

# Analysis of international law on Unmanned Aerial Vehicles through the prism of European Union law<sup>1</sup>

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## Abstract

The paper covers the topic of unmanned aerial vehicles in European and international law. Proposed changes and planned new regulations are also included in the overview. After introducing the basic terminology, the article tackles the problem of international responsibility and legal collision. Further analysis presents the division of legal competencies connected with unmanned aviation in the international legal system. In this context the current status of the EASA consultation process has also been presented. The aim of this process is to deliver new regulations for unmanned aerial vehicles in the European Union. The article summarizes the current legal status of unmanned aviation, including also ongoing legislation processes.

**Keywords:** unmanned aerial vehicle, drone, UAS, aviation law, EASA, European Union

## Streszczenie

Artykuł porusza temat bezałogowych statków powietrznych w prawie europejskim i międzynarodowym. Proponowane zmiany i planowane nowe regulacje są również uwzględnione w analizie. Po przedstawieniu na początku podstawowej terminologii artykuł porusza problem międzynarodowej odpowiedzialności i kolizji prawnej. Dalsza analiza przedstawia podział kompetencji prawnych związanych z lotnictwem bezałogowym w międzynarodowym systemie prawnym. W tym kontekście przedstawiono również obecny stan procesu konsultacji EASA. Celem tego procesu jest opracowanie nowych przepisów dla bezałogowych statków powietrznych w Unii Europejskiej. W artykule podsumowano aktualny stan prawny dot. lotnictwa bezałogowego, w tym również bieżące procesy legislacyjne.

**Słowa kluczowe:** bezałogowy statek powietrzny, dron, UAS, prawo lotnicze, EASA, Unia Europejska

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Until recently, high costs limited a civilian's ability to purchase an Unmanned Aerial Vehicle (UAV), and UAVs were used mainly by the military. Therefore, there was no need to establish a separate regulatory framework for their civilian use. This has changed over a relatively short period of time as drones have become, if not ubiquitous, then available to a significantly broader group of users. Currently, they are used in aerial photography, aerial film-making, monitoring of large areas, fire protection, and leisure. At the same time, legal regulation of unmanned flights remains disparate and limited. Such regulation may be considered at various levels – national, international, and European Union (EU) law. The analysis of these respective legal systems enables an assessment of whether such regulations can be harmonized. Indeed, differences in regulations may result in lack of legal clarity and have significant consequences, including a threat to safety of airspace users, including aircraft passengers. The purpose of this article is to give readers a basic understanding of the topic of unmanned flights and provide them with a systematic review of legal regulations in this respect at the EU level. Such analysis may be useful for drone users and manufacturers as the current legal status is dispersed and undergoing dynamic changes. An analytical approach has been assumed, aiming to verify the hypothesis that unmanned aviation law needs to be as unified as possible on both national and international legal level, in order to best utilize the potential which this technology has to offer. In order to validate this hypothesis, several research questions should be considered. Is the current legal framework ready for unmanned aviation, if not then which areas require modification? Is the direction assumed by the international community, the European Union and individual countries coherent? If the works are continued on the current path, will we reach a harmonized legal system, addressing all the issues which stem from the new technology and which were not considered in the current aviation law? The article describes the legal situation as of January 2017.

The International Civil Aviation Organization (ICAO) defines an aircraft as “any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface” (ICAO 1944: Annex 6, Part I). Unmanned Aerial Vehicles first appeared in military terminology in the 1990s. NATO defines an UAV as “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.” (NATO 2011: p. 386). The concept may be extended to cover Unmanned Aircraft Systems (UAS), which is currently the expression with broadest application. The replacement of the term “aircraft” with “system” stresses the fact that in the case of unmanned vehicles, ground

control (e.g., an operator) constitutes an important component of their operation. According to NATO, an UAS is a “system whose components include the unmanned aircraft, the supporting network and all equipment and personnel necessary to control the unmanned aircraft” (NATO 2011: p. 413). The term “unmanned” may lead to interpretational difficulties. At face value it suggests the absence of crew members. In reality, however, personnel is necessary to control the aircraft. Thus an UAS is in most cases also operated by persons who may be called a crew. Fully autonomous systems which operate on the basis of pre-determined algorithms continue to remain an exception.

In 2011 ICAO introduced in its Circular 328 the concept of a “Remotely Piloted Aircraft” (RPA), which constitutes an element of a “Remotely Piloted Aircraft System” (RPAS) (ICAO 2011). An RPAS is thus a system that comprises an RPA and a Remotely Piloted Station (RPS). Thus an RPA will never take action by itself. In the case of civil applications it is of vital importance that an unmanned aerial vehicle be remotely piloted (i.e., does not fly autonomously without complete control from the ground), in particular for the purposes of determining liability for damages in case of incidents. In popular usage the terms UAV and RPA, as well as UAS and RPAS, are used interchangeably. However, at present the term that is used most often is the term “drone” (“*dron*” in Polish) to denote all unmanned aerial vehicles. This term is also used by, *inter alia*, the Polish Civil Aviation Board (Urząd Lotnictwa Cywilnego 2016).

