

# Unmanned Aircraft Systems

Our Capabilities





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## 01

# The Market

## Rapidly growing market

The potential of drone technology as a new revenue stream or as a means to enhance safety and reduce cost in existing operations is so significant that it cannot be ignored. New-generation Unmanned Aircraft Systems ("UAS" or "drones") are fast becoming the standard replacement for unsustainable or limited transportation technologies. Its proliferation is revolutionizing industries across sectors, while simultaneously pushing aviation law's boundaries. Several projections foresee market growth opportunities in the years to come. Since its initial inception, corporations have began integrating the use of drone technology as a service for data capturing as it continues to play a viable role for their business needs and solutions.

The North America and Asia Pacific continue to lead the regional drone market, with users varying from recreational flyers, commercial operators, public safety & government users and educational users. Today, more than 30 countries worldwide are deploying UAS operations and technology in mainstream markets and industries.

The proliferation of Unmanned Aircraft Systems ("UAS") – also known as Unmanned Aerial Vehicles ("UAV"), Remotely Piloted Aircraft Systems ("RPAS"), or ("drones") is revolutionizing industries across the globe, and pushing the boundaries of traditional regulatory and operational frameworks. Many companies need specialized, industry specific advice to navigate this rapidly-evolving legal landscape and to utilize UAS to their full capabilities.

A wide variety of industries, including construction, agriculture, mining, nuclear, search and rescue, mapping, real estate, insurance, and news media—to name a few—are using small drones to further their businesses, often enhancing safety and reducing costs. In addition to smaller drones, commercial applications are rapidly evolving to include high-altitude pseudo satellite drones ("HAPS"), passenger-carrying self-piloted aircraft, and counterdrone measures.

This presentation is specifically focused on small UAS ("sUAS"), generally defined to mean UAS weighing under 25 kilograms (55 pounds). Larger UAS, as well as riskier operations with sUAS, are subject to a much greater degree of regulation.





## 02

# Drone applications

## Agriculture

The use of drone technology in precision agriculture to aid companies, agronomists and growers in the agribusiness industry has been widely applied. Drones have provided companies and growers with a variety of applications in cutting processing time, supporting in manpower shortages, monitoring crop health, fertilizing and detecting pests and diseases in its early stages. The benefits of the use of drones include the integration of smart technology, artificial intelligence and machine learning that enable the collection and use of data for specialized and modified field and crop management.

Agricultural drones have become an integral part in optimizing operations, surveying land and boosting crop yields. There are now a number of companies manufacturing drones that specialize and provide solutions in this particular segment. Over the years, there have been an increased application of drone use by international nonprofit organizations for food and agricultural productivity. Another innovative application is in the area of drone planting. Drones deliver solutions by monitoring soil conditions, collecting data on specific areas and evaluating where best to plant strategically.

## Construction

From 2017-2018, commercial drone use in construction surged 239%, the fastest growth of any sector. UAS may be used to provide real-time updates of what is happening around construction sites, enabling engineers and surveyors to make informed decisions and reducing costs and risks.

With the ability to provide aerial pictures and videos, as well as create 3D renderings of future construction projects, companies can provide insight to their customers that would otherwise be unavailable. Customers are able to monitor the progress of their projects in real-time, and contractors are becoming more efficient and more proactive in updating clients. UAS also offer a wide range of analytics and end-to-end drone-as-a-service (“DaaS”) solutions to contractors, architects, engineers, building officials and inspectors, and property asset managers.

## Retail and Logistics

Warehousing and logistics has benefited from the introduction of UAS, as global retailers have used UAS instore to improve customer experience as well as last-mile logistics. Coupled with block chain-based systems, which will allow delivery drones located only a few feet from each other to exchange information, the drones are able to exchange authentication signals using block chain keys to confirm they are in the same fleet. From there, one drone can then safely pass on its cargo, revolutionizing retail delivery.





## Energy

The use of UAS to inspect oil and gas infrastructure reduces cost substantially more than traditional inspection methods. By monitoring gas emissions over critical sites and large areas that are otherwise difficult to assess, UAS use also lowers risk.

The accuracy of data from UAS enables companies to shift from preventative to predictive maintenance, helping companies remedy problems. Drones can be employed around flare stacks, oil rigs, and along miles of pipeline for monitoring of leaks or gas emissions, and detecting spills, corrosion, and heat spots. Eliminating the need for human intervention also improves safety.

Integrated with machine learning, UAS may be used to analyze the large volume of images and identify patterns and abnormalities. In an oil and gas installation, algorithms running on a geoservice-enabled machine learning platform can be used to create a digital representation of a remote platform by feeding standard images to train the algorithm to identify an asset on the ground. Future drone-based inspections can then be evaluated based on the algorithm.

