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THE FEAR OF DRONES: PRIVACY AND UNMANNED AIRCRAFT

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The United States is preparing to integrate Unmanned Aircraft Systems (UAS) into the national airspace. It is expected that UAS will be able to serve the needs of both public and private sector interests. The use of UAS by law enforcement agencies has caused many Americans to express concern about how this new technology may affect privacy rights. Several states have enacted laws limiting or prohibiting the use of UAS by state or local governmental agencies.

Privacy concerns are valid, however a full prohibition of UAS technology would limit law enforcement agencies from taking advantage of a valuable public safety tool. This paper will examine privacy issues and UAS and will review the legal basis for law enforcement's use of technology. The focus is to protect the privacy of citizens without prohibiting a potentially revolutionary technology.

Unmanned Aircraft Systems (UAS) or drones in the common vernacular are often perceived as machines that conjure images of large robotic birds of prey lurking high in the atmosphere in distant lands waiting patiently to strike. This description is further perpetuated by constant media reports depicting the military use of this technology. There is also a collective societal psyche impregnated with popular culture's fascination with robotic systems becoming self-aware and lashing out at their human creators as seen in James Cameron's (1984) *The Terminator* and Isaac Asimov's (1950) novel *I, Robot*. This misconception of UAS as instruments of the state trying to map out our lives has been exacerbated by the recent disclosure of details disclosed in the recent confirmation hearings of CIA Director John Brennan (Starr, Benson, & Cohen, 2013).

Part of the hysteria comes from the continued use of the term drone. A drone aircraft is flown with limited or no communication with a ground operator during flight. Drones are typically programmed prior to flight, monitored and have information, such as aerial photographs, recovered after landing (Austin, 2010). This description does not portray the systems employed by

the U.S. military around the world or those attributed to the title "drone" as prescribed by various media outlets. Opponents of domestic UAS use have capitalized on the term "drone" to frame the argument about privacy and civil liberties. These branding tactics yield mixed results. For example, in 2012, the Associated Press' National Constitution Center conducted a poll asking whether Americans perceived a degradation of privacy as a result of law enforcements use of UAS. The poll concluded that respondents were equally split; 35% concerned, 24% somewhat concerned, and 36% not concerned (pg.3). This same poll has been used by opponents of the proliferation of UAS as proof that Americans are very concerned this technology will encroach on civil liberties (Stanley & Crump, 2011). This is misleading, because the same poll reported, 48% of respondents indicated they favor allowing law enforcement to use UAS, compared to 36% of respondents who opposed the use of UAS (17% were indifferent and 3% did not know how they felt) (Associated Press National Constitution Center Poll, 2012). These results indicated that more Americans supported law enforcement's use of UAS despite the fact that the poll referred to these systems as both UAS and "drones" (Associated Press National Constitution Center Poll, 2012). The term drone can be counterproductive and the debate over their use calls for sterile terminology like UAS, which is both correct and free from stigma.

UAS come in a broad array of sizes, ranging from small, backpack carried, hand launched units to large, long duration vehicles the size of passenger aircraft (Federal Aviation Administration (FAA), 2010). The FAA (2013) is the lead U.S. government agency charged with enacting regulations that will allow UAS into the National Airspace System (NAS). The NAS defines UAS as a "a device used or intended to be used for flight in the air that has no onboard pilot […] and its associated elements related to safe operations, which may include control stations […], control links […], payloads, […], and launch/recovery equipment" (p. 6).

From this definition it is clear a UAS is comprised of three major elements: an aircraft, a payload, and a control station communicating with one another through a wireless control link. An overview of this technology is important in understanding both UAS capabilities and limitations. The vehicle is an aircraft devoid of a human machine interface often referred to as a flight deck. The vehicle is similar to a manned aircraft with the presence of a power plant, control surfaces, and electrical systems powering servos, solenoids, and gimbals (Austin, 2010). These vehicles are either rotorcraft or fixed wing and utilize robotic systems with various levels of autonomy to navigate through the air.