### **UAVs in the international legal system**

The main international legal instrument governing civil aviation is the Chicago Convention (ICAO 1944). Its most important provision from the perspective of RPAs is Article 8 which provides that “[n]o aircraft capable of being flown without a pilot shall be flown without a pilot over the territory of a contracting State without special authorization by that State and in accordance with the terms of such authorization. Each contracting State undertakes to ensure that the flight of such aircraft without a pilot in regions open to civil aircraft shall be so controlled as to obviate danger to civil aircraft.” (ICAO 1944: art. 8). The 2003 ICAO Conference clarified the expression “without a pilot” to read “without a pilot in-command on board” (Petras 2015: p. 8). This means that an RPA may fly in the airspace of a given State only upon prior authorisation. Flight control in order to ensure airspace safety rests with the State.

In 2011 the ICAO published Circular 328, which is the basis for further work on UAS integration in the single sky. In accordance with its paragraph 2.2, “[a]ll UA,

whether remotely-piloted, fully autonomous or a combination thereof, are subject to the provisions of Article 8. Only the remotely-piloted aircraft (RPA), however, will be able to integrate into the international civil aviation system in the foreseeable future.” (ICAO 2011: p. 3). This means that the Chicago Convention applies to all UAS, but the integration of unmanned aircraft is being considered only in the context of RPAS.

The Parties to the Convention are obligated to improve the effectiveness and safety of international air navigation. An important element of such activities is striving for the highest possible uniformity of regulations which follows from Article 37 of the Convention (ICAO 1944: art. 37). As all EU Member States are at the same time parties to the Chicago Convention, the *acquis communautaire* should be consistent with ICAO regulations as far as possible in order to comply with Article 37. This conclusion results also from Article 12 of the Convention which requires every aircraft to comply with aviation rules and regulations binding on the territory of the State over which such aircraft flies or within which such aircraft manoeuvres. States are therefore obligated to “keep [their] own regulations in these respects uniform, to the greatest extent possible, with those established from time to time under [the] Convention” (ICAO 1944: art. 12).

Even though the provisions of the Convention apply to civilian UAVs, one should remember that this concept does not encompass aircraft models “intended for recreational purposes only” (ICAO 2011: p. 3). These were excluded from the remit of the Chicago Convention and are subject to national regulations. According to Završnik, “whilst the definition of ‘aircraft’ is prima facie inclusive, the exclusion of model and toy aircraft produces a legal patchwork. This may lead to an overlap and contradiction between the rules. For example, an operator may fly a large UAV across an international border, this seemingly bringing it under the scope of the Vienna Convention and its Annexes, but if it is for only recreational purposes, it would fall outside the scope of ICAO due to definitional purposes. This could lead to legal, safety and security concerns if this is not addressed” (Završnik 2016: p. 189).

By the end of 2018 ICAO intends to introduce air navigation standards and procedures for drones regarding, *inter alia*, licences, collision avoidance systems, communication and air traffic control services regulations. To this end it has published in 2015 a Manual (ISAO 2015), which is to constitute the basis for regulations regarding RPAS in the international airspace. Chapter 3 of the Manual stresses that “the operation of an RPA within the boundaries of its State of Registry remains under the purview of the respective national authority” (ICAO 2015: p. 41). However, in the case of operation

of an unmanned aircraft from outside of the boundaries of that State, ICAO regulations should be applicable regarding the manner of flight authorization pursuant to Article 8 of the Chicago Convention. In practice, should the authorization standards in these two cases significantly differ, this could cause problems with flight authorization and authorization control. Therefore one should aim at a deep harmonization of the regulations under discussion in respective States (and also with the EU legal system), at least for international flights. In accordance with the pro-EU law interpretation principle, all national regulations should be interpreted, as far as possible, in accordance with EU law. Pursuant to the European Court of Justice (ECJ) decision in *Commission vs Germany* (Judgment of the ECJ 1964, case C-61/94), the principle is applicable also in the case of a conflict between EU law and international law (e.g., ICAO).

### **Conflicts of laws in the context of airspace**

National airspace is defined as the airspace over the territory of a given State and its territorial waters; crossing the national airspace requires the consent of the State. International airspace is defined as the airspace which does not belong to any national airspace, i.e., over the open sea and territories which do not belong to any state. All states may use such airspace equally and without limitations.

