Commercial Use of Unmanned Aircraft Systems (UAS)
A Brief "How-to" Guide

Overview
The commercial use of Unmanned Aircraft Systems (UAS) technology is at the cutting edge of the intersection of technology, law, and business. Companies around the globe are taking a hard look at their business plans to determine if it is appropriate to invest in UAS technology to tackle practical business problems. In many cases, companies are determining that use of UAS technology provides a solution. Areas with practical commercial application include energy, film making, infrastructure, agriculture, media, sports, education, emergency relief, real estate, hotels, and resorts, to name just a few. Unlike some more traditional and established technologies, the use of UAS for commercial purposes is based on a developing and uncertain legal foundation, one that must be viewed from a multitude of perspectives: aviation law, communications law, data privacy law, export law, and government security concerns, among others.

Industry-specific applications and related transactions

- Real estate
- Remote sensing
- Agriculture (crop/moisture monitoring)
- Sports
- Film making
- Energy (e.g. flare stacks)
- Border patrols/ drug enforcement
- National security
- Emergency and rescue

With this uncertain and developing legal foundation, companies planning to use UAS technology should ensure that they have obtained the necessary Federal Aviation Administration (FAA) and other regulatory authorizations, and consider contractual and legal risk mitigation techniques, whether the transaction is the creation of a joint venture, a merger or acquisition, or a commercial transaction involving the sale, purchase, or implementation of UAS technology. Any one of these UAS-related projects may require a collaborative effort with a close eye on budget and schedule risk mitigation considerations, while harnessing a proactive strategy to navigate the regulatory landscape. The opportunities are significant, but so are the regulatory challenges.

> "I don't pretend we have all the answers. But the questions are certainly worth thinking about."
>
> *Arthur C. Clarke*

Particular attention must be paid to contractual provisions that envision the allocation of risk and outcomes to accommodate the timing, incremental costs, requirements and limitations that are imposed as the law evolves. These provisions include risk and cost allocation (and adjustment) provisions, termination provisions, insurance availability, implications for existing financial covenants and financing availability, flexibility of technology infrastructure to accommodate new legal requirements, as well as sufficient provision in business planning (and related agreement provisions) to allow for increased costs necessitated by new legal requirements.

Considerations for UAS transactions
Regulations concerning UAS are emerging, with new developments every month. While the principal regulator of UAS in the United States is the Federal Aviation Administration (FAA), the Federal Communications Commission (FCC) regulations are also important, as is privacy regulation. State regulation of UAS is emerging in parallel, as exemplified in the ongoing legal developments in the State of California, where many emerging UAS businesses are located. For many companies, commercialization of UAS also needs to be considered with an eye toward export regulation and international legal requirements. Global regulation of UAS is evolving in parallel, and sovereign legal regimes are diverse in their state of development, which makes a "one-size-fits-all" solution that much more challenging for a global system architecture.

In this emerging industry, it is vital that before entering into any UAS transaction, stakeholders are fully updated on the current state of the applicable

law and anticipated changes in the law. It is equally important that the contract provides for protection in the event of changes in law, especially in the provisions related to compliance with applicable law, cost of compliance and the resulting actions that are to be taken if the literal provisions of the contract cannot be carried out due to changes in law.

Due diligence
A full understanding of the legal framework (existing and anticipated, federal, state, and international) is necessary as applied to the intended operation(s) of the UAS. This will be necessary to evaluate project feasibility, assess the costs and limitations, and for consideration of the contractual provisions that will be required to adjust to changes in the legal framework.

Unlike most settled areas of law, in the case of UAS, gauging risks and negotiating contractual provisions to allocate that risk in view of the changing legal environment presents a significant challenge. Understanding the existing legal landscape, which may in turn be based on the intended system architecture, is a key first step to a successful transaction. The business plan, operational assumptions, technological flexibility, and adaptability (and the cost thereof) must be considered against both the existing and potential changes in the legal landscape.

Contractual provisions
A series of special contractual provisions should be considered in drafting a commercial agreement for a UAS transaction, including the following:

Regulatory conditions precedent or subsequent to having a transaction
Consideration should be given as to whether obtaining a regulatory authorization is a feasible path at all, and whether the timing of the transaction (and/or off-ramps) can be based on obtaining a regulatory authorization, or instead waiting for changes in applicable law to permit implementation. This may depend on the state of the law, and the exemptions granted at the time the transaction is entered into, as well as the technology, relevant jurisdictions, and legal issues raised by the specific proposed UAS operation. The parties should consider if the risk of whether the transaction can occur at all may be addressed in an acceptable manner through conditions precedent or subsequent, including transactional termination and/or indemnification provisions relating to receipt of a regulatory authorization or obtaining needed regulatory changes, or rights of either or both parties to make adverse determinations (off-ramps) with regard to implementation of the business plan in the absence of regulatory action over a defined period.

Schedule for determining if there is a deal
Many UAS-related projects will be time and sweat equity dependent. Parties entering into a commercial transaction should be willing to invest a substantial amount of time, recognizing that a solution provided by UAS technology requires a commitment. Parties should consider having firm backstops to the development or implementation timeline, and consider the remedies if that timeline is not met.

