

***Waldon Automated Vehicle Electronics (WAVE)
Consulting***

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5/20/2022

Abstract

Waldon Ariel Vehicles Electronics (WAVE) consulting looks to approach law enforcement agencies with ways to combat rising crime rates, both cyber and physical. Our research details the increase in crime rates and their effect on society stemming from multiple factors, including the decreases in law informants. Furthermore, we introduce various methods outlining how our services will benefit law enforcement, commercial and public organizations with drone training, cyber defense innovation, and drone repair.

Key Words: *Drones, Law enforcement, Cyber Security*

I. Problem Overview:

There has been a strain between Law enforcement and American society throughout history. This strain is linked to the mistreatment of Americans by corrupt law enforcement and the justice system. Police officers can use elevating force against criminals, which has proven beneficial in providing safety in hazardous situations. However, crooked police use this power to take advantage of citizens. Police brutality in such officers has been apparent since the Jim crow era. In addition, the justice system at the time passed legislation limiting African Americans to what areas they may enter, at what time, and with whom. Being African American was a challenge for most; it was familiar for police to strong-arm African Americans due to the normality of its time. As society progressed from Jim Crow Laws, the divide between police and society would increase. For example, the war on drugs and the increased incarceration of African Americans lead to detrimental effects in most of their communities.

Reports found that corrupt law enforcement would plant drugs, firearms, and other contraband, so the court perceives victims as criminals. As a result, heightened incarceration rates and children growing up without a leading parental figure. In addition, it affects adolescents leading them to find other sources of guidance seeking validation from others. Unfortunately, this validation would sometimes lead to joining gangs and engaging in harmful and counterproductive activities. Suffice it to say; law enforcement received reputations for being distrustful and harmful to black communities.

Arriving in the 2000s, police brutality would frequently make news headlines involving African Americans. Media cases frequently appeared during the last decade, mentioning victims

of police brutality such as Freddy gray, Breonna Taylor, and George Floyd. The deaths of these individuals caused controversy across the United States. For example, while detained by law enforcement in Baltimore, Freddie Grays' death from 'unknown' causes led to dangerous riot outbreaks in 2016. Individuals from the African American community, torn and upset by his death, would begin destroying well-known and local businesses. In addition, more peaceful protests lead to new campaigns to hold conversations about police reform and new legal practices.

On top of the incurring events, the Covid pandemic has also led to a rise in police officers who defer from their positions and increased crime rates, both physical crime and cybercrime. Without sufficient aid from law enforcement, society may struggle to keep down these crime rates. Police officers are an essential part of every community. Unfortunately, little reminders tell us that there are ten more good apples for every bad one. Modern society has a stereotypical impression of law enforcement because a select few make the wrong decisions. Likewise, the media portrays the stereotypical black man as a criminal, athlete, or rapper. These stereotypical views create a more significant divide between communities. With the shortage of numbers in police departments, their torn relationships with communities, and the covid pandemic, departments look to figure out methods to perform jobs efficiently with everyone's safety in mind.

Law enforcement has implemented new practices and technology to protect society. Sometimes, enforcement agencies may need further help utilizing technology and creating efficient mission planning that needs correctly trained individuals. Drones have become an integral part of law enforcement agencies and other organizations. Law enforcement may seek non-lethal or otherwise specialized payloads that they can use to ensure situations less overall

harm to individuals and leave officers in a safe position. With incurring the use of drones, police departments must have trained individuals, the correct technology, and proper cyber security for their UAVs.

II. Overview innovation:

Waldon Ariel Vehicles Electronics (W.A.V.E) Drone consulting seeks to address organizations needing drone security, operators, training, and development. Our primary goal is to provide the best service to organizations in the legal system, especially law enforcement. Law enforcement agencies have constantly struggled over the past couple of years due to the decrease in agents and higher crime rates. Our research tracks that since the beginning of the COVID-19 pandemic, there has been a steady decrease in police officers and civilians who want to become law enforcement. The issue is partially due to the political unrest caused by the tragic deaths of African Americans from police brutality throughout the United States. If the decrease in law enforcement continues, the police department will require additional resources in situational circumstances. For example, when dealing with criminal activity, drones can enter situations with heat-tracking sensors to follow culprits from an aerial view, providing a better line of sight than officers pursuing criminals on foot. In cases like this, our drone consulting services look to give police officers assistance to combat increasing crime rates that have negatively impacted many individuals and businesses.

