Acta Univ. Sapientiae, Legal Studies, **8**, 1 (2019) 89–105

Drones and Privacy-Related Issues/Concerns: Alice in Techno-Land[1]

Ferenc Zoltán Simó
Doctoral Student
University of Debrecen,
Géza Marton Doctoral School of Legal Studies (Debrecen, Hungary)
E-mail: simonfredz@gmail.com

Abstract. The paper examines the emerging technology of drones in their various forms and the difficulties posed by the regulation of this technology, in several jurisdictions, in particular in the United States of America and the European Union. The author begins by addressing the terminological difficulty in designating unmanned aircraft of different descriptions. He goes on to present the safety and operational rules instituted for these vehicles as well as the myriad of potential problems posed to privacy and security by this new technology. He concludes that a unified approach to the definition and regulation of such aircraft is necessary as current regulations lack the required level of cohesion to manage the safe application of this technology, especially when it comes to the defence of privacy rights.

Keywords: drone, UAV, privacy, Federal Aviation Authority, United States, European Union

1. Outline

When I first started to study new technologies, such as drones, and their 'troublesome relation' to privacy-related (legal) concerns, I really felt a bit like Alice as she wondered into another land, now techno-land, tumbling down another rabbit hole. I soon realized that in this world, as in Alice's wonderland, the laws, including the laws of physics, do not apply as they would normally do. This land seems chaotic, so does the relation between technology and privacy. Thus, we may even feel after tumbling down that we need to realize step by step how deep the concerns are in connection with drones. In this case, it appears

1 This study will be developed further by raising relevant issues in connection with drones concerning privacy and personal data protection law, aviation law, public international law, media law, and migration law.

similar to an uncharted territory, or, at least, there are legal areas with no real or realistic solutions offered for easing those concerns.

This paper endeavours to provide a (relatively) short introduction to the concept of drones, some technology they can integrate with, their current commercial potential and applications. I go on to analyse the legal issues of drone use along with providing an overview of the comparative regulatory framework of different jurisdictions. The concluding section deals with the possible balance between drone use and policy/law making.

When one needs to consider the effect of the development or evolution of technology, one is swamped by complex and (mostly) problematic contemporary issues. The 21st century triggered a chain reaction with several reverberations in terms of privacy-related issues since privacy may be said to be one of the most urgent issues that many scholars assume associated with technology. Hence, it looks as so we can state that what people really care about when they submit a complaint and object that their privacy has been violated is not the act of sharing technology or information itself – most people are aware that this is essential and has become usual in social life – but the unlawful, improper, and most decisively illegal use of technology.

2. The Definition of Drones

Drones, as they have become known nowadays, are said to represent a considerable progress in robotic technology, and the civilian application of drones has begun trending in media lately. The use of unmanned aircraft, such as drones, is not a novel concept, and the origins of the concept can be traced back to the 19th century, when in 1896 the first pilotless steam-powered aircraft recorded a powered flight lasting over a minute. Drones have a long history, and they have been with us for a long time. Their '(r)evolution' started long ago, and it looks as so it is one of the most rapidly progressing technologies which should not be considered to be historically stoppable. Therefore, it appears central to mention the fact that more than fifty-five years ago, in July 1963, the 4028th Strategic Reconnaissance Weather Wing, equipped with U-2 strategic reconnaissance aircraft, set off flying global missions from the Davis-Monthan Air Force Base. The event, of course, is strongly connected to the Cuban Missile Crisis in 1963. the 4080th Strategic Reconnaissance Wing at Laughlin AFB, Texas, relocated to the base and assumed (full) responsibility for all U-2 operations, focusing on long-range strategic reconnaissance and intelligence collection. As a Strategic Air Command (SAC) unit, the 4080th was re-designated after the 100th Strategic Reconnaissance Wing and also acquired Lockheed DC-130 Hercules

aircraft for the launch and control of Firebee reconnaissance drones that were the precursors of contemporary unmanned aerial systems.[2]

The revolution of drones might be seen as a novel technological advance with numerous effects on, more or less, all walks of life. The proliferation of the next generation of 'recreational' drones presents how drones will be sold as any other common consumer item. The cultural perception of the technology is moving and keeps being altered as drones are being used more often for humanitarian purposes/activities on the one hand, but they can also strongly and definitely be positioned in the prevailing (recognized) modes of postmodern governance on the other hand.