Due to the wide spectrum of vehicle designs describing exact components can be difficult. In 2010, the FAA reported the existence of over 155 different unmanned aircraft designs (FAA, 2010), and industry consultants expect the size of the industry to double (Zaloga, Rockwell & Finnegan, 2013). The air vehicle is primarily tasked with carrying the system's payload (Austin, 2010).

System payloads vary from mission to mission. The UAS that have generated much attention, particularly among those concerned about privacy issues, employ ground imaging equipment. This equipment is comprised of high powered sensors like Synthetic Aperture Radar (SAR), Infrared detector, and high quality digital cameras that enable UAS to see objects from over 5 miles away and through weather and clouds (McKenna, 2011). Advances in imaging technology have led to gigapixel "super" cameras like the ARGUS-IS (Hoffman, 2013). These camera systems, comprised of several cameras linked together, can record 5,000 hours of high

definition surveillance per aircraft in a single day enabling proponents to identify and track an individual based on the color of their clothes from 20,000 feet (Hoffman, 2013).

In addition to payloads, privacy advocates are also concerned with the ability of many UAS to stay airborne for days at a time casting their unblinking eye at various objects and people. Systems like the Lockheed Martin Stalker can stay airborne for 48 hours or greater; with advances in airborne recharging, this system could theoretically stay aloft months or even years (InnovationNewsDaily, 2012). The combination of high definition surveillance cameras and nearly unlimited duration has privacy advocates concerned that law enforcement would employ this technology around the clock and lead to indiscriminate surveillance (Stanley & Crump, 2011).

UAS are controlled remotely via control stations from a few feet away to hundreds of miles away. There are two distinct types of control; Line-of-sight (LOS) and Beyond Line-of-Sight (BLOS) (Austin, 2010). LOS operations require the aircraft to stay close enough to the control station antennas so the signal is not blocked by the earth's curvature or high terrain. Several factors go into LOS range including antenna power, gain, and receiver sensitivity. Many small UAS operate in what is known as visual line-of-sight (VLOS), which is different than LOS in that the range limitation is based on the operator's ability to see the aircraft rather than signal strength (FAA, 2013). Large and some medium sized UAS used BLOS architectures that "bounce" the control link off a higher platform, usually a satellite. By relaying the signal off of a satellite, the UAS can overcome the curvature of the earth and extend the operational radius exponentially (Austin, 2010). The over the horizon and high altitude capability of some UAS enable these systems to be high overhead, not seen or heard, and with no sign of their operators.

The Development of UAS

Modern UAS with satellite control, high endurance, and high-resolution cameras had very humble origins. American UAS have been remotely piloted since 1916 (Keane & Carr, 2013). Early systems took on two distinctive roles; guided munitions like the Curtiss-Sperry Aerial Torpedo and drones that were nothing more than flying targets used to train gunnery crews like the U.S. Army's OQ-1 target drone (Dalamagkidis, Valavanis, & Piegl, 2012). The loss of a U-2 reconnaissance aircraft over the Soviet Union in 1960, motivated the U.S. Department of Defense to invest heavily in UAS design and development (Dalamagkidis et al., 2012). The Vietnam War saw the large-scale use of UAS for surveillance. The predominant UAS of the war was the Ryan Model 147 Lightning Bug with over 3,500 lightning Bugs employed over the skies of Vietnam. T he U.S. had proven surveillance by UAS was operationally viable and set foundation for the modern UAS era (Dalamagkidis et al., 2012).

The modern class of sophisticated unmanned aircraft technology has its genesis the 1982 Bekaa Valley conflict, where Israel successfully used remote controlled aircraft to confuse Syrian anti-aircraft missile batteries (Sanders, 2002). The acquisition of UAS accelerated in the mid to late 1980s, systems such as the Israeli Aerospace Industries' Pioneer made their way into U.S. Department of Defense inventories while Leading Systems, with a grant from the Defense Advanced Research Projects Agency, built the prototype to the iconic Predator (Sanders, 2002). These new UAS had sophisticated data links, enabling remote pilots and crews to control and manipulate cameras sitting in a control station over 100 nautical miles from their aircraft (U.S. Navy, 2009).

