LITTTLER ON
LEGAL COMPLIANCE SOLUTIONS
FOR THE TRANSFORMATION OF
THE WORKPLACE THROUGH ROBOTICS,
ARTIFICIAL INTELLIGENCE,
AND AUTOMATION

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Littler gratefully acknowledges the following attorneys who contributed to a prior report on robotics, artificial intelligence automation:

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**Coverage**

**Scope of Discussion.** With the advance of new technologies (both hardware and software) that are able to perform tasks previously performed by humans, employers are constantly faced with new challenges. This publication provides an overview of the employment and labor law issues, solutions, and legislative and regulatory response to these new technologies.

The publication’s approach is unique: rather than listing a dozen areas of employment and labor law and applying them generally to robotics, artificial intelligence, and automation, it divides these disruptive technologies into four categories—(1) robotics and automation; (2) wearable and performance-enhancing devices; (3) telepresence, telemanipulation and remote work; and (4) cognitive computing—and then views each through the lens of the most applicable employment and labor challenges and solutions. Although specific technological innovations often cover more than one category, this approach provides employers with a means to more clearly understand and address the employment and labor law issues in light of these new technologies.

**Disclaimer.** This publication is not a do-it-yourself guide to resolving employment disputes or handling employment litigation. Nonetheless, employers may find the information useful in understanding the issues raised and their legal context. This publication is not a substitute for experienced legal counsel and does not provide legal advice regarding any particular situation or employer or attempt to address the numerous factual issues that inevitably arise in any employment-related dispute.

Although the major recent developments in federal employment and labor law are generally covered, this publication is not all-inclusive and the current status of any decision or principle of law should be verified by counsel. The focus of this publication is federal law. Although some state law distinctions may be included, the coverage is not comprehensive.

To adhere to publication deadlines, developments and decisions subsequent to May 1, 2017 are generally not covered.
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§ 1.1 INTRODUCTION

The twin forces of technology and globalization are reinventing and redefining the workplace and the way work is performed. The workplace automation of the last century is rapidly being augmented and replaced by intelligent self-learning systems driven by cloud computing, breakthroughs in sensor technology, and creation of new algorithms that harness the power of “Big Data.” Technologies are emerging that enhance human capabilities and allow workers to provide a wider range of services remotely and with greater efficiency. This new workplace is constantly changing, increasingly uninhibited by geographical boundaries and inspired by the arrival of robots and new technologies previously available only through the pages of science fiction.

These disruptive technologies will affect not only how work is accomplished, but, where, when, by whom and under what conditions. Nations that have attracted manufacturing through low cost human labor are being competitively challenged by the arrival of brilliant machines that can operate flawlessly 24 hours a day. While there is support for the position that robotics increases employment in the long run by generating jobs throughout the robotics supply chain and occasioning the rise of new industries and services and stimulating the economy, in the near-term, the exponential growth of robotics and cognitive computing will likely displace many workers. Robots are becoming more integrated into the human workplace, not only completing tasks autonomously, but also enhancing human performance and safety in the workplace and at home. As new technologies facilitate remote work, the physical and temporal bounds of the workplace are becoming more flexible. These changes are simultaneously and cumulatively transforming the conditions of work.

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2 In response, China has established a five-year plan to bring robotic technology to its factories and “all areas of society” to remain an industry leader. See Chen Fei, How China plans to become a leader in robotics, THE CONVERSATION, Aug. 15, 2013, available at https://theconversation.com/how-china-plans-to-become-a-leader-in-robotics-17084. In the United States, no new factory is built without a complete review of the efficiencies that can be achieved using robotics. In the Netherlands, Phillips Electronics was able to build a robotized factory to manufacture electric razors that outperform its labor-intensive Shanghai operation. See John Markoff, Skilled Work, Without the Worker, N.Y. TIMES, Aug.18, 2012, available at http://www.nytimes.com/2012/08/19/business/new-wave-of-adept-robots-is-changing-global-industry.html?pagewanted=all&_r=0.

§ 1.2 TECHNOLOGY “CATEGORIES” & APPROACH TO ANALYZING THE LEGAL CHALLENGES THEY RAISE

As innovation continues to outpace legislation, the 21st century technologies streaming into the workplace pose novel compliance challenges for employers. Rather than listing a dozen areas of employment and labor law and applying them generally to robotics, AI, and automation, this publication uniquely divides these disruptive technologies into four categories as noted below.

Each category is then viewed through the lens of the most applicable employment and labor challenges and solutions. Specific technological innovations often cover more than one category, nonetheless, the employment and labor law issues are more clearly understood and addressed category by category. Accordingly, this publication addresses the legal challenges that have arisen or may be on the horizon for the following categories of technology:

- **Robotics and Automation (Category 1):** Workforce displacement resulting from mass automation can potentially trigger notice requirements, severance benefits and retraining obligations and can likely implicate collective bargaining obligations. Potential varying technological proficiencies across different demographics will challenge employers attempting to retain a technologically capable workforce while complying with antidiscrimination laws. Integrating robotic systems in close physical proximity to human workers raises potential compliance challenges under the Occupational Safety and Health Administration, and various industry standards such as International Organization for Standardization (ISO) and the American National Standards Institute (ANSI).

- **Wearable and Performance-Enhancing Devices (Category 2):** Wearable and other devices such as exoskeletons aimed at enhancing human performance pose unique compliance challenges and opportunities under laws relating to worker’s compensation, OSHA, wage and hour, and disability accommodation.

- **Telepresence, Telemanipulation and Remote Work (Category 3):** The increasing sophistication of telepresence and telemanipulation technology and the large-scale adoption of crowdsourcing implicate questions about the extraterritorial application of state and national law. Recent controversies over the extraterritorial application of wage and hour law and the justice of independent contractor standards for remote piecework are likely preludes to the legal challenges to come in this space. These technologies may also raise privacy concerns and potential challenges to the viability of the current models of taxation and social welfare.

- **Cognitive Computing (Category 4):** Artificial intelligence, cognitive computing, and the increasing use of “Big Data” and predictive analytics will raise first-of-their-kind issues under laws relating to workplace privacy, discrimination, and electronic discovery. Chief Justice Roberts was asked if he could foresee a day “when smart machines, driven with artificial intelligences, will assist with courtroom fact-finding or, more controversially even, judicial decision-making.” He responded that the day has already arrived. A Wisconsin man was sentenced to six years in prison based in part on a private company’s “secret” algorithm that predicted whether the man would likely commit more

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4 In 2015, the U.S. DOL issued new guidance on the classification of independent contractors as employees under the Fair Labor Standards Act (FLSA). The Administrative Interpretation warns employers that the definition of “employ” is very broad under the FLSA. U.S. Dep’t of Labor, Administrator’s Interpretation No. 2015-1 (July 15, 2015), available at http://www.dol.gov/whd/workers/Misclassification/AI-2015_1.htm.
crimes in the future. The use of the algorithm was upheld by the Wisconsin Supreme Court and at the time of publication, a petition for a writ of certiorari is pending before the U.S. Supreme Court. The sentenced man argues his due process rights were violated in that the algorithm was secret and allegedly took into consideration gender and race. While this case involves sentencing, it is certain that similar algorithms used in making HR decisions will undergo court review.5

Finally, as robotics, artificial intelligence, and automation become increasingly integrated into the everyday workplace, legislatures, regulators, and courts will face pressure to reinterpret existing requirements or create new regulations or laws that better reflect the impact of these technologies.6 Therefore this publication concludes with a look forward to some anticipated legislative and regulatory responses to this wave of innovation.

§ 1.3 Important Concepts Addressed in this Publication

Increasingly, specific definitions have emerged to differentiate areas of robotics, software and AI, as well as historical, contemporary, and future automation. For example, an “industrial robot” has been defined as an “automatically controlled, reprogrammable multipurpose manipulator programmable in three or more axes which may be either fixed in place or mobile for use in industrial automation applications.” While it is important to understand these industry-specific definitions, there are many other generally-applicable definitions. For example, a more elemental definition of “robot” is simply: “a machine that can do the work of a person and that works automatically or is controlled by a computer.” Stated differently, a robot is: “any automatically operated machine that replaces human effort, though it may not look much like a human being or function in a humanlike manner.”

While this publication does not seek to answer the technical, political, social, legal, and ethical question of what a “robot” is, its authors believe that the task of providing insight on the legal and practical implications of robots in the workplace requires working definitions of some important concepts. The following definitions are provided to aid readers’ understanding of the insights and conclusions contained in this publication. It is the authors’ hope that, in addition to enhancing the clarity of this publication, these definitions will expose part of the relationship between the contentious discourse surrounding robotics and its dynamic antecedents.

- **A robotic system** is a computer system that, using intelligent, networked devices, the Internet, Big Data, AI algorithms, and other advanced computing technology, is capable of: automatically and continually “sensing” what is going on in a changing physical or other environment; “thinking” by analyzing data it collects from the environment it is monitoring (e.g., detecting occurrences, changes, and anomalies), identifying trends, and reaching conclusions; and autonomously “acting” by carrying out one or more physical (e.g., navigating through an environment, manipulating an object, etc.) or non-physical (e.g., alerting human operators, recommending potential


6 E.C. Austin, *How to judge a ‘bot; why it’s cover*, The Economist (Sept. 25, 2014), available at http://www.economist.com/blogs/babbage/2014/09/robot-jurisprudence (“The concern for policymakers is creating a regulatory and legal environment that is broad enough to maintain legal and ethical norms but is not so prescriptive as to hamper innovation.”).
responses, making decisions, initiating commands, etc.) functions. Stated more simply, a robotic system is any computer system capable of sensing occurrences in a dynamic situation or environment, capturing and analyzing the relevant data, and subsequently reaching conclusions, providing recommendations, making decisions, and otherwise taking action, whether of a physical or non-physical nature.

- **In this publication, we include software robots or virtual agents.** While these technologies fall outside of the many definitions of “robots,” they are frequently used to enhance human capabilities and may be used in concert with technologies that are more commonly characterized as robots. Such tools include software programs that perform a task previously done by humans, or a virtual assistant, such as a telepresence robot that performs services remotely. “Telerobotics is the area of robotics concerned with the control of robots from a distance, chiefly using wireless connections, ‘tethered’ connections, or the Internet. It is a combination of two major subfields, teleoperation and telepresence.”

- **Automation** is defined as the “automatic operation or control of equipment, a process, or a system.” While automated processes can be traced back centuries, the term “automation” did not come into popular use until 1947, when General Motors established an “automation department.” As used in this publication, automation refers to an operation or control system that uses intelligence. Robotics and AI are subsets of automation. However, in many instances, product manufacturers and system designers have avoided the terms “robotics” and “AI” in favor of some form of the word “automation.” For example, contemporary jet aircrafts are capable of taking off, flying, and landing by themselves with “automatic pilots.” Similarly, the term “vehicular automation” encompasses the “self-driving car,” “robot car” or “autonomous vehicle.”

- **Artificial Intelligence (AI) and Cognitive Computing** are also focal points of this publication. Artificial Intelligence is defined as “the intelligence exhibited by machines or software, and the branch of computer science that develops machines and software with intelligence.” Computer scientist John McCarthy, who is credited with coining the term in 1955, defines it as “the science and engineering of making intelligent machines.” Cognitive Computing is similar to and incorporates AI insofar as it seeks to use algorithms to accomplish processes usually performed by the human mind, but the means for achieving this result differ. One way of articulating the distinction is that “typically, in AI, one creates an algorithm to solve a particular problem, [while] [c]ognitive computing seeks a universal algorithm for the brain that

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would be able to solve a vast array of problems.”\textsuperscript{12} This distinction has also been referred to as “narrow AI” for task specific algorithms and “Artificial General Intelligence” (AGI) for intelligence similar to a human brain and capable of solving problems and performing tasks similar to a human. Currently, narrow AI is in use often with a self-learning capability. AGI does not yet exist. It is predicted to be available in the laboratory as early as 2025-2029. These commonly called “disruptive” technologies are included to underscore that the scope of this publication covers both hardware and software that perform tasks previously performed by humans.

Government agencies and plaintiffs will increasingly attempt to avail themselves of enormously enlarged pools of data in an effort to make out claims against employers principally on the basis of statistics. Employers will need to exercise vigilance in determining whether the data genuinely supports the inferences that the government and plaintiffs seek to draw. Employers may also persuade the government that they should have an opportunity to collect, analyze, and report data as a “safe harbor” for identifying and rectifying issues.

§ 2 ROBOTICS, AUTOMATION, & THE NEW WORKPLACE LANDSCAPE (CATEGORY ONE)

§ 2.1 JOB DISLOCATION & JOB CREATION

The future of automation in the workplace is hotly debated, with studies and thought papers on the issues often differing on whether the rapid increase in technological innovation and automation is a net positive or net negative for the workforce. Far from clear is the notion that increased automation and the proliferation of technology will render swaths of workers unemployed. Rather, numerous papers on the issue have found and postulated that while the robotics industry can make certain jobs obsolete, it will change the nature of other types of jobs without eliminating them, and will create new jobs related to maintaining, programming and operating more sophisticated machines.

For example, the International Federation of Robotics (IFR) estimates that robotics directly created four to six million jobs through 2011, with the total rising to eight to 10 million if indirect jobs are counted. The IFR projected that 1.9 to 3.5 million jobs will be created by 2020.\textsuperscript{13} Increased automation and artificial intelligence will increase the jobs available related to those technologies.\textsuperscript{14} This includes engagement with new technologies, development, supervision, and regulation of new technologies, and jobs related to paradigm shifts introduced by increased automation. Yet, other jobs will change in character, but will remain important to the economy because they require tasks where humans maintain an advantage, such as interacting with others.


flexibility, and problem-solving.¹⁵

Several studies report that many of the jobs done today by humans will be automated. A widely reported study published by Oxford University forecast that an estimated 47% of U.S. jobs is at risk of automation potentially in as few as 10 years.¹⁶ A more recent report from PriceWaterhouseCoopers found that 38% of U.S. jobs are susceptible to automation, and a report from McKinsey Global Institute found that although 46% of human activities performed by American workers are susceptible to automation.¹⁷ However, the elimination of jobs does not take into consideration the creation of new jobs and lifetime learning by the workforce. According to the McKinsey Global Institute’s report, the shift to automation will take decades, providing the United States with time to respond with policy changes. Those policy changes may include increased regulation regarding layoffs, severance pay, and retraining. In the meantime, employers who are automating their job functions need to comply with the existing regulations regarding those concerns, as further described below.

§ 2.1(a) Worker Adjustment and Retraining Act Notification (WARN) Act

Although there are no laws in the United States specifically requiring advance notice of job loss due to displacement by robots, there are a number of laws that require advance notice of job loss generally. The most important of these advance notice statutes is the federal WARN Act.¹⁸ Although the WARN Act does not prevent an employer from implementing a mass layoff or closing a facility, it does require certain employers to notify employees, their representatives, and certain local and state government officials, 60 days in advance of:

- a “plant closing” (which includes closing of departments, product lines or other recognized organizational units) will result in an employment loss of 50 or more full-time employees at that site within a 30-day period; or

- a “mass layoff” that is not the result of plant closing but will result in the loss of employment at a single site of employment for at least 33% of active employees, excluding part-timers, and at least 50 employees; or alternatively, results in loss of employment for 500 or more full-time employees regardless of the percentage.¹⁹

A number of states have passed statutes or ordinances, sometimes referred to as “mini-WARN”


¹⁸ 29 U.S.C. §§ 2101 et seq. For more detail about the WARN Act, see LITTLER ON REDUCTIONS IN FORCE.

