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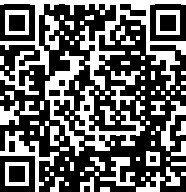
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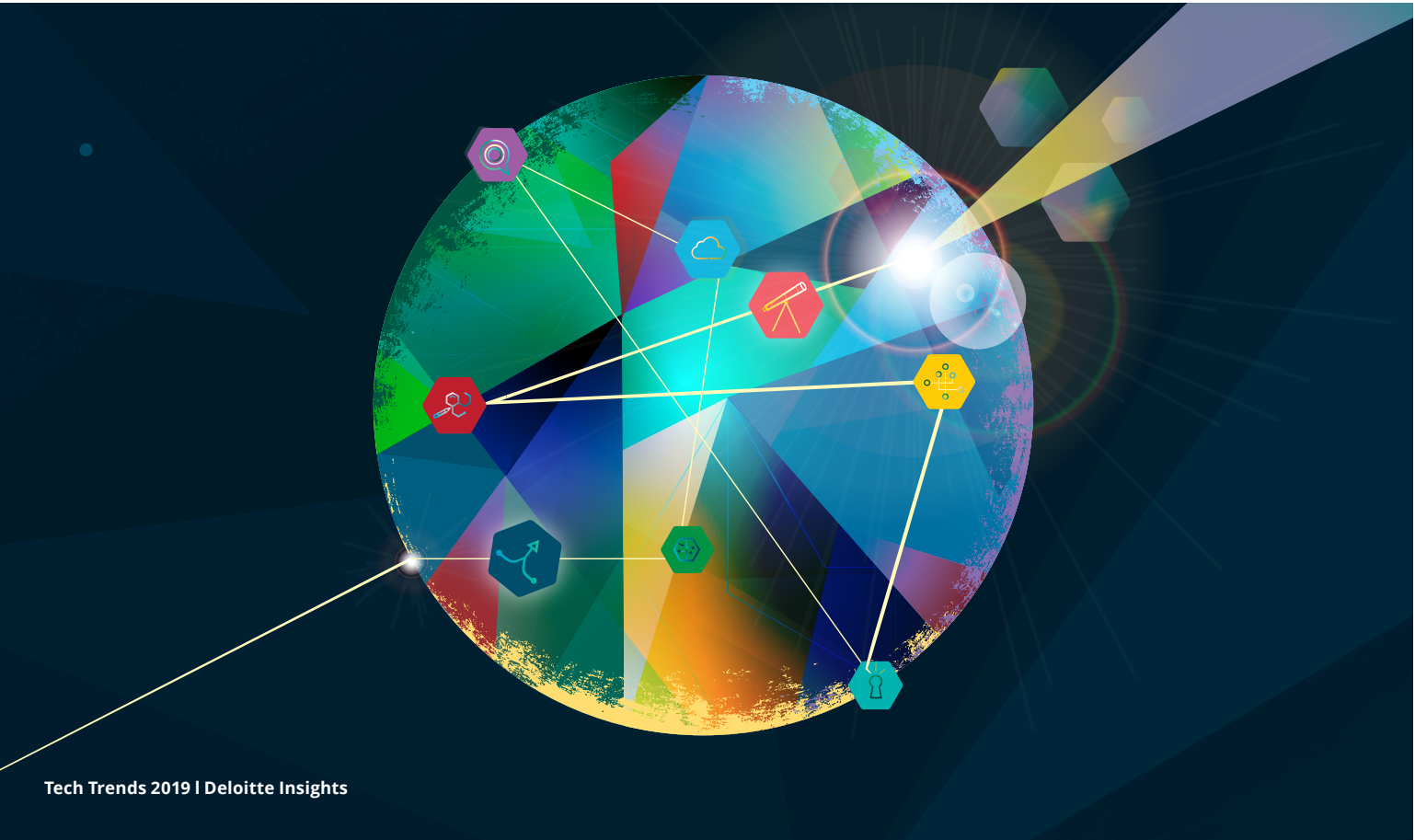
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Tech Trends 2019 Health care perspective

Nonstop disruption across every industry today brings nonstop questions. Evolving technologies, more challenging market and regulatory forces, and rising consumer expectations mean many leaders in the health care industry feel the pressure to understand and anticipate trends.

Innovation in the health care industry encompasses not only patients, clinicians, and payers, but also experiences and opportunities—all focused on the traditional goal of creating better outcomes and value, expanded to include families, caregivers, and communities as well as patients. As organizations work to meet this change head-on, companies rely on fresh, industry-relevant insights. This guide provides a perspective on Deloitte's *Technology Trends 2019: Beyond the digital frontier* with a specific focus on the health care point of view.

With this publication, we examine several important trends through the lens of the health care industry—including macro technology forces and the ways 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.