## Insurance and Disaster Response

Commercial drones now play a key role in the response to natural disasters, such as hurricanes and earthquakes. For instance, following the damage caused by Hurricane Michael in the Florida Panhandle, insurers used to drones to assess the hurricane’s impact, gather data, and process claims for their customers. In response to another 2018 hurricane, one UAS company employed about 40 pilots to help handle insurance claims. UAS can be used to obtain faster and better imagery of impacted property, particularly when the property is otherwise hard-to-reach, greatly improving the efficiency of handling claims. The use of UAS also reduces human risk.

Insurers are not the only organizations that may use drones in the wake of disasters. Emergency responders may employ

UAS to conduct damage assessments and assist in search-and-rescue operations, for instance. UAS can be used to identify road obstructions and check the conditions of homes. In the years to come, the growing use of UAS will likely provide additional opportunities to improve disaster response efforts.

## Mining

Although use in mining is relatively new, application in this sector is rapidly growing due to the efficiency and safety benefits offered by drone technology. Drones can quickly and effectively inspect equipment and assets that are difficult to reach, such as cranes and towers, and can evaluate slopes and blasting areas that may be dangerous for workers to access. Drones can also be used to gather data on stockpiles to quickly and accurately quantify progress of operations.

Another application of drones for mining is in underground mining, to explore and survey underground features and create 3D scans. Drones can be used by mining engineers to assess and update information on ore bodies, geologic features, and progress of operations. Similar to surface operations, safety is a key benefit for this application; companies can gather helpful information without putting workers in high-risk areas.



## 03

# Drone policy

## United States

Commercial operations of UAS weighing under 55 pounds or “sUAS” are regulated by the Federal Aviation Administration (“FAA”) under 14 C.F.R. Part 107, which imposes restrictions on certain operations, including flights at night, beyond visual line of sight, and over people. To operate outside of these restrictions, operators currently must obtain a waiver from the FAA. The FAA intends to move away from the Part 107 waiver regime towards expanded operations in the future and has initiated rulemakings in a number of areas to further this goal. These include the FAA’s December 2019 proposed rule that would require the remote identification of UAS, which will allow the FAA to develop unmanned traffic management capabilities, an initiative viewed by the FAA as a critical component to enable expanded operations.

Separate from the above operating requirements, the FAA also administers airworthiness requirements for certain UAS. In February 2020, the FAA issued a request for public comment on a policy for the type certification of certain UAS, which would apply to both large UAS (55 pounds or more) and sUAS operating outside the limitations imposed by Part 107. sUAS operating under Part 107 (or with a waiver under Part 107) are not required to have airworthiness certification, but all other civil UAS must receive airworthiness certification from the FAA or an exemption from such requirements. The goal of the proposed policy is to move away from the current exemption framework, which is viewed as unsustainable in the long term, towards a standard airworthiness certification system for drones.

## China

Under the current regulatory regime for civil use of UAS, the key regulator in China is the Civil Aviation Administration of China (“CAAC”). CAAC categorizes UAS into different grades based on their unloaded weight and take-off weight. According to the relevant regulations, UAS that fall into specific grades must comply with a series of corresponding requirements regarding registration, pilot licence, trial operation and technical specifications.

In addition, China is in the process of formulating a new codified regulation governing the pilot, aircraft, airspace and operation of UAS, which is expected to be released in the near future.

## European Union

The European Union (“EU”) has recently implemented two Regulations aimed at harmonizing Member States’ legislations on drones, replacing the existing national rules: Delegated Regulation (EU) 2019/945 (“**Delegated Regulation**”) and Implementing Regulation (EU) 2019/947 (“**Implementing Regulation**”). Such Regulations laid down specific manufacture and operational requirements for drones, applicable both to professionals and persons flying drones for leisure. In particular:

- the Delegated Regulation identifies the design and manufacture requirements of drones and the relevant remote identification add-ons as well as the type of drones that present high safety risks and should be subject to certification. It also establishes the rules to sell drones in the EU and regulates drone operations carried out by third-country operators in the EU airspace;

- the Implementing Regulation, on the other hand, regulates drones on the basis of the operation to be carried out, establishing three different types of operation, i.e., the ‘open’, ‘specific’ and ‘certified’ category. The operations would fall under one of such categories depending on certain characteristics defined by the Regulation itself (e.g., maximum take-off mass, flight over assemblies of people, height above the ground) and may require the prior authorization of the competent authority or even the certification of the drone/operator as well as the license of the remote pilot. The Implementing Regulation also contains detailed provisions for personnel involved in drone operations, including remote pilots and organizations.