¹⁹ 29 U.S.C. §§ 2101 et seq.
statutes, similar to the federal WARN Act.\textsuperscript{20} These statutes may differ by having different notice requirements and covering employers not covered by the federal WARN Act. Regardless of whether an employer’s specific state has a mini-WARN statute, it may still be covered by the federal WARN Act.

The WARN Act and mini-WARN statutes are complicated, and employers must plan plant closings and mass layoffs in advance to determine whether notice is required and to which persons or entities. Failure to provide adequate notice under the WARN Act or the mini-WARN statutes generally results in employer liability to employees for compensation that the employee would have earned during the notice period.\textsuperscript{21} Loss of a WARN Act case could also result in payment of the opposition’s attorneys’ fees.

\section*{\textsection 2.1(b) Severance}

Absent any written or oral contracts providing for severance upon the termination of an individual’s employment, there is no general obligation under either federal or state law requiring severance upon an employee’s termination in general or based on displacement due to robots. All states have unemployment compensation systems that provide benefits to displaced workers for varying lengths of time through insurance-based systems. And some of the mini-WARN statutes mentioned above require that employers pay mandatory severance benefits for failure to comply with the statute. For instance:

- Hawaii requires the payment of a dislocated worker allowance in the amount of the difference between the employee’s last average weekly pay rate and the amount of unemployment for up to four weeks, provided there’s no severance right available.\textsuperscript{22}

- In Maine, an employer that relocates or terminates a covered establishment will be liable to the eligible employees for severance pay at the rate of one week’s pay for each year of employment in the establishment. Severance pay is in addition to any final wage payments and must be paid within one regular pay period after the employee’s last full day of work, but may be offset by other severance benefits paid.\textsuperscript{23}

- If employers in New Jersey provide less than the required notice for covered facility closings or layoffs, the employee is entitled to severance pay equal to one week of pay for each full year of employment. The rate of severance pay must be the average regular rate of compensation received during the employee’s last three years of employment with the employer or the final regular rate, whichever is higher. Such severance is in addition to any other severance paid by the employer, except that any back pay provided by the employer due to a violation of the federal WARN Act will be credited toward the severance penalty.\textsuperscript{24}

Many employers provide severance benefits to employees under employee benefit plans covered

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\item For example, Alabama, California, Connecticut, Georgia, Hawaii, Illinois, Iowa, Massachusetts, Maryland, Michigan, Minnesota, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Tennessee, Texas, Wisconsin. For more information, see THE LITTLER STATE EMPLOYER LIBRARY.
\item The Supreme Court in \textit{Czyzewski v. Jevic Holding Corp.}, 137 S. Ct. 973 (2017) held that WARN Act employees in bankruptcy proceedings even take priority over unsecured creditors.
\item HAW. REV. STAT. §§ 394B-1 \textit{et seq.}; HAW. CODE R. § 12-506.
\item ME. REV. STAT. ANN. tit. 26, § 625-B.
\item N.J. STAT. ANN. §§ 34:21-1 to 34:21-7.
\end{itemize}
by the Employee Retirement Income Security Act of 1974 (ERISA) or under informal severance programs. These programs typically involve payment of severance benefits for job loss due to economic conditions, which typically would include displacement by robots. Benefits vary considerably, but often are calculated based on the employee’s pay rate and length of service.

Most employers require employees to sign a release of claims to receive all or part of offered severance benefits even if the employer has used a voluntary termination plan instead of engaging in a reduction-in-force plan. Generally, release agreements signed by employees in exchange for voluntary severance payments and/or other benefits must comply with the requirements of the federal Older Workers Benefit Protection Act (OWBPA) for a waiver of the right to recover for age discrimination in violation of the Age Discrimination in Employment Act (ADEA) to be effective. Furthermore, based on increased scrutiny from government agencies, no severance agreement or provision should arguably discourage employees from communicating or cooperating with a government agency. An employer should have counsel review any agreement to ensure it complies with all federal and state laws and rules.

§ 2.1 Retraining

As briefly discussed above, if jobs are lost due to robotics technology, just as with any other WARN-triggering job loss, employers must also notify the state dislocated worker unit and the chief elected official of the local government where the closing or layoff will occur. The state dislocated worker units receiving the WARN notices vary in purpose, focus, and functionality, but the primary purpose of these units is to help reintegrate dislocated employees into the workforce. The U.S. Department of Labor’s (DOL) Employment and Training Administration also provides information on training programs and other services available to assist laid-off workers, or those who are about to be laid off. In 2014, the Workforce Innovation and Opportunities Act was signed into law with the support of the Robotics Industry Association and several other employer groups focused on technology.\(^{25}\) This law “seeks to impose more accountability on the federal-state training partnerships by requiring a ‘job-driven checklist’ to ensure that federal money is used effectively and by providing ‘data-driven tools’ to give workers better information about career prospects. It also gives cities and states greater flexibility in how they use federal money for training programs.”\(^{26}\)

§ 2.2 LABOR UNIONS & COLLECTIVE BARGAINING

§ 2.2(a) Protected Concerted Activity

Probably among the greatest drivers of union organizing activity is employees’ fear of losing their jobs. Unions have addressed the fear of job loss created by the specter of robotic replacement in their efforts to solicit employees. For this reason, employers should carefully and accurately discuss the benefits that automation will provide for employees: greater safety, less arduous working conditions, or an overall improvement in the workplace. If productivity doubles due to the use of robots and business correspondingly expands, this does not mean that the human workforce needs to decline.

Regardless of how the introduction of robotics is presented, employers should be ready for employees to react with concern about their jobs. Section 7 of the National Labor Relations Act (NLRA) protects employees’ right to engage in concerted activity, with or without a union,

\(^{25}\) Pub. L. No. 113-128 (July 22, 2014) (effective July 1, 2015).

for mutual aid or protection. This means that the NLRA protects employees who act with or on the authority of other employees; seek to initiate, induce, or prepare for group action; or bring group concerns or complaints to the attention of management. Thus, within certain limits, employees may speak out against the introduction of robotics, threaten to unionize, complain to the public or the employer’s customers, or even walk off the job or picket the employer as a form of protest.

Employer responses to protected concerted activity must be measured. The NLRA makes it unlawful for employers to discipline, discharge, or otherwise take adverse action against employees because they engage in protected activity. For example, an employee who complains that the introduction of robotics will result in layoffs, or otherwise protests the effect of robotics on the terms and conditions of employment, likely is engaged in protected concerted activity. Subsequently laying off an employee or taking other adverse action against him or her because of his or her complaints would likely violate Section 7. However, laying off an employee because the introduction of robotics rendered the position superfluous would not violate the NLRA. When confronted with employee behavior that appears to push the boundaries of protected activity, employers should contact legal counsel before taking action. When dealing with employee concerns about the introduction of robotics it is important to communicate with employees often and effectively about the benefits of a robotic workplace and the critical role employees serve within it.

For these reasons, an employer seeking to discuss a possible transition to a robotic workplace during an organizing campaign should tread lightly. It is almost certainly unlawful for an employer to state that if employees elect a union, it will begin automating the facility to save money and achieve the flexibility and efficiency that a unionized workforce could not provide.

If an employer’s possible introduction of robotics into the workplace is an issue in an organizing campaign, the employer will need to discuss the possibility in a lawful manner. Acknowledge that the employer has explored the issue, and whether it ultimately chooses to move forward with robotics will not depend on whether employees vote for the union, but rather global competitive forces impacting the employer. Moreover, if the employer has already made the decision to transition to robotics before the commencement of a union organizing drive, the employer may communicate that decision to employees.

§ 2.2(b) Collective Bargaining

Is an employer required to bargain if it wishes to acquire robots to do work previously performed by unionized employees working under a collective bargaining agreement (CBA)? Does the CBA control the use of robots to perform this work? A unionized employer seeking to add robots to its business process should consider these questions.

Although the NLRA expressly limits the duty to bargain to certain subjects (i.e., “wages, hours and other conditions of employment”), the National Labor Relations Board (NLRB or “Board”) interprets those mandatory subjects of bargaining broadly. Because an employer’s use of robotics necessarily affects existing employees’ terms and conditions of employment, either by substantially changing the nature of their jobs or by eliminating bargaining unit jobs or work altogether, robotics could become a mandatory subject of bargaining. While there appear to be

28 See Idaho Frozen Foods Division, 171 N.L.R.B. 1567, 1573 (1968) (finding violation of NLRA where employer threatened to automate areas of the plant if the union won the election).
few NLRB decisions concerning the transition to a robotic workforce, the NLRB has long held that technological changes that significantly affect an employer’s unionized workforce are a mandatory subject of bargaining.

For this reason, employers negotiating an initial CBA should generally attempt to negotiate a robust “management rights” clause that reserves the employer’s right to make operational changes and a “no-strike” clause that prohibits employees from striking over such changes during the term of the agreement. This is particularly true for employers considering a move toward a robotic workplace. Such employers should seek a management rights or other clause that gives them the specific right to adopt technological or mechanical changes to their workplaces without further bargaining with the union.

Although an employer’s duty to bargain over terms and conditions commonly arises in negotiations for an initial or successor contract, it applies also during the term of an existing collective bargaining agreement when one of the parties proposes a course of action or change that affects a mandatory subject of bargaining.\(^{30}\)

Moreover, because the implementation of robotics, in most instances, will likely be a mandatory subject of bargaining, absent a clear and unequivocal waiver of the right to bargain over the subject, an employer will be obligated to bargain over the implementation of robotics even if the CBA is silent on the issue.\(^{31}\) Even when the parties’ CBA expressly permits an employer to increase its reliance on robotics without bargaining with the union, other elements of the decision may still require bargaining. For example, if the increased reliance on robotics includes the relocation of work to a more technologically advanced facility, the employer may be required to bargain over the relocation of bargaining unit work even if the CBA permits the employer to adopt technological improvements unilaterally.\(^{32}\)

A correlative to the duty to bargain is a duty to supply information to a union.\(^{33}\) In many instances, when an employer advises a union that work might be altered or lost due to automation, the union will request information about the proposed course of action.\(^{34}\) An employer might be reluctant to share this information because of confidentiality or competitive concerns. In such instances, the NLRB has held that the employer has the burden of showing that a bona fide and significant confidentiality interest exists that outweighs the union’s need for the requested information. An employer must make a claim of confidentiality in a timely manner so that the parties can engage in accommodative bargaining over the employer’s confidentiality concerns.\(^{35}\) Thus, the NLRB has held that an employer and union can “bargain over a reasonable accommodation, such as a nondisclosure agreement, when the employer has a legitimate

\(^{30}\) 29 U.S.C. § 158(d); see also Zimmerman Painting & Decorating, 302 N.L.R.B. 856 (1991); but cf. NLRB v. Jacobs Mfg. Co., 196 F.2d 680 (2d Cir. 1952) (employers are not relieved from mid-term bargaining obligations over mandatory bargaining subjects not embodied in CBAs’ terms).

\(^{31}\) Renton News Record, 136 N.L.R.B. 1294 (1962). Although the NLRB refined its approach to determining whether an employer must bargain over a given decision, since Renton News Record, its approach to automation cases remains consistent. Plymouth Locomotive Works, Inc., 261 N.L.R.B. 595 (1982) (applying Renton News Record paradigm, and finding that an employer had committed an unfair labor practice by failing to bargain over a decision to automate).

\(^{32}\) See Dubuque Packing Co., 303 N.L.R.B. 386, enforced in relevant part sub. nom., United Food & Commercial Workers Local 150-A v. NLRB, 1 F.3d 24 (D.C. Cir. 1993).


\(^{34}\) See generally Detroit Edison Co. v. NLRB, 440 U.S. 301 (1979).

confidentiality concern regarding the union’s use of the requested information.\textsuperscript{36} The Obama Board strictly scrutinizes employer’s confidentiality claims, both in their substance and the manner in which they are raised although past dissenting members have appeared to offer more deference to employer substantive claims of confidentiality.\textsuperscript{37}

All collective bargaining agreements contain a description of the bargaining unit, including the positions that are included and those that are excluded from the agreement’s coverage. Automation leads to situations where bargaining unit members learn skills to perform tasks that are for positions specifically excluded from the scope of the bargaining unit.\textsuperscript{38} An employer may unilaterally remove from the bargaining unit an employee who begins to perform excluded work provided those duties are sufficiently dissimilar from those performed by remaining bargaining unit members.

\section*{\textsection 2.3 Tax Implications}

There is some evidence that robotics is increasing job growth in the United States.\textsuperscript{39} For example, a number of companies have brought back manufacturing jobs from China and other overseas countries in recent years. A 2013 study found that three to five jobs are created for each robot in use.\textsuperscript{40} This in turn suggests that the current employment model used to fund social insurance programs such as Medicare, Social Security and unemployment benefits, as well as tax reporting based on an employer model (by, for example, issuing W-2s to employees each year to report their earned wages) will benefit from increased use of robotics.

However, another view is that increases in robotics investment over time will depress wages, while the decreased need for employees in certain industries could reduce overall labor force participation.\textsuperscript{41} It remains a basic fact that any insurance system needs sufficient numbers to spread risk (i.e., a risk pool).\textsuperscript{42} Robotic technologies could negatively affect the social insurance pay-as-you-go model because they may reduce the number of available workers over which these insurance risks can be spread. Thus, such changes to the workforce could impact tax administration and social insurance because the current tax system requires the existence of a critical mass of employer-employee (or employment) relationships.\textsuperscript{43} For example, using robot

\begin{itemize}
\item \textsuperscript{36} Caravan Knight Facilities Mgmt., Inc., 362 N.L.R.B. No. 196, 204 LRRM 1706 n. 14 (2015).
\item \textsuperscript{38} See, e.g., BASF Wyandotte Corp., 276 N.L.R.B. 1576, 120 LRRM 1243 (1985).
\item \textsuperscript{40} International Federation of Robotics, \textit{Positive Impact of Industrial Robots on Employment}, Jan. 2013.
\item \textsuperscript{42} For a discussion of social insurance financing, see Michael Cichon, et al., \textit{Financing Social Protection}, INTERNATIONAL SOCIAL SECURITY ASSOC. (2004).
\item \textsuperscript{43} The employment model used to fund social insurance programs that provided not only for workers, but also dependents, largely developed during the Great Depression, was predicated upon then prevailing
\end{itemize}
waiters in a restaurant is expected to reduce the number of human waiters, which in turn reduces the “wages” being paid into the funding of social insurance, while also increasing the number of unemployed workers potentially claiming unemployment benefits. When firms determine that it is less expensive and more productive to replace an individual with a robot, the implications for tax administration and social insurance become dire.

