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# PREVENTING AIRCRAFT ACCIDENTS THROUGH JUST CULTURE REGULATION (EU) NO 376/2014 - A BETTER USE OF OCCURRENCES TO IMPROVE AVIATION SAFETY

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**Introduction - Regulation (EU) No 376/2014: adoption and content**

On the 3rd April 2014 the European Union adopted Regulation (EU) No 376/2014 of the European Parliament and of the Council on the reporting, analysis and follow-up of occurrences in civil aviation (hereinafter Regulation 376/2014)[2]. This Regulation has been adopted by co-legislators (the European Parliament and the Council) in 1st reading following a relatively quick agreement for a text subject to the ordinary legislation procedure (Article 294 TFUE). Actually, the legislative proposal[3] was presented by the European Commission on 18th December 2012 and an informal agreement was found between the co-legislators 12 months later, on 25th November 2013, formalised by a vote of the European Parliament on 26th February 2014 and by the Council approval on 14th March 2014. Both co-legislators strongly supported the proposal's objectives and endorsed the ambitious legal provisions to ensure the achievement of these objectives (644 MEPs voted in favour of the Regulation, 14 against and 6 abstained; the Council adopted it by unanimity of the Member States).

Regulation 376/2014, which will become applicable from the 15th November 2015, creates a comprehensive legal framework, across all aviation domains, aiming at preventing accidents through the reporting, analysis and follow-up of occurrences in civil aviation. In the Regulation an 'occurrence' is defined as "*any safety-related event which endangers or which, if not corrected or addressed, could endanger an aircraft, its occupants or any other person and includes in particular an accident or serious incident*" (Article 2).

This Regulation is a core element of the future European aviation safety system, which aims to shift Europe towards a more proactive and evidence-based safety system, i.e. a system that attempts to foresee and prevent accidents based on the collection and analysis of data, rather than simply reacting after accidents (Recital 5). The need for this legislation was notably recognised in the Commission Communication on "*Setting up a Safety Management System for Europe*"[4].

Regulation 376/2014 also falls within a broader international context with the adoption of a new Annex to the Chicago Convention[5], Annex 19 dedicated to Safety Management, which has become applicable since 14th November 2013 and which recognises in particular the need to collect and analyse relevant safety information with the view to enhancing aviation safety (Recital 6).

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In this European and international context, which aims at finding more efficient ways to prevent accidents, Regulation 376/2014 requires that the relevant safety information relating to civil aviation be reported, collected, protected, analysed together with the relevant corrective actions to be taken on its basis (Articles 1, 4, 5, 13, 14, 15 and 16) with the sole objective to prevent accidents and incidents and not to attribute blame or liability (Article 1). It also ensures that this information is appropriately exchanged among the relevant authorities (Articles 1, 8, 9 and 14).

The Regulation includes in particular the requirement for the relevant actors at all levels (industry, Member States, the European Aviation Safety Agency - EASA) to establish mandatory (Article 4) and voluntary (Article 5) reporting systems with the view to collecting all occurrences that may reveal a risk to aviation safety (Recital 8). Once collected, these occurrences shall be analysed in order to identify and mitigate safety risks (Recital 27 and Article 13).

Regulation 376/2014 also includes provisions aiming to ensure a high level of quality and completeness of occurrence reports (Recital 13 and Article 7) as analysis and trends derived from inaccurate data may show misleading results and may push for efforts being focused on inappropriate action.

In addition, the Regulation improves the exchange of information between relevant aviation authorities notably through the means of the European Central Repository (ECR), a database which regroups all occurrences collected in the European Union (Recitals 21, 22, 24 and Articles 8, 9). Such exchange aims at enhancing the identification of safety hazards (Recital 19) and should not serve for attribution of blame or safety performance benchmarking (Recital 20). Furthermore, Regulation 376/2014 addresses dissemination of the information contained in the ECR to interested parties in certain restricted circumstances (Recitals 25, 26 and Articles 10 to 12).

This entire occurrence system rests upon the reporting of occurrences by aviation professionals and the Regulation therefore recognises the necessity to establish an environment, which will ensure their confidence in the system and create incentives for reporting (Recitals 33 to 45 and Articles 15, 16). In this perspective, Regulation 376/2014 regulates the confidentiality and appropriate use of information (Article 15) and creates strict requirements for the protection of the source of information (Article 16).

