

PROSEGUR RESEARCH

The humming of the criminal world

The present and future in the
use of drones for criminal purposes

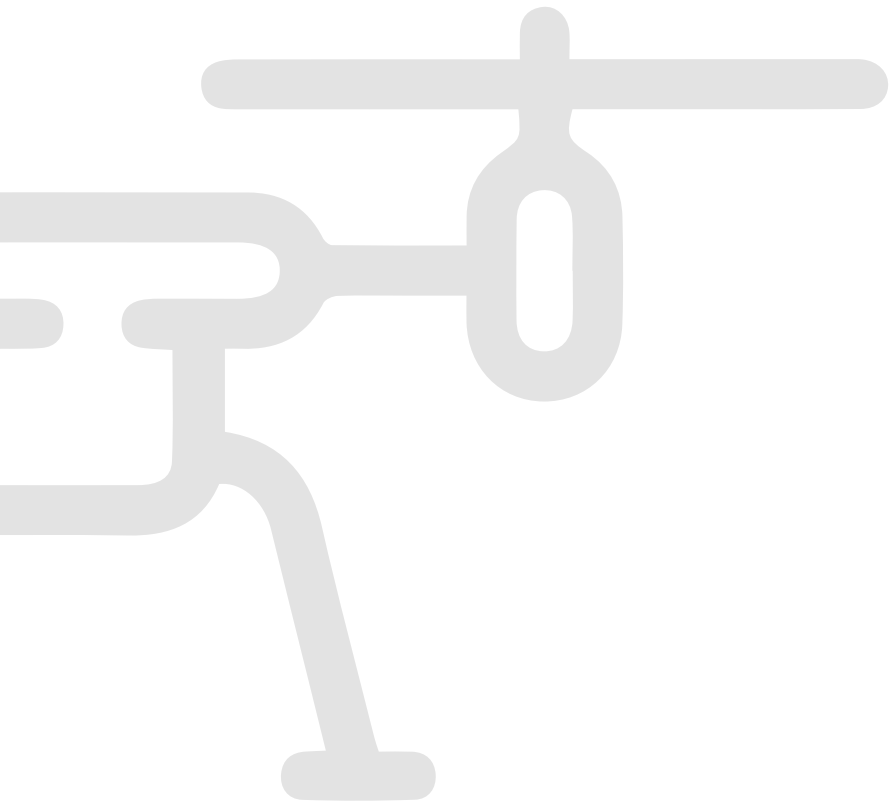


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Index





01

The drones in the present





1 The drones in the present

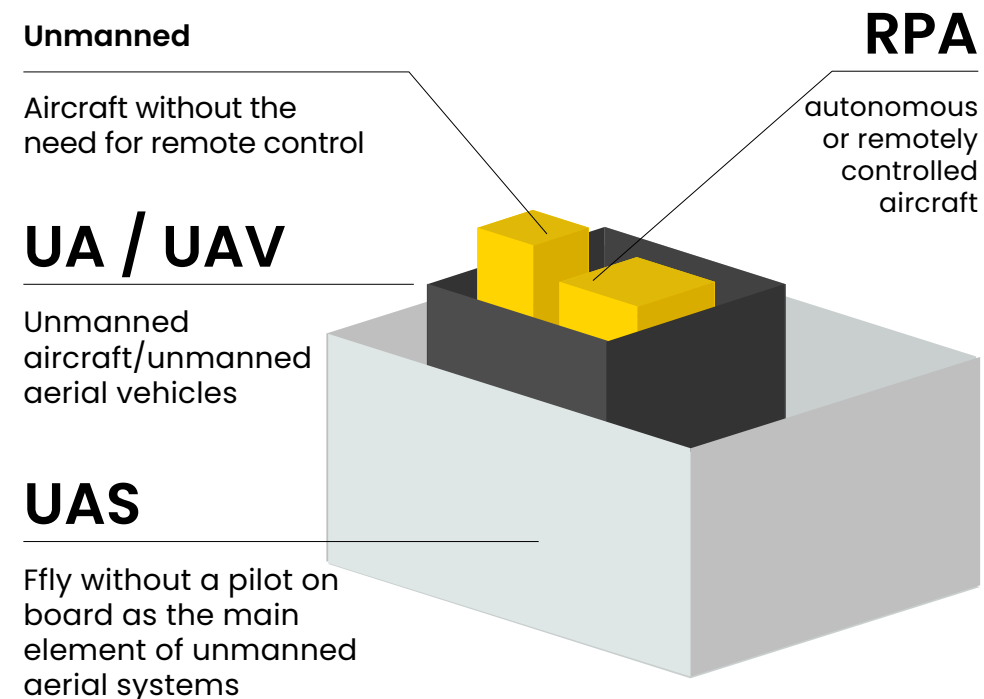
1.1. What is a drone?