In addition to unemployment insurance, demographic changes, such as increases in population and larger numbers of nonworking dependents, continue to put more stress on social insurance programs like Medicare and Social Security, both of which are funded through employment-based taxes. The supply of social insurance capital is decreasing while the demand for those funds continues to increase, and as robotic technologies accelerate this trend, the current employment-based tax system will require significant changes.

These changes will likely require policymakers to adopt one of the following options in the future: (1) an entirely new form of taxation layered on top of the current employment-based model; (2) fundamental changes to tax administration and social insurance programs; or (3) some combination of the two.

A new form of taxation layered on top of the current employment-based model might require a tax levied on the actual robots used to replace human workers. This would essentially mimic the current employment-based tax system; however, such taxes could have the adverse consequence of freezing workforces as employers seek to avoid the higher takes. In addition, it may also be impossible to determine when a robot actually replaces a human laborer, or is in fact being added as a result of growth. Shifting the employment-based tax onto the robotics manufacturers is another option, but this would require an entirely new form of information reporting likely based on the costs of the technology or the profits of the business. This solution would likely cripple attitudes about the family and women’s roles that would strike most as antiquated today. Karen Kornbluh and Rachel Homer, The New Family Values Agenda: Renewing Our Social Contract, 4 HARV. L. & POL’Y REV. 73, 76 (Winter 2010) (explaining that the structure of social programs such as Social Security “reflects historical choices made when the breadwinner-caregiver model was predominant, and it was intended to perpetuate that model. The system includes social insurance entitlement programs that provide benefits linked to one’s income, job tenure, and full-time work, so those who sacrifice earnings to care for their children wind up as their spouses’ dependents and with far less in benefits.”). In addition, theories about the links between “work” and citizenship can be seen through the lens of the framers of the Constitution and views about what work did and did not qualify for consideration within the framework of greater society. See, e.g., William E. Forbath, Caste, Class and Equal Citizenship, 98 MICH. L. REV. 1 (Oct. 1999).

In the near term, robots may be seen as complimenting human work and performing functions in collaboration with, rather than entirely replacing, humans. Whether that remains a longer term trend as well remains to be seen, but it nonetheless still has the potential to reduce labor participation. Tanya Anandan, The End of Separation: Man and Robot as Collaborative Coworkers on the Factory Floor, ROBOTIC INDUSTRIES ASSOC., June 6, 2013, available at http://www.robotics.org/content-detail.cfm/Industrial-Robotics-Featured-Articles/The-End-of-Separation-Man-and-Robot-as-Collaborative-Coworkers-on-the-Factory-Floor/content_id/4140. The robotics industry itself has an incentive to suggest that robotics technologies will increase rather than decrease labor participation rates.

emerging technology companies and exacerbate the tax administration problems and funding for social insurance, all while encouraging more businesses to relocate overseas, beyond the reach of the government’s taxing authority.

Fundamental changes to the tax administration and social insurance programs would require a complete policy overhaul, something lawmakers have historically opposed. One possibility would be for the government to make a single payment to all citizens from birth to death, paid on a regular basis to mimic “wages” and guarantee a minimum level of income for everyone, regardless of whether they perform services traditionally in the employment context. Such an “entitlement” system would replace the current numerous disjointed social programs, and could be graduated by age, wealth, or other factors.\(^47\) Such a radical change is not likely to be seriously considered, making a complete redesign of social insurance unlikely.

Some combination of new forms of taxation with changes to the employment-based model would also require a radical shift that is unlikely to come from a (currently) polarized Congress, especially given that current attempts at tax reform are largely focused on corporate and personal income taxes, not employment taxes. Unfortunately, without proper planning, robotics’ potential to significantly increase the general welfare may be hindered by its erosion of the current mechanism for funding social insurance programs predicated on the employment model. Given that the pay-as-you-go system requires increasing numbers of employed being paid wages to fund increasing current benefits, displacements of currently employed workers by non-tax paying robots is becoming a major concern to policymakers.\(^48\)

\section*{§ 2.4 ANTIDISCRIMINATION}

\subsection*{§ 2.4(a) Age Discrimination in Employment Act of 1967 (ADEA)}

The ADEA prohibits age-based discrimination against applicants or employees age 40 or over.\(^49\) The ADEA also prohibits employers from discriminating on the basis of age between two individuals, both of whom are within the protected age group. The ADEA prohibits discrimination in hiring, discharge, promotion, and other terms or conditions of employment. A plaintiff establishes a case of age discrimination by demonstrating that: (1) the plaintiff was in a protected age group; (2) the plaintiff was qualified for the position; (3) the plaintiff was nevertheless adversely affected; and (4) the defendant sought someone else with similar qualifications to perform the work. Claims may be brought under both disparate treatment and

\footnote{At the beginning of 2017, Finland launched a two-year pilot project, through which monthly Unconditional Basic Income (UBI) payments are being made to 2,000 Finnish citizens who were randomly selected from a target group consisting of social welfare recipients between the ages of 25 and 58. While Finland is not the only country to have conducted a UBI trial – the Netherlands has also launched a pilot project this year, and a number of other countries have conducted similar trials over the past few decades – the Finnish trial is somewhat unique, as it features a partial UBI payment that is conditional on the recipient making efforts to find full-time employment. At this time, it is uncertain whether the Finnish trial will be expanded to include additional recipients or extended beyond 2018, or whether it will be followed by other nations. See Lexer and Scarcella, The effects of artificial intelligence on labor markets – A critical analysis of solution models from a tax law and social security law perspective (2017), available at \url{http://www.werobot2017.com/wp-content/uploads/2017/03/Conference-Paper-LEXER-SCARCELLA-WeRobot2017.pdf} .}

\footnote{See Darrell M. West, What Happens if Robots Take the Jobs?: The impact of emerging technologies on employment and public policy, CENTER FOR TECH. INNOVATION AT BROOKINGS, at 11 (Oct. 2015).}

\footnote{29 U.S.C. §§ 621-634.}
disparate impact theories.\textsuperscript{50}

The very use of advanced robotic systems in the workplace could subject an employer to exposure under the ADEA based on older workers’ familiarities with the new technologies. If employees over 40 are less adept at working with advanced robotic systems than younger employees, employment decisions based on this criteria will likely impact them disproportionately. If those 40 or older are adversely impacted because of an employer’s use of advanced robotics systems, then the employer may face exposure to disparate impact claims under the ADEA. Latent biases and the perceptions that younger people are more technologically advanced or adaptive could lead to disparate treatment claims.

\textbf{\textsection 2.4(b) Americans with Disabilities Act of 1990 (ADA)}

Title I of the ADA,\textsuperscript{51} amended by the ADA Amendments Act of 2008,\textsuperscript{52} prohibits both public and private employers from discriminating in employment against persons with physical and mental disabilities. The ADA requires employers to make reasonable accommodation to the needs of disabled applicants and employees, as long as such accommodation does not result in undue hardship to the employer’s operations. A reasonable accommodation may include any of the following:

- making existing facilities used by employees readily accessible to and usable by individuals with disabilities;
- job restructuring;
- part-time or modified work schedules;
- reassigning a disabled individual to a vacant position;
- acquiring or modifying equipment or devices;
- appropriately adjusting or modifying examinations, training materials, or policies;
- providing qualified readers or interpreters;
- hiring a job coach to help the employee in his or her job for a temporary period of time; and
- other similar accommodations for individuals with disabilities.

Today, courts may consider accommodations for certain individuals absent an undue hardship to an employer’s operations. In the foreseeable future, advanced robotic systems may make such accommodations reasonable in the eyes of the court. Advanced technologies could provide never-before-seen opportunities for individuals with disabilities. For example, self-driving vehicles and advanced sensory technology could make jobs previously denied to deaf or blind applicants a real opportunity. Honda’s Asimo can assist a person confined to a bed or a wheelchair by performing manual operations like turning on a light switch, opening doors, and carrying objects. Such

\textsuperscript{50} 544 U.S. 228 (2005).
advanced technologies could make already existing technology affordable and more accessible.

§ 2.4(c) Title VII of the Civil Rights Act of 1964 (Title VII”)

Title VII, as amended, prohibits employers from discriminating against an individual on the basis of race, color, sex, national origin or religion with respect to hiring, discharge, compensation, promotion, classification, training or other terms, conditions and privileges of employment. As technology, automation, and robotics revolutionize the workplace, employment growth in computer science and engineering jobs is more than double the national average. However, unequal participation of minorities and women in these tech jobs pose serious legal challenges for employers. Recent litigation and media headlines have highlighted a “diversity dilemma” related to sex, race, and age within the tech industry and across jobs involving technology. The U.S. Equal Employment Opportunity Commission (EEOC) recently concluded that demographic diversity in the high-tech sector is “a timely and relevant topic for the Commission” to investigate and address. It held a public meeting on May 18, 2016 to hear from panelists.

In 2016, the EEOC issued a report titled “Diversity in High Tech” in which it examined research related to the participation of minorities in women in high-tech jobs, as well as EEO-1 Report data for 2014. The EEOC concluded that “[d]espite rapid transformation in the field, the overwhelming dominance of white men in the industries and occupations associated with technology has remained,” even in occupations requiring less than a bachelor’s degree. As with age discrimination, hidden biases and stereotypes that women and minorities are less technologically or mathematically proficient may expose employers to disparate treatment claims under Title VII.

Following multiple news stories about the lack of diversity in the tech industry, advocacy groups have increasingly pressured these tech companies to focus on improving workplace diversity. While maintaining a non-diverse workforce presents serious legal risks, as reflected in a 2016 federal suit against a tech company, trying to remedy the problem through an explicit preference for certain groups of employees carries its own legal exposure based on claims of reverse discrimination.

§ 2.4(d) Executive Order No. 11246

Federal government contractors are also subject to Executive Order No. 11246, which prohibits employment discrimination on the basis of race, color, religion, sex, sexual orientation, gender identity, and national origin. In addition, federal government contractors are required to take

58 The technological advances of the information age have also made it easy to research prospective employees’ religion, race, national origin or other protected characteristics. Such online searches can subject employers to increased risk of hiring discrimination claims.
affirmative action to ensure that applicants and employees are afforded employment opportunities without regard to these protected characteristics. The DOL’s Office of Federal Contract Compliance Programs (OFCCP) enforces these requirements and is entitled to inspect employment records to ensure a company’s compliance with its nondiscrimination and affirmative action obligations. More recently, the OFCCP has set its sights on the tech industry, filing lawsuits against tech companies based on allegedly discriminatory hiring and pay practices.

§ 2.5 **Federal Occupational Safety and Health Act (“Fed-OSH Act”)**

The Fed-OSH Act grants the Secretary of Labor responsibility for administering the federal occupational safety and health program. Among the Secretary’s responsibilities are the promulgation of occupational safety and health standards, and enforcement efforts aimed at ensuring employer compliance. On a day-to-day basis, the Secretary’s responsibilities have been delegated to the Occupational Safety and Health Administration (Fed-OSHA). Twenty five states have Fed-OSHA-approved state plans and have adopted their own standards and enforcement policies. For the most part, these states adopt standards that are identical to those set forth by Fed-OSHA.

Employers must ensure that they remain in compliance with OSHA regulations as they begin introducing advanced technologies into the workplace. While there are no current Fed-OSHA standards specific to the robotics industry, certain general Fed-OSHA standards apply, such as those governing machinery and machine guarding, electrical systems, and lockout/tagout procedures. Fed-OSHA guidelines aimed specifically at the robotics industry are somewhat outdated. For example, Fed-OSHA’s Guidelines for Robotics Safety was issued in 1987. The agency’s Technical Manual on Industrial Robots and Robot System Safety has a 1999 effective date, and its manual containing a chapter on Robotics in the Workplace was last updated in

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60 29 U.S.C. § 651.


65 For information on OSHA’s guidelines and standards applicable to the robotics industry, see OSHA’s webpage on Robotics, available at https://www.osha.gov/SLTC/robotics/index.html.


Even older, the National Institute for Occupational Safety and Health (NIOSH) issued a robotics injury prevention guide in 1984.\(^69\)

However, the American National Standards Institute (ANSI) updated its existing standard governing robotics safety in 2012.\(^70\) The updated standard harmonizes its standard with the applicable International Organization for Standardization (ISO) standards, creating a uniform industrial robotic safety standard.\(^71\) While these standards are not Fed-OSHA regulations and are voluntary, the agency notes that “they do provide guidance from their originating organizations related to worker protection.”\(^72\)

These standards address, among other things, the requirement that robotics systems be assessed for risk. In particular, a risk assessment must be conducted on all robotic systems by the supplier and by the end user. Ultimately, the risk assessment is used to determine whether all hazards are at an acceptable risk level for interaction with an operator of the device. The risk assessment component of the ANSI standard is designed, in part, to recognize that every robotics system is unique and that it may also present unique safety hazards: as designed; as integrated into a particular operation; and as it is used.

Collaborative robots that exert little force, or that are designed to handle relatively light loads or tools, are unlikely to pose a significant safety risk or challenge when the device accidentally strikes a human coworker. However, with the development of advanced collaborative robots that can carry significant weights at high speeds, all while operating in close proximity to humans, the risk of significant injury increases substantially. With this in mind, one question that will have to be answered by regulators, manufacturers, and employers is what level of injury, if any, is “tolerable” when a collaborative robot accidentally hits a coworker.

Fed-OSHA’s website warns of potential dangers involved in advanced robotic systems in the workplace. The danger does not come primarily from the robotics but from human error in interfacing with the system. For example, in 2015, a German worker entered a safety cage and died when struck in the chest. Preliminary reports cite worker error and no defect on the robot’s programing.\(^73\) In 2011, an employee suffered a fatality while freeing a jam when he became

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\(^{68}\) OSHA Pub. 3067, CONCEPTS AND TECHNIQUES OF MACHINE SAFEGUARDING, Ch. 6, Robotics in the Workplace (Revised 1992), available at https://www.osha.gov/Publications/Mach_SafeGuard/chapt6.html.


\(^{70}\) ANSI 2012 R15.06. According to Robotics online (sponsored by the Robotic Industries Association), this standard provides guidelines for the manufacture and integration of Industrial Robots and Robot Systems with emphasis on their safe use, the importance of risk assessment and establishing personnel safety. This standard is a national adoption of the International Standards ISO 10218-1 and ISO 10218-2 for Industrial Robots and Robot Systems, and offers a global safety standard for the manufacture and integration of such systems. A two-year transition period to the revised RIA R15.06 ended December 31, 2014.


\(^{73}\) “A [company] spokesman stressed that the robot was not one of the new generation of lightweight collaborative robots that work side-by-side with workers on the production line and forgo safety cages.” Worker killed in Volkswagen robot accident, FINANCIAL TIMES, at http://www.ft.com/intl/fastft/353721/worker-killed-volkswagen-robot-accident; see also Kukil Bora, Volkswagen German Plant Accident: Robot Grabs, Crushes Man To Death, INT’L BUS. TIMES, July 2,
caught between a robotic arm and a conveyor belt. In 2009, another employee suffered a fatality by a robotic palletizer because she entered the caged cell in which the palletizer operates without having de-energized the equipment. In 2006, a worker entered the cell of a robot to clean its sensors, and suffered a fatality because he did not utilize lockout procedures. While not common, such injuries are obviously catastrophic. In each of the above instances, the implementation of strict procedures and training programs could have prevented these fatal or serious accidents.