Since the 1990s, UAS have become larger and more capable, operating above 18,000 feet and over the horizon while still allowing for two-way communications link with their crews (U.S. Air Force, 2012). The advances in UAS technology, made by militaries around the world, can be applied currently to a variety of civilian and commercial uses (FAA, 2010).

The FAA Reauthorization Act of 2012 mandates UAS be allowed to access the National Air Space System by 2015 (FAA Modernization and Reform Act of 2012). As the FAA allows for gradual integration of UAS into the National Airspace System, UAS will find new operational applications in a burgeoning civil UAS market.

The current U.S. policy only allows for government agencies to operate UAS for operations other than research and development of new systems (FAA, 2013). UAS are utilized by several U.S. government agencies, including U.S. Customs and Border Patrol (CBP, 2004). In 2004, the CBP commenced operations of their UAS fleet along the southwest border between the United States and Mexico, later adding the northern border. In 2010, the CBP established a base of operations at Kennedy Space Center using the Guardian UAS to patrol Florida's waters for drug trafficking (CBP, 2011).

Since 2004, the U.S. Geological Survey (USGS) has used small UAS to monitor volcanic activity, conduct wildlife population counts, monitor controlled fires on public lands, and map soil erosion. The USGS experience was so positive that the agency created the National UAS Project Office in 2008 (Hunt 2013). The USGS expect that UAS will be the agency's primary remote sensing platform by 2020 (Hunt 2013).

In 2007, the National Aeronautics and Space Agency (NASA) modified a Predator B, the same UAS popularized in the media for its role in U.S. national security, to assist firefighting efforts in southern California (U.S. Government Accountability Office (GAO), 2008). That same year, the National Oceanographic and Atmospheric Administration (NOAA) and NASA partnered to track hurricanes and gather data that could improve weather forecasting (GAO, 2008).

Law enforcement's use of UAS has been funded in part by the U.S. Department of Justice (DOJ). The FBI first flew a UAS in 2006, but restricted the use to operations with specific needs. In 2013, the FBI used a UAS during a hostage situation in Alabama (U.S. Department of Justice, 2013). Seeing the value of UAS for many law enforcement purposes, the DOJ established a grants program to help local governments purchase UAS.

UAS are highly desirable to law enforcement agencies for two reasons. First, UAS are a low cost alternative to traditional air support. Second, they offer situational awareness to first responders, potentially reducing the risk of endangerment to law enforcement personnel dealing with a highly dangerous situation.

In 2007, the DOJ awarded over $1 million to various local law enforcement agencies in Alabama, Arkansas, and Florida to purchase UAS (U.S. Department of Justice, 2013). Permission to conduct flight operations, however, required approval from the FAA. The FAA created Certificates of Authorization (COA) to allow governmental entities to use a defined block of airspace under an agreed upon set of rules (FAA, 2010). The Gadsden Alabama Police Department (GPD) was among the first recipients of the DOJ grant. The GPD purchased an Aerovironment Wasp UAS (DOJ 2013; Rogers 2013), and flew the system without acquiring a COA from the FAA. In 2009 the UAS crashed, and the GPD subsequently cancelled the program.

In 2008, the Miami-Dade Police Department (Miami-Dade PD) received a grant to purchase a Honywell T-Hawk. The department obtained a COA one year later to use the UAS

within a defined area around a potential crime scene (FAA, 2012). According to the Miami-Dade PD's aviation unit, the purpose of the UAS was "to provide tactical aerial support and assistance to the MDPD Special Response Team (SRT) in high threat situations where the operating environment is hazardous to manned flight" (Miami-Dade Police Department, 2011). Although the Miami-Dade PD has maintained an active COA, it has not used its UAS for any operations.

Many law enforcement agencies have had limited success in utilizing UAS for law enforcement duties. There are many reasons for this difficulty, including the FAA's reluctance to grant agencies permission to fly over populated areas, law enforcement agencies' lack of familiarity with UAS operations, and public opinion (Balcerzak & Hiegel, 2013). Despite the stymied efforts of agencies like the Seattle Police Department who cancelled their UAS program in 2013, (Associated Press, 2013); other agencies have successfully incorporated UAS into their fleet.

