

Gartner®

Gartner TalentNeuron™

Future-Proof Your Talent Strategy

How artificial intelligence (AI) is
evolving the workforce

Overview

The universe of skills is expanding and required skills are changing rapidly. AI is driving this evolution of skills by replacing repetitive tasks in some talent profiles and by elevating and augmenting human behavior in many more. However, AI is developing and being deployed at an uneven rate, leading some skills, like social-creative and digital dexterity skills, to be more future-stable than others. Organizations need to cultivate these skills across talent segments rather than thinking in terms of static skill sets for static profiles. To proactively plan for rapidly changing skills, organizations have five options for profile design: focus, acquire, broaden, redeploy and downsize. Strategically redesigning roles based on potential AI impact will help HR leaders build the workforce of the future.

Key Findings

- Nearly three-quarters of jobs had more than 40% of their required skills change between 2016 and 2019, indicating static profiles are no longer an effective way for organizations to think about building the future workforce.
- Social-creative and digital dexterity skills are more likely to be required in the future workforce and are at lower risk of AI impact, positioning them as future-stable skills.
- The degree to which a talent profile is at risk of disruption due to AI and automation — its Risk of AI Impact score — is a function of the amount of social-creative skills in a profile and the importance of those skills for executing that profile.
- Organizations have multiple options for talent segments impacted by AI, beyond simply eliminating them. Based on a profile's risk of AI impact and proportion of digital dexterity skills, HR leaders can choose to focus, acquire, broaden, redeploy or downsize the profile.

Recommendations

To prepare the workforce for the future of work, HR leaders should:

- Map the impact of AI on key talent segments by determining the importance of social-creative skills and the proportion of digital dexterity skills in each profile.
- Hold regular check-ins with IT and business leaders to determine where and how the organization is deploying AI and gauge its potential impact on the workforce.
- Assess the role's risk of AI impact and how it works with technology to choose the most appropriate option for role redesign (focus, acquire, broaden, redeploy or downsize).

Changing Universe of Skills

In the past three years, 43% of employees learned a new-to-world skill.^{1,2} This is up from 34% one year prior, indicating not only that skill needs are changing, but that skills are changing more rapidly.³

This rapid evolution of skills is evident when we compare job descriptions from 2016 with job descriptions for the same role in 2019. In those three years alone:⁴

- 82% of jobs had more than one-third of their required skills disappear.⁵
- 22% of jobs gained at least 10% new required skills.
- 73% of jobs had at least 40% of their skills change entirely.

Given many of the skills organizations thought were critical four years ago are no longer applicable in 2019, we see a problematic trend: job descriptions reflect needs at the moment they're written and don't account for how skills will inevitably evolve. By the time the organization fills a position, the skills needed are already changing. In other words, because organizations rely on static job descriptions rather than understanding dynamic skill needs, they are hiring the workforce of the past.

HR leaders are rightfully concerned. Amid changing skills, 64% of HR leaders do not have an effective plan to address how technology will change the skills needed in the workforce.⁶

AI Drives the Evolution of Skills

A major factor driving this rapid evolution of skills is AI.

AI technologies reshape how work gets done, both in business and personal life. For example, AI technologies include:

- **Commuting** — Autopilot for commercial flights, route suggestions on Google Maps
- **Email** — Spam filters, smart email categorization
- **Banking and personal finance** — Mobile check deposits, fraud prevention, credit decisions
- **Social networking** — Facebook's facial recognition, Pinterest's pin recommendations, Snapchat's facial filters