A drone is an **unmanned aerial vehicle (UAV)**, a device capable of flying **without the need to physically pilot** it due to its capability to be remotely controlled or the trajectory can be programmed by means of software.

There are many ways to define and categorize the different types of drones¹.

¹ In recent years, there has been an increase in mentions of unmanned waterborne unmanned aerial vehicles (UWVs) - known in the media as underwater or aquatic drones. In this report, the scope of the concept is relegated to the aerial domain, in order to framework its study and facilitate the analysis for criminal purposes.

- According to the National Institute of Aerospace Technology (**INTA**), attached to the Ministry of Defense of the Government of Spain, unmanned aircraft (**UA**) or unmanned aerial vehicles (**UAV**) are those that fly without a pilot on board as the main element of unmanned aerial systems (**UAS**). UAS include the aircraft, the ground station and the communications link. These aircraft can be autonomous or remotely piloted aircraft (**RPA**) as part of remotely piloted aircraft systems (**RPAS**).
- The International Civil Aviation Organization (**ICAO**) has defended the use of the **drone** concept for those **RPAS that are under 25 kilograms**.



“ One of the worrying trends is the proliferation of the illicit use of unmanned aerial vehicles, which can paralyze airports or critical infrastructures and, are also potential weapons for sabotage or terrorist activities.” ”

National Security Strategy of Spain, 2021





Drones have a number of special features that expand the possibilities of use. Some of the most important are:

These properties coexist within an **ecosystem of technological convergence**, where interoperability, connection and communication between devices, systems and sensors has allowed an unprecedented amplification of uses. In the following section we analyze the most frequent ones.

Dimensions and weight

These are small vehicles that are lighter and easier to handle than traditional aircraft.

Connectivity

Drones have communication capabilities, either with the operator piloting remotely, in the case of RPAS, or with all kinds of sensors and devices thus expanding the potential for kinds of tasks it can assume.

Flight altitude, precision, and autonomy

Their dimensions allow them to fly at different altitudes, and thanks to their ability to adapt to the preset flight parameters or adjusted during the flight, drones have increasingly greater flight precision and autonomy.

Detectability

Mainly due to the size and flight altitude, drones have a low detectability making it difficult to track and control these aircraft, known as UAS LSS (Low, Slow and Small).





1.2. What are the most widespread uses?

In recent years, drones have undergone a technological development that has improved their characteristics and boosted the use of these devices by **various economic sectors**. The incorporation of **cameras** -which allows to take photographs and/or videos from high altitudes-; motion, proximity and temperature **sensors** -among others-; and GPS -to geolocate and monitor targets- have given these devices a multitude of utilities. As a result, the commercialization of drones has ranged from toys to weapons.

Drones have been adopted by the public security services of various countries with the aim of improving their activities and preventing and combating crime, among other objectives. Private companies have also taken advantage of these characteristics for logistical² and private security purposes.

Within the framework of **hybrid security**, drones are and will be an essential element of empowerment for security experts. In addition to speeding up surveillance rounds, the inclusion of sensors enables the detection of variations in relevant signals imperceptible to the human eye, such as thermal imaging and environmental sensors, which provides additional information to the security guard.