However, the EU has given Member States a transitional period to get prepared to and coordinate with the above-mentioned provisions. Regulations will be gradually applicable within 2022.





# 04 Challenges facing commercial drone operators



## AVIATION REGULATORY

- Aircraft and operator certification
- Airspace restrictions and authorizations
- Public aircraft operations
- Registration
- Accident reporting and investigation
- Preemption



## PRIVACY, SECURITY, AND CYBERSECURITY

- Individual rights to privacy
- UAS defenses
- Corporate espionage
- In-flight identification
- Warrants and law enforcement uses
- Restricted zones



## TECHNOLOGY AND INTELLECTUAL PROPERTY

- Infringement
- Licensing and sourcing
- Cybersecurity
- Trade secrets
- Patents



## SAFETY

- Unmanned traffic management
- Pilot training/qualification
- Crew time and medical certification
- Geo-fencing
- Risk-management
- Batteries and hazardous materials



## LIABILITY

- Insurance
- Forum and jurisdiction
- Manufacturer and owner liability
- Regulatory compliance and enforcement
- Unauthorized operations
- Mishap planning



## INTERNATIONAL LEGAL ISSUES

- Import/export compliance
- Anti-corruption
- Cross-border flight approvals
- State bilateral and international regulation
- Economic sanctions



## CORPORATE, BUSINESS AND GOVERNMENT CONTRACTS

- Taxes
- Citizenship requirements
- Employment
- Corporate flight policies/guidance
- Public-private partnerships



## APPLICATIONS AND PLATFORMS

- Public aircraft operations
- Large high-altitude UAS
- Self-piloted vehicles
- sUAS
- Experimental UAS and flight testing



## 05

# Country regulations

## United States

To operate under Part 107 regulations, sUAS weighing more than 0.55 pounds must be registered with the FAA, and the pilot must be issued a Remote Pilot In-command Certificate ("**RPIC**"), which may be obtained by passing an aeronautical exam. Part 107 imposes several limitations on sUAS operations. Most notably, nighttime operations and operations over people are prohibited without a special waiver from FAA. In addition, sUAS must remain in the pilot's visual line of sight and may not be operated more than 400 feet above ground, or more than 400 feet above a building or structure. Part 107 also prohibits the operation of sUAS "in a manner that interferes with operations" at an airport. For those seeking to conduct UAS operations beyond the scope of the restrictions, Part 107 offers a broad waiver mechanism, which allows operators to obtain a waiver of most restrictions. The FAA has issued close to 3,000 waivers to date. Penalties for violations of Part 107 may include the suspension or revocation of the operator's RPIC license and civil fines. The FAA is also working with local law enforcement agencies to improve the identification of pilots operating in violation of the regulations.

In January 2019, the FAA issued a Notice of Proposed Rulemaking ("**NPRM**") containing proposed regulations that would authorize nighttime operations and operations over people without a waiver. In February 2019, the FAA issued an Advanced Notice of Proposed Rulemaking ("**ANPRM**") seeking public comment on a number of issues such as stand-off distances, altitude and airspeed limitations, and payload restrictions. Should the FAA determine

to expand or modify the Part 107 regulations, the FAA will issue a new NPRM containing proposed regulations, which will provide for more public comments before the regulations are made final.

In December 2019, the FAA issued a NPRM for the remote identification ("**Remote ID**") of UAS, which is likely to be modified to address concerns raised by UAS stakeholders during the public comment period which closed in March 2020. The FAA expects to issue a final rule by the end of 2020. The Remote ID NPRM had been long-anticipated, and will serve as a linchpin to further UAS integration and expansion of operations currently restricted by the FAA, including flights at night, beyond visual line of sight, and over people. Under the NPRM, all owners of UAS subject to current FAA registration requirements will be required to register each individual drone, including the manufacturer, model, and serial number. Beginning three years after the rule is finalized, operators of UAS that are required to be registered with the FAA must comply with the Remote ID transmission requirements. Beginning two years after the rule is finalized, UAS manufacturers will be required to design or produce drones in accordance with performance requirements of one of two types of Remote ID transmission: standard Remote ID or limited Remote ID. The key difference is that Standard Remote ID UAS would be required to broadcast ID and location information from the UAS and transmit that same information to a Remote ID USS through an internet connection. On the other hand, Limited Remote ID UAS would be required to transmit information through the internet only, with no broadcast requirements. Limited Remote ID UAS can operate no more than 400 feet from the control station.

