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February 28, 2017

The future of work: The augmented workforce

2017 Global Human Capital Trends



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Paradigm-shifting forces such as cognitive technologies and the open talent economy are reshaping the future workforce, driving many organizations to reconsider how they design jobs, organize work, and plan for future growth.

Introduction

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DRIVEN by the acceleration of connectivity and cognitive technology, the nature of work is changing. As AI systems, robotics, and cognitive tools grow in sophistication, almost every job is being reinvented, creating what many call the “augmented workforce.” As this trend gathers speed, organizations must reconsider how they design jobs, organize work, and plan for future growth.

- This year, 41 percent of companies reported they have fully implemented or have made significant progress in adopting cognitive and AI

technologies within their workforce.

- Another 34 percent of survey respondents are in the midst of pilot programs.
- But only 17 percent of global executives report they are ready to manage a workforce with people, robots, and AI working side by side—the lowest readiness level for a trend in the five years of the Global Human Capital Trends survey.

For the past several years we have chronicled the arrival of what is now called “the future of work.” In 2013, we identified *The open talent economy* as a trend and discussed the growth of off-balance sheet employment, talent platforms, and crowdsourcing.¹ In 2015, we highlighted the trend of *Machines as talent: Collaboration, not competition* and the increasing power of robotics and cognitive computing to

restructure jobs.² Finally, last year we published *The gig economy: Distraction or disruption?*, which discussed the benefits and challenges of managing talent in the sharing and collaborative economy.³

In 2017, these changes have come into focus and the issue has become more urgent. Automation, cognitive computing, and crowds are paradigm-shifting forces that will reshape the workforce now and in the near future. Organizations are redesigning jobs to take advantage of cognitive systems and robots, and we see an opportunity to rethink work around something we call “essential human skills.”⁴ In 2017 and beyond, organizations should experiment and implement cognitive tools, focus heavily on retraining people to use these tools, and rethink the role of people as more and more work becomes automated.

Rethinking work for the augmented workforce

The question of how each job will change, adapt, or disappear has become a design decision. What aspects of work do you replace with automated machines? Do you want to “augment” workers with machines that make work easier and more scalable? What will be the impact of AI and robotics on the customer experience, service quality, and brand? Should your organization wait for competitors to fully validate AI and robotics?

Today there is a new focus on the “people aspects” of work. Our research, based on studies from Oxford University and the O*Net job database, shows that while tasks are being automated, the “essentially human” parts of work are becoming *more* important.⁵ Skills such as empathy, communication, persuasion, personal service, problem solving, and strategic decision making are more valuable than ever. While some will dramatize the negative impacts of AI, cognitive computing, and robotics, these powerful tools will also help create new jobs, boost productivity, and allow workers to focus on the human aspects of work. This opens another design question: How can companies achieve the greatest total value through automation, while balancing the short- and long-term consequences of these decisions for their organization, work, and workforce?

Our research and discussion with clients show that when done carefully, automation (and the use of crowdsourcing) can have a tremendous positive impact on productivity, employee engagement, and customer value. Amazon.com, for example, has effectively used automation to scale warehousing and shipping rapidly during holiday seasons while reducing time to training for employees and maintaining its reputation as one of the top employer brands in its industry.⁶

Where do companies stand today?

Our research shows that most companies are in the middle of this fundamental shift. Thirty-one percent of companies in this year’s *Global Human Capital Trends* survey tell us they are in the process of implementing AI and robotics, and 34 percent are piloting selected areas. And 10 percent say they are either fully automated or highly advanced in this area.

Interestingly, when we asked companies about the impact of these future-of-work scenarios, only 20 percent said they would reduce the number of jobs. Most companies (77 percent) told us they will either retrain people to use technology or will redesign jobs to better take advantage of human skills.

When we asked companies about their plans to leverage crowds, contract labor, and new models for human talent, the story was quite different. In these “new human models” for the future of work, companies are far less prepared. While 66 percent of companies believe their use of off-balance sheet talent will grow significantly in the next 3–5 years, only 49 percent say they are not able to manage contingent labor well and 55 percent say they have never used or do not understand how to leverage crowdsourcing. So while some elements of the future of work are well understood by business leaders, others are still in an emerging stage of understanding.

