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The future is here

The future of work is poised to bring
better jobs and more fulfillment to the
practice of health care – if provider
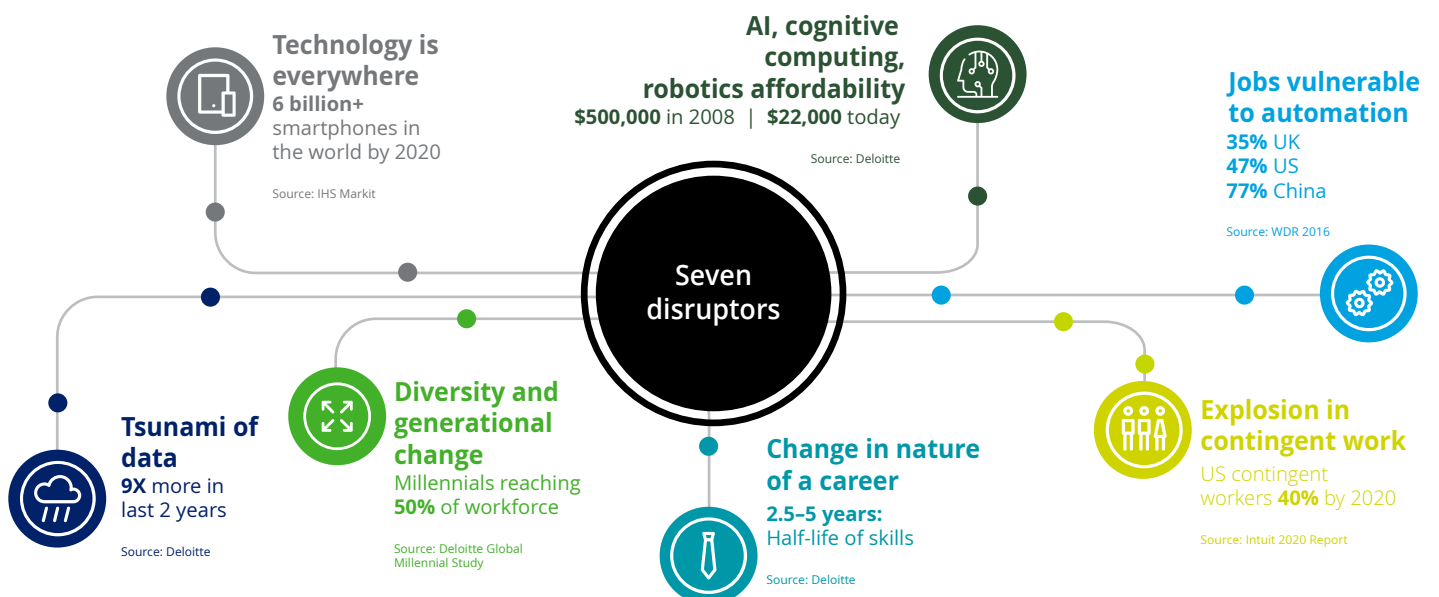organizations adapt fast enough

The future is here

The nature of work across almost every industry is being disrupted by a number of factors. Rapidly evolving digital technology is driving increased automation, affecting the proximity of where work is performed, and giving rise to new and open talent models. With so much change in the air, many provider organizations are understandably apprehensive about how to grapple with such exponential change and its implications on how, where, and by whom work gets done. What these organizations need to keep in mind with this shift is the immense opportunity to alleviate current pain points like nursing shortages and physician burnout, and refocus professions on mission-oriented, fulfilling work.

World Economic Forum founder, Klaus Schwab, has dubbed this transformation in the way work is performed "the Fourth Industrial Revolution"—making the distinction that it is not about replacing people, but rather how new technologies are "fusing the physical, digital, and biological worlds."[1] This augmented workforce combines people and machines to get things done in a way that is not only more productive, but also more rewarding to the worker.

Interestingly, while 69 percent of US health care providers consider the augmented workforce to be an important trend, only 33 percent feel the same way about robotics, cognitive computing, and artificial intelligence.[2] What these providers may not appreciate is that all these areas are part of the same wave of change.

