Artificial Intelligence in Air Cargo

Federal Developments and Potential Liabilities

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Introduction

Artificial Intelligence (AI) is broadly thought of as machine learning to make decisions simulating those made by people. Proponents of AI in transportation point to its potential to improve safety by reducing human error and to create efficiencies for air carriers, passengers, and cargo. Examples of safety enhancements include potentially preventing ground collisions between taxiing aircraft, helping pilots avoid bad weather, and ensuring they are lined up to land on the correct runway.

Such technologies also can potentially create efficiencies throughout the air cargo ecosystem. Consider the scenario where cargo is grouped, assigned to flights, and transported to aircraft with minimal human interaction. The aircraft taxis autonomously to the runway through automated air traffic control communication, and is piloted safely over its oceanic route closer to other aircraft than allowed today because of airplane-to-airplane communications and communications with air traffic control. Although this may seem futuristic, elements of AI are being routinely incorporated into today's aviation systems. In airplanes, autopilots and flight management systems are examples of artificial intelligence and have been in the flight deck for years. As uses for AI grow, air cargo carriers should be aware of the challenges ahead and how AI is being viewed by regulators and the courts.

Challenges to AI Implementation

AI in aviation faces two significant hurdles: the regulatory authority's willingness to embrace AI and public acceptance, particularly as it relates to flight crew requirements. As is common with emerging technologies, AI has developed faster than regulators can adapt. The Federal Aviation Administration (FAA), however, has a history of certifying flight guidance systems. As far back as 1968, the FAA published guidance for "Automatic Pilot Systems Approval." The current version, Advisory Circular 25.1329-1C, recognizes that these flight systems assist the flight crew with guiding the aircraft, providing workload relief, and supporting operational requirements including reduced vertical separation minima or required navigation performance. Clearly, the FAA recognizes there are benefits to using fight guidance systems, and the Agency has a procedure in place for certifying these systems. Questions remain whether the FAA will allow these systems with a reduced flight crew complement, whether the FAA will move to a performance-based approach for certifying these systems as it has done with small aircraft, and how quickly it will do so.

The success of AI also depends on its acceptance by the public. On one hand, people will certainly embrace technology that delivers cargo more quickly and provides transparency regarding its location at any given time. However, on the other hand, reducing the number of pilots in aircraft operations faces more significant technological and public approval barriers. Proponents of AI, across all modes of transportation, often point to the potential safety benefit of reducing human error as causes of accidents. Others identify AI as a potential way to address pilot shortages. Whether airline passengers are willing to accept a smaller flight crew remains to be seen. However, air cargo may be a fertile testing ground for AI as the technology advances because it poses less risk to the flying public than a passenger aircraft flight.

How Congress, DOT and ICAO are addressing AI

Congress is active in AI, including aviation applications. The House of Representatives' FAA Reauthorization Bill, H.R. 4, contains two specific provisions relating to AI. First, the Bill requires the FAA to establish a research and development program "in support of single-piloted cargo aircraft assisted with remote piloting and computer piloting." Additionally, the Bill addresses cybersecurity risks. It would require the FAA to establish a cybersecurity research and development program, consult with the National Institute of Standards and Technology on cybersecurity threat modeling, and evaluate cabin communications, entertainment and information technology systems vulnerabilities. At this writing, the Bill is pending.

The Department of Transportation (DOT) appears to favor applying existing rules to AI and modifying its rules where needed, rather than broadly interpreting existing regulations to incorporate AI. For example, in 2016, the National Highway Transportation Safety Administration (NHTSA) addressed AI in the context of driverless cars. Google requested an interpretation of whether a Self-Driving System (SDS) in an autonomous motor vehicle could be the "driver" under NHTSA's Federal Motor Vehicle Safety Standards (FMVSS). NHTSA noted that "if no human occupant of the vehicle can actually drive the vehicle; it is more reasonable to identify the 'driver' as whatever (as opposed to whoever) is doing the driving. In this instance, an item of motor vehicle equipment, the SDS, is actually driving the vehicle." However, exemption from its rules would still be needed where the SDS could not meet the FMVSS – such as actuating a brake lever. The Agency indicated it would consider rulemaking to address updating the definition of "driver."

Similarly, FAA right-of-way rules require that pilots "see and avoid" other aircraft. It has determined that drones do not meet this requirement based on the rule's history. At the time the rule was established, the Agency did not contemplate remotely piloted aircraft, and therefore revising that opinion would require rulemaking. The FAA has been working on rules to integrate drones and finding other means, such as

pilot programs and exemptions, to broaden the permitted uses of drones. The FAA has also emphasized its commitment to performance-based rules and collaborating with affected stakeholders.

