Trending the trends: A decade of research

EXPERIENCE & DIGITAL REALITY	ANALYTICS & COGNITIVE	CLOUD	BLOCKCHAIN

Asset intelligence · User engagement · Wireless and mobility · Information management · Information automation · Cloud revolution
Social computing · User engagement · Applied mobility · Visualization · Real analytics · Capability clouds
Gamification · Social business · User empowerment · Enterprise mobility unleashed · Geospatial visualization · Big data goes to work · Hyper-hybrid cloud
Gamification goes to work · Social reengineering by design · Digital engagement · Mobile only (and beyond) · Finding the face of your data
Industrialized crowdsourcing · Social activation · Wearables · Cognitive analytics · Cloud orchestration
Dimensional marketing · Ambient computing · Amplified intelligence · API economy
AR and VR go to work · Internet of Things · Industrialized analytics · Blockchain: Democratized trust
Mixed reality · Machine intelligence · Dark analytics · Everything-as-a-service · Blockchain: Trust economy
Digital reality · Enterprise data sovereignty · API imperative · Blockchain to blockchains
Beyond marketing · **Intelligent interfaces** · **AI-fueled organizations** · NoOps in a serverless world

Years: 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019

Exponential technology watch list · No-collar workforce · Reengineering technology · Connectivity of tomorrow · The new core · DevSecOps and the cyber imperative · *Risk implications*
Exponentials watch list · IT unbounded · Inevitable architecture · *Risk implications*
Social impact of exponentials · Right-speed IT · Autonomic platforms · Reimagining core systems · *Risk implications*
Exponentials · IT worker of the future · CIO as chief integration officer · Software-defined everything · Core renaissance · *Risk implications*
Exponentials · CIO as venture capitalist · Real-time DevOps · In-memory revolution · Cyber security
Design as a discipline · Business of IT · CIO as postdigital catalyst · IPv6 (and this time we mean it) · Technical debt reversal · No such thing as hacker-proof
Measured innovation · Reinventing the ERP engine · Outside-in architecture · Digital identities
Value-driven application management · CIOs as revolutionaries · The end of the "death of ERP" · "Almost-enterprise" applications · Cyber intelligence
CIO operational excellence · Virtualization · Best-of-breed enterprise applications · Services thinking · Cyber security

BUSINESS OF TECHNOLOGY	CORE	RISK

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Tech Trends 2019

Beyond the digital frontier

DELOITTE'S 10th annual Tech Trends report identifies those trends that are likely to disrupt businesses in the next 18–24 months, including advanced networking, intelligent interfaces, serverless computing and more. These trends are part of a larger convergence of powerful forces that are driving disruption across industries.

This year's report looks back at a decade of disruptive change. We also look to the horizon to examine technology's promise for the future. As in previous years, we include perspectives on how these changes are impacting IT operations and how companies should respond to risk.

The demand that disruptive change places on the enterprise can seem daunting. Yet, organizations are increasingly harnessing connections between powerful macro forces, emerging technologies, and business priorities to create a roadmap to opportunities that lie beyond the digital frontier.
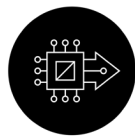
How are the trends selected?

- Feedback from client executives on current and future priorities
- Perspectives and insights from academic and industry luminaries
- Roadmaps and investment priorities from leading start-ups, venture capitalists, and technology vendors
- Insights and experiences from our global network of Deloitte professionals

Macro technology forces at work

Over the last ten years, cloud, analytics, and technologies empowering digital experiences have steadily disrupted IT operations, business models, and markets. Though these now-familiar forces may no longer qualify as "trends," their impacts cannot be overstated, and their storylines continue to evolve. Recently three new technologies—blockchain, cognitive, and digital reality (AR, VR, IoT, and others)—have taken up the "disruptor" mantle. Today, each is poised to become a distinct macro force in its own right. Meanwhile, three foundational forces make it possible for organizations to harness innovation while maintaining operational integrity: modernizing legacy core systems, transforming the business of technology, and evolving cyber risk strategies beyond security and privacy. These nine formative forces are the backbone of technology innovation past and present. Their individual futures are advancing at a rapid pace, while the controlled collision between them compounds their overall impact to drive purposeful, transformational change.

