IDC FutureScape

IDC FutureScape: Worldwide Future of Work 2024 Predictions

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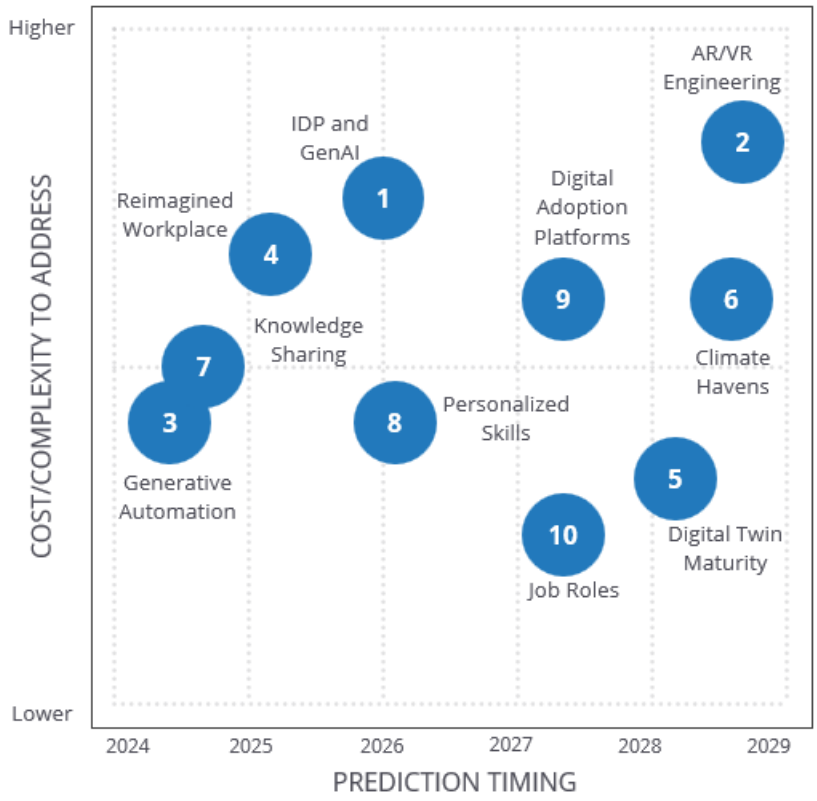
IDC FUTURESCAPE FIGURE

FIGURE 1

IDC FutureScape: Worldwide Future of Work 2024 Top 10 Predictions



Note: Marker number refers only to the order the prediction appears in the document and does not indicate rank or importance, unless otherwise noted in the Executive Summary.

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EXECUTIVE SUMMARY

After much back and forth around work models, bold ultimatums by employers and adamant pushback by workers, the world is starting to codify a range of approaches to work that swing from more in-office (most common for Asia/Pacific) to more flexible policies (most common in North America). The reality, born out by many surveys and data collected by IDC and others, is that the future of work has shifted from the question of whether flexible work models will endure to how they will be deployed. One of the many reasons for this shift has been the speed with which technology, artificial intelligence (AI) and generative AI (GenAI) in particular, has enabled work to be done equally well and securely across remote, field, and office environments.

The downside of rapid technological development and adoption has been that organizations simply can't keep pace with employing workers that have sufficiently current or deep skills — both at a technical and human level. Therefore, managing highly distributed teams doing complex, interdependent tasks is not easy; finding employees trained sufficiently well to offer effective IT support across a broad security threat landscape of applications, platforms, and endpoints is also not easy. Enter the promise of automation and in particular the ability of AI and GenAI tools to both facilitate repetitive tasks like coding, data entry, research, and content creation and also amplify the effectiveness of learning in the flow of work.

IDC defines the future of work as a fundamental change to the work model that fosters human-machine collaboration, enables new skills and worker experiences, and supports a reimagined physical workplace and borderless digital workspace. The future of work is an enterprise-wide imperative driven by senior executives and board level. This definition captures the myriad competing elements that organizations need to address in the face of economic, climate, technology, employment, and other disruptions. It is designed to explore the fundamental linkages between who does work — from digital and physical robots to humans. It examines how the work is done from fully automated workflows and generative AI to face-to-face communication. Finally, it explores the implications of where work happens across digital and physical domains.

The predictions that follow explore what the future of work will look like over the next five years, probing the areas of work automation, digital and physical locations, and work culture. They consider the key drivers, making these changes possible and, in some cases, inevitable. Across geographies, industries, and business sizes, organizations must adapt work practices to navigate climate change, approaches to flexible work, the need for rapid skills development in the face of AI everywhere, and development of new job roles. Organizations will need to compete on this dynamic playing field of divergent pressures from economic uncertainty to transforming work models. And so continues the foundation building of the future of work.

The top 10 predictions for future of work for 2024 are:

- **Prediction 1:** By 2026, enterprises that directly tie GenAI to intelligent document processing will see a 20% increase in new use cases leading to increased productivity and scale and improved customer experiences.
- **Prediction 2:** By 2028, over two-thirds of large businesses will use prompt engineering to prototype AR/VR simulations, reducing development time from weeks to hours and creating precision training.

- **Prediction 3:** Business teams using code generation copilots will achieve 70% success rate in streamlining jobs with task/workflow automation, replacing low-code and IT-supported development by 2024.
- **Prediction 4:** 60% of G2000 will upgrade hardware and software technologies to increase worker retention with personalized work experiences and enhanced collaboration by 2025.
- **Prediction 5:** By 2028, digital twin technologies will enhance virtual and physical office user experiences, driving a 30%+ improvement in retention of workers in G1000 companies.
- **Prediction 6:** By 2028, 80% of the Global 2000 will invest in office climate havens, using asset-based/renewable energy to defray 30% of their ongoing operating costs.
- **Prediction 7:** In 2024, GenAI tools will enable senior leaders to double productive use of unstructured data by discovering untapped insights and knowledge, driving 20% growth in sustainable business benefit.
- **Prediction 8:** Enterprises will leverage personalized technology skills development to drive $1 trillion in productivity gains by 2026, enabled by GenAI and automation everywhere.
- **Prediction 9:** By 2027, 80% of G1000 organizations will mitigate technical skills shortages using digital adoption platforms.
- **Prediction 10:** By 2027, 40% of current job roles will be redefined or eliminated across G2000 organizations accelerated by GenAI adoption.

This IDC study contains IDC analysts' future of work worldwide outlook for 2024 and the planning horizon for the next five years. The outlook is presented through the lens of the 10 predictions that make up, in IDC's view, the framework for technology-related initiatives in the years ahead that can be leveraged by IT, human resources (HR), and other line-of-business (LOB) decision makers and influencers.

