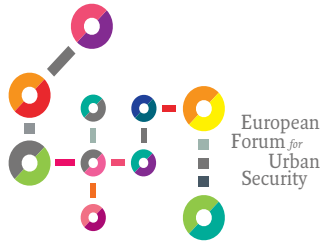


# Exploring the opportunities and the risks of using drones in urban areas



In recent years the use of unmanned aircraft systems (UAS) - drones - in urban areas has greatly increased. They are employed to enhance urban mobility, monitor environmental accidents, survey public and green spaces, monitor traffic, inspect infrastructure facilities and collect and transmit data. In the field of urban security they are used to monitor public spaces, control mass gatherings, or to prevent illegal waste disposal - to name only a few use cases.

The global health crisis related to the Covid-19 pandemic has stirred up the public discourse on the use of drones. On the one hand, they can be used to facilitate the sanitation of spaces without exposing essential workers to risks, or to deliver medication, essential necessities, or even vaccines. On the other hand, the technology is criticized as a tool for increased surveillance, especially when used to monitor and enforce physical distancing rules in public space. This entails questions concerning the right to privacy and data protection.

Additional risks are related to potential disruptive and malicious uses of drones, especially in a context of heightened fears of terrorist attacks in European countries.

## EXPLORING THE POTENTIAL OF DRONES FOR URBAN SECURITY USES AND BEYOND



### Brussels (BE)

The Brussels region started investing in drones after the 2016 terrorist attacks and established a drone team in partnership with six local police forces and the federal police of Brussel, in 2017. Before the Covid-19 pandemic, the drones were used mainly for large sports events, manifestations and political summits.

When the first lockdown in Brussels was announced in March of 2020 the government encouraged people to spend time in outdoor public spaces. They took measures to improve their capacities, for example by increasing bike lanes and mapping out green spaces.

Aware of the risks of large gatherings in public spaces, the local police started using drones to enforce lockdown measures. The drone team would deliver a public address, reminding people of the lockdown rules. Additionally, the drones could alert the police so that a team would be sent to the location. The drones are not allowed to be used to track individuals or look into private property. In the two months of lockdown, they were used for a cumulative 230 hours, a steep increase in use since they were first employed in 2017<sup>1</sup>.

<sup>1</sup> For more detailed information on the use of drones in Brussels during the first lockdown in 2020, Efus members can find the minutes of the Efus webconference "[Using technologies to control the pandemic: Could privacy also be a victim of Covid-19](#)", held in May 2020, on Efus Network. .

### The Turin Drone Unit (IT)

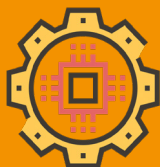
The Technological Investigations Department (RIT) at the local police of the City of Turin has a drone unit that explores different use cases in the urban environment. The City of Turin is the coordinator of the DronEUnit Network, which includes eight universities, four European capitals, eight countries, seven law enforcement agencies and a number of private actors. Its objectives are to produce guidelines for all partners, focus on urban routes and automatic flights, research the employment of artificial intelligence and invest in research and development for drone technology.

The drones are tested at Doralab, an urban park used specifically for testing new technologies in an urban context. An indoor testing area is outfitted with cameras for streaming and wind simulations for navigation tests. One of the use cases of drones in Turin is the safety and security of large events, where they can be employed to monitor and control the crowd, recognise when individuals are in distress and alert emergency services.

Turin has also tested other purposes, such as environmental protection and sustainability, digitalization of the city, and indoor sanitation. This last use case is particularly relevant in the context of the Covid-19 pandemic. The American-made *Skycopter* drone is a high performance indoor inspection drone that already successfully operates in dangerous environments such as nuclear power plants. The sanitizer version of the *Skycopter* can access any height or corner to spray a disinfecting solution, thus avoiding the exposure of cleaning personnel to the virus.

## THE FUNCTIONALITIES OF DRONES AND THE POTENTIAL FOR MISUSE

### *Inadvertent risks and deliberate threats through drones*



Drones can *inadvertently* precipitate crime by generating stress over noise or perceived intrusiveness. They can also cause injury, through collisions with aircraft or dropping cargo, for example. Drones can be operated remotely, they can operate in the air, in water and on land, they can communicate with the operator, they can be outfitted with sensors and capture, transmit, record and potentially interpret images if integrated with computer vision systems.

They can be autonomous to different extents and present different levels of ease of operation. They can carry goods and actuate services. All of these abilities and functionalities make drones practical tools to be *actively used* for or against crime.