We not only examine the effects on police departments but all organizations. In terms of capital loss due to riots, gang activity, and other malicious actions that damage communities' drones provide a safer way for police to disperse large or small groups. Organizations also face a significant problem with cyber-related attacks and vulnerabilities in computer systems. These vulnerabilities will transfer to new emerging technology and robotics as the systems will become commonplace in the future. Our consulting firm implements a framework to provide physical UAV services that protect information stored and transmitted by drones.

Waldon Ariel Vehicles Electronics (W.A.V.E) Drone consulting firm comes to provide solutions. In most areas, the decrease in law enforcement may be sustainable in ordinary circumstances. However, an enforcement agency may incorporate missions with drones in extraordinary or high precautionary situations. For example, drones can be equipped with payloads to carry advanced cameras to provide descriptive characteristics of suspects fleeing from a crime scene. Technology has allowed the combination of these cameras with object recognition to analyze various surrounding entities such as vehicles, clothes, and body composition. Other customers may have reconnaissance missions that require stealth; drones flying from high aerial postures are harder to view, providing anonymity.

We set ourselves apart from the competition by allowing the customers to contact us based on their needs. As a result, our customers will save money by eliminating unnecessary workforce and labor. In addition, consulting with Waldon Aerial Vehicles Electronics (W.A.V.E) will allow clients to acquire services they need for a limited time, save over the long term, and help with expansion.

III. Literature review describing problem

This section produces research on societal factors that show law enforcement needs external help with operations. Beginning with the struggles of the police department, outlining the effects that police brutality and covid have produced on law enforcement—Continuously covering the increased crime rates and the solutions with technology that enforcement agencies have implemented. Furthermore, covering topics such as the increased use of drones, cybercrime, and aid that departments outside law enforcement will need when utilizing drone technology in the future.

Tensions with Police

There has been rising tension between law enforcement and various parts of society in American culture. The tensions between police officers are most common between African and other minority groups. One of the most notable factors regarding perceptions of the police is race. Whites are generally found to have higher satisfaction and more favorable attitudes toward the police than do Blacks (McNeely,2016). There have been various theories on why African Americans are more displeased with police officers in America than their counterparts. Research from the Southern Criminal Justice Association shows that many believe that racial profiling often occurs in black communities. Susan McNeely's survey found 3,759 adults concluded that,

"Those who reported more frequently seeing police cars in their neighborhoods were more likely to feel that the police were doing a good job. Police presence was also positively related to the belief that the police use racial profiling. (McNeeley,2016)".

McNealy's survey shows data that many individuals still believe that police are there for safety but believe racial profiling is apparent. This may be concluded as most respondents were from a majority group or other races outside of African American. "Out of all the participants in this survey, Blacks had less favorable perceptions of the police than did Whites: they were less likely to feel that the police were doing a good job solving problems within the community (McNeeley,2016). The next section of our research looks to introduce how this tension builds and what was the national response to these events.

A. Police Brutality

The focus of this research is not on the history of police brutality. As mentioned in the prior section, police brutality has been incorporated apparently in America since the passing of the Jim Crow legislature. The researcher intends to utilize current history leading through the COVID pandemic. Police brutality has drastically changed the attitude toward police and their practices in contemporary times. One notable case that changed the climate toward police is the death of Freddie Gray. As mentioned earlier, his death caused riots in Baltimore that created mass harm to local businesses and large store chains. Although there was peaceful protest demanding reform to law enforcement practices, the damage caused by rioting brought more tension between communities and police. The case is widely known and is prompt as a prime example of police brutality. However, the six police officers on trial for manslaughter and murder concluded that federal officials would not prosecute the officers on federal charges. The upsetting outcome

would only begin to show pressure on law enforcement and their practices needing reforms.

Research Pyo stated about the case,

While many race and social justice scholars and activists have expressed relief with the outcome, some have clearly noted that this particular action represents only a start in terms of what needs to happen to adequately address illegal actions by the police, and the institutional racism that runs rampant in the US criminal justice system and prison industrial complex [1]

This pressure remained constant by social activist groups such as those involved with the Black Lives Matter movement. A significant cultural movement in support of creating reform to supposed “corrupt” political systems and police practices. Research has associated BLM protests with poverty, educational attainment, population size, police killings, the democratic vote share, the black population share, and past incidents of lethal use-of-force by the police (Cambell,2021).

