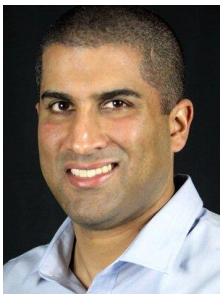
Legal Issues Loom For Driverless Trucking

By **Zal Phiroz and Nicolas Bezada** (February 5, 2024)



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The logistics sector is experiencing an unprecedented transformation, propelled by the advent of autonomous technology. The launch last fall of the first commercial autonomous freight corridor by Aurora Innovation Inc., connecting Dallas and Houston, marks a seminal moment for the industry.[1]

This initiative reflects a significant commitment to optimizing supply chain dynamics and illustrates a forward-thinking approach to deploying autonomous systems. But it comes amid heightened regulatory scrutiny, evidenced by Cruise LLC's nationwide suspension of driverless vehicle activities at the end of October 2023, bringing the discourse on safety and regulatory compliance to the forefront.

As companies embark on increasing hub-to-hub operations, in anticipation of driver-out freight runs, it is imperative to consider the legal and ethical frameworks that will govern this new era of transportation.

In this article, we explore the intricate legal terrain accompanying these technological strides, and examine the emerging liabilities, evolving regulatory protocols and essential practices pivotal for industry participants navigating this wave.

Overview of Driverless Innovation

A focal point in driverless innovation is the advent of autonomous trucking solutions.[2] Initiatives to seamlessly integrate self-driving technologies into freight transportation are reshaping conventional logistics paradigms.[3]

Autonomous trucks, equipped with innovative tools such as advanced sensors, cameras and sophisticated artificial intelligence algorithms, are transforming the transportation of goods over long distances. Sensors including radar and lidar provide critical data on road conditions and surrounding obstacles, while cameras visually monitor the truck's environment. The algorithms process this information, enabling autonomous decision making and navigation.

This integration of state-of-the-art technology represents a significant shift in the logistics industry, optimizing efficiency and safety in long-haul freight delivery.[4] Enterprises deploying sophisticated automated driving systems are pioneering this transformation, empowering trucks to navigate highways and interstates with minimal human intervention.

Additional areas of innovation include the emergence of platooning technology, wherein multiple autonomous trucks travel in proximity, forming a convoy.[5] These trucks synchronize their movements through vehicle-to-vehicle communication, optimizing aerodynamics and fuel efficiency.

But beyond highway travel, autonomous trucks must also be capable of last-mile delivery —

the final step of the transportation process, in which a parcel is delivered to its destination. Innovation in autonomous last-mile delivery solutions is gaining prominence.

Companies are actively exploring using self-driving delivery trucks to navigate intricate urban environments.[6] Tailored to handle the complexities of local roads, traffic nuances and delivery challenges, these vehicles promise to revolutionize the final stages of the supply chain, ensuring expedited and precision-focused deliveries.

Liability Implications in Autonomous Trucking

Technical Malfunctions and Accountability

Autonomous trucks depend on complex sensors and algorithms, where malfunctions can lead to significant navigational errors. Liability determination is multifaceted, entangling manufacturers, software developers and maintenance entities within an evolving legal context.

Cybersecurity and Data Integrity

In the realm of interconnected autonomous systems, cybersecurity and data integrity are paramount. The threat of hacking and unauthorized access requires a complex legal approach to address potential manufacturer flaws and external cyberattacks.

Determining liability in these breaches is critical, balancing technical vulnerabilities and legal responsibilities to safeguard against system malfunctions and protect privacy and safety.

Ethical Decision Making in Emergencies

When confronted with emergencies, autonomous trucks face ethical dilemmas like the so-called trolley problem. For instance, an AI-controlled truck might have to choose between swerving to avoid a pedestrian and risking a collision with another vehicle or maintaining its path, ensuring the safety of its cargo and passengers but potentially harming the pedestrian.

Such scenarios demand that AI systems make critical decisions that have moral implications. Therefore, establishing ethical guidelines and transparent decision-making processes is crucial in addressing liability issues.

As AI becomes a decision maker in these situations, the shift from individual to producer liability becomes apparent. This underscores the need for corporate responsibility in programming, designing AI systems and developing strategies to mitigate moral hazard issues.

Companies must navigate these ethical waters carefully, balancing the safety of all parties involved and considering their autonomous systems' broader societal impact.

Insurance and Risk Allocation

The ambiguity in accidents involving autonomous trucks necessitates redefined insurance policies. Collaboration with insurers for tailored coverage and establishing precise liability frameworks will be crucial for risk distribution among technology providers, operators and the broader supply chain network.

Standardization and Interoperability

The lack of uniformity in autonomous technologies across different carriers can lead to significant interoperability challenges. An example that illustrates the importance of standardization can be drawn from the shipping industry, where the adoption of standardized container sizes revolutionized global trade by ensuring compatibility across different ships, trains and trucks.

Similarly, in autonomous vehicles, industrywide standardization of software and hardware components, like communication protocols and sensor systems, is vital for ensuring seamless integration across various manufacturers and platforms. This not only reduces operational risks but also aids in clarifying liability in unforeseen events.

But while standardization in autonomous trucking is essential for interoperability and safety, it must be balanced with considerations for healthy market competition and innovation.