"The next five years will show the rapid shift in business and technology to support new ways of working," said Amy Loomis, research vice president, Future of Work at IDC. "Across industries and organizations, there must be equal investment in deploying automation like AI and GenAI and human skills and guardrails essential to managing them."

IDC FUTURESCAPE PREDICTIONS

Summary of External Drivers

- **AI everywhere –** Generative AI takes the spotlight
- **Operationalization of ESG –** Measuring and implementing sustainability
- **Dynamic work and skills requirements –** New work mode era
- **The digital business imperative –** Competitiveness and outcomes
- **Cybersecurity and risk –** Building resilience against multiplying threats
- **Economic uncertainty –** IT malaise and market volatility
- **The drive to automate –** Maximizing efficiency and new opportunities

Predictions: Impact on Technology Buyers

Prediction 1: By 2026, Enterprises That Directly Tie GenAI to Intelligent Document Processing Will See a 20% Increase in New Use Cases Leading to Increased Productivity and Scale and Improved Customer Experiences

Intelligent document processing (IDP) technology can automatically extract, analyze, and validate unstructured information. IDP breaks down data silos and makes qualitative and quantitative document information more available, regardless of the format. Why? Unstructured data can be difficult to manage and integrate into efficient processes. But it is a vital part of enterprise data and knowledge — and decision making.

IDP technologies leverage AI/ML, generative AI, and advanced analytics technologies to support orchestration and decisioning while acting as a key component to content and document workflow efficiencies. Generative AI capabilities within IDP solutions include features such as summarization/observations, targeted search across many sources, multiple language support, and higher accuracy to reduce human-in-the-loop interventions for more straight-through processing (STP). For example, a central Europe fintech company implemented IDP to eliminate a backlog, especially during peak times. Its IDP solution includes multiple language support and feeds into summarization dashboards that extract data from multiple sources. Once it realized employee productivity benefits, it created two new B2C products and improved its Net Promoter Score.

When a part of a sophisticated content-centric workflow, IDP enables the delivery of data and insights at scale through decision support and decision automation capabilities. When companies first implement IDP, most performance metrics revolve around productivity, automation, accuracy, and improved security/compliance. When companies mature and embed IDP as a strategic part of their workflow, they are moving beyond basic productivity key performance indicators (KPIs) and reducing backlogs. They can scale up the business, create new products, and improve customer experiences. They can upskill workers and spend more time focused on customer service by leveraging enterprise intelligence from the extracted and summarized data — rather than focusing on the *process* of extracting the data.

Associated Drivers

- **The digital business imperative —** Competitiveness and outcomes
- **AI everywhere —** Generative AI takes the spotlight
- **The drive to automate —** Maximizing efficiency and new opportunities

IT Impact

- IT teams should work with C-level and LOB stakeholders to assess IDP solutions with embedded generative AI features establishing clear KPIs to understand the business value compared with the investment costs.
- IDP solutions use capture and document AI for extraction and classification and may require resources for training the AI/ML models based on specific document types.

Business Impact

- Top IDP business benefits include optimizing the supply chain, increased customer satisfaction, increased employee satisfaction/engagement, and eliminating data silos — both internal and external. Knowledge management platforms can connect to data extracted with IDP.

- Productivity gains that come with IDP can enable upskilling of workers and drive development of next-gen experiences and products.

Guidance

- Re-evaluate content workflow and how it fits into automation strategy as well as enterprise intelligence strategy. Plan for the near-term and long-term changes that IDP productivity will bring, especially for employees.
- Engage with current content-centric workflow partners. Most likely, IDP is integrated into the platform. Ask if they have GenAI capabilities in production today or if they are on their near-term road map.
- Establish performance KPIs for the revenue team, including how they are defined and how they will be measured. Quick time to value can ensure more funding for IDP projects and how each department will achieve them both individually and cross-departmentally. Some GenAI capabilities are nice to have but can be costly from a CPU perspective if not managed.

Prediction 2: By 2028, over Two-Thirds of Large Businesses Will Use Prompt Engineering to Prototype AR/VR Simulations, Reducing Development Time from Weeks to Hours and Creating Precision Training

This prediction incorporates two trends in the market: prompt engineering and augmented reality (AR)/virtual reality (VR), both of which are in their initial stages of adoption and development but will improve by 2028. Prompt engineering is the process of structuring text that can be interpreted and understood by a generative AI model. Currently, prompt engineering runs on a text-to-text model, but given the widespread interest, it is not hard to envision this moving to other forms of output, including digital content for AR and VR. Prompt engineering will be a critical component to ensuring successful use of GenAI capabilities. Similarly, usage of AR/VR for training continues apace. According to a recent U.S. survey, 46.4% of IT decision makers said that they were using AR and 54.0% were using VR for training today, and IDC expects more companies to join as the benefits and the competitive advantages become clearer.

As companies increasingly turn to AR and VR simulations to complement their training programs, they must develop custom training modules as part of any overall curriculum. Traditionally, companies would hire a software vendor to create an AR/VR simulation, which can take weeks or even months. This entails determining objectives and outcomes, writing a script, developing digital assets, designing different decisions and results, and measuring performance. The process becomes even more complex as managers introduce new scenarios or when new equipment and machinery become involved, adding time and cost. By the time a simulation is ready, training needs may even have shifted, revealing new learning objectives to achieve.

This is where prompt engineering can assist. Instead of going through the process outlined previously, a manager can give instructions to a prompt engineering program, one that specializes in training and development and is familiar with the specifics of a particular field. Managers can then design their own learning modules with different scenarios and situations, adding as much detail as they desire and creating their own evaluation tools prompting the desired output from the AI model. The prompt engineering program then uses this guidance to create the AR or VR simulation. Already, multiple companies are incorporating prompts into VR content generation such as a VR training software company that uses AI to assist in VR content creation, including storyline development, digital content generation, and feature usage in response to user behavior and interaction.

Associated Drivers

- **The digital business imperative –** Competitiveness and outcomes
- **Dynamic work and skills requirements –** New work mode era
- **The drive to automate –** Maximizing efficiency and new opportunities

IT Impact

- AR/VR – whether used in training, collaboration, field service, or other use case – represents a whole list of hardware, software, storage, and processes to secure and manage. IT should be prepared to address each as they would with other devices and applications.
- The success of prompt engineering is directly attributable to how well the software detects and acts on those prompts, especially when they are job specific. This is where IT can help bridge the gap between what managers need and what prompt engineering can provide.

Business Impact

- Prompt engineering reduces the development time of AR/VR simulations and training content. This allows managers and organizations to train their teams sooner and update their skills as situations warrant.
- The hands-on or experiential learning aspects of AR and VR more effectively and quickly codify learning for employees than simply reading about a process. Repeated multimodal exposure to learning translates to a greater speed to proficiency for employees to drive competitive advantage.