Funding the start-up phase
Investors may initially be wary of an untested commercial technology, particularly with uncertain and shifting regulatory hurdles. Therefore, investors may seek to add additional layers of contingencies to funding UAS-related

Silicon Valley

A number of technology companies have been exploring and testing the use of UAS for several years. For instance, Google X began working on UAS technology in 2011, and conducted a test flight on a farm in Australia in 2014. Google also acquired Titan Aerospace in 2014. Titan makes high-altitude, solar-powered UAS that can stay aloft for 5 years without the need to land or refuel. These UAS have many different potential uses, and Google has recently requested permission from the FCC to conduct UAS tests to identify the potential for using these UAS to deliver internet to remote areas. In light of the unsettled U.S. regulatory regime governing commercial UAS use, technology companies have been aggressively advocating and lobbying for clearer rules that would permit commercial applications of the type contemplated by these technology companies. Amazon has been in the forefront of advocacy for such rules among technology companies. In March 2015, the company received initial and limited approval from the FAA to test UAS near its headquarters in Seattle, Washington. Amazon has been testing UAS deliveries in the United Kingdom and says that it will expand research in the United Kingdom and outside of the country if the U.S. government does not loosen its grip on flight testing restrictions. Other technology companies are contemplating using UAS in consumer applications that may also draw regulatory scrutiny.

programs, such as terms and conditions with timeframes for development, delivery, and implementation. Investors' requests need to be carefully considered and addressed early in the process, to limit surprises or delays as the program or deal progresses.

Advocacy with regulatory bodies and dealing with unexpected decisions

For companies desiring to operate UAS for commercial purposes, active participation in the process of seeking FAA authorizations, regulatory interpretations or approvals may be required. Contract parties, whether in M&A transactions, investments, joint ventures, or other transactions, are accustomed to contracting around risks that regulatory approvals will not be granted and allocating responsibilities for seeking approval. Since the FAA UAS rulemaking process is anticipated to be a lengthy one, specific provisions will be needed to address the roles of the parties in seeking the necessary FAA authorizations and the parties' rights to shape the applications for such authorizations. This is particularly important where a denial of such an application may be preferred by one or more parties over the grant of an exemption that comes with high compliance costs, and thus obligates the parties to move forward, but perhaps with different economics than originally anticipated. There are some analogous provisions in the commercial lawyer's bag of tools, such as provisions dealing with divestitures for merger approvals or for payment of break-up fees if conditions attached to approvals are beyond described limits. Fashioning such contractual provisions to handle unknown regulatory risks is therefore critical for UAS transactions, especially since the possible outcomes are not predictable, and there is no body of precedent to look to for risk assessment guidance.

Allocating responsibilities for and costs of compliance with laws not yet known

The regulatory landscape may well evolve over time to support broader commercial operations of UAS than will be available through the FAA's exemption process. Where the parties are prepared to put a temporary arrangement in place while awaiting broader regulatory

action, there may well be costs of compliance that exceed those that will apply when the regulations are fully developed. For example, the FAA may impose more stringent requirements as a condition of granting an exemption than would apply under generally applicable rules, including technology requirements (such as technology to ensure the UAS's avoidance of other UAS or manned aircraft), pilot certification and training requirements, operational restrictions such as visual line-of-sight requirements, and privacy-focused requirements (such as limitations on operations over another's property without the owner's consent).

In the event of an ongoing partnership with another entity, whether through commercial contract or joint venture, the transaction documents ideally would contain an obligation for each party to comply with applicable law, even as the law may change over time and between jurisdictions worldwide. However, with UAS this is not as simple as compliance with other more established legal requirements, such as anti-bribery statutes, Foreign Corrupt Practices Act, (FCPA) or export requirements (e.g., ITAR). Regulatory checklists and timeframes should be kept in mind. Ideally, specific compliance obligations would be addressed directly as specific obligations of the parties, so that failures can be conditions to performance by other parties, and costs of compliance can be factored into the economics of the arrangements.

In a sale transaction, does the buyer or seller agree to fund the costs of product modifications to achieve legal compliance, as of what date or on an ongoing basis, and based on what standard? What might the compliance upgrade entail? Is the UAS inexpensively and easily upgradable, for example, remotely through a software change, or would there be a need for a return to the seller for a software and/or hardware upgrade? Who will be liable for continued operations without the upgrade, including with respect to continued sales under an existing contract? Can the contract terms continue to be fulfilled (while appropriately allocating liability and imposing any necessary indemnification) and/or provide for termination at the discretion of either party in the case of a failure of the basic assumptions about operational feasibility? Does (and should) the contract limit the geographic area of sale and usage of a UAS to a location where the same is lawful, and what liability exposure is there to each party to the transaction if the UAS is operated in an unlawful manner in the applicable jurisdiction? When is a contractual termination right the appropriate remedy, with or without additional economic payments,

indemnification or forfeitures, and to be exercised by which party (or both parties) to the transaction?

