

**Deloitte.**



2023 technology  
industry outlook

# Contents

Leading through macroeconomic uncertainty	4
Navigating global uncertainties	5
Transforming other industries through technology	6
Adapting to new regulations	7
Signposts for the future	8

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*About Deloitte's outlooks*

*Our 2023 outlook for the technology industry seeks to identify the strategic issues and opportunities for tech organizations to consider in the coming year, including their impacts, key actions to take, and critical questions to ask. The goal is to help equip US technology organizations with the information and foresight they need to position themselves for a robust and resilient future.*

# Executive summary

The technology industry has not just weathered the pandemic-driven disruptions of the past few years but has flourished.

The crisis thrust many organizations into the future, accelerating digital transformation and changing work models dramatically. As supply networks struggled, Deloitte urged tech leaders to evaluate where and how manufacturing happens; to focus on improving transparency, flexibility, and resiliency of their supply chains; and to prepare proactively for future uncertainty and other systemic risks.<sup>1</sup> We recommended that tech companies ramp up innovation and transformation by doubling down on cloud and everything-as-a-service (XaaS).<sup>2</sup> We advised leaders to bolster their talent bench in critical capabilities such as artificial intelligence (AI), robotic process automation (RPA), and cybersecurity.<sup>3</sup>

While many leaders appear to have heeded the advice, in 2023 the tech industry will likely continue to grapple with issues around supply chains, workforce, and innovation—now exacerbated by considerable macroeconomic and global uncertainties. A recent Deloitte survey revealed technology decision-makers' top strategic concerns for the next two to three years: Macroeconomic uncertainty topped the rankings, followed by workforce issues and then the competitive landscape.<sup>4</sup> Geopolitical and regulatory uncertainties also worry the respondents, though not as intensely.

While tech stocks outperformed during the pandemic pressures of 2020–2021, the sector led considerable stock market declines in 2022.<sup>5</sup> A major challenge now for tech companies is how to weather a potential economic slowdown by trimming costs, increasing efficiency, and growing revenues. At the same time, many are likely looking for ways to remain innovative and build a strong, competitive position for the future.

Some of the specific themes we see playing a critical role in 2023 and beyond include:

- **Leading through macroeconomic uncertainty.** Beleaguered by softening consumer spending, lower product demand, and falling market capitalizations, tech companies' C-suites are feeling the urgency to increase margins and grow revenues. Beyond

workforce adjustments, approaches may include making business processes more efficient, relying more heavily on intelligent automation, reducing tech debt by implementing best practices for software development, modernizing legacy architectures by migrating to cloud and XaaS, and considering strategic mergers and acquisitions (M&A).

- **Navigating global uncertainties.** As technology companies confront heightened global challenges—including geopolitical tensions, supply chain volatility, raw material shortages, semiconductor supply concerns, and new regulations—they should work to mitigate risks and build more resilient systems. Leaders should think strategically about their choices of partners, where they're located, and where and how production takes place.
- **Transforming other industries through technology.** On a hunt for new revenue opportunities, the tech sector is extending its reach into other industries, using digital advancements to support innovation and transformation. A primary example of this convergence is tech and health care. Tech companies are also seeking to improve efficiency and spur innovation in other areas that are ripe for transformation, including real estate, manufacturing, and retail.
- **Adapting to new regulations.** Climate change and social impacts are having an increasing effect on the operations of tech companies. At the same time, governments and shareholders around the world are pushing companies to increase transparency around environmental footprints and tax payments and to commit to reducing carbon emissions. New and proposed regulations are expected to require updates to business management software tools, enabling companies to achieve real-time visibility and to grant authorities access to data they will need for increasingly complex compliance processes.

Economic headwinds seem to be gathering for business in general and for the technology industry specifically. But there are many regulatory incentives that may spur innovation and growth in 2023 and beyond. To survive and thrive, technology companies should rededicate their efforts to improving supply operations, modernizing infrastructure, and leveraging growth opportunities.