The term 'drone' is a colloquial word used to designate all types of aircraft[3] which are operated without a pilot on board and their auxiliary components, such as a control station, if relevant. In addition to drone, other terms and acronyms are also used in a wide range of scientific publications and regulatory documents. The common examples are Unmanned Aerial Vehicles (UAV), Unmanned Aircraft (UA), Pilotless Aircraft, and Unmanned Aircraft System (UAS).[4] Although those terms refer to the same concept in theory, different aviation authorities have their own preferences.[5] For example, the International Civil Aviation Organization (ICAO) uses the expression 'pilotless aircraft', whereas the US Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA) use the term 'UAS'. Naturally, it can be stated that the terms UAV, UA, and Pilotless Aircraft refer to an aircraft which is operated without a pilot on board. Concerning UAS, one may include that the additional word 'system' refers to the ancillary components (control station, command, control data link, and so on) as opposed to the aircraft component. Within the range of drones, as they are identified, there are two main modalities: drones remotely piloted from another place [Remotely Piloted Aircraft System (RPAS)], or programmed, and fully autonomous drones.[6] But drones could be the combination of the two abovementioned major modalities. Therefore, in order not to be confused, I intend to use the term 'drone' as an over-arching concept to include all applicable modalities and components

2 For more information on early unmanned aircraft, drones, and their 'brief' history, see: Keane–Carr 2013. 558–571.

3 Of course, there are several types of aircraft, including aeroplanes with fixed wings, airships (lighter than air), and helicopters (rotary wing).

4 Zavrsnik 2016.

5 Whether a drone was an 'airplane' as a matter of law, subject to regulatory enforcement by the Federal Aviation Administration, or a 'model airplane' subject to mere policies issued by aviation regulators was largely unresolved until the decision on *Huerta v Pirker*. See Huerta v Pirker, CP-217, Board's Decisional Order No EA-5730 (National Transportation Safety Board Decisions, 18 November 2014); available at: http://www.ntsb.gov/legal/alj/OnODocuments/Aviation/5730.pdf (accessed on: 25 March 2019).

6 ICAO 2011. Unmanned Aircraft Systems (UAS), Cir. 328, Glossary. Retrieved from: https://www.icao.int/Meetings/UAS/Documents/Circular%20328_en.pdf (accessed on: 25 March 2019).

and also refer to the acronyms insofar as (any) existing laws and regulations apply any specific ones. Nowadays, it seems relevant to notice that drones can appear in various shapes and sizes and could be operated/controlled by individuals for recreational/sports or commercial purposes. Unlike traditional vehicles, such as helicopters and hot-air balloons, drones are capable of flying at lower altitudes and can harness the data-capturing potential of smart (computing) devices. And, of course, drones also differ from traditional aircraft, as they are more economical to operate and are also accessible to a wider range of the population without any difficulties. Yet, as far as terminology is concerned, drones mostly refer to aerial vehicles which can fly without a human operator or without human assistance. However, for regulatory purposes, it must be admitted that different countries and international organizations have already come up with wide-ranging definitions. In general aviation and space-related phraseology, a drone usually refers to any vehicle that can operate on multiple surfaces and/or in the air without a human being on board to control it. And, as a matter of fact, we may go even further in this respect because, as far as their varieties are concerned, they can vary in size, shape, form, speed, and a host of many other features/attributes though some jurisdictions categorize and regulate them by weight. A drone could vary from a model aircraft/toy which can be bought in a store to a large-sized aircraft sent to combat in a war zone.[7]

It can be safely stated that most of the other terminologies describe drones as Unmanned Aerial Vehicles (UAVs) or Model Aircraft, Unmanned Aerial Systems/ Unmanned Aircraft Systems (UAS).

2.1. Unmanned Aerial Vehicles (UAVs)

A UAV refers to a powered aircraft that is designed to fly with no human operator on board. The International Civil Aviation Organization (the ICAO), responsible for the codification of air traffic rules and regulation of airways, categorizes drones as UAVs. It has also coined an exclusive term defining them as Remote Piloted Aircraft Systems (RPAS).[8] The ICAO Circular on Unmanned Aircraft Systems, 2011 defines an RPAS as '[a] set of configurable elements consisting of a remotely-piloted aircraft, its associated remote pilot station(s), the required command and control links and any other system elements as may be required, at any point during flight operation'.[9] It is of primary importance to note that the term 'remote pilot' is a key concept here as it (visibly) emphasizes the fact that the system is not always unmanned and always has a pilot in command liable

7 For more information, see: Kreps 2016, Završnik 2016.
8 Kreps 2016.
9 ICAO Circular 328-AN/190.

for the flight,[10] which could also be controlled either by on-board computers or remotely piloted on/from the ground. Hence, RPASs fit into the wider category of Unmanned Aircraft Systems. The ICAO has an RPAS Panel, which has the objective to produce standards for unmanned aircraft to ICAO's Governing Council (GC) by the end of 2018.[11]

2.2. Model Aircraft

Model aircraft are defined as aircraft which are mechanically driven or launched into flight for recreational purposes and are not designed to carry persons or living creatures. According to the FAA Modernization and Reform Act, 2010, a drone may be equated with a 'model aircraft' if it weighs less than 55 pounds (approx. 25 kilogrammes) and is operated in compliance with certain safety guidelines such as flying within the operator's line of sight – below 400 feet – and providing prior notice to air traffic control operators if flying within a 5-mile radius of an airport.[12] Since model aircraft are generally recognized as being intended only for recreational purposes, they are not covered under the ambit of any international regulations and are exclusively governed by relevant national regulations, if any.