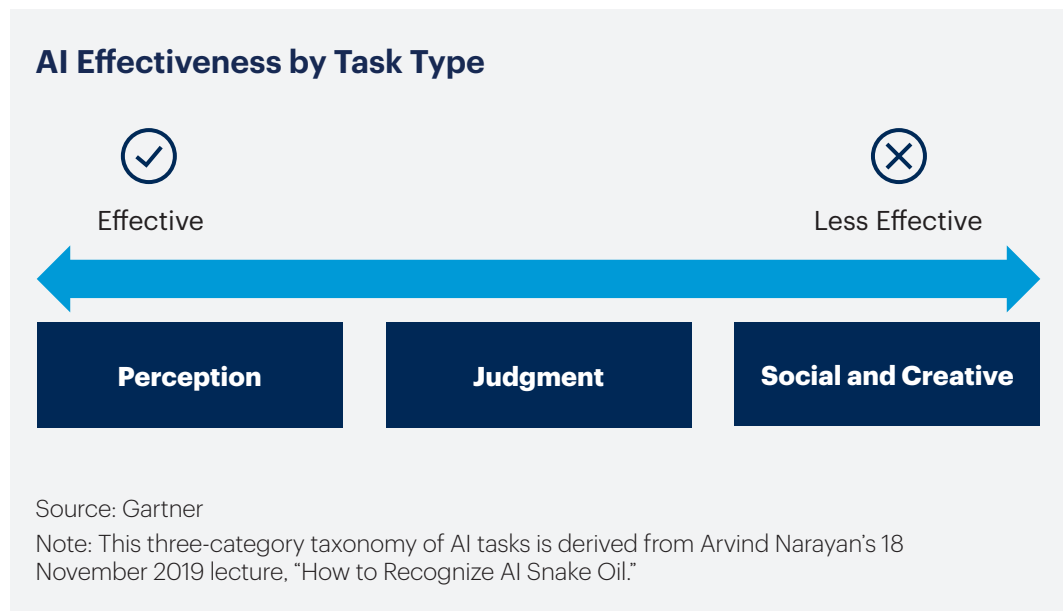
Artificial Intelligence (AI): AI refers to tools and platforms that emulate human performance, typically by learning, applying advanced analysis and logic-based techniques, coming to their own conclusions, and executing nonroutine tasks in a manner that has previously only been modeled through human cognition.^a

AI elevates and augments humans' ability to function throughout the day. While it will replace humans in some circumstances, overall, AI enhances humans' ability to do new things and work more effectively.

Although it is advancing and accumulating new abilities at an accelerating rate, AI is not getting better at everything. To understand how AI will drive the evolution of skills and impact the future workforce, HR leaders must understand how AI effectiveness varies by task.

AI Effectiveness Varies by Task Type

AI's effectiveness varies across three broad categories of tasks: perception, judgment, and social and creative (see Figure 1).



Perception-related tasks involve identifying something in particular, such as a word or an image. Examples include hands-free texting, photo tagging, quality control bots and automated contract review.

These tasks involve combing through data for patterns, something that AI already excels at. As greater volumes of digital data become available and computing power continues to improve exponentially, AI will become even more effective at perception-related tasks. As a result of its effectiveness in this area, AI is automating some tasks typically done by humans and causing some skills to expire. For example, some tasks in the legal field associated with discovery, contract review and due diligence can now be automated, since AI is much faster than humans at finding particular words, topics or errors in text.

Judgment-related tasks involve taking patterns found in data and recommending an action based on those patterns. Examples include content recommendations on Netflix or Spotify, suggested text in emails, automated customer outreach and technology-assisted medical diagnostics.

AI can have the greatest impact on judgment-related tasks when humans collaborate with technologies. For example, AI could replace some tasks that radiologists currently do. But the real value of AI tools in detecting early-stage cancer is their ability to rapidly scan images for anomalies and share judgments about which represent a high cancer risk with human radiologists, who then diagnose and develop care plans. For that reason, AI for performing judgment-related tasks is stoking growing demand for digital dexterity skills (i.e., knowing how to effectively work with AI to get optimal results).

Social and creative tasks involve predicting future outcomes, creating new ideas and engaging in interactions with others. Examples include job performance predictions, emotion recognition, strategy development, and artistic or aesthetic projects.