AI-fueled organizations

For some organizations, harnessing artificial intelligence's full potential begins tentatively with explorations of select enterprise opportunities and a few potential use cases. While testing the waters this way may deliver valuable insights, it likely won't be enough to make your company a market maker (rather than a fast follower). To become a true AI-fueled organization, a company may need to fundamentally rethink the way humans and machines interact within working environments. Executives should also consider deploying machine learning and other cognitive tools systematically across every core business process and enterprise operation to support data-driven decision-making. These are not minor steps, but as AI technologies standardize rapidly across industries, becoming an AI-fueled organization will likely be more than a strategy for success—it could be table stakes for survival.

NoOps in a serverless world

We have reached the next stage in the evolution of cloud computing in which technical resources can now be completely abstracted from the underlying system infrastructure and enabling tooling. Cloud providers are continuing to climb the stack; rather than simply providing everything from the "hypervisor on down," they are now taking on many core systems administration tasks. Together, these capabilities create a NoOps environment where software and software-defined hardware are provisioned dynamically. Going further, with serverless computing, traditional infrastructure and security management tasks can be automated by cloud providers or development teams. Freed from server management responsibilities, operations talent can transition into new roles as computing farm engineers who help drive business outcomes.

Connectivity of tomorrow

Advanced networking is the unsung hero of our digital future, offering a continuum of connectivity that can drive new products and services or transform inefficient operating models. Increasingly, digital transformation through data- and networking-dependent technologies such as cognitive, IoT, and blockchain is fueling adoption of connectivity advances. Next-generation technologies and techniques such as 5G, low Earth orbit satellites, mesh networks, edge computing and ultra-broadband solutions promise order-of-magnitude improvements that can support reliable, high performance communications; software-defined networking and network function virtualization help companies manage evolving connectivity options. Soon, expect to see companies take advantage of advanced connectivity in tomorrow's enterprise networks.

Intelligent interfaces

Today, people interact with technology through ever more intelligent interfaces, moving from traditional keyboards to touchscreens, voice commands, and beyond. And even these engagement patterns are giving way to more seamless and natural methods of interaction. For example, images and video feeds can be used to track assets, authenticate identities, and understand context. Advanced voice capabilities allow interaction with complex systems in natural, nuanced conversations. By intuiting human gestures, head movements, and gazes, AI-based systems can respond to nonverbal commands. Intelligent interfaces combine the latest in human-centered design techniques with leading-edge technologies such as computer vision, conversational voice, auditory analytics, and advanced augmented reality and virtual reality. Working in concert, these techniques and capabilities are transforming the way we engage with machines, data, and each other.

Beyond marketing: Experience reimagined

The new world of marketing is personalized, contextualized, and dynamic. Increasingly, this world is no longer orchestrated by creative agencies, but by chief marketing officers partnering with in-house technology organizations. Together, CMOs and CIOs are building an arsenal of experience-focused marketing tools powered by emerging technology to transform marketing from a hunch-driven exercise to one that is grounded in data. In experiential marketing, companies treat each customer as an individual by understanding their preferences and behaviors. Analytics and cognitive capabilities illuminate the context of customers' needs and desires and the optimal way to engage with them. Experience management tools tailor content and deliver across physical and digital touchpoints, bringing us closer to truly unique engagement with customers.

DevSecOps and the cyber imperative

To enhance their approaches to cyber and other risks, forward-thinking organizations are embedding security, privacy, policy, and controls into their DevOps culture, processes and tools. As the DevSecOps trend gains momentum, more companies will likely make threat modeling, risk assessment, and security-task automation foundational components of product development initiatives, from ideation to iteration to launch to operations. DevSecOps fundamentally transforms cyber and risk management from being compliance-based activities—typically undertaken late in the development lifecycle—into essential framing mindsets across the product journey. Moreover, DevSecOps codifies policies and best practices into tools and platforms, enabling security to become a shared responsibility of the entire IT organization.

Beyond the digital frontier: Mapping your future

Digital transformation has become a rallying cry for business and technology strategists. To those charged with mapping the future, it promises a triumphant response to the pressures and potential of disruptive change. Yet all too often, companies anchor their approach on a specific technology advance. To fuel impactful digital transformation, leading organizations combine technology with other catalysts of new opportunities—from emerging ecosystems to human-centered design and the future of work. Why? Because the technology trends that inspire digital transformation efforts don't take place in a vacuum. They cross-pollinate with emerging trends in the physical and social sciences and in business to deliver unexpected outcomes. 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. It is time to move beyond the frontier of random acts of digital.