Guidance

- Partner with a learning and development company with best practices around AR/VR, content creation and storage, and performance measurement.
- Consider AR/VR as part of future business planning – both technical and for leadership development.
- Monitor prompt engineering's progress. While the common output today is text, pictures, and video, making it interactive and measurable is still several cycles away.

Prediction 3: Business Teams Using Code Generation Copilots Will Achieve 70% Success Rate in Streamlining Jobs with Task/Workflow Automation, Replacing Low-Code and IT-Supported Development by 2024

Rapid delivery of GenAI capabilities by task and workflow automation vendors will enable workers and teams to generate automation useful to them with minimal to no training. Only a handful of vendors are currently working on offering GenAI development capabilities for business users, but the simplification of development they offer is already a substantial departure from today's no-code environments. No-code programs are increasingly offered by enterprises to encourage business users to become involved in development. In a March 2023 survey, IDC found that successful citizen automation programs required investments in training, managing the programs, and providing a career path and salary increases for those business users who work regularly on a range of development tasks.

As vendors offer business user copilot development tooling, the training burden will decrease. Meanwhile, with GenAI services coming on stream, workers will increasingly interact with these services to create content, engage interactively with questions, and receive recommendations. Generating automation capabilities is a logical step compared with no code, especially as automation suggestions begin to be delivered as recommendations.

Automation technologies have traditionally been used for improving business processes. Only the tasks related to those processes are typically automated. Decreasing the complexity of development for business users opens the opportunity for individuals and teams to apply automation more widely in their jobs. This simplification will also enable teams to build situational workflows and activities to support working on short-term special activities such as projects. Part of the project setup will be creating the project automation using GenAI-powered tools. However, not all organizations will support business use of GenAI automation development in 2024. The organizations most likely to be early adopters are groups that already have citizen automation programs and groups that are embracing GenAI for their workers. Both types will largely be active and largely successful in 2024.

Associated Drivers

- **The digital business imperative —** Competitiveness and outcomes
- **Dynamic work and skills requirements —** New work mode era
- **The drive to automate —** Maximizing efficiency and new opportunities

IT Impact

- Automation centers of excellence (COEs) with citizen automation programs will need to evaluate and pilot business-friendly GenAI-powered offerings to figure out adoption suitability as well as revise their citizen automation programs. IT will need to be a key participant in these efforts.
- Situational use of a particular automation, such as a workflow or task, will be more common, which means users will be active for a period and then no longer active. This may impact licensing agreements and should be reviewed as well as how to govern business user-created automation tied to situational use.

Business Impact

- The opportunity to improve overall productivity for more types of work will be available with GenAI and, specifically, with GenAI business-friendly development tools. This will require education and training as well as work with the automation COE to determine how and when to adopt.
- Monitoring how users are adopting and sharing successes will accelerate the benefits and ensure funding for expanded adoption.

Guidance

- Talk to your application vendors to see what they have planned for business users. Some vendors already offer or plan to offer prompts that can be used by business users to interact with GenAI to automate. Others are working on adding GenAI first to their professional developer environments.
- Put together a work group of business users interested in learning how to apply GenAI for development and run pilots. For organizations with an existing citizen automation program, it would be good to assign the evaluations and pilot to the product champions who can work on identifying use cases and useful GenAI tools.

Prediction 4: 60% of G2000 Will Upgrade Hardware and Software Technologies to Increase Worker Retention with Personalized Work Experiences and Enhanced Collaboration by 2025

Rapidly evolving technology and work patterns paired with accelerating worker and customer expectations will drive companies to upgrade hardware and adopt new software technologies that

support a new era of experiences, personalization, and enhanced collaboration. This will affect the workforce, both remote and onsite, and more closely mirror their collaborative experiences with technology outside the workplace. Collaborative applications are becoming more visual and will continue to develop characteristics not unlike a multiplayer game that enables a more personalized view of work and teams, better alignment to projects, and hands-on collaboration applications.

Meetings and all work assets, including collaborative assets (workflow, meetings, new document formats, etc.), will be translated and transcribed in real time, captured, and analyzed and will leverage other integrated enterprise data sources. The results will enable faster and more individual decisions and collaborative work, including summarizations with generative AI. Gradually, IoT devices will increase the number of ways people engage with content and data, and AI itself will become a digital collaborator. Many productivity and collaboration software vendors have publicly announced or already started to roll out these features across their collaborative products. Customers and partners will increasingly join relevant teams in both collaboration and community applications to drive more relevant and current insights and needs — resulting in better employee and customer experiences.

Videoconferencing will evolve to give a feeling as if people are physically together rather than just people in a virtual box. Using an array of cameras, 3D data compression, and faster bandwidths, the start of holographic or copresence videoconferencing will make older conferencing feel like a pandemic-era relic — and for the most part, will not require head-mounted displays. Google's Project Starline, now in testing, is a good example of what will be coming. Part of that evolution will include videoconferencing where AI will direct online meetings as if it were a produced video, catering to how people watch videos. The gradual normalization of more realistic-looking avatars that mimic our behaviors will also find greater purpose and adoption.

Associated Drivers

- **Dynamic work and skills requirements —** New work mode era
- **AI everywhere —** Generative AI takes the spotlight
- **The digital business imperative** — Competitiveness and outcomes

IT Impact

- Everything new is newer again. The evolving collaborative stack of applications will require additional integrations of collaborative applications, resulting in hardware and software spend for conference rooms, onsite, and remote employees.
- Integrations are a superpower. IT will enable workers to access data from across systems, creating a personalized workspace that saves over 40 hours per week per person. Focus on AI and collaborative integration with security, governance, and compliance will be critical remit for IT.
- IT will better scale by leveraging subject matter experts at each level to better fine-tune solutions to ensure and retain adoption.

Business Impact

- Better collaborative stacks help hire and retain talent because of greater engagement that leads to a more productive workforce (see *IDC's 2023 Annual Collaboration Survey: The Intelligent Multiplayer Home Base,* IDC #US49385523, August 2023).
- Collaboration is a culture-supported team sport that, for maximum success, is modeled and mentored across the enterprise and regions.

- Flexibility and agility in adopting new ways of working collaboratively lead to process improvements and new offerings that facilitate collaboration from access to improved audio and video experiences.