Figure 1: Seven disruptors shaping the future of work

Technology is everywhere
6 billion+ smartphones in the world by 2020
Source: IHS Markit

AI, cognitive computing, robotics affordability
$500,000 in 2008 | **$22,000** today
Source: Deloitte

Jobs vulnerable to automation
35% UK
47% US
77% China
Source: WDR 2016

Seven disruptors

Tsunami of data
9X more in last 2 years
Source: Deloitte

Diversity and generational change
Millennials reaching **50%** of workforce
Source: Deloitte Global Millennial Study

Change in nature of a career
2.5–5 years: Half-life of skills
Source: Deloitte

Explosion in contingent work
US contingent workers **40%** by 2020
Source: Intuit 2020 Report

The view from beyond health care

Rapidly changing technology is causing a ripple effect of changes across industries and organizations. For example, today there is nine times more data flowing through business than there was just two years ago, and industrial robots are becoming more capable and less expensive every year.[3] Traditional employment has been replaced by a talent continuum that now includes not only full- and part-time employees, but also contractors and freelancers, as well as crowdsourced and automated labor. The pace at which a typical employee changes jobs has rapidly increased, and the half-life of a skill is now as short as two and a half years.[4]

In this mix, automation finds its most valuable niche in processes that are repetitive, rule-based, and largely free of exceptions and ambiguity. For example, consider the ATM which has been around for more than 40 years. It absorbed the rule-based transactions of evaluating and dispensing cash, a task formerly performed by bank tellers. Automating these repetitive, rule-based tasks leaves humans to handle higher-level functions – which is often the way humans prefer to approach work. The work they now focus on is more meaningful and more directly tied to the organization's mission, which can boost employee satisfaction while also helping to enhance the customer experience and drive growth. The addition of ATMs has created a 24/7 business that has increased human interactions, customer access, and satisfaction. It certainly drove growth for banking. As the number of ATM machines in the US went from zero to about 400,000, the number of urban bank branches grew by 43 percent. Even though ATM adoption caused the average number of bank tellers per urban office to drop by 35 percent, the 43 percent growth in urban branches resulted in an overall increase (rather than decrease) in the number of bank tellers to more than 550,000.[5]

An example of how the future of work is playing out in health care can be seen from a hospital system that integrated digital technologies and well-designed robots into care delivery. Digital kiosks, motion detectors, and voice recognition transcriptions brought convenience to patients. Robots assisting with logistic tasks

such as delivering linens, meals, and medical supplies provided staff more time for patient care. By integrating technology across all systems, this hospital system improved physician and staff productivity, which resulted in higher quality patient care and enhanced patient and visitor experiences.[6]
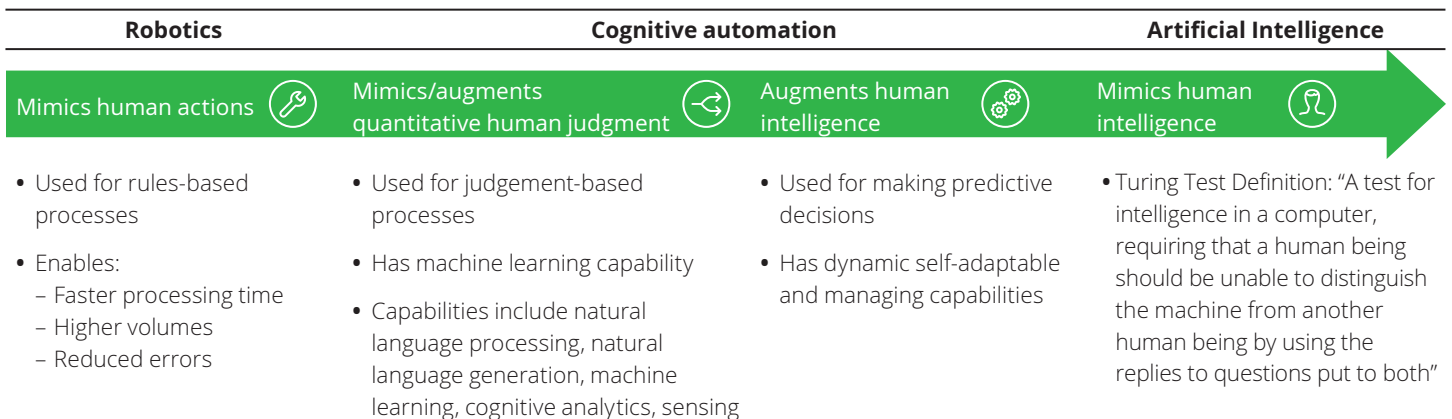
Another example of the future of work playing out in health care can be seen from the lens of a pharmaceutical environment where robots contribute to the increased accuracy of prescription dosing and speed of delivery to patients, augmenting the humans to do higher-level management tasks.[7]

There is no slowing the spread of technology, so what stands in the way of more rapid progress in the move towards augmenting today's workforce? One obstacle is simple, and familiar: many organizations are slow to adapt to enable new ways of working.