2.3. Unmanned Aerial Systems (UAS)

The term UAS, though defined similarly, is broader in its ambit and includes: the aircraft, the control system(s) on the ground, the control data link(s), and other support equipment.

While these definitions are centred around the technology and operation of drones, military journals may come up with varied definitions based on their applications or usage. For instance, the US Department of Defence Dictionary of Military and Associated Terms gives us a different definition for UAVs; thus, they are said to be: 'a powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or non-lethal payload. Ballistic or semi-ballistic vehicles, cruise missiles and artillery projectiles are not considered unmanned aerial vehicles'.[13] Hence, based on the above-mentioned definitions, we could roughly consider drones to be unmanned aircraft/ships guided/directed by remote controls used for different purposes/

10 Council of the European Union. Towards a European Strategy for the development of civil applications of Remotely Piloted Aircraft Systems external (RPAS), Working Paper (13438/12), 6 September 2012.

11 https://www.ainonline.com/aviation-news/aerospace/2015-01-06/icao-panel-will-recommend-first-uav-standards-2018 (accessed on: 25 March 2019).

12 https://www.faa.gov/uas/publications/model_aircraft_ operators/ (accessed on: 23 March 2019).

13 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2385448 (accessed on: 25 March 2019).

functions. The (mere) fact that they might be operated/controlled without a person on board allows for a smaller design, making them less disruptive when compared to conventional aircraft.[14] In addition, it is also possible to equip a drone with a number of other devices such as Global Positioning System (GPS), cameras of several types, computers, other related systems, and so on. The (relatively) user-friendly nature of drones has already opened many ways for their uses in commercial and civilian/domestic areas. One of the studies by the Association for Unmanned Vehicles Systems International (AUVSI) offers estimation on the 'influence' of drone production since it states that the drone industry in the United States of America is able and ready to provide up to over 100,000 new jobs and add $82 billion in economic activity between 2015 and 2025.[15] Drones, therefore, are a form of technical innovation that has tapped the doors to an utterly new market, bursting with market potential. Today, the reality is that there are unlimited civil applications for drones with no doubts about that, and the potentials seem to develop at even higher rates as the technology progresses/becomes more accessible to the public. In response to this exceptional/unparalleled growth, the FAA has already decided to increase the regulation and supervision of drone operation for not only commercial operators but recreational users as well. As a start, in December 2015, the FAA introduced some changes concerning the requirements for all recreational drone operators, operators being required to register from that date on.[16]

3. The Revolutionary Applications of Drones Nowadays

Drones have a multitude of uses which have become apparent. They could be used for the quick delivery of donated organs, thereby avoiding the expense of hiring air transport or having to deal with traffic, thereby potentially saving more lives.[17] They can be used for enhancing agricultural efficiency/proficiency by identifying factors such as moisture content and nutrient availability in soil. Remote sensing through drones can be of significant use in disaster-prone areas for pinpointing and fighting fires[18] or detection of theft and pilferage of goods meant for public utilization or in detection of natural gas leaks, which can save several lives and

14 http://www.academia.edu/11845032/Privacy_law_implications_of_the_use_of_drones_for_security_and_justice_purposes (accessed on: 24 March 2019).

15 http://www.auvsi.org/auvsiresources/economicreport (accessed on: 25 March 2019).

16 FAA Announces Small UAS Registration Rule (14 December 2015); https://www.faa.gov/news/press_releases/news_story.cfm?newsId=19856 (accessed on: 24 March 2019).

17 https://dronelife.com/2016/05/17/drones-may-soon-deliver-vital-organs-across-india/ (accessed on: 25 March 2019).

18 http://www.businessinsider.in/The-fire-in-Alberta-doubledin-size-on-Saturday-and-firefighters-are-using-drones-to-fightit/articleshow/52170421.cms (accessed on: 25 March 2019).

