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# Eye in the Sky

Unmanned Aircraft System  
Applications in Law Enforcement

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## Unmanned Aircraft System Applications in Law Enforcement

### **Introduction**

Unmanned aircraft systems (UASs) are becoming ever more popular in the skies across the United States and around the world. These remotely piloted aircraft, commonly referred to as drones, unmanned aerial vehicles (UAVs), quadcopters, hexacopters, and multirotors, vary in design and intended usage from professional applications used for digital mapping, site surveying, film production, thermography and aerial photography, to flying for fun by the everyday hobbyist. They can be powered by gas engines or electric motors, and are designed after helicopters, fixed-wing airplanes, and rotary aircraft. The aircraft themselves can range from being minimal cost and have a wingspan of only a couple inches, with a range of less than fifty feet from the remote-control transmitter, to costing tens of thousands of dollars or more and a wingspan of several feet, with an effective control range of over twenty miles. While the smaller and cheaper versions are predominantly used by hobbyists who don't necessarily need the extended range or other available high-tech features, the larger and more expensive commercial aircraft systems come with a variety of flight control programming options and added equipment capabilities that make them safer and more ideal for use in a variety of professional applications. In recent years, multi-rotor style unmanned aircraft systems with onboard live-view cameras have become increasingly popular with emergency services, and there are a multitude of applications for their use by police agencies.

### **Unmanned Aircraft System Usage Potential in Law Enforcement**

There are many potential scenarios that would warrant the use of unmanned aircraft system technology in the day to day activities of law enforcement officers. From using the

aircraft mounted camera systems to assist with the documentation and mapping of crime scenes and major vehicle crash investigations, to searching for missing persons or fleeing suspects during on-going incidents, there are a vast number of response scenarios that would be resolved more effectively by officers equipped with unmanned aircraft systems.

The benefits to having an available manned rotary or fixed-wing aircraft to assist in law enforcement operations are well known. However, most smaller agencies in the United States do not have the luxury of these assets due to budgetary and other logistical constraints. Unmanned aircraft system usage originated in the military, but in recent years the commercialization of these remote-controlled aircraft has dramatically increased the availability of these aircraft systems to civilians and emergency services personnel alike. The use of small unmanned aircraft systems equipped with live-view cameras can bridge the gap and provide smaller law enforcement agencies a more cost-effective means to benefit from real-time aerial observation technology.

The small size of many unmanned aircraft systems makes them more ideal than having available manned aircraft in many situations. Even police departments that do operate manned aircraft sections often do not have those air assets flying at all times. Inevitably, serious incidents necessitating the use of these aircraft will eventually occur when the aircraft is not available. Most small unmanned aircraft systems can be transported by vehicle to a location that is near the situation where the unmanned aircraft system is needed, and then remotely launched from a very small area. Because of the simplistic nature of many remote-control systems, unmanned aircraft systems can be deployed rapidly and provide immediate assistance to officers on the ground in a variety of situations.

Unmanned aircraft systems being market to law enforcement universally have one key feature that agencies are seeking; real-time, aerial video feeds provided by cameras mounted on the aircraft and transmitted back to receivers on the ground. The ability to have one of these systems over a dynamic and rapidly evolving situation is invaluable to law enforcement officers and supervisors managing those situations. The addition of infra-red and night vision cameras greatly increases the capabilities of these systems and give law enforcement an even greater advantage in resolving certain incidents. For example, an unmanned aircraft system equipped with an infra-red or thermal camera could be used to search a large rural area for a missing person. Because of the speed and maneuverability of these aircraft systems, it can cover far more ground than human officers, especially over rough terrain. The added technological advances brought by the specialized camera systems increase the chances for the missing person to be located in a much shorter time frame. In a situation such as this, an unmanned aircraft system equipped agency could deploy the aircraft for a precursory search of the area prior to conducting a full-scale response. This saves the responding law enforcement agency, or agencies- depending on the scope of the response, valuable time and effort, and can lower the considerable cost involved in large scale search and rescue operations that are often born by the agencies. Using an unmanned aircraft also ultimately preserves most of the available manpower and resources for specifically targeted functions, rather than general search operations. As an example of this type of deployment, in 2014, an unmanned aircraft system helped locate an 82-year-old man who had been missing for three days. The unmanned aircraft system searched a 200-acre field and located the man in twenty minutes. (Wells, 2016)

