



2020 CLM Workers' Compensation, Retail Restaurant & Hospitality Conference
May 20-21, 2020
Chicago, IL

New Technology Risks and Rewards: Robotics, Driverless Vehicles and Virtual/Augmented Reality

I. RETAIL AND HOSPITALITY ROBOTS

Work Tasks and Functioning

In order to attract and satisfy tech savvy customers; better deliver goods and services; and address labor and cost issues, retailers and hospitality companies are increasingly utilizing robots and robotics in retail stores, hotel lobbies and warehouses.

In a growing number of grocery stores and general merchandise retail businesses, retail robots independently circulate the sales floor, most following a preprogrammed path on continuous loop. These pioneer retail robots can perform a variety of important tasks, most notably floor-monitoring, shelf scanning, floor cleaning and customer service.

Retail floor monitoring robots use sophisticated software and cameras to detect spills, debris and other hazards on the store's sales floor. The floor monitoring robot will remain at the spill site and summon human cleanup assistance using radio communications. The robot will also emit an audible and visual signal when a spill is located, in order to warn nearby shoppers of the hazard's presence.

Shelf-scanning retail robots constantly circulate the sales floor conducting price checks and monitoring inventory. Shelf scanning robots keep track of store inventory on their rounds and automatically report low or depleted stock of merchandise on shelves for reorder, so shelves are always full, thus enhancing sales and making for a better customer shopping experience. Additionally, the correction of inaccurate pricing of retail items on the shelves plays a cost saving function for retailers, as many states have consumer protection statutes that mandate the retailer offer the item for sale at the lowest marked price, even if it is mistakenly mismarked.

Like their floor monitoring robot cousins, retail floor cleaning robots can detect spills and other hazards on the retail floor, but have additional functions, equipment and programming to immediately perform the necessary cleaning of the floor. These robots rely on sensors to scan for people and spills, but also perform floor scrubbing and sweeping, as they move along their predetermined route. Floor cleaning robots do not have to wait for a human responder to perform the clean-up task to address spills detected.

Some retailers and hotel companies are also literally rolling out customer service robots to greet customers and guests, as they entering the premises. For hotels, these robots can act as an electronic desk clerk, concierge or bell hop, to check-in the guest, provide local information and handle luggage. At some retail stores, a customer service robot will greet shoppers entering the store, locate products in the

store for patrons, display product information on a screen and even guide customers through the store to the merchandise sought.

National retailers, both brick and mortar, as well as on-line sellers, are also increasingly relying on robotics in their warehouses. Robotic warehouse systems are utilized to enhance productivity of human workers, move products across warehouses, speed up work and increase efficiency, avoid warehouse traffic congestion, and enhance worker safety.

Equipment and movement

Most retail robots are programmed to follow a predetermined path around the store while looking for spills, scanning product and performing cleaning functions. Customer service robots used by retailers and hotels are more varied and flexible in the path that they move through the premises, often guided by the needs of the customer or guest. As they perform their jobs, these robots are almost certain to encounter patrons, shopping carriages/baskets, luggage, and other objects, as the robots circulate on their rounds.

Retail, hospitality and warehouse robots utilize a variety of technologies and equipment to avoid collisions and accomplish their programmed tasks, including cameras, sensors, 3D scanners, visual recognition software and RFID detection systems.

In the warehouse setting, automated vehicles, robot cranes, forklifts and mechanical arms and computerized conveyor systems efficiently collect and move product for retail distribution and sale. In some warehouses, automated guided vehicles (AGV) transport inventory around the warehouse usually following magnetic stripes or a track laid in the warehouse floor. In other warehouses, autonomous mobile robots (AMR) use sensor technology to deliver inventory around the warehouse, but do not require a set track or preset route for guidance. These AMRs understand their environment through computerized mapping and onboard sensors.