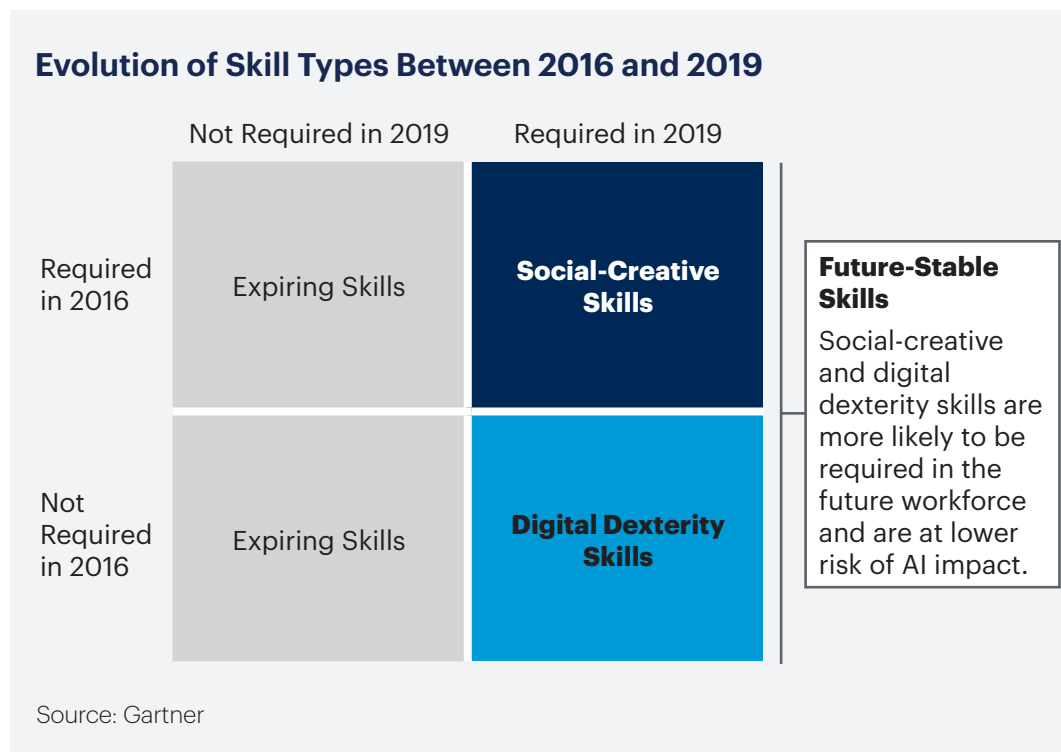
AI has the most trouble with these tasks because its technology is inherently based on backward-looking existing data. While it can find patterns indiscernible to humans, it doesn't yet have the ability fully to see events, create scenarios or anticipate social interactions that haven't yet happened. Instead, it provides data processing and pattern recognition as an input for human ingenuity. As a result, AI increases demand for social-creative skills — the ability to strategize, empathize and think critically.

How to Create a Future-Stable Workforce

The variation in AI effectiveness across these different types of tasks means social-creative and digital dexterity skills are critical for workforce development in the age of AI. Our analysis of job descriptions from 2016 and 2019 underscores the importance of these two types of skills:

- Social-creative skills were more likely than other types of skills to be required in both 2016 and 2019. They are more stable over time.
- Digital dexterity skills were more likely than other types of skills to emerge as required between 2016 and 2019. They are in greater demand as technology advances.

These qualities position them as future-stable skills (see Figure 2). Future-stable skills are at lower risk of AI impact now and are more likely to be required in the future workforce. HR leaders should focus on cultivating these skills rather than thinking in terms of static roles.