## Argentina

UAS operation is allowed in Argentina to the extent it complies with local standards set by the Argentine Federal Civil Aviation Administration ("**ANAC**"). Argentina currently has provisional rules governing both commercial and recreational UAS use. New, streamlined regulations are expected to be approved in the near future. UAS are only allowed to fly below 122 meters, and some additional restrictions may apply based on the area (e.g. airport surroundings). UAS are subject to different restrictions based on their weight classification. Those classifications are: (a) small, weighing less than 10 kilograms; (b) medium, weighing between 10 and 150 kilograms; and (c) large, weighing more than 150 kilograms. In all three classifications the operator must obtain a license by ANAC, except for UAS that weigh under 10 kilograms and are being used for recreational purposes. Currently UAS are only allowed to operate during the day, though a new regulation currently under analysis would also allow some nighttime operations. The operator is exclusively liable for all the damages arising from the operations, and, therefore, is requested to have an insurance covering all operations. Such insurance is not required for small UAVs used exclusively for recreational purposes.



## Australia

To operate UAS in Australia, companies must comply with several requirements from The Civil Aviation Safety Authority ("**CASA**"). If a drone is flown for commercial purposes or if money is earned with its use, a remote pilot licence ("**RePL**") or remotely piloted aircraft operator's certificate ("**ReOC**") is usually required. Drones weighing under 2 kilograms can be flown without a licence. For drones that weigh more than 2 kilograms, a flight notification form must be completed. The form must refer to a specific drone and location and it is valid for three years. Multiple locations and categories can be chosen on one notification form. In addition, new requirements will take effect at the end of 2019:

- All drones must be registered with CASA except for drones weighing 250 grams or less as well as those only flown indoors. Also, any drone model being exclusively flown at a CASA-approved model airfield need not be registered.
- Companies must obtain a drone accreditation to prove they are familiar with the "Drone Safety Rules" if the drone weighs more than 250 grams.
- Operators may fly only one drone at a time, must always fly the drone within their visual line of sight, may not fly it higher than 120 meters above ground level, and not closer than 30 meters to people or closer than 5.5 kilometres to a controlled aerodrome or airfield.

Flying without a required registration is punishable by penalties including fines of up to AUD\$ 10,500 and possible jail time.

## Brazil

The Brazilian National Aviation Agency ("**ANAC**") approved a special regulation for the use of UAS throughout the Brazilian territory. According to Brazilian laws, UAS may be used for commercial or recreational purposes; both are subject to some restrictions and a code of conduct. ANAC differentiates UAS based on weight: (a) less than 250 grams; (b) between 250 grams and 25 kilograms; (c) between 25 kilograms and 150 kilograms; and (d) more than 150 kilograms. Different requirements apply depending on the weight classification of the UAS; however, all UAS, regardless of weight class, shall be registered with the Brazilian Aeronautic Registry. For UAS under 250 grams no special requirements are imposed; however, for every other UAS category, the operator must be at least 18 years old and have third-party insurance. ANAC requirements also apply to operators depending on the UAS category.

## Canada

Transport Canada, the agency that oversees UAS operations in Canada, made sweeping changes to the UAS regulatory framework that took effect on June 1, 2019. Those changes authorize commercial UAS operations without preapproval for each use; previously, nearly all non-recreational UAS operations required a one-time Special Flight Operations Certificate ("**SFOC**"). Under the new regulations, all UAS weighing between 250 grams and 25 kilograms must be registered with Transport Canada, and all operators must obtain a pilot certificate. There are two types of

pilot certificates: one for "basic operations," and one for "advanced operations," which is needed for certain types of operations such as operations over people. Holders of either certificate must abide by certain restrictions: they may not conduct UAS operations more than 400 feet above ground or 100 feet above a building or structure, the UAS must remain in the pilot's visual line of sight, and the UAS may not be operated at outdoor events such as concerts or festivals. Unlike in the United States, however, nighttime operations and operations over people are permissible without a special license (though the latter are limited to holders of a certificate for advanced operations). To conduct operations beyond the scope of the regulations, a pilot must obtain a SFOC from Transport Canada. A SFOC is also required for operations of UAS carrying dangerous or hazardous payloads, as well as for operations by foreign pilots. Canada's UAS regulations are enforced by both Transport Canada and the Royal Canadian Mounted Police, and penalties for violations may be as high as \$5,000 for individuals and \$25,000 for corporations.