B. Medias’ Effect on Law enforcement

The Black Lives Matter movement has been very polarized through popular media platforms as it is a form of protest held in various cities across the United States. Using social media, individuals can push movement and ideas a lot quicker spreading knowledge of many different incidents. Collected data after the events of the Freddie Gray in Baltimore and examined the number of Twitter tweets involving law enforcement as a search. Positive sentiment toward police was relatively stable in 2014 and 2015, and the rate of positive tweets in both years was about 2 percent. (Oglesby-Neal,15). In contrast, the rate of negative tweets was 17 percent in 2014 and 21 percent in 2015, showing an increase in negative sentiment over time. (Leppert,

2022). Conclusion lead that the data negatively affects the relationship between communities and law enrolment.

Much information has concluded that social media platforms play a significant role in citizens' overall view of topics. Not only limited to police brutality, but such social media use has led to a mass perception of specific topics that easily influence personal views. One Study that addresses the role of social media on police found,

Social media was chosen as the most utilized medium to stay informed on current news... Since these apps are getting their information second hand, there is a higher probability that details will be distorted, even if unintentionally...respondents explained that their growing distrust of the news media lead them to check outside sources...This trend to restrict exposure to major news stations has a damaging effect on law enforcement, particularly because stories of excessive use of force appear often (Schultz,2019)

The main power that media holds over this established image of police as inherently violent is their ability to influence and persuade an already uneasy community. This situation makes it crucial to provide a positive image of police to the community, which they can use to formulate their own opinions (Schultz,2019). In recent years, there have been extensive social options for police addressing the issues of excessive use of force, which has led to a new wave of national protest. However, the continued influence of the media on public opinion has created a new, stereotypical image of police: aggressive and bigoted, especially toward certain minority groups (Schultz,2019)

D) COVID-19s effect on law enforcement

The covid pandemic in circulation with increased media usage also holds an effect not only on police practices but also on their mental health. Covid-19s cause immediate stress on essential workers, including law enforcement. First responders may experience increased stress risk due to the prolonged threat of virus exposure and stay-at-home ordinance compliance enforcement (Stogner, 2020). Police officers are not immune from the problems of the pandemic and still work in environments with potential severe dangers. Dealing with the hinged stress can cause the officers to underperform in their work. Moreover, the pandemic affects law enforcement personal lives.

Critical incidents, trauma, and disasters that directly spill over and impact personal and family life, which are present in a COVID-19 context, are associated with greater likelihood of poor mental health outcomes for police. (Drew, 2020) Officers are still susceptible to the same mental and physical ailments as civilians. This should be accounted for when looking at the negative backlash received from the general public. Dealing with COVID-related demands and uncertainty itself presents as a source of stress, but also clearly exacerbates other job stressors that may impact mental health. (Stogner,2020) There was an increase in 2020 of law enforcement who, according to Blue H.E.L.P., 60 officers had died by suicide. law enforcement is likely to experience increased high-stress encounters with individuals suffering from mental health problems aggravated by fear of contagion, economic uncertainty, resource shortages, and isolation. (Py0,2022). Dealing with others who are also affected by the pandemic requires law enforcement to think about how to Defuse situations, whether potentially dangerous or to produce an effective outcome. Officers may also get sick and require medical treatment from being exposed to the virus. In 2020 the N.Y.P.D saw a significant percentage of its workers

impacted by covid. Approximately 13% of its entire workforce has been medically impacted. (Drew,2020). On top of this percentage, according to Blue H.E.L.P., 60 officers died by suicide in 2020.

Along with the increasing number of officers getting sick, a study has shown that African Americans have been arrested more often during covid. Preliminary data show that Black people are disproportionately arrested for social distancing violations (Kaplan & Hardy, 2020), which also increases the likelihood of exposure to the stressor of police presence and potential deadly encounters (Njoku,2021). African Americans being minorities in America have had the most void cases and deaths. A hazardous issue inside of their communities but also to law enforcement. These encounters can further put police lives in harm's way and create a more significant infection spread to others.

Many factors decrease the ability of police officers to do their jobs under preferred circumstances. Police had many issues with the public before the covid pandemic, but this escalated quickly as the pandemic began to go underway.

