IDC FutureScape

IDC FutureScape: Worldwide Future of Work 2020 Predictions

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IDC FUTURESCAPE FIGURE

FIGURE 1

IDC FutureScape: Worldwide Future of Work 2020 Top 10 Predictions
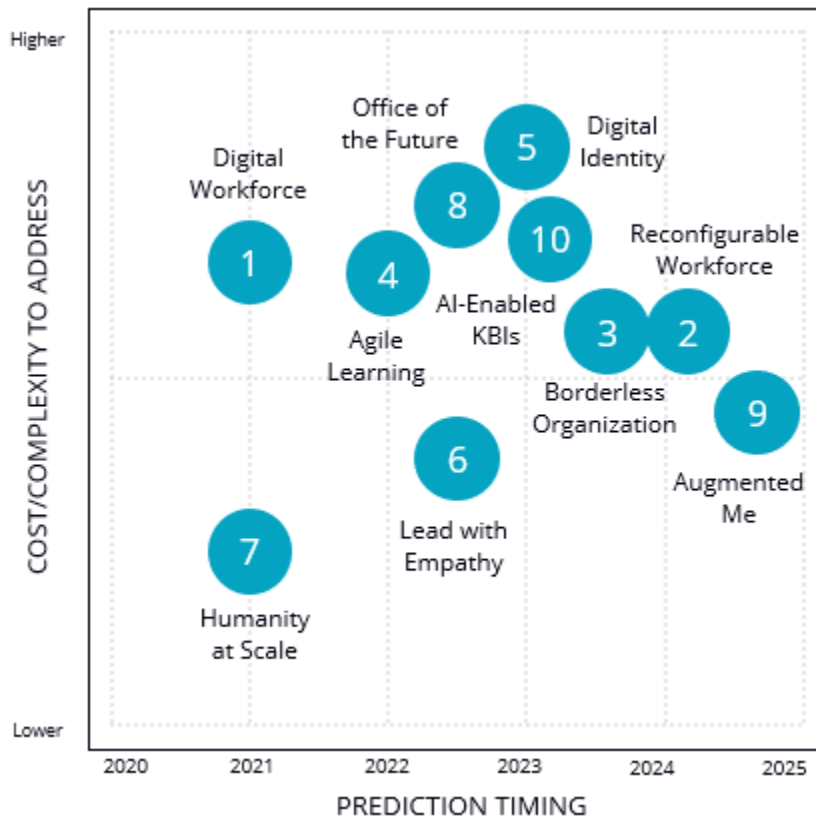
Note: Marker number refers only to the order the prediction appears in the document and does not indicate rank or importance, unless otherwise noted in the Executive Summary.

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EXECUTIVE SUMMARY

From a personal perspective, we all can attest to the fact that 3rd Platform and related technologies such as cloud, mobility, and social business have changed how we work on a daily basis. However, technologies such as artificial intelligence (AI), data analytics, robotics, augmented reality/virtual reality (AR/VR), and intelligent process automation (IPA) (including robotic process automation [RPA]) are rapidly changing who – or what – are performing ever larger shares of the work. The World Economic Forum calls this the "Fourth Industrial Revolution," and its impact is being felt broadly across all industries and many job functions. These changes are happening very rapidly – in fact, many of us are already seeing the growing role of "digital workers" in our own companies and industries.

At the same time, our consumer experiences are driving new sets of expectations for the workplace – a workplace increasingly characterized by geographically diverse teams, a rising premium on collaboration, and a sea of new data analytics opportunities. To cope with the accelerating shifts, workers are seeking out new, more intelligent workspaces that deliver personalized experiences with almost ubiquitous access to resources, anytime and anywhere, with ease and immediacy. Differing workstyles may be associated with different constituents of our multigenerational workforce, and all must be accommodated. And broader macroeconomic trends such as globalization and sustainability are also impacting the work environment.

The future of work is about rethinking the way work gets done. It is a fundamental shift in the work model to one that fosters human-machine collaboration, enables new skills and worker experiences, and supports an environment unbounded by time or physical space.

Work transformation is critical for effectively scaling digital transformation (DX) initiatives. Work transformation initiatives will increase business agility, worker productivity, and operational efficiency. Most importantly, it will drive greater stakeholder (including employee) engagement and innovation, enabling your organization to establish competitive differentiation in a dynamic business environment.

This IDC study contains IDC analysts' future of work worldwide outlook for 2020, as well as 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 resource (HR), and other line-of-business decision makers and influencers (refer back to Figure 1). IDC's future of work 2020 top 10 predictions are:

- **Prediction 1:** By 2021, the contribution by "digital coworkers" will increase by 35%, as more tasks are automated and augmented by technology, including AI, robotics, AR/VR, and intelligent process automation.
- **Prediction 2:** By 2024, two-thirds of employees in high-performing G2000 enterprises will shift from static roles and processes to dynamic, multidisciplinary, outcome-focused reconfigurable teams.
- **Prediction 3:** By 2024, 30% of the G2000 firms will rely on a global, secure, intelligent, highly integrated, and collaborative ecosystem that enables enterprises to function as borderless organizations.
- **Prediction 4:** By 2022, 33% of G1000 companies will offer agile, dynamic, and AI-driven learning pathways as the primary approach to career development and succession planning.

- **Prediction 5:** By 2023, 30% of the workforce will have their own secure portable, private digital work identity, enabling them to access the tools and data they need across business entities.
- **Prediction 6:** By 2023, 50% of G2000 organizations will measure and incentivize management empathy metrics as part of their leadership's balanced scorecard to positively impact revenue and brand value.
- **Prediction 7:** By 2021, 35% of knowledge and frontline workers will consider social, environmental, and humanitarian actions as key criteria to employment decisions.
- **Prediction 8:** By 2022, 25% of G2000 firms will use integrated workplace sensing systems to optimize and personalize the employee experience, enhancing office productivity, safety, and security.
- **Prediction 9:** By 2025, 20% of G2000 workers will have access to "fit for purpose" forms of human augmentation and assistance, merging physical and digital, including exoskeletons and robotics, AR/VR, and wearables.
- **Prediction 10:** By 2023, half of G2000 companies will use AI/ML, chatbots, and digital assistants to measure key behavioral indicators (KBIs) to drive agility, collaboration, innovation, and business outcomes.