Organizations have the opportunity to fuse talent and technology or to have them "join forces" instead of burdening or competing with one another. To do so they need to intentionally coordinate human and technological resources from the outset. The organizations that fail to do so risk missing out on great leaps in efficiency and engagement. From a health care perspective, it can mean a dispirited workforce with growing nursing shortages and high levels of burnout, a reduced ability to attract and retain highly skilled clinicians and non-clinicians, a reduction in the quality of care, and a loss of position as a patient's provider of choice.

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Figure 2: Automation continuum

Robotics	Cognitive automation		Artificial Intelligence
Mimics human actions	Mimics/augments quantitative human judgment	Augments human intelligence	Mimics human intelligence
• Used for rules-based processes • Enables: – Faster processing time – Higher volumes – Reduced errors	• Used for judgement-based processes • Has machine learning capability • Capabilities include natural language processing, natural language generation, machine learning, cognitive analytics, sensing	• Used for making predictive decisions • Has dynamic self-adaptable and managing capabilities	• Turing Test Definition: "A test for intelligence in a computer, requiring that a human being should be unable to distinguish the machine from another human being by using the replies to questions put to both"

The future of work in health care

Plenty of technology. Rapid change. Workforce uncertainty. And no shortage of well-entrenched "ways we've always done things." Few industries match this description better than health care.

Although 100 percent of health care providers surveyed in the 2017 Deloitte Human Capital Trends report plan to make significant progress in adopting cognitive and artificial intelligence (AI) technologies in the next three to five years, and 33 percent say they consider it a priority to train employees so they can work side by side with robots and AI, none have made significant progress in adopting these technologies.[8]

One reason for this may be that many leaders of health care provider organizations anticipate that the scale and pace of change will overwhelm their workforce and compound current challenges, such as a short supply of nurses and a burned out physician population. What these executives may not be considering is that these shifts – and subsequent disruption to the automation of tasks, proximity of where work is performed, and evolution of new and open talent models – represent a tremendous opportunity to help resolve those current challenges.

Today's hospital systems are asking, "How can we hire and retain more nurses to combat our labor shortage?" The question they should ask instead is, "How can we augment nursing roles so that high-performing nurses wouldn't want to work anyplace else?"

To answer this question, provider organizations will need to assess the trajectory of specific jobs and workflows, evaluating the mix of factors that combine to operate those jobs and workflows and how they can be re-envisioned by employing enabling technologies and new talent models:

- **Talent category:** Is this a full-time, in-house job? To what extent can different categories such as contract, off-balance-sheet, or crowdsourcing, accomplish this?

- **Automation level:** How much of the work is made up of tasks that can be delivered through either physical robotics, cognitive automation, or a combination? What skill-based parts of the job must remain in human hands?

- **Physical proximity:** Must this job be performed in person? Does the practitioner need to be present at the site of service delivery? What about the patient?

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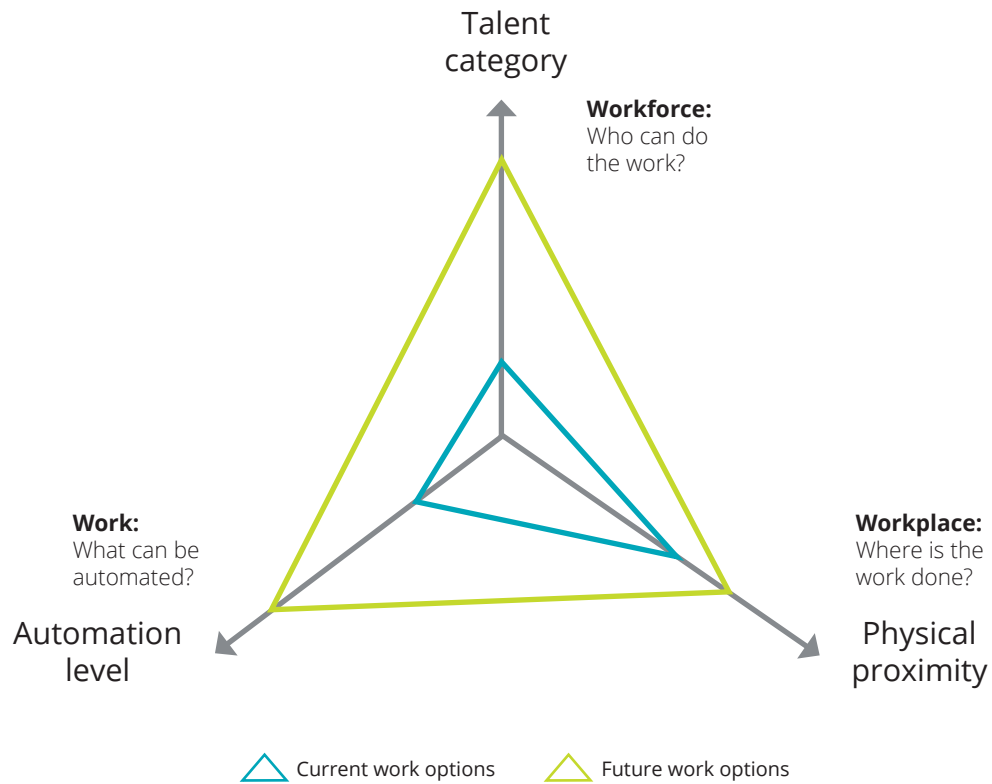
Figure 3: Three dimensions changing the future of work