Training and Human-Machine Interfaces

The shift to autonomy requires logistics personnel to increase their understanding of the nuances of autonomous systems. Developing comprehensive training for diverse roles and user-friendly interfaces is vital to limit liability and maintain operational efficacy.

The integration of driverless technology in supply chains presents a complex liability landscape driven by technical reliability, cybersecurity, ethical decision making, insurance complexities and standardization. Proactive legal and operational strategies are imperative to navigate these multifaceted challenges as the industry evolves toward increased automation.

Legal Frameworks and Compliance

Current Legal Landscape

The legal landscape for driverless technology comprises a complex array of vehicle operation and safety standards designed initially with human operators in mind. This paradigm is exemplified by the Federal Motor Vehicle Safety Standards in the U.S., which presuppose human control of vehicles.[7]

The emergence of autonomous vehicles calls for a significant reevaluation of these standards, primarily to facilitate the integration of driverless trucks lacking conventional control mechanisms such as steering wheels or pedals.[8]

Adapting Regulations to Autonomous Technologies

Regulatory adaptation to autonomous vehicle technologies presents a multifaceted challenge, balancing the need to nurture innovation with the imperative of ensuring public safety. This has led to diverse regulatory strategies globally.

Some regions have taken proactive steps by drafting regulations specifically for autonomous vehicles.[9] Others have modified existing laws in response to the technological evolution.[10]

Robert Rabin and Kenneth Abraham, in a 2019 paper in the Virginia Law Review titled "Automated Vehicles and Manufacturer Responsibility for Accidents: A New Legal Regime for

a New Era," proposed a fundamental shift from traditional tort systems to a no-fault regime akin to workers' compensation, acknowledging the changing dynamics of accident causation in the era of autonomous vehicles.[11]

Also in 2019, Gary Marchant and Rachel Lindor examined the evolving role of product liability in the context of driverless cars in a comprehensive analysis published by the Brookings Institution, titled "Products Liability and Driverless Cars: Issues and Guiding Principles for Legislation."[12] They explored how traditional liability insurance and litigation processes will likely be transformed by the growing prevalence of autonomous vehicles.

These works provide valuable insights into anticipated legal challenges and offer guiding principles for future legislation, particularly concerning the responsibilities of manufacturers, insurers and consumers in this new landscape.

Legal Gaps and Challenges

The shift toward autonomous systems introduces ambiguities in traditional vehicular laws focused on driver responsibility. Determining liability in system failures — whether with manufacturers, software developers or vehicle owners — is an evolving question within legal circles, and will potentially be reshaped by new state statutes, case law and federal standards.

Additionally, as autonomous vehicles become integral to supply chains, addressing cybersecurity within the regulatory framework becomes critical, given the potential inadequacy of existing regulations in this area.[13]

Global Perspectives

Understanding the varied legal responses to autonomous vehicles across jurisdictions is crucial in the global context of supply chains. The European Union's General Safety Regulation, which mandates advanced safety features in all new vehicles, exemplifies a regulatory move toward facilitating autonomous vehicle integration.[14]

This underscores the necessity for a legal framework that is both harmonized and adaptable, capable of responding to the rapid advancements in autonomous vehicle technology.

Case Studies and Precedents

The legal landscape of autonomous vehicle liability is continuously evolving, including in the courts. A seminal case contributing to the jurisprudential shaping of liability frameworks in this area is Holbrook v. Prodomax Automation.[15]

Decided by the U.S. District Court for the Western District of Michigan in 2021, this case addressed a legal theory pertinent to software as a product. In its decision, the court found that software, due to its "integral" and "essential" role in the functionality of autonomous machinery, falls within the ambit of product liability.

This jurisprudence extends the parameters traditionally ascribed to products, thus significantly influencing the responsibilities of manufacturers and developers in the autonomous vehicle domain. This ruling offers a clear directive: Software that is fundamental to the operational efficacy of an autonomous vehicle may be subject to scrutiny under product liability statutes in instances where system failures precipitate

accidents or resultant injuries.

Legal Implications and Industry Impact

The Holbrook decision has far-reaching implications for the autonomous vehicle industry. It signals a shift in judicial thinking that could influence future litigation, emphasizing the role of software reliability and safety in the overall assessment of an autonomous vehicle's design and manufacturing quality.

For companies in the autonomous trucking and transportation sector, Holbrook underscores the critical importance of:

- Software quality assurance, i.e., ensuring that the software powering autonomous vehicles is rigorously tested and meets the highest safety standards;
- Documentation and disclosure, i.e., keeping detailed records of software development processes, and being transparent about the capabilities and limitations of autonomous systems; and
- Proactive legal compliance, i.e., monitoring evolving legal theories regarding software liability, and updating practices accordingly to mitigate the risk of litigation.

Driverless technology in supply chains marks a pivotal moment of innovation, but comes with legal intricacies. Autonomous logistics is poised to have a transformative impact, but also raises issues of liability, technical and ethical challenges, and the pressing need for an adaptive legal framework.

As companies and regulators venture into this uncharted territory, the guiding principle should be a commitment to safety, transparency and ongoing dialogue. With thoughtful navigation of the legal complexities, the potential of driverless innovation can be fully realized, promising a future of enhanced efficiency and advancement in supply chain management.

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