## China

The regulations addressing the civil use of UAS in China are not yet well-established, but they are evolving rapidly. In addition to Civil Aviation Administration of China ("**CAAC**"), which is the key authority in China in charge of civil use of UAS, other authorities, such as the Ministry of Industry and Information Technology and the Ministry of Public Security, also work with CAAC in regulating UAS. According to the relevant rules, UAS generally can be categorized in the chart below:

To operate UAS, the owner and operator must comply with the following CAAC rules: (a) all UAS with a maximum takeoff weight of 250 grams or more must be registered with the CAAC under the owner’s name; (b) except for Grade I and Grade II UAS (and other

special circumstances), an operator must obtain the appropriate UAS pilot license issued by the CAAC; and (c) any company utilizing UAS with a maximum unloaded weight of 250 grams or more for commercial purposes must first obtain an operational license from the CAAC. Current rules in China provide that UAS can only be operated in the restricted airspace designated by the governmental authorities. Accordingly, an operator of UAS outside of such restricted airspace must file any flight plan and obtain the approval from CAAC. As a general principle under CAAC’s regulations, the operation of UAS should be within the visual line of sight, and if any flight of UAV goes beyond the visual line of sight, the UAS and the operator are subject to a series of more stringent requirements.

Grade	Unloaded Weight (kilograms)	Maximum Take-off Weight (kilograms)
I	0 < Weight ≤ 0.25	0 < Weight ≤ 0.25
II	0.25 < Weight ≤ 4	0.25 < Weight ≤ 7
III	4 < Weight ≤ 15	7 < Weight ≤ 25
IV	15 < Weight ≤ 116	25 < Weight ≤ 150
V	Agricultural UAV	
VI	116 < Weight ≤ 5700	150 < Weight ≤ 5700
VII	Weight > 5700	

## France

To operate UAS to perform 3D imagery in France, companies must comply with several requirements from the French Direction Générale de l’Aviation Civile ("**Civil Aviation Authority**" or "**DGAC**"). Companies must operate drones within one of the four operational scenarios allowed by regulations and comply with the operational and technical requirements applicable to each scenario. DGAC requirements for the operation of drones weighing less than 2 kilograms are generally less burdensome and allow the operator to fly up to 150 meters. If the company wants to operate outside of the four scenarios or over protected airspace, it will need an authorization from the competent civil aviation authority. The DGAC regulates operations of UAS weighing 150 kilograms or less in France. France regulates UAS differently based on the type of operation. Three types of operations are available: recreational, specific, and experimental. The DGAC provides a broad definition of “specific operation” which includes all operations that are not for recreational or testing purposes.

## Italy

In Italy, the operation of Remotely Piloted Aerial Vehicles ("**RPAV**") is subject to the general provisions of the Italian Navigation Code and the sector-specific implementing regulation issued in 2013 by the Italian Civil Aviation Authority (Ente Nazionale per l’Aviazione Civile - "**ENAC**") on drones (the "**Drone Regulation**"). ENAC has recently amended the Drone Regulation to coordinate it with the new EU regulations on drones. The Drone Regulation regulates the operation of RPAV with a take-off mass up to 150 kg used



for ‘specialized operations’, ‘research and developments activities’ and ‘non specialized activities’. The operations may be conducted in Visual Line of Sight (“**VLOS**”), Extended Visual Line of Sight Conditions (“**EVLOS**”) and Beyond Visual Line of Sight Conditions (“**BVLOS**”). Operators of RPAV used for professional purposes or weighing 250g or more used for recreational purposes must be registered with an ad-hoc portal and place a QR code on the RPAV for identification purposes while pilots of same RPAV must obtain a pilot certificate to operate them. Depending on the type of the operation (i.e., ‘critical’ or ‘non-critical’), the operator may be required to obtain a prior authorization from ENAC and the pilot may also be required to attend a training course and pass the relevant final exam. All drones must be insured against liability to third parties. The Drone Regulation does not apply to ‘toy aircraft’ (i.e., drones designed to be used by children under the age of 14) and contains specific provisions for ‘model aircraft’ (i.e., drones operated within organizations recognized by a Member State for sport or leisure purposes). Drones weighing more than 25kg are subject to additional registration, identification and authorization requirements.

## Japan

There are various laws which govern drones in Japan, the most important of which is Aviation Law. Aviation Law, which is overseen by the Minister of Land, Infrastructure, Transport and Tourism, regulates drone operation from two angles. One establishes prohibited airspace for flight, and the other establishes the rules on operational limitations. As to prohibited airspace, flying drones is prohibited: (a) near an airport; (b) above densely populated areas; and (c) beyond certain heights above ground level (150 meters or more). Under the rules, the following

conditions must be met when flying drones: (a) operation in the daytime; (b) operation within VLOS; (c) operation beyond 30 meters of other persons and property; and (d) operation way from event sites where many people gather. In addition, drones may not transport hazardous materials or drop objections while in operation. Any person who intends to fly drones within prohibited airspace or beyond the scope of the above conditions must obtain prior authorization from the competent government agency. Drones that weigh less than 200 grams are not subject to Aviation Law but may be subject to other regulations including the Drone Operation Restriction Act and ordinances issued by local governments. There are currently no UAS registration requirements, but the government aims to launch drone registration system in 2022.