In addition to search and rescue operations, unmanned aircraft systems can be deployed to assist law enforcement in the search of dangerous fleeing or hiding suspects. Earlier this year,

officers at my department responded to a shooting that occurred during the night in the downtown area of Benton. In that situation, a male had been shot at a residence, and then fled the residence in a pickup truck but stopped and waited for police and paramedics a few blocks away. Once officers and paramedics arrived and began to treat the shooting victim, the suspect began to fire at the officers, paramedics, and response vehicles from an unknown position some distance away. I responded to the area along with another SWAT officer that was on duty at the time. Due to not having a definite suspect location, we had to park our vehicles a significant distance away and make our way into the area on foot using night vision equipment and systematically clearing sections of the downtown area while searching for the suspect. This drastically slowed our response, and put responding officers in significant danger of being ambushed by the suspect. Prior to entering the area on foot, I asked dispatchers to request assistance from both the Little Rock Police and Arkansas State Police aviation units, however neither were able to respond at that time. A lengthy search ensued, and the suspect was eventually apprehended over six hours later over a mile from the location where officers and emergency response personnel were shot at. Had the department had an available unmanned aircraft system with infrared capable cameras, the suspect in this situation most likely would have been apprehended almost immediately following the shooting. Much like deploying a manned helicopter to assist in the search and utilizing onboard forward looking infrared cameras, an agency equipped with unmanned aircraft system technology can put this equipment to use on a smaller scale. Having the aerial infrared view of an area a potentially armed and dangerous suspect is believed to be hiding can be the difference between life and death for the suspect or responding officers involved in the search by assisting law enforcement officers on the ground approach these situations from the safest avenues available, and give an extremely valuable live

view of the suspect's actions as ground officers are approaching. A manned police helicopter in this situation can be a show of force used to obtain surrender from a suspect, but could also become a target if the suspect is armed. There are significant advantages of using an unmanned aircraft system in that instance, since there is no danger to the pilot of the aircraft due to it being operated remotely. In addition, while a manned helicopter is extremely loud and not able to hover over a scene undetected unless at an extreme altitude, most small unmanned aircraft systems are marketed to law enforcement are battery operated, and therefore extremely quiet. The small size and significantly lower sound signature of unmanned aircraft systems makes them much more difficult to detect by suspects and far less likely to attract the unwanted attention of citizens in the surrounding area. Unmanned aircraft systems can also access areas that traditional helicopters cannot, because they can fly much lower to the ground, get into extremely tight spots, hover under bridges and structures, and even fly inside buildings in order to gather as much detail as they can about the situation. (Varah, 2015)

Unmanned aircraft systems can also help in many ways when it comes to disaster relief. Sending an unmanned aircraft system into an affected area can give first responders a better understanding of the situation, help locate survivors, perform structural analysis, deliver supplies and equipment, and help extinguish fires. One of the largest issues following Hurricane Katrina was the slow response. The people of New Orleans were left without food, water, and medical supplies while thousands crowded in the Superdome for up to five days after the storm. The scope of the disaster dramatically reduced the capacity for responders to use transportation to deliver supplies because they had difficulty reaching affected areas. In this situation, unmanned aircraft systems can act as logistics support because they do not need to rely on infrastructure for effective use, making it easier to deliver supplies quickly where needed. (Wells, 2016)

In addition to providing logistical support in response to disaster areas, unmanned aircraft systems can also assist in providing a temporary communications network in affected areas. Communication in disaster areas is central to organizing response efforts, and several examples in recent history have demonstrated how fragile our communication system is. Glaring communication gaps were obvious during and after Hurricane Katrina. During the storm, winds reaching 140 miles per hour crashed the electrical grid, caused cellular towers to fall, and the New Orleans area largely fell silent. In these situations, unmanned aircraft systems can act as Wi-Fi hotspots, helping spread network coverage across areas where power lines or cellular towers may not be working properly. (Wells, 2016)