Common activities include **fluid leak detection, temperature and air quality monitoring, industrial maintenance inspections and photogrammetry**.

Moreover, drones can **detect the activity of other drones and mitigate the threat** they pose in the airspace of a protected area, such as a mass entertainment event or a relevant public event³. The most effective measures for civilian use are based on jamming and blocking the drones' usual working frequencies, those used for piloting and for transmitting information. Drones are also capable of altering the GPS signal on which the drones' autopilot is based and force their landing or return to the starting point.

Drones have also traditionally been used by **military forces** in combat. These, called unmanned combat aerial vehicles

(UCAVs), have proliferated **in warfare** since the Vietnam War (1955-1975), where the **United States adopted these devices**. UCAVs became established in the combat environment during the Iran-Iraq war in the 1980s, when technological industries in countries such as **Israel and Iran** increased the creation and distribution these devices. Subsequently, the use of UCAVs has evolved, being adopted in conflicts and acquiring greater sophistication in their **precision, discretion and ammunition capability**.

² In countries such as Israel, tests are being carried out to use drones to deliver food like sushi, beer or even ice cream.

³ The legal framework for detection and countermeasure systems is often far more restrictive than that applicable to the use of drones themselves. Sometimes it requires direct collaboration with the law enforcement agencies of each country.





Thus, the **loitering** method by which drones are used to carry out attacks on localized targets, is currently implemented in most active conflicts and **has acquired relevance both for regular armies and for insurgent and terrorist groups.**

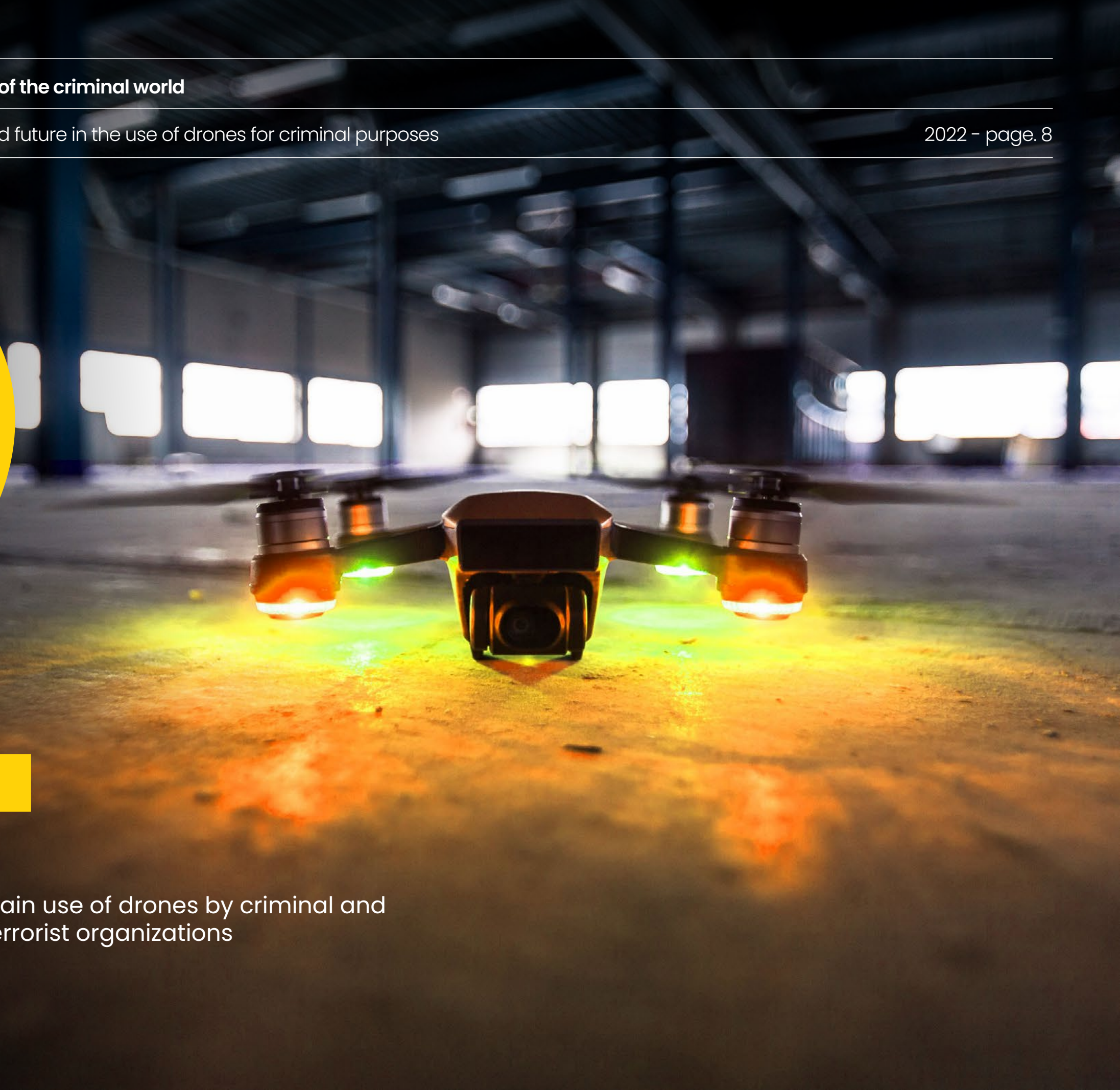
New uses that can facilitate the logistical and operational work of different professionals dedicated to security, as well as other sectors are currently being investigated. As an example, in recent years a myriad of uses has appeared, including the refueling of aircraft in-flight, the search for missing persons, evacuation tasks, the resupply of goods and anti-aircraft systems.