Nevertheless, because drones used in certain applications do not need to be certificated by the FAA, they will likely be an incubator of AI technology in aviation. Drone manufacturers and software developers are exploring how AI can be used in drone navigation, construction, and security. Technology developed for small drones today may ultimately find its way into transport category aircraft.

DOT is also working on a policy regarding safe rollout of automated vehicles, addressing all DOT modes except aviation. The "AV 3.0" Policy is expected to emphasize flexible and technology-neutral policies and performance-based regulations.

The International Civil Aviation Organization (ICAO) has recognized the importance of cybersecurity to civil aviation because of the growing interconnectedness of, and reliance on, new technologies. In 2013, ICAO established a working group of industry stakeholders, including IATA, to promote cooperation on cyber security issues. In 2014, ICAO developed a Civil Aviation Cybersecurity Action Plan to assess the risk, develop joint positions, and develop best practices for defending systems and mitigating risks. It also considered a resolution calling upon States and industry stakeholders to take actions to counter cyber threats to civil aviation.

How courts will assess AI used in the air cargo industry depends on the specific context of a case, including whether the technology is subject to a federal standard, the level of human interaction with the technology, and the segment of the industry giving rise to the case. Airplane cases will likely be treated differently than vehicle cases.

AI also raises novel legal questions such as who is operating a vehicle largely controlled by AI and whether a human operator can be liable for negligence if not sufficiently alerted to the need to monitor the technology. As discussed below, existing case law should provide guidance in these areas. Currently, there is a conflict in how the federal circuit courts address product liability cases for alleged defects in aviation products. Aircraft systems like flight guidance systems must be approved by the FAA to be installed on aircraft. Some circuits have found that state aviation product liability cases are preempted by federal law because of the FAA's expansive role in regulating aviation safety – so-called "field preemption." Yet, other federal circuit courts have held that such FAA approval does not preempt state product liability claims, finding that manufacturers of certificated equipment may still be held liable under state product liability claims. For example, in *Sikkelee v. Precision Airmotive Corp.*, the United States Court of Appeals for the Third Circuit held in 2016 that preemption must be determined on a case-by-case basis – so called "conflict preemption." The Third Circuit found that FAA type certification alone does not "establish or satisfy the relevant standard of care for tort actions, [or] evince congressional intent to preempt the field of products liability . . . ."

Traditional tort law will likely apply to litigation involving AI, although there are questions about the appropriate legal standards to apply. Courts will need to address whether AI should be treated as a traditional product, or whether it should be held to the same standard for negligence as humans particularly when the technology is processing data and making decisions based on the data it collects. Cases where AI systems are implicated, but error is caused by the flight crew operating the aircraft and its equipment, may still be subject to civil claims in state courts for negligence, wrongful death, survival actions, and breach of contract. For a more detailed discussion, please see our article on air cargo carrier liability in the Winter 2017-18 edition of Air Cargo Focus.

AI may find its way into many aspects of the air cargo industry beyond aircraft. For example, automated vehicles may shuttle cargo or flight crew to aircraft. Again, courts are likely to use established negligence and tort principles to decide these cases. Interestingly, some automobile manufacturers are voluntarily assuming liability for failures of their AI systems even in cases where driver monitoring is required. However, others may seek to shield themselves from liability by arguing drivers understood and voluntarily assumed the risk of operating the vehicle. Additionally, development of federal standards for automated vehicles or other conveyances may affect how tort claims in state court will be decided.

Conclusion

AI certainly holds promise for improving efficiencies and safety for air cargo carriers. Nevertheless, there are many considerations for entities that implement AI, including liability and cybersecurity concerns. There are also considerations for developers of AI such as copyright, intellectual property, and trade secrets protection. We recommend seeking the advice of experienced legal counsel with respect to these matters.

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Dean Griffith focuses his practice on aviation regulatory matters including air carrier, on-demand, fractional ownership, agricultural, helicopter air ambulance operations, and unmanned aircraft. Dean held both law and policy related positions during his more than nine-year career at the Federal Aviation Administration (FAA).

About John D. Goetz, Partner, Jones Day

John Goetz has nearly 30 years of experience defending companies in business and tort litigation. He is a recognized authority in aviation and transportation litigation and has defended multinational companies in trial and appellate courts across the US, Canada, and in Europe. A licensed pilot, John leads Jones Day's airlines and aviation industry initiative. John also counsels clients in NTSB investigations and in FAA proceedings.

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