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Author

For questions regarding the *Tech Trends 2019 life sciences perspective*, please contact:

Todd Konersmann

Principal

Life Sciences Information
Technology Practice Leader
Deloitte Consulting LLP
tkonersmann@deloitte.com
+1 214 840 1993

Contributors

Special thanks to the following contributors for their insights:

Aditya Kudumala

Principal

Life Sciences Strategy
and Analytics Leader
Deloitte Consulting LLP
akudumala@deloitte.com

Rajeev Vasudeva

Managing Director

Life Sciences Cloud
Engineering Leader
Deloitte Consulting LLP
rvasudeva@deloitte.com

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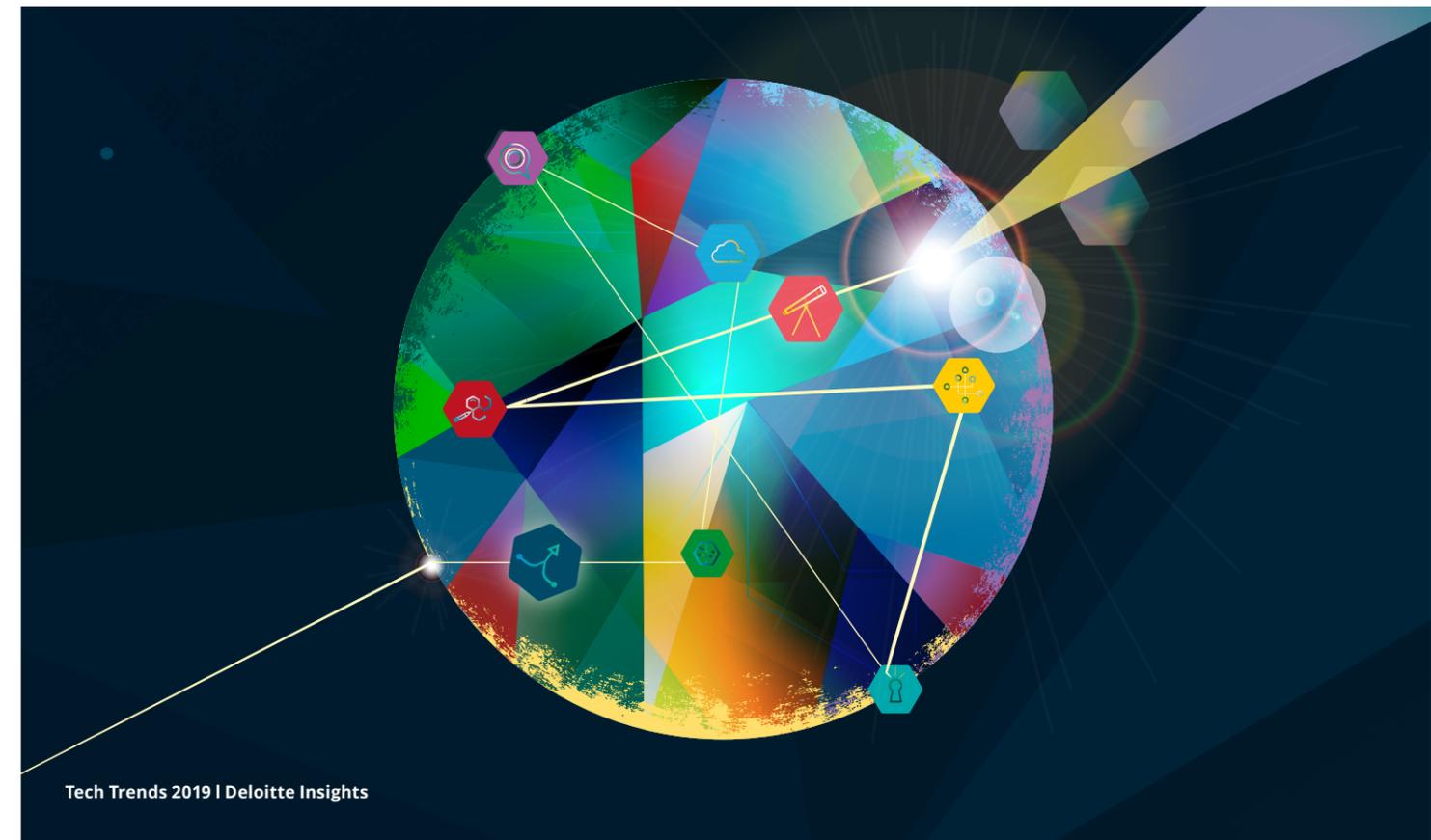
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Tech Trends 2019

Life sciences perspective

Nonstop disruption across every industry today brings nonstop questions. Evolving technologies, increasingly challenging market and regulatory forces, and rising consumer expectations mean many leaders in the Life Sciences industry feel the pressure to understand emerging trends, get ahead of them, and capture their potential.