## Mexico

Operators, manufacturers, importers and sellers of RPAS, who are involved in activities related to operation and use of RPAS in Mexico, need to comply with several requirements pursuant to the Mexican Official Standard (Norma Oficial Mexicana) number 107-SCT3-2019 (“NOM”), issued by the Ministry of Transport and Communications (“SCT”). The RPAS are categorized depending on their weight, namely (i) micro, weighing no more than 2 kilograms; (ii) small, ranging from 2,001 to 25 kilograms, and (iii) large, weighing more than 25 kilograms. NOM-107 classifies RPAS into different categories based on their maximum take-off weight and, regardless of their classification; they may be operated for (a) recreational, (b) private non-commercial, and (c) commercial use. Depending on the category, different operating requirements must be met by operators, such as mandatory registration before

the Mexican Civil Aviation Authority, (“AFAC”) for its initials in Spanish, and acquiring civil liability insurance policies. RPAS used for commercial or private not commercial purposes, may conduct night flights with prior authorization of the AFAC, while RPAS for recreational use are only allowed to be operated during daylight. Additionally the NOM provides, as a general rule, that all RPAS must be operated within VLOS; however, operators of RPAS for private not commercial and commercial use may request a special one-time authorization from the AFAC to operate the RPAS BVLOS.

## United Kingdom

Commercial operations of UAS that weigh less than 20 kilograms in the United Kingdom requires permission from the Civil Aviation Authority (“CAA”). Permissions granted by the CAA are valid for up to 12 months, and are subject to an annual renewal. To obtain permission, operators must provide evidence of pilot competence and an Operations Manual detailing how the UAS flights will be conducted. The “standard permission” granted by the CAA for commercial UAS operations permits a range of operations, including operations within a congested area (meaning a city, town, or an area substantially used for industrial or recreational purposes). Operations that contain a greater degree of risk, however, such as beyond visual line of sight operations, operations within 150 meters of open-air assemblies, and operations within 50 meters of persons or property uninvolved in the UAS operations, require an additional “non-standard permission.” To obtain a non-standard permission, operators must provide the CAA with an Operating Safety Case to demonstrate that the intended operation is appropriately safe. Operators are required to have insurance for every flight they conduct.



# 06

## How we can help



### AVIATION REGULATORY

Like manned aircraft, UAS are subject to numerous regulatory requirements depending on the size of the UAS and the type of operations. In general, most jurisdictions take a risk-based approach to regulations, with more complex operations and operations by larger drones being more heavily regulated.

Aviation regulators certify pilots, define areas of UAS operations, and set limitations for such operations. For operations outside the standard parameters or in controlled airspace, attorneys can help secure waivers or authorizations.

**Subtopics**

- Aircraft and operator certification
- Airspace authorizations
- Public aircraft operations
- Registration
- Accident reporting

**Points to consider**

Become familiar with the governing UAS regulations well before commencing operations.



### PRIVACY, SECURITY, AND CYBERSECURITY

Because drones often carry a sensor, such as a camera, the proliferation of drones has significant privacy implications. Corporate entities have raised concerns with drone overflights of their property, based on concerns about corporate espionage and the protection of trade secrets.

In response to privacy concerns, drone defenses and protection is an area that is rapidly expanding. Our attorneys understand the interplay of privacy requirements and advise on privacy investigations, disputes, and agreements.

**Subtopics**

- Privacy Laws
- UAS defenses
- Corporate espionage
- Remote identification
- Law enforcement uses
- Restricted zones

**Points to consider**

Consult with counsel before using UAS that may (intentionally or not) monitor or record other persons or property.



### TECHNOLOGY AND INTELLECTUAL PROPERTY

In addition to the hardware, drone software has expanded. Companies are using UAS with different types of sensors to collect various types of data. This data is then processed and analyzed. As with any quickly developing technology, UAS software developers will have to navigate intellectual property, licensing, sourcing, and infringement issues. Relatedly, the issue of cybersecurity also impacts UAS. Our leading team helps protect clients against cybersecurity threats by developing, managing, and implementing data security policies, procedures, and emergency plans.