# Leading through macroeconomic uncertainty

Faced with ebbing product demand, decreasing consumer spending, and falling valuations, tech company C-suites may feel enormous pressure to reduce their costs and improve profitability. They're responding in many ways: conducting strategic reviews of talent, modernizing their tech infrastructure, and looking for bargains in M&A. Tech leaders should consider a mix of approaches that could enable them to emerge from a downturn with the right tech, talent, and growth opportunities in place.

Notably, Q4 2022 saw hiring freezes and layoffs sweep through the sector.<sup>6</sup> After hiring aggressively to meet demand during boom years, leaders are now aiming to right-size their workforces.<sup>7</sup> But *right-skilling* continues to be just as critical: 58% of technology decision-makers Deloitte surveyed reported that recruiting talent is a major challenge, and 48% said the same about retaining personnel.<sup>8</sup> The workforce reductions may have an upside for smaller, growing tech companies by providing opportunities to acquire newly available talent.

Tech leaders are using other cost and efficiency levers, too, such as revisiting procurement decisions, using digital tools to optimize sourcing activities, reexamining operations from a tax perspective to identify potential savings, and transforming operating models.<sup>9</sup> According to Deloitte's 2022 Global Intelligent Automation survey, organizations are increasingly deploying intelligent automation technologies—including RPA, optical character recognition, AI, low-code tools, and process mining—to realize broad benefits that include improved productivity, increased accuracy, better customer experience, and cost reduction.<sup>10</sup> Indeed, surveyed leaders whose organizations have moved beyond piloting intelligent automation reported achieving cost reductions of 32%, on average.<sup>11</sup>

Cloud computing and XaaS<sup>12</sup> will likely continue to flourish during economic uncertainty.<sup>13</sup> Facing fluctuating IT demands and workforce challenges, leaders accelerated the shift to service-based IT during the pandemic.<sup>14</sup> Researchers estimate that, as of 2022, cloud represents 40% of global enterprise IT spending and as-a-service represents a majority of software spending.<sup>15</sup> The benefits—elastic scaling of IT capacity and costs, increased agility, minimized risk, and access to innovative capabilities—have heightened appeal in uncertain times. Migrating operations to the cloud can also help companies shift from capital expenditures to a consumption-based model, freeing up cash for operations. Moreover, leaders view cloud and XaaS as critical to their digital transformation and core to creating new solutions and business models—which could pave the way to new revenues.<sup>16</sup> As product providers, many tech companies are converting their offerings to a subscription-based XaaS model—

which has the benefits of predictable, recurring revenue streams and potentially faster revenue growth, plus improved client retention.<sup>17</sup>

One initiative that many companies undertake as part of their digital transformation efforts is modernizing legacy systems. These may be critical to their business, but they are expensive to maintain; susceptible to hacking; and difficult to integrate with cloud, analytics, and mobility.<sup>18</sup> This process may involve re-architecting legacy systems to use cloud-native services, decomposing monolithic code into microservices, and integrating modern user interfaces and cybersecurity solutions.<sup>19</sup> Potential benefits include improved efficiency, agility, and customer experience. Modernization also allows companies to take greater advantage of software engineering practices such as agile methodologies, DevOps, and DevSecOps.<sup>20</sup>

Tech leaders will likely be looking to increase revenue in 2023 through strategic mergers and acquisitions. Indeed, M&A activity flourished in the enterprise IT sector in 2022, with DevOps and cloud transactions leading the deals.<sup>21</sup> In 2023, lower valuations may drive tech companies to rev up M&A activity in areas that will allow them to leverage new technologies, including AI and machine learning.<sup>22</sup> Additionally, alliances and joint venture partnerships present alternate pathways to grow market and revenue footprint. At the same time, to enhance margins and become more agile in dealing with future uncertainties, tech leaders may consider divesting their non-core assets to become leaner and unlock value from their core businesses.<sup>23</sup>

## Strategic questions to consider:

- What steps are we taking to evaluate and improve our tech company's operating models and business processes? For example, are we considering process mining to visualize business processes and workflows, understand bottlenecks, and identify opportunities to reduce costs?<sup>24</sup>
- How can we foster greater productivity despite potential resource constraints?
- How can our company accelerate research and development of innovations that create opportunities for new products, services, business models, and, ultimately, new revenues?
- How can we ensure that our workforce has the right mix of skills for competitive success? Have we considered how to keep workers engaged and how to train and upskill them? Can acquisitions help us upgrade our talent in growth areas?