resources.[19] Drones also find application in law enforcement agencies, aiding and contributing to border patrolling, though their cost efficiency has been questioned by many, of course, with regards to the endeavours on the US–Mexico border.[20] However, with developing technologies, such concerns can be surmounted and indisputable advantages, such as being (relatively or almost) unnoticeable/untraceable, may be able to aid in preventing human and drug trafficking, in pinpointing and reacting to border violations, and in monitoring otherwise inaccessible terrain.[21] It goes without saying that the main issue in this case is the degree of autonomy that exists with regard to the non-human components. With the rapid progress of drones, it seems obvious that several types of drones have already been in use with autonomous functionality to the extent that collisions can be avoided, and some are capable of executing general instructions as well. While regulations have generally not addressed this aspect, the circular released with the latest FAA regulations in June 2016 allowed autonomous operation, but within certain limits.[22] However, no solutions are offered to regulate larger drones as in the case of a drone taxi or having only non-pilot human passengers. While it stays in a legal grey area, this field is expected to advance along the lines of self-driven cars. Today, it can also be stated that we are witnessing a rapid progress of the use of drones in the civilian and humanitarian domain. Also, it can be admitted that more and more drones are used for objectives as diverse as, for example, news gathering, aerial inspection and surveillance, mapping of rough or inaccessible and remote terrain, crop dusting, or search and rescue operations. The civilian use of drones has already become a (harsh) reality in the European Union and in the U.S. I assume it does not really matter from our point of view whether one considers the revolution of the drones as a novel technological revolution or phenomenon or only as a sixty-year-old one – the fact remains, and the effects of this technology have already started to be visible in connection with nearly all walks of life. Thus, the production of the next generation of 'recreational' drones illustrates how drones will be sold as any other, regular consumer item.

19 https://www.businessinsider.in/Now-a-drone-that-detects-LPG-gas-leak-and-delivers-emergency-medical-kits/articleshow/48467531.cms (accessed on: 26 March 2019).

20 https://www.foxnews.com/us/federal-report-says-border-patrols-drone-program-doesnt-fly (accessed on: 25 March 2019).

21 Hambling 2016.

22 https://www.faa.gov/uas/media/AC_107-2_AFS-1_Signed.pdf (accessed on: 25 March 2019).

4. Applications of Civilian Drones: Security and Privacy Concerns

Numerous books, articles, pamphlets, and commentaries cry out for reforms, mainly for restrictions in law and policy to prop up defences against the erosion of privacy due to the ever-growing ranks of technology-based systems practices. It appears significant to mention that Hillary B. Farber enlightens us on the fact that only a few years ago one may have seen a small object flying above our head without any ideas what it could be. Today, practically, it is a view which entails no shock or surprise to see drones flying around our neighbourhood skies. Also, she reveals that in 2015 hobbyists, recreational users, and businesses purchased unmanned aerial vehicles, commonly referred to as drones, in record-breaking numbers.[23] The Federal Aviation Administration (FAA) calculates/predicts that there will be (more than) seven million drones populating our skies by 2020.[24] In addition to this, the FAA admits openly that its traditional processes for guaranteeing the safety of airplanes and helicopters are inapt for the mounting number of small drones, which, we may add, are growing even smaller: '[T]he FAA's current processes for issuing airworthiness . . . certificates were designed to be used for manned aircraft and do not take into account the considerations associated with civil small UAS [Unmanned Aircraft Systems] …'[25]

> [O]btaining a type certificate and a standard airworthiness certificate … currently takes about 3 to 5 years … [I]t is not practically feasible for many small UAS manufacturers to go through the certification process required of manned aircraft. This is because small UAS technology is rapidly evolving at this time, and consequently, if a small UAS manufacturer goes through a 3-to-5-year process to get hold of a type certificate, which allows the issuance of a standard airworthiness certificate, the small UAS would be technologically outdated by the time it completed the certification process.[26]

It is more and more often claimed that remotely piloted aircraft (RPAs) have the potential to pose a serious threat to citizens' privacy since they are capable of intruding on any person's or a business's (private) conducts either with (criminal) intent, as it can be said in the case of planned/deliberate surveillance, or accidentally in the course of other activities such as aerial photography, traffic

23 Farber 2017. 1–2.

24 https://www.faa.gov/data_research/aviation/aerospace_forecasts/ (accessed on: 22 March 2019).

25 Notice of Proposed Rulemaking: Operation and Certification of Small Unmanned Aircraft Systems, 80 Fed. Reg. 9544, 9549 (proposed: 23 February 2015) (NPRM). Available at: https://www.federalregister.gov/documents/2019/02/13/2019-00758/safe-and-secure-operations-of-small-unmanned-aircraft-systems (accessed on: 25 March 2019).

26 Ibid.

monitoring, or search and rescue. Since RPAs have become cheaper and more proficient, and, of course, this progress has not slowed down, the instruments they are able to carry have developed to become more sensitive. Thus, these techno-gadgets can provide governments, companies, and individuals alike with the cost-effective capability to observe and gather information on almost anybody, potentially without their knowledge or consent. One of the main concerns relating to drones is that they could be used to record images of other people without their consent. Drones regularly carry video cameras to allow the remote pilot to fly them. Thus, images can be recorded, and technologies could be used to equip drones with high-power zoom, microphones, and a multitude of sensors as well as GPS systems recording the location of the persons filmed.[27] The visible absence of adequate safeguards and regulations with respect to the use of drones has raised several (major) issues. These can be related to concerns such as government overreach, data aggregation, and invasion of privacy in public. It is of the essence that these concerns are recognized and concentrated on professionally by sufficient regulatory decisions.