These costs of compliance cannot readily be estimated in the absence of specific regulatory standards and requirements or even reliable predictions as to what those standards and requirements will be, yet in order for a meaningful, binding arrangement to exist, those costs and burdens of compliance will need to be allocated. The issues involved in allocating these risks, and the costs resulting from changes of law in this area, present the greatest challenges in developing a contract structure that addresses the interests and reasonable expectations of all parties to the transaction. At a minimum, a combination of cost and risk allocation provisions (possibly with provisions for equitable adjustment) and termination provisions if there are major departures from the parties' assumptions about compliance costs may prove advisable.

Software upgrades and expenses

Particularly with regard to the purchase of UAS technology, the buyer will seek to have the seller take responsibility for the cost of software upgrades and expenses, and the reverse will be true for the seller, particularly in a firm fixed-price environment where unknown upgrades may be required. Regardless of how the commercial deal is ultimately struck, there needs to be a path for the buyer to oblige the seller to perform the upgrades either as part of the underlying agreement (if the law changes prior to delivery), under an ongoing warranty provision, as a firm fixed-price option, or otherwise on an equitable adjustment basis. Since the potential compliance modification costs may be difficult to foresee, the seller will need to consider pricing such updates appropriately, whether into the base contract, through options, or through an equitable adjustment provision.

In the event that a hardware change is required, or the software is not amenable to a self-installed upgrade, the costs of compliance become much more significant, as does the proper consideration and allocation of such costs in the contract.

In the context of a joint venture or acquisition transaction, the amenability and flexibility of the UAS platform to least-cost upgrades to accommodate changes in law, diversity of spectrum allocation for telecommunications, and other evolutionary improvements all need to be considered in the business model and transaction pricing for the project.

Allocating liability for legal but "unsafe" activity

The more UAS that are deployed, the more important it will be for those UAS to coexist safely with other UAS and with general aviation and commercial aviation aircraft. This will likely require the development of both new air traffic control capabilities and safety regulatory standards and operational requirements for the various types of UAS (perhaps with differing standards and requirements applying to different types of UAS, depending on their complexity, characteristics, and capabilities, as well as the purpose, location, and altitude of the UAS operation).

Entering into arrangements in advance of adoption of the standardized safety standards may require dealing with the real possibility that a proposed UAS operation business model will not be contrary to any enacted UAS safety regulatory standards or operational requirements, but still could be deemed "unsafe," giving rise to significant liability risks in the case of interference with manned aircraft or other UAS, or injury or damage to individuals or property. The legal standards by which these activities will be assessed as to negligence, strict liability, and other legal theories are not yet developed, and may in fact be viewed differently across different jurisdictions. Those risks may currently be uninsurable, leaving the parties to handle the risks among themselves.

Indemnification

Once there is agreement on the allocation of liabilities and risks, the parties need to support that agreement with appropriate indemnification provisions by the responsible party. Counsel will need to advise on whether to draft these provisions narrowly, simply to handle identified risks, or whether to have broader indemnification should the government or third parties seek redress based on theories not yet determined. Even if a sales agreement for a UAS allocates liability to the seller, or a joint venture agreement limits liability to the joint entity, in all likelihood the government and/or third parties may proceed against all parties to the contract or joint venture. It is therefore critical to consider these provisions, often considered "boilerplate" in more routine arrangements, with great care. It is also vital to try to predict the compliance risks, first by understanding the potential consequences and risks of potential violations of such regulatory regimes, and then building into the transaction the remedies and potential termination that results in the event of a compliance enforcement issue.

UAS in action: Sports

UAS presents an opportunity for ski resorts to obtain high-quality aerial images and video of skiers and ski races. Their most prominent use as of yet has been to promote ski locations through social media. Last summer, New Zealand Tourism launched the #nzdronie promotional campaign. Its UAS shot 8-second HD clips of visitors at several New Zealand South Island ski areas, then emailed the free videos ("dronies") to participants to allow sharing on social networks. This campaign was very popular. In the United States, some companies and individuals are beginning to use UAS to document ski races. In the future, ski resorts may use UAS for mountain search and rescue operations.

In the United States, ski resorts may be able to obtain FAA exemptions for UAS commercial use in order to use UAS to document races or assist with safety issues. The FAA has already issued a number of such commercial use exemptions, including for photogrammetry and crop scouting for precision agriculture and to augment real estate listing videos.

If the transaction counterparty is a start-up or less well-funded entity, care must be taken to best structure the deal with other contractual protections in the event that the indemnity provisions prove to be of little or no practical benefit. For example, consideration should be given as to including provisions requiring ongoing disclosure and visibility as to operations to ensure compliance, insurance (if obtainable), performance bonds, escrows or modified payment schedules, and the right to terminate the contract for default in case of violation of law by the counterparty.