# Navigating global uncertainties

Beyond the concerns about macroeconomic conditions, the technology industry faces global challenges ranging from geopolitical tensions to supply chain uncertainties, ongoing semiconductor concerns, raw material shortages, and enactment of new legislation and trade restrictions. In 2023, all these issues will likely top the priority lists of many prominent tech companies as they reassess partnerships, suppliers, and the markets in which they do business.

With nearly 80% of digital components manufactured in Asia, the reliability and swift supply of parts and components pose a huge risk for US tech companies in the current market environment.<sup>25</sup> The big tech companies are dependent on China to supply hardware for their servers, storage, and networking products.<sup>26</sup> In light of the supply chain threat posed by China's COVID issues and ongoing trade tensions, tech leaders should consider exploring additional countries for manufacturing and sourcing of their products.<sup>27</sup> While it may not be possible to shift product sourcing entirely away from China, the manufacturers that command a lion's share of the technology market are likely to explore other Southeast Asian countries and perhaps near-shoring for sourcing components and assembling their products.<sup>28</sup>

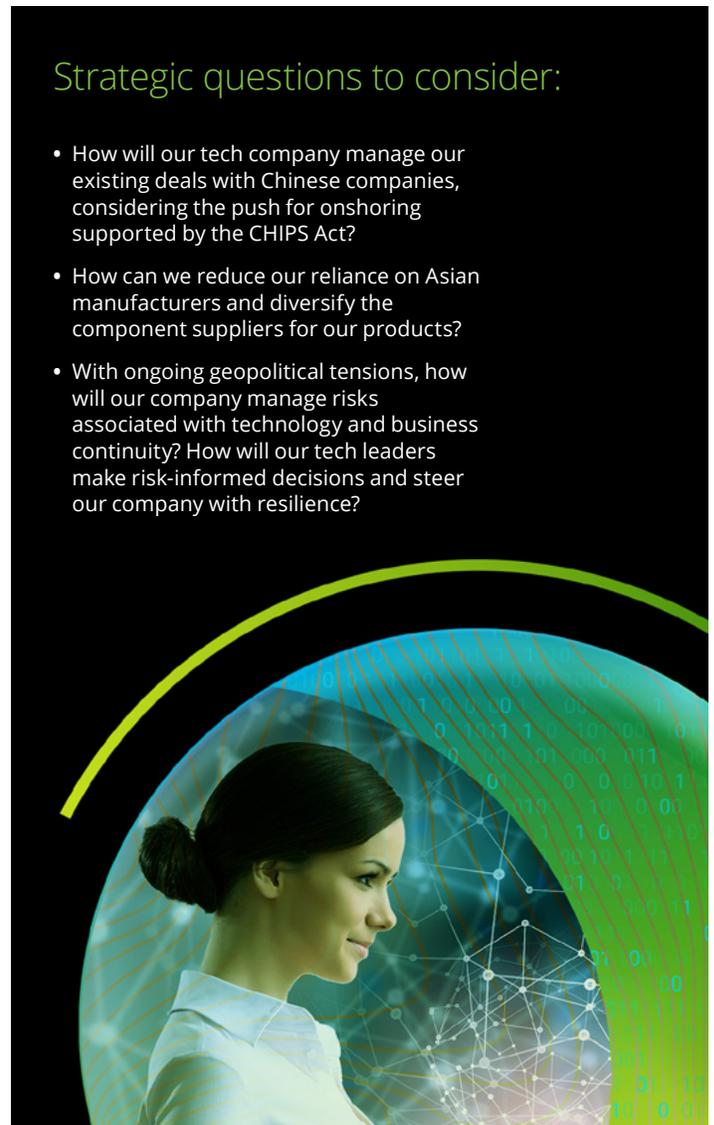
Global economic instability is likely to compound the challenges facing tech companies. Owing to conflicts such as the Russian invasion of Ukraine and geopolitical tensions in Asia, tech companies may witness product shortages and delays, service disruptions, bankruptcy of core suppliers, increased product costs, and reduced global sales in the months ahead.<sup>29</sup> Additionally, tech companies that have prior purchase commitments with their suppliers will be constrained to buy components at higher prices than those available in the current market, which will affect gross margins. In 2023, tech companies should consider revising supplier agreements to reflect new circumstances.