Legal Issues

As with many technological advances, the adoption of robots into retail and hotel environments will likely bring with it new potential hazards and related legal and risk management challenges. The presence of large robots circulating through an often crowded and dynamic retail sales floor or hotel lobby carries with it the risk of physical contact between the robot and patrons, employees and fixtures. A collision between a robot and a customer or guest may give rise to a premises liability personal injury claim or lawsuit for bodily injuries resulting from the impact with the robot and/or a related fall. As the robots are equipped with sensor technology and software programming designed to avoid such collisions, the happening of an accident involving a robot may also give rise to a product liability claim against the robot maker, programmer and component software/hardware suppliers. The accuracy and limits of sensor technology and the robot's programming will be called into question, if they failed to avoid an impact. The insurance claims adjuster and counsel for a retailer or hotel owner who is sued because of an accident involving its robot will need to assess what common law and contractual indemnity rights may exist against the robot seller and other design and manufacturing entities in the robot's supply chain.

In the warehouse setting, employee injuries, which would typically be addressed through a worker's compensation claim, may implicate other parties when robots and robotics are involved. The injured employee and/or his/her subrogating worker's compensation insurer may seek recovery from third party companies that sold, manufactured, designed or programmed the robot and its component

parts, software and hardware, if a robot was involved in a work place accident. These worker third-party claims may implicate insurance, contract and indemnity issues between the warehouse owner and seller of the robot. A thorough analysis of the respective contract and insurance obligations between the robotics seller and the employer/warehouse owner is essential in both the claim stage and litigation to understand and assess the potential risks and exposure.

Another legal issue associated with retail, hospitality and warehouse robots will certainly be the compilation, storage and preservation of relevant data. Following an accident, the data collected by the robot's processors regarding sensor information, the robot's movements and objects detected will likely be closely scrutinized in connection with a causation analysis. Proper preservation of data from the robot, during the investigation, claim stage and litigation, will be important to avoid allegations of spoliation by the claimant or her/his counsel.

Claim handling and litigation involving retail, hospitality and warehouse robots may also require the use of costly technical experts to address the issues of alleged failures of software, hardware and robot programming, when a robot is involved in an accident. These technology experts, likely from various fields of engineering, will investigate what role, if any, the robot's equipment and programming played in the accident. Technology experts, who may serve as consultants at the claim stage and during litigation may ultimately be needed for testimony at deposition or trial. The reliance on an engineering expert to assess and address technology issues will likely add significant complexity and cost to a claim or lawsuit in a case involving retail and hospitality robots.

The decision to litigate or take to trial a case involving a robot will also need to factor in the public's perceptions and expectation of robots. A jury considering the issue of negligence in a case involving a robot may have an expectation of perfection, with respect to the robot's performance. The usual negligence case jury charge of "reasonably safe under all the circumstances" may be more difficult for the jury to follow when the alleged tortfeasor is a 500 pound robot made of plastic, aluminum and wires, and not very human face of the local hotel clerk or grocery store porter, who is working a long shift, in often challenging circumstances, to support a family. It may be easier for the jury to arrive at a finding of negligence and award damages, when the contest is between an injured plaintiff shopper and a soulless robot from whom perfection of performance is expected.

II. DRONES AND AUTONOMOUS DELIVERY VEHICLES

Unmanned Aircraft Systems a/k/a Drones.

Retailers and restaurants may one day be able to use an unmanned aircraft system (UAS), commonly called a "drone," to take their businesses to new "heights." Perhaps the most wide-reaching use of drones for restaurants and other retailers may come from their use as a future mode of delivery for orders placed by local customers.

Drones are not planes in the traditional sense. Nevertheless, in the United States, the same Federal Aviation Administration (FAA) that regulates planes also regulates the use of drones.¹ Under these regulations, drones can be used for limited commercial purposes so long as the UAS is less than 55 pounds and the flight is conducted "within the visual line of light" of the remote pilot in command and the person manipulating the flight controls of the small UAS. The UAS may not be launched from a moving vehicle or aircraft when done so commercially.

¹ See 14 C.F.R. Part 107, which went into effect on August 29, 2016.