Guidance

- Creating a plan for a generative AI-integrated collaboration stack will help guide adoption of fast-emerging benefits into your business.
- Metrics will be a challenge in the short term as we tend to rely on industrial-era metrics when we are leaning into new data methods that better connect ideation, creativity, and critical thinking directly to customer outcomes.
- Personalized collaboration is not an oxymoron, but it is the path in how to maximize productivity at the individual, team, business unit, and enterprise levels. There should be a strong sense of flexibility in evolving these systems, which will respond to the dynamic nature of business.

Prediction 5: By 2028, Digital Twin Technologies Will Enhance Virtual and Physical Office User Experiences, Driving a 30%+ Improvement in Retention of Workers in G1000 Companies

2023 marks the year of industries focusing on a return to the office. In fact, in a recent survey conducted worldwide among the IT decision makers, about a half (50.3%) of the respondents said that their organizations were promoting programs and policies to voluntarily bring as many workers as possible onsite while a much lower percentage, 34.1%, of organizations were mandating onsite work with few exceptions. Further, the same survey indicates that about half (48.7%) of the respondents' organizations were reimagining facilities as locations for training, meeting, and collaborating. This suggests a new use for the office, as a space for nurturing an engaging corporate community, rather than simply a place to work. As employee engagement and retention have become critical issues for corporate sustainability, many organizations are adopting employee experience (EX) as a business KPI and making flexible work a fundamental premise of their business model. Furthermore, those organizations are addressing many challenges besides business model transformation, including productivity; collaboration; creativity; environmental, social, and governance (ESG); inclusion; safety; and security to enhance employee experience and presumably engagement.

A digital twin of the office is one critical technology helping achieve these goals. For the workplace, digital twins can be a replica of physical space, updated in real time and able to interact with the physical office through IoT and robotics. It can be used as a virtual office platform, a model for humans and AI agents to test changes, and a tool for broader community collaboration. Employees can access digital twin instances as a virtual office platform, whether they work in the physical office, at home or elsewhere, or in the field. For example, Toda Corporation (construction company) newly built its central office in Tokyo with digital twin office technology built in. The virtual office platform replicates the layout of physical offices, with employees in the physical office becoming avatars linked to their office badges using near-field communication (NFC) and Bluetooth Low Energy (BLE). As the employee moves, the avatar also moves around in the virtual office and nearby screens provide a visual window into the digital space, where virtual workers are present and visible. Virtual workers and in-office workers can chat and work with each other using their avatars, set up quick meetings, and maximize the social connection that is an advantage of real offices.

The digital twin is also a workspace in and of itself, where humans and AI agents simulate and test changes that can, if useful, manifest in the physical world. Employees and AI can control equipment such as air-conditioning, lighting, blinds, and digital signage and the environmental conditions such as

temperature and CO_2, or they can check camera images from both real and virtual offices. This can help minimize wasteful electricity consumption and carbon emissions at the floor management and employee levels, no matter where they work, by remotely controlling such equipment and functions with IoT.

Associated Drivers

- **Cybersecurity and risk —** Building resilience against multiplying threats
- **The digital business imperative —** Competitiveness and outcomes

IT Impact

- The digital twin office has a major impact across the entire organization; therefore, the decision will be made by top management. IT and the facilities team will play a key role in selecting technologies/facilities/equipment, developing cost implications, and implementing/managing technologies/facilities/equipment.
- The digital twin office initiative will involve a multifaceted exchange of ideas from the perspectives of usability, functionality, privacy, ESG, safety, and security, including HR, facility team, administration, and employee representatives. IT will need to have the skills to understand diversified requests to correctly create the requirements documents.
- The IT department is required to acquire and update knowledge about technologies related to heating/ventilation/air-conditioning and other facilities/equipment, which the IT department does not often deal with in its normal work.

Business Impact

- Decision makers tend to judge investments by return on investment (ROI), but the digital twin office initiative will help improve the employee experience, an area that is not easily quantified. EX-conscious workplaces can not only lead to job retention but also lead to increased employee engagement and well-being.
- The success of the digital twin office initiative will require the participation of diverse departments, distinct locations, and employees implementing diverse workstyles. It will also require the commitment of executives and must be communicated to the project members and throughout the organization.
- Redefining the office, including creating new office layouts and room setups, will require guidance from outside the organization to best create effective environments.

Guidance

- IT must work closely with executives and project members to identify and understand the requirements for a virtual office platform, security, location-based technology, and the state-of the art facilities/equipment.
- The initiative members should consider a multiphase pilot implementation of key technologies, even if started at the headquarters. This ideally includes the field and regional offices in later phases.
- Key milestones in the project rollout must include management review, with confirmation of management commitment at each milestone.

Prediction 6: By 2028, 80% of the Global 2000 Will Invest in Office Climate Havens, Using Asset-Based/Renewable Energy to Defray 30% of Their Ongoing Operating Costs

As uncontrolled wildfires, climate change, and extreme weather events become more common, the consequences are affecting human health and the ability to work effectively. These stressful conditions have prompted organizations to rethink traditional office buildings to be climate havens from adverse weather conditions like extreme heat. In some regions, a greying workforce with increasingly fragile health makes adoption even more urgent. Meeting these challenges will require rethinking both the purpose of commercial real estate and how we meet the enormous power needs in the face of these disruptions. Indeed, the prioritization of sustainability has emerged as one of the top outcomes for work transformation initiatives (source: IDC's *Worldwide Future of Work Survey,* 2023). Sustainability measures are no longer seen as optional or nonessential, as organizations globally recognize them as integral and imperative components of strategic planning and sustainable operational excellence.

Forward-thinking companies will deploy a combination of innovative building design, digital twins, robotics, and integrated climate systems to create climate havens, where employees and their families can both find relief and focus on work. Unfortunately, simply retrofitting existing buildings with AI and robotics adds energy requirements to already struggling grids, while highly specialized buildings like One Angel Square in Manchester, the United Kingdom, require enormous up-front capital ($108 million in 2016). This will require careful choices regarding where to invest considering requirements for flexible work models, sustained urban development, and evolving socioeconomic needs.

Companies that invest heavily in asset-based energy (hydro/tidal, geothermal, solar, and wind) local to their climate havens will both support their own operating costs and, potentially, create a secondary revenue stream as they provide power back to the grid. This reversal of the long-standing trend of digital organizations consuming energy, leaving their local communities in peril, will improve community relationships, employee retention, and talent recruiting efforts.

