way biopharma field reps operate, and support more agile way of working.



Hybrid work models are here to stay. Every life sciences company will need to plan for more flexible work environments, powered by technology. Leading organizations are using this opportunity to introduce new digital tools that bring out both human and technological strengths in how work is designed, managed, and executed. These efforts can result in a reinvention of the talent journey, encouragement of new models of virtual collaboration, and a redefinition of productivity and outcomes. The benefits for life sciences organizations are endless as new technologies help them drive towards more consumer-focused, data-driven, and innovative models of work.

—Elaine Loo, principal, Deloitte Consulting LLP

Bespoke for billions: Digital meets physical

Forced to embrace digital faster than ever, organizations are recognizing that the desired human experience strikes a balance between making physical human experiences more digital, and digital experiences more physical.

In response, companies are developing sophisticated human experience platforms that will enable brands to orchestrate a seamless, highly personalized journey across all channels.



Getting started

- **Take a crawl, walk, run approach:** Start with a thorough understanding of your employees and customers (patients, caregivers, and health care professionals) before you move up the customer experience maturity curve.
- **Target customers and employees directly:** Today's consumers and workers are highly informed. Speak to their needs while leveraging health care practitioners as influencers and partners who can nurture the patient and caregiver relationship.
- **Zero in on the right data:** Leverage advanced data platforms and analytics to gain a 360 view of your employees and your ideal customers.
- **Consider strategic uses of AI:** Change the game with cognitive technologies that harness data to predict what customers and employees want before they ask for it.

Trends in action

A medical device organization that's trying to gain a competitive edge in a crowded market is exploring how to make it easier for consumers to do business with the company. To that end, they're breaking down silos and looking at the end-to-end customer experience across marketing, sales, customer support, operations, and product development. Rather than focusing solely on data, they're looking at new ways to synch their data management and experience management initiatives to deliver personalized interactions across all touchpoints, both physical and digital.

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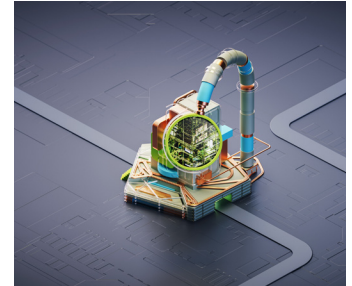
Life sciences companies have an extraordinary opportunity to nurture patients for life. That hinges on their ability to look beyond a siloed view of the customer experience—by department or by channel—to create more meaningful connections, foster loyalty, and ultimately drive growth.

—Mike Ice, principal, Deloitte Consulting LLP

DEI tech: Tools for equity

Organizations have access to increasingly sophisticated tools to support their diversity, equity, and inclusion (DEI) initiatives across the talent life cycle. The tools seek to make DEI decision-making and processes more data-driven.

Many organizations are embracing DEI as a business imperative, with a growing number adopting holistic, systemwide initiatives that address individual and organizational biases and inequity to enhance overall enterprise performance.



Getting started

- **Start with strategy:** Evaluate and select tools that will help you deliver against defined DEI objectives and goals.
- **Go beyond talent:** Use tech-enabled solutions to address DEI priorities beyond the talent life cycle, such as exploring how greater data interoperability between community health care providers and clinical investigators can advance more inclusive research and clinical trial diversity.
- **Solicit cross-functional feedback:** Engage existing DEI councils, employee resource groups, and other communities in the tool selection and evaluation process.

Trend in action

With new tech tools, life sciences companies could access pools of qualified, diverse candidates and then use AI, machine learning, and automation to identify “optimal” candidates for key roles within their R&D function, resulting in more diverse research teams. They can also leverage digital technologies and remote or virtual approaches to engage more diverse patient populations in clinical trials.

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DEI programming and technologies are in the nascent stages at most life sciences companies. But there is a significant opportunity for life sciences leaders to leverage DEI tech to build more diverse workforces reflective of the customers, patients, and communities they serve. They can also push change forward by expanding their use of remote and virtual tech tools to diversify clinical trial participation.

—Kevin Sullivan, principal, Deloitte Consulting LLP

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Endnotes

1. AWS Events YouTube Channel, "AWS re:Invent 2019: Merck drives innovation with a 'real-world data exchange' on AWS [ENT232-S]," 1: 02: 52, December 4, 2019
2. "The digital edge in life sciences: The business case for digital supply networks", Deloitte 2017, <https://www2.deloitte.com/us/en/pages/operations/articles/digital-supply-networks-life-sciences.html>
3. Tech Trends 2021, "Zero Trust" Deloitte 2021, <http://www.deloitte.com/us/techtrends>

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