Understanding a drone's functionalities helps predict how it could be misused for criminal intent. Delivery abilities could for example be used for deliveries of illegal substances; image capture and transmission can pose a threat to privacy. Drones can be outfitted with improvised explosive devices (IEDs), which makes them a considerable terrorist threat, especially in public spaces. In addition to being a tool for crime, drones can also be the *target of crime*: they can be misappropriated (stolen, or stolen from), mistreated (shot down), mishandled (used with a false license) and misbegotten (counterfeit models).<sup>2</sup>.

<sup>2</sup> Efus members can find the slides of Professor Paul Ekblom's presentation on this topic on Efus Network [via this link](#).

## MEASURES AGAINST NON-COOPERATIVE DRONES

### ● Understanding the risks of using drones

Drones must both be secured against the risk of becoming a target of crime and be proofed against mistakes and mishaps. There are different ways of doing this, depending on the type of misuse drones risk running. As a potential target of crime, drones must be proofed against theft, takeover and being shot down. As a potential tool for crime, they need to be traceable. In order to prevent annoyance amongst bystanders, they might be outfitted with a noise reduction system. To ensure that they are safe for their surroundings, they need collision avoidance, proximity detection, and fail-safe landing.

### ● Gearing up counter drone measures

Drones used in the field of urban security can become a target for crime (f.ex through incapacitation) and can run the risk of malfunction. In addition to crime proofing these drones, there is the question of how to counter hostile drones, i.e drones used by criminals to inflict harm. There is no single solution to the various threats posed by rogue or malicious drones. This question is particularly salient when it comes to the security of public spaces and the mitigation of terrorist threats.

The EU funded DroneWise project aims to enhance cooperation and coordination between different first-responder agencies. Developing multi-stakeholder responses against hostile drones is extremely important as the threats are ever evolving<sup>3</sup>. The publication *DroneWISE First Responder Agency Operational Briefing* explores the threats posed to public spaces and gives recommendations on how to improve current counter drone measures through a coordinated response.

<sup>3</sup> <https://crisis-response.com/Publisher/Article.aspx?ID=602507>



- **A European level effort**

The threats posed by drones are not limited to one territory and should be considered as cross-border risks. Given the speed of technological developments and the evolving threats from drones linked to it, the European Commission recognises the need for a common “drone culture” in the block to understand risks and mitigate threats<sup>4</sup>. In 2020, the Commission’s counter terrorism unit within the EU’s Directorate General Migration and Home Affairs created an interest group on counter-Unmanned Aerial Systems (Counter-UAS). It aims at supporting EU Member States in their initiatives to better understand and mitigate threats from drones.

The Commission also acknowledges the necessity of including local partners in this effort. While risks from non-cooperative drones can play out on national and international levels, urban environments can be particularly vulnerable to targeted attacks.

<sup>4</sup> [https://ec.europa.eu/home-affairs/news/20191107\\_commission-hosted-high-level-international-conference-counteracting-threats-posed-drones\\_en](https://ec.europa.eu/home-affairs/news/20191107_commission-hosted-high-level-international-conference-counteracting-threats-posed-drones_en)



## **LEGAL, SOCIAL AND ETHICAL IMPLICATIONS**

### ***1. The right to privacy and data protection***

One of the many functionalities that drones can be outfitted with is the capture, recording and transmission of images and videos. This has an important impact on data protection regulations and the right to privacy.

In their 2020 data protection report on digital solutions to fight Covid-19, the Council of Europe outlines the aspects to take into account when considering the use of technological tools that can process personal data. These include, among others, “*cooperation with the national data protection authority, at early stages of the design of the procession, as well as at later stages (...)*” (CoE, 2020). In May 2020, the French Council of State ordered the government to end its surveillance measures carried out by drones in Paris. The Parisian police had been using drones to monitor physical distancing rules in public spaces in response to the Covid-19 pandemic. The potential of the drones to zoom into the crowd and identify people was deemed as violating the existing legal framework.

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### ***2. The need for solid legal and regulatory frameworks***

The convention 108+ of the Council of Europe (Convention for the protection of individuals with regard to the processing of personal data) endows emergency measures - such as the use and processing of personal data in the fight against the pandemic - a certain extent of legitimacy. At the same time, the Council’s 2020 report on data protection calls for more specific regulations that define the scope and purpose of such uses (CoE 2020).