In 2009, the Mesa County Sheriff's Office (MCSO) in the State of Colorado acquired a pair of Draganflyer X6 UAS helicopters (same UAS as Seattle PD), and obtained a COA to fly over the county landfill. A year later Mesa County deputies were able (with permission from the FAA) to fly anywhere in the county. According to the MCSO, the Draganflyers were used to take aerial photographs of fatal crashes and fires. In 2012, the MCSO expanded the UAS fleet to include UAS with longer endurance. To date, the Mesa County UAS program has flown in 35 operations. (MCSO, 2013).

In 2011, with grants from the Department of Homeland Security, the City of Arlington Texas Police Department purchased two Leptron UAS helicopters and received a training COA (Govers III, 2013). Two years later, the Department was granted permission to fly the system operationally as long as the UAS was operated during daylight hours, flew below 400 feet, and within visual line of sight (Govers III, 2013).

The FAA Reauthorization Act of 2012 includes language to "allow a government public safety agency to operate unmanned aircraft weighing 4.4 pounds or less" (FAA Modernization and Reform Act of 2012). The combination of FAA provisions and federal grants will support local law enforcement with the ability to acquire UAS and incorporate them into policing operations in areas such as search and rescue, hostage situations, and monitoring highway traffic.

To the guardians of civil liberties, the potential violation of an individual's privacy is the largest concern about allowing law enforcement agencies to employ UAS. The United States has legal protections in place, which prohibit the "indiscriminate surveillance" by a governmental body (Ramshaw, 2013). The existing legal framework may provide sufficient protection against intended or unintended privacy violations by local law enforcement agencies. However, Ryan Calo, Director for Privacy and Robotics at Stanford Law School's Center for Internet and Society, explained, ''[t]he development of American privacy law has been slow and uneven; the advancement of information technology has not" (Calo, 2011).

Federal Case Law

Article IV of the United States Constitution states in part that the public has the right to be free from "unreasonable searches and seizures" (U.S. Const. amend. IV). If the government wishes to conduct a search, it must, subject to some exceptions, obtain a warrant from a judge (e.g., a separate branch of government) based upon probable cause (U.S. Const. amend. IV) (Illinois v. Gates, 1983). A search occurs when law enforcement agencies "encroach on a person,

effect or object, as to which a citizen has a reasonable expectation of privacy" (Rapp, 2009, as cited in Fisher, 2002).

Although the U.S. Supreme Court has never addressed privacy in the context of UAS, it has decided cases, which provide a greater understanding of the constitutional protections afforded to the public (Villasenor, 2013). In California v. Ciraolo (1986), the Santa Clara Police Department received an anonymous tip that Mr. Ciraolo was growing marijuana in his back yard (CALIFORNIA v. CIRAOLO, 1986). The police were unable to conduct a visual observation due to a high fence on the property (CALIFORNIA v. CIRAOLO, 1986). The police department decided to use an airplane to fly over Mr. Ciraolo's property at an altitude of 1,000 feet (CALIFORNIA v. CIRAOLO, 1986). Police were able to see and photograph the marijuana plants and subsequently obtained a search warrant to enter the property. The law enforcement agency seized 73 plants and arrested Mr. Ciraolo who then pleaded guilty to the cultivation of marijuana.

On appeal, the U.S. Supreme Court addressed the issue of whether a violation of the Fourth Amendment occurs when aerial observation without a warrant from an altitude of 1,000 feet of a fenced-in backyard within the curtilage of a home (CALIFORNIA v. CIRAOLO, 1986). The Court considered the issue by applying the "reasonable expectation of privacy" test set forth in Katz v. United States (1967). The test has two components. "[F]irst, has the individual manifested a subjective expectation of privacy in the object of the challenged search? Second, is society willing to recognize that expectation as reasonable?" (CALIFORNIA v. CIRAOLO, 1986). In analyzing the issue, the high court stated:

> The Fourth Amendment protection of the home has never been extended to require law enforcement officers to shield their eyes when passing by a home on public thoroughfares. Nor does the mere fact that an individual has taken measures to restrict some views of his activities preclude an officer's observations from a public vantage point where he has a right to be and which renders the activities clearly visible. E. g., United [***217] States v. Knotts, 460 U.S. 276, 282 [**1813] (1983).