This IDC study contains IDC analysts' future of work worldwide outlook for 2020.

"Technology, worker expectations, and the need for a new type of organizational agility are changing work as we know it," said Roberta Bigliani, vice president, IDC Energy Insights. "This impacts an organization's culture, required competencies, a new type of work environment, and the nature of makeup of the workforce itself."

"Work transformation is not 'one and done,'" said Holly Muscolino, vice president, IDC's Content and Process Strategies and the Future of Work research programs. "The future of work is an ongoing journey that requires adaption to evolving technologies, worker experiences, and customer requirements."

IDC FUTURESCAPE PREDICTIONS

Summary of External Drivers

Many external factors have a direct or indirect impact on the future of work. These factors come from the political, economic, social, technological, environmental, legal, and business realm. IDC has identified the main drivers that set the context and conditions for designing and executing on organizations' future of work strategies, tactics, and operations. Collectively, these drivers lead to the 10 predictions discussed in the sections that follow:

- **The age of innovation:** Driving the future enterprise
- **Accelerated disruption:** Navigating business challenges as volatility intensifies
- **Geopolitical risk:** Societal and economic tensions rise
- **Intelligence everywhere:** AI's opportunity and implications
- **Rising customer expectations:** More convenience, customization, and control
- **The future of work:** Agile, augmented, borderless, and reconfigurable
- **Economies of intelligence:** AI, human, and organizational "learning" fuels asymmetrical advantage

For more details, please refer to the External Drivers: Detail section.

Predictions: Impact on Technology Buyers

Prediction 1: By 2021, the Contribution by "Digital Coworkers" Will Increase by 35%, as More Tasks Are Automated and Augmented by Technology, Including AI, Robotics, AR/VR, and Intelligent Process Automation

Organizations that are deploying robotics, intelligent process automation, AR/VR, and other "digital workers" to work alongside human workers are realizing a number of business benefits. The most discernable are improved operational efficiencies, including increased productivity, reduced errors, faster cycle time, and reduced security and compliance risk. Digital workers may also service to enhance customer experience with improved customer response times, reduced rework, and overall better customer engagement. And since human workers can offload repetitive duties and focus on higher-value tasks, employee experience is improved, which, in turn, may increase talent retention and acquisition.

In a recent IDC study in the United States, we asked respondents to think about a set of business activities, and we asked them to reflect on what percentage of those activities are accomplished by a digital worker today and what percentage of those digital workers will contribute in two years. We asked them to consider a variety of technologies, including AI, robotics, augmented reality and virtual reality, intelligent process automation software, digital assistants, and other "smart" devices. According to this research, almost 38% of activities related to finding and identifying information is today accomplished by a digital worker. In addition, just over 31% of activities related to evaluating information are conducted by intelligent technology today. That value is expected to increase by over 56% in two years. In addition, the contribution of digital workers to activities related to reasoning and decision making will jump 88% by 2021.

In most cases, these new digital members of the workforce will not replace human workers, but rather will augment the capabilities of these workers and create new business opportunities. In fact, another recent IDC survey of 786 senior decision makers in North America and Europe responsible for work transformation initiatives reflected optimism about the impact of these technologies on jobs in their organizations. In that survey, 53% of respondents indicated that AI and robotics would have a positive impact on jobs in their company over the next three years.

Associated Drivers

- **The age of innovation:** Driving the future enterprise
- **Intelligence everywhere:** AI's opportunity and implications
- **The future of work:** Agile, augmented, borderless, and reconfigurable

IT Impact

- IT departments must acquire and/or develop new skill sets related to the creation, deployment, and management of digital workers.
- IT support expands beyond technology acquisition, deployment, configuration, and support and must also consider security, privacy, and compliance implications.
- The IT department itself will become more automated, freeing up IT resources to focus on more strategic and growth-focused initiatives and activities.

Business Impact

- Organizations must adopt the appropriate technologies, policies, and processes to evaluate and select business tasks and processes for automation and augmentation in order to maximize optimization and business benefits.
- Though process owners are best positioned to direct process reengineering, engage with IT early to optimize integration with enterprise applications and mitigate security and compliance issues.
- Develop the appropriate training, reskilling, and change management programs to enable employees to work effectively, securely, and unreservedly with digital coworkers.

Guidance

- Think humans *and* machines. Automation is not simply about replacement. Understand how intelligent automation technology can further augment human skills at your company.
- Develop a strategy for retraining and redeploying employees as well as for acquiring new talent. Pay special attention to change management and user adoption.
- Workforce transformation is not "one and done." Focus on creating an organization that is agile, embraces change, and that fosters continuous learning. Establish a cross-functional automation center of excellence to cultivate and disseminate best practices and to identify those areas that could provide the greatest business benefit through automation.

Prediction 2: By 2024, Two-Thirds of Employees in High-Performing G2000 Enterprises Will Shift from Static Roles and Processes to Dynamic, Multidisciplinary, Outcome-Focused Reconfigurable Teams

Traditional company organization, founded on the "Napoleonic" hierarchical structure where each unit has specific goals and people have specific limited tasks to accomplish, is struggling in today's business environment. The need for faster time to market, to increase customer satisfaction and engagement, to develop the right product and services, to reduce risks and engage employee, has pushed many organizations to reconsider their way of working. Agile is more and more adopted in large organizations and not only in start-ups. The focus on interdisciplinarity teams, on design thinking techniques, and the new attention to employee experience is requiring workers to be more flexible and contribute to multiple cross-team projects and activities that are dynamically evolving based on customers and business needs.

This change in organizational paradigm will bring employees a more diverse portfolio of tasks, more opportunities for personal growth, but also more requirements with regard to continuous learning. Management techniques need to evolve. Executives need to make clear the desired business outcomes and show their engagement throughout the program. They need to move from being "the boss" to being "the coach."

The shift from traditional static hierarchic organization, which require strong orchestration capabilities on all levels of management, influences the functioning of supporting processes. It will imply HR transformation, as the underlying processes, talent allocation, and outcome metrics will need to readjust to fit the new organizational paradigm. The CHRO task of skills acquisition and allocation will become more continuous, requiring organizations to go beyond traditional acquisition methods. The focus on leveraging the right talent in multidisciplinary teams will require much more granular data around the employee skills, going far beyond the usual listing of major skills that employee listed while applying for the original job. The horizontal as well as vertical movements of employees, differing

career paths taking into consideration the whole skills portfolio and skills demand, will place additional pressure on HR processes.