Currently applicable legislation associates liability with a number of situations which may involve the use of a drone, such as unauthorised violation of another State's airspace. If such incidents cause liability, the principles of asserting claims should be determined (Gregorski 2016). If national and international regulations exist at the same time and the incident pertains to more than one state, it should be determined which regulations are applicable in a given case. Article 27 of the Vienna Convention provides that "a party may not invoke the provisions of its internal law as justification for its failure to perform a treaty (...)" (United Nations 1969). This provision clearly shows that if there are parallel national and international regulations, ratified international agreements should prevail. A similar solution – the rule of priority – applies in the relationship between the national legal systems of EU Member States and EU law. Consequently, also the provisions of the Chicago Convention should take precedence over the national laws of the parties thereto.

When national and international regulations overlap in a given area, the governing law is determined by conflict of law rules. There may be more and more conflict layers "in connection with more and more complicated map of Treaty relationships between

states, the increased number of states and Treaties executed thereby” (Czapliński, Wyrozumska 1999: p. 351). The European Union is an example of this – with EU law taking, in principle, precedence over any national law of Member States. A specific case of conflict of international laws is the conflict between international treaties and EU law. According to Wessel, “the legal order of the Union is widely identified as monist in its relation to public international law” (Cannizzaro, Palchetti, Wessel 2011: p. 11). This means that international agreements become a part of EU law, as results *inter alia* from Article 216 TFEU (Treaty on the Functioning of the European Union), which regulates the principles of conclusion of international agreements by the European Union. This position is also confirmed by Czapliński – “in case 181/73 *Haegeman*, regarding the association agreement between the European Economic Community and Greece, the European Court stated that international agreements executed by the Community constitute a part of the community law” (Czapliński 2002: p. 18).

However, the determination that international agreements constitute an integral part of European law does not solve the problem of the hierarchy of these agreements with regard to the remaining sources of law in the EU. As the European Court of Justice held in *Commission v Germany* (case C-61/94), the precedence of international agreements executed by the Community over other Community regulations means that such ratified international agreements must be interpreted in accordance with other community regulations “so far as possible” (Judgment 1996: par. 52). In accordance with the principle of pro-EU interpretation of law, the ECJ chose a broad interpretation that leaves a certain freedom when determining the precedence of regulations. This means that each conflict of laws of this kind needs to be considered individually by a competent court.

From a legal perspective, the specificity of aviation consists in that during a flight State borders determining airspace of respective States may be crossed several times. These borders usually correspond to the borders of legal systems. Therefore, there is a natural strong incentive to create an international framework for air traffic. In turn, in the absence of a broader harmonization, the existence of such international regulations may conflict with national laws or supranational legal systems such as the EU legal system. ICAO regulations are widely adopted but not all of them may be applied directly to unmanned flights. This means that conflicts of laws are possible if national legal systems introduce their own laws to regulate this area (indeed such regulations have already been introduced and they are not always consistent with one another). Globally applied rules and standards seem to offer the best chance to avoid such conflicts. The global registry

of drones proposed during the ICAO UAS Industry Symposium in 2017 might be an example of such a legal device, intended to be applied worldwide (Lampert 2017).

### **Division of regulatory competencies with regard to unmanned flights**

The principles of international use of drones are currently defined at the United Nations level by the International Civil Aviation Organisation. The ICAO permits to use RPAS in non-segregated airspace on the condition that a competent national authority gives its consent thereto. Such authorisations are restricted to specific operations under specific conditions in order to ensure highest possible airspace safety. Some EU Member States (including Germany, France and Poland), have adopted national legislation addressing the operation of light RPAS. While this avoids the need to conduct a case-by-case flight authorization process by competent national authorities, such authorizations are not always recognized internationally and do not permit flights over the territory of the entire EU (European Commission 2014a).

The principles of using European airspace were adopted jointly by the European Commission, ICAO and EUROCONTROL in the Commission Implementing Regulation 923/2012 – SERA (Standardized European Rules of the Air), but the Regulation is of limited application to UAVs. It only addresses unmanned free balloons while other UAVs are subject to the common rules applicable to aircrafts.

Remotely Piloted Aircrafts with a take-off mass of more than 150 kg are subject to the provisions of Regulation (EC) No. 216/2008 of the European Parliament and of the Council and, therefore, their operation is governed by the European Aviation Safety Association (EASA). Annex II to the Regulation excludes from the application of the Regulation in point (i) “unmanned aircraft with an operating mass of no more than 150 kg” (Regulation (EC) No 216/2008: Annex II, p. 62). Accordingly, RPAs lighter than 150 kg are regulated by national regulations of Member States, while heavier RPAs are subject to EASA jurisdiction. It is worth noting here that toys (including flying toys) in the EU legal system are subject to Directive 2009/48/EC. According to the definition, toys are products intended for use in play by children under the age of 14. In certain cases the qualification of a given aircraft may be additionally hindered. According to the EASA interpretation (EASA 2014) toy aircraft are subject to Regulation 923/2012 – SERA, similarly to other model aircraft.

