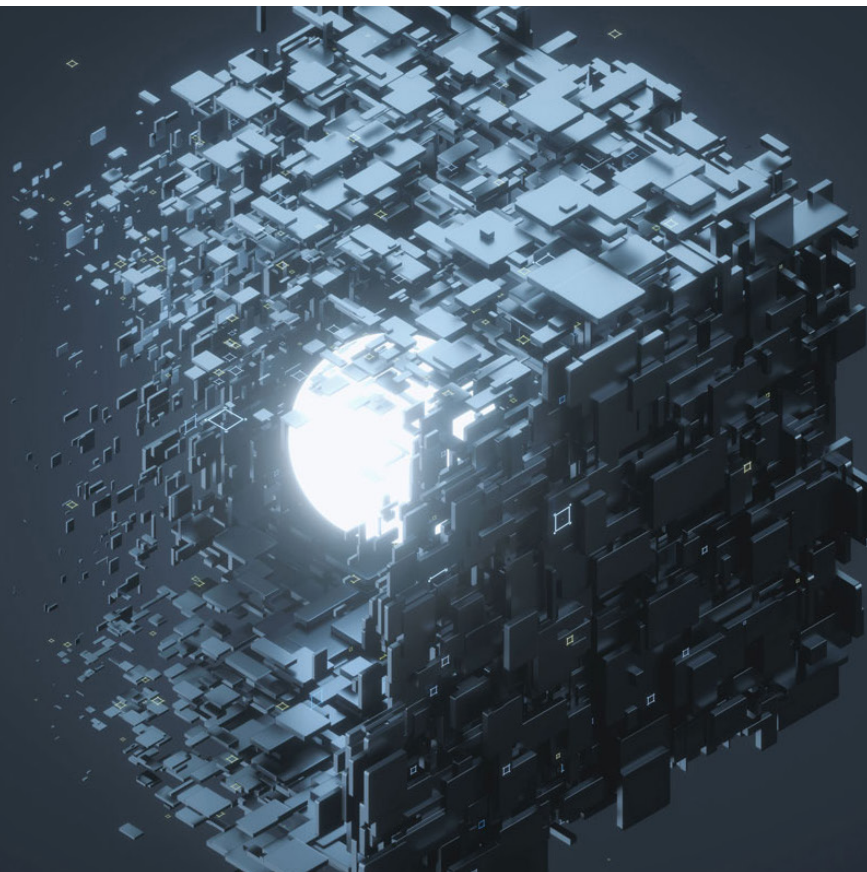# McKinsey & Company

Insurance Practice

How top tech trends will transform insurance

Over the next decade, the fully tech-enabled insurer will bear little resemblance to today's organization. Five trends, individually and in combination, will have a seismic impact.

by Krish Krishnakanthan, Doug McElhaney, Nick Milinkovich, and Adi Pradhan

September 2021

A handful of accelerating technology trends are poised to transform the very nature of insurance. In auto insurance, risk will shift from drivers to the artificial intelligence (AI) and software behind self-driving cars. Satellites, drones, and real-time data sets will give insurers unprecedented visibility into the risk around facilities, leading to greater accuracy. Claims processing after natural catastrophes will be automated, infinitely scalable, and lightning fast. The life insurance industry will bring to market "wrapped" products that seamlessly adjust coverage based on the evolving needs of their customers.

These scenarios aren't science fiction. The technologies behind them already exist, and innovative offerings could become mainstream in the next decade. Our analysis explored the impact of ten rapidly accelerating trends most relevant to competitive advantage.[1] Of these ten, five are poised to reshape the insurance landscape: applied AI, distributed infrastructure, future of connectivity, next-level automation, and trust architecture. The prevalence of these technologies also means insurers could face heightened competition from a new wave of digital attackers, as evidenced by the large number of greenfield insurers founded in the past three to five years.

To survive, incumbents will have to adapt their operating models, products, and core processes to a new reality. All executives must understand the impact of these technologies and ensure their organizations are positioned to unlock their potential. Leaders will need to let go of entrenched perceptions and business models and embrace new ways to manufacture and distribute what will in many cases be fundamentally different products.