Progress in this industry encompasses not only molecules and devices, but also experiences and opportunities—all focused on improving outcomes and value for payers and providers, as well as patients and caregivers. As organizations apply ever-greater levels of innovation to meet this change, they rely on fresh, focused, industry-relevant insights. This guide provides a sector-specific perspective on Deloitte's *Technology Trends 2019: Beyond the digital frontier* report.

With this publication, we examine several important trends through the lens of the Life Sciences sector—also touching on the macro technology forces at play and how modern businesses can navigate digital transformation. These forces are actively shaping strategic and operational transformations, redefining IT's role

within the enterprise, and forcing business leaders to reimagine what it means to operate in a digitally driven global economy.

No two Life Sciences organizations are alike. Each is on a path toward greater digital adoption, but they're at different places on that journey. The fundamental nature of the industry provides no shortage of complexity or unpredictability, even before one takes technology trends into account. However, Life Sciences has a clear and constant mission to steer by: It exists to imagine, create, and deliver the innovations that make life better for people everywhere. Through real-world examples and industry-specific examinations of emerging technology capabilities, this publication should help Life Sciences leaders gain a clearer view of how new tools fit into this ageless mandate. ➔



Macro technology forces at work

Nine technology forces (cloud, analytics, digital experience, blockchain, cognitive, digital reality, core modernization, cyber, and the business of technology) have been the backbone of innovation past and present. These forces are critical for organizations—their controlled collision can compound the effect of purposeful, transformational change. What is the “state of the state” of these forces today and how are organizations harnessing them?

Getting started

- **Learn the forces that will shape change in the coming decade.** We'll look back on cloud, analytics, and digital experiences, as the new normal—and ask how well we used them.
- **Embrace technology at the core.** The support organization will increase in importance as new tools affect everything you do.
- **Keep your eye on the horizon.** Phenomena like blockchain, cognitive tools, and digital reality are next in line to find their place in how we work.

Trends in action

Life Sciences companies are combining IoT, smart sensors, digital reality, and cognitive in areas such as supply chain and operations. Together, these forces are driving end-to-end network visibility—from raw material suppliers to patients—and training employees to see and use new insights across the value chain. Pick promising areas as focal points for small-scale pilots.



Intelligent interfaces

Intelligent interfaces combine the latest in human-centered design with leading-edge technologies such as computer vision, conversational voice, auditory analytics and advanced augmented reality (AR), and virtual reality (VR). Working in concert, these techniques and capabilities can transform the ways we engage with machines, data, and each other.

Getting started

- **See beyond the long-established standards.** Imagine new engagement patterns and capabilities that go beyond “click and type” and “touch and swipe.”
- **Rethink training, collaboration, and more.** Take advantage of new ways to connect and learn.
- **Unlearn limits.** How can intelligent interfaces observe, track, measure, and monitor without deliberate user actions like typing?

Trends in action

Life sciences companies are evaluating intelligent interfaces to auto-translate inquiries from HCPs from one language to another, as well as intelligent logging to record cases and adverse events.



AI-fueled organizations

Leading organizations are harnessing AI's full potential for data-driven decision making and generating valuable insights. To become a true “AI-fueled” organization, a company needs to find AI's place in the mission, rethink its talent, focus on human and machine interaction in its environment, and deploy machine learning across core business processes and enterprise operations.

Getting started

- **Decide what AI means to you.** Relevant applications can vary by industry, mission, and situation.
- **Strive to become an “AI-first” organization.** Change the question from “why AI?” to “why not?”—and get started.
- **Train the people you have.** Both in the mission and in IT, the nature of your plan and your maturity to date will help determine which skills to add.
- **Add the skills you don't have.** Hire or contract for talent as necessary.