Associated Drivers

- **Accelerated disruption:** Navigating business challenges as volatility intensifies
- **The future of work:** Agile, augmented, borderless, and reconfigurable

IT Impact

- IT will be challenged to quickly provide the appropriate collaboration environment and access to resources, in order to make the team and the individual productive and effective.
- IT must develop increased agility to proactively adapt to the evolving technology environment as well as dynamic organizational structures.
- The chief information security officer (CISO) will be requested to dynamically handle workers' profiles to secure the access to the appropriate set of data and applications.

Business Impact

- Human capital management (HCM) systems must be able to support the new organizational models. And this means also being able to blend full-time or part-time employees with freelance and external contractors.
- HR departments must become enablers of new ways of working rather than policy "rulers."
- Organizations themselves must increase agility to more quickly achieve target business outcomes.

Guidance

- Assess if your IT environment can support agile working models and a multigeneration workforce. Consider mobile first as the approach for new deployments. Focus on user experience (UX) when delivering new solutions. Make collaboration easy and engaging from a user perspective.
- Evaluate if your organization is equipped with the right HCM system needed to manage both internal and external workers and to support HR processes and metrics suitable for an agile organization.
- Engage CISOs in designing digital workspace from the beginning; foster a "can do" approach to balance security concerns with the effectiveness of outcome-based teams.

Prediction 3: By 2024, 30% of the G2000 Firms Will Rely on a Global, Secure, Intelligent, Highly Integrated, and Collaborative Ecosystem That Enables Enterprises to Function as Borderless Organizations

Technology is consumerized: The smartphone user is always connected. If this user needs to know something, they will use that device to search. If they need to communicate, they will download a chat or messaging app. If they need to collaborate, they will download a collaboration app. They shop and get customer support on their devices. This dynamic is driving significant change in customer experience and causing a profound change in employee expectations or employee experience. Workers fairly question why they can collaborate more easily and be more productive outside of work than using the same technologies at work. Companies can leverage this dynamic in an online collaborative environment to drive greater outcomes including ideation, greater productivity, faster time to market/project completion, and better employee experience. Some teams create a powerful culture that empowers the flow of ideas, capabilities, and knowledge without regard to department or location. These highly productive teams are "super teams."

Super teams are mission driven, focused on purpose, and have an effective and unashamed disregard for traditional silos, departments, or locations but place a high value on outcomes as a team. While not every team performs at the super team level, there are incremental benefits on the collaboration journey. "Deskless" or "frontline" workers, including contractors, who may not have a desk or corporate email address are being realized as the newest knowledge worker category, adding unique and valuable insights. All workers can leverage an array of collaborative applications including team collaboration applications to keep conversations with content and data assets (documents, meeting transcripts, etc.), videoconferencing, other communications platforms (messaging, chat, and social and online communities), and often workflow, content management, CRM, and HRIS systems. These solutions support deep integration that create an ecosystem from your IT stack and are highly permissions based. As AI and ML increase their enterprise presence, they will utilize data across the IT stack to enhance the superpowers that these teams bring at the interpersonal level.

The work of super teams goes beyond technology. Cultural dynamics that are found in the most successful collaborative super teams include being purpose or identity driven, enabling the free flow of convergent and divergent ideas, mentoring and modeling good community behavior, and becoming a meritocracy where credit is given for ideas.

Associated Drivers

- **Accelerated disruption:** Navigating business challenges as volatility intensifies
- **The future of work:** Agile, augmented, borderless, and reconfigurable

IT Impact

- Instead of supporting many IT technologies, it will be necessary to support an integrated IT stack, perhaps with a collaborative application at the hub. AI/ML will be easier and more effective when integrated within this hub.
- The need for API-coding talent will increase, despite the increase of no-/low-code integration solutions. Most of the latter are for less complicated, end-user requests that free up developers for more mission-critical work.

Business Impact

- Organizations must deploy strong collaboration tools that are highly integrated to attract and retain tech-savvy workers. In addition, effective, cross-functional collaboration and communications powers faster time to market and greater individual and team productivity.
- Integrated solutions will make it easier to collaborate, and more effectively, leverage AI/ML in the enterprise by centralizing data flow.
- Managers will need to become greater facilitators to evoke the best ideas and processes.

Guidance

- Invest in collaboration technologies and integrate your IT stack to them.
- Don't forget about training and change management. Collaboration is more than technology – it is also cultural, requiring a culture of collaboration to thrive.
- Understand employee's needs. If enterprises fail to adopt a suitable collaboration platform, tech-savvy users will adopt one on their own to meet increasing productivity demands.

Prediction 4: By 2022, 33% of G1000 Companies Will Offer Agile, Dynamic, and AI-Driven Learning Pathways as the Primary Approach to Career Development and Succession Planning

Organizations are using new contracting models to create an agile, borderless, and reconfigurable workforce – to both take advantage of new technologies and overcome the growing skills gap. While IT is often the focus of discussions about skill gaps and talent shortages, other professionals and employees have significant training needs as well. The growing need for new skills has resulted in organizations leveraging disparate ad hoc, online training programs; limiting the organization's ability to monitor progress; adjust training priorities; and measure impact. Still, the *Harvard Business Review* reports that only 10% of the $200 billion businesses spend on training in the United States annually to reskill their workforce delivers business results. This is a staggering statistic and yet not surprising when we stop to think that most measurement of learning programs has been focused on program participation and course completion – not business results. With competition for talent at an all-time high, companies are forced to reconsider and revamp their efforts to make learning more relevant to business success and become a core part of the employee experience. To be more responsive, the learning and development (L&D) process has begun to incorporate more agile, dynamic approaches to aligning skills development and a more closely established relationship between employee performance and career advancement. Better embedded and dynamic learning tools are helping address the isolation of training from progress and business results day to day.

The distinction between agile and adaptive learning programs and traditional approaches is the ability to identify learning requirements that are essential to the business and to rapidly assess employee competence and adapt learning pathways and approaches to meet both the employee and the enterprise requirements. AI is playing an increasingly critical role in several key areas in learning and development: isolating critical skills important for business success and career advancement, identifying skills gaps, aligning training offering to address skills gaps, testing to confirm competence, and providing career pathway recommendations to workers and managers. AI is used to dynamically serve up content as needed but also to identify who needs what training when – anticipating and calibrating the training for the needs of the business.