COVID-19 will have long lasting impacts on society and police departments will likely have to permanently alter some policing protocols as a result. As people start getting out in public more, police departments will need to reestablish community relationships and develop strategies to deal with individuals who have been economically impacted (Stogner, 2020)

E) Encouragement new law enforcement police

In the past sections, the research reviewed ways the public responds to law enforcement and the effects of covid on law enforcement. These factors have to lead to new legislation and reform implementation to increase the efficiency of officers while keeping citizens safe in mind.

Academics, journalists, and state officials have all spoken their opinions on limiting the ability of police officers in the highest situations with suspects. The first of which involves the incorporation of new de-escalation practices.

Another recent reform proposal considered by many police agencies is the implementation of de-escalation training ... De-escalation training generally aims to develop police tactics that require officers to use verbal or non-verbal communication skills during encounters with the potential for escalation, in order to reduce conflictual or aggressive behavior (Pyo, 2022)

Alongside de-escalation training, officers now use cameras on their person to provide evidence of a crime scene. Body cameras held police accountable for situations and were implemented as a method to capture object evidence for events taking place.

Legislatures and police departments have created body cam programs to promote transparency, enable accountability, and improve relationships between police and communities. One of Attorney General Loretta Lynch's first statements in office concerned the importance of body cams for improving policing in America: "Body-worn cameras hold tremendous promise for enhancing transparency, promoting accountability, and advancing public safety for law enforcement officers and the communities they serve." (J.A.P,2017)

Police body cameras also come equipped with onboard cameras similar to Vehicle cameras but capture more detailed evidence of investigations, situations, and other actions where police are to be found with them. These methods are linked to improving the handling of situations and correctly concluding who was in the right and wrong. Body cameras have captured evidence of

people performing malicious actions that have led courts to see that police response was justified. Likewise, body cameras on police have been spotted planting drugs, physical abuse, and malpractice of expected behaviors. Despite best efforts by law enforcement to be honest about their operations, a history of police brutality towards minority groups coupled with recent stories in the media have made mutual understanding between the community and law enforcement increasingly difficult. (Schultz,2019)

F) Police Opting Out

Although there has been much debate on improving law enforcement practices, America sees fewer roles filled. Police are under constant pressure to perform their task during the covid pandemic; stereotypical views and new and changing practices are changing how they approach situations. There is a clear link between the events over the past years and the decrease in enforcement agents. Many of the most worried officials have latched onto recent data from a non-scientific survey conducted by the Police Executive Research Forum think tank that shows a 45% increase in the law enforcement retirement rate and other "dramatic" losses. (Mahjan, 2021) Police choosing to opt-out of their positions can have a dramatic reproduction on society. It is also to say that throughout COVID-19, it is apparent why the officer chooses to step down. Repeated distrust for officers causes a prolonged, adverse effect on the quality of policing within the public, creating an "Us vs. Them" mentality amongst law enforcement and the local populace. (Schultz, 2019)

Society views began to take hold as those who do not defend communities but are the harm causers. Negative stimulus from the public and dealing with personal issues can provide too much for most individuals if they do not feel any reward for their work. Since last summer's

Black Lives Matter protests, a famous refrain echoes through urban police precincts, rural sheriff's offices, and city halls everywhere. Officers are fleeing America's police forces in significant numbers. (Mahjan, 2021) Enforcement agents leaving their positions with lower performance ability is beginning to show a significant problem in our society. The number of new law enforcement applications has decreased. Local police departments lost just under 1% of employees after a decade of steady expansion, according to the Bureau of Labor Statistics. (Mahjan, 2021). This percentage decrease represents that the expansion has moved from a positive trend in law enforcement to a decreasing rate. For example, if law enforcement saw a 25% increase in applications yearly, this is positive growth. Even if this number slowed to 5%, police officers would still receive more applications; this is conclusive to say that a negative 1% expansion means that more officers are leaving than applications coming in nationwide. The added pressure from the community from this negative image has severely impacted officers' performance in the field, especially in situations where various racial and social groups are involved. (Schultz, 2019)

G) Increase in crime rates

Since the decrease in the number of law enforcement, crime rates have been on an incline in the United States. Presenting many problems for local communities, businesses, and the government; increased crime rates have been dramatic since the beginning of the covid pandemic. As a result, government officials have begun to notice the increased crime rates and look to incentivize to increase the number of law enforcement agents to fight this growing war.