Associated Drivers

- **Economic uncertainty –** IT malaise and market volatility
- **Operationalization of ESG –** Measuring and implementing sustainability
- **The digital business imperative –** Competitiveness and outcomes

IT Impact

- IT will culturally expand its remit from dealing with problems in the digital estate and value streams to embracing real-time, life-impacting choices for the company and broader local communities. This will also directly impact the provisioning and protection of the digital workspace, as haven access/control becomes an increasingly life-or-death matter.
- Digital workplaces generate vast amounts of data. This includes tracking energy consumption and CO_2 emissions, water conservation, waste reduction, diversity and inclusion metrics, and other key sustainability indicators. IT will therefore need to provide this data in real time, with appropriate analysis and scenarios for change, as part of its mandate to support corporate goals.
- In many cases, a company with a climate haven in one area will have a dispersed workforce in another. These enterprises will need to support both, at increasing levels of sophistication, as the workplace continues to evolve.

Business Impact

- A cluster of climate havens will become, de facto, a civic asset for areas experiencing the impacts of climate change. Business leaders should coordinate with one another and with local civic leaders to coordinate the complex civic, humanitarian, and business opportunities that result in taking such a leading role.
- Haven needs are extremely localized practically by definition — even if the toolset used to address them can only emerge in a global digital context with large capital investment. Business leaders will therefore need to empower local teams to adapt to emerging needs without overreliance on centralized decision making.

Guidance

- Immediately implement local-level surveys to identify critical climate haven needs and identify which resources can be quickly deployed to meet them.
- In the hotspots identified through the local-level surveys, assess whether the existing physical assets can be adapted to meet the identified needs and, if not, begin a process to create temporary solutions while preparing for a longer-term capital investment.
- Join or create an affiliate program with other local leaders to support a climate haven strategy focused not on grand pronouncements but practical, actionable ideas to improve civic stakeholders' lives in the immediate future.
- Establish a specialized team comprising experts in sustainability and climate heavens to spearhead enterprisewide initiatives. Anticipate that regulatory and compliance requirements will progressively demand a high degree of technical acumen and data-driven metrics.

Prediction 7: In 2024, GenAI Tools Will Enable Senior Leaders to Double Productive Use of Unstructured Data by Discovering Untapped Insights and Knowledge, Driving 20% Growth in Sustainable Business Benefit

Knowledge management (KM) helps the enterprise capture, share, and access knowledge for organizational insights and achieve business objectives. Flexible work models have come to complement in-person work, and people are working and collaborating in browser-based solutions, messaging platforms, and even with the emerging generative AI tools. KM has been around for decades but is enjoying a renaissance due to new AI capabilities that enable it to act as an organizational resource to support collaboration and learning. IDC sees KM as a centralized pathway to help people find the data — especially unstructured data, applications, and processes that people need to do their work.

As a multidisciplinary approach to achieving organizational objectives, KM combines solutions like creation, knowledge graphs, governance, collaboration, and search. It organizes and contextualizes knowledge — explicit and implicit — so companies can break down information silos and language barriers, as well as locate data and insights that might not have known they have. Knowledge graphs employ GenAI to build sematic networks, by connecting the right concepts, relationships, and events within a company's unstructured data repositories. GenAI-powered KM helps both knowledge and frontline workers provide better insights and support for global customers, by having the most current and relevant information — and in the right context.

Associated Drivers

- **The drive to automate —** Maximizing efficiency and new opportunities
- **The digital business imperative —** Competitiveness and outcomes

- **AI everywhere –** Generative AI takes the spotlight

IT Impact

- IT will need to take lead responsibility for maintaining knowledge management systems, involving other departments, including HR, compliance, operations, finance, and legal.
- Both humans and technology contribute information to the knowledge management systems including internal employees, enterprise applications, and "digital workers." This information will need to be informed by IT governance and security requirements.
- The most common process challenges for IT will include unusable data formats, obsolete information, and difficulty in capturing information (source: IDC's *Knowledge Management Strategies Survey,* October 2022).

Business Impact

- Knowledge management removes barriers, so global businesses can make decisions faster and with cohesion. Knowledge management can drive innovation and speed to delivery by enabling employee sharing across locations and language. Organizations deploying KM can effectively establish, communicate, and document organizational processes and practices.
- The top business benefits shown with KM investments are improving stakeholder experience, protecting knowledge lost by attrition, and improving employee onboarding (source: IDC's *Knowledge Management Strategies Survey,* October 2022).

Guidance

- Establish clear metrics around knowledge management investments (e.g., decision making, time to market, innovation, standardized practices, and processes), customer support improvements (e.g., reduced service volumes and faster service resolution time), and satisfaction and engagement improvements (e.g., employees, customers, and partners).
- Consider knowledge management as critical infrastructure in your digital transformation initiatives. Envision knowledge management as a location-agnostic digital workspace.
- Enable analytics/AI technology within knowledge management, so that experiences can be personalized, predictive, and continuously improved.

Prediction 8: Enterprises Will Leverage Personalized Technology Skills Development to Drive $1 Trillion in Productivity Gains by 2026, Enabled by GenAI and Automation Everywhere

As the complexity of technology development and use expands in everyday work environments, organizations are struggling to find experts in programming, security, architecture, operations, management, and many other roles. For example, IDC data shows that 43% of global organizations lack the skills support needed for successful automation deployment (source: IDC's *Future of Work Survey,* April 2023).

With GenAI, workers with entry-level skills will be better able to target personalized learning needs based on the speed with which GenAI can generate code, summarize information, and create multimedia productions in first draft form. Across levels of expertise, GenAI can be used in a targeted fashion to ensure rudimentary requirements are not taking time from employees developing more advanced level skills. One of the reasons that GenAI adoption and experimentation has grown so quickly is that everyday workers see its immediate value.

As new jobs come online driven by new automation requirements, and workers learn new skills, GenAI will be embedded in the tools that create employee training. Generative AI can create personalized

content for IT and line-of-business professionals based on their current skills, knowledge gaps, and career goals. This tailored approach ensures that individuals receive the most relevant training, optimizing their upskilling and cross-skilling efforts as job roles evolve — including the need to program GenAI applications themselves.

Associated Drivers

- **Dynamic work and skills requirements —** New work mode era
- **The drive to automate —** Maximizing efficiency and new opportunities
- **AI everywhere —** Generative AI takes the spotlight

IT Impact

- IT teams will need to put in place technical and governance guardrails for generative AI to enable secure, ethical, and technically accurate experiences for workers.
- IT departments will benefit from the automated and rapid generation of code. The improved productivity will enable the recruitment of candidates who can train in the flow of work, opening doors to a far bigger resource pool.
- Senior IT leaders will need to plan for training new recruits and evolving career pathways for IT experts in evolving use and deployment of AI, GenAI, and dependent areas such as security.

Business Impact

- Organizations will realize a rapid rise in productivity as personalized skills development ensures rapid speed to expertise for new and newly trained workers across the business.
- GenAI-enabled business applications will be deployed more quickly and effectively without IT support speeding business results and critical insights into where processes should be adapted.
- Budget planning for hiring and upskilling needed talent will evolve as the impact of GenAI and personalized learning tools becomes apparent and more advanced.