Trends in action

Life Sciences companies are making investments in data to deliver business strategy. For example, companies are using AI not only to accelerate drug development, but also to direct their sales forces to manage physician outreach for more efficiency and better relationships. AI is unlocking innovations across supply chain, commercial, and R&D.



NoOps in a serverless world

Cloud providers have doggedly automated traditional infrastructure and security management tasks and are increasing the complexity and value of “as a service” capabilities. As a result, technical resources are interacting less and less with the underlying system infrastructure. Operations talent can shift to increasingly agile teams focusing on higher-order (and higher-value) activities that more directly support mission outcomes.

Getting started

- **Shift administration to an engineering footing.** Determinedly standardize, modernize, and synthesize, so you can begin applying engineering principles to operations.
- **Go cloud native.** Pilot and pursue technologies that don't involve managing physical servers.
- **Transform your processes.** Make your processes automatable and repeatable without human intervention.

Trends in action

New tools and techniques have made cloud migration a faster path for many Life Sciences companies. They're taking a more proactive approach to automation, and highly acquisitive companies are accelerating to drive integration and speed, and reduce complexity. A talent strategy focused on continuous learning can help prepare operations colleagues to operate in the cloud environment on day one.



Connectivity of tomorrow

Advanced networking offers a continuum of connectivity that can drive development of new products and services or transform inefficient operating models. From edge computing and mesh networks to 5G, low Earth orbit satellites, and ultra-broadband, organizations across sectors and geographies are relooking at advanced connectivity options to design tomorrow's enterprise networks.

Getting started

- **Plan for the upcoming explosion of bandwidth.** A wirelessly connected world will bring changes that bring new demands and new opportunities.
- **Learn from history.** This isn't the first time bandwidth has exploded. Smartphones changed the ways we keep and use data. What parallel changes are ahead?
- **Button down the status quo.** If millions of new devices are soon to arrive, every mobile computational device you use now must be under control. Use scenario planning to define the future.

Trends in action

Life Sciences companies are using advanced networking to improve patient outcomes and wellness through high-touch digital engagement. One company is working to increase the types of remote procedures available to patients through ultra-broadband environments. Patient wearables have moved from heart rate monitoring to tracking wellness behaviors and clinical trial protocol adherence.



Beyond the digital frontier: Mapping your future

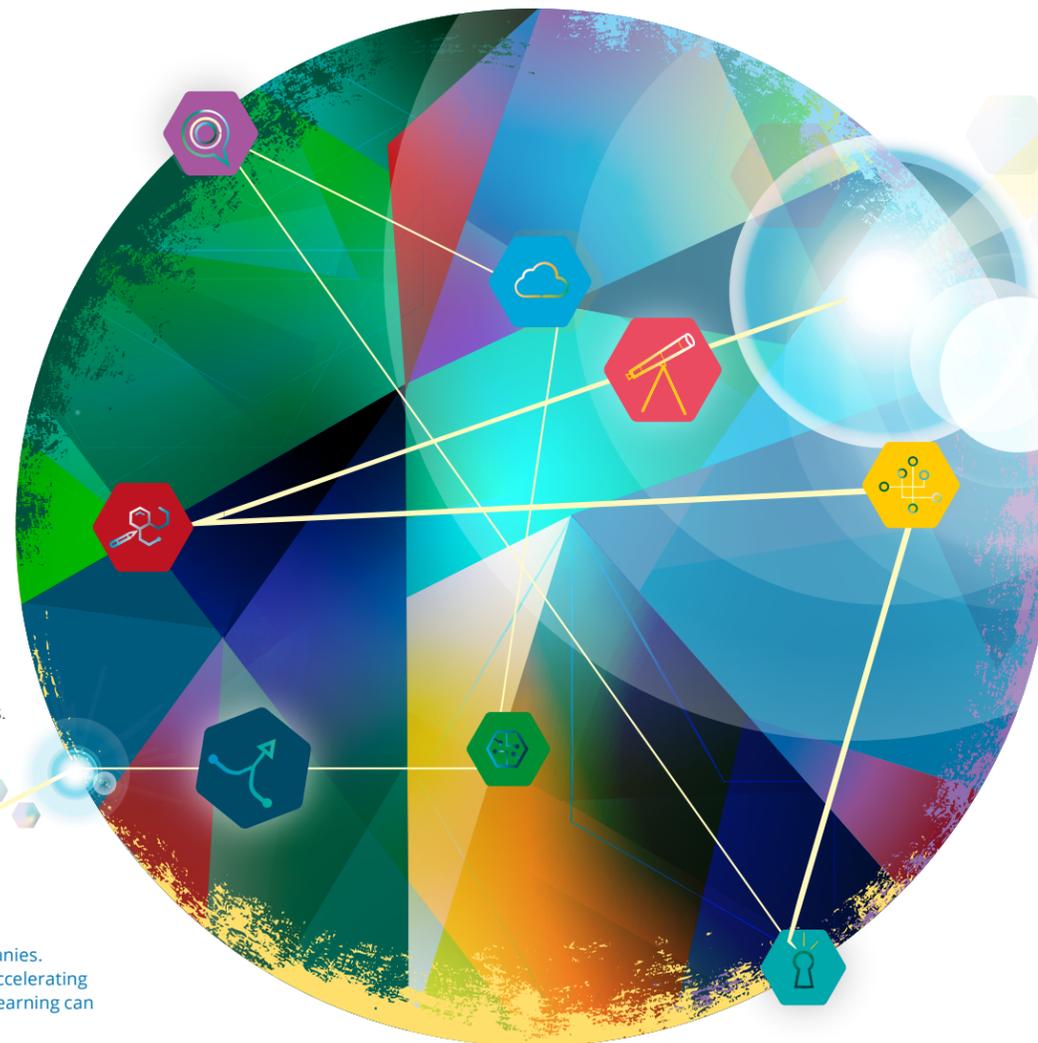
Digital transformation has become a rallying cry for business and technology strategists. Yet all too often, companies anchor their approach on a specific technology advance. Developing a systematic approach for identifying and harnessing opportunities born of the intersections of technology, science, and business is an essential first step in demystifying digital transformation, and making it concrete, achievable, and measurable.