In addition, "What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection." (Katz, supra, at 351). The Supreme Court held that the Fourth Amendment does not require law enforcement traveling at 1,000 feet in public airspace "to obtain a warrant in order to observe what is visible to the naked eye" (CALIFORNIA v. CIRAOLO, 1986).

Three years later, the U.S. Supreme Court, in Florida v. Riley, was asked to determine:

> [W]hether surveillance of the interior of a partially covered greenhouse in a residential backyard from the vantage point of a helicopter located 400 feet above the greenhouse constitutes a 'search' for which a warrant is required under the Fourth Amendment…
>
> (Florida v. Riley, 1989)

In this case, the sheriff's office received an anonymous tip that an individual was growing marijuana on his property (Florida v. Riley, 1989). As part of the investigation, a deputy used a

helicopter to circle twice over the accused's property at an altitude of 400 feet (Florida v. Riley, 1989). As a result of the roof and sides of the greenhouse being partially open, the deputy observed what he believed to be marijuana growing inside the structure and subsequently obtained a search warrant (Florida v. Riley, 1989).

The Supreme Court stated that its decision in California v. Ciraolo was controlling in this case (Florida v. Riley, 1989). In its analysis, the Court noted that the fact that the helicopter was flying at 400 feet did not "make a difference for Fourth Amendment purposes" because the vehicle was flying at an altitude that was legal under U.S. law (Florida v. Riley, 1989). The Court, however, noted that one should not conclude that "an inspection of the curtilage of a house from an aircraft will always pass muster under the Fourth Amendment simply because the plane is within the navigable airspace specified by law" (Florida v. Riley, 1989). The Court, in finding that there was no Fourth Amendment violation, stated:

> …it is of obvious importance that the helicopter in this case was not violating the law, and there is nothing in the record or before us to suggest that helicopters flying at 400 feet are sufficiently rare in this country to lend substance to respondent's claim that he reasonably anticipated that his greenhouse would not be subject to observation from that altitude. Neither is there any intimation here that the helicopter interfered with respondent's normal use of the greenhouse or of other parts of the curtilage. As far as this record reveals, no intimate details connected with the use of the home or curtilage were observed, and there was no undue noise, and no wind, dust, or threat of injury (Florida v. Riley, 1989).

In Kyllo v. United States, the U.S. Supreme Court addressed "whether the use of a thermal-imaging device aimed at a private home from a public street to detect relative amounts of heat within the home constitutes a "search" within the meaning of the Fourth Amendment" (Kyllo v. United States, 2001). In this case, a United States Department of the Interior agent became suspicious that marijuana was being grown in the home belonging to Danny Kyllo (Kyllo v. United States, 2001). The use of high intensity lamps is usually required in order to grow marijuana inside a home (Kyllo v. United States, 2001).

The federal agent used a thermal imager, which detects infrared radiation, from the passenger seat of his car to scan the triplex where Kyllo lived in order to determine whether the amount of heat emanating from the home was consistent with the use of high intensity lamps (Kyllo v. United States, 2001). The scan of Kyllo's home took only a few minutes and was performed from the passenger seat of Agent Elliott's vehicle across the street from the front of the house and also from the street in back of the house.

The scan revealed that the roof over the garage and a sidewall of the petitioner's home were "relatively hot compared to the rest of the home and substantially warmer than neighboring

homes in the triplex" (Kyllo v. United States, 2001). The law enforcement agent relied on the thermal imaging, informants, and utility bills to secure a search warrant from a Federal Magistrate authorizing a search of Kyllo's home (Kyllo v. United States, 2001). A search of Kyllo's home revealed over 100 marijuana plants (Kyllo v. United States, 2001).