Work is currently being carried out in the European Union to regulate the use of drones. The solutions worked out will likely influence the principles adopted in inter-

national law (EU law itself is a part of international law), e.g., by ICAO. In April 2014, the European Commission issued a Communication to the European Parliament and the Council “A new era for aviation. Opening the aviation market to the civil use of remotely piloted aircraft systems in a safe and sustainable manner”. The Communication analyses the present economic and legal situation in the light of benefits for the internal market which would result from regulating the drone market. This would be beneficial to manufacturers and service providers, market growth would lead to the creation of new jobs and economic growth. It is proposed that the legal requirements be adapted to the potential risk level (European Commission 2014b: point 3.1), bearing in mind various types of unmanned vehicles. This means that not all drones would be treated analogously to manned flights. In January 2015, the Economic and Social Committee issued an opinion on the Communication. The opinion stresses the lack of clear international regulations regarding drones and the fast growth of this branch of aviation. It highlights the need to protect air traffic safety and the interests of drone manufacturers and users.

Successive proposals of amendments to the present legal competencies were announced on 6 March 2015 in the Riga Declaration drafted jointly by the representatives of the Council of the European Union, the European Commission, national authorities responsible for civil aviation, national authorities responsible for data protection and representatives of drone manufacturers. The Declaration introduces 5 principles for establishing legal frameworks for UAS functioning in the European airspace. The most important principle is the differentiation between unmanned and manned flights and their classification according to risk. The role of EASA is to draft new safety rules based on the principles determined by ICAO and JARUS. European funds should be used in order to develop technologies and standards, which would make it possible to ensure UAS safety. The key role of public acceptance of legal regulations introduced has been stressed, which is connected with the sense of security. The last principle distinguishes the role of an unmanned flight operator and points out the need to ensure the possibility to identify him/her. When a drone service is delivered in a prohibited airspace, in an unsafe manner, or for illegal purposes, “the authorities should be able to act and hold the operator accountable” (Riga Declaration 2015: p. 4).

It should be noted that a number of other European organizations and agreements also deal with airspace safety issues and the regulation thereof:

- EUROCONTROL – the European Organization for the Safety of Air Navigation, was established in 1960 with its seat in Brussels. Its responsibilities in-

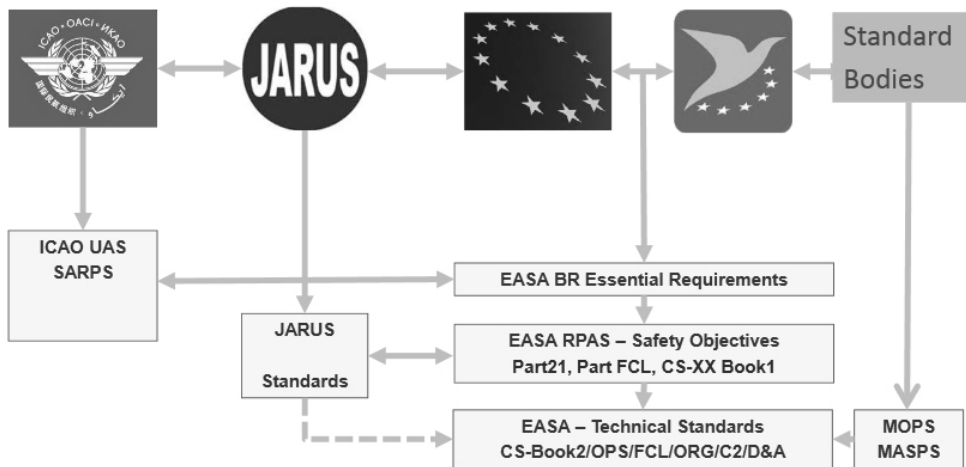


clude air traffic control (civil and military) in the entire Europe, in co-operation with individual states, air operators, airports and other organizations. One of EUROCONTROL’s areas of activity is the analysis of the possibility of UAS integration into air traffic management (EUROCONTROL 2008).

- ECAC – the European Civil Aviation Conference, was established by ICAO in 1953 and presently works in three-yearly sessions. The organization defines its priorities as air traffic safety and environmental protection (Sciacchitano 2015). ECAC members include, *inter alia*, all EU Member States and EUROCONTROL.
- ECAA – the European Common Aviation Area is a set of bilateral agreements between European States started on 5 May 2006 in Salzburg. The objective of the agreements is to liberalise the European aviation market and enable flights between respective ECAA Member States. The agreements constitute the basis for further integration as part of the Single European Sky (SES) (Savić, Kapetanović 2011: p.195 – 216).