Mechanisms to effect modifications to accommodate changes in law

Most contracts or other similar legal relationships are based upon a concept that there be a "meeting of the minds," without which a court will not enforce the arrangement. Other doctrines such as commercial impossibility also could potentially come into play. The parties should assess whether the commercial contract approach should be used at all where the legal rules eventually adopted could be quite different than what the parties presently believe will be the case. For a contract to survive a "no meeting of the minds" challenge, or to keep risks at manageable levels, the parties may well need to implement adjustment mechanisms to maintain the basic economic deal between the parties. There are some standard mechanisms for contract adjustments to deal with the economic changes over time (such as escalation provisions, based on pricing indices) or changes to the obligations of the parties to provide services or usable products (such as a directed changes clause, where changes can be directed within the general scope of the contract with an "equitable adjustment" to the price, schedule, or other terms). Would either of these adjustments work where the basic permitted ground rules for a project are not currently known? For any chance to have a binding arrangement without undue risk, a series of risk allocation and adjustment provisions, coupled with termination rights, buy-sells, or other off-ramps to cap maximum exposure, may be the best way to manage this level of uncertainty.

A joint venture or partnership arrangement, where the parties agree to conduct business together even if things do not evolve as anticipated, may be a sturdier vehicle for handling the high level of uncertainty. If there is a significant change of operation, business purpose or cost based on modifications to the law, rather than having economic adjustment provisions to accommodate the legal changes the parties could employ various rules of governance to alter the business model. Of course, as with any governance provisions there are issues about the required level of support, including level of approval (majority, supermajority, or unanimous) and capital contributions to be made by the parties. Again, a combination of decision mechanisms with off-ramps (dissolution provisions, buy-sells, or limits on overall liability) to protect the parties against situations too far from the envisioned business model may be the best alternative.

Whether the transaction is a "simple" commercial contract or a more complex joint venture or corporate acquisition, significant thought needs to be given as to termination or modification of the transaction based on changes in the law. Thinking these issues through is critical, and it may be to your advantage to seek agreement at the onset to set the parties' expectations as to the costs and liabilities, rather than leaving the implications of changes to later negotiations. All reasonable scenarios should be contemplated in drafting agreements, to ensure that the compliance,

approvals, costs, indemnification, termination, insurance, and financing provisions (among others), support the desired business outcome.

Product liability and insurance

Regardless of the type of transaction, the liabilities and insurance provisions, with respect to third parties as well as property risk of the technology itself, should be carefully taken into consideration.

This includes identifying responsibility for providing appropriate instruction manuals, labeling of UAS as to risks, and other standard commercial liability practices for risk allocation.

Commercial industry participants utilizing UAS technology will need to work closely with underwriters to obtain the required protection to mitigate loss, both through requirements of insurance carried by counterparties and your own company. As the industry evolves, and given anticipated exclusions, there may be some losses that are not immediately insurable. Particularly in commercial transactions, these liabilities need to be clearly articulated between the parties.

Litigation

Clear termination and force majeure provisions in the event of changes in law that make performance untenable for one of the parties can help stave off litigation. So too can carefully crafted indemnification and change- and upgrade- cost allocation provisions. Parties should also give careful consideration to warranty rights and obligations and related disclaimers, as well as limitation of damage provisions. Bear in mind that contractual limitations of liability and damages provisions are useful tools for dealing with disputes between contracting parties, but less helpful in the event of third-party claims, for which an indemnification regime is a better tool to allocate risk. In short, the more the parties can do to anticipate and plan for areas of potential dispute up front, the less likely they are to end up in litigation.

But even under carefully constructed contracts, disputes will arise. As a result, choice of law and forum should be focused upon in connection with any commercial UAS project, because outcomes of similar disputes may be different under different legal regimes, both within the United States and around the world.

Careful consideration should also be given to the use of alternative dispute resolution procedures, such as

arbitration. Where the parties' legal rights turn on a determination of the current state of regulation (as opposed to just contractual intent), it may be challenging to find an arbitral panel with the legal expertise to make such determinations. An arbitral decision in such cases may not be fully in line with a federal agency viewpoint, and in such cases a judicial decision may provide a better and more definitive result. In determining whether to incorporate alternative dispute resolution procedures into a transaction, the relevance of regulatory expertise in potential disputes should be weighed carefully, as well as the pros and cons of the publicity and precedential effects of proceeding in a judicial forum, and the potential availability of injunctive relief not available in arbitration. For cross-border transactions, the challenges are even more complex, with an added layer of issues around the enforceability of judicial decisions and arbitral awards in foreign forums.

In all cases, it will be critical to ensure that the parties understand how the choice of law and forum selected in a heavily regulated and evolving environment may drive the resolution of disputes. The parties also must contemplate how that legal backdrop, their resulting rights and obligations, and the outcome of their disputes, can all shift with changes in the law. Care needs to be taken as to the critical provisions that may be affected by the changes in law to ensure that the correct outcome in fact is to be derived from the agreement provisions as drafted.

FAA authorization, regulation, and enforcement

The FAA published in the Federal Register its Notice of Proposed Rulemaking (NPRM) on Small UAS (less than 55 pounds) on 23 February 2015, but the FAA's firm position is that until the Final Rule on Small UAS is issued (which is likely two or three years away), no business may operate a UAS for commercial purposes, including using a UAS as a business tool (regardless of whether compensation is received), without obtaining specific prior authorization from the FAA. Such authorization may come from either (a) obtaining an FAA certificate of airworthiness for the UAS and complying with all applicable Federal Aviation Regulations (FAR), or (b) obtaining an FAA regulatory exemption under Section 333 of the FAA Modernization and Reform Act and a "private" Certificate of Waiver or Authorization (COA). For most UAS, obtaining a certificate of airworthiness is neither practical nor cost-effective. In order to obtain a Section 333 regulatory exemption and a private COA, the applicant must file with the FAA a petition for exemption and an application for a private COA.