Trends in tech shaping the future of insurance

The past few years have seen the emergence of core technology trends that are affecting nearly every industry. A multitude of technology advancements and shifts are reshaping products and services.

McKinsey examined a range of factors to identify the ten technology trends that matter most to top executives across industries (Exhibit 1). For every trend, we calculated a momentum score based on the growth rate of the technologies underlying the trends, which we derived from an in-depth analysis of six proxy metrics: patent filings, publications, news mentions, online search trends, total private investment, and the number of companies making investments.
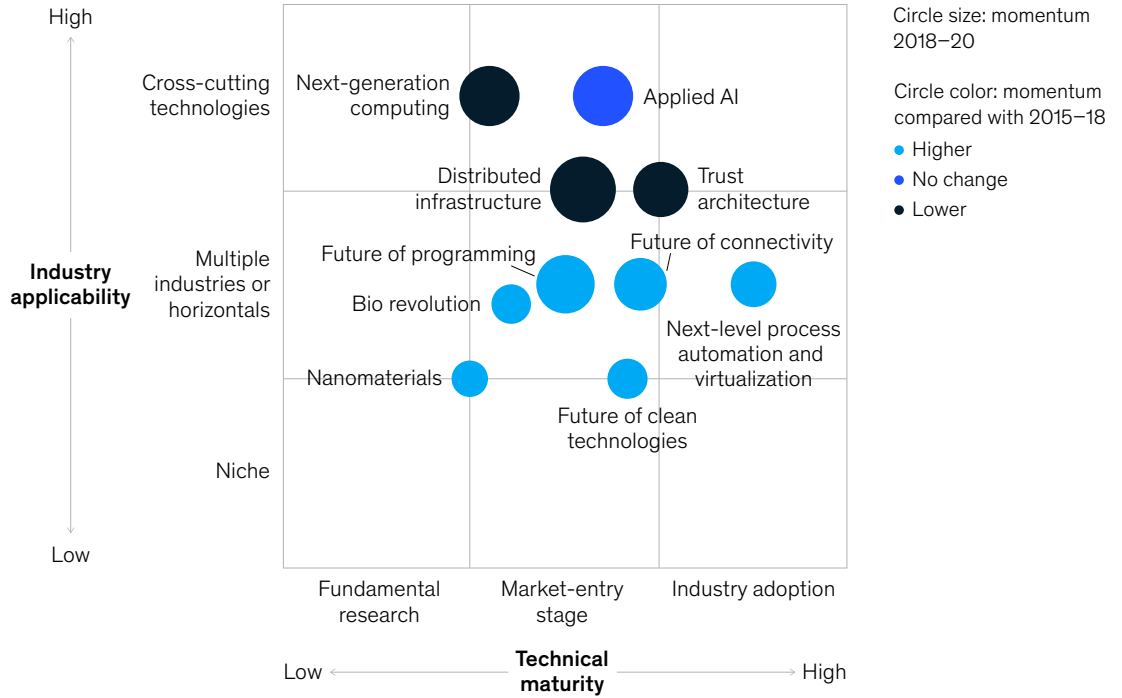
---

[1] For a detailed discussion of all ten tech trends, see Jacomo Corbo, Nicolaus Henke, and Ivan Ostojic, "The top trends in tech," June 15, 2021, McKinsey.com.

All insurance executives must understand the impact of accelerating technology trends and ensure their organizations are positioned to unlock their potential.

Exhibit 1

Ten tech trends will unlock a variety of new opportunities across industries.

McKinsey tech trends index

Circle size: momentum 2018–20

Circle color: momentum compared with 2015–18
- Higher
- No change
- Lower

In assessing how these trends are affecting the insurance industry—across lines and core processes—we pinpointed five that are likely to have an outsize impact over the next few years (Exhibit 2).

Applied AI
While many carriers are experimenting with AI, few have truly scaled their capabilities across the enterprise. As AI becomes more prevalent and algorithm creation becomes commoditized, carriers will be able to more fundamentally reengineer core processes to be more predictive in nature. AI will disrupt distribution, underwriting, claims, and service as core processes become AI-enabled, creating a "human in the loop" model that increases productivity and allows for higher-quality touchpoints with customers. Carriers have yet to fully realize the potential of their data assets—for example, claims histories and distribution

interactions. In addition to reengineering core processes, leading carriers and ecosystem players will use the advent of AI to create products and services based on data and analytics.