Guidance

- Before implementing GenAI for upskilling, businesses should conduct a thorough assessment of their employees' current skills and identify skill gaps for future business requirements. This analysis helps with ROI on skills development.
- Assessing the degree to which employees view GenAI-enabled skills training with concern or enthusiasm will ensure it is positioned appropriately as a benefit and not a means to explicitly eliminate jobs.
- Businesses must ensure that individualized GenAI skills development are a part of broader upskilling initiatives and align with the broader business strategy and objectives.

Prediction 9: By 2027, 80% of G1000 Organizations Will Mitigate Technical Skills Shortages Using Digital Adoption Platforms

Traditional training can only go so far in an era where automation everywhere is fundamentally changing how and what work is done. This is particularly true where technical skills are concerned. Digital adoption platforms (DAPs) help IT and LOB workers navigate existing and new applications and workflows designed to keep pace with the speed of business and customer demand. They enable end users to reinforce their understanding of new work processes and practice skills while in the flow of work. DAPs offer hands-on learning opportunities for employees, giving them real-time guidance and support from within their active software applications and processes. In a universe where the typical worker juggles 20+ applications, DAPs suggest next-best action and fluidly integrate complementary

workflows across applications. This improved employee experience goes a long way to address day-to-day IT support requirements that can be handled by workers through automated guidance.

DAPs speed up the journey to employee proficiency by providing interactive learning experiences, step-by-step guidance, tutorials, and other contextual help. This on-the-job guidance at once enhances productivity and reduces the need for external tech support. DAPs also can automate or simplify repetitive work, freeing up employees to focus on higher-value activities. But the true power of a DAP lies in its analytics. DAPs monitor employee software usage and track where employees have the most difficulty in using application features or cross-app workflows; they enable IT leaders to improve the return on investment on the enterprise software they buy. DAPs can both deploy GenAI capabilities and complement them — especially as new GenAI tools take IT automation and personalized training to more automated levels.

Associated Drivers

- **The drive to automate —** Maximizing efficiency and new opportunities
- **Dynamic work and skills requirements —** New work mode era
- **AI everywhere** — Generative AI takes the spotlight

IT Impact

- IT leaders who rely on DAPs will find such platforms play a key role in facilitating the adoption of new software applications within an organization, reducing some of IT's training and software support burden.
- DAP analytics will support IT management to monitor work environments more effectively and provide data-driven insights around the usage, value, and ROI of enterprise software.

Business Impact

- Built-in DAP analytics reveal user behavior, software utilization, and training effectiveness, allowing IT organizations to make better decisions about software adoption, resource allocation, and future training strategies. The best DAPs offer powerful integration features, providing a seamless user experience that works within current IT infrastructure to improve product delivery, strategic guidance and, ultimately, business results.
- Whether implementing a new software system, introducing new processes, or transitioning to a digital-first approach, DAPs can guide employees through periods of intense change and minimize resistance along the way.

Guidance

- Define clear objectives for your DAP initiative. Whether it is improving software adoption, streamlining workflows, or better understanding software ROI, identify the specific pain points and challenges you hope your DAP will address.
- Determine how your DAP will integrate with your existing software applications, processes, and infrastructure. Seamless integration will ensure the DAP provides real-time guidance and support within and across the applications employees use regularly.
- Create high-quality training content for your employees to use within their DAPs. This might include interactive walkthroughs, task-based tutorials, tips, and contextual help. The idea is to keep content relevant, concise, and easy to understand and build upon.

Prediction 10: By 2027, 40% of Current Job Roles Will Be Redefined or Eliminated Across G2000 Organizations Accelerated by GenAI Adoption

Integrated applications of AI into functional tools for functions across the organization like human resources, finance, and operations are making jobs, roles, and tasks less tactical and more strategic. These job role shifts are a strategic and highly intentional act organizations take to redefine work expectations and outcomes. They are *not* merely word changes on a job description. Job role updates come directly from changes in the operating model of an organization based on how AI and GenAI are disrupting and will continue to disrupt work modes. 40% of current job roles will be redefined or removed from how most organizations operate because GenAI will influence the evolution of current work practices.

Personalized growth is increasing internal mobility and leading to entirely new classes of job descriptions that are outmoding historically rigid roles. At the same time, driven by a combination of organizational skills shortages and financial objectives, advanced and generative AI is further removing the need for knowledge and frontline workers to manage research and case history as part of inventing and managing across new precedents and problems. As physical automation meets career personalization, the nature of roles will have no choice but to change or be outmoded by encroaching AI advances and integrated use cases.

For example, the new job role that blossomed from GenAI that has recently seen growing excitement over is the prompt engineer. This position is a combination of technical writer, logical thinker, code writer that does not need the technical background to succeed, and collaborator, among other things, with an impressive salary. The roles that will be changing or disappearing are those positions that use available data to make decisions on a stable set of possible outcomes. AI tools can take these mostly transactional decisions away from employees' purview. The affected staff either will become AI tool users to produce more impactful and quicker outcomes or will be replaced.

Associated Drivers

- **The drive to automate –** Maximizing efficiency and new opportunities
- **AI everywhere –** Generative AI takes the spotlight

IT Impact

- IT will grow more central and prominent to maintain the foundational data environment to drive operational AI at work.
- The rise of the HR-IT partnership – already on the table – will grow and lead to a framework for other stakeholders to engage IT for cross-functional data insights management in support of faster, more accurate, and more secure and permissions-based decision guidance.

Business Impact

- Functional data use cases will have more potential by working together to contextualize back-office functional decision making in HR, IT, and finance that will assess required head count at a skills level, leaning into AI-evolving skills ontologies that grow from a baseline framework built by HR.
- Over time, the organization will grow more flexible to achieve its desired objectives and key results (OKRs) as both the workforce and the organizational framework adapt to remain on track for consistent goals.

Guidance

- Understand AI is not a panacea, but an enabler of employee dynamism. Past experiments with employee replacement have led to falling productivity and operational disruption as structural changes in one area of the organization stepped on those in others.
- Map out the AI use cases across advanced and generative AI. Identify and differentiate between low-level guided and assisted use cases versus data-informed decision insights and acute guidance applications. Communication at all stages across organizational change will be essential to establishing trust as organizational roles and evolving AI technology transform how work is done and by whom. Be mindful to carefully communicate the role of AI and expectations of what is and is not so employees can focus on exploiting automation and not fearing for their jobs.