While the FAA permits an applicant to file such a petition and application without discussing the matter with the FAA first, the wiser course is to meet with the FAA and discuss the proposed UAS operation before finalizing and filing these documents. The timing of the filing is an important business consideration. The FAA processing time for the Section 333 exemptions it has granted typically has been in the range of four to eight months. With a large backlog of Section 333 petitions for exemption developing at the FAA, that processing time is likely to grow in the future. For that reason, companies contemplating using UAS for commercial purposes should plan for long processing times, and file as soon as reasonably possible.

Many companies appear to be under the mistaken impression that the FAA does not regulate or require authorization for commercial uses of Small UAS that operate at low altitudes and without any compensation being earned for the operation. The FAA is addressing this lack of understanding primarily through an aggressive education program. Nevertheless, the FAA has indicated through recent pronouncements that it

Energy

Energy companies across the world are already utilizing and testing UAS. Oil and gas companies are using and testing UAS to survey land, monitor pipelines, and monitor drilling rigs, particularly in areas where harsh weather makes conventional monitoring difficult.

In June 2014, the FAA approved a plan by energy corporation BP and UAS manufacturer AeroVironment to use UAS to conduct aerial surveys and monitor pipelines in Alaska's Prudhoe Bay oil field. Royal Dutch Shell is conducting similar surveys over Arctic waters. U.S. wind energy companies are exploring the use of UAS to inspect wind turbines and blades.

In Canada, a number of oil sands companies, including Royal Dutch Shell and Syncrude Canada Ltd., are using UAS for surveys and mapping. And oil and gas companies are using UAS internationally to monitor pipelines for leaks and vandalism.

FAA exemptions for commercial use of unmanned aircraft systems

The FAA has received hundreds of Section 333 petitions for exemption for commercial UAS operations, with more being filed practically every day. The FAA has granted dozens of exemptions, and is issuing more virtually every week. The exemptions have covered UAS operations for many different purposes, including:

1. movie and television production;
2. precision aerial surveys;
3. aerial imaging of construction sites;
4. flare stack inspections of overwater oil production platforms;
5. conducting photogrammetry and crop scouting for precision agriculture;
6. augmenting real estate listing videos and enhancing academic community awareness of the local area for those unfamiliar with the area; and
7. aerial photography and inspections.

Conditions to these exemptions have typically included requirements that:

- the UAS operator hold a private pilot certificate;
- the UAS be kept within line of sight of the operator at all times;
- the UAS be inspected before each flight;
- there be no night UAS operations; and
- the UAS be operated at 400 feet above the ground or lower.

In issuing these exemptions, the FAA has emphasized the importance of the manuals covering UAS operations, maintenance, and inspection procedures that have been submitted by the petitioners. For exemption holders, the FAA issues "private" Certificates of Waiver or Authorization (COAs) that set forth UAS flight rules and require timely reports of any accidents or incidents involving the covered commercial UAS operations.

is prepared to take enforcement action against anyone "who conducts an unauthorized UAS operation or operates a UAS in a way that endangers the safety of the national airspace system." The FAA can and does issue warning letters and letters of correction, and may seek civil penalties for such operations, particularly where the FAA believes that the operator knew its conduct constituted a violation. The FAA has indicated that the higher the risk to safety posed by the unauthorized UAS operation, the higher will be the penalty imposed by the FAA. For those individual operators who hold an FAA certificate, this penalty may include the FAA's suspension or revocation of the certificate. The FAA also has issued guidance to local law enforcement agencies to encourage them to assist the FAA's UAS enforcement activity, and to inform these agencies of steps that they can take to identify violators and gather evidence for use by the FAA.

For companies considering using UAS for commercial purposes, taking into account these FAA authorization, regulation, and enforcement issues, and ensuring full compliance, will be essential to a successful business transaction and rewarding commercial UAS operation.

FCC considerations

Virtually every UAS will avail itself of wireless communications for command and control purposes (i.e., directing or controlling the flight of UAS). Additionally, UAS will likely require communications to allow concurrent operations with other, ubiquitously deployed UAS-potentially under, as it evolves, a central safety control system. These wireless communications subject the UAS to FCC jurisdiction, and companies must consider issues including: (a) identifying appropriate licensed or unlicensed spectrum for the UAS; (b) acquiring spectrum licenses, if necessary; (c) applying to certify UAS as wireless transmitters under the FCC's "equipment authorization" process; (d) evaluating whether any fixed wireless infrastructure is required, which itself requires FCC approval; and (e) ensuring ongoing compliance with the relevant FCC technical rules, including avoiding interference to protected wireless operations.