Figure 1. demonstrates a diagram of work organization on new regulations prepared by EASA.

**Figure 1: Work organization on RPAS regulations in the EU**



Source: Tytgat 2015: p. 11.

## UAVs in the European legal system

The European Union does not have a ready answer to the rapid development of drone technology. Its legislative process is lengthy and must reconcile the interests of various States and stakeholders, such as equipment manufacturers, home (leisure) users and professional users, air traffic control services, and to a certain extent military and public services. Another complication is the rule of priority of EU law over national laws. The rule was developed in ECJ case-law. In particular in *Costa v. E.N.E.L.* (Judgment of the ECJ of 15 July 1964 in case C-6/64 *Flaminio Costa v. E.N.E.L.*, CELEX 61964J0006), the ECJ ruled that by the integration to the community legal system of the norms which had been established by each Member State to date, the Member States limit their sovereign rights and may not adopt regulations which are contrary to the community law. As a consequence of this rule, EU law should be established before the national law in order to achieve the envisaged result that the legal regulations be consistent in all Member States. If there are no such regulations, then each State implements its own legislative solutions which may lead to problems and abuse in case of differences between the national legislations. Such differences may also hamper the uniform (harmonized) implementation of EU law across all Member States once such EU legislation is enacted.

The genesis of the works on EU law regarding drones is presented by Zieliński: “considering the growth of remotely piloted aircraft systems, their potential benefits for European citizens and economy and the present lack of internal market in the sector, DG Enterprise and Industry and DG Mobility and Transport, in close co-operation with other European Commission services commenced on 23 June 2011 (...) consultations with a large group of stakeholders (UAS Analysis Process) the purpose of which was to contribute to the preparation of the civil RPAS application development strategy in Europe” (Zieliński 2014). There is a need to create such a strategy in order to include unmanned vehicles in the Single European Sky (SES), an initiative launched in 1999 with the aim of “improving the performance of air traffic management and air navigation services through better integration of the European airspace” (Thomas 2015).

The consultations under the UAS Analysis Process took place in 2011-2012 with the participation of public institutions and businesses involved in this area. It was estimated that within a decade the global production would reach the level of 35 000 machines (Council of the European Union 2012). Today we already know that these projections were largely underestimated. Only 3 years later Bloomberg informed that “Amazon

sells over 10 000 drones monthly” (Levin 2014). In turn, drone sales in 2015 alone already exceeded 4.3 million drones (Bedard 2015) – over one hundred times more than forecasted for the entire decade. Had such dramatic market growth been assumed at the time, the matter of drone market regulation would surely have been given a higher priority. As part of consultations an important question was raised regarding the liability for possible accidents. General principles should be based on the regulations presently binding for manned aircraft. Detailed rules of conduct are set forth in Regulation (EC) No 785/2004. The scope of this regulation excludes aircraft whose maximum take-off mass does not exceed 500 kg (Regulation 785/2004: art. 2, Sec. 2, point g).

In July 2012 the European Commission appointed the European RPAS Steering Group (ERSG) to co-ordinate the work of institutions and experts in the area of unmanned flights (European Parliament 2015), including, EASA (European Aviation Safety Agency), EUROCONTROL (European Organization for the Safety of Air Navigation), EUROCAE (European Organisation for Civil Aviation Equipment), SESAR JU (Single European Sky ATM Research: Joint Undertaking), JARUS (*Joint Authorities for Rulemaking on Unmanned Systems*) and other. In 2013 the ERSG published a “Roadmap for the integration of civil Remotely-Piloted Aircraft Systems into the European Aviation System” (European RPAS Steering Group 2013) setting the date of the integration commencement in 2016. The document’s main conclusions include the statement that in principle unmanned vehicles should be treated as manned vehicles, bearing in mind their specific features. As not all technologies necessary to ensure the required safety level are already widely available, in the initial phase drone integration should be based on a defined set of conditions which must be met so that the aircraft be permitted to fly. Another proposal is the removal of the maximum take-off mass limit of 150 kg and granting EASA regulatory competencies regardless of the aircraft mass.

Because remotely piloted aircrafts do not require a crew or a pilot in the cabin, flight safety matters relate to third parties who are on the ground or in other aircraft flying in the air. By analogy to manned flights, the RPA overflight clearance should be therefore granted in accordance with the standard procedure applicable in all EU Member States. In doing so one may take an analogous approach to safety matters. The final effect would be the integration of manned and unmanned air traffic as far as requirements and procedures are concerned, bearing in mind the differences resulting from the specific features of these two types of aviation.