4.1. Unauthorized Surveillance, Data Aggregation/Mass Data Collection, Potential Security Hazards, and Hacking

It is well-known that drones can be easily exploited for mass surveillance. In the context of novel technologies, such surveillance is simply conducted with the aim to reform our daily lives, with the purpose of having more detailed records about those lives.[28] On the authority of national security and terrorism, surveillance apparatuses are employed to track down and profile the citizens by the state as well as by private entities.[29] Owing to their design and size, drones can operate without being detected, letting the operator observe people without their awareness. For example, there are drones with state-of-the-art cameras that can be used to track people and vehicles from altitudes as high as 20,000 feet.[30] High-tech drones are able to carry equipment with which Wi-Fi codes can be broken and intercept text messages and mobile phone conversations without the awareness of either the communication provider or the user.[31] Drones equipped with advanced technologies can infiltrate test networks and collect unencrypted data and even set up fake access points. Although it may be argued that the

27 European Parliamentary Research Service, Civil Drones in the European Union, October 2015. http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/571305/EPRS_BRI(2015)571305_EN.pdf (accessed on 25 March 2019).

28 https://harvardlawreview.org/2013/05/the-dangers-of-surveillance/ (accessed on: 25 March 2019).

29 Zavrsnik 2016.

30 https://www.eff.org/deeplinks/2012/01/drones-are-watching-you (accessed on: 25 March 2019).

31 https://www.eff.org/issues/surveillance-drones (accessed on: 26 March 2019).

collection of data about a person as such does not violate her/his privacy interests, far-reaching compilation of data – it may be argued – could be able to reach a level of privacy intrusion.

Both data mining and aggregation refer to the method of matching different data sets to deduce novel things and make (valuable) predictions about the data subjects.[32] Apart from observation, drones accumulate large amounts of personal/private data which are of primary importance for an individual's privacy. Post collection, the aggregation of drone-collected data with other personal information, such as the details of bank accounts, phone numbers, biometrics, and so on, obtained from other resources can lead to a unique privacy infringement beyond the sheer collection of those individual data sets.[33] Another well-known privacy-related concern in connection with drones can be hacking since each and every computer source or a connected device, such as a drone, is also exposed to compromise. There have been earlier cases where even high-tech drones on patrol duty have been compromised. Thus, there is a need to ensure that adequate measures be taken to sustain high encryption standards for the data stored on the drones and strict sentencing and penalties be prescribed for unauthorized hacking of drones. There are more and more potential security hazards which can be named since the opening up of skies for the private and domestic use of UAVs allows for the risks of potential accidents caused by impacts, collisions, battery failures, failure and/or error of navigational control, and so on. The operation of UAVs notably differs from that of conventional aircraft. The traditional air traffic control system issues a command for the pilot by radio, and the pilot thereby avoids the collision. Thus, the relevant human factor can directly interfere in order to prevent incidents.

5. Drone Regulations

5.1. United States of America. General Rules for Flying a Drone in the United States of America[34]

Today, the domestic use of drones is at a relatively early stage. Most countries do not provide for exclusive regulations to govern their operations. Only a handful of countries, such as the United States of America, France, and Germany, have systematically planned on various concerns involved with the use of UAVs and have put down comprehensive legislation to regulate their applications. According to the U.S. national aviation authority, the U.S. Federal Aviation

32 http://www.dbta.com/Editorial/Trends-and-Applications/What-is-Data-Analysis-and-Data-Mining-73503.aspx (accessed on: 25 March 2019).

33 Cudd–Navin 2018.

34 https://uavcoach.com/drone-laws-in-united-states-of-america/ (accessed on: 25 March 2019).

Authority, flying a drone is legal in the U.S. though one is supposed to be aware of and comply with the drone regulations listed below before doing so. For instance, there are some special travel considerations when one is travelling to the United States of America and intends to bring their drone; the FAA lists these special considerations for foreigners who want to fly drones: they must register their drone with the FAA using the FAADroneZone portal. If drones are used for fun, they must follow the rules for recreational/hobbyist flying, but if drones are used for work, then operators must obtain a certificate from the FAA and follow the rules for commercial flying. When one travels domestically in the U.S. with his/her drone, travel is allowed by the U.S. Transportation Security Administration (TSA), but drones must be brought in carry-on luggage only. A drone is not allowed to be packed in checked luggage.[35]