As companies evaluate transactions involving UAS technology, each of these considerations will present significant risks and considerations. The FCC has stepped up enforcement for violation of its rules, and failure to comply presents steep penalties. The framework for the UAS should include a clear plan regarding what type of spectrum (licensed or unlicensed) it will use and, if relying on unlicensed spectrum, ensure that it meets quality of service (QoS) requirements. All

UAS wireless equipment should be certified under the FCC's equipment authorization process, and companies should be able to demonstrate compliance with FCC technical rules. If a company holds FCC licenses prior to a change in control of the entity, the parties must make sure they seek approval with the FCC regarding the transfer of the license. Considering these and related issues at the beginning of any UAS-related transaction will help ensure its success and avoid significant repercussions or disappointment at a later time.

Export and trade regulation matters

In addition to general provisions as to compliance with law, the agreements will need to contemplate: (i) obtaining any requisite trade (including export) licenses or exemptions as a precondition to certain transactions (as required for compliance or to monitor ongoing compliance); (ii) obligations to cooperate on obtaining and maintaining approvals; and (iii) time frames for approvals to be received.

These provisions will be most applicable in cross-border sales, joint ventures, and corporate acquisitions involving parties in multiple jurisdictions and should be expected to present more significant hurdles depending on the jurisdictions of the parties, the sophistication of the technology, and the government versus commercial nature of the project.

Thirty-four countries, including the U.S., are members of the Missile Technology Control Regime (MTCR), "an informal and voluntary association of countries which share the goals of non-proliferation of unmanned delivery systems capable of delivering weapons of mass destruction," that restricts the sale of armed and unarmed UAS due to missile technology proliferation concerns. Consistent with its MTCR commitments, the U.S. and other member country governments have in place restrictions on exports of UAS vehicles, components and related technology. The U.S. government in particular has a comprehensive export control program for UAS. The State Department has export licensing jurisdiction under the International Traffic in Arms Regulations (ITAR) for defense articles and services covered by the U.S. Munitions List (USML), including all military and armed UAS, regardless of range or payload, and certain UAS software, components, and technologies. The Department of Commerce has export licensing jurisdiction under the Export Administration Regulations (EAR) for dual-use items on the Commerce Control List (items with civilian and military applications) – these can include certain UAS and related equipment, software, and technologies that are of missile technology proliferation, national security, and other concerns but not already controlled on the USML. Companies should carefully consider the coverage of U.S. and other export control regimes when contemplating any proposed transaction that will involve UAS exports.

Intellectual property

As in all areas of evolving technology, for UAS-related technology too, great care needs to be taken to understand, define, and allocate the ownership of intellectual property (IP) rights in the technology, to protect the IP rights in the technology, to diligence, and to consider third party IP rights in the technology prior to undertaking both commercialization, and the later permitted uses and licensing of the technology.

Consideration of the ownership of IP rights in UAS-related technology is especially important when the technology is jointly developed or developed by others, such as by consultants, outside of a regular employment relationship. This is because IP rights in technology, materials, or other works are presumptively owned by the creators absent written assignment agreements (such as a consulting agreement or development agreement that includes a present assignment of IP rights) that spell out ownership rights. Just because you have paid someone to develop technology does not mean that you own the IP rights in the developed work. Again, there must be a present assignment of the IP rights from the developer to the payor. And even in a regular employment situation where the employer is presumed to own IP developed on the job, employment agreements that address ownership of IP rights in inventions and discoveries are still important in the event of disputes.

Consideration of the various forms of protection for IP rights in developed UAS-related technology is also important. Patents may protect the functionality or operation of new and non-obvious devices, systems, and processes. In the U.S., patents must be filed within one year of any public disclosure, use, or offer for sale of the technology sought to be patented – abroad patents must be filed before their subject matter becomes publicly known, used or offered for sale (there is no one-year grace period). Patents are a right to exclude others from

making, using, or selling the patented technology – they are not in and of themselves a right to commercialize one's own technology. The latter may be affected by the IP rights of others, such as earlier patents that bear on the technology. Thus, if one plans to expend significant resources in developing new technology, consideration of whether there are third-party patents that might block or inhibit commercialization (e.g., whether there is freedom to operate) is important. This is especially the case as UAS-related technology becomes a focus for commercial applications and there is a rush to patent such applications. The functionality of novel computer code or computer systems may be protectable by patent, as long as the innovation would not be considered to be merely an abstract idea implemented by standard computer parts. In the event broad patent protection is not available, aspects of the technology may be protectable by trade secret. In order for trade secret protection to apply, however, the subject matter to be protected must not be generally known or discernible – it must be kept and be able to be kept a secret.

Aspects of technology commonly considered for trade secret protection include source code or manufacturing processes. Thus, well developed trade secret policies are an important part of any UAS-related business. Copyright offers narrow protection of a particular expression such as in written documents, screen shots, or code, but does not protect the ideas or functionality exhibited in such works. Only patents or trade secrets can protect embodied ideas or functionalities. And trademarks, whether they be words, logos, slogans, and the like, protect the name or brand of products and services, acting as a source identifier for those products and services. Registration of copyrights and trademarks provides advantages and is relatively inexpensive, but registration is not required in order for the protections to apply.