Each health care organization is on its own path toward greater digital adoption. While complexity and unpredictability are universal, health care has a clear and constant mission to steer by: It exists to deliver and finance the services and support that make the quality of life better for people everywhere. Through real-world examples and industry-specific examinations of new technology capabilities, this publication should help health care leaders gain a clearer view of the way new technologies, tools, and techniques can help them answer this ancient need. ➔



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

- **Prioritize** wellness outcomes, cost, consumer engagement, and market expansion in choosing tech forces and initiatives to adopt.
- **Build agility and flexibility into your core IT staff** to speed the path to progress.
- **Solve for the big problem—interoperability.** Managing the sheer volume, identifying sources of truth, aggregated domains, and clean data for model consumption.

Trends in action

Cloud and other new technologies are freeing organizations to focus on higher-value initiatives and refocusing IT resources on transforming patient care delivery. Analytics can draw powerful insights from electronic health records to improve clinical decision making while cognitive tools and training through digital reality have improved surgical outcomes.



Intelligent interfaces

Intelligent interfaces combine the latest in human-centered design with leading-edge technologies such as computer vision, conversational voice, auditory analytics, 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

- **Explore the potential of intelligent interfaces** to help address major consumer and data security considerations by making health monitoring secure, seamless, and noninvasive.
- **Translate capabilities into care** by using interface enhancements to give patients a more active role in their well-being and treatment across a wider array of settings and locations.

Trends in action

Intelligent interfaces powered with NLP and AI can help bridge the “empathy gap” in health care. Consider a nurse enabled with a VR headset that can recognize symptoms of pain before the patient expresses discomfort. The hospital staff is more equipped, resulting in more positive outcomes.



AI-fueled organizations

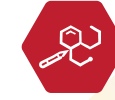
Leading organizations are harnessing AI's full potential for data-driven decision making and generating valuable insights. To become a true “AI-fueled” organization, a company needs to find AI's place in the mission, rethink its talent, focus on human and machine interaction in its environment, and deploy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

Trends in action

Artificial intelligence, specifically machine learning, mines high-volume and unstructured data and employs statistical learning and hypothesis generation. As a result, organizations use it to identify care gaps and inform clinical decision support and diagnostic processes. Other AI applications can help curb waste, automate document handling, improve revenue cycle management, and even help enhance the physician experience and reduce burnout.

Getting started

- **Decide what AI means to you.** Relevant applications can vary by mission, and situation.
- **Focus pilots on repetitive and high-volume tasks** to help reduce costs and improve efficiency.
- **Govern AI adoption** by identifying the technical know-how skills gap, complying with industry regulations, and understanding the ROI from AI investments.



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

- **Use digital solutions** such as customer apps, patient portals, and personalized digital information kits to provide a more personalized experience.
- **Enhance customer targeting, engagement, and service** with data from customer relationship management (CRM) systems and analytics.
- **Extend access to consumer data** to everyone who has a stake in the patient's health, not just the CMO and CIO. The same methods and tools that engage a consumer to buy a product can also help organizations.

Trends in action

CRM systems gather data on individualized patient journeys and align services, workflows, and interactions to those journeys. Leveraging data from CRMs can provide insight into a patient's experience relative to behavioral, medical, and socioeconomic dimensions.



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 IT talent's focus** from technical infrastructure problems to innovating for better business outcomes by using cloud computing to support DevOps and automation.
- **Determine how to partner** with cloud service providers (CSPs) to run automated infrastructure while relying on business associate agreements (BAAs) to control risk.

Trends in action

The use of a serverless infrastructure to monitor and analyze IoT health device data in near-real time can alert medical staff and patients of the amount of consumable assets that are used in the facility. Automating security policies into application development and infrastructure processes also increases security for HIPAA-compliant cloud operations.



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

- **Storyline your DevSecOps goals** with current regulatory and cybersecurity requirements before starting to build out your DevSecOps capabilities.
- **Start with small teams** and add incremental automation capabilities over time to replace manual controls. With health care organizations, it is easier to build out the DevSecOps program than it is to tear it down and change it.

Trends in action

DevSecOps has the capability to reduce security breaches and associated costs because it allows cybersecurity to “shift-left” (happen earlier) in the SDLC process. Security-as-Code and Compliance-as-Code features allow for more governance automation than ever before, helping health care companies improve compliance adherence to requirements and regulations.



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

- **Button down the status quo.** As consumers and providers increase dependency on reliable networks to give and receive care, now is the time to see that existing mobile assets are under control.
- **Plan for advanced connectivity.** As the variety and number of networked devices increase, the need for bandwidth to support them will accelerate as well.

Trends in action

Advanced networking capabilities allow continuous monitoring of patient vitals and interaction with patients in a virtual environment. Networking advancements can also allow more extensive sharing of data between organizations collected across multiple systems, and even geographies, in order to treat patients in real time.



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

- **Look to other industries.** Digital technology, robotics, and other automated tools from other applications have potential to resolve current and future pain points experienced in health care.
- **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

Blockchain technology provides the opportunity to revolutionize data interoperability and operational efficiencies. Smart sensors and telehealth visits are showing effectiveness in treating the flu and mental health disorders. Voice-enabled assistants, like those used at home, are showing up in hospital rooms to assist patients and can be used to detect biomarkers through tone of the patient's voice.