The widespread use of drones in everyday activities, as well as the easy development and acquisition of these devices, have posed a **challenge** to the security forces and authorities of different states who are designing **regulatory frameworks** to control the proliferation of these devices. As early as 1987, the G-7 countries created the **Missile Technology Control Regime (MTCR)**, which placed special emphasis on unmanned aerial vehicles. However, the legislation has been preceded by misuse and the **proliferation of criminal activities carried out using these devices as a form of criminal innovation.**





02



The drones of the criminal world

Main use of drones by criminal and terrorist organizations



2 The drones of the criminal world

Main use of drones by criminal and terrorist organizations

The **popularization** of the use of drones, **the decrease in their production costs** and **the consequent increase in their accessibility**, as well as the wide variety of uses, has led different criminal and terrorist organizations to incorporate this type of technology in their operations.

As early as 2004, U.S. intelligence services and consulting firms warned of the use of **drones by Hezbollah**, prompting the Israel Defense Forces (IDF) to develop improvements in **anti-aircraft technology for drone combat**. However, since 2012, coinciding with the proliferation of illegal arms sales in the framework of the wars in Syria and Libya, terrorist groups such as **Daesh** and, to a lesser extent, **Ansar Dine and Al Qaeda**, adopted these devices as a basic means of **surveillance, propaganda and espionage**.

The humming of the criminal world

The present and future in the use of drones for criminal purposes

2022 - page. 9

Likewise, the technological advances that have implemented drones and have provided improvements to various economic and social sectors have also been exploited by **criminals**, both at the individual and organization scale. It is pointed out that each use of a drone can lead to **bad practices** that result in criminal acts. The following are the main detected uses of drones for criminal purposes.

2.1. Obtaining private information and images

The cameras and sensors present in drones make it easier for criminals to obtain information from victims or potential victims. The use of drones to obtain **information and private images**, as well as their use for **surveillance, control and victim tracking**, are among the most widespread by criminal groups. In addition to violating people's privacy⁴, the images obtained through drones can be used for **blackmail and/or extort**, as well as in the development of **robberies** and **assaults**, both of individuals and properties.