To be successful, LOB, IT, and HR leaders need to coordinate and collaborate to build the right training pathways to achieve both business results and individual career development goals. Regular collaboration between learning and development leaders (whether LOB, HR, or IT) is essential to ensure appropriate learning pathways, programs, and tools are deployed and iteratively adapted to meet learning needs. This amounts to offering the precise right materials at the right time to the right workers. This dynamic approach means cross-functional efforts need to be regularly assessed to ensure they are effectively delivering results like improved performance and progress in career development. For the enterprise, this functionality improves the ability to monitor skill attainment, identify skill gaps, and adjust training priorities to meet changing business requirements. LOB managers can clearly see the relationship between competence and worker performance. For the employee, AI-driven learning allows individuals to better understand areas for growth and quickly find the necessary resources to build, test, and document their skills development. AI-driven skills and career opportunity recommendations guide workers and their manager to proactively focus on the next steps in an individual's career pathway.

Associated Drivers

- **The future of work:** Agile, augmented, borderless, and reconfigurable
- **Economies of intelligence:** AI, human, and organizational "learning" fuels asymmetrical advantage

IT Impact

- IT needs to understand its own skills development requirements around development and integration of AI-enabled applications as well as broader IT requirements for automation and augmentation.
- IT must be able to offer recommendations on configuration and integration of AI-enabled L&D applications, tools, and API integration as well as agile deployment of new tools, practices, and programs across organizations and geographies.

Business Impact

- L&D must begin to establish competency measurement (testing) across employees and significant competency areas (sales, finance, IT, supply chain, retail distribution, etc.) to establish a "baseline" for future analysis.
- HR, IT, and L&D must organize competency data and associated business data to help inform AI development.
- L&D organization must closely associate future strategic learning programs with competency targets and expected business impact and establish monitoring programs that demonstrate the relationship (or lack of relationship) of competence to performance.

Guidance

- Align learning and development initiatives to business goals by proposing a L&D initiative that considers potential impact of learning and program costs.
- Isolate areas where AI can identify, monitor, and drive learning and development opportunities.
- Secure agreement between L&D and LOB to ensure the AI-enabled learning program can meet the objectives, target learners to participate in the learning initiative, and ensure the program results are worth the investment in time and money.
- Build confidence in the process to ensure senior leadership is committed to data-driven succession planning.

Prediction 5: By 2023, 30% of the Workforce Will Have Their Own Secure Portable, Private Digital Work Identity, Enabling Them to Access the Tools and Data They Need Across Business Entities

The increased digitization of people's daily, personal lives is already bleeding into work life and the workplace, as employees bring their own devices to work, use personal cloud storage/file-sharing apps with work content and data, and even intermingle online personalities on social media and other online platforms. At the same time, workers are increasingly disaggregating from traditional employee/employer relationships, with the rise of the gig economy, as well as other forms of online-enabled freelance and temporary/contractor work. For many workers, all of these factors will converge around a single, portable, and secure online digital identity, allowing for extended access to business systems, content, data, and applications.

This will go far beyond workers simply having a personal email account they use for all gigs and project work. Federated cloud identity and increasing interoperability of digital identity capabilities

among the so-called "Big 5" cloud platforms (Amazon, Apple, Facebook, Google, and Microsoft) and beyond will enable a significant portion of workers to have a single digital identity that will unlock access to a wide range of enterprise internal (cloud-based) systems and digital resources. This will make businesses more agile, with the ability to quickly take in and assimilate a flexible workforce. Enterprises will also be more secure, eliminating the need to create individual, temporary identities for workers (across multiple platforms) to access sensitive data and apps required for productive work. (Many organizations fail to deprovision such temporary credentials and IDs when workers move on or end projects, creating dangerous backdoors and cyberattack vectors.) Ultimately, workers will be productive from day one of a project or gig, allowing for instant onboarding and access provisioning to important data, apps, and other online resources.

Associated Drivers

- **The age of innovation:** Driving the future enterprise
- **Rising customer expectations:** More convenience, customization, and control
- **The future of work:** Agile, augmented, borderless, and reconfigurable

IT Impact

- Enterprises will have to "get cloudy" in order to support this new, growing component of the workforce using portable digital IDs. Having critical business systems in the cloud or connected to cloud-federating and cloud-based ID brokering technologies will be key to enabling and supporting such workers.
- IT teams must support and embrace more automation of system access provisioning and deprovisioning workflows to support employees and contractors using portable digital IDs. Manually recreating multiple worker IDs on back-end systems is not an approach that will scale to support a flexible, on-demand workforce of the future.

Business Impact

- Enterprises will more easily be able to find and support temporary workers with specific skill sets or industry-specific expertise areas, allowing business-critical initiatives, tasks, and projects to complete sooner and with greater quality and business outcome.
- Common barriers and roadblocks to supporting gig workers (denied system access, miscommunication, and noncompatible/interoperable collaboration technologies) will erode as portable, secure IDs proliferate and become accepted by businesses.

Guidance

- Work with cloud platform providers that offer broad identity federation and interoperability across multiple productivity and application platforms.
- Explore vertically focused cloud platform identity standards, technologies, and frameworks that are specific to your enterprises' specific industry, especially to support temporary or gig workers with specific skills or expertise.
- Examine all aspects of digital tools and platforms required to support workers – from email/collaboration, to conferencing, file share/edit, content creation and beyond – and ensure federated ID and portable digital ID support are present for each scenario and use case.

Prediction 6: By 2023, 50% of G2000 Organizations Will Measure and Incentivize Management Empathy Metrics as Part of Their Leadership's Balanced Scorecard to Positively Impact Revenue and Brand Value

The future of work assumes that human beings will be able to come together in focused, ad hoc teams to deliver ambiguous outcomes in a complex environment. These teams will have little direct control over their schedule (flexible staffing), association (matched by outcome required), and group identity (assigned by theoretical skill/capability). This may be efficient for the enterprise but will create an environment of disengaged, depressed, and demotivated workers who lack the ability to cohere into teams and organizations with a common purpose and goal.

On a practical level, managers will be under pressure to make up for these less-than-ideal circumstances through a combination of emotional intelligence traits, including empathy and self-control. Finding common ground, understanding other's emotional context, and leading others to act for the common good will become the norm rather than exceptional behavior.