Distributed infrastructure
Insurers around the world have significant technology debt, with many core processes weighed down by extensive on-premise legacy technologies. As cloud matures, a rapid shift to the cloud for all core systems will help insurers to be more nimble in launching new products and creating better customer service. Cloud will also be critical for enabling the type of compute power that is needed to fully understand and make use of the incredibly large data sets (such as tens of millions of claims data points). As ecosystems continue to develop globally, cloud-native insurers will be best positioned to act as ecosystem orchestrators—

Exhibit 2

Five trends will have a pronounced impact on insurance.

	Personal P&C		Commercial P&C		Life and annuities	
Tech trend	Home	Auto	Standard[1]	Specialty[2]	Individual	Group
Applied AI	Major	Major	Major	Major	Major	Major
Distributed infrastructure	Major	Major	Moderate	Moderate	Major	Major
Future of connectivity	Major	Major	Major	Moderate	Major	Major
Next-level automation	Major	Major	Major	Major	Moderate	Moderate
Trust architecture	Major	Major	Major	Major	Moderate	Moderate
Next-generation computing	Limited	Limited	Limited	Limited	Limited	Limited
Future of programming	Moderate	Moderate	Moderate	Limited	Moderate	Moderate
Bio revolution	Limited	Limited	Limited	Limited	Major	Major
Nanomaterials	Moderate	Moderate	Moderate	Moderate	Limited	Limited
Future of clean technologies	Moderate	Moderate	Moderate	Moderate	Limited	Limited

Legend: ■ Major impact ■ Moderate impact ■ Limited impact

[1] Main lines include other liability (claims), marine, financial lines, and specialized property.
[2] Main lines include workers' compensation, general liability, commercial auto, commercial multiple peril, and property.
  Source: McKinsey analysis

acting as a connecting hub among customers, distributors, insurtech, healthcare providers, carriers, and reinsurers, among others.

Future of connectivity

In many markets, insurers have begun using telematics to evolve the core auto product. The wider adoption of IoT could usher in a similar reshaping of product in life, health, property, and commercial lines. Increasing the frequency and specificity of data being shared through IoT devices helps customers provide a more accurate view of their needs and insurers better understand risk, both at time of purchase and an ongoing basis. The increased prevalence of 5G allows this data to be shared at lower latencies and helps insurers provide real-time services to clients.

Next-level process automation and virtualization

Insurers have for many years invested in robotic process automation to help automate processes, especially in back-office operations, but emerging technologies will enable carriers to fundamentally rethink product and service. For example, industrial IoT can enable real-time monitoring of equipment to allow for predictive maintenance before claims happen. Similarly, digital twins and 3D and 4D printing have the potential to transform the claims experience for all physical damage areas.

Trust architecture

Across lines, insurers handle sensitive customer information, and the ongoing evolution of products and services will require customers to share even more of this information with carriers. New

technologies will allow carriers to more effectively manage risk and make use of complex customer data—a critical step in evolving to a "predict and prevent" model of insurance where data is shared more frequently between parties with insurers playing a more active role in claims prevention. As blockchain becomes more widely adopted, it will help carriers more effectively manage customer data in a safe and consistent manner and simplify current issues such as identity management and verification. Zero-trust security and similar approaches will help carriers create resilient networks that protect against cyber intrusions.

Why tech trends matter—and why now

These technology trends have the potential to materially change some of the underlying inputs of insurance products and core functions. In underwriting, for example, automated warehouses (enabled via applied AI and distributed infrastructure) may fundamentally alter the nature and focus of workers' compensation coverage by removing the majority of human workers from most warehouse operations. The higher-order impact of these trends on insurance will likely be experienced when technological forces interact and build upon one another. As an example of this multiplicative effect, we see distributed infrastructure (such as wearables), trust architecture (enabling privacy-protected sharing of real-time health data), and applied AI (enabling real-time feedback on the impact of physical activity on personal wellness) combining to transform how insurers use data to develop predictive insights and inform a variety of interactions with policyholders. Similar innovations could take place across the insurance value chain.