Organized crime groups, mainly those dedicated to drug trafficking, have incorporated drones into their practices, taking advantage of their **tactical and operational traits** in comparison with their low cost and easy access. This, in addition to increasing the insecurity of individuals and groups, has had a negative impact on the population's



perception of safety, to the detriment of the security forces. For example, in **indigenous areas** where criminal groups allegedly use these devices to monitor areas of interest, self-defense groups have formed to carry out surveillance and protection tasks to make up for the alleged lack of control by the authorities.

Moreover, the acquisition and use of drones for surveillance by **private companies** or individuals has been criticized for allegedly abusive uses relating to **espionage**. These uses are mostly sustained by the legal vacuum they represent, although there are more and more rulings limiting the use of the devices and limiting the areas in which they can operate.

⁴ As noted in this *academic study*.



2.2. Transportation of goods

Another of the main uses of drones is related to **logistics and the transport of goods**. The use of drones for these tasks facilitates criminal activity by minimizing the level of risk for the offender and the speeding it offers for delivery processes. The sophistication acquired by drones in this sense makes the transportation of goods – whether they be explosives, polluting materials, bacteria or other materials harmful for the health – one of the uses in which security forces and private security companies should focus their attention in the present and in the future.

There are many cases in which the use of these devices by criminal organizations has been reported, especially in the case of **drug transport or smuggling**⁵ in highly guarded areas. For example, **synthetic opioids** such as fentanyl are **transported across the U.S.-Mexico border** using drones⁶. Likewise, in 2021, **an operation carried out jointly by the French and Spanish police** disassembled a network that transported hashish to different parts of Europe using drones.

The case of prison smuggling has also benefited from the use of drones. For example, in 2012 a case was highlighted in which a group of criminals

used a drone to deliver **cell phones** to prisoners. Later on, this modus operandi was replicated in 2019 at **Telfair State Prison** (Georgia, USA) where drones were used to drop several cell phones, **ammunition and tobacco inside the prison compound**.

2.3. Attacks and cyber-attacks

An interesting advantage offered by drones for illegal purposes and exploited by organizations is their use as a method of attack.

A In physical attacks, **crashing drones against people or their property** with the aim of causing damage to them does not compromise the physical integrity of any member of the criminal or terrorist organization.

⁵ *InsightCrime* is recommended for case studies.

⁶ The concept of “underwater drones” for drug transport, or “narco-submarines” is noteworthy even if it is not included within the concept of drone established in this study (given that instead of airspace it uses maritime space). Since 2011 there has been **collaboration** between the Revolutionary Armed Forces of Colombia (FARC) and different drug cartels in order to create a narco-submarine capable of transporting up to thousands of kilograms of cocaine. Recently, on the 5th of July, the Spanish police intercepted six **underwater drones** capable of crossing the Strait of Gibraltar with up to 200kg of drugs.





The humming of the criminal world

The present and future in the use of drones for criminal purposes

2022 – page. 11

Between **1994 and 2018**, more than 14 planned or attempted terrorist attacks took place with use of drones. In fact, the first record of the **use of domestic or homemade drones** for the successful commission of attacks dates back to 2014⁷. Since then, other incidents have been recorded, such as the attack by a **swarm of homemade explosive drones** against a Russian base in Syria in January 2018; the **attack** by Houthi rebels⁸ against the Yemeni army headquarters in January 2019; the **drone attacks** during January 2022, in the context of the conflict between the Jalisco Cartel - New Generation (CJNG) and the **United Cartels** (Familia Michoacana, the Knights Templar and the Viagas), or the **DÁESH** operations in Syria and Iraq.

During the last few years there has been an **increase in the use by several insurgencies active** in the wars in Syria, Ukraine, Libya, Iraq, Yemen, Mexico or Colombia of **homemade drones modified to carry improvised explosives: hand grenades, 40mm grenades and small mortar shells by**. In late January 2022, a video taken from a CJNG drone went viral showing how the device dropped several bombs over Tepalcatepec in Michoacán. In addition, within Mexico, attacks have been recorded in **Jalisco, Guanajuato y Michoacán**.

B

Regarding **logical attacks**, it is remarkable the wide **communication capacity** of drones with different devices, which allows a great diversity of agile and hardly detectable cyberattacks.