Companies will need to understand and apply behavioral indicators, support, and training to achieve this broad-scale realignment of management culture. These and similar tools will need to extend throughout the enterprise, allowing omni-directional visibility into team performance in general way, with more detailed views based on access entitlements related to functional, geographical, product, and outcome responsibility.

Associated Drivers

- **Accelerated disruption:** Navigating business challenges as volatility intensifies
- **Geopolitical risk:** Societal and economic tensions rise
- **The future of work:** Agile, augmented, borderless, and reconfigurable

IT Impact

- Social information (e.g., significant life events, interests, and biographical and geographical information) will be embedded into collaboration and productivity tools to enable common courtesies and community formation that current transaction-based conversational systems prevent.
- Cultural and emotional intelligence coaching/training in interactive digital environments to include, but not limited to, multimodal training; intelligent agents to allow for training interactions in text, AR, and VR; and coaching software to monitor and make suggestions to promote empathy must be provided.
- Provide sentiment and company milieu (e.g., emotional climate, cultural adherence to desired principles, and external reaction to corporate actions) data to HR to support manager training, interventions, and cultural awareness.

Business Impact

- By building empathetic leadership into organizational culture, leaders can better deliver on business initiatives that require rapid workforce reconfiguration, skills development, and integration of new and existing workers.
- Empathic leadership creates a culture in which the narratives which enable the creation of authentic branding that increase the company's long-term ability to attract and retain talent.
- Leadership empathy and self-control together enable radically higher productivity and performance in teams by allowing the team to collectively and positively address conflicts which arise during collaboration.

Guidance

- Identify and track key behavioral indicators (KBI) for managers, which support empathy and self-control.
- Align the identified key behavioral metrics indicators to manager and executive bonus structures.
- Use sentiment and lexical analysis to track emotional contagion patterns within and outside of the enterprise.

Prediction 7: By 2021, 35% of Knowledge and Frontline Workers Will Consider Social, Environmental, and Humanitarian Actions as Key Criteria to Employment Decisions

In an era when socially conscious next-generation workers are becoming a larger percentage of the workforce, customer experiences (CX) and employee experiences (EX) are coincidentally playing an outsized role in defining digital transformation efforts. More than ever, workers are looking to employers to take on the responsibility of driving social change where other entities are too slow or unwilling to act. It began with consumers pressuring corporations to redress issues like discriminatory legislation through boycotts and social media campaigns. Now workers are pressuring (current or prospective) employers to uphold socially responsible practices or divest from partners, clients, and governments who are not living up to socially and ecologically responsible standards. Writ large, personal brand and employer brand are increasingly linked as workspace and work culture converge. Whether welcome or not, the long-term economic success of global corporations is becoming inextricably linked to their acceptance of greater responsibility for ethically supporting the ecosystem that connects clients, employees, suppliers, communities, and shareholders.

The recent declaration by the Business Roundtable (BRT) that profits for shareholder are no longer the only purpose of a corporation underscores this blurring of corporate and social boundaries in the current social, political, and business climate. As Darren Walker, president of the Ford Foundation, stated: "... it is more critical than ever that businesses in the 21st century are focused on generating long-term value for all stakeholders and addressing the challenges we face, which will result in shared prosperity and sustainability for both business and society." A group of more than 30 American business leaders, including the heads of outdoor clothing brand Patagonia, The Body Shop owner Natura, Ben & Jerry's (part of Unilever), and Danone's U.S. business, took out a full-page ad in the Sunday edition of the *New York Times* to champion more ethical ways of doing business. These efforts and many more on a smaller scale document a significant shift in the way corporations are seen as more than employers: they are seen as key players in driving social, humanitarian, and ecological change with and through their workers. They are long-term efforts aimed in part at addressing internal needs to create workplace culture designed to attract and retain top talent. They are also meant to address broader long-term business needs that require socio-political and ecological stability to support a thriving global marketplace. From an IT perspective, the ubiquity of social media and globally diverse teams have the potential to amplify both negative exposure and positive change.

While there is a distinct difference between correlation and causality, organizations need to be aware of the consequences and connection between corporate social responsibility and the ability to attract top talent. IDC has predicted that by 2021, at least 60% of G2000 companies will actively monitor and manage employee experience and utilize EX as a key differentiator to build and maintain B2B and B2C relationships. As the lines between workplace and marketplace blur, so too will the boundaries between social and corporate expectations. Actions driven by and on behalf of digital and social

transformation will have an outsized impact in attracting and retaining talent, who see these as two sides of the same coin.

Associated Drivers

- **The future of work:** Agile, augmented, borderless, and reconfigurable
- **Rising customer expectations:** More convenience, customization, and control
- **Geopolitical risk:** Societal and economic tensions rise

IT Impact

- CIOs need to consider adoption and deployment of enterprise and ecosystem-integrated collaboration tools to facilitate global corporate employee engagement.
- IT needs to support corporate and PR requirements for deploying global media and worker analytics to ensure timely awareness and response to socio-political issues effecting brand value, employee recruitment, and client engagement.

Business Impact

- Ensure efforts to build and maintain corporate social responsibility initiatives are done with integrity or risk the consequences of employee attrition or diminished applicant pools.
- Consider opportunities to inspire grassroots efforts with ultimate potential for broader corporate endorsement.
- Align internal and external communication and employee engagement efforts to maximize value and minimize damage related to social, humanitarian, and environmentally sensitive arenas.

Guidance

- Assess competitive brand positioning using social media listening and analytics to identify key social, humanitarian, and environmental industry concerns for clients and prospective workers.
- Establish and promote corporate social responsibility guidelines and goals using digital collaborative tools internally and externally.
- Identify key areas for exposure and improvement using content and social media analytics, sentiment analysis, and interactive automation technologies.
- Ensure corporate, business unit, and department-level initiatives for social responsibility engagement are complementary and connected to business goals.

Prediction 8: By 2022, 25% of G2000 Firms Will Use Integrated Workplace Sensing Systems to Optimize and Personalize the Employee Experience, Enhancing Office Productivity, Safety, and Security

This prediction focuses on the office of the future with an emphasis on the physical site, use of technology, and workforce with respect to employee wellness, satisfaction, and engagement.