The Biden Administration recently announced that cities can use part of the \$350 billion American Rescue Plan relief money to hire more officers to combat gun violence This

increase is to combat the dramatic crime as FBI data shows the number of homicides rose by 25% from 2019 to 2020. By the end of 2020 homicide rates had increased by 33%. (Li, 2021).

The backlash affecting police departments shows dramatic increases that are negatively affecting communities. Although there is an apparent decline in police and an increase in crime, the researcher was able to find other research articles focusing on the severity of these two factors. It is not to a conclusive point why this is, but there seems to be a clear relationship as there seem to be insufficient human resources to manage the upcoming societal challenges. With fewer law enforcement numbers on the streets to counter these rising crime rates, law enforcement has implemented new methods to perform jobs.

Researchers also look at the increase of cybercrime rates as law enforcement also take care of increasing online presence attack and how they handle the situations. Cybercriminals always leave a footprint online, which is why most law enforcement also have digital forensic investigators to further help with gathering more data. When looking at such an expansive increase in cyber-attacks, law enforcement agencies have invested more into these resources but still need an increasing workforce who can use and launch these tools.

H) Police Incorporate drone squad

Police have begun to investigate salutations using more advanced technology, including Unmanned Aerial Vehicles (UAVs). Law enforcement agencies have seen an increase in drone department investments. (Sakiyama) stated that,

In fact, UAS technology has enormous potential for supporting various policing activities. These activities include search and rescue of missing persons, aerial

photography for crime scene investigation, detection of criminal trespass and other criminal activity in public places, identifying traffic violations and responding to automobile accidents, locating hazardous materials without endangering human lives and providing on scene fire or weather conditions to assist rescue workers in emergency situations. (Sakiyama, 2017)

The researcher was unable to conclude why this increase was, but there is information that Currently, 347 state and local police, sheriff, fire, and emergency agencies in 43 states fly unmanned aerial drones (Gettineger,2017). With drone departments being very common in the United States, this has caused debate over public opinions about the use of drone squads. They partially concern the public opinion of drones and citizens worrying about ‘big brother’ policing practices. Indicating that public attitudes toward the police and various policing activities depend in large part on the level of public faith and trust in police. (Miethe, 2015)

The Federal Aviation Administration (FAA) currently governs domestic UAS usage in the United States by law enforcement and other public agencies (Sakiyama). The FAA creation for law enforcement practices of Unmanned Aerial Systems (UAS) is to keep the use of drones in a system of checks and balances. While there is research, it still shows that in some areas, there is more disapproval of drone usage for specific activities as opposed to others. The physical location of the UAS activity also appears to be a factor in its level of public approval. (Sakiyama). Heen, Lieberman, and Miethe (2018) found that public support for UAS use by police was highest when used in reactive policing contexts, such as responding to calls, search and rescue, etc. (Miethe,2019).

Mesa County, Colorado, was the center for research on how people may respond to law enforcement drone use and under what circumstances they are favorable. Mesa County residents voiced their highest level of support for UAV usage in the areas of search and rescue (90%), tactical operations (82%), and crime scene investigations (70%). (Miethe, 2018). In one case, residents favor the police using drones for activities, including tactical and crime scene investigations. Other research cases show much lower levels of favorability for drone usage by law enforcement. Researchers Sakiyama found in a study that.,

nearly all (94 per cent) of the sample respondents support UAS use in search and rescue operations. A substantial majority also support this technology for border patrol (76 per cent) and traffic monitoring (74 per cent), but there is far less approval for UAS usage for detecting criminal activity in open public places (57 per cent) and crowd management (47 per cent). (Sakiyama, 2017)

There is still a high response of individuals who find the use of drones effective for search and rescue operations, as in the prior study. The difference is the percentage of individuals who approve of criminal investigation, a 13% difference. Again, the measurements differ based on the relationship between public areas and law enforcement. However, despite the limited availability of national survey data, much has been written about privacy issues and other concerns about this technology in the modern surveillance society. (Sakiyama)

The government and other organizations still believe that this technology can further help law enforcement with their practices. As we move towards a more technological-based society drone, have many different practical applications. Law enforcement used the first armed drone in 2016 in a case dealing with Micah Johnson, a former military reserve who took innocent lives at

a BLM protest. Johnson, killing police officers, citizens, and wounding more, stationed himself in a room in an office building. Law enforcement used an Unmanned ground system equipped with an explosive to restrict the damage done by Johnson. This situation is a prime example of the good that drone technology can produce for law enforcement.