Another current regulatory limitation is preventing major logistics companies from rapidly deploying drones. FAA approval under Part 107 explicitly does not permit “air carrier” operations, which instead must be licensed like any other air carrier. Under the existing regulations, an air carrier is defined as “a citizen of the United States undertaking by any means, directly or indirectly, to provide air transportation.”² Adding to that definition, “‘air transportation’ means foreign air transportation, interstate air transportation, or the transportation of mail by aircraft.”³ As a result, current regulations inhibit the use of drone delivery by companies like Federal Express, UPS, and Amazon unless the operator is willing to meet all of the requirements for an air carrier... at least for now.⁴

Elsewhere in the world, however, drone delivery is already becoming a reality. DHL International GmbH, an international courier based in Germany, has been experimenting with the use of drones to make deliveries to otherwise hard to reach customers. DHL launched its first drone delivery service in 2014 using a device called the “Parcelcopter.” That drone delivered basic medical aid across a 12km open water route to the car-free island of Juist in Lower Saxony, Germany.⁵ Two years later, in 2016, the company conducted a three-month trial of its third-generation Parcelcopter that delivered packages to two separate communities high up in the Bavarian Alps. DHL is now on its fourth generation of the Parcelcopter, which is being used in limited operations to make deliveries of medical supplies to remote parts of Tanzania.⁶

Drones may also be used to deliver goods more quickly than through existing courier methods. For example, Amazon announced plans in June 2019 for its own “Prime Air,” a delivery system using drones with the goal of delivering packages to customers in thirty minutes or less. The prototype design calls for fully electric drones that can fly up to 15 miles and deliver packages under five pounds to customers by using artificial intelligence technologies. Rather than wait for the existing regulations concerning the commercial use of drones to change, Amazon instead filed on July 16, 2019, a Petition for Exemption under 49 U.S.C. § 44807 and 14 CFR Parts 61, 91, and 135 to operate drones as an “air carrier.”⁷ Drones are the next step in Amazon’s integration of all aspects of the delivery chain. Amazon, which delivered more than 2.5 billion packages in 2019, already operates its own cargo planes and freighters and recently ended its long-time relationship ground shipping and air transport relationship with FedEx, opting to take both under its own control. It appears that drones are going to be a large part of Amazon’s plan going forward.

One big competitor already beat Amazon to the punch in getting drone delivery off the ground. On April 23, 2019, Google’s subsidiary, Wing Aviation LLC, became the first company to gain FAA air carrier certification for drone delivery,⁸ launched operations with deliveries – in conjunction with FedEx and

² 49 U.S.C. § 40102(a)(2).

³ 49 U.S.C. § 40102(a)(5).

⁴ See 14 C.F.R. Part 135.

⁵ <https://www.dpdhl.com/en/media-relations/specials/dhl-parcelcopter.html>

⁶ <https://newatlas.com/dhl-parcelcopter-africa/56663/>

⁷ <https://www.aviationtoday.com/wp-content/uploads/2019/08/amazon - exemption rulemaking.pdf>

⁸ https://www.faa.gov/news/press_releases/news_story.cfm?newsId=23554

Walgreens – to residential customers in Christiansburg, Virginia, in October 2019.^{9,10} Wing is just one of a number of Google-related companies who are working on “moonshots” – the use of cutting-edge, new technologies to solve various problems.

Legal Issues

Even if approved by the FAA, the use of drone delivery for commercial purposes may come under state regulation. Currently, 43 states – to varying degrees – have some form of rule or regulation governing their use. Illinois, for example, has created the Unmanned Aerial System Oversight Task Force Act to regulate commercial and private drone use.¹¹ The Illinois Department of Transportation’s Division of Aeronautics was statutorily designated to chair the Task Force, which submitted its UAS Recommendations Report on June 30, 2016.¹² The Task Force suggested that IDOT “be tasked with developing a set of recommended general safety standards and guidance for entities intending to facilitate sustained UAS operations at a specific location,” including at “a commercial package delivery distribution center where numerous UAS operations take place daily.”¹³ But, to date, the Task Force’s Recommendations have not been implemented.

While the future of drone delivery seems assured to present operational benefits for retailers and restaurants seeking to get their products to customers more quickly, affordably, and reliably, United States laws at the state and local level do not presently allow for widespread implementation at this time. But, that time is coming soon. When domestic laws finally permit drone delivery to go from being “on the horizon” to fully implemented, other sorts of legal challenges will arise. Like other delivery mechanisms, drone delivery is sure to bring with it breach of contract, personal injury, product liability, and other traditional tort claims, perhaps including trespass claims resulting from errant or misguided drones. Retailers who operate the delivery devices themselves will create additional risk exposure commensurate with the number of drones placed into operation.