Geopolitical tensions, embargoes, and trade restrictions are notably affecting the chip industry, causing downstream disruptions for tech and other industries. Deloitte's 2023 Semiconductor Industry Outlook anticipates that there will likely be a surfeit of some chips, while others remain in short supply.<sup>30</sup> Ensuring a reliable supply of chips is expected to remain crucial for the stability of many markets, and 2023 may see tech companies finding the right mix of expansion, new plants, and "friendshoring"<sup>31</sup> to localize the chip supply chain and help make it more resilient.

US tech companies planning to build their own chips can receive financial assistance, thanks to the new CHIPS and Science Act of 2022 (CHIPS Act).<sup>32</sup> Companies opting for CHIPS Act funding may need to reassess their existing deals with Chinese suppliers, as they will be barred from building leading-edge technology in collaboration with China.<sup>33</sup> From a long-term standpoint, tech companies should consider analyzing the strategic importance of their materials and components and seek to ensure a continuous supply. One way to potentially make the entire supply chain more resilient is to explore the possibility of a merger or a joint venture with domestic manufacturers, mitigating the adverse impact of market uncertainties and disruptions.

## Strategic questions to consider:

- How will our tech company manage our existing deals with Chinese companies, considering the push for onshoring supported by the CHIPS Act?
- How can we reduce our reliance on Asian manufacturers and diversify the component suppliers for our products?
- With ongoing geopolitical tensions, how will our company manage risks associated with technology and business continuity? How will our tech leaders make risk-informed decisions and steer our company with resilience?



# Transforming other industries through technology

Seeking new growth areas in the face of macroeconomic pressures, tech giants are accelerating their ventures into other industries. Health care is a prime example of this convergence: Tech companies are bringing improved efficiencies and innovation to a system that's ripe for digital transformation.<sup>34</sup> The global digital health market—estimated at US\$211 billion in 2022 and projected to reach US\$1.5 trillion by 2030—represents a huge potential opportunity for tech giants to continue their growth.<sup>35</sup> Collectively, the Big Five<sup>36</sup> made more than \$3 billion in disclosed venture capital investments into health care in 2021, and 2022's activity may top that number.<sup>37</sup> Investments in digital-health startups are estimated at \$57 billion in 2021, up 79% from the year before.<sup>38</sup> Digital technologies and experiences—including virtual health care, wearable devices, remote patient monitoring, cloud, predictive analytics, and augmented reality—play a significant and growing role in transforming health and well-being.

Consumers pivoted to virtual health care during the pandemic. Telehealth Medicare visits alone soared 63-fold from 2019 to 2020.<sup>39</sup> According to Deloitte's 2022 Connectivity and Mobile Trends (CMT) survey, 49% of US consumers attended one or more virtual medical appointments as a patient in 2021, and looking ahead, more than four in 10 consumers would prefer virtual or hybrid options to assess new symptoms or chronic conditions in the future.<sup>40</sup> One tech giant is seeking to meet these preferences by venturing into telehealth, launching a virtual health storefront that allows consumers to seek out and pay for consultations.<sup>41</sup>

Consumers increasingly use health-tracking wearable devices to help achieve their health and fitness goals.<sup>42</sup> Deloitte's CMT survey revealed that 41% of US consumers personally own a smartwatch or fitness tracker—and 57% have them in their households.<sup>43</sup> For tech companies, the growing popularity of wearables means more device, software, and service revenues. For consumers, wearables represent better management of health and well-being. At least seven in 10 users reported their smartwatches/fitness trackers have improved their fitness and health; the most common uses are to track daily steps, pulse rate, calories and nutrition, heart health, and sleep.<sup>44</sup> And 55% of device owners said they share wearable data with their medical providers—leading the trend of health data integration and improved monitoring of health conditions.<sup>45</sup>