Our attorneys have deep experience in the field of Intellectual Property. We approach IP management as a strategic issue and have developed the people, processes, and technologies to serve as a one-stop shop for protecting the IP assets of global businesses.

**Subtopics**

- Infringement
- Licensing & sourcing
- Cybersecurity
- Trade secrets
- Patents

**Points to consider**

Drone software has numerous IP implications that should be assessed from the start.





## SAFETY

The safety of UAS operations is one of the primary concerns of aviation regulators. As UAS operators seek approval for more complex operations—such as flights that are BVLOS, package delivery, large UAS flights, and passenger operations—regulators will demand greater levels of safety and additional certainty and redundancy of safety features. New technologies, such as geo-fencing, see-and-avoid programming, and unmanned traffic management (“UTM”) are providing operators and regulators with increased safety protections.

Our attorneys advise on product recall, crisis and risk management, as well as other aviation safety matters.

### Subtopics

- Unmanned traffic management
- Pilot training/qualification
- Crew time and medical certification
- Geo-fencing
- Risk-management
- Batteries & Hazardous Materials

### Points to consider

Don’t wait until after an accident occurs. Determine how to address safety issues and manage any accidents before anything goes awry.



## LIABILITY

Drone insurance is increasingly in demand as countries require commercial operations to have basic insurance requirements. Although the FAA does not currently require insurance, many private corporations insure their operations to lessen liability risks. Commercial operators should also develop a plan for responding to mishaps and a thorough review of reporting regulations in the jurisdiction.

Despite safety improvements, UAS accidents and incidents have occurred and will continue to occur. Government investigations typically review such mishaps to determine their cause and attempt to prevent similar future mishaps. We advise operators on how to prepare and respond to the complex requirements and exceptions to UAS accident and incident reporting.

### Subtopics

- Insurance
- Forum & jurisdiction
- Manufacturer & owner liability
- Regulatory compliance & enforcement
- Unauthorized operations
- Mishap planning

### Points to consider

Understand your potential exposure to liability before beginning operations.



## INTERNATIONAL LEGAL ISSUES

The expansion of UAS internationally raises numerous issues and presents novel legal questions. For example, as UAS technology improves, longer, cross-border UAS flights are becoming possible. sUAS are easily transportable to other jurisdictions.

Our attorneys advise operators and authorities to help them navigate UAS through the existing frameworks. We advise on traditional import/export regulation, arms controls, and economic sanctions involving multiple jurisdictions.

### Subtopics

- Trade compliance
- Anti-corruption
- Cross-border flight approvals
- International regulation
- Economic sanctions

### Points to consider

Determine in advance how your international operations are impacted by trade regulations, economic sanctions, and the laws of other jurisdictions.





## CORPORATE, BUSINESS AND GOVERNMENT CONTRACTS

UAS companies must navigate common corporate issues, such as tax and employment. Companies should develop internal UAS policies to ensure employees are operating in compliance with corporate and government requirements. As UAS companies look to operate overseas, such businesses also face citizenship requirements—a challenge that airlines have been addressing for years. Additionally, as governments expand their use of drones to include both military and civil uses, government contract work and public private partnerships for UAS will expand.

Our global team regularly advise on Tax, Employment, Corporate and PPP related matters that help address these challenges and issues facing our clients' businesses and operations.

### Subtopics

- Taxes
- Citizenship requirements
- Employment
- Corporate flight policies/guidance

### Points to consider

UAS companies should consult with counsel to address tax, employment, and other corporate legal issues.





## 07 Where we have helped our clients

### Our expertise and experience

Our advice for UAS manufacturers, operators, and developers includes:

- Expanded Operations – Obtaining waivers for commercial drone operators to operate outside of normal operating parameters, such as package deliveries and flights at night, beyond visual line of sight, and over people.
- UAS Certification – Advising clients on certification and regulatory approval issues, working closely with regulators and manufacturers/developers.
- Restricted Airspace – Helping clients obtain authorizations to operate UAS in restricted airspace, including a long-term authorization to fly in Class D airspace.
- Innovative Drone Technologies – Counseling start-ups developing passenger-carrying drone technology and other innovative drone technologies.
- Aerial Surveying and Mapping – Advising clients on cross-border laws in connection with drone operations, aerial surveying and mapping all over the world.
- High-altitude operations – Advising high-altitude drone operators on regulatory and operational issues around the world.
- Industrial Inspections – Advising industrial companies on UAS applications in infrastructure inspections and precision mapping.
- Marketing and Events – Counseling clients on the use of drones in marketing and events, including in the real estate industry.
- Drone Restrictions and Defense – Advising clients on drone restrictions, privacy law considerations, and drone defense above private properties in multiple jurisdictions.



