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- COMMERCIAL INSURANCE
- EMPLOYEE BENEFITS
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- SURETY

TECHNOLOGY

Markets in Focus

Economic Overview & Market Update

Q4 2023

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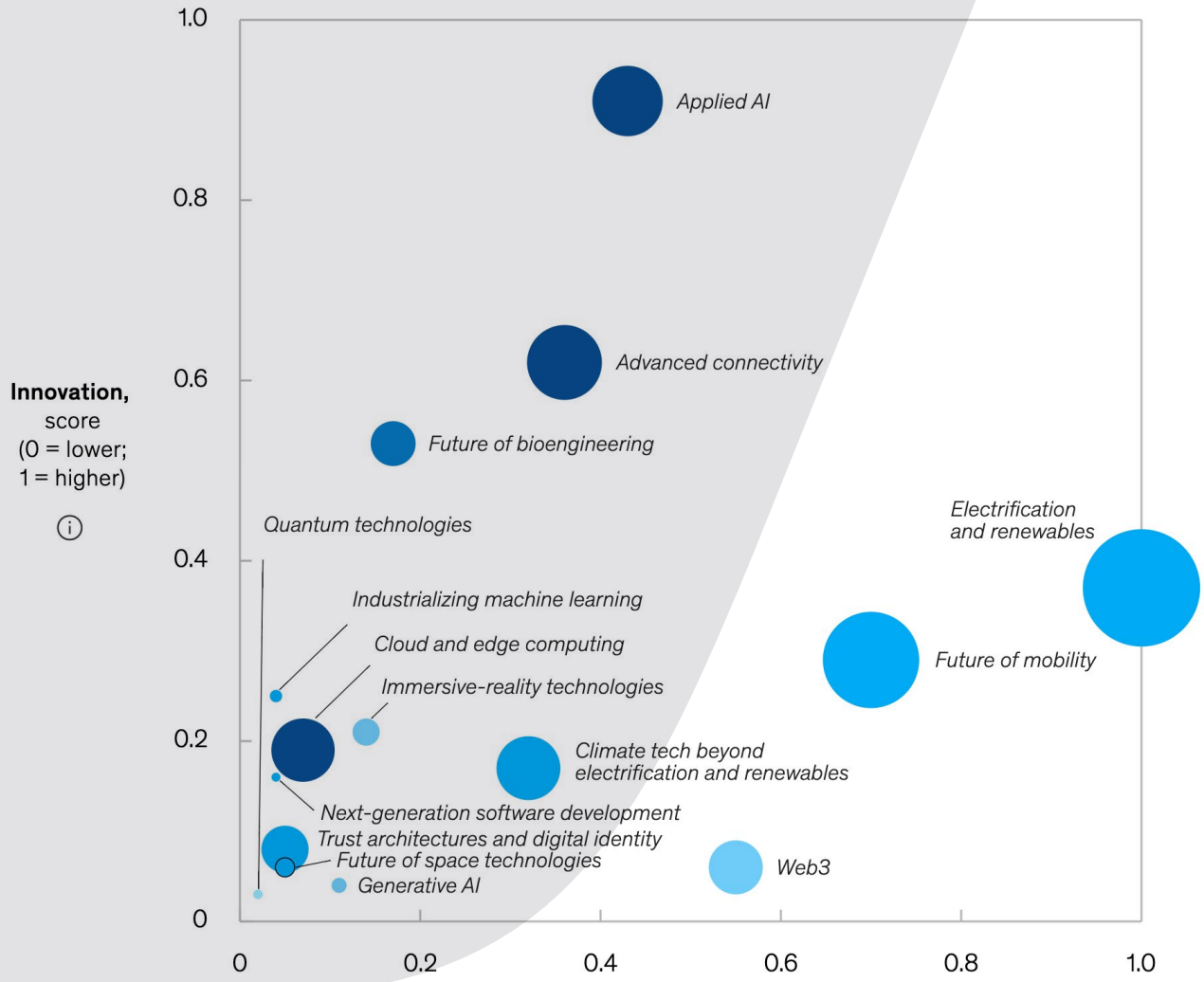
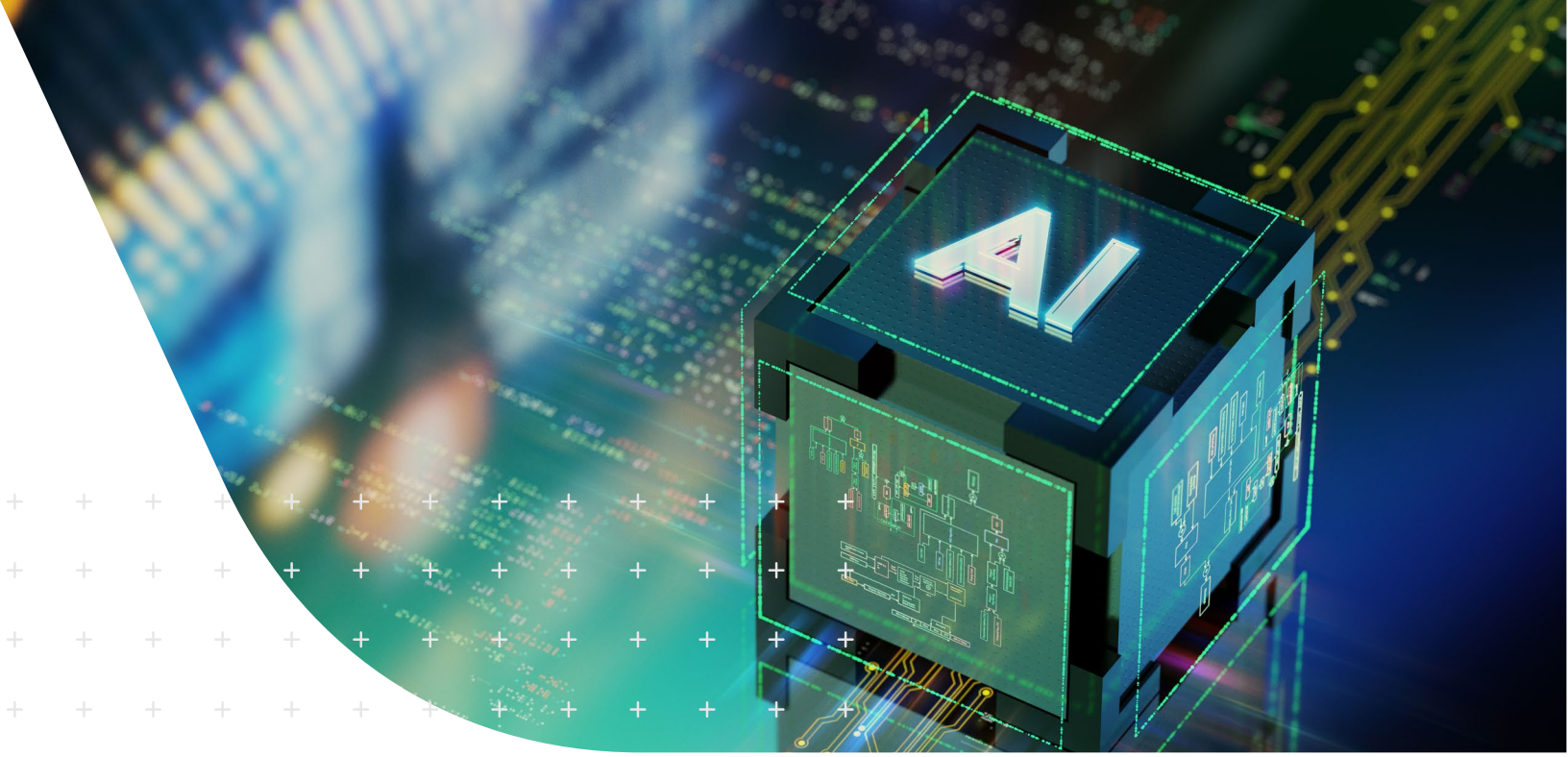
2023 YEAR IN REVIEW