Talent
category

Workforce:
Who can do
the work?

Work:
What can be
automated?

Automation
level

Workplace:
Where is the
work done?

Physical
proximity

△ Current work options   △ Future work options

Figure 4: Talent models

Closed ⟵   ⟶ Open

Balance sheet talent	Partnership talent	Borrowed talent	Freelance talent	Open source talent
Full-time, statutory employees of your organization; you bear all the carrying costs of these employees	Employees that are part of a partnership or joint venture that are on related balance sheet	Employees who are part of your value chain or ecosystem but who reside on someone else's balance sheet such as contractors who work in support roles	Independent workers you hire for specific but temporary projects	People who provide services for you for free either independently or part of a community – for example those who answer questions about your products on the web in an open source help function

The future of provider organization professions

Strategically adopting technologies can improve work from a clinician's perspective by reducing administrative tasks (e.g., documentation, insurance processing, scheduling, etc.), giving them more time with patients and extending their reach. A reduction in administrative tasks that currently consume a significant portion of a clinician's workday will leave more time for patient interaction. Telemedicine and the Internet of Things (IoT) will allow clinicians to extend their reach into other locations and situations where they were not able to make a difference before. Crowdsourcing can offer alternative talent models and additional resources.

For example, think of the radiologist. Diagnostic radiology is a prime area for change because it is plagued by burnout and turnover, is technological at its foundation, has a high volume of repetitive activities, and often does not require the radiologist to be at the same location as the patient.

Here are some example pain points that may be ripe for change from a radiologist's point of view:

- **Radiological interpretation:** The interpretation of images is a core activity of diagnostic radiologists. Radiologists are increasingly having to complete a higher volume of studies in a shorter amount of time and interpret more images in each study.

- **Limited autonomy and uneven work distribution:** The anticipated consolidation of the radiology players in the market will likely lead to radiology groups growing larger and covering more facilities in more expansive areas. Consequently, radiologists may experience greater loss of autonomy and uneven work distribution.

- **Declining reimbursements and limited patient interaction:** Radiologists have a high burnout rate of 49 percent.[9] Contributing to the burnout rate are the declining reimbursements which leads to longer hours, liability pressures, and the often sedentary and isolated nature of the work. Additionally, current radiology practice only involves a minor amount of patient interaction.

As a result of these pain points, the radiology sector is ripe for change in the coming years. Machine learning technologies, such as Computer-Aided Detection (CAD) can assist radiologists in analyzing images. CAD learns from images allowing it to more accurately identify relevant imaging abnormalities so the radiologist can review images at a more efficient pace and free up time to interact with patients. Furthermore, the teleradiology model, where radiologists can provide remote diagnosis, can be progressively extended to distribute interpretation work more evenly across sites and organizations with varying volume, which can lead to alternative work arrangements that suit individual radiologists. Lastly, there may be an opportunity for radiologists to provide crowdsourced radiology interpretations to patients through online platforms to deliver fast, accessible results. This new form of care model provides radiologists with more flexibility, potentially easing the sector's high burnout rate. With new technologies and diagnostic capabilities, radiologists will need to learn new skills and capabilities in order to adapt.

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Nurses, too, have a lot to gain from the future of work. Technological disruptors, like AI, robotics, and cognitive technologies, are augmenting the role of the nurse, enabling nurses to become more efficient. This allows nurses to redirect their time towards engaging and educating patients and families, driving quality and safety, and delivering exceptional patient experience. At Deloitte, we've been thinking about the future of work in nursing through the lens of the "Quadruple Aim" – enhancing the patient experience, improving the health of populations, reducing the per capita cost, and cultivating clinician and employee engagement. As we continue to develop and iterate on solutions that address present-day nursing challenges through the "Quadruple Aim," it will be critical to consider a combination of technology and talent solutions. It is also important that we consider how shifts related to the future of work may represent opportunities to create capacity within a declining or steady state clinical workforce.