Knowing AI's impact on skills in the workforce, HR leaders can build their future-stable workforce by:

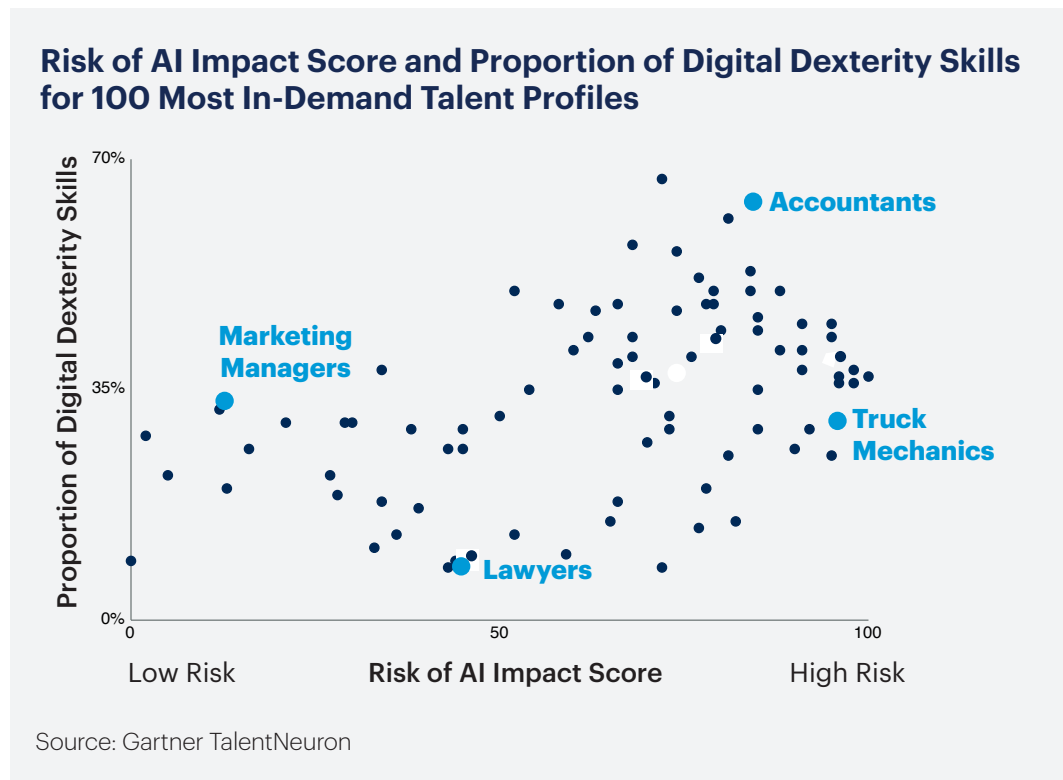
1. Assessing the impact of AI on current talent segments
2. Reevaluating the design of those profiles based on AI's impact

Assess AI's Impact on Current Talent Segments

Social-creative and digital dexterity skills are the keys to future stability. As such, we used them to map the impact of AI on the 100 most in-demand talent profiles (see Figure 3).

Using Gartner TalentNeuron data, we calculated a Risk of AI Impact score. By examining the number of skills in a job that are social-creative and the importance of social-creative skills for doing that job, we can determine a profile's exposure to AI risk. These inputs help us move beyond the binary yes/no of whether the job requires social-creative skills and account for the nuance of how much exposure a role has to automation risk. This allows us to provide insight on the best course of action an employer should take to achieve a future-stable workforce. The Risk of AI Impact score ranges from 0 (low risk) to 100 (high risk).

Further, by examining the percentage of skills in a job that are digital dexterity skills, we can get a sense of the extent to which the talent interacts with and uses technology.



The following examples illustrate the various ways AI will impact existing talent segments.

Accountants' Risk of AI Impact is high (81), indicating the predictable, repetitive elements of the typical accounting profile, such as generating tax reports, tracking accounts payable/receivable and conducting audits, will be automated. But accountants also have a very high proportion of valuable digital dexterity skills, meaning they will be able to work effectively with emerging technology on the higher-level projects in their purview.⁴

Marketing managers have a very low Risk of AI Impact (12), indicating that social-creative skills are critical to this profile and that it's unlikely new technology will take over significant elements. This profile also has a significant proportion of digital dexterity skills; nearly one-third of the required skills fall in this category. As a result, marketing managers have the skills to work effectively with technology to increase the efficiency and scope of their organizations. They can more effectively direct engagement to new consumer segments, make better decisions based on more in-depth analytics data and personalize messaging at greater scale.⁴