Defined as *applying scientific knowledge for practical purposes*, technology has many terms, definitions, and use cases. Technology touches every commercial industry vertical and includes hardware and software solutions for public use, including information technology, robotics, the Internet of Things, communication, health technology, machine learning, electronics, and automation. In this report, we will focus on three of the timeliest advancements for 2023-2024: Artificial Intelligence, Quantum Computing, and Sustainable Technology.

Change is a constant and a measure of progression into the future. Technological advancements continue to shape the current state and lead us into the future. In the following annual report, IMA's Advanced Industries team looks at significant innovations in artificial intelligence, quantum computing, sustainable technology, and market challenges. We then consider the impacts and uncover insights that may impact the future of insurance strategies and risk solutions.



Source: McKinsey & Company Technology Trends Outlook 2023, July 2023



2023 IMPACTFUL INDUSTRY EVENTS

ARTIFICIAL INTELLIGENCE (AI)

AI companies led the tech sector in overall growth in 2023, helping it recover from the previous year. Forbes Global 2000 highlights a spend of $4.2 trillion in 2023 revenue compared to $4.0 trillion in 2022 and $3.3 trillion in 2021.[1]

Applied AI

Models trained in machine learning can be used to solve classification, prediction, and control problems to automate activities, add or augment capabilities and offerings, and make better decisions.

0 1 2 3 4 5
adoption rate score, 2022
(0 = none; 5 = mainstream)

$104
billion
equity investment,
2022

+6%
job postings
difference,
2021–22

Generative AI

Generative AI can automate, augment, and accelerate work by tapping into unstructured mixed-modality data sets to enable the creation of new content in various forms, such as text, video, code, and even protein sequences.

0 1 2 3 4 5
adoption rate score, 2022
(0 = none; 5 = mainstream)

$5
billion
equity investment,
2022

+44%
job postings
difference,
2021–22

Source: McKinsey & Company Technology Trends Outlook 2023, July 2023.

AI-based machine learning increasingly supported generative AI applications – the ability to create new content based on the probability data uncovered in AI machine learning. These generative AI capabilities found their way into workplaces as companies found new applications that raised concerns about personal intellectual property protection and job security.

Labor unrest may continue as workers aim to protect their roles in the workplace. We may see an increase in creating more virtual or digital twin environments where innovators can experiment and test theories without the costs and risks of working in the "real world." The link to quantum computing and generative AI will enhance the frequency of product and process breakthroughs.

In 2023, a blueprint for AI framework was developed to address five guiding principles: creating safe and effective systems, data privacy, algorithm discrimination protections, user notices, and human alternatives, but it has remained largely unused and voluntary. In the fourth quarter of 2023, multiple bills have been presented and discussed, with an expected executive order specifically addressing Artificial Intelligence to be released soon. It is expected that the Federal Trade Commission (FTC) will be tasked as the agency responsible for enforcement.

On October 30, 2023, President Biden issued a groundbreaking Executive Order, setting new benchmarks for AI safety, security, and privacy. It emphasizes equity, consumer rights, innovation, and global leadership in artificial intelligence. The executive order introduces comprehensive measures to safeguard Americans from potential AI risks:[2]

+ Developers of powerful AI must share safety test results with the U.S. government.
+ Create standards, tools, and tests for AI safety, security, and trustworthiness.
+ Guard against AI misuse in creating hazardous biological materials.
+ Set standards to detect and authenticate AI-generated content, countering fraud and deception.
+ Launch an advanced cybersecurity program to fortify critical software.
+ Mandate a national security memorandum for additional AI security directives.

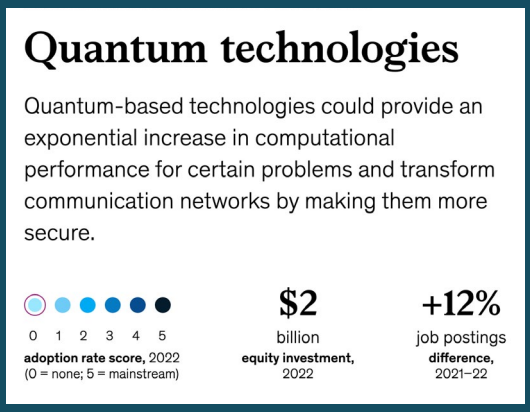
WHAT THIS MEANS FOR YOU

+ Insurance carriers and brokers have been underwriting artificial intelligence for years, as it is embedded in many kinds of existing technology. The Secure Software Development Framework (SSDF) and additional changes in regulations may very likely change the future of tort liability for software companies.
+ Key insurance considerations:
  - There may be heavy reliance **on technology errors & omissions** (or **professional liability** for technology firms), **media liability** and **intellectual property**, and **general liability** for any company negligence that results in bodily injury or property damage related to AI.
  - Shifts in regulation may push the **tort liability** back to the software developer, regardless of how the AI functions, and may significantly increase the rates and underwriting scrutiny of technology companies that deploy AI.
  - **Directors & Officers Liability** - There may be additional scrutiny for software companies that self-attest clean controls to satisfy various regulations furthering existing complexity of the fraud exclusions in policies.