Large cloud providers, for their part, are inking deals with hospitals and health care systems as they compete for a share of the lucrative health care cloud market.<sup>46</sup> These projects typically involve moving electronic health records (EHRs) and applications to the cloud, and some focus on using data analytics and AI to develop predictive insights that can help with scheduling, capacity planning, and

identifying patients who could benefit from early interventions.<sup>47</sup> Next-gen EHRs could evolve into technology-enabled platform ecosystems that interoperate with other data sources (e.g., from wearables), leverage AI to support clinical decision-making, and provide data and insights to public health departments and other entities in an effort to increase equitable health outcomes.<sup>48</sup>

The health care industry is hardly alone in seeing transformations driven by tech. In automotive, some cars are becoming large mobile computers, equipped with sensors and software that can control almost every function, from assisted driving to safety and infotainment. Tech companies are supplying maps and voice assistant technologies to car makers. Some large tech companies are working on autonomous driving technologies—and may even have ambitions to produce their own branded vehicles and to offer self-driving rideshare services.<sup>49</sup> In real estate, Internet of Things (IoT) sensors and smart devices are being installed in homes, offices, and warehouses; analytics on the resulting data flows can lead to energy use optimization and smarter inventory management.<sup>50</sup> In manufacturing, deploying smart factory solutions that combine a variety of capabilities—including industrial IoT, cloud and edge computing, private 5G networks, RPA, AI, vision systems, and augmented and virtual reality—has been shown to improve cost, throughput, quality, safety, and revenues.<sup>51</sup> And in retail, augmented reality and 3D technologies are providing consumers with immersive digital experiences when they shop—whether in-store, online, or on-the-go.<sup>52</sup>

## Strategic questions to consider:

- How might our tech innovations improve efficiency; enable new products, services, and business models; or revolutionize experiences in other industries? How can we ensure adoption at scale?
- Which methods—for example, partnerships or strategic acquisitions—could be most effective to bring our technology capabilities to other industries?
- What steps can our company take to comply with stringent regulatory requirements of other industries, which may include data privacy, security, and transparency of data handling?

# Adapting to new regulations

Innovative technologies and new business models tend to evolve more quickly than tax regulations can be written. The push into cloud and as-a-service subscription models, along with the increasing popularity of virtual assets, has blurred the lines between tangible goods, services, and usage rights. Different jurisdictions define and tax goods and services in different ways. Add globalization into the equation, and it's not always simple for companies to ascertain what's being sold, where, and to whom.

All of these complexities are emerging even as company shareholders and governments around the world are pushing for transparency—especially from tech companies. They want to know where companies are doing business; how locations and ecosystems are impacted; how much these companies are contributing in terms of taxes, employment, and commerce; and whether they're paying a “fair share.” These concerns are reflected in regulations and reporting requirements taking shape today:

- Tax transparency is a major component of the most recently released Global Reporting Initiative (GRI) 207 standard, which went into effect January 1, 2021. Issued by the Global Sustainability Standards Board, the initiative requires that companies disclose country-by-country tax information, plus information about their tax strategy, accountability, governance, stakeholders, security practices, customer privacy, marketing and labeling, indirect impacts, and more.<sup>53</sup> While this new standard is not mandatory, GRI standards are widely adopted voluntarily, as many companies and industries look to apply leading practices in sustainability reporting. As a result of GRI 207, companies are considering the role tax plays in their sustainability narrative and reporting more actively.
- The Pillar Two model rules of the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting, which are currently proposed to take effect in a phased approach between 2024 and 2025, include a 15% minimum tax on companies that operate in any of 137 participating jurisdictions and report more than EUR750 million annually. The goal is to present a unified standard and prevent companies from leveraging tax loopholes unfairly.<sup>54</sup>
- In the United States, the recently passed Inflation Reduction Act places a 15% minimum corporate tax on certain classes of companies that report \$1 billion or more in profit to shareholders annually.<sup>55</sup> The legislation also includes significant credits and incentives for companies to improve their climate and sustainability efforts.<sup>56</sup> While there are varied views in the tech industry regarding appropriate levels of voluntary disclosure, some companies welcome the opportunity to position themselves as champions of environmental stewardship.<sup>57</sup>
- The US Securities and Exchange Commission is rolling out a reporting requirement for climate information, encompassing governance and risk management, financial impact of climate-related events, and anticipated effects of climate on business planning.<sup>58</sup> This proposed requirement will also take effect in phases, with the first disclosures expected to apply to reports filed in 2024 for fiscal year 2023.<sup>59</sup>