ADVICE FOR TECHNOLOGY BUYERS

The aforementioned predictions have much in common while touching on distinctly different technical, societal, and organizational areas. They all seek to better understand the intersection points of technology and human behavior as we are increasingly confronted with the need to acknowledge and navigate the importance of both. Science fiction has predicted dystopian views of mechanized and artificially driven societies where humanity is compromised to efficiency. IDC's vision is far from that view, but we also see how concerns sparked by emerging technologies can play an outsized role in dampening adoption — for better or worse. Organizational leaders must be very thoughtful in strategic planning for deployment and adoption of AI and GenAI technologies and the new job roles and ways of working they will create. This is not simply a technology issue that factors in prerequisite compute, security, hardware, infrastructure, and integration requirements. It is also a human issue that considers employee empowerment through skills development and appropriate, transparent career development pathways.

Organizations will need to pay close attention to the governance of AI and GenAI technologies as well as evolve key performance indicators to target employee experiences as well as business outcomes. Industry leaders will be those that thoughtfully invest in the hardware, software, and services needed to better facilitate and negotiate dynamic business, organizational, political, and climate conditions. While harder to manage and measure, flexible work models will be an essential component to attracting, retaining, and training the top talent behind competitive success. This includes adapting work schedules and improving digital tools for frontline workers.

Factor into strategic planning a means of deploying learning in the flow of work through improved digital adoption technologies and easier-to-use tools for all employees. These may range from AR and VR on the factory floor to GenAI document creation and knowledge management practices embedded into new ways of working. Consider what new roles and jobs will be a part of future planning and how you will introduce them without alienating current workers. Across all industries and sectors, thoughtful approaches to adoption and building a culture of trust will be critical, requiring the support of both technology and service providers with technical and organizational expertise.

EXTERNAL DRIVERS: DETAIL

AI Everywhere — Generative AI Takes the Spotlight

- **Description:** With intelligence becoming the primary source of value creation, we are on the verge of the "Intelligence Revolution," in which artificial intelligence and automation-oriented technology will be the main accelerators of business change. In the realm of "AI everywhere," generative AI emerges as a transformative force, potentially revolutionizing the future. This branch of artificial intelligence enables a machine-driven autonomous creation of new content, from images to music to even written text, with remarkable accuracy. Early applications of GenAI have highlighted its potential in fields such as creative arts, content and code generation, and personalized recommendations. However, it also raises concerns regarding bias and privacy: AI algorithms can inadvertently perpetuate biases and pose threats to personal data. As a result, regulation becomes crucial to ensure responsible and ethical use of GenAI. Despite these challenges, the possibilities are vast, ranging from improved customer experiences (CXs) to innovative problem solving. Harnessing the power of GenAI and navigating its associated complexities has the potential to shape the future of industries and drive advancements in the AI-driven world.
- **Context:** Businesses are already jumping to get a piece of the AI pie, afraid to miss out on the opportunities it presents. Although we are in the early days, monetization and scale of AI solutions are expected to evolve rapidly. However, this comes during a time of relative economic uncertainty and increasingly constrained IT budgets. Furthermore, AI is not without risks, especially when it comes to ethical AI and data privacy, and companies need to carefully consider the best use cases to implement AI effectively.

The Drive to Automate — Maximizing Efficiency and New Opportunities

- **Description:** Broader automation use cases – beyond just generative AI – are now ubiquitous. Now that data is embedded in the core of strategic capability for every organization, automation is critical to scaling a digital business and is evident in three domains: IT automation, process automation, and value stream automation – leading to autonomous operations, digital value engineering, and innovation velocity. Industrial organizations have spent the past few years evolving toward the Fourth Industrial Revolution (Industry 4.0) through industrial automation and intelligence. Thoughtful implementation is more important than ever as data becomes embedded in the strategic core of every organization. Automation technologies such as robots and drones are being used increasingly in the military and healthcare sectors. Given this boost in automation, data is increasingly precious, and privacy must be prioritized and security enhanced. In some cases, automation has also led to concerns over the future of work – whether it will enhance or take away.
- **Context:** Businesses are rethinking how to employ automation to maximize operational efficiency – from automating assembly in manufacturing to identifying opportunities for food waste reduction in hospitality to improving customer experience in digital banking. IT will need to continue to assess new technologies and to approach automation investments strategically, both within the walls of the organization and in the field. Among industrial organizations, IT/OT convergence will necessitate shared responsibility across teams for automation priorities and implementations.

Economic Uncertainty — IT Malaise and Market Volatility

- **Description:** The global markets have been thrown into a state of prolonged uncertainty. The era of low interest rates and easily accessible corporate debt has abruptly transitioned into an economic slowdown, accompanied by a surge in interest rates. Despite monetary policy

interventions, inflation persists due to the compounding effects of global conflicts and supply chain constraints. As a result, economic growth is stifled, hindered by soaring commodity prices and mounting sovereign debt. In certain cases, this instability has even escalated into recessions. These conditions have created a situation of IT malaise, especially in the United States and Europe in early 2023, as uncertainty makes budget planning and forecasting challenging for executives. Many IT leaders are now bracing for an onslaught of AI-driven technology while battling uncertainty about which current expenditures and assets they should keep or discard. While technological innovation may be a rejuvenator, it further contributes to disruption and uncertainty in today's already-volatile economic environment.

- **Context:** Given uncertainty around inflation and interest rates, C-suite executives need to strategically plan IT spend. Most executives view IT as a deflationary measure but striking this balance between digital investments and cost management becomes increasingly challenging given volatile conditions. With generative AI, IT executives further find themselves caught up in questions of strategic spending. While many IT organizations initially focused on constraining new expenditures and optimizing the use of existing assets, they now find themselves grappling with how to invest in AI and other drivers of innovation while reining in costs.

Cybersecurity and Risk — Building Resilience Against Multiplying Threats

- **Description:** The era of digital business has resulted in a significant increase in the interconnectedness of devices, people, applications, data, and networks alongside movement of workloads to the cloud. However, this progress has led to a broader vulnerability to cyberattacks. Ransomware attacks have multiplied exponentially; the dark web is teeming with low-cost, high-quality hacking services; and generative AI is threatening with more believable, humanlike phishing and pretexting attempts. A shortage of skilled cybersecurity professionals presents a continuous challenge for organizations to respond effectively. Cyberattacks have impacted all types of organizations, from governments to universities to businesses, and are oftentimes entangled in geopolitical motives. The increase in high-profile data breaches is furthermore leading to increased policy interventions regarding privacy and sovereignty.
- **Context:** An organization that is unprepared for cyberattacks may suffer various consequences, including data loss, financial implications, harm to the organization's brand reputation, decreased employee morale, and loss of customers. Cyber-resilience – the ability of an organization to anticipate, withstand, recover from, and adapt to any threats to its resources – is key for an organization to not only defend against cyberattacks but also prepare for swift response and recovery to attacks.