QUANTUM COMPUTING

According to Dell, the economy for quantum computing is growing at an accelerated rate of 31.3% CAGR.[3] Encryption methods currently in place could be disrupted by quantum computing, enabling nations with advanced quantum technology to decode others' encrypted data. In 2023, the U.S., U.K., China, and Russia invested heavily in this technology.[4]

The U.S. Government is spending on quantum information science (QIS) research in agencies to support complex problems like the Department of Energy and National Science Foundation.



Source: McKinsey & Company Technology Trends Outlook 2023, July 2023

Agency	FY 2024 Budget Request for QIS
The Office of Science at the Department of Energy (DOE)	$280M
National Science Foundation (NSF)	$333M
Commerce: National Institute of Standard and Technology (NIST)	$5M

Source: Deltek GovWinIQ Funding for quantum R&D in the FY 2024 Budget Request. April 2023[5]

WHAT THIS MEANS FOR YOU

+ Quantum computing will be the technology to watch over the next 10 years. A hybrid of standard and quantum computing is expected as it will be more commercially scalable.

+ Key insurance considerations:

  - Traditional **technology errors & omissions** and **cyber liability policies** will likely respond to claims arising from technology platform stacks.

  - There is a significant amount of energy needed for this advanced computing, which leads to an overall focus on sustainable technology and renewable energy.

SUSTAINABLE TECHNOLOGY

The plans for carbon emissions reduction, clean energy, and decentralized energy initiatives gained more traction in focusing on sustainable technology. Sustainable technology will continue to take center stage as countries and corporations continue to work on meeting net-zero commitments. At the same time, individuals will increasingly leverage technology to minimize their impact on the environment and manage environmental costs to the business.

In 2024, sustainable technology will maintain its spotlight as nations and businesses strive for net-zero goals. Individuals will also adopt tech for eco-conscious living. This includes electric vehicles, green energy solutions, and innovations like carbon capture. A majority of CEOs (62%) plan to allocate at least 6% of their revenue towards initiatives aimed at enhancing organizational sustainability.[6] The circular economy gains traction, emphasizing product durability, and reusability.

WHAT THIS MEANS FOR YOU

+ Expect advancements in green cloud computing and eco-friendly apps, shaping a greener future.

+ There will be a need to prioritize ethical and sustainable material sourcing for manufacturing in response to evolving consumer habits. Addressing potential disparities in accessing green alternatives among different groups.

+ Vigilance against greenwashing, where companies engage in surface-level eco-friendly initiatives for PR gains, will be crucial.[7]

Source: Asite. January 2022.

REGULATION CHALLENGES

Technology is moving further ahead of regulation, and ever-changing regulations struggle to keep up with technological changes. The May 2021 Executive Order on Improving the Nation's Cybersecurity (EO14028) required the private sector to adapt to a changing threat environment and ensure protections are built into operations.[8] We can expect increased focus on infrastructure in technology advances. This increase in focus could be a primary component where transparency and trust meet. In 2023, regulatory updates took place in critical areas:

1. Federal Trade Commission (FTC) and Artificial Intelligence

- In 2021, the Appropriations Act in which Congress asked for recommendations on "reasonable policies, practices and procedures."
- In 2022, the FTC issued a joint statement on bias in artificial intelligence algorithms with the U.S. Department of Justice's Civil Rights Division, the Consumer Financial Protection Bureau, and the Equal Employment Opportunity Commission that reminded the industry that using tools that allow for discrimination is prohibited.

2. FDA for Cybersecurity in Medical Devices

- The U.S. FDA updated its cybersecurity safety guidance for medical devices on Sept. 27, 2023 in response to increasing cyberattacks. The guidance applies to all devices with cybersecurity considerations and recommends implementing a secure product development framework (SPDF) at each stage of device development.
- The FDA recognized the critical role of artificial intelligence and machine learning (AI/ML) in medical device development. The guidance advises manufacturers to evaluate and enhance cybersecurity systems throughout the device life cycle.
- Investors should ensure potential targets incorporate security-by-design and lifecycle security risk management into their plans and have measures to prevent possible attacks at each touchpoint and via interconnected devices.[9]