Lawyers have a midlevel Risk of AI Impact (43) indicating technology will take over some core parts of their job. For example, AI is more effective than humans at completing legal discovery, contract review, due diligence and billing hours. But as those elements disappear, lawyers will have room to broaden the scope of their talent profiles into new areas that make use of their well-developed social creative skills. Because only 8% of lawyers' skills are digital dexterity skills, we will likely see new parts added into the profile rather than focusing on and optimizing parts of the existing profile.⁴

Truck and diesel mechanics have a very high Risk of AI Impact (92), indicating this job requires very few social-creative skills. Therefore, it's likely that technology can automate significant portions of this profile in the near future (e.g., self-driving and self-diagnosing cars, advanced robotics for physical repairs). Truck and diesel mechanics have some required digital dexterity skills (29%), meaning some tasks require them to interact effectively with technology. Their highly specific knowledge of vehicle development and maintenance will likely be useful to organizations as they adopt AI and undergo digital transformation.⁴

Questions to Consider

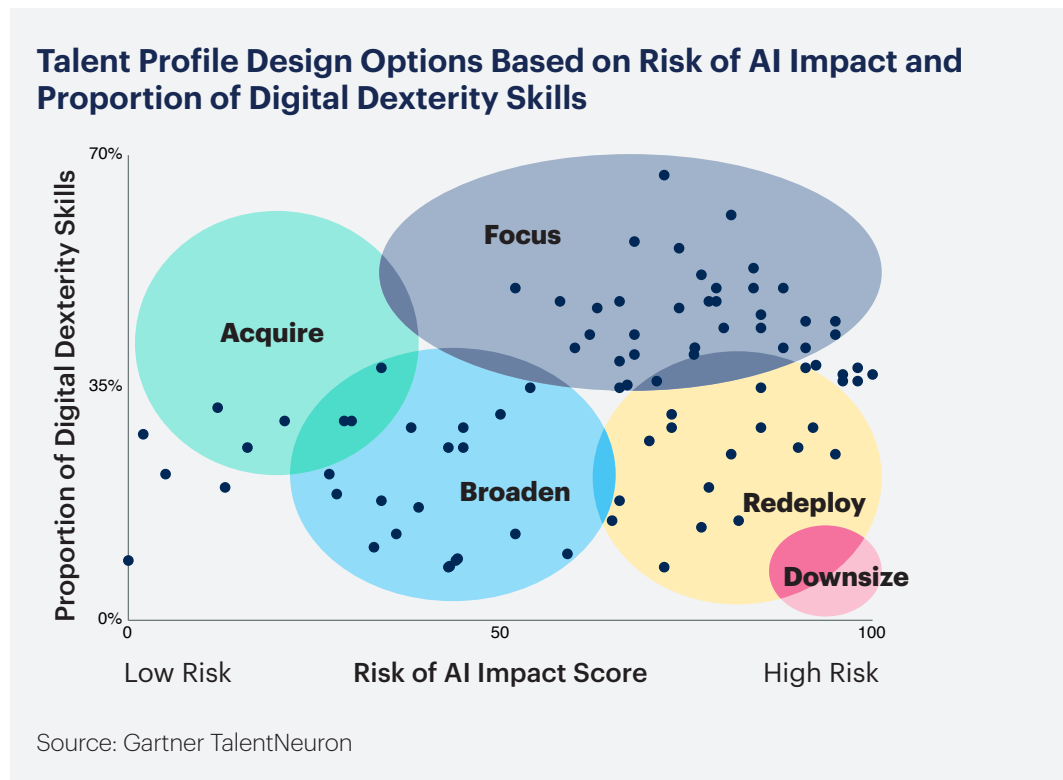
While our Risk of AI Impact score is based on Gartner TalentNeuron data, HR leaders can also use the following questions to begin mapping their critical roles and gauge the likely impact of AI on their existing workforce:

1. Which talent segments do you want to prioritize evaluating? HR leaders may prioritize profiles because they have a high volume of employees in a particular position (e.g., call center operations, manufacturing floor personnel), because a particular position is critical to workflow or strategy (e.g., quality control specialist, customer service intake) or because they spend large amounts of resources on acquiring or retaining certain positions.
2. How do these prioritized talent profiles use social-creative skills? There are two ways to gauge how each prioritized profile uses social-creative skills. The first involves cataloguing the skills in the profile's job description; however, the speed at which skills change may make this input less accurate. The second involves walking through a "day in the life" for the prioritized profiles, which may reveal social-creative skills critical to the role but absent from the job description.
3. How is your organization planning to implement AI in the next three years? While AI is changing the overall universe of skills, the impact on your organization may be more immediate in some talent segments than others, depending on the kinds of AI tools and technologies the organization is adopting. For example, if you have an AI customer service chatbot rolling out soon, call center employees may be affected on an accelerated timeline. Similarly, if you have an AI tool that will allow customers to try on clothes or paint colors virtually, it may impact retail staff.
4. How will prioritized profiles interact with AI and other emerging technologies? Thinking about the technological tools these profiles use will help organizations understand what kinds of digital dexterity skills are necessary.
5. How do prioritized profiles figure into your organization's future business strategy? This question will help you consider how urgently your organization should be tackling automation risk for these profiles. You may consider prioritizing those that will support new products or emerging markets, or deprioritizing those in areas where you may be phasing out lines of business.

After mapping out the expected impact of AI on key talent segments within their organization, HR leaders should focus on how best to redesign those profiles for greater future stability.

Reevaluate Talent Profile Design

Organizations typically think of AI's impact in terms of using it to reduce or eliminate talent. In reality, the options for profile design go far beyond that binary. A given profile may fall into any one of five categories of role design based on its Risk of AI Impact and digital dexterity skills (see Figure 4). These options will help organizations hone their existing talent into an effective future workforce.



When parts of a talent segment require skills or knowledge that AI cannot automate, organizations should focus the profile. Focusing involves orienting a profile toward future-stable and social-creative skills. Organizations should consider focusing talent segments when:

- AI is incapable of automating all parts of a particular profile.
- The required skills or knowledge are unique in the organization.
- Specific tasks require human oversight or intervention.

Accountants, highlighted in the previous section, fall into this category due to their high Risk of AI Impact but high proportion of digital dexterity skills. Organizations should consider focusing their accounting talent on specialized tasks as others are automated or expire, such as working with AI to build more accurate financial forecasts, advising leadership on cost optimization and planning better budgets.

Acquire

When AI enables higher production volume or leads to opportunities for differentiation, organizations should consider acquiring talent. Acquiring involves increasing headcount for particular talent as AI enables new, creative solutions and creates opportunities for scale.

Organizations should consider acquiring talent when:

- AI creates opportunities for new-in-kind innovation to boost competitive advantage.
- AI tools in your organization produce specific outputs that require action.
- Increased volume or speed would produce workflow bottlenecks at specific points.

Marketing managers fall into this category due to their low Risk of AI Impact and significant proportion of digital dexterity skills. They are likely to be critical for the expansion of operations moving forward, so organizations should consider acquiring additional headcount.

Broaden

Where talent segments may be expanded or combined to more efficiently perform key tasks, organizations should broaden profiles. Broadening involves adding new elements to profiles when some skills expire or become automated.

Organizations should consider broadening talent segments when:

- AI is capable of automating some — but not all — parts of a profile, leaving the employee scope to expand into new tasks.
- Proximal profiles are also impacted by AI, allowing for workflow to be reconfigured.
- Key future-stable skills are shared across more than one profile.

Lawyers fall into this category due to their midlevel Risk of AI Impact and low proportion of digital dexterity skills. As technology takes over some core tasks of the job, lawyers will have room to broaden the scope of their profiles into new areas that make use of their well-developed social- creative skills.