Here are some example pain points that may be ripe for change from a nurse's point of view:

- **Nursing assessments:** Today's nursing assessments are a time consuming and repetitive activity for both nurses and patients. Using bots to mine electronic health record (EHR) data and pre-populate the intake forms with information that already exists within the EHR will empower nurses to transition from filling out administrative information in the intake forms to using their clinical judgment to review patient data, serve as a care advocate, and focus on advancing the care plan. This can optimize nursing time and improve satisfaction, since the nurse will be focused on what matters – connecting with patients and improving care delivery.

- **Order implementation:** By using advanced algorithms and alerts, possibly augmented by AI, the amount of nursing effort and time spent reviewing and validating orders, sequencing complex order sets, and linking labs, medications, and treatments could be reduced and in fact enhanced. This freed-up bandwidth can enable nurses to spend more time providing high-quality, high-touch care to their patients.

- **Patient education:** Utilizing applications and devices to automate patient education will allow patients and families to have access to the same high-quality educational information at every place that they might receive care – the bedside, physician's office, and home just to name a few. This will enable nurses to translate information, answer questions, and coach patients and families through providing additional tips and thereby improving patient experience, setting patients up for continued self-care success, and harnessing the teaching power of nurses.

- **Documentation:** The focus must be on using technology to drive quality and patient safety. Through using automated alerts generated by the EHR system, all clinicians and care providers can see the same critical patient information. Standardizing patient care handoffs and ensuring they are template-driven will enable both nurses and the entire multidisciplinary care team to work in lockstep to advance the patient's care plan and drive quality outcomes. This will be increasingly critical as the provision of care expands (driven by telehealth) beyond the walls of a hospital or ambulatory care site.

- **Location:** Today, care is mainly provided in the hospital or clinic setting which can be a detriment to speed and frequency of care and puts limitations on the number of patients a nurse is able to assist. Telehealth and digital medicine tools are enabling a "care anywhere" model. This new model allows organizations to build and deploy new staffing models, such as allowing nurses to work remotely, while still building strong patient relationships and having high-value interactions, thereby reducing nurse burnout and potentially creating more fulfillment at work. A notable example of how this is happening is the introduction of remote monitoring through voice-activated solutions (e.g. oral chemo at home). This could be relevant for chronic patients as well as rehab patients.[10]

Robotics, digital technology, and other emerging technology forces have enormous potential to resolve nursing pain points and lessen administrative burdens. This could create the time and opportunity that would allow nurses to practice at the top of their license and use their professional judgment and clinical decision-making skills while engaging with the family at the bedside—whether that is the physical or digital bedside. Digital technology could be used to improve nursing assessment and diagnostic abilities, including more precise intervention approaches for patients. Additionally, robotic support for executing orders for patients could reduce physical burdens while improving outcomes. Smarter EHR software with voice recognition abilities could reduce misunderstanding, miscommunication, and patient record management time. And an application-based crowdsourced scheduling software could enable more flexibility in shift management, reduce last minute shift changes, and improve coverage.

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The future of work also represents a huge opportunity to evolve the way in which care is delivered. As mentioned previously, the provision of care is largely constrained to the physical location of the hospital or physician office. Health systems are beginning to take advantage of technologies that enable virtual care. For example, telemedicine units allow clinicians to video chat with patients and virtually monitor their vital signs. This change to the proximity of where care can be provided – remotely, in a patient's home, or even over the phone – allows certain clinical roles to optimize their time to see more patients, provide care for even more complex patients, and serve populations in hard-to-reach locations. And in tandem, it enables them to play to their strengths and spend more time doing impactful and fulfilling work.

These are merely high-level glimpses of the vast array of opportunities the future of work presents to health care. A provider organization that rethinks the way work is done by breaking down the clinical work steps and evaluating opportunities to leverage automation and alternative talent models, and re-envisions the proximity of where care should be delivered, has the power to resolve current pain points and develop a critical competitive advantage as an employer capable of attracting and retaining top talent – and a provider of choice for patients.

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The path forward

In technological terms, the future is already here. But in many provider organizations, the plan for working in that future is still on the drawing board.

As each provider organization seeks to map out its own workforce strategy, it needs to adopt an exponential mindset: Each part of the workforce will evolve not along a single linear path, but in response to a collection of forces. Rather than fearing this wave of change as an overwhelming challenge, provider organizations should proactively seek out the opportunities for augmentation and automation in clinical workflows – and pinpoint where both clinicians and patients will benefit from new technologies, innovative talent models, and expanded locations where care is delivered.

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