Therefore, as employers begin to use collaborative robotics to increase productivity, the importance of standards in the design, function, and safety protocols related to these machines will become increasingly important. In 2016, the ISO issued new regulations specifically targeting collaborative robotics, including standards and specifications related to protective measures, stopping functions, and transition between collaborative and non-collaborative operation.\(^{74}\) These specifications address, for example, the maximum speed and pressure and amount of force a robot may achieve in the presence of a human.

The use of robots can also improve ergonomics and minimize repetitive stress injuries.\(^{75}\) In 2013, NIOSH announced that it developed a talking robotic head to aid research into factors affecting how respirators fit to workers’ faces.\(^{76}\) (Over five million Americans are required to wear respirators in their workplace.) In addition, several companies currently use robots to perform work that is either unsafe or potentially hazardous to humans. For example, robots perform work in excessive heat, polluted areas, or under other extreme conditions harmful to humans.

Employers should also be aware of safety regulations from other federal agencies, such as the Federal Aviation Administration (FAA). Currently drones are increasingly being used by companies for such work as industrial-scale agriculture or transportation infrastructure, including railways, roads, ports, and waterways.\(^{77}\) FAA rules allow routine use of certain small unmanned aircraft systems (“drones”) in today’s aviation system but impose strict safety regulations.\(^{78}\) Several of the rules severely limit the practical use of drones; however, a waiver of certain of these rules is available.\(^{79}\)

\section*{§ 3 Human Enhancement/Wearable Technology & New Possibilities (Category Two)}

\subsection*{§ 3.1 Workers’ Compensation}

Advances in robotics are likely to improve workers’ health and safety and, in turn, reduce

\begin{footnotesize}
\begin{enumerate}
\item ISO/TS 15066:2016.
\item For additional examples, see International Federation of Robotics, http://www.ifr.org/robots-create-jobs/work-unsafe-vor-humans/.
\item 14 C.F.R. pt. 107 (Small Unmanned Aircraft Systems).
\item 14 C.F.R. §§ 107.200, 107.205.
\end{enumerate}
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employers’ workers’ compensation costs. Much of these savings will be realized in two ways. First, as robots take over tasks that are dangerous, strenuous, or repetitive in nature, workers are likely to suffer fewer and less serious work-related injuries or illnesses. Second, creative applications of robotic engineering that are designed to assist workers in performing the physical requirements of their jobs will greatly improve the ability of injured workers to return to work, shorten the “lost-time” period, and reduce the re-injury rate. An example of the types of robotic applications that could have a positive impact in the workers’ compensation context is the “wearable robot,” such as the “exoskeleton.” While such robots will come in many forms, they will have a few things in common: (1) they will be worn by workers or affixed to workers’ bodies in some way; and (2) they will be used by workers to supplement or replace actions previously performed by one or more of the worker’s body parts using the workers’ muscle power. Such robots will be directed by workers via a variety of methods, such as hand or arm movements, subtle body or eye movements, voice commands, and even brain waves. Aside from reducing the reliance on muscle power to perform tasks, such robots will greatly improve workers’ speed, efficiency, and productivity, and will greatly increase their ability to perform tasks that are heavier and more repetitive with a reduced risk of injury. This technology will be particularly helpful with employees who have light duty restrictions. Shipyard workers in South Korea are currently using exoskeletons, giving them super-human strength.

The financial impact of getting injured workers back to work and doing so in less time can be substantial. For example, employers with thousands of employees report that reducing the lost-time period by only a few days can result in saving millions of dollars, both in terms of reductions in wage-loss benefits (i.e., “indemnity” benefits) and medical costs. Medical costs are positively affected because, statistically, injured workers who return to work quicker tend to seek less medical treatment.

Despite the benefits of wearable robots, some risk of injury will always remain. Certainly, as the use of such robots enhances, workers’ physical capabilities, employers are likely to increase their expectations and demands that workers perform more work, improve efficiency, and, in some instances, perform more physically demanding or dangerous jobs. If not carefully monitored, the benefit or robotics could cause injuries in a number of different ways. For example, robots that are poorly designed and incompatible with the human body or that are well designed but poorly implemented or maintained, could easily damage muscles, tendons, and nerves, particularly when performing repetitive tasks. In addition, increased physical capabilities from using wearable robots may tempt workers to push the envelope by performing tasks that exceed their physical ability, thus increasing the risk of injury.

There have been several instances of work-related injuries and even some deaths caused by the use of robotic devices due to programming, maintenance, installation, and repair errors. Workers who are injured while using robotic devices will still be eligible for workers’ compensation benefits, provided their injuries are incurred in the course and scope of their employment. For the purpose of determining eligibility for workers’ compensation benefits, injuries caused by robots will be treated the same as injuries caused by using any other tool used in the workplace, such as a hammer, wrench, or computer keyboard.

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§ 3.2 WAGE & HOUR LAW: DONNING AND DOFFING

Not paying workers for time spent putting on wearable robots could expose employers to liability for unpaid wages. Normally, under the Fair Labor Standards Act (FLSA), employees must be compensated for time spent changing and washing clothes that they are required to wear for work. 82 Therefore, employers who require employees to don wearable technology in order to perform their jobs will likely be required to pay them for the time spent changing into and out of the devices, as well as any time spent maintaining the devices.

It remains to be seen whether a narrow exception to this rule could exempt employers in some unionized workplace from having to pay for time spent donning and doffing robotic devices. In unionized workplaces, otherwise compensable time spent changing or washing clothes at the beginning or end of shifts need not be compensated, if it is excluded from compensation by the express terms of, or by custom or practice under, a bona fide collective bargaining agreement. 83 The U.S. Supreme Court has made clear that this exception applies only to “clothes,” which it defines as “items that are both designed and used to cover the body and are commonly regarded as articles of dress.” 84 Safety glasses, earplugs, and a respirator did not come within this definition of clothes. 85 However, where such items are donned and doffed along with clothing, the time spent changing may be subject to exception by a collective bargaining agreement if the time period at issue, could, on the whole, be fairly characterized as changing and washing clothes. 86 For this to be the case, the “vast majority” of the time would have to be spent donning and doffing “clothes.” 87

Whether wearable robotic devices and other wearable technologies will fit in this definition of “clothes” is likely to depend on the nature of the device and how commonly worn such devices are outside of a small set of industries that require them. At least initially, it is unlikely that such devices will qualify as clothes because they are not “commonly regarded as articles of dress.” Therefore, time spent donning and removing wearable robotics and other technology will probably be compensable, even in workplaces governed by a collective bargaining agreement that excludes time spent changing and washing clothes, unless the portion of time devoted to donning and doffing the wearable technology makes up only a relatively small portion of the time spent donning and doffing overall.

§ 3.3 DISABILITY LAW

Employers may one day be required to provide wearable robotic devices as reasonable accommodations, or to accommodate disabled employees who wear them.

Robotic arms or legs are already allowing individuals with physical disabilities to operate without physical restrictions. Cyberdyne’s battery-operated exoskeleton, which is being developed in Japan, can be worn to increase mobility and muscle function in those with musculoskeletal disabilities and persons without disabilities. 88 The suits have been touted as the “first assistive

84 Sandifer, 134 S. Ct. at 877-78.
85 134 S. Ct. at 880.
86 134 S. Ct. at 880-81.
87 134 S. Ct. at 880-81.
nursing mechanism to be certified under a draft international safety standard for personal robots. 89 Firefighters have been able to use exoskeleton suits to “supplement muscle performance and help . . . manage all the extra weight without impeding the freedom of movement.”90 Wearable technologies like this have the potential to mitigate disabilities based on mobility and muscle function, broadening employment opportunities for disabled workers.

These wearable technologies may one day be required as accommodations for disabled employees. Under the ADA and similar state laws, workers’ mobility limitations can require reasonable accommodation by modification of both the duties and the workplace, which includes obtaining assistive equipment.91 Currently, much wearable and human enhancing technology may not be objectively reasonable or may pose undue hardships because of its novelty or cost. However, as this technology becomes more common and prices decline, it becomes more likely that employers may be required to provide it to aid disabled employees to perform their jobs.

While the overwhelming effect of these wearable enhancing devices will likely be improved physical capability, wearable technology also carries the potential to highlight disabilities that previously did not affect employees’ abilities to work. Therefore, in incorporating wearable technologies, employers should be alert to the possibilities that certain workers may be limited in their abilities to use the new technology. For example, workers may be sensitive to the materials composing the wearable devices or may have preexisting disabilities that interfere with the fit and movement of the technology or that the technology would exacerbate. These limitations may qualify as disabilities, requiring accommodation in their own right.

The fast pace of innovation may also throw into question the qualifications of physicians to accurately certify workers’ abilities and limitations. When employees seek reasonable accommodations, employers are entitled to at least one physician certification as to the extent of the employees’ limitations.92 Employers who are concerned that physicians may not be taking into account the range of potential mitigation options when they assess employees’ abilities may wish to consider selecting physicians who are familiar with these innovations or educating physicians and employees on the accommodation options available to them.

§ 3.4 Fed-OSHA

Advances in wearable technology in the workplace will lead to a massive increase in the interaction between workers and robots. This development is in direct contrast to a vast body of Fed-OSHA’s safety standards—which are designed to ensure that workers and machines operate separately. For example, Fed-OSHA enforces regulations for machine guarding on a wide variety of equipment.93 Fed-OSHA’s general machine guarding standard for all machines provides, in part, that one or more methods of machine guarding “shall be provided to protect the operator and other employees in the machine area from hazards” that may be created by operation of the

91 Title I of the Americans with Disabilities Act, 42 U.S.C.A. § 12101 et seq., requires reasonable accommodation of disabilities through modifications to the work or workplace. Title II requires further modifications to enhance accessibility, but only applies to certain public entities. 42 U.S.C.A. § 12111(9-10); 29 C.F.R. § 1630.2(o)(2)(ii) (listing acquisition of equipment as a reasonable accommodation).
92 29 C.F.R. § 1630.9.
93 See, e.g., 29 C.F.R. § 1910.213 (for woodworking machinery requirements); 29. C.F.R. § 1910.215 (for abrasive wheel machinery); 29 C.F.R. § 1910.217 (for mechanical power presses); and 29 C.F.R. § 1910.218 (for forging machines)
That general machine guarding standard goes on to state that “the point of operation of machines whose operation exposes an employee to injury, shall be guarded,” and that in the absence of some other specific standard, the guard “shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle.”

The design and use of wearable technology and collaborative robots is not contemplated within these standards. Moreover, with the creation of additional options for remote worksites using new robotic applications, the scope of an employer’s responsibility for workplace safety may expand to new locations not directly controlled by the employer. For example, Fed-OSHA currently does not require employers to inspect home offices; it generally will not conduct inspections of home offices; and it typically will not hold employers liable for conditions in an employee’s home office. However, Fed-OSHA’s own guidance regarding home offices also provides that employers are indeed responsible for hazards in home worksites that are caused by “materials, equipment, or work processes which the employer provides or requires to be used in an employee’s home.”

To the extent an employer is supplying employees with robotic applications for use in remote locations such as home offices, the employer must ensure that the equipment and the process for using the equipment complies with or exceeds recognized safety standards.

The potential exposure to liability for violation of safety practices in remote work locations is further complicated by the inability of employers to consistently monitor employee behavior in remote locations. Therefore, adequate training and the development of safe work practices and procedures for the use of any robotic applications is also critical for remote work locations.

§ 4 TELEPRESENCE, TELEMANIPULATION, & THE BORDERLESS WORKPLACE (CATEGORY THREE)

§ 4.1 EXTRATERRITORIAL APPLICATION OF WORKPLACE LAWS

Which jurisdictional laws apply to a given workplace activity depends largely on the physical location of the actors and events. As telepresence and telemanipulation technology permit employees to perform work in states and countries far from their physical locations, the distance between employees, managers and the effects of the employee’s work will increasingly raise the question of which laws govern. To illustrate this issue, this section considers wage and hour law.

Employers are subject to federal wage and hour laws such as the Fair Labor Standards Act (FLSA) and Equal Pay Act with respect to the workers performing work in the United States. In addition, employers may be subject to the wage and hour laws of various states. As a general rule, the law of the state in which the work is performed governs the employer’s wage and hour responsibilities with respect to that employee.

Subject to constitutional restraints, states determine the reach of their own wage and hour laws. Therefore, states have discretion over whether to extend wage and hour law coverage to workers.

97 See OSHA, Dir. No. CPL 2-00.125, Home-Based Worksites (Feb. 25, 2000).
98 See, e.g., Sullivan v. Oracle Corp., 557 F.3d 979 (9th Cir. 2009) (certifying the question of applicability of wage and hour laws to in-state work by non-residents to the state court).
whose tasks primarily produce results in another state. States may define the scope of their wage and hour statutes very broadly. California, for example, has even required California corporations to comply with its own minimum wage standards for workers who live and work primarily out-of-state for any entire days that the out-of-state workers spend working in California. However, so far no state has successfully subjected an employer to that state’s wage and hour requirements for work conducted by an employee who performs all of his work in another state.

Consider the example of an employee who works remotely and permanently resides in one state, but her job requires her to operate a robot located in another state. That employee would not be subject to the law of the state in which the robot she operates is located; she would likely be subject to the law of the state in which she performs the operation. However, employers located on state borders should consider the potential wage and hour implications of allowing their employees to split their time between working in the physical plant and working remotely from another state.

The same question arises when workers located in other countries operate robots located in the United States. The FLSA states that it “shall not apply with respect to any employee whose services during the workweek are performed in a workplace within a foreign country or within territory under the jurisdiction of the United States.” This provision has not been applied to the question of whether the FLSA governs payment of workers located in other countries who operate robots located in the United States. Courts have found that when an employee of a U.S. company is physically outside of the United States performing work without telepresence technology for the majority of the time, such employee is not entitled to U.S. wage and hour protections. The definition of “workplace,” however, could be contested in the context of remote operation of robots located in the United States. When courts do address this question, they may draw from the reasoning behind the institution of the FLSA to decline coverage to workers permanently based abroad.

Of course, separate and apart from whether U.S. labor laws have extraterritorial effect, employers who employ operators outside the United States to operate robots present in the United States must comply with the labor and employment laws of those countries.

99 California’s minimum wage law, for example, states that it covers “all” people, without mentioning any geographical limitation. CAL. LAB. CODE § 1171-1171.5.


101 Sims v. WorldPac, Inc., 2013 U.S. Dist. LEXIS 24740, at *6 (N.D. Cal. Feb. 22, 2013) (“In general, there is a presumption that the ‘Legislature did not intend a statute to be operative, with respect to occurrences outside the state ... unless such intention is clearly expressed or reasonably to be inferred from the language of the act or from its purpose, subject matter or history.”); see also Sajfr v. BBG Commc'ns, Inc., 2012 U.S. Dist. LEXIS 15198 (S.D. Cal. Jan 10, 2012).