In analyzing the issue, the Supreme Court stated that "[i]t would be foolish to contend that the degree of privacy secured to citizens by the Fourth Amendment has been entirely unaffected by the advance of technology" (Kyllo v. United States, 2001). The Court held that when "the Government uses a device that is not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion, the surveillance is a 'search' and is presumptively unreasonable without a warrant" (Kyllo v. United States, 2001).

In 2012, the U.S. Supreme Court in United States v. Jones (United States v. Jones, 2012) addressed "whether the attachment of a Global-Positioning-System (GPS) tracking device to an individual's vehicle, and subsequent use of that device to monitor the vehicle's movements on public streets, constitutes a search or seizure within the meaning of the Fourth Amendment" (p. #) This case has implications for law enforcement conducting extended surveillance operations with UAS (Villasenor, 2013).

In this case, Antoine Jones came under suspicion for engaging in narcotics trafficking (United States v. Jones, 2012). Based in part on information gathered from various sources, the Federal District Court issued a warrant to a joint FBI and Metropolitan Police Department task force authorizing the use of an electronic tracking device on the Jeep Grand Cherokee registered to Jones's wife (United States v. Jones, 2012). The court order required the "installation of the device in the District of Columbia and within 10 days" (United States v. Jones, 2012).

On the 11th day, and in the State of Maryland (outside the borders of the District of Columbia), agents installed a GPS tracking device on the undercarriage of the Jeep while it was parked in a public parking lot (United States v. Jones, 2012). The government used the device to track the vehicle's movements over the course of a month (United States v. Jones, 2012). The GPS device established the vehicle's location within 50 to 100 feet, thereby generating more than 2,000 pages of data (United States v. Jones, 2012). The government's first trial against Jones for conspiracy to distribute and possess with intent to distribute five kilograms or more of cocaine resulted in a hung jury (United States v. Jones, 2012).

Jones was indicted again in March 2007 for conspiracy to distribute cocaine (United States v. Jones, 2012). At trial, the prosecutor introduced into evidence the GPS-derived locational data, which connected Jones to his alleged conspirators' house that contained $850,000 in cash, 97 kilograms of cocaine, and 1 kilogram of cocaine base (United States v. Jones, 2012). The jury returned a guilty verdict, and Jones was sentenced to prison for life (United States v. Jones, 2012). The U.S. Court of Appeals reversed Jones' conviction on the grounds that "admission of the evidence obtained by warrantless use of the GPS device…violated the Fourth Amendment" (United States v. Jones, 2012).

The Supreme Court ruled that the "government physically occupied private property for the purpose of obtaining information" and that such an intrusion "would have been considered a 'search' within the meaning of the Fourth Amendment when it was adopted" (United States v. Jones, 2012). The Court found the government's actions unconstitutional and ruled that "the installation of a GPS device on a target's vehicle, and its use of that device to monitor the vehicle's movements, constitutes a 'search' " (United States v. Jones, 2012).

State Statutes

The United States Congress has directed the FAA to develop regulations to incorporate UAS into the National Airspace System by 2015 (FAA Modernization and Reform Act of 2012). At the federal level, the FAA is working with other federal government agencies to address privacy issues (Federal Aviation Administration, 2013). In 2013, 40 states considered legislation regarding the use of UAS (Lee, 2013). Thirteen states enacted 16 new laws and 11 states adopted 16 resolutions pertaining to UAS (National Conference of State Legislatures, 2013).

Florida, Illinois, Montana, Tennessee, and Virginia all passed laws limiting the use of UAS by law enforcement agencies. Florida's Freedom from Unwarranted Surveillance Act (Fla. Stat. § 934.50 (2013)) prohibits a law enforcement agency from using a UAS to obtain evidence or information, unless one or more of the following conditions exist:

(1) The U.S. Secretary of Homeland Security determines that credible intelligence exists indicating a high risk of a terrorist attack by an individual or organization.
(2) The law enforcement agency first obtains a search warrant authorizing the use of a drone.
(3) The law enforcement agency has reasonable suspicion that swift action is necessary to prevent imminent danger to life, such as to facilitate the search for a missing person, to prevent serious damage to property, or to forestall the imminent escape of a suspect or the destruction of evidence (Fla. Stat. § 934.50 (2013)).