Other retailers who elect not to operate drone delivery in-house may elect to use drone delivery systems that will be operated by as-yet-created third-party companies, much the way that restaurants have partnered with traditional delivery operators like DoorDash, UberEats, and GrubHub. Depending on their success and coverage, perhaps restaurants, too, could move to drone delivery and away from deliveries made by motor vehicle drivers.

Because drone delivery systems are likely to rely upon less human labor, these new systems might reduce overall delivery-related claims such as motor vehicle accident or workers’ compensation claims. These systems, though, might give rise to other sorts of claims, including those in the areas of data privacy – as each drone delivery tracks and store a customer’s home address and other information – or intellectual property. How drone-delivery information is gathered, handled, and stored is sure to be on the minds of future risk managers and in-house counsel. For now, how this all will shake out, of course, remains “up in the air.”

⁹ <https://www.wdbj7.com/content/news/Virginia-gets-pilot-project-to-use-drone-delivery-for-FedEx-Walgreens-560788911.html>

¹⁰ <https://vtnews.vt.edu/articles/2019/10/ictas-wingdronedeliverylaunch.html>

¹¹ 20 ILCS 5065

¹² <https://idot.illinois.gov/transportation-system/transportation-management/planning/IUASOTF/Index>

¹³ <https://idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Aero/IUASOTF/UAS%20Recommendations%20Report-IUASOTF-2016-06-30.pdf>

Autonomous Delivery Vehicles

The delivery of goods across the country will soon expand in ways beyond just the use of drones. Many companies are actively working on the creation and adoption of autonomous or remote-controlled vehicles – from small robots to cars to semitrucks. Two things are certain: autonomous delivery is going to come in all shapes and sizes, and doing so is going to employ far fewer humans than current methods do.

One of the largest applications for autonomous delivery appears to be the delivery of groceries directly to customers' homes. Udelv, a self-driving delivery company out of Burlingame, California, initially launched a project using an open platform system, Apollo 3.5, from Baidu, one of China's leading search engines.¹⁴ Udelv partnered with grocery stores in Oklahoma City, OK, and San Mateo, CA, to provide localized grocery delivery services. Udelv, though, does not seem content on partnering with local grocery stores. In 2019, Udelv announced two big partnerships – one with Walmart to test autonomous grocery delivery in Arizona,¹⁵ and second with H-E-B to offer a pilot program to customers outside of San Antonio, Texas.¹⁶ These pilot programs could be each grocer's testing with an eye towards a broader rollout nationwide.

Udelv and its competitors are seeking to take a bite out of the rapidly growing online grocery shopping market, which is expected to see 500% growth to more than \$100 billion on food-at-home items by 2025.¹⁷ For example, in August 2018, Nuro launched a driverless delivery service in partnership with Kroger at a Fry's Food Store location in Scottsdale, Arizona.¹⁸ Nuro initially used Toyota Prius or Nissan Leaf vehicles along with a human "safety" driver. Later, however, it moved to a fully autonomous vehicle known as the "R1,"¹⁹ which is unmanned and can reach up to 25 mph, and began serving limited parts of Houston, Texas.²⁰

What will the new autonomous delivery vehicles look like? Based upon existing prototypes, companies do not want to limit themselves to vehicles that look like or are limited by the roadways of traditional cars, vans, or trucks. For example, a company called "Refraction AI" has launched a vehicle called a REV-1, an 80 pound robot standing four feet in height that can travel up to 15 mph in either car or bike lanes.²¹ This design will allow the REV-1 to choose routes that are off limits to standard motor vehicles.