Government contracting

In contracting with governments (U.S. or international) with respect to UAS systems, considerable attention must be paid to compliance obligations, intellectual property rights, and export (trade regulation) restrictions.

Unlike in the commercial marketplace, willful failure to comply with the terms of a government contract may lead to civil False Claims Act penalties, government-wide suspension or debarment, and even criminal liability. It is critical, therefore, that companies choosing to contract with the government understand the importance of assigning adequate resources to government-sponsored projects and having an adequate ethics and compliance function.

As to intellectual property, the U.S. government often obtains intellectual property rights by virtue of providing funding for technology development initiatives. Care must be taken in an emerging area such as UAS for a party not to inadvertently cede title or a royalty-free license to its intellectual property rights through these arrangements. Government contractors generally can retain title to patents conceived or first reduced to practice under a government contract, but the government customer receives a perpetual, non-exclusive right and license to authorize others to use the patent for government purposes. Likewise, the U.S. government typically receives unlimited rights in technical data first produced under a government contract. The government, however, may receive narrower rights when the intellectual property is developed under mixed funding. Contractors need to understand how these rules work and take steps to protect their rights, including by properly marking pre-existing technical data developed at private expense that will be used in the performance of a government contract.

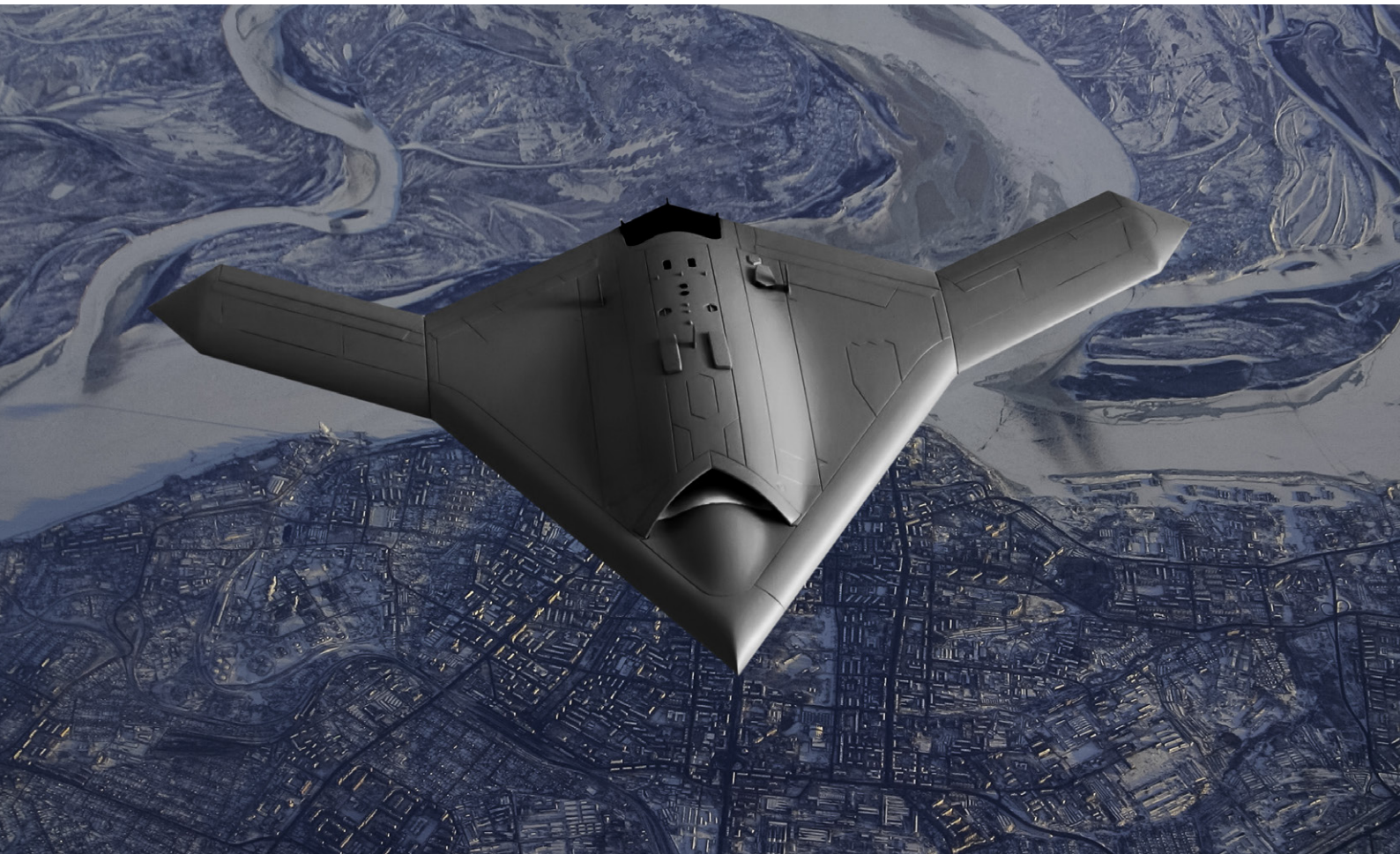
Although contracting with the government can increase risks, there also are some potential countervailing benefits, such as potential sovereign immunity-based defenses to third party tort lawsuits that may be available when the government participates in or approves the design of a UAS.