The statute also prohibits the use of evidence obtained in violation of the statute in any criminal proceeding (Fla. Stat. § 934.50 (2013)). The statute would prohibit the use of UAS to conduct aerial surveillance as in California v. Ciraolo. Furthermore, the use of thermal imaging devices as depicted in Kyllo v. United States would also be illegal.

On April 13, 2013, Virginia enacted a statute which placed a moratorium on the use of UAS by law enforcement agencies until July 1, 2015 (Va. Code Ann. § (Chapter 796)). The law requires the Virginia Department of Criminal Justice Services and other related agencies to develop protocols for UAS use by law enforcement. The statute also contains language that allows for UAS to be used by higher education institutions, the National Guard, and for search and rescue operations (Va. Code Ann. § (Chapter 796)).

In 2013, Illinois enacted the Freedom from Drone Surveillance Act (Illinois Public Act 098-0569). The statute is similar to Florida's Act. Specifically, it prohibits the use of UAS by law enforcement except for the following conditions:

(1) To counter a high risk of a terrorist attack by a specific individual or organization if the United States Secretary of Homeland Security determines that credible intelligence indicates that there is that risk.
(2) If a law enforcement agency first obtains a search warrant based on probable cause.
(3) If a law enforcement agency possesses reasonable suspicion that, under particular circumstances, swift action is needed to prevent imminent harm to life, or to forestall the imminent escape of a suspect or the destruction of evidence.

The statute also limits the use of a UAS by law enforcement to a period of 48 hours. It also requires the head of the law enforcement agency to report the use of a UAS to the local prosecuting attorney within 24 hours of the use of a UAS.

The Way Forward

This review of judicial opinions and state statutes demonstrates legal limits in place to address privacy concerns. Laws like the one passed in Florida will prohibit the use of UAS to collect evidence without a warrant unless a statutory exception applies. Illinois' state statue will limit the duration of UAS observation by law enforcement, thereby limiting indiscriminate surveillance. The case law also reveals there is precedence for law enforcement to use aerial platforms to observe open spaces and use the findings to obtain warrants, and ruling out a full prohibition of UAS. As government entities have and will continue to play a role in addressing privacy, law enforcement agencies should work on adopting policies that address privacy, while retaining freedom to use the technology in a meaningful way.

The best strategy for the adoption of UAS technology is for law enforcement agencies to promote "middle of the road" polices that are neither *laissez-faire* nor out right prohibition. This approach can be categorized into three domains: permission, transparency, and data. On the issue of permission, all publicly owned and operated aircraft, including UAS, should not be restricted from viewing people, property, or objects in the open that are not subject to the normal expectation privacy. This will enable UAS to be used for search and rescue and while applying the same standard that apply to traditional public aircraft. On the issue of transparency, all UAS proponents, organizations that own and operate UAS, should post activities, standard procedures, program administration, aircraft type, and capabilities in the public forum. Public proponents should also consider publishing annual reports regarding the use of UAS technology and presenting it to the public. Finally, data collected during operations without a warrant should be destroyed under the same rules and regulations that govern images taken by other types of data collection technology (i.e. police cruiser dash cameras). If during routine flight operations, criminal activity is spotted or the threshold of probable cause is met the evidence should be handled under the chain of custody presently used by the public agency, and consistent with the constitutional standards set forth by courts. By adopting a middle of the road approach, UAS can be used with appropriate safeguards.

Policymakers concerned with the benefits of UAS technology, as well as privacy issues can sway public opinion by demonstrating that UAS are not a threat to civil liberties, but additional tools for law enforcement agencies to protect the public.

UAS are a new technology and therefore going through the challenges of gaining public acceptance. Opponents of this technology have valid concerns that should be respected and addressed. It can be expected that many cases will be heard in the coming years pertaining to the use of UAS technology. Law enforcement agents who wish to pursue this technology would be wise to garner support prior to deploying a system.

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