For example, it allows the configuration of a fake mobile Wi-Fi network or an unauthorized access point, in order to **intercept network traffic** from smartphones in range to **capture sensitive user information**.

Drones can also **disable** Wi-Fi networks, radios or other devices, as well as cause them to perform a local deauthentication attack⁹. If these attacks are carried out on companies that carry out essential or especially sensitive activities, it can represent a terrorist attack with a high impact on citizens or a powerful formula for extortion.

Technological progress enables the development of **small drones** for any type of attack complicating surveillance and protection tasks¹⁰. Thus, states have had to adapt to the miniaturization of threats¹¹, investing considerable efforts in this area, which promises to continue to expand its use in the criminal world.

⁷ When the Hezbollah guerrillas (a Shiite militant group based in Lebanon) managed to carry out a successful terrorist action against an Al Qaeda building on the Lebanese-Syrian border.

⁸ The Houthis employ more sophisticated drones, which cannot be considered homemade, including: Samad-1 (3.5 m wingspan, 500 km range, surveillance), Samad-2 (UAV-X, 4.5 m wingspan, 500 km+ range, surveillance or payload) and Samad-3 (4.5 m wingspan, 1500 km range, payload).

⁹ A type of denial-of-service attack targeting communication between a user and a Wi-Fi wireless access point.

¹⁰ On **January 26th**, on the White House lawn, a small drone crashed unnoticed by the security service.

¹¹ As an example, in early July, the **Israeli Army** reported that it shot down three Lebanese Hezbollah militia drones using an F-16 fighter and two Barak 8 anti-aircraft missiles launched from a warship.





03

**The future of criminal
uses of drones**





3 The future of criminal uses of drones.

Drones have acquired great relevance and, according to data issued by private companies¹² and specialized consultancies¹³, the projection of this technological advance is very high, both at a developmental and economic level.

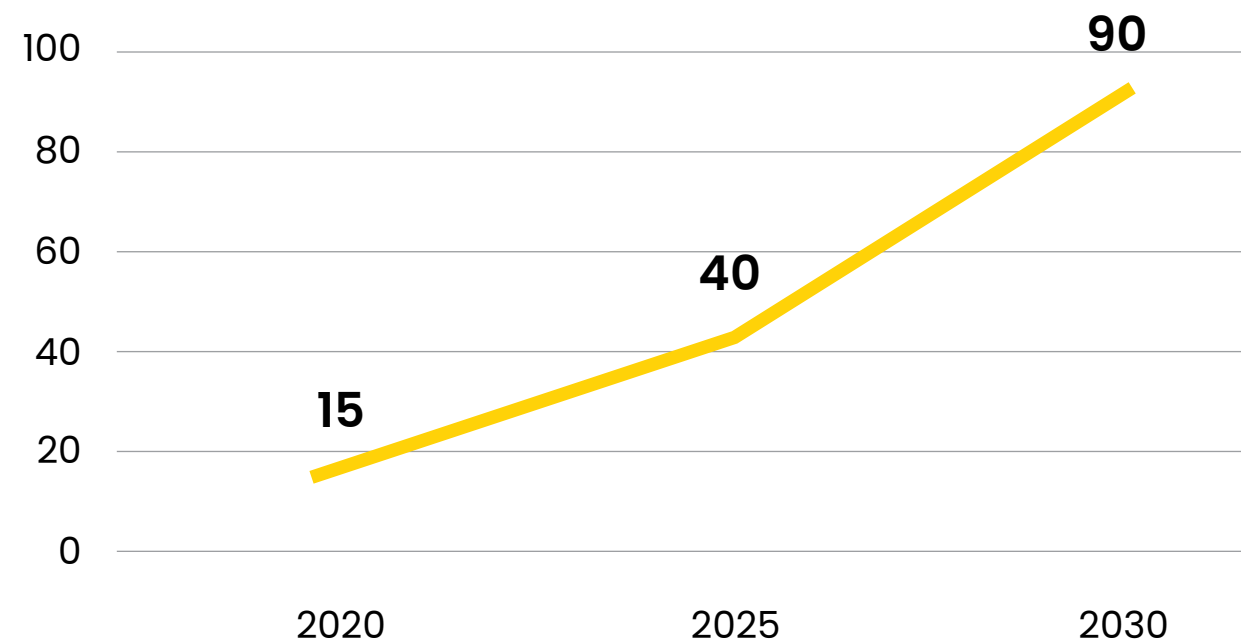
Some of the **most important advances are related to the inclusion of more advanced sensors¹⁴**, the reduction of electronic emissions (less detectability and possibilities of electronic neutralization), the improvement of materials and technology, reduction of the electronic, acoustic and radio frequency footprint that hinder their detection.