W.A.V.E Consulting

When customers look to W.A.V.E for business services, we will service both commercial and government organizations. For example, although one of our missions is to aid law enforcement, we want commercial clientele also to be able to seek help when securing and repairing their deployable drone units or providing them with specialized Drones; the following sections will give readers a greater understanding of all of our services that we look to provide for clients. Each service in itself is unique and causes a variety of team members.

Team Deployment:

Our team deployment services are primarily for organizations that do not have the correct number of employees to suffice an operation. W.A.V.E will send employees who can operate drones and efficiently execute any operation. When dealing with law enforcement and government agencies, the client can select the number of team members needed for an operation along with the specified type of drone needed for a mission. In a later section, we will outline the drones we provide with our services. Our expert team knows each drone we deploy with our solution and are adept at following organization plans.

Drones for Sale:

W.A.V.E will allow organizations to purchase our drones. All of our drones provide enhanced camera and object detection capabilities. Furthermore, drones can track objects and send feedback to locations in a lifetime. Our more advanced models offer specific payloads.

We offer; Communication Interception, Network Scanning, Non-lethal, Noise emulation, object retrieval/delivery, and perimeter breaching payloads. Communications interception payload will allow users to listen in on communications of an unsuspecting party, being able to hear and detect what communications are taking place over electronic devices. Network scanning devices track what is happening when a network picks up a device and provide the ability to detect what physical devices connect to a target network. Non-lethal payloads disperse large or small crowds of individuals to control external situations and keep police officers out of harm's way. Noise emulation is the creation or replication of distraction or misleading noises for the distraction of targets so that enrolment agencies may draw attention away from units moving towards a location. Object retrieval and delivery move material from one party to another, and perimeter breaching payloads create a clear path of entry into the target premise for units to move in further.

Training Courses

W.A.V.E will provide drone training courses that will allow individuals to receive safety and best practice training when operating drones. Our training course aims to help individuals train inexperienced operators about drones in any law enforcement agency to help increase efficiency in future operations. Additionally, we will provide different certification levels to departments and their employees to verify that they have received the proper training. For more

advanced uses, customers who purchase our drones require training on the premise of an individual who has the certification to fly our drones. If misused, drones can cause harm, and trained personnel should have user access. Organizations may also receive a training certification which allows members of an organization to receive training from their department—further helping organizations to become more self-sufficient in their practices.

Drone Repair

W.A.VE drone repair services fix damages incurred through usage. When customers purchase drone models, we offer a repair membership, which allows their drone models to be fixed for free. Including drone purchases within a specific serial number range, reducing the amount spent on repair. W.A.V.E believes our customers should focus more on operation planning, not cost.

Drone Security:

With the increase in cyber-attacks, drones are devices that will need to be thoroughly protected as they will hold information about operations going on, whether that be government or commercial practices drones are needed for. W.A.V.E has a department that specializes in the protection of drone communication by creating platforms in which updates and upgrades can take place. When working on these software updates, we look to constantly make it more difficult for attacks to be able to access an organization's systems. Our department also can instigate attacks that have taken place against drones to analyze how the system was attacked and to provide a solution to help companies get back on track with their business practices.

Innovation Outside Class

In society, there is an apparent attitude towards police that are found in small discussions and on social media that show the negative attitude towards law enforcement because of police brutality. The first class that I took at Old Dominion focusing on the history of African Americans was my African American history course, which I took my freshman year. This course demonstrated topics about police brutality and how laws and regulations were turned against African Americans. An issue that was focused on dealt with Jim crow laws and how that affected African Americans' daily lives. Blacks could not access the same amenities as Caucasians limiting their freedom to move around society. If an African American was caught using or breaking one of these laws, they would be sentenced with heavy punishments and harsh treatment. This earlier account allowed me to make deeper connections about how far back the black communities' divide with police officers has been. A majority of minority communities have been proven to be afraid of police officers, passed down from generation to generation as elder family members experienced abusive treatment from law enforcement.

In my CYSE280 course, we were asked to research a topic related to cybersecurity. My focus was on the effects of drones in modern society. Concentrating on drones in many different walks of culture, drones are used by commercial, government, and civilians. The scope of this research allowed me to see how drones were growing in the global market. Now a multibillion-dollar industry that aims to make more regular commercial uses. With this industry growing, users and organizations must be aware of a plethora of laws to stay within the FAA guidelines

and international regulations. These regulations should be considered for any company looking to expand its efforts.