Here I intend to show some other fundamental rules for flying a drone in the U.S. Recreational/Hobbyist Rules are the following: there are some 'musts' for hobby or recreation-only use, without side jobs or in-kind work, such as registering the UAV with the FAA on the FAADroneZone website, flying within visual line of sight, following community-based safety guidelines/protocols, flying within the programming of a nationwide community-based organization (CBO) like the AMA, flying a drone weighing under 55 lbs unless certified by a community-based organization, never flying near other aircraft, reporting to the airport and air traffic control tower prior to flying within 5 miles of an airport, and, of course, never flying near emergency response efforts. For commercial purposes, the 'musts' are the following: holding a Remote Pilot Certificate issued by the FAA to fly commercially, registering the UAV with the FAA on the FAADroneZone website, the UAV must weigh less than 55 lbs including payload at take-off, flying in Class G airspace, keeping the UAV within visual line of sight, and flying at or below 400 feet: during daylight or civil twilight and at or under a speed of 100 mph. One must yield way to manned aircraft and cannot fly directly over people or from a moving vehicle unless in a sparsely populated area. In addition, there are certification requirements for flying a drone in the United States of America; thus, in order to fly a drone for commercial purposes in the U.S., one must obtain a Remote Pilot Certificate from the FAA. But one should not be shocked to learn that law on technologies regarding drones may be different from one state to another. The United State of America regulates the drone industry, which clearly means dominance over manufacturing and usage. According to the Federal Aviation Administration's report, the number of drones is estimated to exceed 7 million by 2020, with recreational drones accounting for 4.3 million units.[36] As a result, to stay abreast of the accelerating pace of

35 https://uavcoach.com/drone-laws-in-united-states-of-america/ (accessed on: 25 March 2019).

36 http://www.govtech.com/public-safety/Drone-Sales-Could-Reach-7-Million-by-2020-FAA-Says.html (accessed on: 25 March 2019).

UAV use, the FAA and particular federal states have provided for an excess of legislation for their regulation. In 2012, with an endeavour to address the safety concerns and to provide for uniformity throughout the national airspace, the USA Congress passed the FAA Modernization and Reform Act. The act calls for the FAA to 'develop a comprehensive plan to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system'.[37] It goes on to state that a 'model aircraft', which can be a drone, must not weigh more than 55 lbs, must be within the visual line of sight (VLoS) of the operator, and must be used solely for recreational or hobby purposes. Model aircraft are covered by Federal Aviation Regulation 101, which came into force on 29 August 2016. Now, it can be stated that any federal, state, or local agency intending to operate a drone in national airspace must have a certificate of authorization from the FAA, while the commercial use of drones is allowed in accordance with FAA regulations and guidelines for private commercial use and the state-specific guidelines. In addition, FAA has already decided to implement plans to create test ranges and designate specific airspace throughout the country to be used to operate drone flights to develop better certification and air traffic standards.[38]

5.2. The European Union

The EU has a framework of privacy and data protection legislation. The Charter for Fundamental Rights of the EU establishes, particularly, the rights to respect private and family life, home, and communications (Article 7) and addresses the protection of personal data (Article 8).[39] These rights are implemented through Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data and through repealing Directive 95/46/EC (General Data Protection Regulation). The UK Human Rights Act 1998 and the European Convention on Human Rights also currently apply to the operation of surveillance drones. As far as the terminology of 'unmanned aircraft' is concerned, it can be a massive aircraft comparable to a manned aircraft in size and feature, but, of course, it may as well be a miniature consumer electronics aircraft. These days, the use of smaller, even more sophisticated craft in the Europe Union (EU) does take place, but the (satisfactory) regulatory framework has not yet been developed, having only a fragmented structure without being capable of fulfilling its main regulatory function. Fundamentally,

37 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2357657 (accessed on: 25 March 2019).
38 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2357657 (accessed on: 25 March 2019).
39 European RPAS Steering Group, Roadmap for the integration of civil Remotely-Piloted Aircraft Systems into the European Aviation System, June 2013: http://ec.europa.eu/DocsRoom/documents/10484/attachments/1/translations/ (accessed on: 25 March 2019).

in most cases, national safety rules can be applied, but the rules applicable look different from one Member State to another in the EU, and what is even more challenging is the fact that several key safeguards have not been addressed (so far) in a structured/coherent way. Some scholars have been coming up with concerns, posing rational questions which require clarification of the legal status of drones, but it is not unexpected in this field that a large number of answers might be found to enlighten us, for instance, about civil drones. Thus, the question of what a civil drone is could be answered, and such vehicles may be classified in a different way in accordance with the interpretations of different authorities. One of the memos of the European Commission has already made an attempt to respond to some repeatedly asked demanding questions concerning drones. The European Commission supposes that the term drone is used to portray any type of aircraft that is automated/computerized or programmed and can function with no pilot on board. In accordance with this authority, there are two types of drones.