The humming of the criminal world

The present and future in the use of drones for criminal purposes

2022 – page. 13

Economic projection of the global drone market
(in billions of dollars)



Source: Prosegur, 2022 based on **Levitante Capital**, 2020.

The **sophistication** of drones by public and private companies, framed in the development and technological evolution, will condition their criminal use, limiting the mitigation capabilities of security forces against malicious uses of these devices.

¹² For example **Airbus**.

¹³ As **McKinsey**.

¹⁴ As reviewed by the **National Aerospace Security Council** (2022).





The humming of the criminal world

The present and future in the use of drones for criminal purposes

2022 – page.14

Some of the threats posed by drones identified by the **National Aerospace Security Council** (2022) are linked to intentional actions against valuable or critical facilities and individuals, groups of people or authorities. The use of these devices would facilitate the taking of photographs or videos for later extortive uses, as well as the spread of diseases or polluting materials that deteriorate the health of specific population centers. In addition, due to their impact, possible actions against important buildings or critical infrastructures such as airports or nuclear power plants, among others, are highlighted.

One of the main threats posed by drones **is the reduction of their size and imperceptibility**, as well as the development of new capabilities (cargo, flight precision or other).

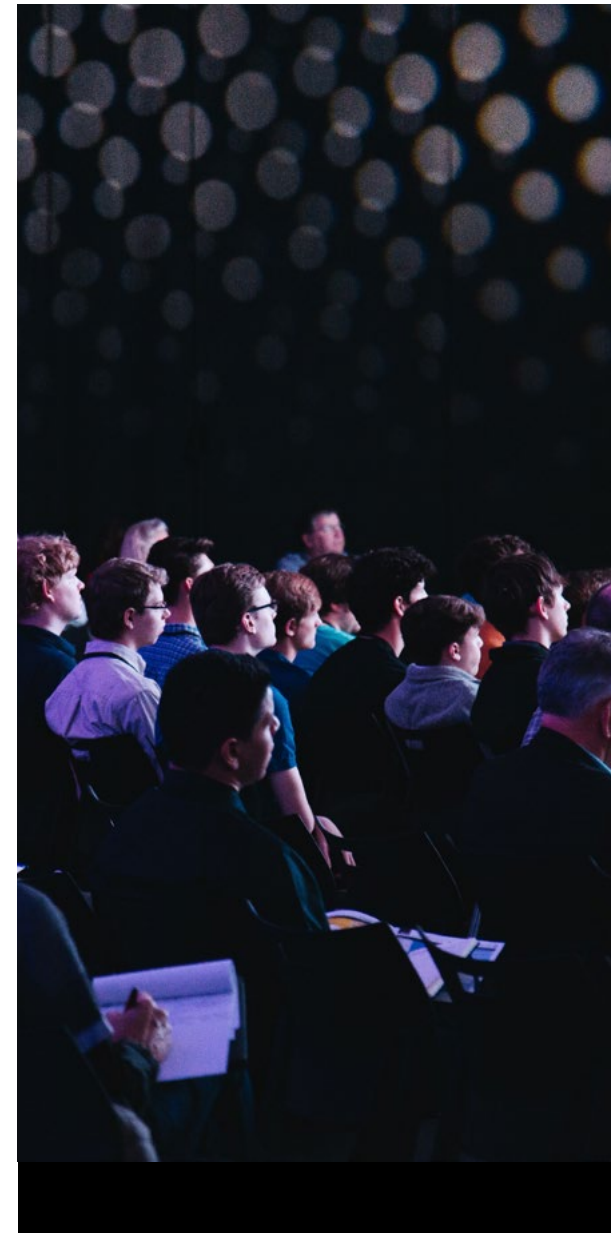
For example, in 2021, the Massachusetts Institute of Technology (MIT) designed a drone, inspired by the flight and resistance of a **mosquito**. Moreover, a group of researchers from the University of Washington developed the Smellicopter: a drone capable of perceiving odors, based on the sense of smell of a **moth**. This type of device could be developed without losing efficiency, maintaining the sensors that facilitate geolocation and guarantee its usability.