103 Wright v. Adventures Rolling Cross Country, Inc., 2012 U.S. Dist. LEXIS 104378 at **6-7 (N.D. Cal. May 3, 2012) (finding that trip guides hired by a California company on a per trip basis to conduct three-week trips in other countries were not entitled to minimum wage under the FLSA).


105 For an overview of the possible extraterritorial scope of U.S. employment laws, including those pertaining to antidiscrimination laws and laws prohibiting retaliation against employees who complain about allegedly unlawful practices of their employer, see LITTLER ON MULTINATIONAL EMPLOYERS.
§ 4.2 INDEPENDENT CONTRACTOR ISSUES: REMOTE & CROWDSOURCED WORKERS

It appears that, for the foreseeable future, the distinction between employee and independent contractor will continue to provide the threshold for the application of wage and hour laws like the FLSA. Consequently, a question that employers must consider is how the incorporation of robotics will affect workers’ classifications under this scheme. Again, consider the example of the individual who works remotely and whose job requires him or her to operate a robot located in another state. Is this individual more properly classified as an employee or independent contractor? While courts have yet to address this question, the answer will likely turn, as it has for decades, on the precise terms and conditions of the working arrangement, on a case-by-case basis.

Generally, a court will consider the following six factors when evaluating independent contractor status under the FLSA:

- the degree to which the worker is independent or subject to the control of the “employer” as to the manner in which the work was performed;
- the worker’s opportunities for profit or loss;
- the worker’s investment in the facilities and equipment of the business;
- the permanency and duration of the relationship between the business and the worker;
- the degree of skill required to perform the work in question; and
- the extent to which the services rendered are an integral part of the employing entity.¹⁰⁶

It is difficult to predict how the kinds of employment relationships that are emerging in robotic workplaces will be classified. Courts’ application of the independent contractor test is highly case-specific. The factors may be assigned different relative weights in different contexts, and by courts in different jurisdictions. Furthermore, to the extent that the definition of “employee” is rooted in the lay meaning of the word, its legal definition may change along with public consensus.

Notwithstanding the difficulty of making predictions, several factors of the FLSA test tend to support classifying more flexible employment arrangements, like in the out-of-state robotics operator example, as independent contractor relationships. Remote workers’ abilities to control when and where they work supports an inference that the business exercises relatively little control. To the extent that this increased flexibility allows workers to realize gains and losses by allocating time in their days as productively as possible, it also supports classifying remote workers as independent contractors. Thus, all else equal, some features of remote and flexible work arrangements facilitated by robotics render these positions more amenable to independent contractor classifications.¹⁰⁷

¹⁰⁶ MATTHEW BENDER 1-2 WAGES AND HOUR: LAW AND PRACTICE § 201A(1)(b).
¹⁰⁷ For further information about assessing such classifications, see https://www.littler.com/service-solutions/compliancehr.
As another example, crowdsourcing – a revolutionary model for integrating technology into workplace operations – also places unique strains on the traditional classification method. In the most basic sense, crowdsourcing is an Internet-based method of outsourcing. On crowdsourcing websites, such as Amazon’s Mechanical Turk, “[w]orkers are offered pay for completion of a series of Human Intelligence Tasks (HITs), easily fragmented activities (like transcription, categorization or tagging) in which computers” require human assistance. Notably, many other such platforms pay the workers in game pieces, bitcoin and the like. Crowdsourcing platforms are attractive because they have the potential to realize savings over alternative methods of outsourcing. There are many crowdsourcing websites, some laying claim to tens of thousands of HITs.

At first glance, crowdsourced workers appear to be volunteers or independent contractors. They perform discreet tasks for which they are paid by the piece, use their own equipment, work when and where they want, engage in work for multiple employers, and generally receive no additional training or instruction. However, the purportedly low average rate of pay on some platforms has incited opposition to classifying crowdsourced workers as independent contractors. According to one source, for example, “[e]stimates of what workers can earn on these crowdsourced tasks [on one crowdsourcing website] range from about $1.20 to $5 an hour without any benefits.” To the extent that the lower hourly pay estimate is accurate, it falls short of the FLSA-established minimum wage, as well as most state minimum wages. This pay rate could pose a substantial legal liability to businesses utilizing crowdsourcing, should these workers be deemed employees. In fact, in October 2013, a putative class action lawsuit was filed against a crowd-sourcing platform provider. Specifically, plaintiff claimed that he and his fellow crowdsourced workers were misclassified as independent contractors and were owed both minimum wage and overtime pay. That case settled in 2016 on a federal classwide basis for over a half-million dollars.

Even employers who hew to more traditional employment models should be aware of the impact of new technologies on their workers’ classifications. The FLSA exempts from its coverage, in addition to independent contractors, employees whose jobs require a nuanced knowledge of technology to allow them to perform tasks related to programming. As certain tasks become

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111 29 U.S.C. § 213(a)(17) exempts any employee “who is a computer systems analyst, computer programmer, software engineer, or other similarly skilled worker, whose primary duty is—

(A) the application of systems analysis techniques and procedures, including consulting with users, to determine hardware, software, or system functional specifications;
(B) the design, development, documentation, analysis, creation, testing, or modification of computer systems or programs, including prototypes, based on and related to user or system design specifications;
(C) the design, documentation, testing, creation, or modification of computer programs related to machine operating systems; or
automated, many positions will come to require a more sophisticated knowledge of computers. Unless the terms of the exemption change, employees in these positions may become exempt from FLSA coverage. Conversely, some jobs may come to require less discretion or specialized knowledge, causing employees to become nonexempt.

Because the standard for employee status is malleable and classifications difficult to predict, employers should approach contractor classifications with these factors in mind. To minimize risk of misclassifications, contracts should clearly provide that workers are independent contractors and indicate the opportunities they have to pursue additional work with other businesses.

§ 4.3 TAX IMPLICATIONS: INDEPENDENT CONTRACTORS
Center firms arose in the late 19th and early 20th centuries to aggregate assets for efficiency, and required large numbers of employees to do so. However, technologies such as crowdsourcing and telepresence, aided by today’s more efficient markets, are capable of handling transactions that previously were required to be handled within the firm.

Just as automation has driven down the number of employees required to perform tasks such as payroll and human resources, crowdsourcing will likely decrease the number of full-time employees needed to perform simple, discrete digital and manual tasks that cannot be performed by robots. This has the potential side effect of creating many firms that may keep their full-time employees to less than 50, thereby avoiding the health insurance mandates of the Affordable Care Act, and thus reducing the potential tax penalties or benefit costs associated with a larger workforce.

Remote access and crowdsourcing technologies allow for more rapid ramp up and down of workforces through the use of independent contractors. While the status of workers as employees or independent contractors does not, by itself, cause major problems for tax administration or the funding of social insurance other than unemployment, there is no question that an increase in numerous small “firms”—whether a single person or a few people—potentially makes employer-based tax administration less effective.

§ 4.4 “ON CALL” EMPLOYEES
Telepresence and telemanipulation will likely allow some jobs that currently entail substantial downtime to be performed by employees working remotely, on an as-needed basis. This could substantially reduce the amount of compensable time worked by eliminating the obligation to compensate employees for down-time formerly spent at the workplace. However, even if these jobs can be performed remotely in a manner that allows employees to devote the downtime to non-work-related pursuits, the time that employees are “on-call” may be compensable.

Under the FLSA and many analogous state laws, employers must compensate employees for periods of inactivity during which the employer’s requirement that employees be available if needed limits the employee’s discretionary use of time. For example, the U.S. Court of Appeals for the Tenth Circuit has held that employees’ “on call” responsibilities “to continually monitor automated alarms by pager and computer,” which required them to remain close to their homes,
were “sufficiently onerous” to require compensation under the FLSA. In contrast, courts usually do not find that merely requiring an employee to return a phone call or respond to a pager causes an employer to owe the worker for the time during which that requirement exists. Therefore, employers seeking to use robots and remote operation to lower payroll costs and other overhead by permitting employees to work remotely and as needed on a regular basis should structure remote workers’ “on call” time to minimize any restrictions on how the employees use this time. Placing restrictive requirements on employees could expose them to claims under state and federal law.

§ 4.5 Privacy Concerns

Telepresence and telemanipulation technologies are primarily intended to allow employees to work remotely from the location where tasks are being performed by a robot or other technology; for example, a drone pilot at Amazon headquarters flying a robotic aircraft to deliver holiday presents for the tardy shopper. The remote robot, using cameras, video and audio recording devices, and other sensors, can collect information necessary for the employee to perform his/her job functions. This technology raises the risk that the employee or the robot will “over-collect” information in a way that could violate individual privacy rights.

Under the ADA, employers generally are prohibited from requiring employees to submit to inquiries about their medical condition or their disability unless the inquiry is “job-related and consistent with business necessity.” In its “Enforcement Guidance on Pre-Employment Disability-Related Inquiries,” the EEOC interpreted this prohibition to extend to an inquiry that is likely to elicit information about a disability even though the inquiry does not on its face ask about a disability. For example, an employer’s review of data indicating a tremor could fall under the EEOC’s interpretation of a disability-related inquiry, because a tremor could indicate a stroke or Parkinson’s disease. Notably, there is no consent exception to the ADA’s general prohibition on disability-related inquiries. The ADA also prohibits employers from making employment decisions based on disabilities unrelated to job function. Consequently, even reviewing apparently innocuous information that might not be considered a disability-related inquiry under the ADA, such as data from a telemanipulation device indicating low muscle strength on the part of the employee/operator could create risk for the employer. If the employer discharged the employee after reviewing the report, the employee might allege that the employer terminated the employee because of a disability or perceived disability, even if the employer actually terminated the employee for a legitimate reason.

A robotic technology’s audio and video recording functionality also may over-collect or collect information in a way that is not lawful. The most serious risk in this category flows from federal

113 See, e.g., Reimer v. Champion Healthcare Corp., 258 F.3d 720, 725 (8th Cir. 2001); Dinges v. Sacred Heart St. Mary’s Hosps., 164 F.3d 1056, 1059 (7th Cir. 1999); Ingram v. County of Bucks, 144 F.3d 265, 269-70, (3d Cir. 1998); Paniagua v. City of Galveston, 995 F.2d 1310, 1317 (5th Cir. 1993); Norton v. Worthen Van Serv., Inc., 839 F.2d 653 (10th Cir. 1988).
117 42 U.S.C. § 12112(a)
and state wiretap laws. These laws prohibit the interception of communications without consent, including the audio recording of conversations. Individuals in a location subject to the use of telepresence technology may not realize that the robotic technology is recording their communications, let alone consent to such recordings. Moreover, recording audio without the consent of all those present could violate wiretap laws of 12 states if individuals being recorded would not expect their conversations to be recorded. Wiretap laws generally provide tough criminal and civil penalties. Under the Federal Wiretap Act, for example, an aggrieved party can recover a minimum award of $10,000 or $100 per day of violation — whichever is greater, or, actual damages, plus punitive damages, attorneys' fees and costs.

Moreover, video recording an employee without his or her consent when that employee has a reasonable expectation of privacy may violate the employee’s common law and statutory rights of privacy. Courts have generally held that employees do not have a reasonable expectation of privacy in work spaces shared by other employees, but that they do have such an expectation in bathrooms and changing areas. This analysis becomes more complicated when the employee is working in his home, in which case the line between work space and private space is blurred. Employers should consider reducing the risk of liability by generally obtaining consent from employees for video recording in a remote work location.

Video recording also could collect information about an employee’s membership in a protected category. For example, a video recording of the employee’s home office might indicate that he is a practicing Muslim due to the presence of a prayer rug and Quran. If the employer took an adverse action against the employee, even for a legitimate reason, the employee might allege discrimination based on his religion.

121 Compare Acosta v. Scott Labor L.L.C., 377 F.Supp.2d 647, 649, 652 (N.D. Ill. 2005) (holding for purpose of common law intrusion tort that employer secretly videotaped by disgruntled employee in common, open, and exposed area of workplace lacked privacy), with Trujillo v. City of Ontario, 428 F.Supp.2d 1094, 1099–100, 1103, 1119–22 (C.D.Cal.2006) (recognizing that employees have common law and constitutional privacy interests while using locker room in basement of police station, and can reasonably expect that employer will not intrude by secretly videotaping them as they undress), and Doe by Doe v. B.P.S. Guard Services, Inc., 945 F.2d 1422, 1424, 1427 (8th Cir.1991) (similar conclusion as to models who were secretly viewed and videotaped while changing clothes behind curtained area at fashion show).
122 Employers that engage in video recording in California should be particularly cautious because several courts have construed the state’s all-party consent wiretap law to encompass video recordings even when the recording captured no voice. In California v. Gibbons, the court ruled that videotaping sexual intercourse without consent violated California’s wiretap law. 215 Cal. App. 3d 1204 (1989). The court reasoned that sexual intercourse is a form of communication protected by the wiretap law. 215 Cal. App. 3d 1204. Some California courts have rejected the extension of the state’s wiretap law to video-only recording, but several courts have followed Gibbons. See, e.g., People v. Nakai, 107 Cal. Rptr. 3d 402 (Cal. App. 4th Dist. 2010) (arguably expanding on Gibbons by holding that sending a photograph over the Internet to another person qualified as a communication); People v. Nazary, 191 Cal. App. 4th 727 (Cal. App. 4th Dist. 2010) (citing Gibbons approvingly). But see People v. Drennan, 84 Cal. App. 4th 1349, 1354 (Cal. App. 3d Dist. 2000) (The “statute is replete with words indicating the Legislature’s intent to protect only sound-based or symbol-based communications.”).
These technologies may collect information that the employer has a legal obligation to safeguard. As noted above, telemanipulation technologies may collect health information. A telepresence screen may unwittingly capture and store private information, such as images of driver’s license numbers and financial account numbers. Many states require organizations to safeguard such personal information.\(^{123}\) If the information is compromised, the employer may have to issue breach notifications and provide identity theft monitoring.\(^{124}\) The employer should vet the information security program of a service provider that controls the telepresence technology and stores information collected by it and obtain contractual assurances that require the service provider to maintain those safeguards. Some states have statutes that require such contractual assurances, but even in states without statutory requirements, obtaining safeguards by contract for sensitive personal information is a “best practice.”\(^{125}\)

U.S. courts have generally recognized that employees have a diminished expectation of privacy in the workplace. In *O’Connor v. Ortega*, the U.S. Supreme Court held that a reasonable expectation of privacy in an office may be balanced against the legitimate interests of the employer in conducting a search.\(^{126}\) However, this balancing test becomes more challenging when the employee is virtually present in the office but is physically in his or her home. In that case, the employee’s privacy interest in his or her home will likely weigh more heavily against the employer’s interest in conducting the search.