In order to enable the integration of RPAS into the present system, it is necessary to define the rules for licensing operators, evaluating aircraft airworthiness, as well as necessary procedures (with regard to operation, communication and identification). This results from Annex 2 to the Chicago Convention (ICAO, 1944: Annex 2 – Rules of the Air, Appendix 4. Remotely piloted aircraft systems, art. 1-3), which lists the above areas as necessary for the introduction of RPAS into the airspace. According to Crespo and Mendes de Leon, “[t]he operations of RPAS itself have to comply with existing and future regulations and procedures of manned aviation as feasible. A general concept of RPAS integration is that RPAS shall pose no greater risk than manned aviation” (Crespo, Mendes de Leon 2011, p.258). In accordance with the above assumption, RPAS are to be finally included in the Single European Sky (SES).

In the case of unmanned flights regulation in the EU, the principle of “occupied field” has not been applicable so far, because EU treaties did not deprive Member States of the competence to adopt legislation in this respect. However one may expect that such regulations will soon be introduced. According to Polish MEP Janusz Zemke, “[t]herefore, the European Commission and Parliament plan on introducing regulations to cover the whole of the EU. Objectively, I believe this issue should be an EU competency” (Levy-Abegnoli 2015). Should the provisions be adopted in form of regulations, the principle of the primacy of EU law over national laws applies and the law of individual Member States would be substituted with new EU regulations.

### **EASA consultation process and its effects**

The European Commission recommends that new regulations should be drafted taking into consideration strict safety rules, protection of fundamental rights of the citizens and control of drone flights in order to guard against threats (e.g., terrorism), insurance liability rules and support to the growth of the European RPAS market (European Commission 2014a, p.4). On 31 July 2015 EASA launched a consultation process regarding the introduction of a new regulatory framework for drones taking into account the above recommendations. As a result EASA published, in September 2015, a document with the proposal to create common rules for operating drones in European aerospace (A-NPA 2015-10) (EASA 2015a).

EASA identifies two sets of priorities that should be considered when drafting new regulations. On the one hand, it stresses economic aspects such as industry growth and creation of new jobs. But on the other hand, it also mentions such

issues as safety, environmental protection, privacy and data protection (EASA 2015a: p. 1). The proposal suggests to introduce common European safety rules regarding the use of drones regardless of their mass. This means that the features of a machine (e.g., take-off mass) are relatively less important than the purpose and circumstances of its use.

The EASA proposal contains 33 safety rules recommendations which do not differentiate between commercial and non-commercial use of drones. This uniform approach was justified with the fact that the same operation and the same machine may be used both for a commercial and non-commercial purpose. There are no grounds to differentiate safety rules for such flights. Instead, a division into three basic categories was made (EASA 2015a: p. 14) depending on the operation risk:

- ‘Open’ category (low risk): safety is ensured through compliance with industry standards, and the requirement to have certain functionalities and a minimum set of operational rules. Enforcement mainly by the police.
- ‘Specific category’ (medium risk): authorisation by a National Aviation Authority responsible for airspace safety following a risk assessment.
- ‘Certified’ category (higher risk): requirements comparable to those for manned aviation. Oversight by a National Aviation Authority and EASA, appropriate licences and training are required.

In accordance with the above, EASA regulations would be applicable only to the certified flight category. The remaining categories would be regulated by individual Member States, via designated authorities. The proposed division is analogous to the one proposed earlier in the Riga Declaration.

Classification as the open category, in accordance with proposals 5-19, requires flights under a direct visual line of sight (VLOS) operated with a drone of less than 25 kg up to the height of maximum 150 m above the ground. The pilot is liable for safe joint use of airspace and safe distance from persons and property on the ground. In this category, flights over a gathering of people (more than 12 persons) are prohibited. For flights at an operating height above 50 m, basic knowledge of aviation rules is required. The proposal also provides for the introduction of so-called *geo-fencing*, i.e., determining zones in the airspace which a given machine would not be able to enter even if its operator attempts to do so. EASA shall prepare standards for marking such zones (e.g., data format) and a method for transferring such data directly to drones. This requires to adapt technical standards of machines to use such data. Competent

institutions would then be able to define no-drone zones and limited drone-zones (in which it must be possible to clearly identify a given aircraft).

Equipment manufacturers will be obligated to provide information attached to their products about the rules of using drones in the “open” category. Basic requirements regarding the features and functions of such drones shall be defined by EASA taking into consideration UE product certification rules (e.g., the CE label). Three subcategories will be created (EASA 2015a: p. 23):

- Category A0 – ‘Toys’ and ‘mini drones’ with a mass under 1 kg
- Category A1 – ‘Very small drones’ with a mass under 4 kg
- Category A2 – ‘Small drones’ with a mass of 4 to 25 kg.