In active shooter response situations, having a bird's eye view can enable police to gain a quick understanding of the scope of what is going on. The view from an unmanned aircraft system can not only provide the location of the shooter, but also an understanding of the surrounding area, offering valuable information such as the direction the shooter might be headed, escape routes for victims, and the shooter's firing line. The ability of an unmanned aircraft system to be stored in the trunk of a patrol car and deployed rapidly from almost anywhere make it a great tool for law enforcement officers to have at their disposal in rapidly evolving situations such as these. (Varah, 2015)

Another area of law enforcement response that could be enhanced by using unmanned aircraft systems is the response to bomb threats where suspicious packages are located, and assisting in the location and neutralization of suspected devices. Today, bomb disposal units predominantly use ground-based robots to investigate suspicious packages and suspected devices, but aerial unmanned aircraft systems can serve the same purpose. While an unmanned aircraft system cannot touch and manipulate the bombs, they can provide a more rapid initial

assessment of the situation and rule out threats before resources are wasted or lives are lost. This means that information would get to law enforcement supervisors and experts making decisions about the manner of response to the incident much faster, thereby greatly reducing the chances for loss of life. (Varah, 2015)

Surveillance activities are part of the normal day to day operations for law enforcement officers, especially those assigned to various types of special investigations divisions, and they involve hours of waiting and watching. Often, investigators are unable to reach the areas they need to surveil on the ground without being identified. The integration of unmanned aircraft systems into these operations would allow police officers to see places and things that fixed, and even mobile ground cameras cannot. Although these systems cannot hover endlessly over an objective, they can land within view of the target area to save battery life. The rotors can be powered off while keeping the camera on to record the events taking place from concealed locations where investigators cannot reach. There are many places where there is no available vantage point to conduct meaningful surveillance without being seen by individuals involved in the activities attempting to be watched. An example of such a location would be the middle of an open field. In these cases, a high altitude unmanned aircraft system being remotely operated by investigators near the area would offer the best opportunity to observe and record activities at the targeted location. (Varah, 2015)

Outside of tactical and emergency response situations faced regularly by law enforcement, crime scene and major traffic crash scene documentation and analysis is probably one of the more obvious uses for unmanned aircraft systems by law enforcement. Crime and accident scene documentation requires the response of highly trained forensic experts, including crime scene photographers, who meticulously capture detailed evidence from specific angles

under precise conditions. The exact crime scene must be documented for further investigation, and possible recreation, even after the scene is cleaned up. In many cases this can take several hours, and sometimes days depending on the severity of the crime and size of the area to be processed, for investigators to fully document a crime scene with proper measurement references. In the case of a major traffic crash, this often requires the roadways affected to be closed while investigators document the final resting position of the vehicles, measure and document skid marks, and document the debris field. Investigators using unmanned aircraft systems can reduce the time it takes to process these complex scenes dramatically. Using a few ground measurements and reference points, the unmanned aircraft system can fly over the crash scene to capture images and video, and the investigators and accident reconstructionists can refer to this data to complete much of their investigation. (Varah, 2015)

For departments that have venues and events bringing large crowds into their jurisdictions, unmanned aircraft systems can greatly enhance law enforcement officers assigned to staff and manage these complex work details. Monitoring large events like concerts, parades, and sporting events is extremely expensive and requires a great deal of manpower and coordination. Augmenting ground teams with unmanned aircraft system technology gives law enforcement officers a wider field of surveillance over a large area. This type of immediate, crowd-based monitoring can provide police with the vital information needed to make critical decisions regarding the deployment of ground personnel to a specific location only when it is necessary to do so. (Varah, 2015)

These are just a few examples of situations law enforcement officers respond to that would benefit from the implementation and deployment of unmanned aircraft system programs. While there is some cost associated with acquiring the necessary equipment and training officers

to pilot these systems, the benefits to the officers and departments vastly outweigh the financial cost of starting and maintaining such a program.