What is clear is that interest in this topic is growing exponentially. While only 6 percent of C-suite respondents rate this trend as a priority for this year (which we believe represents the level of confusion in the market), 26 percent believe it will be important in the next three to five years—an increase of 400 percent, one of the largest movements we have seen.

Figure 1. Robotics, cognitive computing, and AI: Percentage of respondents rating this trend “important” or “very important”



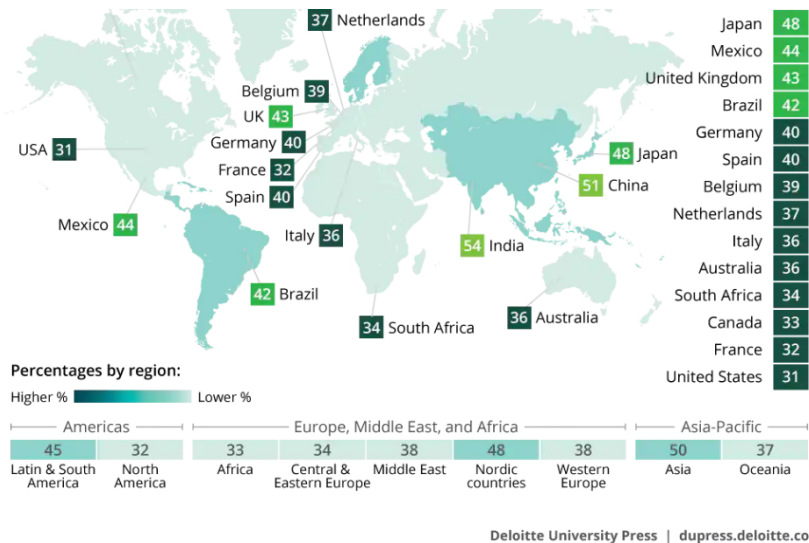
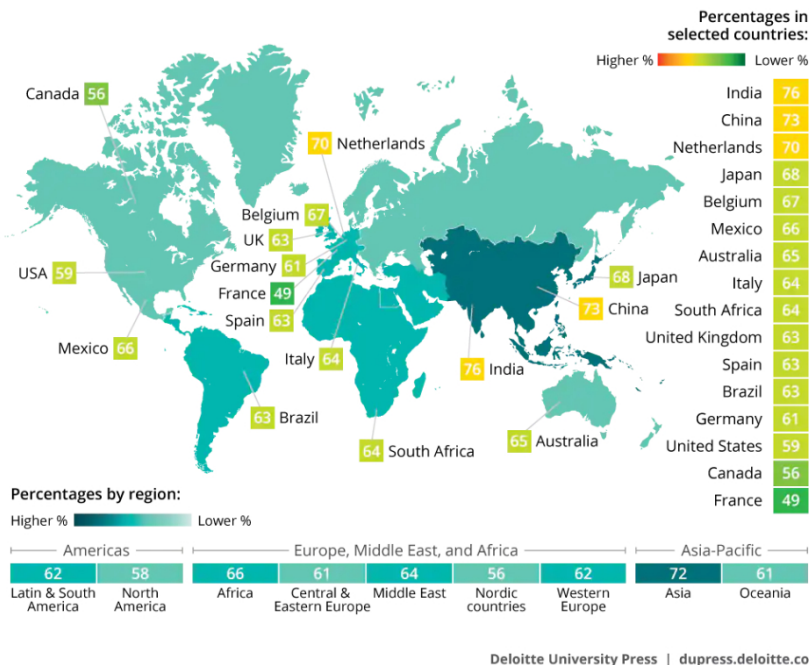