¹⁴ <https://www.theverge.com/2019/1/8/18173776/udelv-self-driving-delivery-walmart-baidu-ces-2019>

¹⁵ <https://techcrunch.com/2019/01/08/walmart-taps-startup-udelv-to-test-autonomous-grocery-deliveries-in-arizona/udelv>

¹⁶ <https://techcrunch.com/2019/07/10/udelv-partners-with-heb-on-autonomous-grocery-deliver-pilot/>

¹⁷ <https://www.theverge.com/2019/1/8/18173776/udelv-self-driving-delivery-walmart-baidu-ces-2019>

¹⁸ <https://www.theverge.com/2018/8/16/17693760/nuro-kroger-self-driving-delivery-scottsdale-arizona>

¹⁹ <https://www.washingtonpost.com/technology/2018/12/19/tired-going-grocery-store-arizona-robot-driven-car-will-deliver-groceries-your-home/>

²⁰ <https://venturebeat.com/2019/03/14/nuro-expands-driverless-delivery-partnership-with-kroger-to-houston/>

²¹ <https://www.washingtonpost.com/technology/2019/07/25/new-autonomous-delivery-vehicle-is-designed-operate-like-bicycle/>

Besides looking different from typical motor vehicle delivery, the autonomous delivery vehicles that are being designed and tested also will do more than just deliver groceries. In August 2019, Amazon began to make deliveries to customers in Irvine, California, using a small number of robots called “Scout,” which are six-wheeled delivery robots that operate on sidewalks.²² In the test program, each Scout is paired with an “Amazon Scout Ambassador” whose job is to both review the robot’s performance and to interact with humans in the neighborhood and gauge how those individuals interact with each Scout as the robot works. All parts of Scout – from the hardware to the software – are created and designed by Amazon, allowing the company to rapidly prototype hardware components, write new code, and validate efforts in real-time.²³ The information gathered by Amazon Scout will be invaluable to the company as it refines future autonomous delivery options.

Amazon is not alone in its pursuit of new autonomous delivery bots. The field continues to get crowded. In the fall of 2019, Starship Technologies began a two-year deployment of its similarly six-wheeled delivery robots at colleges across the country.²⁴ Starship Technologies has already tested its robots in more than twenty countries and made more than 100,000 deliveries using them. Each fully electric robot can carry up to twenty pounds of cargo and has a delivery radius of three to four miles. The robots would be used primarily for intra-campus deliveries. Unlike traditional couriers, Starship’s robots will require no meals, no break periods, and will file no workers’ compensation claims.

Even the traditional automobile manufacturers are getting involved in autonomous delivery. Cruise Automation, an autonomous vehicle created by General Motors, seeks to revolutionize how people are moved from place to place. But as part of that, Cruise is also partnering with DoorDash to use its vehicles to deliver food in San Francisco.²⁵ The partnership seeks to answer three primary questions:

- What key technical and infrastructure challenges exist with autonomous delivery?
- How can autonomous delivery positively impact merchants, dashers, and customers?
- Are autonomous vehicles capable of achieving the same quality standards that DoorDash customers have come to know and love?²⁶

Not to be outdone, Ford Motor Company teamed up with both Walmart and Postmates using self-driving Ford vehicles in Miami to learn more about how customers will interact with autonomous vehicles.²⁷

Just how receptive municipalities will be to these new autonomous delivery systems remains to be seen. In August 2019, in San Francisco, traditional delivery company Postmates became the first company to gain approval to launch a wheeled delivery robot on city streets.²⁸ Other municipalities, however, may not be so welcoming to the new technology.

Legal Issues

²² <https://techcrunch.com/2019/08/06/amazon-scout-autonomous-delivery-robots-begin-deliveries-in-california/>

²³ <https://blog.aboutamazon.com/transportation/whats-next-for-amazon-scout>

²⁴ <https://www.theverge.com/2019/8/20/20812184/starship-delivery-robot-expansion-college-campus>

²⁵ <https://www.theverge.com/2019/1/3/18166660/gm-cruise-doordash-test-self-driving-food-delivery>

²⁶ <https://blog.doordash.com/launching-the-future-of-autonomous-delivery-with-cruise-automation-fabf6ed7a39d>

²⁷ <https://www.theverge.com/2018/11/14/18087898/ford-walmart-postmates-self-driving-grocery-delivery-miami>

²⁸ <https://techcrunch.com/2019/08/16/postmates-lands-permit-to-test-its-serve-autonomous-delivery-robots-in-sf/>

The use of autonomous vehicles as a delivery method appears to have a bright and growing future. But, that future will also include a litany of unsettled legal issues that will accompany the new technology. For example, companies will need to become familiar with a host of new federal and state laws and regulations related to the new vehicles. Companies will need to stay in front of these new laws and regulations, whether operating the new technology or contracting with third-parties for it.