## 08 Key contacts

Drones are changing how we do our business. Baker McKenzie's UAS Team led by Jennifer Trock, who formed the first U.S. drone team, has industry-focused expertise to help operators and stakeholders understand how UAS technology, commercial arrangements and regulations are developing domestically and internationally.



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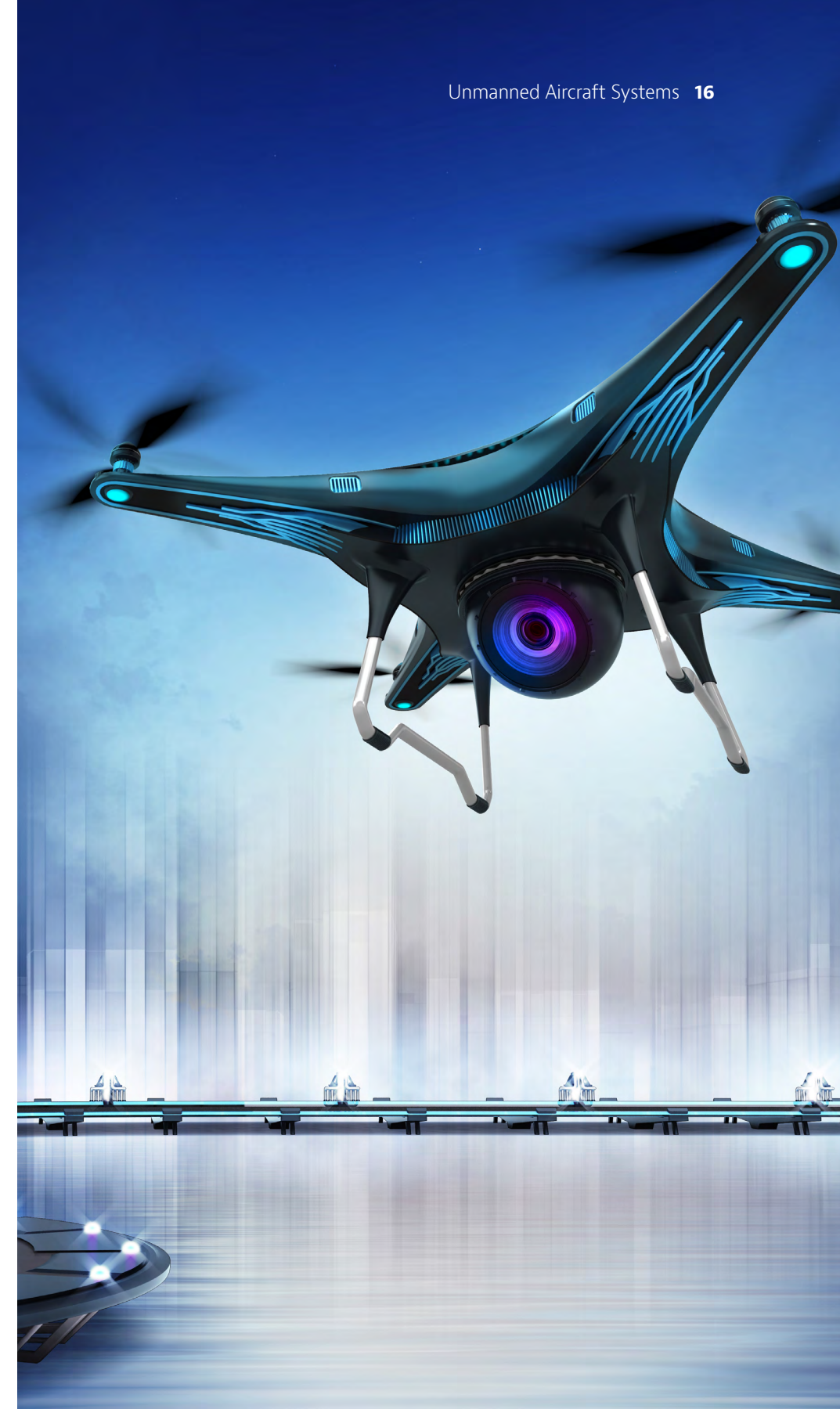


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## **Baker McKenzie delivers integrated solutions to complex challenges.**

Complex business challenges require an integrated response across different markets, sectors and areas of law. Baker McKenzie's client solutions provide seamless advice, underpinned by deep practice and sector expertise, as well as first-rate local market knowledge. Across more than 70 offices globally, Baker McKenzie works alongside our clients to deliver solutions for a connected world.

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