A related risk is the collection of location information from employees with whom the employer connects through telepresence technologies. In *U.S. v. Jones*, the Supreme Court held that continuous tracking of a vehicle’s location for one month constituted an unreasonable search in violation of the Fourth Amendment, even though the vehicle’s location was in public view at any particular point in time.\(^{127}\) Five justices found a protected privacy interest in the pattern of private activity that can be derived from continuous location tracking notwithstanding the public nature of any particular data point.\(^{128}\) These privacy issues will continue to emerge as technology advances and as the U.S. Supreme Court rules on the challenges technology imposes on current laws.\(^{129}\)

Employers can reduce these risks in several ways. The robotics technology itself may provide functionality that helps to reduce the risk of over-collection. Employers can train their workforce on how to use this functionality. Providing notice and obtaining consent can also go a long way.

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\(^{123}\) See, e.g., CAL. CIV. CODE § 1798.81.5; TEX. REV. CIV. STAT.. ANN. BUS. & COM. § 521.052.

\(^{124}\) See, e.g., CAL. CIV. CODE § 1798.82.

\(^{125}\) See, e.g., OR. REV. STAT. 646A.622 (2)(d); 201 Mass. Code Regs. 17.03.


\(^{127}\) 132 S. Ct. 945, 946 (2012).

\(^{128}\) 132 S. Ct. at 946 .

\(^{129}\) While this case only held that police are barred from searching smart phones when they arrest someone without a warrant, the ruling has been called “the Brown v. Board of Education of privacy.” The justices recognized just how much private information and data is held on such devices as cell phones. See Riley v. California, 134 U.S. 2473 (2014); Neal Katyal, Opinion: Supreme Court swings in favor of criminal defendants, CONCORD MONITOR, July 15, 2015, available at http://www.concordmonitor.com/home/17603291-95/opinion-supreme-court-swings-in-favor-of-criminal-defendants ; Adam Liptak, Major Ruling Shields Privacy of Cellphones, N.Y. TIMES, June 25, 2014, http://www.nytimes.com/2014/06/26/us/supreme-court-cellphones-search-privacy.html?_r=0 (“‘This is a bold opinion,’” said Orin S. Kerr, a law professor at George Washington University. “It is the first computer-search case, and it says we are in a new digital age. You can’t apply the old rules anymore.””)(internal quotes added).
towards reducing privacy risk. Effective notices will require a deep understanding of the technology’s functionality. Management must partner with human resources, the information technology department, and the providers of the technology to fully understand the data flows: what information is collected, how it is used, and with whom it is shared. The privacy risk is manageable as long as the employer makes an effort to understand the risk and how the technology can be used to reduce it.

§ 5 ARTIFICIAL INTELLIGENCE & COGNITIVE COMPUTING SYSTEMS (CATEGORY FOUR)

§ 5.1 WORKPLACE PRIVACY

§ 5.1(a) United States

Cognitive computing systems learn and interact with people to extend what humans or machines can do on their own. IBM’s Watson supercomputer is the iconic example of this transformation. Having defeated two human Jeopardy champions, Watson is now being “tutored” by Memorial Sloan-Kettering, the world’s oldest and largest private cancer treatment center, to help oncologists diagnose and treat cancer. Watson can listen to and process information while attending patient visits; process up to 60 million pages of text per second; and understand “natural language.” Watson also has the ability to express doubt. When making a diagnosis or treatment recommendation, the supercomputer usually pairs a level of confidence to each issued series of possibilities.130 IBM has also created the “IBM ‘Watson’ Engagement Advisor,” which has a self-service mode that permits customers who contact call centers to interact directly with Watson by typing questions into a web browser or by speaking to a speech recognition program.131 In fact, there is evidence to suggest that call center operations that were once outsourced to India and the Philippines are returning to the United States, only to be handled by robots and artificial intelligence systems such as Watson.132

While Watson may not be quickly introduced into most workplaces, many other forms of “Information Age” artificial intelligence systems likely will. Some companies, including several start-ups and Google, are developing personal assistants in the form of smart phone apps that use predictive search techniques to anticipate what users need before they ask for it. Such predictive, “smart,” workplace technologies will likely gather and analyze vast amounts of information about employees. To predict what an employee would need, a personal assistant, for example, might collect information about what terms the employee enters into web searches, the directions they request from map applications, and when and what they order for lunch. Artificial intelligence could potentially analyze this data to determine the employee’s productivity, health issues, buying patterns, common mistakes, and a host of other traits. Collecting and analyzing this information already poses legal risks to employers, and legal risks are likely to increase due to the steady expansion of privacy legislation in the United States and around the world.

In support of wellness programs, for example, employers may require employees to use smart phone applications, like MyFitnessPal and Azumio, to track their medical information, such as blood pressure, weight, heart rate, activity counters, and stress levels. The ADA allows employers to conduct voluntary medical examinations as part of an employee health program, such as a voluntary wellness program. While the EEOC interpretation acknowledges that the ADA allows for voluntary wellness programs, the agency emphasizes that such programs must be truly “voluntary." To be “voluntary,” employees must neither be required to participate nor penalized for nonparticipation in the wellness program.

Even if the wellness program is sufficiently voluntary and an employee consents to participate, any information collected that could reveal a disability must be handled in accordance with strict requirements imposed by the ADA. Employers must:

- maintain such information separately from the employee’s personnel file;
- provide access only to human resources or benefits employees with a need to know and not to supervisors or other employment decision-makers;
- not use the information for employment purposes; and
- not disclose the information to any non-agent third party, with the exception of first responders and agencies empowered to enforce the ADA.

To keep the health information separate from decision makers, employers offering voluntary wellness programs subject to the ADA often rely on a third-party service provider to administer the program. Employers should also consider delegating the administration of health tracking applications to such service providers to reduce ADA-related risk.

Private sector employers are also increasingly using global positioning satellite (GPS) systems to track their employees’ whereabouts. As five Supreme Court justices found in U.S. v. Jones that continuously tracking an employee, even when the employee is in public view, could violate the employee’s privacy. Employers should provide notice to employees that technology is tracking their location, thereby allowing employees to deactivate location tracking when they are “off the clock” and to avoid locations that would reveal private information about them when they are being tracked.

Technologies that collect biometric information, such as fingerprints or facial scans, also present hidden risks for employers. An employer might use biometric data, for example, to authenticate access to the employer’s computer system or to a highly secure area of the employer’s facilities. At least two states impose strict limitations on the collection of biometric identifiers. Illinois and

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135 EEOC, EEOC Enforcement Guidance on Disability-Related Inquiries and Medical Examinations of Employees Under the Americans with Disabilities Act (ADA), EEOC Notice No. 915.002, at Q&A 22 (July 27, 2000).
Texas require that an individual consent to the capture of his or her biometric identifier for a commercial purpose.\textsuperscript{139} The biometric identifier in these states must also be protected as confidential information and destroyed within a reasonable time.\textsuperscript{140}

In a unionized workplace, the collection of data about employees could be a mandatory subject of collective bargaining. Failing to bargain, or violating the collective bargaining agreement by mishandling the data, could lead to an unfair labor practices charge.

Finally, California’s Attorney General has taken the position that app developers and platform providers are required to comply with California’s On-Line Privacy Protection Act (CalOPPA), which requires that commercial web site operators post a privacy policy on their web site with respect to mobile apps.\textsuperscript{141} CalOPPA does not appear to apply to employers that develop or provide mobile apps for business purposes, only because the statute applies only to online services offered for sale or lease by consumers “for personal, family, or household purposes.”\textsuperscript{142} However, CalOPPA arguably would apply if an employer were to sell mobile apps to employees for personal purposes, such as to participate in a wellness program.

While these legal risks are somewhat peripheral, the potential for damage to employee morale resulting from the use of cognitive computing systems in the workplace is very real. Many employees likely would balk at participating in a program that analyzes their data, regardless of its legal justification, unless they fully understood how the information collected about them would be used. Others might simply be daunted by the novelty of the technology. Employee resistance could undermine the efficiencies the technology is intended to achieve.

To mitigate these employee relations concerns, employers should consider applying the following three key lessons from past efforts to introduce new technologies into the workplace:

1. Use should be fully voluntary, at least at first. Other employees will be more likely to embrace the technology after witnessing the benefits obtained by those employees who volunteer.

2. Employers should provide robust notice to wearers that explains, at minimum, the following:
   - how the technology works;
   - how the technology will enhance employees’ performance or make their work easier to accomplish;
   - the information that is collected, to whom it will be disclosed, how it will be used, and how long it will be retained; and
   - how access to any information collected will be controlled and any other safeguards for the information.

\textsuperscript{139} 740 ILL. COMP. STAT. 14/15(b); TEX. BUS. & COM. CODE § 503.001(b).
\textsuperscript{140} 740 ILL. COMP. STAT. 14/15(e); TEX. BUS. & COM. CODE § 503.001(c).
\textsuperscript{142} CAL. BUS. & PROF. CODE § 22577(d).
To help reduce the risk of inadvertently disclosing information that employees might not want revealed, information collected by the wearable device should be de-identified, if possible. In addition, the employer should consider retaining the information for the shortest possible period necessary, especially if the data could be discoverable in civil litigation.

§ 5.1(b) Outside the United States

Although a detailed discussion of the international risks of cognitive computing technology is beyond the scope of this article, it is worth noting that employers must exercise particular caution when analyzing the data of non-U.S. employees, especially employees who reside in the European Union. All countries in the European Union have enacted laws to implement the European Union Data Protection Directive, (the “Directive”) which tightly regulates the processing of personal data. Moreover, in 2018, a generally stricter data protection law, the European Union’s General Data Protection Regulation (GDPR) will come into effect. Many other countries have adopted data protection laws similar to those of the European Union.

The Directive and the GDPR are broad. For instance, “personal data” is defined in the Directive as: “any information relating to an identified or identifiable natural person (‘data subject’); an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity.” This definition covers a much wider array of information than most U.S. legal definitions of personal information, which limit protection to specific data points, such as Social Security numbers or protected health information subject to HIPAA (Health Insurance Portability and Accountability Act). In the context of data analytics, the broader definition is particularly noteworthy because categories of information that generally are not protected under U.S. law, such as performance appraisals, records of discipline, and compensation information, are protected under the Directive and the GDPR.

Critically, the Directive and the GDPR forbid decisions based on the automated processing of personal data except in certain circumstances. Making decisions based on data-driven analysis of employee personal data could potentially violate this prohibition. Given the restrictions in these countries, U.S. multinationals likely will have more difficulty introducing cognitive computing technologies that process employee personal data into the workplace in the E.U. and in other jurisdictions with similar data protection regimes.

§ 5.2 ANTI-DISCRIMINATION LAWS

Several federal laws prohibit discrimination based on an individual’s protected classes, including Title VII of the Civil Rights Act of 1964 and the Civil Rights Acts of 1866 and 1871, which

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144 A few examples of non-E.U. countries with broad data protection laws are: Australia (The Privacy Act 1988 (Cth)); India (Information Technology Act, 2000, No. 21 of 2000, as amended by Information Technology (Amendment) Act, 2008 and Information Technology (Reasonable Security Practices and Procedures and Sensitive Personal Data or Information) Rules, 2011, G.S.R. 313(E) (Apr. 11, 2011)); Mexico (Ley Federal de Protección de Datos Personales en Possesión de los Particulares, 5 de Julio de 2010); and South Korea (Personal Information Protection Act, Act No. 10465, Mar. 29, 2001).


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prohibits discrimination based on an individual’s race, color, religion, sex and national origin. Many state laws prohibit discrimination based on these and many other categories. These laws prohibit employers from using an individual’s race or other protected category as a basis for any employment decision.

Pre-programmed or employer-programmed robotic systems could operate with inherent biases or limitations.\(^\text{147}\) For example, technology that operates by voice commands could present challenges for individuals who do not speak English as their first language. Employers could minimize their exposure by customizing advanced robotic systems to meet such challenges. In addition, employers can provide targeted training to employees in a protected class in order to mitigate such issues.

Businesses that use their websites and/or the Internet to search artificial data to identify and target – or eliminate – certain groups of people based on their demographics, preferences, locations and protected classes, should be aware of the risks related to disparate impact. Such impact on members of a protected class are unlawful even if the discrimination was not intended.

§ 5.3 eDISCOVERY & BIG DATA

§ 5.3(a) The eDiscovery Data Deluge
Technology has already significantly impacted how discovery is conducted in today’s digital age. There is no dispute that data volumes implicated in litigation have exploded during the past decade. A sampling of comments submitted to the Civil Rules Committee on Rules of Practice and Procedure of the Judicial Conference of the United States in support of then-proposed amendments to the Federal Rules of Civil Procedure to address eDiscovery preservation and sanctions are illustrative:  

- A large technology company reported the following statistics regarding electronic data for its “average” case:
  - it preserves the equivalent of over 48 million pages of written documents;
  - it collects the equivalent of about 13 million pages of written documents; and
  - it reviews the equivalent of over 645,000 pages of written documents.\(^\text{149}\)

\(^\text{147}\) Walter Frick, *When Your Boss Wears Metal Pants*, 93 HARV. BUS. REV. 84 (June 2015) (“Humanoid robots can create interpersonal issues in the workplace. For instance, an employee expressed jealously after a humanoid robot complimented a colleague for being in the office all the time and therefore being a hard worker.”).


\(^\text{149}\) Microsoft Corp. Comment, Aug. 31, 2011, pp. 4-5.
• A global pharmaceutical company reported that in one products liability multidistrict litigation (MDL), it produced over 90 million pages of data/documents, while in another MDL matter it produced over 50 million pages of data/documents.150

• Another global pharmaceutical company reported that for the 12-month period ending October 1, 2013, it collected roughly 1 billion pages from 3,000 custodians in connection with as many as 60 ongoing litigation matters. Of the 1 billion pages collected, approximately 140 million pages were identified as potentially responsive to discovery requests, roughly 25 million pages were produced, of which 5.5 million required at least one redaction.151

Simply put, it has become increasing challenging for humans to effectively analyze and review the staggering volume of data that comes with 21st century litigation without help from machines.

§ 5.3(b) Machines to the Rescue

As a result, industry-standard technologies have emerged to help lawyers collect, search, protect and produce information in litigation. Those computer-based tools save legal professionals hundreds of thousands of hours and the related costs that would be required to review and analyze the same volume of data without help from technology. In particular, those computer-based tools allow legal professionals to:

• virtually instantaneously run searches applying keywords and Boolean search techniques;

• significantly reduce the volume of data by electronically filtering out system files, duplicates, nonrelevant file types, irrelevant e-mail domains and by applying specific date parameters based upon issues in a particular case;

• quickly perform mass- or bulk-tagging of evidence that matches certain criteria;

• automate quality assurance activities by electronically categorizing potentially privileged and confidential data that may require closer scrutiny, helping to eliminate or limit the inadvertent production of privileged information;152 and

• perform advanced concept searching using mathematically based, advanced analytics that rely upon patented Latent Semantic Indexing and/or rules-based classification

151 Pfizer Inc. Comment, Nov. 5, 2013, p. 4.
152 For example, a common Presumptive Privilege Protocol uses key words that are variations of common terms that are used by attorneys and their staff and/or associated with privileged or confidential documents to identify and flag “Presumptively Privileged” documents/data. Once identified, those documents/data can be targeted for closer scrutiny via visual cues (i.e., auto-highlighting in bright red) that are automatically created within the review platform and/or by automatically checking the “privilege” box/tag in the substantive review template. A variation of the Presumptively Privileged query can also be run on production sets of documents/data before they are produced, to ensure that no potentially privileged documents are being produced to an adversary.
processes that identify how and where ideas and concepts within the data intersect with similar ideas and concepts.\textsuperscript{153}

\section*{§ 5.3(c) Technology Assisted Review (TAR)}

\textit{Predictive Coding}, also referred to as Technology Assisted Review (TAR), takes computer-based eDiscovery one step further. In short, TAR involves reviewing a relatively small percentage of documents and then—using machine learning technology—extrapolating those results to all of the documents in a data set (e.g., in a case that has 1,000,000 documents, reviewing a sample of 30,000 for responsiveness, and then using a computer algorithm to apply those results across the remaining 970,000 documents). This is the next horizon for analyzing Big Data in litigation.