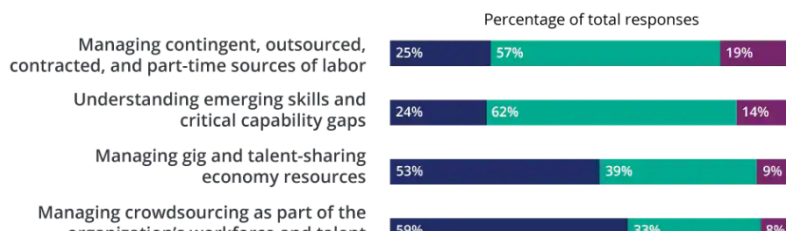
Figure 2. Augmented workforce: Percentage of respondents rating this trend “important” or “very important”



Uneven progress toward the future workforce

The shift from full-time employees to an augmented workforce (augmented by both technology and crowds) is one of the more challenging of the human capital trends on the horizon. It upends the familiar concepts of what a job is (along with all the implications for careers), what work really means, how the workforce is trained and selected, and how the workplace is designed. It stretches conventional notions of what types of work can be done by people and by machines, and it redefines the human workforce segments that are involved.

Figure 3. Respondent ratings of sub-capabilities related to the augmented workforce



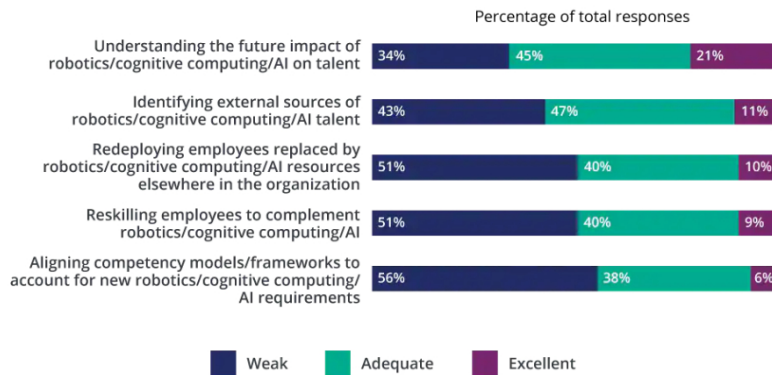
organization's workforce and talent programs

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While the adoption of robotics is happening quickly, companies' abilities to reskill and reorganize around automation are still behind. Roughly half of the leaders surveyed rate their company weak at aligning competency frameworks to account for new robotics, cognitive, and AI requirements; deploying employees replaced by these technologies; and reskilling employees to complement these new tools.

Figure 4. Respondent ratings of sub-capabilities related to robotics, cognitive computing, and AI



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Rethinking talent, technology, and the workplace

Our research clearly shows that one of the new rules for the digital age is to expand our vision of the workforce; think about jobs in the context of tasks that can be automated (or outsourced) and the new role of human skills; and focus even more heavily on the customer experience, employee experience, and employment value proposition for people. Organizations that automate manufacturing plants, for example, and that do not clearly give people opportunities for reskilling and new positions, may see their brand suffer, and to some extent may also feel pressure from the social and political environment. AT&T's talent manifesto, which encourages and empowers employees to continuously reskill themselves, is an effective example of a company that automates in an integrated, human-centric way.⁷

We envision rethinking the combinations of talent, technology, and the workplace across multiple dimensions:

- What parts of a job can be automated, and what is the human "value add" around these skills? For example, bank tellers now advise and sell, rather than simply transact, giving greater customer value to clients.
- How can we reskill and retrain people to learn technology and tools faster, and how can we design the technology so it takes almost no training to use?
- Where does the work—and more specifically each individual task—need to be done? What physical proximity is required to serve customers and to design and develop products and services?
- How can we crowdsource activities—and use contingent, freelance, and gig economy talent—to save time and money, increase quality, and improve operational flexibility and scalability?
- How can we redesign the workplace to be more digital in nature, open, and collaborative, yet provide opportunities for development, growth, and focus time? Much research now proves that the highest performing teams (and leaders) are those that are the best connected within and across the company. Does our organization have enough open, collaborative physical and digital spaces to facilitate people-to-people meetings and collaboration?
- How can we evolve, and perhaps separate, the functions of multiyear (3–5 years) strategic work, workforce, and workplace planning on the one hand, and annual workforce planning (annual headcount) on the other, to more deeply explore scenarios that include more crowdsourcing, greater automation, or the increased use of robotics?
- What is our organizational and work design capability,⁸ and have we explored the way machines can cross functional boundaries to move people from "jobs" to "work" and from "execution work" to

Cross functional boundaries to move people from jobs to work and from execution work to “empathy work?” As we explore in both the “People analytics” and the “Organization of the future” chapters of this report, new tools to perform organizational network analysis and even trusted network analysis can help identify flows of work that can facilitate productivity among teams as more tasks are automated.