The research also examined the potential hazards that could be caused to drones if malicious users were to take control of a UAV. Outlining vulnerabilities found in drones with realizing that most drones with vulnerabilities are consumer-grade drones. Their open systems allow attackers to more easily access a UAV's operating system. Other more sophisticated drones can be attacked through GPS-based attacks depending on the grade of the GPS system found inside the drone. This can allow attackers to reroute and maneuver a drone causing potential damage to others or relocating the drone to a physical point where data can be extracted and collected.

Following potential attack vectors, my research views how drones can be taken out of the sky and defense systems that can be implemented to remove hazardous ariel systems. When building a business plan, failsafe plans should be in place to understand how to minimize the potential harm that can come if a drone is controlled by a malicious party.

When developing an understanding of drone technology for law enforcement, I learned of different ways that law enforcement can use drones and what problems may circumvent by their use. For example, the fear of privacy breaches was one primary concern expressed by using drones. This is also to say that there has been an ongoing debate involving the use of surveillance equipment outside of drones involving police bodies and car cameras.

Moreover, investigations may even take place in an aerial vehicle such as a helicopter that passively captures information of others in the vicinity of a specified target. Information like this

is essential when developing a drone consulting company because you understand that the problem does not deal with the just drones themselves. Still, the deeper undertone is the public relationship with law enforcement tactics.

In my EET405 course, Data Communications and Computer Networks, our task was to create an IoT device and application. While also researching and learning about drones, I made a war-flying drone. This war-flying drone was capable of scanning networks through an application using python3. War flying is derived from wardriving, a cybersecurity technique exploiting 802.11 networks while driving with network scanning devices. This technique allows individuals to receive more information on networks and mark the location to let others know the security of a network. This drone can scan networks and observe a target's facial features, capture photos/videos, and use a live GPS. I used a secure login for the user to secure the application and obfuscated the source code so malicious attackers would have trouble accessing the application. This project taught me a lot about the different aspects of developing drone technology and developing practical applications. For example, flying under the correct calculation is arguably the most essential part of any UAV device. If a drone's measurements are incorrect, it will not take off or function correctly. Once I started understanding the data for the drone, my learning continued with things that can augment a drone to make it perform a particular task. This knowledge is valuable when servicing clients. Moreover, allowing for better communication with team members and other technical roles.

Innovation Effectiveness

When figuring out how to determine whether W.A.V.E innovative techniques are efficient, we can first begin by setting up small scale experiments. These experiences include but are not limited to testing simulations where we test the ability of the drone to act in various planned simulations. These planned simulations will encompass a law enforcement task that needs to be specially planned. Operations require the answering of initial question. How do the enforcement agents plan to handle the operation, how much personal is needed, and what drone payload is needed? We will then feed the drone into these operations as planned and test its ability to perform various tasks. Next, our experiment well allows individuals to attempt to hack our drone, testing out how well our security posture is. To determine whether W.A.V.E consulting is effective, this will start with small-scale operations. This is the most effective way to understand how we can service the market. Through building relationships with clients, we can better understand their immediate needs as research about a topic is only but so limited. Research is a great foundation for understanding a broader view of a topic. When gathering firsthand evidence from top leaders in organizations, we can stay on top of today's problems and issues. For example, our customers may already have a drone operation unit, so they will not look to utilize our personnel for their mission. They may seek repairs from the prior mission and only look for such repairs to be made to drones. W.A.V.E will essentially then be able to determine what services are most needed in the market and how effective we can provide those services.

Offering such a broad range of services allows W.A.V.E to adapt to the needs of any department.

Innovation to Reality

When creating a company, it is always best to start with pen and paper. Developing first a vision. What we see for the future from the services that W.A.V.E. provides. Creating more safe communities and loving environments. Next, our mission is to deploy innovative drone services to commercial and government organizations. After figuring out your mission statement and values, the next is to produce values and goals from inside an organization. Value is created by the leader of an organization, setting a standard for excellence and expectations moving towards a goal. Once there is a value system and mission, we develop plans to ensure we complete our task.