TAR tools generally start the process by selecting a random sample of documents\textsuperscript{154} and presenting these to a Subject Matter Expert (SME). The SME must be someone who knows the factual background of the case and trial strategy, and is capable of making final, binding decisions about which documents are relevant to the case.

After the SME has reviewed and coded several rounds of sample documents as “Responsive” or “Not Responsive,”\textsuperscript{155} the TAR tool uses its conceptual search feature to compare the sets of sample documents (those coded as “Responsive” and “Not Responsive”) against all the other documents in the case. The TAR tool then scores each document in the dataset based on its similarity to the documents coded by the SME as “Responsive” and “Not Responsive.” The TAR tool uses those scores to predict how the SME would code the remainder of the documents in the case, without having the SME review the remaining documents. In other words, the TAR tool “learns” how the SME would code the un-reviewed documents in the dataset and analyzes the accuracy of its predictions from earlier rounds.

After each round, the review team analyzes the accuracy of the tool’s predictions and makes

\begin{itemize}
\item Many of these types of automated procedures are not possible when evidence is handled via a manual review without the aid of technology. Moreover, from a defensibility/quality-control standpoint, unlike a manual review that is conducted without the aid of technology, these computer-based tools electronically log and track all activities so there is an auditable trail of every decision that is made about every document (including when it was designated responsive, not-responsive, privileged, confidential, etc., and who did so) as well as precisely what data is produced to an adversary, when and in what format.

\item In a Predictive Coding protocol that was approved by a court in 2015, the parties defined the term “Statistically Valid Sample” to include:

\begin{equation}
 n = \frac{X^2 * N * P * (1-P)}{(ME^2 * (N-1)) - (X^2 * P * (1-P))}
\end{equation}

where ME is the margin of error; \(X\) is the Confidence Level (1.96 for a 95\% Confidence Level); \(P\) is judgment of richness, \(N\) is the population and \(n\) is sample size.

Where richness is not reasonably estimable, 0.5 may be used. Based on a Confidence Level of 95\%, richness of 0.5, a Population of 1,000,000, and a margin of error of 2\%, the resulting sample size is 2,395 documents.


\item At this stage in their development, most TAR tools are designed to identify documents as “Responsive” or “Not Responsive.” Thus, most TAR tools do not predict for responsiveness to specific issues or for privilege.
\end{itemize}
decisions about whether additional learning rounds are necessary. The number of rounds, and the size of the sample datasets involved, varies among vendors and tools and is complicated by a number of factors specific to the lawsuit and that particular data set.\footnote{156}{Some vendors have developed tools that continue the “learning” process once the initial learning rounds are completed. These tools are referred to as “Continuous Active Learning” or “CAL.” See Rio Tinto PLC, 306 F.R.D. at 128.}

Regardless of the measure used, once the case team concludes the learning rounds are completed and the TAR tool is adequately “trained,” the TAR tools apply that learning by applying decisions that have been made during the “training” rounds on the seed sets of documents to the entire data set. After this is done, all the documents in the data set will be grouped into one of three categories: (1) “Responsive;” (2) “Not Responsive;” and (3) “Undetermined.” At this point, a decision must be made about what to do with each group, and there is no clear industry consensus about how to proceed. The most typical approach is:

- First, the “Responsive” documents are reviewed by junior case team members subject to an appropriate review protocol to confirm their “Responsive” nature, identify and tag privileged documents, and code for confidentiality per the applicable Protective Order in the case.

- Next, the “Undetermined” documents must be reviewed in some manner, as the TAR tool cannot suggest the relevance of the group. This group of documents includes any documents that were excluded from the TAR process at the outset.\footnote{157}{Most TAR tools have an important limitation: they cannot analyze all of the files in a dataset. For example, spreadsheets that consist mainly of numbers, scanned documents or image files with no searchable text, and extraordinarily short or long documents are excluded from some vendors’ processes. In addition, because of the way the conceptual search tools analyze documents, some of the content of documents may not be included in the analysis. For example, when indexing documents for a TAR analysis (which is a foundational requirement), some tools do not index basic things like the “To,” “From” and “Date” fields of emails. Those fields of data may be critical to determining responsiveness or otherwise analyzing the merits of a case and the inability to index them may impact the efficacy of a TAR process. For this reason, it is critical to have a deep understanding of the functionality (and limitations) of the TAR tool that is used in a particular case.}

- Finally, developing case law suggests that the “Not Responsive” group should be sampled using the same statistical sampling techniques as discussed above, and reviewed (subject to an appropriate review protocol) to determine if “Responsive” documents were miscategorized as “Not Responsive” by the TAR tool.

Eventually, all documents that have been tagged as responsive by the trial team and that are not privileged are produced (along with appropriate confidentiality designations, redactions and bates designations).

§ 5.3(d) \textit{New Legal Challenges Presented by Use of Machine-Learning Tools in Litigation} With the advent of these technologies come new legal challenges. Naturally, obligations that apply to making relevancy determinations in litigation (that are controlled by the Federal Rules of Civil Procedure — or a state equivalent—and the rules of ethics) are very different from conducting a run-of-the-mill search in Google, or as one judge observed:
Searching for an answer on Google (or Westlaw or Lexis) is very different from searching for all responsive documents in the … eDiscovery context.158

Under the Federal Rules of Civil Procedure, discovery is self-executing and a party generally does not have to defend what it has done to locate and produce responsive documents or “prove” the reasonableness of its production.159 Those rules also are the foundation for “The Sedona Principles: Best Practices, Recommendations & Principles for Addressing Electronic Document Production”160 Principle 6 (“Principle 6”), which provides “[r]esponding parties are best situated to evaluate the procedures, methodologies, and technologies appropriate for preserving and producing their own electronically stored information.”161 The comments to Sedona Principle 6 explain it is the producing party’s responsibility to identify information responsive to discovery requests and to produce relevant, non-privileged information.162 The comments also caution “[a] producing party should not be required to undertake more heroic efforts merely because the party seeking discovery is suspicious of the efforts undertaken by the producing party.”163 Sedona Principle 6 also makes clear that responding parties—not their adversaries or the courts—are in the best position to choose the procedures, methodologies and technologies for preserving and producing their own ESI.164 Sedona Principle 6 has been cited with approval by numerous courts.165

Consistent with Sedona Principle 6, well-established case law makes clear that an adversary does not have the right to challenge decisions a party has made about how it will respond or has

159 Cf. Fed. R. Civ. P. 26(f) (parties required to meet and confer about discovery); 26(g)(1)(B) (counsel’s certification of discovery requests and responses); 34(b)(2)(A) (parties directed to respond to discovery requests); 34(b)(2)(E)(1) (specifying form of production absent agreement).
160 Available at https://thesedonaconference.org/publications. The Sedona Principles were first published in March 2003. Since that time, several updates to the Commentaries to the Principles have been issued to address developments in the case law, as well as amendments to the Federal Rules of Civil Procedure and several state civil procedure rules. Principle 6 has, however, remained fundamentally unchanged.
A more thorough discussion of the role that Sedona has played in the development of the field of eDiscovery can be found below.
164 See Hon. James C. Francis, IV, Judicial Modesty: The Case for Jurist Restraint in the New Electronic Age, L. TECH. NEWS (Feb. 2013) (no Federal Rule “has given judges the authority . . . to dictate to the parties how or where to search for documents.”).
165 See, e.g., Kleen Prods. L.L.C. v. Packaging Corp. of Am., 2012 U.S. Dist. LEXIS 139632, at *5 (N.D. Ill. Sept. 28, 2012) (observing that under Sedona Principle 6 “[r]esponding parties are best situated to evaluate the procedures, methodologies, and techniques appropriate for preserving and producing their own electronically stored information”); Ford Motor Co. v. Edgewood Props., Inc., 257 F.R.D. 418, 427 (D.N.J. 2009) (“The Sedona Principles wisely state that it is, in fact, the producing party who is the best position[ed] to determine the method by which they will collect documents. . . . absent an agreement or timely objection, the choice is clearly within the producing party’s sound discretion.”); Cache La Poudre Feeds, L.L.C. v. Land O’Lakes, Inc., 244 F.R.D. 614, 628 (D. Colo. 2007) (“in the typical case, “[r]esponding parties are best situated to evaluate the procedures, methodologies, and technologies appropriate for preserving and producing their own electronic data and documents.”
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responded to discovery (including the procedures it will follow or has followed), unless and until the adversary can demonstrate a deficiency in a discovery production.166

Despite those well-settled rules, case law and principles, some requesting parties have claimed that when a producing party uses machine-learning tools like TAR, that party must disclose the fact it is using TAR in the first instance, the specifics of its methodology (including the confidence level and margin of error), and in some instances share the “seed sets” used to train the TAR tool (including non-responsive documents) with their adversary. Those arguments are often premised on a misapplication of the holdings of seminal cases that have addressed machine learning via the use of TAR in litigation. The seminal TAR case of Da Silva Moore v. Publicis Groupe & MSL Group167 is often mis-cited for this proposition.

In Da Silva Moore, Magistrate Judge Peck judicially endorsed a party-negotiated predictive coding protocol. Many litigants and judges have mis-cited Da Silva Moore for the proposition that the protocol in that case is one that parties must follow when using predictive coding, or that courts can or should order the parties to follow when using predictive coding, including the exchange of training or non-responsive documents. If parties in a case cooperatively agree to such a protocol and seek the court’s approval of it, Da Silva Moore encourages judicial endorsement of such a party-agreed protocol. However, if parties cannot agree on a protocol, or

166 See, e.g., In Re Ford Motor Co., 345 F.3d 1315, 1317 (11th Cir. 2003) (vacating order allowing discovery of certain databases where there was no factual finding of “some non-compliance with discovery rules by [the responding party]”); Orillaneda v. French Culinary Inst., 2011 U.S. Dist. LEXIS 105793, at *27 (S.D.N.Y. Sept. 19, 2011) (defendant moved for a protective order against plaintiff’s discovery requests, which sought production of a list of “backup sets,” litigation hold notices, organizational charts for defendant’s IT department, a graphic representation of defendant’s computer network, disaster recovery and document retention plans, descriptions of locations used to store emails and word processing documents and information concerning computer hardware and applications used by certain individuals. The court granted the protective order explaining: “[B]ased on the present record, I find that plaintiff’s requests for discovery of defendant’s search procedures and information systems do not seek relevant information. Discovery concerning these areas may be appropriate in certain circumstances, but it is not appropriate in this case unless and until plaintiff makes a specific showing that defendant’s production is deficient.”); Steuben Foods, Inc. v. Country Gourmet Foods, L.L.C., 2011 U.S. Dist. LEXIS 43145, at **19-20 (W.D.N.Y. Apr. 21, 2011) (“[G]iven that [defendant] has failed to establish that Plaintiff destroyed any relevant evidence even in the absence of a written litigation hold, [defendant’s] request for sanctions based on spoliation is unwarranted. Nor will the court grant [defendant’s] alternative request to conduct discovery directed to Plaintiff's document preservation actions in this case. Given the lack of colorable factual basis for [defendant’s] spoliation motion, such request amounts to one seeking to initiate a ‘fishing expedition’ based on mere speculation.”); Hubbard v. Potter, 2008 U.S. Dist. LEXIS 60 (D.D.C. Jan. 3, 2008) (Facciola, M.J.) (rejecting a request for additional discovery because speculation that other electronic documents existed does not overcome a Rule 26(g) certification); Scotts Co., L.L.C. v. Liberty Mut. Ins. Co., 606 F. Supp. 2d 72 (S.D. Ohio 2007) (mere suspicion that defendant was withholding electronically stored information is an insufficient basis to permit discovery on discovery, including forensic searches of defendant’s computer systems, network servers, and databases). See also Hanan v. Corso, 1998 U.S. Dist. LEXIS 11877, at *23 (D.D.C. Apr. 24, 1998) (Facciola, M.J.) (“Plaintiff seeks ‘all documents relating to [defendant company’s] previous efforts to respond to [plaintiff’s] request for production in this case.’ Plaintiff therefore wants discovery about discovery…. [P]laintiff cites no authority for the proposition that the Federal Rules of Civil Procedure contemplate that discovery is itself a fit subject for discovery. To the contrary, discovery is only permitted of information which is either relevant or likely to lead to admissible evidence. Fed. R. Civ. P. 26(b)(1). Plaintiff never explains why discovery about discovery meets that standard, no matter how liberally it is construed, nor any legal authority for the proposition that the federal courts deem the discovery process itself a fit subject for additional discovery.”).


168 See discussion of The Sedona Conference Cooperation Proclamation, below.
whether predictive coding is an appropriate procedure for one or both of the parties to use to respond to discovery, *Da Silva Moore* does not stand for the proposition that a court can require a party to follow a certain procedure (including the exchange of training or non-responsive documents) and/or to use predictive coding to respond to discovery, especially if the party is objecting to such a procedure.\footnote{Accord Christopher Boehning & Daniel Toal, *No Disclosure: Why Search Terms Are Worthy of Court’s Protection*, L. TECH. NEWS (Dec. 9, 2013) (“Forced cooperation, in the form of directing a party to turn over . . . search terms or information related to predictive coding seeding [] is . . . a dangerous dance . . . .”); Sean Grammel, *Protecting Search Terms as Opinion Work Product: Applying the Work Product Doctrine to Electronic Discovery*, 161 U. PA. L. REV. 2063 (2013) (scholarly analysis of why search terms deserve protection from compelled disclosure as opinion work product).}

Stated another way, while a producing party may *choose* to disclose the fact that it plans to use a TAR methodology, the workflow and related intricacies of the methodology itself, and/or in limited instances seed sets of documents, there is no legal requirement under the Federal Rules of Civil Procedure or otherwise mandating such disclosure. For example, in *In re Biomet M2a Magnum Hip Implant Products Liability Litigation*, the defendant used key word searches to narrow the initial universe of documents, then applied predictive coding to the remaining documents.\footnote{2013 U.S. Dist. LEXIS 84440 (N.D. Ind. Apr. 18, 2013).} The plaintiffs, who sought a more active role in the production, objected to that approach and wanted the defendant to re-run predictive coding against all of the original set of 19.5 million documents. Plaintiffs also demanded they work jointly with the defendants to train the predictive coding tool. The court rejected plaintiffs’ request, holding:

> The issue before me today isn’t whether predictive coding is a better way of doing things than keyword searching prior to predictive coding. I must decide whether [defendant’s] procedure satisfies its discovery obligations and, if so, whether it must also so what [plaintiff] seeks. What [defendant] has done complies fully with the requirements of Federal Rules of Civil Procedure 26(b) and 34(b)(2). I don’t see anything inconsistent with the Seventh Circuit Principles Relating to the Discovery of Electronically Stored Information. Principle 1.02 requires cooperation, but I don’t read it as requiring counsel from both sides to sit in adjoining seats while rummaging through millions of files that haven’t been reviewed for confidentiality or privilege.\footnote{2013 U.S. Dist. LEXIS 84440, at **5-6.}

In a subsequent opinion in the same case,\footnote{2013 U.S. Dist. LEXIS 172570 (N.D. Ind. Aug. 21, 2013).} plaintiff sought to compel defendant to identify “seed” documents used to train the predictive coding tool. The court held that Federal Rule of Civil Procedure 26(b)(1) did not require such disclosure, reasoning:

> The [plaintiff] wants the whole seed set [defendant] used for the algorithm’s initial training. That request reaches well beyond the scope of any permissible discovery by seeking irrelevant or privileged documents used to tell the algorithm what not to find. That the [plaintiff] has no right to discover irrelevant or privileged documents seems self-evident.