Rethinking the boundaries of work between humans and machines

The rapid advances in machine intelligence have been well-documented.⁹ Robots and cognitive technologies are making steady advances, particularly in jobs and tasks that follow set, standardized rules and logic. This reinforces a critical challenge for business and HR leaders—namely, the need to design, source, and manage the future of work, workforces, and workplaces to incorporate a robust understanding of which skills are essentially human.

HR leaders should focus on defining the difference between essential human *skills*, such as creative and ethical thinking, and nonessential *tasks*, which can be managed by machines. This requires reframing careers, and designing new ways of working and new ways of learning—both in organizations and as individuals. Research by Deloitte in the United Kingdom finds that the future workforce will require a “balance of technical skills and more general purpose skills such as problem solving skills, creativity, social skills, and emotional intelligence.”¹⁰

One of the techniques we advise for this work is design thinking and the development of journey maps. Journey maps outline and document the actual work taking place, and the tools, people, and information involved in a job. This kind of analysis helps designers understand where tasks can be outsourced and where human empathy can be enhanced and further leveraged.

As Tom Davenport and Julia Kirby emphasize in *Only Humans Need Apply*, this requires recognizing that “augmentation means starting with what minds and machines do individually today and figuring how that work could be deepened rather than diminished by a collaboration between the two.”¹¹

The future of work has arrived, and companies should embrace this disruptive opportunity. We believe the factors driving these changes will accelerate, leaving slow adopters behind as first movers become experts at optimizing the use of machines and crowds to drive productivity, innovative products and services, and customer relationships.

Lessons from the front lines

Amazon’s use of advanced warehouse technologies illustrates how robotics, cognitive computing, and flexible human workforce strategies can combine to maximize efficiencies and productivity, while creating new temporary and permanent jobs.

To meet increased demand during the holiday season, Amazon expands its workforce by roughly 40 percent with around 120,000 temporary hires, who can be trained quickly because of robotic and cognitive technologies. These tools, such as automated training screens, “smart” tape dispensers, and robotic pallets, reduce new hire training from six weeks to as little as two days.¹² The technologies automate tasks such as rote memorization and heavy lifting, allowing temporary employees to quickly master the work that requires human skills.

Further, these workforce innovations not only enable flexibility for short-term workers—they also create permanent jobs. Last year, Amazon retained 14 percent of its seasonal hires, in part because augmented warehouses actually require a greater number of human workers.¹³ These centers can process more total orders, and therefore require more total human employees.

Finally, all of these jobs are possible because of e-commerce, which is itself a result of recent technological advances. Though some speculated that e-commerce would replace workers in certain industries, the field has led to robust job creation, such as Amazon’s construction of 26 new warehouses in 2016 alone.¹⁴

This optimistic view of complementary machine and human work is also evident in a range of historical cases. For example, 40 years after the first ATMs began to perform tasks formerly done by tellers, there are more bankers working at more branches, and their work is more varied—even as it leverages more and more technology. While there are now roughly 400,000 ATMs in the United States, the number of tellers has continued to rise to more than 550,000.¹⁵ Similar transformations have occurred across a range of technologies and professions, such as barcode scanners and cashiers, or electronic document discovery and paralegals.¹⁶