According to Amara's Law, we often overestimate the short-term impact of new technology and underestimate its long-term effect. With respect to the tech trends affecting insurance, it is unclear where the industry is in the impact continuum. Given the pace at which these trends have emerged and become disruptive (consider the rapid, in some cases exponential, increase in AI capabilities such as deep learning in the past three

to five years), we may have passed the inflection point and begun to underestimate their long-term impact. These specific trends have significant momentum (as measured by the tech trends index), and innovative insurance incumbents and new entrants have started using them to offer new products and services. However, many insurers are still modernizing their technology stacks and are at an early stage of the digitalization journey, leaving them susceptible to being overtaken by more nimble players. All of these factors should be a wake-up call for insurance executives to develop an understanding of where and how these trends may affect their core products and the competitive landscape.

Scenarios enabled by the combination and interaction of tech trends

Several scenarios could play out, depending on technology adoption, government legislation, consumer preferences, and tech-enabled product innovation.

Property and casualty

While these trends could affect property and casualty (P&C) in a range of ways, two scenarios illustrate the extent to which they could transform the landscape.

Seamless, automated underwriting of commercial insurance
Key trends: applied AI, distributed data collection, future of connectivity, and next-level automation

Scenario: The combination of applied AI, distributed data collection, future of connectivity, and next-level automation will allow insurers to underwrite a much wider range of risks more or less automatically using real-world, real-time data from a variety of sources. Insurers can increasingly use drones, satellite-generated radar imagery, computer vision, applied AI, and smarter edge devices to collect a variety of data on facilities and assets. In just a few days, a carrier could compile a data set of radar-based and drone-generated images and image attributes of an oil rig to inform underwriting in a fraction of the time

currently required. Trust architectures embedded via IoT and high-speed mobile networks allow a wide range of participants in the insurance value chain to share data in a secure and public manner.

Potential P&L impact: There could be significant improvement in combined ratio as a result of more accurate underwriting and more efficient processes for initial quote and bind as well as renewal.

Emerging examples:
— Predictive intelligence company Windward provides watch-list monitoring for maritime assets, enabling risks to be assessed based on near-real-time conditions and recent activity.

— The integrated logistics company Maersk has built a maritime blockchain with a vision for using IoT and smart contracts to update policies in an automated fashion.

Drastic shift in risk profile and how insurers partner with their customers to manage it
Key trends: next-level automation, applied AI, trust architecture, and distributed infrastructure

Scenarios: As the degree of automation increases in traditionally labor-intensive industries, the nature of insured risk will change. Consider a fully automated dark warehouse run by robotic pickers using applied AI and next-level automation. Risks from cyberthreats and malfunctioning AI become more acute compared with accidents caused by human error. The nature of risk will change, while some new risks may emerge and require new types of coverage and underwriting.

Managing risks from autonomous and semiautonomous vehicles will force carriers to reassess how auto insurance products function. The role of insurers may shift from claims to prevention, whereby they are best placed to identify and reduce risk by partnering with clients and using technology. In many cases, insurers will need to form ecosystems and integrate a multitude of data sources.

Potential P&L impact: Industry revenue and profit pools could shift significantly.

Emerging examples:
— Munich Re's aiSure is an insurance product for AI providers that wish to offer insurance-backed performance guarantees. For example, Deep Instinct (a cybersecurity firm using AI and deep learning in its products) offers customers a ransomware warranty backed by an insurance policy purchased from Munich Re.

— AXA's Construction Ecosystem integrates data from a range of technologies, including imagery, wearables, and sensors, to provide contractors with unique insights and benchmarks to help manage risks on their jobsites.

Life and annuities
Through technology, insurance underwriting becomes continual rather than at a point in time, with innovative products emerging to reflect shifting customer behaviors. Models such as ecosystem-enabled data sharing will give insurers greater access to granular information to support more specific pricing and risk tiering. The combination of tech trends will enable insurers to cover individuals in more dynamic and responsive ways.