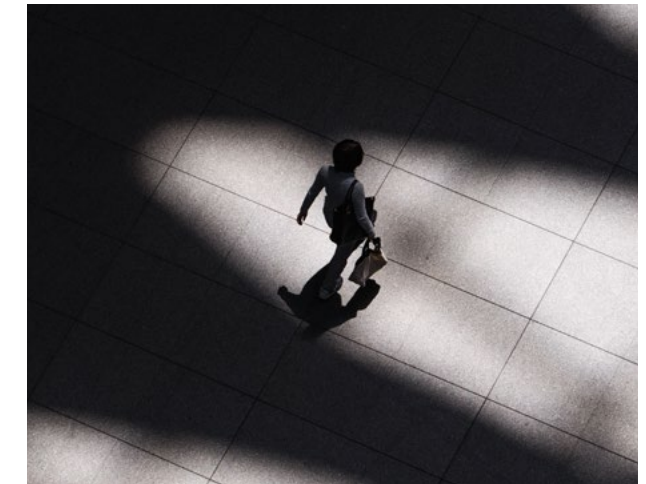
Actions against popular or valuable facilities.



Spread of diseases or polluting materials.



Actions against individuals, groups of people or authorities.



Taking photographs or videos for later extortive uses.



Actions against critical infrastructures such as airports or nuclear power plants, among others.



Trend 1

Technological development and the emergence of devices facilitates the **proliferation of criminal modus operandi adapted to the technological reality and its new utilities**. In this sense, the anticipation of the security forces relating to the future of the criminal use of drones is conditioned to the evolution of these, as well as to the imagination of those who use these devices.

Trend 2

On the other hand, the implementation of drones through traditional threats **improves the capabilities of criminal groups**. This improvement can occur in two ways: on the one hand, by **providing logistical support to the criminal** - for example, by using this device for surveillance purposes prior to a robbery, which has traditionally been carried out by one or several people who could be seen - or by improving the usual modus operandi, for example, by using an explosive drone to carry out a collective assassination.



The logistical use of drones and the opportunities that these devices provide for sectors such as microbiology pose major challenges for security forces. For example, bacteriological conflicts or the contamination of water or air could be facilitated by the criminal use of these devices.

The use of drones enhances the **asymmetry** between the perpetrator and the victim, making it difficult for security forces or systems to mitigate and anticipate the threat. Among the **challenges** faced by security forces or private security companies with respect to the proliferation of the use of drones by criminal groups in the future are the **adaptation** they will have to make to the new modus operandi - adapting, for example, escort services to the threat posed by the possible development of targeted attacks against public figures through the use of imperceptible drones -, as well as the **complexity of detecting the perpetrator** of the crimes or the guarantees of anonymity facilitated by the possibility of drones being developed in a handcrafted way.

The adoption of these devices by criminal groups, which is already a **reality**, increases the need for **technological qualification** on the part of criminals, which may lead to a **modification of the traditional criminal profile**. In addition, the use of drones requires certain **meteorological conditions** that may affect their operation: for example, the visibility of the device may be impaired during fog or storms. Sudden weather changes, often linked to climate change, deteriorate forecasts, and this variable must be taken into account when planning illicit actions with these devices.



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and **society** as a whole.