Today, companies worldwide are making huge investments in office space. As companies become more flexible and agile in the way they work, office space needs to be regularly modified and managed to ensure maximum benefits and return on investment (ROI). Companies need to think about how to use the office capacity they have and how to optimize it. This may result in a shift from owning office assets to a hybrid model of ownership and a flexible office rental model. Offices will rely on the development of load balancing to determine use and a more adaptable design that is more conducive to employee needs and to enhance their office experience. We believe that an increasing number of G2000 firms will move in this direction to help drive better employee retention and productivity.

Prospective employees will increasingly seek companies that offer such environments as part of evaluating where they want to work.

Those companies that embark on an office of the future journey need to realize that this is a complex initiative. Firms should understand that there will be multiple stakeholders in the organization impacted by this plan, including IT, HR, finance, and facilities. These different functional groups will also have varied needs to be met as part of this transformational effort. This involves:

- IT needs to ensure that the proposed changes work within the current technology infrastructure.
- HR needs to examine the plan's impact on employee benefit and buy-in. HR must also make sure that the plan conforms to local agreements and legislation.
- Finance will look for a favorable return on investment. This may be a complex calculation if factors such as employee retention are included in the analysis.
- Facilities will require any additions made to the current workplace system to function with established environmental controls. Facilities will also be responsible for monitoring target energy savings goals, which can be achieved by intelligently managing worker placement in the office.

Associated Drivers

- **The age of innovation:** Driving the future enterprise
- **Rising customer expectations:** More convenience, customization, and control
- **The future of work:** Agile, augmented, borderless, and reconfigurable

IT Impact

- IT will be involved in evaluating technologies for the evolution of the office environment.
- IT should be part of a corporatewide initiative to determine what technologies are essential for the desired work model and will be one of the key stakeholders in future workplace initiatives.
- IT will need to routinely conduct assessment analyses to ensure that newly implemented technologies designed for the office of the future are having the desired positive impact.

Business Impact

- Intelligently managing the office environment yields overall energy cost savings and increased security for the organization.
- The employee experience will be enhanced and result in happier employees. Employee retention should improve.
- This initiative increases the company's overall corporate social responsibility presence and will be viewed positively across the broader marketplace.

Guidance

- Evaluate and consider implementing monitoring technologies designed to optimize the office experience to drive employee retention and productivity.
- Think about how an increasingly hybrid office model of asset ownership and flexible rental will influence how work gets done and what technologies are needed.
- Involve all stakeholders and employee representatives early in the office of the future initiative to ensure defined benefits and employee buy-in.

Prediction 9: By 2025, 20% of G2000 Workers Will Have Access to "Fit for Purpose" Forms of Human Augmentation and Assistance, Merging Physical and Digital, Including Exoskeletons and Robotics, AR/VR, and Wearables

Accelerated progress of technologies such as artificial intelligence, AR/VR, robotics, and wearables offers new opportunities to amplify and augment the capabilities of workers. Already today, operators in a call center can be advised on the next best action. Field engineers use augmented reality to look at the information and design of the asset they are working on and are guided in what they need to do. Exoskeletons are not only promising to improve the life of people with major diseases but are starting to allow workers in warehouses or construction sites to lift heavy objects.

Augmentation, which goes far beyond automation, can be defined as the adoption of a set of technologies to enhance human mental and physical capabilities. There are three major areas of human augmentation. First, senses augmentation looks at augmenting vision, haptic sensation, hearing, taste, and smell but also allows to translate one sense into another, like sounds into vision. A second area of augmentation is cognition. It means using technology to augment human intelligence. For instance, using analytical tools, it is possible to interpret human cognitive state and have a bot predict and provide what the person needs. Last, action augmentation leverages technologies to increase or amplify human force or movement, which allows remote presence or teleoperation, or capture speech, or enables gaze-based controls.

With the push to increase productivity, to reduce time to market, and to cope with the lack of talent and experienced workers, companies will take advantage of technology evolution and will look for economic viable options to enhance each worker capabilities and give them tailored "superpowers."

Associated Drivers

- **The age of innovation:** Driving the future enterprise
- **Intelligence everywhere:** AI's opportunity and implications

IT Impact

- IT departments will need to increase their expertise across the full set of augmentation technologies and be able to evaluate how to integrate them with company applications and data sets.
- IT departments' collaboration with LOBs will have to be further intensified, as part of an orchestrated attempt combining both digital and physical in redesigning specific workers activities and processes.
- IT departments will need to be able to orchestrate decisions of work automation and workers augmentation.

Business Impact

- Workers augmentation will provide companies with enhanced skills and capabilities, faster time to market, and operations effectiveness.
- Line-of-business executives and HR will need to be technology savvier and open minded to appreciate the opportunities and benefits of workers augmentation.
- Workers augmentation will be deployed to improve company overall performance, but to be successful will have at the center, workers experience and engagement.

Guidance

- Establish collaborations with start-ups and external organizations to stay on top of innovation: At the same time, look at concrete use cases implementations and evaluate impact on the enterprise tech architecture.

- Create agile teams with business, IT, and HR to evaluate, experiment, and deploy concrete opportunities of workers augmentation. Prioritize use cases that allow to increase workers engagement and performance, improve customer experience, and accelerate business outcomes.

- Take the "robot out of humans" whenever possible, but secure balance between automation and workers augmentations projects. These two areas are very correlated in the digital transformation journey.

Prediction 10: By 2023, Half of G2000 Companies Will Use AI/ML, Chatbots, and Digital Assistants to Measure Key Behavioral Indicators (KBIs) to Drive Agility, Collaboration, Innovation, and Business Outcomes

The behaviors of employees, and their adoption of collaborative, mobile technologies, have a direct impact on businesses' operations, and subsequently, its success. This correlation becomes more important today as many organizations are moving toward an "empowerment" culture. If recognized and implemented correctly, this can foster agility and innovation. However, if implemented poorly, it can have the potential to hinder productivity and damage employer brand.

It is critical to foster a culture of collaboration and leverage technologies that measure employee engagements and key actions that generate the desired business outcomes. According to IDC surveys, companies across the world are ranking teamwork nearly as important as productivity when evaluating employee performance. Other behaviors highly ranked include initiative, flexibility, and a problem-solving attitude. As collaboration grows, increased capture of business conversations, including AI-generated meeting transcripts and messaging conversations, are developing a new breed of measurement points.