Start here

- **Consider how the core work actually gets done:** Challenge the organization to rethink not only what work needs to be done, but to consider the range of talent segments and technologies that can be used, in combination, to best complete that work.
- **Identify all human workforce segments:** This includes those both inside and outside the company, different models of contractors, the crowd, and competitions. Talent platforms are growing rapidly in scale; understanding how they can augment full-time workforces is a key capability for managers in both HR and business.
- **Examine all types of nonhuman workforces:** This includes the entire array of robotics, cognitive, and AI technologies to augment human workers, leveraging the power of machines to accomplish an increased number of tasks. Partnering with the business, HR can help lead the redesign of work arising from rapid changes in robotics and AI.
- **Redesign multiyear strategic and annual operational workforce planning:** Consider separating multiyear strategic work, workforce, and workplace planning—which combs new talent segments and technologies to develop specific future scenarios for the workforce—from annual operational workforce planning.
- **Collaborate across functions to plan and implement new work and workforce solutions:** Ensure that the new scope of the augmented workforce aligns with business strategy and involves full participation of business, HR, and other corporate functions. This will likely require experimenting with new ways of working and coordinating across organizational silos.
- **Invest in critical human skills for the future workforce:** Problem solving, creativity, project management, listening, and moral and ethical decision making are all essentially human skills that every organization needs—now and in the future. When planning the future of the workforce, consider these long-term human skill needs.
- **Plan and manage the workforce transformation:** Given the scope and scale of coming changes to work, workforces, and workplaces, it is critical to have an enterprise “future of work” or “augmented workforce” roadmap combining business, HR, IT, procurement, and finance. This plan should include an actionable view of talent, training, communication, leadership, culture, and organizational impacts.

Fast forward

Of the trends in this year’s report, the “future of work” will likely accelerate the fastest in the next five years. This is simply a function of where we are in the evolution of technology. Fifty years after the formulation of Moore’s law, processing and computing power continue to grow exponentially, driving advances in robotics and machine learning. Cognitive tools to augment, and in some cases replace, knowledge work will continue to accelerate and become widely deployed and adopted. We would not be surprised if the future of work, workforce, and workplace issues come to dominate the concerns and agenda of HR and business leaders in the near future. This challenge requires major cross-functional attention, effort, and collaboration.

Figure 5. The future of work: Old rules vs. new rules

Old rules	New rules
Machines and artificial intelligence are taking over jobs (replacement)	Jobs and tasks are being redesigned to use more essential human skills, and are augmented by technology (augmentation)
Full-time employees are the main source of talent	A continuum of talent is available, including contractors, gig employees, crowds, and competitions
Workforce planning focuses on full-time workforce and skill requirements	The focus in workforce planning shifts to start with work and analyzing options across multiple workforces and technologies
Jobs are relatively static with fixed skill requirements	The half-life of skills continues to decrease rapidly, and work is being constantly reinvented
Jobs and career ladders are the foundation of work and the workforce	Projects, assignments, and tours of duty are building blocks for work; careers are portfolios of projects and experiences
Robotics and cognitive technologies are IT projects	Integrating people and technology is a multidisciplinary task
HR’s job in automation is to focus on change management and workforce transition	HR has a strategic role to facilitate and orchestrate the redesign of jobs and train the augmented workforce
The fundamental elements of work are “jobs,” with	The fundamental elements of work are “tasks,” which

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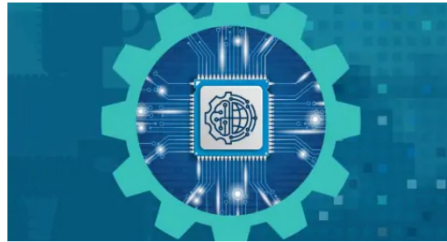
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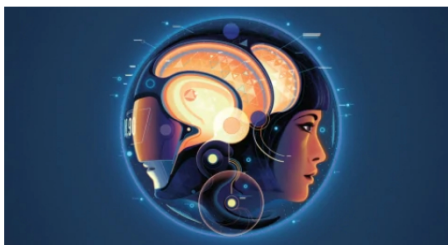
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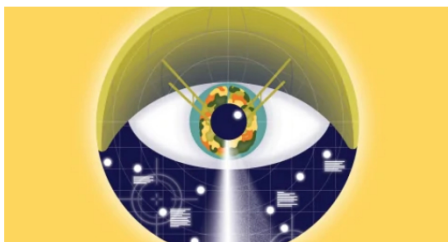
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