### **Legal Considerations and Community Impact**

One of the main public concerns regarding the use of unmanned aircraft systems by law enforcement is the potential for intrusion that may be posed by unmanned aircraft that are equipped with surveillance cameras or video recording equipment. These devices, mounted on an unmanned aircraft system may allow for the collection of images that might otherwise require trespass. An example of this would be a fenced backyard. While in *California v. Ciraolo* (1986) the Supreme Court ruled that there was not a Fourth Amendment violation when officers took photographs of a private residence while flying at 1000 feet, and in *Florida v. Riley* (1989) the Court ruled once again, that photographs of a private residence taken while flying at 400 feet did not constitute a search, these spaces are not public spaces and as such, it is strongly advised that law enforcement obtain a warrant when using an unmanned aircraft system to conduct targeted surveillance of a suspect's property. (Valdovinos, Specht, Zeunik, 2016)

There is consensus among public safety and privacy community advocates that warrantless use of unmanned aircraft system technology should be used to accomplish important missions in ways that do not encroach on people's privacy. For example, unmanned aircraft systems can offer a unique perspective from the sky that can change the way in which first responders and other government personnel manage emergency situations, such as a hazardous materials spill, hurricane evacuation, crime scene, automobile accident or search for a missing person. Despite the obvious benefit to law enforcement and citizens in these situations, there are still questions that must be answered for transparency and accountability regarding the specific circumstances and authorities under which the government should be allowed to use unmanned

aircraft systems. For instance, how long should data be retained? Are the privacy interests different if an unmanned aircraft system operator is only viewing a scene via live video, rather than recording the scene for later review and analysis? Many of these questions remain unanswered and do not appear to be within the scope of existing rulemaking by federal agencies. For example, the Federal Aviation Administration (FAA) issues regulations to ensure the safety of civil aviation within the National Airspace System (NAS) and grants waivers to permit government agencies to conduct certain public aircraft operations in ways that do not jeopardize the safety of other aircraft. The FAA's rules typically are concerned with flight safety rather than the collection of data by airborne sensor packages. To summarize, on one side, privacy advocates are afraid of rogue and excessive use of unmanned aircraft system technology and want stronger controls. On the other side, representatives of the law enforcement community oppose the imposition of unnecessary controls that will inhibit their ability to conduct their public safety mission and to quickly respond to exigent, life-threatening situations. All parties concur that the technology has value; the challenge for all agencies seeking to use unmanned aircraft systems will be formulating policy that accommodates the needs of law enforcement and public safety while also ensuring appropriate privacy and civil liberty protections based on existing law and regulation. (NIJ, 2016)

In order to minimize risk of liability as a result of use, any law enforcement unmanned aircraft system program should have a system of checks and balances in place that includes procedures for auditing, system oversight, and clear consequences for misuse. Misuse could not only undermine the legitimacy of an established unmanned aircraft system program, but also irreparably damage community trust in the program and the agency as a whole. Not only does

misuse open the door to civil liability, it also opens the door to criminal liability for officers, supervisors, and state and local government entities. (Valdovinos, Specht, Zeunik, 2016)

In order for communities to be open to the use of unmanned aircraft systems by law enforcement, the public safety benefits of their use must clearly outweigh any potential risks. The use of unmanned aircraft systems poses challenges and liability risks for law enforcement which fuel community concerns. The liability risks for law enforcement include injury to persons or property, violation of a person's right to privacy, and violations of the First and Fourth Amendment, among others. Taking measures to ensure accountability to the community is key for any law enforcement unmanned aircraft system program, and should be established early—well before the program is implemented. Some ways in which law enforcement agencies can work to proactively manage the risk of liability from unmanned aircraft systems use are establishing standard and program operating procedures, conducting program training, and ensuring sufficient program oversight. Ensuring community input into law enforcement unmanned aircraft system programs, from program inception through implementation, also helps to ensure community trust and promote accountability. (Valdovinos, Specht, Zeunik, 2016)

It is important for agencies to conduct a methodical assessment of community and department needs, making thoughtful consideration prior to determining if unmanned aircraft systems technology is right for their community. While decisions to acquire new technology should always be driven by organizational mission and demonstrated need, for police departments using community-policing philosophies, assessing the need for an unmanned aircraft system program must also start with a scan of community and stakeholder sentiment regarding the technology. Determining whether your community is ready for unmanned aircraft system technology is a critical component of a needs assessment. A final determination of need

should aggregate the findings from the technology research, cost benefit research, and legal research conducted, along with the community and stakeholder input obtained. (Valdovinos, Specht, Zeunik, 2016)

### **Conclusion**

The implementation of an unmanned aircraft system program into a department poses many potential challenges, but, if managed properly, the benefits to deploying this new technology lawfully and transparently will dramatically increase the effectiveness of the police organization and has the potential to change the way policing is conducted in the future.

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