> Remotely Piloted Aviation Systems (RPAS), in short a drone where the aircraft is controlled by a human pilot from a distant location. This means that there is always a pilot in control, even if remotely. These are the only types of drones that can be authorised currently, and under the new framework, for use in EU airspace. Unmanned drones. These are drones which are automatically programmed without being piloted, even remotely. These are not yet authorised for use, either by ICAO or under EU rules.[40]

Also, it can be acknowledged that the term 'civil drones' is used to cover those RPAS that are used for civilian purposes such as delivering mail or examining an oil platform out at sea. Over time, civil drones have a great potential to perform various tasks, including jobs which are dirty, dull, or dangerous for people. As for the use of civil drones, the European Commission declares that they have already been used to take over wearisome or sometimes hazardous/risky tasks which could be more efficiently or securely performed by a technological instrument. In Europe, drones are used for safety inspections of infrastructure such as rail tracks, dams, dykes or power grids, and other infrastructure facilities. There are some novel endeavours for regulating drones, one of them being the Notice of Proposed Amendment (NPA) Unmanned Aircraft System Operations in the Open and Specific Category and its Impact Assessment. On the demand of the European Commission, Member States, and other stakeholders, the Agency began to develop proposals for an operation-centric, proportionate, risk- and performance-

40 http://europa.eu/rapid/press-release_IP-14-384_en.htm (accessed 23 January 2019). http://europa.eu/rapid/press-release_STATEMENT-14-110_en.htm (accessed on: 25 January 2019).

based regulatory framework for all unmanned aircraft (UA), establishing three categories with different safety requirements, proportionate to the risk: *open* (low risk) is a UA operation category that, considering the risks involved, does not require a prior authorization by the competent authority before the operation takes place; *specific* (medium risk) is a UA operation category that, taking into consideration the risks involved, needs an authorization by the competent authority before the operation takes place and takes into account the mitigation processes identified in an operational risk assessment, except for certain standard scenarios where a declaration by the operator is adequate; *certified* (high risk) is a UA operation category that, considering the risks involved, requires the certification of the UAS, a licensed remote pilot, and an operator approved by the competent authority in order to ensure an appropriate level of safety. After the publication of an Advance-NPA 2015-10 in July 2015, a Technical Opinion in December 2015, a 'Prototype' regulation was drafted for the open and specific categories. In August 2016, the 'Prototype' regulation was published, proposing actual rules providing the necessary clarity, notably on what the responsibilities of the Member States are and what flexibility is offered to them. Similar to the United States, the EU has an attempt to provide for a detailed set of regulations for regulating the operation of drones. In December 2015, the European Aviation Safety Agency (the EASA) released the following notes: *Introduction of Regulatory Framework for the Operation of Unmanned Aircraft* and *Proposed Concept of Operations for Drones*, with reference to the regulation relating to the use and operation of drones.[41] The purpose of these notes is to offer feedback for EASA members and other stakeholders, such as manufacturers and operators, about the regulatory framework for the operation of drones. Based on their nature and purpose, the notes divide drones in the above-mentioned categories. With respect to the privacy and data protection ramifications, the EU has already released a report on the evaluation of the repercussions of drones.[42] Although it must be admitted that specific/detailed provisions have to be framed by Member States of the EU, the EASA notes provide transparency in terms of the objectives of the proposed law and the rights and duties of the stakeholders. Till the final EASA rule is published, the EASA has delegated interim rulemaking for the regulation of drones to its Member States which have promulgated national regulations.

41 https://www.easa.europa.eu/easa-and-you/civil-drones-rpas (accessed on: 25 March 2019).

42 http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/519221/IPOL_IDA(2015)519221_EN.pdf (accessed on: 25 March 2019).

6. Conclusions

We must admit there are several additional issues likely to emerge world-wide, primarily related to privacy and third-party liability, that urge us to improve integration and take into consideration the public perception of novel technologies such as drones. The regulatory framework applicable for drones is many-sided, and the paper has only attempted to highlight some associated relevant aspects of privacy and personal data protection law, aviation law. The so-called drone acts are not even close to being completed, let alone effective, but to lay them to rest seems to be too early as they can be seen as new-born babies with no relevant experience. The legal and institutional framework of privacy and data protection are bound to face new challenges offered by the use or applications of novel technologies. Regulatory endeavours may differ as while the FAA regulations categorize or classify drones by size and shape, the EASA regulations opt for more risk-based categories, and the EU regulations are focused on licences and certifications. But I dare to state that one thing remains: novel technologies, such as drones, need to be regulated, and their regulations need to be revised time after time.

References

CUDD, A. E.–NAVIN, M. C. 2018. *Core Concepts and Contemporary Issues in Privacy*.

FARBER, H. B. 2017. Keep Out the Efficacy of Trespass, Nuisance and Privacy Torts as Applied to Drones. *Georgia State University Law Review* 33(2): 1–2.

HAMBLING, D. 2016. *Swarm Troopers: How Small Drones Will Conquer the World*. Venice (Florida).

KEANE, J. F.–CARR, S. S. 2013. A Brief History of Early Unmanned Aircraft. *Johns Hopkins APL Technical Digest* 32(3): 558–571.

KREPS, S. E. 2016. *Drones: What Everyone Needs to Know*. New York.