Insure the individual: 'Pay as you live'
Key trends: future of connectivity, distributed infrastructure, applied AI, bio revolution, and trust architecture

Scenario: The ability to engage individuals continually will lead to products that dynamically adjust premiums, benefits, or both on a regular basis. Mortality and morbidity insurance will be a more fluid product, essentially enabling individuals to pay as they live. For example, many individuals today need to buy life insurance, critical-illness protection, disability coverage, and long-term-care coverage to fully protect their families from the financial disruption of high-cost medical events. In the future, the lines between these product categories will blur substantially, as carriers are able to offer "umbrella" coverage across risk categories tailored to each individual. In addition, with the bio revolution and the advent of precision medicine, carriers will be expected to have a significantly more nuanced perspective on a customer's risk. The ability to "unbundle" traditional protection products to

create custom packages will be guided by broader regulation and actuarial standards, which will need to adapt.

Potential P&L impact: Industry revenues and profit pools for personal life and health insurance could change substantially.

Emerging example: Vitality, a South African wellness solution, provides incentives for better health behavior, collects data using fitness devices, and dynamically prices risk over time based on customers' engagement with their health.

Reimagining strategy in an evolving landscape

As these trends unfold and begin to steadily alter the nature of insurance operations and products, incumbent carriers will need to carefully consider a number of critical questions to inform decisions and actions in the near future:

— How will these trends affect the nature and structure of our organization? In what ways will we need to adapt our functions and core processes?

— Do we have the right talent and mix of skills that will be required to both understand and harness these new technologies? Where are our gaps— and how wide are they?

— If we were to incorporate these new technologies, should we pursue a build, buy, or partner strategy?

— What is the role of data and technology ecosystems as we consider our future technology, product, and operating strategies? If we participate, what should our role be— for example, ecosystem owner, facilitator, or participant?

— How are consumer attitudes toward privacy and data sharing evolving? Which technology ecosystems are well positioned to capture data that could be transformative for insurers?

— Where are traditional insurers being disintermediated by new entrants, and where do new entrants have an unfair advantage in how they deliver products and services built on tech trends?

The tech trends highlighted in this article will dramatically reshape the industry from top to bottom, creating significant opportunities and, in some cases, existential threats to traditional players. These shifts are already happening, meaning insurers should act now to develop a more ambitious vision for how technology can elevate their organizations. To embrace the potential of tech trends, winning insurers will build their tech talent, put tech trends and their business implications on the leadership agenda, and be willing to disrupt their own products and services.

In future articles, we will continue to offer deep dives on the impact of selected tech trends, focusing on the specific opportunities and threats to various insurance lines of business.

Contact

For more information on this topic, please contact:

North America

Ramnath Balasubramanian
Senior partner, New York
Ramnath_Balasubramanian@McKinsey.com

Sanjay Kaniyar
Partner, New York
Sanjay_Kaniyar@McKinsey.com

Krish Krishnakanthan
Senior partner, Stamford
Krish_Krishnakanthan@McKinsey.com

Doug McElhaney
Partner, Washington, DC
Doug_McElhaney@McKinsey.com

Nick Milinkovich
Associate partner, Toronto
Nick_Milinkovich@McKinsey.com

Europe

Jens Lansing
Partner, Düsseldorf
Jens_Lansing@McKinsey.com

Nadine Methner
Partner, Frankfurt
Nadine_Methner@McKinsey.com

Björn Münstermann
Senior partner, Munich
Bjoern_Muenstermann@McKinsey.com

Ulrike Vogelgesang
Senior knowledge expert, Hamburg
Ulrike_Vogelgesang@McKinsey.com

Asia

Dino Ho
Senior expert, Seoul
Dino_Ho@McKinsey.com

Joe Zachariah
Associate partner, Melbourne
Joe_Zachariah@McKinsey.com

Further insights

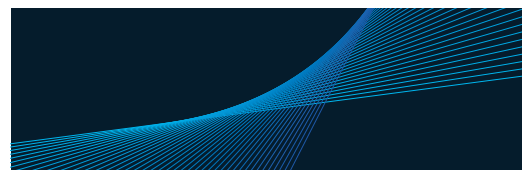McKinsey publishes on issues of interest to industry executives. Our recent articles include:

Tech-driven insurers: How to thrive in 2030

Insurance 2030—The impact of AI on the future of insurance

Reaching the next normal of insurance core technology

The top trends in tech