As a result, and complementing KPIs, many organizations are developing their own set of key behavioral indicators that are intrinsic to their own cultural organization and raison d'être. While many metrics are still nascent, the emerging set of KBIs will become crucial parameters in the recruitment selection process – ensuring new candidates are a good cultural "fit" – but also in collaboration and change management programs with existing employees. The evaluation of KBIs will include evolving metrics related to empathy, collaboration, communication, social connectedness, and relationship building. While it will be a cumbersome task involving too many variables to track manually, intelligence driven by a deeply integrated IT stack will be able to inform both employees and managers of actions that can be taken, in real time, to improve team cohesion, time to market/project completion, and overall efficiency. Despite the need to neutralize data bias and comply with privacy regulations, enterprises will continually develop a new spectrum of insights using KBIs.

Associated Drivers

- **The future of work:** Agile, augmented, borderless, and reconfigurable
- **Economies of intelligence:** AI, human, and organizational "learning" fuels asymmetrical advantage

IT Impact

- Evolving metrics provides the opportunity for IT leadership. This will require data science skills to ensure these new metrics are measuring what is intended and reflect causal relationships rather than correlations of convenience.

- Advanced development skills with APIs, AI, and machine learning will increase exponentially over the next decade.

- The ability to partner with line-of-business and executive leadership to identify best practices, grow data literacy, and take leadership on emerging data trends will increase the value of IT significantly.

- Adherence, and the ability to document adherence to evolving privacy regulations, will continue to be vital.

Business Impact

- HR departments can recommend the relevant training that equip employees with the right soft skills to succeed in their jobs.

- Enterprises facilitate bottom-up and top-down support to mentor and model behaviors that support collaboration, problem solving, empathy, and cross-platform communications skills.

- Organizations can more easily foster a culture of collaboration, innovation, and agility.

- By developing the right organizational behaviors, HR departments can prove their efforts can effectively influence the bottom line and company profits.

Guidance

- Invest in reskilling and hire individuals for their emotional intelligence – those with problem-solving skills and the empathy and ability to collaborate, for example. Their values have to be in alignment with the strategy and ethos of your company.

- Reinforce a culture of learning and collaboration across the enterprise to empower workers to work in safe environments where the best solutions can be created.

- Team collaboration applications, extended with the integration of other core solutions from your IT stack, create a hub for data that creates an easy access point for AI and ML.

- Foster innovation by creating collaboration across functional areas. Ask colleagues to make time for brainstorming and creative thinking. Hire individuals with diverse backgrounds. Diversity and inclusion foster employee retention and a creative working environment.

ADVICE FOR TECHNOLOGY BUYERS

Organizations must take a structured and holistic approach to work transformation and future of work initiatives. The future of work is not just about automation and job replacement, millennials entering the workforce, or the latest digital workspace solution. The future of work is an enterprisewide imperative. It requires CXO leadership and intimate collaboration between IT, lines of business, HR, and other departments and results in increased productivity, worker engagement, and competitive differentiation. Most importantly, future of work initiatives must be an integral component of an organization's overall DX strategy.

IDC offers the following advice for organizations embarking on a work transformation journey:

- **Take a holistic approach.** Don't think of the future of work as solely automation, new skill sets, or a digital workplace. Consider all aspects of work culture, workforce, and workspace.

- **Enable an agile organization.** Traditional organizational models, metrics, policies, and infrastructure won't provide the flexible, dynamic working environment required to be competitive in today's world.
- **Seek out and participate in new ecosystems.** Look for opportunities for new platforms to support dynamic teams, agile learning, and integrated and borderless work environments.

EXTERNAL DRIVERS: DETAIL

The Age of Innovation: Driving the Future Enterprise

Description

Digital transformation – the continuous process by which enterprises adapt to or drive disruptive changes in their operations, customers, and markets – is now being driven by multiplied innovation. Competition is powered by platforms and ecosystems where network effects and innovations feed off themselves. But the changes and innovations aren't accidental; they are driven by data, analytics, and learning, which feed and multiply more innovation. Data drives intelligence yielding insight and knowledge, allowing for action and creating value. Automation and machine learning revolutionize operations, providing major increases in productivity and efficiency. To compete, companies must balance digital and industrial competencies and master them at scale. Yet these efforts will not succeed without leadership and talent and the enterprises' ability to effect change.

Context

With direct digital transformation investment spending of $5.5 trillion over the years 2018-2021, DX continues to be a central area of business leadership thinking. Industry leaders are transforming markets and reimagining the future through new business models and digitally enabled products and services. At the same time, companies that digitize their operating model may see a 40% increase in productivity. Purely digital opportunities aren't enough anymore. New opportunities will come increasingly from combining digital technology with physical assets. To succeed, digital natives need to adopt and transform the traditional world of industrialization and specialized assets. Industrial natives need to adopt and master digital technologies that could affect robustness, reliability, and safety.

Accelerated Disruption: Navigating Business Challenges as Volatility Intensifies

Description

Today, survival of the fittest is linked not to size or strength but to the ability to change – to move quickly, react, adapt, seize opportunities, and be agile. With the increasing uncertainty in economic rules, political stability, climate effects, and disruptive innovations in the marketplace, a sense of urgency pervades companies concerned about their competitiveness and longevity. Beyond that, organizations' ability to navigate the increasingly complex and uncertain business environment has become essential. The new imperative is to keep pace with business change by increasing the speed of business operations, the speed at which changes are delivered, and the speed and scale of innovation. Survival means understanding and adopting these new approaches quickly, throughout the organization.

Context

The best performing companies are pulling away from the rest, creating a bifurcated and unequal landscape where a few firms exhibit high productivity and profits. The global superstar companies and the unicorn start-ups leverage innovation cultures, agile organizations, and disruptive approaches to everything from machine learning to talent acquisition in order to adapt to complex uncertainty; adjust their products, services, and operations; and seize opportunities.