Redeploy

Organizations should redeploy employees when they can reskill and relocate existing talent to address talent needs elsewhere in the organization. Redeploying involves shifting employees whose profiles are substantially impacted by AI to new jobs.

Organizations should consider redeploying talent when:

- Unmet talent needs exist elsewhere in the organization.
- AI is automating the vast majority of skills required for the profile.
- Impacted talent profiles represent significant segments of the workforce.

Truck and diesel mechanics fall in this category because, while technology can automate significant portions of their jobs, they have highly specific knowledge of vehicle development and maintenance. Redeploying these mechanics to new jobs working with advanced digital diagnostics systems or preventative maintenance will often be a more cost-effective and less disruptive option for organizations than eliminating the existing positions and seeking new talent to work with technology.

Downsize

Only when currently deployed technology can accomplish all of the tasks in a particular talent segment should organizations consider downsizing. Downsizing involves eliminating talent profiles that technology can perform more efficiently. Though this option is often closely associated with AI and automation, in practice it is rare that all parts of a job can be done as effectively by AI. Reskilling and redeployment are often more effective options for talent profiles that fall in this area.

Organizations should consider downsizing when:

- Other options for profile redesign are not feasible.
- The organization has no other unmet talent needs
- Downsizing will not result in damage to the employer brand or remaining workforce.
- Impacted profiles represent a small or specific segment of your workforce.

It's worth noting these five options for talent profile design may overlap. Figure 4 illustrates how these options correlate with Risk of AI Impact and the proportion of digital dexterity skills required for a talent profile. In many cases there may be more than one right answer, depending on the roles being considered and the circumstances of the organization.

Conclusion

AI is rapidly reshaping the skills organizations need to get work done. As a result, HR leaders must now focus on skills rather than talent profiles. AI's development trajectory indicates that social- creative and digital dexterity skills are at lower Risk of AI Impact and are more likely to be required in the future workforce, positioning them as future-stable skills. HR leaders must cultivate those skills as the foundation of the workforce moving forward.

To build the workforce of the future, HR leaders should assess AI's impact on current talent segments and then reevaluate the talent profile design based on that expected impact. When redesigning talent profiles HR leaders have five options for talent profile design:

- **Focus** talent segments with a mid- to high-level risk of automation and high levels of digital dexterity.
- **Acquire** talent profiles with a low risk of automation and high level of digital dexterity.
- **Broaden** talent segments with a midlevel risk of automation and a mid- to low level of digital dexterity.
- **Redeploy** those with a high risk of automation and a midlevel to low level of digital dexterity.
- **Downsize** those with a very high risk of automation and a very low level of digital dexterity.

About This Research

Our research is based on in-depth statistical analysis of Gartner TalentNeuron's database of 47.6 million job postings from 2016 and 2019, containing 15,842 skills. This analysis focuses on skills for the workforce of the future so the research remains relevant and meaningful even as talent profiles and tasks evolve, and the model can be applied to

new skills as they emerge.

Endnotes

¹ 2019 Gartner Leader Effectiveness Survey for Employees

² New-to-world skills are newly invented skills that did not previously exist in any context. Gartner clients reported agile, RPA, machine learning and DevOps as common new-to-world skills.

³ 2018 Gartner Shifting Skills Survey

⁴ Gartner TalentNeuron

⁵ Some organizations report they are making a deliberate effort to reduce the number of skills listed in job descriptions in order to incorporate only those essential for success in the position. This may account for some portion of skills disappearing. However, much of this change in skills is due to formerly required skills simply expiring.

⁶ 2020 Gartner Agenda Poll

About Gartner TalentNeuron™

Gartner TalentNeuron is the premium end-to-end labor market intelligence solution combining real-time insights from trusted global data sources, deep research and expert advisors to guide decisions your biggest workforce decisions around:

1. Workforce planning
2. Location optimization
3. Competitive intelligence
4. University analysis
5. Diversity analysis
6. Strategic recruiting
7. Employer value proposition (EVP) analysis

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