Our goal is to turn W.A.V.E. into reality. First, there needs to be registered a business entity. This will ensure that you keep full rights to any product or service produced by the company. Forming a company as a business entity instead of under the name of the C.E.O. Allowing the company to represent liabilities. After registering the company as a business entity, it is best to set up a business account for which all company transactions will be kept and put into place. This will help ensure that the company's transactions are easy to find and can be taxed easily during the end of the year taxes. Once completing both a business account and have the name right. Setting up a website, and social media page, for which you can hold the name of your entity for future cases even without the development of the product. This will ensure that other outside parties cannot access words you may later need while marketing to customers.

The securing of the primary resources sets the foundation. The next step is to set up a strategic business model. Our model will be formed around how W.A.V.E. will provide the best customer service. This strategy will include methods for generating revenue and potential problems. This is important as we will need financial backing to achieve the technology that will be efficient enough to produce great jobs. When reporting to a bank or Venture Capitalist, they will want to see numbers and data on why this venture will work, and we will have the data required to prove to them that W.A.V.E. has got what it takes.

Once receiving the capital for the business, the next step is to ensure that we onboard not only great specialized workers but also management roles who can efficiently communicate with individuals in an organization to see that we are constantly moving towards our goals. With the proper management and team, our next destination will be networking with potential clients. For W.A.V.E., this would mean local law enforcement agencies and other companies that utilize drones in their practices. This will allow W.A.V.E. to build a reputation and receive more projects dealing with our customers and their needs.

Getting our first jobs, the next goal is to focus only on that job. Ensuring that customers receive what they ask for and dedicating every second and moment to ensure that they are satisfied. The net income produced after reducing business expenses will go directly back to the company to keep it growing healthy. This means creating a Research and Development department that allows us to test new products. Further expansion of operations will enable W.A.V.E. open its open facility and testing center to optimize our work.

W.A.V.Es Next Steps

As highlighted in the prior section, our first steps will be to create a vision for W.A.V.E. This is very important, to make the initial sense of direction in an organization; always keep the ability to come back as a reference point when things become uncertain. This reference point is the vision, what we see in the future, and all of our actions should be made to ensure that that future becomes a reality. A vision statement should be a broad view that all members of an organization can easily see and recognize. This will allow all of our employees, investors, and customers, to see where we are going, and we want them to be a part of our journey.

Once we establish a vision statement, our next goal is to create a mission statement. This mission statement encompasses who we are serving and what we are serving. We are intent to service commercial and government organizations with innovative drone services of the future. This mission statement specifies the intended group we will work with well and what they will get from our services. Establishing a mission statement is essential when setting up the goals for our business. Goals are important; they help ensure the following stepping stones when guiding an organization. The goals set by a company should be milestones; things are achievable, that tangle steps can be produced to ensure that they occur.

After creating goals, you create objectives that will move you towards that goal and begin to make it more accurate as you complete them. In front of the creation, a plan will be to get it recognized as an organization. This recognition will be our first mission objective. We believe

that many others overlook the simple yet powerful nature of creating vision, mission, and goals for organizations.

Self-Reflection

W.A.V.E drone consultancy is a drone innovation company that serves both public and private organizations. Our vision is to help bring communities closer to one another. One of our goals is to help repair the relationship between law enforcement and American society. Our research shows that there has been a decrease in law enforcement due to social media, police brutality, and the history of corrupt police affection minority communities. Since the beginning of the pandemic, all of these causes have created larger devices between law enforcement and communities. There has been a substantial decrease in law enforcement over the past two years and a significant increase in the crime rate across America. Police officers have begun utilizing drone units to help them in their operations.

This project allowed me to find more data on why law enforcement has decided to leave their roles. Students will find value in this product as research concludes how there is a need in the market and why that need exists. In the future, I would want to gather more information from direct sources being as law enforcement agencies. Understanding in greater detail the most up-to-date problems police departments are having with their drone department, current laws and regulations on what abilities they can use. This would help provide a better scope and understanding of how to service them as clients. All agencies and organizations may have different problems and need to be serviced by W.A.V.E; research from secondhand sources does

not allow us to see what is going on. The study will also need to be performed when understanding what licensing W.A.V.E will need to act with enforcement agencies. This may cause our organizations or members to serve as private investigators, which will require extra licensing and time to service them. When consulting with drone repair and protection, it would be beneficial to look inside police-grade drones to understand what weaknesses they have to create improvements for them. This research was foundational for generating more questions and thoughts they may not be initially viewed on the surface of a matter.

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