Legal frameworks must not only address the use of drones in emergency situations. The European Commission has adopted a number of rules on drone operations and technical requirements to harmonize regulation across the bloc and encourage responsible use of drones<sup>5</sup>. Together with the European Aviation Safety Agency (EASA), the Commission is also working on an unmanned traffic management concept in Europe (U-Space) in order to further clarify principles and conditions of both manned and unmanned aircraft<sup>6</sup>.

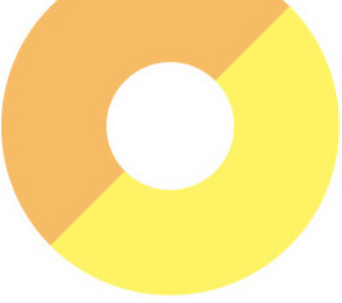
<sup>5</sup> [http://data.europa.eu/eli/reg\\_impl/2019/947/oj](http://data.europa.eu/eli/reg_impl/2019/947/oj)

<sup>6</sup> [https://ec.europa.eu/home-affairs/sites/default/files/news/docs/20191018\\_chairs-statement-uas-conference.pdf](https://ec.europa.eu/home-affairs/sites/default/files/news/docs/20191018_chairs-statement-uas-conference.pdf)

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### ***3. Social acceptance and feelings of insecurity***

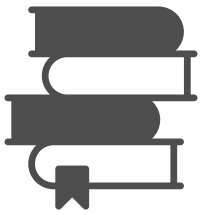
The level of social acceptance of drones is linked to the way they are used and by whom they are used. In Brussels, the use of drones to monitor lockdown measures was initially met mostly with surprise. There were however also negative reactions, particularly on social media. In particular when it comes to the use of drones for surveillance measures it is important to allow civil liberty groups or watchdog institutions to evaluate the legality and proportionality of the activity.



The European [Cutting Crime Impact \(CCI\)](#) project focuses part of its research on the measurement and mitigation of feelings of insecurity. The presence of drones for surveillance might satisfy some people and improve their perception of security but other groups might perceive them as a sign of unwelcome surveillance in certain public spaces. Additionally, increased surveillance might have a similar effect as walls or barbed wire, which have been shown to increase feelings of insecurity, instead of decreasing them<sup>7</sup>.

<sup>7</sup> Davey and Wootton (2019), PIM Toolkit 4: Report on feelings of insecurity - Concepts and models adapted from Davey, C.L., & Wootton, A.B. (2014) "Crime and the Urban Environment: The Implications for Wellbeing", in Wellbeing. A Complete Reference Guide (Eds) Burton, R., Davies-Cooper, R. and Cooper, C. Wiley-Blackwell: Chichester (UK)

## READING SUGGESTIONS



- Ekblom, P (2005) 'How to Police the Future: Scanning for Scientific and Technological Innovations which Generate Potential Threats and Opportunities in Crime, Policing and Crime Reduction', in M. Smith and N. Tilley (eds.), Crime Science: New Approaches to Preventing and Detecting Crime. Cullompton: Willan. (Introduces the Misdeeds and Security framework.)
- Ekblom, P. (2017) 'Technology, opportunity, crime and crime prevention - current and evolutionary perspectives' in B. Leclerc and E. Savona (Eds.) Crime Prevention in the 21st Century. New York: Springer.
- The DroneWISE [First Responder Agency Operational Briefing](#) details operational information and provides evidence of the threats and risks to first-responder agencies in their response to terrorist attacks on public places using a UAV.
- European Union Agency for Fundamental Rights (2020) 'Coronavirus pandemic in the EU - Fundamental Rights Implications: With a focus on contact-tracing apps: [https://fra.europa.eu/sites/default/files/fra\\_uploads/fra-2020-coronavirus-pandemic-eu-bulletin-may\\_en.pdf](https://fra.europa.eu/sites/default/files/fra_uploads/fra-2020-coronavirus-pandemic-eu-bulletin-may_en.pdf)'. This is one of a series of bulletins that the FRA published in the course of last year. While the focus is on contact tracing applications, it also discusses the use of drones.
- Council of Europe (2020) '[Digital Solutions to fight Covid - 2020 Data Protection Report](#)'.
- Cutting Crime Impact (CCI) Project [factsheet on measuring and mitigating feelings of insecurity](#).
- Efus (2021) '[Will our urban public spaces soon be buzzing with drones? We've asked the cities of Turin and Edinburgh](#)'. This article asks the cities of Turin and Edinburgh about the challenges they face when employing drones to protect public spaces. Both cities are partners in the [PACTESUR](#) project which aims to empower cities and local actors in the field of security of urban public spaces facing terrorist threats.



This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement No 787100