UAS or related equipment developed under contract with the U.S. military also may be subject to heightened export control restrictions (International Traffic in Arms Regulations).

Once developed and protections have begun, consideration of commercialization approaches, such as licensing, come to the fore. In addition to clarifying ownership and scope of permitted uses of the technology, licenses or similar agreements typically also address the remuneration or payments for permitted manufacture, use or sale of the technology, allocation of costs, contracting party representations and warranties concerning the technology, liability if the technology is found to be unsafe or infringing of others' IP rights, and indemnification if the technology causes harm to tangible or intangible rights of others. Particular attention must be paid to identifying the ongoing rights of each party to ownership, licensing, sublicensing, and usage of the IP rights in the subject technology as part of any contract, whether it be a commercial sale agreement, joint venture, or other acquisition. An IP originator may want to maintain full control, ownership, and patent filing, licensing and legal enforcement rights as to the background technology, foreground technology, enhancements and improvements, providing the counterparty only a limited license with restricted rights (if any) to sublicensing. Or, a counterparty who is developing an extensive system architecture around the originator's IP and funding the improvements and enhancements, may want to obtain significant (and potentially exclusive) rights to the IP rights in the counterparty's business area and have the right to control further licensing, transactions, patent filings, and legal actions to enforce patents as part of the commercial transaction. Thus, the IP terms of commercial agreements are likely to be heavily negotiated depending on the unique nature of the UAS offering and the enhancements being made to the system as part of the commercial development, purchase, licensing, joint venture, and/or sale agreement.

Privacy

Commercial use of UAS may prompt significant privacy concerns, as evidenced in the legislation presented in California. No less than five states – California, Idaho, North Carolina, Oregon, and Texas – already have



enacted laws that address UAS use by private entities. While the legal requirements vary, the California, Idaho, and North Carolina laws generally prohibit the capture of images from a UAS in a manner invasive to a person's privacy. The Oregon and Texas laws prohibit certain uses of UAS over private property. In February 2015, in the United States, President Obama issued an executive memorandum on privacy issues and government use of UAS and established a multistakeholder process led by the National Telecommunications and Information Administration (NTIA) to establish best practices.

In addition to these statutory restrictions, in the United States, common law-based protections for individual privacy should be factored into commercial plans to deploy UAS. A potential invasion of privacy claim is the tort of "intrusion upon seclusion," which has been adopted by most states. Under a common formulation of the tort, "[o]ne who intentionally intrudes, physically or otherwise, upon the solitude or seclusion of another or his private affairs or concerns, is subject to liability to the other for invasion of his privacy, if the intrusion would be highly offensive to a reasonable person." One who has established a cause of action for invasion of privacy is generally entitled to recover damages: for i) the harm to his interest in privacy resulting from the invasion; ii) his mental distress proved to have been suffered if it is of a kind that normally results from such an invasion; and iii) special damage of which the invasion is a legal cause.

The pursuit of such claims by individual plaintiffs, while in the past not particularly common, has very clear potential to expand in the case of UAS given the privacy concerns already expressed by certain constituencies, which are likely only to intensify as commercial UAS use becomes more common.

Outside of the United States, in almost all of the markets of interest to commercial users of UAS, governments have already enacted data protection laws of general applicability to business collection of personal data. Unless exemptions are made available by overriding regulation, businesses planning to deploy UAS in any European market, and multiple other jurisdictions in Asia and Latin America, would be advised to include data protection and privacy compliance in their regulatory planning as well.

The types of privacy and data security compliance actions likely to be required, whether in the United States, Europe, or other markets, will likely involve the provision of some form of external notice about the personal data gathered by the UAS and its contemplated uses, as well as the implementation of certain types of policies and procedures – such as data security and data retention policies – to manage such data. The UAS industry need not reinvent the wheel in designing such compliance programs; other industries' experience can provide valuable "lessons learned" and recognized industry standards for privacy and data security programs, and may provide useful (although not necessarily authoritative) roadmaps.

In addition to planning for compliance, commercial UAS users should plan to address privacy and data security risks in ongoing agreements (such as joint venture agreements). Parties to an agreement will need to determine whether the ability to oversee operations is a sufficient safeguard or whether additional rights are needed to ensure privacy issues are addressed. Specific warranties and representations should be included in purchase/sale transactions to ensure that the purchaser acknowledges its obligations to operate the UAS consistent with all legal requirements.

Consideration also should be given to the allocation of liability between the parties to the transaction (as well as contemplation of insurance as to the same) as to privacy and data security compliance.

Conclusion

As is the case of any new technology deployment, in contracting for UAS transactions, it is both critical to understand the shifting legal sands as well as to draw heavily upon previous "new industry" lessons in developing the contractual models for your UAS contracts. Both the "known" and "unknown" must be anticipated, and care must be taken in considering as many possible outcomes and variables as possible to best protect your position in these transactions.

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