Getting started

- **Build a recipe file.** “Get in the kitchen” to test promising combinations of techniques and technologies.
- **Look for examples.** Organizations and companies are already moving to become digital in processes and areas you support.
- **Learn the landscape.** New technologies include AI, digital reality, blockchain, and more. Catalysts include concepts like crowdsourcing, human-centered design, and the maker movement. Keeping up with what's new prepares you to invent what's next.

Trends in action

Old lines between business and technology will continue to blur as the traditional IT approach gives way to a patient-centered, outcomes-based approach. Greater data connectivity and radical interoperability will spur a shift from “health care” to “health and well-being” over the next 20 years. Companies must make clear three- to five-year decisions as they look ahead.



Beyond marketing: Experience reimagined

Today's astute customers expect highly personalized, contextualized experiences. To deliver them, leading chief marketing officers are looking inward to closer partnerships with their own CIOs and a new generation of marketing tools and techniques powered by data-enabled emerging technologies.

Getting started

- **Look beyond marketing.** Leading organizations are rethinking all of the ways customers interact with them.
- **Create connections.** It's not just pushing information—new tools and techniques enable customized experiences and better relationships.
- **Go all-in on data.** Collect and manage information from your customers to better understand the interactions they desire.

Trends in action

Every patient's case is different, but Life Sciences companies need operational stability and efficiency. New relationship tools allow them to answer both mandates—providing personalized, contextualized patient experiences without adding inefficiency. Patient information can help companies understand, track, and address adherence on an individual level.



DevSecOps and the cyber imperative

To enhance their approaches to cybersecurity and cyber risk, forward-thinking organizations are embedding security, privacy, policy, and controls into their evolved IT delivery models. DevSecOps fundamentally transforms cyber and risk management from compliance-based activities (typically undertaken late in the development life cycle) into essential framing mindsets that help shape system design from the ground up.

Getting started

- **Integrate security.** Don't test it in at the end—build it in throughout the system and operational life cycles, starting with requirements and design.
- **Expand your security culture.** Compliance is still important, but the focus now is on proactive risk management.
- **Pick bold goals.** Propel the culture forward—don't be incremental on this one.

Trends in action

Life Sciences companies are using DevSecOps to shift from a project mindset to focus on platforms and products. One company is applying this approach to improve quality and speed to market across all commercial products. This is fundamentally changing approaches to funding, talent, and security.