ZAVRSNIK, A. 2016. *Drones and Unmanned Aerial Systems Legal and Social Implications for Security and Surveillance*.

Other Sources

COUNCIL OF THE EUROPEAN UNION. Towards a European Strategy for the Development of Civil Applications of Remotely Piloted Aircraft Systems External (RPAS). *Working Paper* 13438(12), 6 September 2012.

EUROPEAN PARLIAMENTARY RESEARCH SERVICE. *Civil Drones in the European Union*. October 2015.

EUROPEAN RPAS STEERING GROUP. Roadmap for the Integration of Civil Remotely-Piloted Aircraft Systems into the European Aviation System. June 2013. http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/571305/EPRS_BRI(2015)571305_EN.pdf (accessed on: 25 March 2019).

HUERTA v. Pirker, CP-217, Board's Decisional Order No. EA-5730 (Nat'l Transp. Safety Bd. Decisions (N.T.S.B.) 18 November 2014).

ICAO Circular 328-AN/190. https://www.icao.int/Meetings/UAS/Documents/Circular%20328_en.pdf (accessed on: 25 March 2019).

2011. Unmanned Aircraft Systems (UAS). *Cir.* 328. Glossary. Retrieved from: https://www.icao.int/Meetings/UAS/Documents/Circular%20328_en.pdf (accessed on: 25 March 2019).

NOTICE of Proposed Rulemaking: Operation and Certification of Small Unmanned Aircraft Systems, 80 Fed. Reg. 9544, 9549 proposed 23 February 2015. https://www.federalregister.gov/documents/2019/02/13/2019-00758/safe-and-secure-operations-of-small-unmanned-aircraft-systems (accessed on: 25 March 2019).

OPERATION and Certification of Small Unmanned Aircraft Systems, 80 Fed. Reg. 9544, 9549 Press Release, FAA Announces Small UAS Registration Rule 14 December 2015.

Online Sources

http://europa.eu/rapid/press-release_IP-14-384_en.htm (accessed on: 23 January 2019).

http://europa.eu/rapid/press-release_STATEMENT-14-110_en.htm (accessed on: 25 January 2019).

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2357657 (accessed on: 25 March 2019).

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2385448 (accessed on: 25 March 2019).

http://www.academia.edu/11845032/Privacy_law_implications_of_the_use_of_drones_for_security_and_justice_purposes (accessed on: 24 March 2019).

http://www.auvsi.org/auvsiresources/economicreport (accessed on: 25 March 2019).

http://www.businessinsider.in/The-fire-in-Alberta-doubledin-size-on-Saturday-and-firefighters-are-using-drones-to-fightit/articleshow/52170421.cms (accessed on: 25 March 2019).

http://www.dbta.com/Editorial/Trends-and-Applications/What-is-Data-Analysis-and-Data-Mining-73503.aspx (accessed on: 25 March 2019).

http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/519221/IPOL_IDA(2015)519221_EN.pdf (accessed on: 25 March 2019).

http://www.govtech.com/public-safety/Drone-Sales-Could-Reach-7-Million-by-2020-FAA-Says.html (accessed on: 25 March 2019).
http://www.ntsb.gov/legal/alj/OnODocuments/Aviation/5730.pdf (accessed on: 25 March 2019).
https://dronelife.com/2016/05/17/drones-may-soon-deliver-vital-organs-across-india/ (accessed on: 25 March 2019).
https://harvardlawreview.org/2013/05/the-dangers-of-surveillance/ (accessed on: 25 March 2019).https://uavcoach.com/drone-laws-in-united-states-of-america/ (accessed on: 25 March 2019).
https://www.ainonline.com/aviation-news/aerospace/2015-01-06/icao-panel-will-recommend-first-uav-standards-2018 (accessed on: 25 March 2019).
https://www.businessinsider.in/Now-a-drone-that-detects-LPG-gas-leak-and-delivers-emergency-medical-kits/articleshow/48467531.cms (accessed on: 26 March 2019).
https://www.easa.europa.eu/easa-and-you/civil-drones-rpas (accessed on: 25 March 2019).
https://www.eff.org/deeplinks/2012/01/drones-are-watching-you (accessed on: 25 March 2019).
https://www.eff.org/issues/surveillance-drones (accessed on: 26 March 2019).
https://www.faa.gov/data_research/aviation/aerospace_forecasts/ (accessed on: 22 March 2019).
https://www.faa.gov/news/press_releases/news_story.cfm?newsId=19856 (accessed on: 24 March 2019).
https://www.faa.gov/uas/media/AC_107-2_AFS-1_Signed.pdf (accessed on: 25 March 2019).
https://www.faa.gov/uas/publications/model_aircraft_ operators/ (accessed on: 23 March 2019).
https://www.foxnews.com/us/federal-report-says-border-patrols-drone-program-doesnt-fly (accessed on: 25 March 2019).