Autonomous vehicles will not just involve new, redesigned motor vehicles, but will be supported by artificial intelligence and other complex computer systems that help them to operate. Often, more than one company may be involved – one who manufactures the vehicle while the other creates the “brains” behind the system that runs the vehicle. When an autonomous vehicle fails or is involved in an accident, investigation will need to be performed to identify the underlying cause – the vehicle itself, the algorithms behind it, human error, or a combination of each. Thereafter, as claims and litigation arise, parties and the courts will need to determine which party or parties ultimately are responsible and should be held liable for any resulting loss.

Will traditional motor vehicle policies apply to vehicles with autonomous-driving technology? If not, where will the lines be drawn when a vehicle optionally could be operated by a human, but relied instead upon the vehicle’s autonomous systems? Will this give rise to new limits and new exclusions? Alternatively, new insurance products are likely to develop to insure the unique risk that autonomous vehicles will create. Insurance adjusters will need to become intimately familiar as the insurance industry adapts to cover the emerging technology. How will this affect the insurance industry as a whole?

Perhaps the most important legal issues related to autonomous delivery vehicles may come from their own intellectual property and customer data that they collect. The technology that will underly the new autonomous delivery systems, both in terms of hardware and software, will rely upon a myriad of patents, trademarks, and vast proprietary information. Retailers, restaurants, and hospitality companies who partner with third-party autonomous delivery companies should expect vendor agreements and other contracts to carefully protect that information. Future litigation may necessarily see discovery disputes regarding access to that proprietary information.

Data privacy will also be a paramount concern. Retailers, restaurants, and hospitality companies must be mindful of their customers’ data collected by future autonomous delivery vehicles. Vendor agreements with third-party autonomous delivery companies must carefully spell out how that information is captured, stored, and retained, and they should identify who is responsible for each step.

III. Virtual and Augmented Reality

The Oxford dictionary defines virtual reality (VR) as a computer-generated simulation of a three-dimensional image or environment that can be interacted within a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors. Gaming systems such as Nintendo and PlayStation have popularized virtual reality using goggles and helmets to completely immerse players in realistic electronic virtual worlds.

Augmented reality (AR), on the other hand, is defined by Oxford as a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view. The game Pokemon Go is one of the most widely used applications of augmented reality, in which the player’s mobile phone uses GPS to locate, capture, battle, and train virtual creatures, called Pokémon, which appear on the phone’s screen, as if they are in the player's real-world location.

In-Store Virtual and Augmented Reality

Retailers looking to be on the cutting edge of technology are introducing augmented reality screens and virtual reality helmets or goggles in their retail stores to provide customers with a digitally enhanced shopping experience. In-store augmented reality screens use digital technology to allow shoppers to see visual images of themselves trying on shoes and clothing or applying cosmetics, among other uses. Furniture retailers are using virtual reality technology and equipment to allowed shoppers to see furniture items in different virtual room settings.

App-based Augmented Reality

Retailers are also increasingly embracing app based augmented reality to provide customers with more choices and enhance the shopping experience. Shoppers can use augmented reality apps on their phones, and other mobile devices, to see furniture, faucets and light fixtures superimposed in rooms in their home; paint the interior and exterior surfaces of their homes; try on jewelry, clothing and shoes utilizing a virtual mirror; and see themselves with different hair styles and colors or manicure options

Legal Issues

Legal concerns related to the use of virtual and augmented reality are being increasingly recognized and discussed, as the use of these technologies spreads across the retail environment. Privacy concerns related to the collection and retention of images, data and personal choice information are often cited as the most common legal issue of concern by companies that utilize VR and AR in their sales and marketing. Every customer interaction with a retailer's VR or AR generates substantial personal data regarding customer choices, sizing, spending, location, interests and activities and more. The potential use and sale of this collected data, which has real value in the consumer marketplace, is an issue that retailers will need to address as a matter of corporate policy and legal decision making. How a retailer deals with such marketable data may include the use of notice and assent provisions in click wrap agreements. However, the potential negative reaction that may result from the presentation of a click wrap agreement to the customers in a retail setting may be undesirable from a sales and marketing point of view, motivating retailers to keep and protect this customer data rather than market it.