Drones in Category A0 are prohibited to exceed the ceiling of flight 50 m above ground. In Category A1 the aircraft must have geo-fencing capability and active automatic identification enabled when operating in the ‘limited-drone zones’. Drones in Category A2 should also be equipped with such mechanisms but they are not allowed to enter ‘limited-drone zones’. The above rules apply also to tethered aircraft.

A special category covers unmanned flights which do not meet the conditions of the open category and therefore pose a higher risk. In connection with the above, the operator should perform a risk analysis and supply a set of information necessary to evaluate the risk to a respective national institution. The information should also include the method for removing identified kinds of risk. The operator should also prepare an operating manual containing flight requirements such as conditions, personnel qualifications and aircraft inspection documentation. The flight must be performed in accordance with the authorization issued. Flights in the special category may be performed exclusively by certified aircraft. In proposal 28 EASA suggests that aircraft manufacturers together with respective standardization bodies provide standards to address the safety risks. This would simplify and harmonize the process of obtaining a flight authorization.

The highest category (certified) pertains to flights with the highest risk level. Requirements in this category are comparable to the requirements for manned flights. This means that it is necessary to obtain a Certificate of Airworthiness and Type Certificate (compliance with environmental protection standards) equivalent to the presently binding certificates for manned aircraft (TC/CofA). Institutions participating in the flight organization process (e.g., as employee training providers) should have appropriate certificates. A pilot should have a license and an aircraft operator should have ROC

(Required Operational Capability). EASA plans to prepare various kinds of Certification Specification (CS) for unmanned vehicles, depending on their type. The scope of EASA liability in the certified category is the same as in the case of manned flights.

Upon collecting comments on the A-NPA 2015-10 document, in December 2015 EASA published a Technical Opinion (EASA 2015b) on unmanned aircraft. It is an updated version of the prior document taking comments into account. The number of proposals was reduced from 33 to 27 as a result of deleting most general proposals or as a result of joining proposals. The term “drones” was replaced with the term “unmanned aircraft” in order to ensure consistency with ICAO terminology. EASA however reserves the right to use the term „drone” for example in marketing communication as it is a widely used and comprehensible term.

In August 2016 EASA published the Prototype Regulation (EASA 2016) focused on open and special categories. All parties involved in the legislative process were given the possibility to read the proposed regulation and to provide their comments. Objections are raised by, for example, modellers who complain that EASA included also flying models in the scope of regulations regardless of prior statements that this would not be the case. In the opinion of Europe Air Sports, “[f]or model flying, the proposed Prototype Rules are largely unnecessary, overly complex and disproportionate given the widely acknowledged safety record for model flying established over the last century throughout Europe” (Phipps 2016). It is worth noting that the US Federal Aviation Administration (FAA), contrary to European regulations, directly excludes flying models from regulations applicable to drones (Federal Aviation Administration 2012). Furthermore, the Prototype Regulation is criticized by the Drone Manufacturers Alliance Europe, the organization established by 3 leading European drone manufacturers: Parrot, DJI, GoPro and modelled on a similar US organization: “[t]he recent EASA proposal strikes us as too complex and too conservative given the excellent safety record of the technology” (Posaner 2016). As an effect of the consultation process a refined and more detailed version of the document was published in May 2017, called NPA-2017-05 (EASA 2017). It contains a technical analysis of each risk category, together with their social, economic and safety implications.

In November 2016 the Warsaw Declaration was published by EASA and Polish aviation institutions. It assessed the progress achieved since the Riga Declaration and laid down ground rules for further development of regulations in the area of unmanned aviation, such as addressing the problems of coordination between various EU institu-

tions and highlighting the principles of safety and simplicity of the future regulations (Bujnowski 2017). The declaration introduces an important concept of U-Space, being a set of services and procedures allowing to automate control over UAVs to a big extent, especially in urban areas and when flying at low operating heights. In a declaration in June 2017 the European Commission declared that the implementation of the basic level of U-Space should be completed in 2019 (European Commission 2017). According to SESAR JU, the most important components of U-Space are electronic registration, electronic identification and geo-fencing (SESAR JU 2017: p. 2). Based on the recommendations by SESAR JU, a budget of EUR 9 million has been assigned from the EU's Horizon 2020 budget for the selected projects (Air Traffic Management 2017). This meant that European institutions are entering new phase in the regulatory process with particular tasks assigned and budgeted.

