

Emerging Technologies Update

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Introduction

Our present era is one characterized by rapid technological change, marked by an influx of advancements aimed at enhancing productivity, reducing labor costs, and providing companies with previously unforeseen efficiencies and insights. These emerging technologies—a broad collection of hardware and software that includes artificial intelligence (AI), autonomous vehicles (AVs), biotechnology, robotics, and unmanned aerial systems (drones)—are being incorporated into everyday operations by seemingly every industry and sector.

A number of emerging technologies are finding particular value in the energy, natural resources, and transportation spaces. A brief survey of these sectors reveals that companies are incorporating emerging technologies in a number of novel ways, including:

- Use of drones to detect leaks along pipelines and to survey the structural integrity of offshore rigs;
- Integration of machine learning-empowered connected devices by electric, gas, and water utilities to better serve communities by identifying ways to be more efficient with respect to how resources are managed;
- Application of predictive analytics for refinery/gas plant optimization to mitigate unprogrammed plant shutdowns, improve yields, and enhance safety awareness;
- Incorporation of machine learning and computer vision into AV systems which have the capability to significantly improve road safety, reduce traffic fatalities, and improve vehicle efficiency;
- Adoption of machine learning and data analytics by oil and gas companies into planning processes for drilling by hydraulic fracturing; and
- Utilization of autonomous delivery systems—including aerial and sidewalk drones—in an effort to significantly reduce the cost of deliveries and environmental impacts over the “last mile.”

While these and other technologies show great promise, they also create a host of new challenges for governments, companies, and individuals. In particular, emerging technologies could usher in an era of massive disruption that dramatically alters and upsets traditional notions of consumer safety and privacy, national security, job security, and environmental quality. Federal and state regulators and legislators are already starting to tackle the challenges arising from emerging technologies—with mixed results. These actions risk generating unintended consequences that could stifle innovation and/or forestall the incorporation of emerging technologies into various industry operations.

This inaugural VNF Emerging Technology Update is intended to identify recent executive and legislative branch developments in the emerging technology space that may impact the deployment of these technologies, which in turn could impact client operations. If you have a question about these or any other developments in the emerging technology space, please contact the authors of this alert.

Recent Emerging Tech Developments

DOT Announces New Measures to Facilitate Drone Deployment

On January 14, 2019, Secretary of Transportation, Elaine Chao, announced several significant regulatory developments that should—in time—provide drone companies and operators with more operational flexibility.

First, Secretary Chao announced that the Federal Aviation Administration (FAA) had unveiled a proposed rule entitled, “[Operation of Small Unmanned Aircraft Systems over People](#).” Among other things, the proposed rule would allow a small drone to “pass[] over any part of any person who is not directly participating in the operation and who is not located under a covered structure or inside a stationary vehicle”—provided that the drone meets certain operational constraints related to drone weight, design, and risk of injury to people. The proposed rule would also permit drones to operate at night provided that (i) the drone is equipped with an anti-collision light that is visible for at least three statute miles, and (ii) the operator has completed relevant knowledge training and testing.

While the proposed rule is a good first step in facilitating further innovation in small drone use cases, it is unlikely that the rule would have any immediate impact because it is contingent on the FAA implementing remote identification and tracking regulations, which the FAA is expected to promulgate in proposed form [later this year](#). Moreover, remote ID and tracking rules are necessary to stymie nefarious and nuisance operations that could target critical systems and infrastructure, including events similar to those that occurred at London’s Gatwick and Heathrow airports late in 2018 and early in 2019, and at Newark International Airport on January 22, 2019. Thus, while the proposed rule is a welcome step toward facilitating drone innovation, regulators still have a lot of work to do before companies (and consumers) realize the potential benefits of commercial drones.

In addition to the proposed rule, the FAA also announced an advanced notice of proposed rulemaking (ANPR) seeking comments on the “[Safe and Secure Operations of Small Unmanned Aircraft Systems](#).” The ANPR recognizes the potential national security threat that drones pose to critical infrastructure, acknowledging that it is continually assessing the ability of the Part 107 regulations to address these concerns. In addition, the ANPR notes that the FAA is working to develop a process to allow certain fixed-site facility owners to petition the agency to prohibit or restrict drone operations in close proximity to, e.g., critical infrastructure sites. The ANPR further recognizes public safety and national security concerns arising from loss of control of a drone. The agency seeks comment on the need to promulgate regulations establishing design requirements (such as

redundancy) for systems critical to flight safety.

It is important to note that the current government shutdown has impacted the publication of these regulatory actions in the *Federal Register*. Therefore, the FAA is not yet accepting public comment on these actions. The FAA has not indicated when it will publish these actions in the *Federal Register*, but simply says both will be published “at a later date.”