3. U.S. Government & the Secure Software Development Framework (SSDF)

- Three of the most significant and impactful cyber events in recent years led to the increased scrutiny of the U.S. supply chain and software vulnerabilities.
- SolarWinds, a software company working with the U.S. Government, suffered a catastrophic supply chain attack that affected not only their customers but their customers' customers and many agencies within the U.S. Government. NotPetya and the Colonial Pipeline cyber events highlighted the risks of supply chains in infrastructure, including electricity, oil and gas, and water supplies.
- Executive Order 14028, "Improving the Nation's Cybersecurity," tasked technology companies working with the U.S. Government to “identify[ing] practices that enhance the security of the software supply chain” in 2021.[10]
- The federal government is finalizing the SSDF requirement to secure firmware, operating systems, applications, and cloud-based software through self-attestation with a Software Bill of Materials (SBOM) with 42 controls.

KEY COVERAGES TO WATCH

PROFESSIONAL LIABILITY, ERRORS & OMISSIONS

+ Professional liability coverage provides third-party liability coverage for claims alleging financial damages arising out of the products or services of technology companies.

+ Companies that offer software, and specifically those whose services include artificial intelligence, may face additional underwriter scrutiny in the future based on the possible shifts in tort liability arising out of pending regulations.

CYBER

+ Carriers continue to improve underwriting with a dynamic application process to include not only static underwriting questions but also cyber risk assessment tools and underwriter calls to drill down on bespoke cybersecurity practices by the company.

+ Underwriters have continued strengthening their questions regarding cyber practices and detailed applications for clients to complete.

DIRECTORS LIABILITY

+ Very few lines of coverage see significant fluctuations based on macro and micro-economics as directors & officers liability. The impetus of environmental, social, and governance (ESG), volatile geopolitical landscapes, litigation, and nuclear verdicts are only a few challenges to carriers in 2023-2024.

+ Ever-changing regulations worldwide meant continuous evolution in coverage, claims, and legal responses. In 2023 alone, there have been significant updates to the FDA, FTC, and SEC regulations of cyber and how it affects directors & officers liability coverages.

GLOBAL LIABILITY COVERAGES

+ Due to software, global hardware supply chains, and the Internet of Things (IoT), technology firms are global. Whether a company tracks global sales or has offices and warehouses worldwide, working with an insurance broker who understands global risk assessment, insurance, and regulations is imperative.

IN SUMMARY

The insurance landscape for technology is growing in complexity as they aim to keep pace with regulation. It remains critical to be as transparent as possible with your broker and the insurance marketplace to unlock the best combination of coverage and cost. Brokers specializing in this space understand how to translate complex technology into simple terms that the market can understand. Keys to success with upcoming insurance renewals/placements include:

BEGIN THE RENEWAL PROCESS EARLY

Partner with your broker early to prepare for changes to increase greater renewal success.

PARTNER WITH INDUSTRY EXPERTS

It is important to work with your broker's industry experts who understand the business and the market for placing the specific risk. Collaborating with a team that can best represent your risk and partner with your operations is more important than ever during this disciplined market we are experiencing. IMA can tap into global resources quickly to source the most effective team in the countries in which our clients operate. Deep collaboration among the global teams assists clients not only from a risk management and insurance perspective, but can better assess and track pending regulations in the country in real time.

HIGHLIGHT CYBER SECURITY & PROACTIVE RISK MANAGEMENT

IMA has a team solely dedicated to managing cyber risks. They offer expert assistance, including coverage analysis, financial loss exposure benchmarking, contract language review, in-depth cyber threat analysis, and strategic development of comprehensive, high-value cyber insurance programs.

CONTRACT REVIEW

Our **contract review** teams add value to our clients' overall risk management program by ensuring the indemnity language is market standard and doesn't expose our clients to unforeseen losses that may not be insurable.

ENGAGE SUSTAINABILITY

Sustainable technology is a broad term that alludes to many tactics to protect our future environment. IMA invests heavily to deploy specialty niche teams concentrating on cutting-edge technology, green energy initiatives, and advanced manufacturing. As every client is different, our Sustainability Advisory team provides clients with education, advice, and access to tools and best practices to advance their sustainability resiliency and showcase their ESG performance for insurance underwriters.

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MORE THAN JUST INSURANCE

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MARKETS IN FOCUS CONTRIBUTORS

RENEE STOCK, VP, Senior Advisor and Consultant: Advanced Industries Specialty

ANGELA THOMPSON, Marketing Specialist, Market Intelligence & Insights

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California Lic #0H64724

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CT-MiF-B-C-120523

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