The Digital Business Imperative — Competitiveness and Outcomes

- **Description:** A digital business sees value creation based on the use of digital technologies for both internal and external processes, including customer engagement, employee experience, and product and services development. Building and leading a digital business is imperative for organizations to be competitive. While certain operational aspects may always have a nondigital component, digital businesses prioritize a digital-first strategy that aligns all parts of the business and IT landscape with digital workflows to drive value and growth. The development strategies for both digital and nondigital assets now require leveraging multiple channels for the digital business to obtain support or funding. This places a strong emphasis on providing digital experiences for customers and citizens, employees, and partners and necessitates a shift toward fully digital operating models and resilient supply structures enabled by digital technology. The focus of a digital business is increasingly on delivering measurable outcomes. Businesses that have recognized the value of digital anticipate maintaining or even increasing their investment in technology, even in times of economic uncertainty.

- **Context:** As more enterprises embrace digital strategies and technology, they prioritize technology investments that drive innovation or allow for competitive differentiation. Technology is no longer viewed as a tool to keep the business running, but it is the foundation for building new revenue-generating experiences and products. Laggards will need to adapt quickly and develop their digital road maps and embrace a digital business platform. Identifying top digital revenue opportunities that deliver value will be crucial for overall business success and implementation of organizational digital-first strategies.

Dynamic Work and Skills Requirements — New Work Mode Era

- **Description:** In the wake of COVID-19 pandemic-driven accelerated work transformation, enterprises continue to face dynamic work conditions. These range from lack of skilled employees to codifying more flexible ways of working that rely on a broad range of technologies and services. In some regions, most notably in Asia/Pacific, organizations are focused on building more secure and technically sophisticated office environments. In North America, remote and more flexible work models are driving investments in technologies that support collaboration across and within disparate work environments. Across this spectrum of work models, organizations are investing in infrastructure, hardware, software, and services to enable and manage increasingly automated ways of working. These include automated remote onboarding, learning in the flow of work, and use of AI and generative AI to facilitate basic tasks and workflows. While the pandemic drew much needed attention to the employee experience, enterprises have shifted to aligning employee requirements more plainly to strategic business goals. The key challenge around the globe has been to find or upskill/cross-skill employees to scale and meet the demands of complex, automated work processes. Flexible work models continue to change to become even more agile, with digital workspaces highlighting skills, workforce management, automation, changing demographics, and as-a-service talent resourcing.
- **Context:** New modes of working are now intrinsic to leadership and organizational resilience and go well beyond traditional staff planning methods. They are also having an impact on frontline workers who have historically been neglected in favor of higher-paid front- and back-office peers. New work models require agile cross-functional teams — including HR, IT, LOB, finance, facilities management, and operations — to engage top talent and meet client brand expectations. While headlines debate the fate of environmental, social, and corporate governance (ESG) initiatives, it's clear that environmental concerns will be an embedded element of workplace design and implementation of flexible work models. C-suite leaders and their teams must collaborate to recalibrate work culture, augmentation, and space/place planning to enable more secure, dynamic, and refined work models of the future.

Operationalization of ESG — Measuring and Implementing Sustainability

- **Description:** Environmental, social, and governance, a globally adopted framework supporting actions to achieve sustainability and a better future for all, is gaining more traction than ever. ESG laws are increasing: the EU launched the Corporate Sustainability Reporting Directive (CSRD) requiring companies to disclose and assure ESG metrics, the SEC's climate disclosure requirement is forthcoming, and Japan's GX Basic Policy implements an emissions trading scheme and carbon tax. There are also new International Financial Reporting Standards. Given this, many companies are actively operationalizing ESG with AI-informed carbon accounting software, carbon budgets, and sustainability requirements into requests for proposals (RFPs) they send to tech suppliers. Many companies now have positions such as chief sustainability officer or are integrating sustainability into the responsibilities of the C-suite. And many enterprises are replacing redundant faulty and energy-heavy tech with newer,

more efficient energy-saving counterparts. Businesses recognize that diversity, equity, and inclusion are positively affecting profits and are therefore implementing diversity, equity, and inclusion (DEI) initiatives to include more women and minorities. In addition, ESG compliance is a form of long-term strategic business risk reduction. Given climate change and instable energy prices, among other risks, ESG helps curb costs and hedge against risks caused by natural disasters and other shocks.

- **Context:** ESG is more than just a measure; it is foundational to business purpose and value. Businesses are increasingly beholden to ESG. More customers care about whether the companies they deal with behave sustainably and deliver sustainable products and services. ESG can also be a cost-saving measure and hedge against risks. Yet, despite much progress, there is still work to be done, especially in complying with carbon footprint measuring and achieving high-quality data. As laws and regulations — as well as investment opportunities — amp up around ESG, the IT industry will increasingly require green talent and skills and better data modeling of ESG metrics to achieve maximum benefit.

LEARN MORE

Related Research

- *IDC MarketScape: Worldwide Intelligent Document Processing 2023 Vendor Assessment* (forthcoming)
- *Market Analysis Perspective: Worldwide Future of Work, 2023* (IDC #US49961623, September 2023)
- *Market Analysis Perspective: Worldwide and U.S. IT Skills and Training for Digital Business 2023* (IDC #US48511423, September 2023)
- *Will Global Organizations Rely on Generative AI to Personalize Training?* (IDC #US51228123, September 2023)
- *Tech Workforce Skill Management — Future Enterprise Planning Guide* (IDC #US51189423, September 2023)
- *Workplace Technologies to Enhance Tech Parity and Employee Experience in Asia/Pacific (Excluding Japan)* (IDC #AP50338923, September 2023)
- *Market Analysis Perspective: European Future of Work, 2023* (IDC #EUR150262423, September 2023)
- *Critical External Drivers Shaping Global IT and Business Planning, 2024* (IDC #US51057623, September 2023)
- *Investments in Generative AI and the Effect on the European Future of Work, 1H23 Update* (IDC #EUR151121423, August 2023)
- *IDC's 2023 Annual Collaboration Survey: The Intelligent Multiplayer Home Base* (IDC #US49385523, August 2023)
- *Worldwide IT Education and Training Services Forecast, 2023-2027* (IDC #US48511523, June 2023)
- *European Future of Work: Can Automation Bridge the Skills Gap?* (IDC #EUR150831523, June 2023)
- *Using Knowledge Management to Create a Borderless and Reimagined Workspace* (IDC #US50737023, June 2023)
- *Enterprise Automation to Mitigate the Digital Skills Shortage* (IDC #AP50344823, March 2023)

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