FCC Proposed Rule on Unlicensed Use of 6 GHz Band

On December 17, 2018, the Federal Communications Commission (FCC) published a proposed rule to expand [unlicensed use of the 5.925-7.125 GHz band](#) (6 GHz band). Specifically, the FCC would allow unlicensed access points to operate on the 5.925-6.425 GHz and 6.525-6.875 GHz sub-bands only on frequencies determined by an automated frequency control (AFC) system. For the 6.425-6.525 GHz and 6.875-7.125 GHz sub-bands, the FCC would not mandate an AFC system and would permit unlicensed access points to operate at lower transmitted power.

The FCC’s press release on the proposed rule notes that “[u]nlicensed devices that employ Wi-Fi and other unlicensed standards have become indispensable for providing low-cost wireless connectivity in countless products used by American consumers.” The proposed rule represents one element of the FCC’s broader objective to facilitate and ensure that adequate spectrum exists to accommodate the proliferation of connected devices in the internet of things (IoT).

While the FCC asserted its commitment to “protecting the incumbent licensed services that operate in this spectrum,” the FCC’s proposed action does raise the possibility of conflict with electric, gas, and water utilities and other critical infrastructure systems, which have long relied on the 6 GHz band for their communications networks. Some worry that the FCC’s action could unleash a flood of new unlicensed users on the spectrum, which could create radio frequency interference that compromises both reliability and emergency response capabilities.

Comments on the proposed rule are due by February 15, 2019.

BIS Contemplating Export Controls for Certain Emerging Technologies

On November 19, 2018, the Bureau of Industry and Security (BIS)—an agency within the Department of Commerce—published an ANPR seeking public comment on [criteria for identifying emerging technologies](#) that are essential to U.S. national security. The BIS ANPR comes at a time of heightened scrutiny over global technology transfers. The past year alone has been dominated by headlines of (i) potential national security concerns related to the import of Chinese telecommunications technologies; (ii) potential supply chain attacks on U.S. technology manufacturers; and (iii) escalating trade tensions between the United States and China precipitated at least in part by U.S. objections over Chinese theft of intellectual property.

It is this third risk that BIS’s ANPR is attempting to redress. With the help of public comments received over the course their comment period (which closed on January 10, 2019) BIS will evaluate potential national security risks that may arise from the export of emerging technologies. The agency has indicated that it will likely promulgate a proposed rule to amend the Commerce Control List (CCL) to include new Export Control Classification Numbers (ECCNs) for certain emerging technologies.

While there is certainly a need to address the economic, national security, and political implications of technology transfers—and the deleterious impacts of industrial espionage—some of the most

prominent technology companies and technology industry advocacy groups argue that BIS's action will do little to mitigate potential national security risks and may actually do more to harm U.S. emerging technology companies, because any prohibition on technology exports will apply to companies operating within the United States. Consequently, sophisticated external actors will still be able to engage in industrial espionage, thereby extracting potentially sensitive technologies outside of officially-sanctioned processes, allowing certain emerging technologies to end up in jurisdictions outside of the United States or its allies without U.S. companies being able to control the dissemination of those technologies.

Given the potential negative impacts of BIS's contemplated regulatory action—as well as the fact that BIS issued the ANPR immediately before the year-end holiday season—many companies petitioned the agency for an extension of the original 30-day comment period. While BIS did extend the comment period an additional three weeks, the compressed comment period undoubtedly prevented some companies and individuals from offering more detailed insights. Given the potential economic and security impacts of the ANPR, companies may wish to engage with the Office of Information and Regulatory Affairs (OIRA) within the Office of Management and Budget (OMB) as an alternative or parallel strategy to ensure that the Administration is aware and understands the potential implications on U.S. companies.

Senators Warner and Rubio Introduce Bill to Establish the Office of Critical Technologies and Security

On January 4, 2019, Senators Mark Warner (D-VA) and Marco Rubio (R-FL) introduced [S.29](#), which would establish an “Office of Critical Technologies and Security” within the White House. Recognizing threat of industrial espionage, forced technology transfers, and supply chain vulnerabilities, the bipartisan bill is intended to ensure that technology transfer decisions occur within a broader policy context—a “whole of government technology strategy”—that weighs relevant economic, geopolitical and national security concerns in a way different from the existing BIS regulatory process.

As of January 22, the Senate has taken no further action on the bill.

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National Law Review, Volumess IX, Number 23

Source URL: <https://natlawreview.com/article/emerging-technologies-update>