In February 2018 EASA released a new version of the rules proposed to the EU Commission – EASA Opinion 01/2018. It focuses on the open and specific categories of drone operations. It highlights that model aircraft are subject to the regulation and that all flights beyond visual-line-of-sight require registering these aircraft and passing tests by their pilots, as it falls into the specific category. Additionally, all aircraft “able to transfer 80J of terminal kinetic energy in an impact with a person” (EASA 2018) should be registered. Most drones currently used for amateur filming (such as one of the most popular models – DJI Phantom) do not meet this restriction, so according to the new rules they should all be registered. Several additional changes were also introduced in the Opinion, such as cancelling the minimum age or maximum camera resolution requirements in the open category. In July 2018 the European Parliament formally adopted the new Regulation 2018/1139 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, which came into force in September. This means that the general rules established by EASA are now applicable for all EU member states, even though specific directives will need to be implemented by the Commission to establish detailed rules for pilot training, exams, drone registration and other technical details.

Nevertheless, due to the lack of final regulations at the EU level up to this moment, individual Member States make attempts to ensure the highest possible safety level. It is in the interest of each State that the law governing this area be uniform in all Member States and secure the highest possible number of occurrences. However, the rapid market growth forces respective States to adopt regulations fast. There are certain



general standards determined (for example, by JARUS), but they are not sufficient to ensure uniform regulations. After the implementation of Regulation 2018/1139 each member state will be required to adopt their regulations to the uniform standard, possibly using transition periods.

### **Conclusions**

Currently applicable regulations may be divided in two categories: existing regulations which can be interpreted so as to extend to unmanned vehicles and new regulations introduced specifically for drones. In the case of the first category, problems arise as a result of differences between manned aircraft and unmanned aircraft. The technology undergoes such rapid changes that also the regulations pertaining directly to the unmanned aircraft may be not be entirely suitable. There should be no doubt that the area of unmanned aerial vehicles should be regulated at an international level similarly as manned flights are regulated. This results from the need to ensure safety in the airspace.

Attempts are being made to draft uniform regulations both at the EU level and at the global level (by ICAO). By analogy to manned flights, one may expect that the basic legal framework will be provided by ICAO. More detailed issues may be regulated at the level of respective states or groups of states (e.g., EU). Work on the regulation of unmanned flights in the EU has commenced in 2011. The problem was noticed then but drones were much less popular at that time than they are at present. Also the need to co-ordinate works of numerous institutions involved is a serious obstacle.

As there were no consistent regulations at the international level or across the EU, national regulations were introduced. The more such separate systems, the more difficult it will be to integrate them later. There is also an increased safety risk related to UAS due to the steadily increasing number of aircraft, their uncontrolled use and lack of requirements regarding the equipment and pilot qualification. Lack of control also means increased opportunities for criminal acts and terrorist attacks. Drones' characteristic features also make them very convenient and anonymous tools for committing a tort. As a result, various methods are currently developed for preventing such conduct, for example distorting communication or intercepting drones.

Also the impact of the legal situation on economy should be noted. On the one hand, less comprehensive (looser) regulation may mean larger sales and higher profits for

manufacturers. Equipment may be cheaper because it does not have to meet specific requirements. If there are only national regulations, the manufacturer may choose the country in which such requirements are less stringent. The purchase process itself is simple as it does not involve additional activities or costs. Probably the lack of regulations may be seen as one of the reasons of such a rapid growth of the sector. But on the other hand, regulation of the unmanned flights area is very beneficial to the economy. Many new companies and jobs are created and the sector generates profits. Lack of international regulations provides certain benefits to national legislators. They have greater control over the legal system in the country and may achieve consistency with other regulations and technical requirements with greater ease.

It may be assumed that ICAO will complete the pending process of drafting regulations regarding unmanned flights. Pursuant to Article 37 of the Chicago Convention each contracting State is obligated to secure uniformity of its regulations with the provisions of the Chicago Convention. However, the European Union as an entity is not a party to the Convention, even though all its Member States are contracting States. This means that the EU is not obligated to create law which is consistent with the Convention. In such a situation EU through EASA continues its works on EU regulations regarding unmanned flights. Thus EU Member States will be obligated to observe ICAO rules (they are parties to ICAO) on the one hand and to observe EU regulations on the other. Besides, national regulations will also exist in this respect which may be inconsistent with the new regulations. In the case of such conflict, EU law shall prevail.

Aviation is a specific area due to, inter alia, its international character. In addition, issues connected with safety of persons and property in the air and on the ground are important. Due to these specific features harmonization of regulations to the maximum extent seems to be beneficial. It should be stressed that EASA and ICAO co-operate in the creation of new legal solutions. However this does not mean that these solutions will be identical. The present legal situation and the direction of its development indicate that despite the attempts to harmonise regulations between ICAO and EASA certain differences will remain. In the event of aerial incidents, problems may arise with determining the applicable legal regulations.

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