> ....

> The only authority the [plaintiff] cites is a report of the Sedona Conference that has had a significant, salutary, and persuasive impact on federal discovery practice in the age of electronically stored information. Sedona Conference
Cooperation Proclamation, 10 Sedona Conf. J. 331 (Fall Supp. 2009). [Defendant], the [plaintiff] says, isn't proceeding in the cooperative spirit endorsed by the Sedona Conference and the corresponding Seventh Circuit project. But neither the Sedona Conference nor the Seventh Circuit project expands a federal district court's powers, so they can't provide me with authority to compel discovery of information not made discoverable by the Federal Rules.173

In another high-profile TAR case,174 after holding multiple evidentiary hearings at which predictive coding experts testified for both parties about the sufficiency of defendants’ search to determine whether defendants could be compelled to use predictive coding over their objection, Magistrate Judge Nan Nolan likewise held that, absent agreement or evidence of a deficient search, consistent with Sedona Principle 6, the responding party is in the best position to evaluate and select the appropriate tools and techniques for document collection and production, and instructed the parties to collaborate and work toward a mutually-agreeable search protocol.175 As a post-script, the plaintiffs eventually withdrew their request for predictive coding and the parties agreed upon search terms in that case.176

In contravention of well-established rules and case law that allow a producing party the discretion to select the best way to respond to discovery requests, some counsel have attempted to argue that a responding party should be forced to use TAR (irrespective of the costs of using such a methodology).177 Such arguments are squarely at odds with the Federal Rules framework that discovery is self-executing and the mandates of Sedona Principle 6 that put the onus on the

173 2013 U.S. Dist. LEXIS 172570, at **3-5. Nonetheless, the court did encourage cooperation stating that, “[a]n unexplained lack of cooperation in discovery can lead a court to question why the uncooperative party is hiding something, and such questions can affect the exercise of discretion.” 2013 U.S. Dist. LEXIS 172570, at *2.


177 For example, in Gordon v. Kaleida Health, 2013 U.S. Dist. LEXIS 73330, at *1 (W.D.N.Y. May 21, 2013), the plaintiffs sought an order compelling “defendants to meet and confer with respect to establishing an agreed protocol for implementing the use of predictive coding software.” Plaintiffs (mis)cited Da Silva Moore for the proposition that “it is necessary that the parties negotiate a protocol to guide the use of predictive coding software for the case.” 2013 U.S. Dist. LEXIS 73330, at *2. The plaintiffs also claimed that “cooperation” required “a negotiated ESI protocol.” 2013 U.S. Dist. LEXIS 73330, at *2. Defendants responded that the general rule is that ESI production is within the “sound discretion” of the producing party. 2013 U.S. Dist. LEXIS 73330, at *2. Defendants also pointed out that in Da Silva Moore, the court did not direct defendants to provide plaintiffs with the seed-set documents, rather, defendants volunteered to provide such information. 2013 U.S. Dist. LEXIS 73330, at **2-3. While the court ultimately determined it was unnecessary for the court to address the merits of plaintiffs’ motion because the parties had agreed to meet-and-confer on discovery issues, the fact that the plaintiffs would claim that they could somehow dictate the defendant’s discovery process in-and-of-itself is troublesome. See also Hiterberger v. Catholic Health Sys., Inc., 2013 U.S. Dist. LEXIS 73141 (W.D.N.Y. May 21, 2013) (same facts and holding as Gordon).
responding party to choose how to respond to discovery served by its adversary.\textsuperscript{178} Indeed, one influential jurist in the eDiscovery space observed that judges should be cautious about ordering (versus allowing parties to choose) the use of TAR in any particular case:

The judiciary’s lack of technical expertise is even more pronounced when it comes to technology-assisted review tools that do not depend on familiar keyword strategies. Few vendors are likely to be willing to share the details of their technology with a court for fear of divulging proprietary information to competitors, but even if they did, there is little chance that the judge could comprehend the algorithms. While it is no doubt entirely appropriate to permit a party to choose predictive coding or any other form of technology-assisted review to collect and review data, whether the tool selected will ultimately produce reliable results is a determination that a judge is ill-equipped to make in advance. \textit{See DaSilva Moore v. Publicis Groupe}, 2012 WL 607412, at **5-6, 8 (S.D.N.Y. Feb. 24, 2012).\textsuperscript{179}

Advances in machine-learning tools that assist in litigation will also lead to even more changes to the legal landscape. For example, TAR may require the use of experts to support its use, including expert testimony to support the specific TAR methodology, specifics about the particular TAR tool in use, and the statistics that were applied during the TAR process.\textsuperscript{180} Additional questions also remain open about whether a TAR tool that applies proprietary and “black-box”-type algorithms can be subject to a \textit{Daubert} challenge\textsuperscript{181} and whether the underlying

\textsuperscript{178} \textit{Hyles v. New York City}, 2016 U.S. Dist. LEXIS 100390 (S.D.N.Y. Aug. 1, 2016) (“The key issue is whether, at plaintiff’s request, the defendant City (i.e., the responding party) can be forced to use TAR (technology assisted review, aka predictive coding) when the City prefers to use keyword searching. The short answer is a decisive ‘NO.’… Under Sedona Principle 6, the [defendant] as the responding party is best situated to decide how to search for and produce ESI responsive to [plaintiff’s] document requests. [Plaintiff’s] counsel candidly admitted at the conference that they have no authority to support their request to force the [defendant] to use TAR. [The defendant] can use the search method of its choice. If the[plaintiff] later demonstrates deficiencies in the [defendant’s] production, the [defendant] may have to re-do its search. But that is not a basis for Court intervention at this stage of the case.”) (ALL CAPITALS in original).


\textsuperscript{180} \textit{See, e.g., Kleen Prods. L.L.C. v. Packaging Corp. of Am.}, 2012 U.S. Dist. LEXIS 139632 (N.D. Ill. Sept. 28, 2012), discussed above. \textit{See also Dynamo Holdings Ltd. P’ship v. Comm’r of Internal Revenue}, 2014 U.S. Tax. Ct. LEXIS 40 (Sept. 17, 2014) (analyzing testimony that was presented at an evidentiary hearing by competing predictive coding experts about predictive coding protocols as well as a comparison of volumes of data and associated review costs using traditional linear review vs. TAR approach); \textit{Aurora Coop. Elevator Co. v. Aventine Renewable Energy—Aurora W., L.L.C.}, 2014 U.S. Dist. LEXIS 185406, at *2 (D. Neb. Mar. 10, 2014) (granting plaintiff’s motion to compel and holding that “[f]or at least this first discovery stage, the parties shall consult with a computer forensic expert to create search protocols, including predictive coding as needed, for a computerized review of the parties’ electronic records”).

\textsuperscript{181} \textit{See Hon. James C. Francis IV, Judicial Modesty: The Case for Jurist Restraint in the New Electronic Age}, L. TECH. NEWS, Feb. 2013:

We do know, however, that the collateral proceedings required to obtain a judicial determination on a technical matter can be substantial. In one recent case, a judge devoted two full days of hearings to a dispute over search methodology, at the end of which she encouraged the parties to reach agreement, which they did (after numerous additional conferences with the court). \textit{Kleen Products LLC v. Packaging Corp. of America}, No. 10 C 5711, 2012 WL 4498465, at *5 (N.D. Ill. Sept. 28, 2012). That the parties were required to devote substantial resources to this dispute is not surprising. The
algorithms and processes themselves would be protected from discovery by trade secrets law.\textsuperscript{182}

**§ 5.3(e) Humans Are Still an Essential Component to Machine-Learning Tools in Litigation**

It is important to underscore that machine-learning tools and methodologies like TAR are not akin to hitting an “Easy Button”\textsuperscript{183} whereby a large amount of data is dumped into the tool on the front end, and a nicely-packaged, complete, smaller volume of relevant and responsive data is quickly and simply exported on the back end.\textsuperscript{184}

Properly managed, TAR can add value. But TAR is not an instant panacea. In reality, implementation of machine-learning workflows and tools requires a significant investment of human capital and other resources. Indeed, a study conducted by Oracle, several Stanford University professors and the non-profit Electronic Discovery Institute concluded:

> The first phase of the highly-anticipated Oracle/Electronic Discovery Institute joint research project has been completed, and confirms what many advocates have been preaching about technology-assisted review (aka predictive coding) – that spending more money doesn’t correlate with greater quality; that senior attorneys know what they are doing; and that you can’t turn discovery over to robots – humans are still the most vital component of the project.\textsuperscript{185}

In another article, two industry veterans remarked:

> In the past few years, document review has begun to change from a heavily staffed people effort to an approach that optimizes both technology and high-level human involvement. Sometimes, though, the description and business case is pushed too far, as some eDiscovery professionals advocate for futuristic, technical methods and minimize what skilled document reviewers bring to the process.

> ....

> There are reasons to doubt that the results of the 2009 Text Retrieval conference (TREC) Legal Track Interactive Task study – a leading study cited in favor of the


\textsuperscript{183} “Easy Button” is a registered trademark used for Retail Store Services, Mail Order Catalog Services, and Computerized Online Retail Store Services Featuring Office Supplies, Office Equipment, Including Computer Hardware, Copiers and Telephones, and Office Furniture and owned by Stapes the Office Superstore, L.L.C..

\textsuperscript{184} Unfortunately, many in the eDiscovery industry have created such an impression in the market by heavily promoting TAR as a turnkey, budget-slashing “solution” for all eDiscovery matters, large and small.

\textsuperscript{185} See Monica Bay, *EDI-Oracle Study: Humans are Still Essential in eDiscovery*, L. TECH. NEWS, Nov. 20, 2013 (emphasis in original).
use of Predictive Coding over human review] can lead to generalized conclusions about the efficacy of computer-assisted methods. Of course, the [“Technology-Assisted Review in eDiscovery Can Be More Effective and More Efficient than Exhaustive Manual Review,” XVII RICH. J.L. & TECH 11 (2011) – another study that advocates in favor of the use of Predictive Coding over human review] article doesn’t conclude that computer-assisted methods are more effective – it says that they “can be more effective.” This is stating the obvious: any method can be better than any other, depending on how it is executed. Every eDiscovery tool currently available, even the most technically advanced, still depends entirely on the very “manual” work of its operators.\(^{186}\)

While there are certainly limitations on the use of TAR tools in litigation, it is fair to say robotics is already changing eDiscovery by making it possible to analyze and produce incredible volumes of data that would either be impossible or cost prohibitive to handle by a manual review.

§ 5.3(f) The Next Frontier
It is also highly likely that as robots take over more jobs from humans, the entire focus of discovery may shift. Instead of witness interviews, statements and depositions, parties would be requesting and focusing most of their discovery on obtaining data and algorithms from machines. Likewise, instead of fact witnesses, experts would be called to the stand to interpret the data and algorithms for juries and factfinders. And in the not too distant future, the courts may ultimately defer much of their fact-finding and judicial decision making to smart machines driven by artificial intelligence.\(^{187}\)

§ 6 What Does the Future Hold?
In the coming years, a few likely results of the influx of robotics, AI and automation to the workplace include:

• Potentially more regulatory and legislative responses to job dislocations caused by robotics and computer-based technologies.

• Courts and regulatory agencies attempting to apply well-established labor and employment laws to virtual workplaces.

• An expectation from employers for greater worker adaptability and greater technological sophistication from their employees.


\(^{187}\) See, e.g., Adam Liptak, Sent to Prison by a Software Program’s Secret Algorithm, N.Y. TIMES, May 1, 2017, available at https://www.nytimes.com/2017/05/01/us/politics/sent-to-prison-by-a-software-programs-secret-algorithms.html?hp&action=click&pgtype=Homepage&clickSource=story-heading&module=first-column-region&region=top-news&WT.nav=top-news&_r=0 (“When Chief Justice John G. Roberts Jr. [was asked] ‘Can you foresee a day … when smart machines, driven with artificial intelligences, will assist with courtroom fact-finding or, more controversially even, judicial decision-making?’ [he responded] ‘It’s a day that’s here ….’” The article then discusses the case of a Wisconsin man who was sentenced to six years in prison based, in part, on a private company’s proprietary software. The report at issue was produced by a product called Compas, sold by Northpointe Inc., and included a series of bar charts that showed a high risk of violence and a high risk of recidivism for the defendant, leading the sentencing judge to comment: “You’re identified, through the Compas assessment, as an individual who is a high risk to the community.”).
• Improved efficiency and safety.

• Cost reduction.

Legislatures are taking steps to provide the well-trained workforces that are essential to realizing the opportunities of this technology. The Workforce Innovation and Opportunity Act (WIOA) provides opportunities for employers and manufacturers of these technologies to coordinate with federal and state funders to train a workforce that meets their needs. Under the WIOA, “[s]tate and local boards will promote the use of industry and sector partnerships to address the workforce needs of multiple employers within an industry.” Such partnerships can ease the financial burden born by first movers to train employees on new technologies and help to supplement shortfalls in the labor market that cannot be resolved by individual employers, generally lowering the industry-wide costs of scaling up new technologies. The federally funded “registered apprentice” program provides another highly customizable form of on-the-job training that will be helpful in bringing workers up to speed on new and specialized technologies.

Employers should be aware of these changes domestically, as well as internationally, since many countries are beginning to develop new laws and regulations surrounding the implementation of robots and automation into our societies and workplaces.188

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188 The EU-backed €1.5 million RoboLaw Project was developed by a team of roboticists, lawyers, and philosophers who came up with proposals for the laws and regulations necessary to manage emerging robotics technologies in Europe. European Commission, Scuola Superiore Sant’Anna (SSSA), Regulating Emerging Robotic Technologies in Europe: Robotics Facing Law and Ethics (project acronym RoboLaw), proj. no. 289092 (Sept. 22, 2014) available at http://www.robolaw.eu/index.htm.