In addition to transparency, a new set of European regulations focuses on the business practices of large-scale tech companies that intermediate among businesses and large user groups. These may include search engines, online marketplaces, social networks, and

cloud services. The Digital Markets Act (DMA), which takes effect in May 2023, may restrict certain practices among these core platform providers and allow smaller businesses to compete more effectively in the global market.<sup>60</sup> The DMA may cause these companies to rethink their business models and possibly even divest assets.

Companies that have adopted hybrid work models should also consider the state- and local-level regulations where their employees are located. When workers are remote and mobile, companies may incur unexpected taxes and fees that vary by jurisdiction. According to a recent *Wall Street Journal* report, one company discovered this issue when it was hit with \$30,000 in back taxes, fees, and penalties because an employee worked in two states where the organization was not registered to do business.<sup>61</sup> Adding up the time spent in meetings and the hours needed for accounting and human resources to hash out the details, the total cost was closer to \$500,000. “We’d never even thought about these things,” the CEO told the *Journal*.

In 2023, tech companies that haven’t already thought about these things should likely start. Enterprise resource planning (ERP) software is a place to start; businesses should work to ensure that these systems have end-to-end visibility and can generate the reports to satisfy disclosure requirements for each relevant jurisdiction.

Tracking environmental and social impacts is another element for tech companies to focus on in the coming year. While consensus has yet to be reached on standards and metrics, reputable ERP vendors and industry groups have frameworks that may satisfy anticipated requirements. Compliance with evolving regulations may feel like a moving target, but companies may achieve success working by analogy (likening a new business practice or transaction type to an existing guideline) and documenting practices meticulously.

## Strategic questions to consider:

- How can we ensure we have a clear view of operations across the enterprise and the value chain?
- What reports and outputs will we need to achieve compliance with new and evolving regulations?
- Will regulators require real-time reporting and automated reports with direct pulls from ERP software? If so, how can we implement these securely?
- To what extent is our tech company responsible for monitoring business practices and impacts across partners, suppliers, and service providers?
- How can we leverage transparency reporting to highlight our company’s dedication to social good?



# Signposts for the future

As 2023 dawns, the technology industry is struggling with uneven demand, right-sizing and right-skilling of its workforce, and uncertainty on a global scale.

Modernizing legacy IT, adopting state-of-the-art software engineering practices, and shifting some processes to cloud may help organizations streamline operations, reduce costs, and improve compliance with new regulations. These strategic moves could position tech companies well to expand into adjacent industries when opportunities arise.

In the coming year, tech companies should be on the lookout for potential signals of change in the market, including:

- Changing macroeconomic conditions—whether weakening or improving—that may impact product and service choices, workforce decisions, and business model choices.
- Opportunities to grow or streamline—for example, making strategic M&A decisions or divesting noncore assets.
- Activity around technology/health care convergence, including acquisitions, partnerships, and significant new tech upgrades and enhancements to established health and wellness products.
- Increased M&A activity among health care, tech, and sustainability companies.
- Changes in due diligence concerns for targeted M&A efforts in the tech industry.
- Potential trade policy changes between the United States and other key regions that could affect how tech companies source products and contract with global suppliers and distribution channels.
- Increased investment in onshoring of chip and component manufacture.
- Regulatory discussions around tax transparency and real-time reporting requirements.
- New interoperability standards for devices and data.
- The emergence of a comprehensive framework for ESG reporting.



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**About the TMT Center**

Deloitte’s Center for Technology, Media & Telecommunications (TMT Center) conducts research and develops insights to help business leaders see their options more clearly. Beneath the surface of new technologies and trends, the TMT Center’s research can help executives simplify complex business issues and frame smart questions. The TMT Center can help executives better discern risk and reward, capture opportunities, and solve tough challenges amid the rapidly evolving TMT landscape.

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