Geopolitical Risk: Societal and Economic Tensions Rise

Description

Social and political discourse have risen to a new level of dysfunction causing instability in social and economic foundations. Fueling much of this is the unprecedented impact of information. Social media has made it possible for anyone to create and disseminate ideas, true or not, to millions. Offensive AI technologies and automated bots spread targeted misinformation to achieve social engineering or nation-state goals, fanning the flames and creating uncertainty and risk. The Digital Iron Curtain threatens to separate nations with free information from those that control it for political purposes. The impacts of escalating trade and software wars, supply chain disruption, diverging technology stacks, national and international balkanization, and more affect profits and investments. Environmental risks impact populations and drive regulatory changes but also provide new opportunities. Businesses require new strategies and the ability to pivot from these risks; at the same time, they must account for government's difficulty in addressing internal and geopolitical challenges, the rise of nationalism, worldwide social stratification, and the like.

Context

Instability in global economics, politics, and society is increasing. A digital backlash is seen in widespread demands for privacy, legislative limits on business models, and a push for antitrust activities to break up platform owners. The circular economy (cradle-to-grave resources) and climate change are forcing major disruptions in the business and regulatory environment. The Digital Iron Curtain is the new face of the cold war, managing information access to exert control of citizens. Countries and economies are stalled or held hostage to divisive issues such as Brexit or immigration as divided governments fail to muster consensus to deal with them and businesses are left unable to plan.

Intelligence Everywhere: AI's Opportunity and Implications

Description

Accelerating progress in AI is impacting experiential engagement, business processes, strategies, and more — autonomously creating a significant portion of new innovations. But, as automation and augmentation increase, so do the ethical issues and opportunities for misuse, surveillance, invasions of privacy, and more. Many future applications will be developed by AI without human supervision. Beyond that, augmented humanity — the fusion of digital technologies and humans — for improved mobility, sensing, and cognition will become routine. There are justifiable concerns and issues around AI-enabled applications, bias, and transparency and the long-term impacts of these on workforce transitions and the essential elements of being human. Social pushback is demanding accountability and rights. Business and governments need to address the ethical and legal issues of AI to realize its opportunities.

Context

AI innovation and application are being driven by massive investments in all kinds of industries. Hospitals are testing how AI can enhance care, school districts are looking at AI-equipped cameras that can spot guns, and human resources departments are using AI to sift through job applications. Government agencies, including law enforcement, are looking for ways to harness this next technological revolution to meet their ends, while others are demanding accountability and an "algorithmic bill of rights." With industries investing aggressively in projects that utilize AI software, IDC forecasts AI systems will more than double from 2018 to 2022 to $79.2 billion with a compound annual growth rate (CAGR) of 38.0%.

Rising Customer Expectations: More Convenience, Customization, and Control

Description

Customers accustomed to the personalization and ease of dealing with digital-native companies such as Google and Amazon now expect the same kind of service from every business in every industry. The changing expectations are most evident in the newest generations of customers, but all customers are demanding more convenience and personalization. At the same time, they want more control of what data is collected and how it is used. Intelligent customer agents will start to intermediate the relationship on the customer's behalf, taking more control from the vendor. Companies that systematically collect, measure, and analyze data to create exceptional, personal, relevant, and compelling experiences can set themselves apart from their competitors.

Context

With new customer expectations being set by thriving companies that disrupt markets, the previous levels of customer service are no longer good enough. New business, operational, and organizational models are required to meet continually growing consumer expectations. 38% of companies that are digital natives report that they are "almost constantly online" through their device of choice, the mobile phone, providing unparalleled access to behaviors and preferences, that they expect to be turned into customized engagement and experience. While there is also backlash, customers seem willing to relinquish some control over their data in exchange for a sufficiently engaging personalized experience.

The Future of Work: Agile, Augmented, Borderless, and Reconfigurable

Description

Technologies are rapidly changing who, or what – and where, or how – work is being done. A new generation of workers have new expectations for work, culture, and space. The future workspace will be a mix of physical and virtual. Work culture will be more collaborative, while the workforce will be a combination of people and machines working together. Organizations are using new contracting models to create an agile, borderless, and reconfigurable workforce. However, the new skills required to thrive in this new era are still in short supply. To bridge the digital talent gap, organizations need to retrain and reskill existing staff, develop access to new talent pools, and attract new resources. Society must equip and educate up-and-coming generations for the future while bringing existing workers up to speed to address current needs. Employees must become lifelong learners.

Context

The demographic shifts led by millennials entering the workforce and technology advances are driving fundamental changes in the workplace. Good pay, positive cultures, diversity, flexibility, and access to leading-edge technology are all important keys to keeping workers happy at work. The short supply of digital talent, particularly in data science, security, and CX design, is forcing organizations to adopt new approaches to work. IDC predicts that by 2021, 60% of G2000 companies will have adopted a future workspace model – a flexible, intelligent, and collaborative virtual/physical work environment – to attract new talent and improve employee experience and productivity.

Economies of Intelligence: AI, Human, and Organizational "Learning" Fuels Asymmetrical Advantage

Description

Enterprise economies and the nature of competition have changed. While still important, economy of scale has been augmented with economies of scope and economies of learning. Now, leading companies are pursuing "economies of intelligence," the continual improvement, innovation, and variation based on leveraging data and AI technologies to identify and fulfill changing needs to enhance scale, scope, and customer engagement. This is changing the nature of intellectual property, whose value has shifted to where it's created rather than where it's realized and contributing to an asymmetrical accumulation of capital and innovation where an organization's capacity to learn has a distinct competitive advantage.

Context

As enterprises scale their use of modern technologies for complete instrumentation, integration, and insight, they are able to expand their scope by offering a wider variety of experiences that demonstrate increasing value as the organization learns what is most desirable and efficient. This enables the learning organization to capture more knowledge and increase its asymmetrical accumulation of capital and innovation.

LEARN MORE

Related Research

- *Critical External Drivers Shaping Global IT and Business Planning, 2020* (IDC #US45540519, October 2019)
- *IDC MaturityScape Benchmark: The Future of Work in the United States, 2019* (IDC #US45367119, July 2019)
- *The Roadmap to Future of Work: It Needs to Be Human-First and Experience-Centric* (IDC #AP45033019, May 2019)
- *IDC MaturityScape: The Future of Work 1.0* (IDC #US44752519, March 2019)
- *The Future of Work – The Future Is Now* (IDC #US44924319, March 2019)
- *IDC Market Glance: Future of Work, 1Q19* (IDC #US44876919, February 2019)
- *IDC FutureScape: Worldwide Future of Work 2019 Predictions* (IDC #US44581818, December 2018)

About IDC

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