This key component of the system is notably based on the recognition of the 'Just Culture' principle, which establishes that aviation professionals shall not be "*punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but in which gross negligence, wilful violations and destructive acts are not tolerated*" (Definition of 'Just Culture' Article 2).

**Evolution of the 'Just Culture' concept**

Just Culture is not a new concept; it exists and has been discussed for more than a decade. In addition, this notion is not inherent to aviation as it is also used in other domains such as healthcare. In an aviation context, it was defined for the first time in EU legislation in 2010[6] but its underlying principle was already present in several EU legislations. This was notably the case with the first EU legislation on occurrence reporting[7], in its Article 8, and with the so-called EASA Basic Regulation[8], in its Article

16, which both contain provisions ensuring that individuals are not blamed when reporting 'honest errors' but are held accountable for wilful violations and gross negligence.

Initially, 'Just Culture' was mainly understood in a context where judicial authorities were involved. Indeed, in a safety system, which was mostly relying on technological progress and on lessons learnt from accidents, information provided by aviation professionals on the possible circumstances of accidents was important in order to understand the causes of accidents and avoid their reoccurrence. When an accident happens two main questions usually come up: Why did this happen – how can we prevent it in the future? And, should anyone be liable, be held responsible for this? Whereas the first question is addressed by aviation authorities, the second one leads to the involvement of judicial authorities, be it criminal or civil. This situation may cause aviation professionals' reluctance to provide important safety information to aviation authorities, as they are afraid that such information could later be used against them by judicial authorities. 'Just Culture' has therefore risen from the necessity to create an atmosphere of trust in which front line operators are encouraged to report important safety information and are given protection in case of judicial actions.

Over the last decade, with the increasing development of safety management systems (SMS), the large majority of safety information reported by aviation professionals has been gathered in the context of occurrence and other reporting systems. Therefore, today safety information is not mainly gathered to understand the reasons of an accident but even before it occurs in order to avoid it, following a systematic data collection process by the industry in the context of their SMS. The use of such information by judicial authorities in such circumstances, while possible, rarely occurs.

Regulation 376/2014 accompanies this evolution of the safety system and furthermore strengthens the 'Just Culture' related provisions. Indeed, the changes introduced by Regulation 376/2014 are substantial and are going much further that a simple definition of 'Just Culture' principles. For the first time in the European legislation, the 'Just Culture' principles are translated into concrete legal provisions which aim at ensuring their effective implementation. In addition, it shifts the focus towards the protection of aviation professionals in their daily working environment whereas in the past 'Just Culture' was mainly seen from the perspective of interaction with the judicial environment.

**Preventing accidents with 'Just Culture'**

The growing levels of air traffic volumes combined with a fairly constant accident rate and the increasing complexity of aircraft (Recital 2) yielded calls for the transition of the aviation safety system towards a more proactive and evidence-based system, built on continuous analysis of safety information, including occurrences (Recital 5), as described in the sections above.

Whilst information coming from automatic reporting systems (such as Flight Data Monitoring systems) is increasingly being used in the context of SMS, reporting by aviation professionals remains a substantial and fundamental source of information to identify safety hazards and prevent accidents from occurring. In particular, aviation systems, whilst very complex, are heavily dependent on human performance. Preventing accidents therefore requires an increased focus on human factors. This can notably be achieved through the collection of extensive information about what people thought

and how they acted in a given situation, far more than that obtainable by automatic means. The safety system therefore is crucially dependant on the participation and contribution of aviation professionals (Recital 8) in narratives that help to provide a description of the occurrence and the context surrounding the occurrence.

The methodologies used for occurrence reports analysis are very important to allow the best possible use of the information collected. The perspective adopted is frequently one where the event is seen entirely through a filter of the human's errant behaviour. Occurrences are analysed by an approach of decomposition of system's components, which are then analysed one by one.. The presence of 'human error' is often used as the final point, the point of causal explanation of the occurrence.

However, aviation professionals may be reluctant to report occurrences, in particular when this occurrence has involved an error or a mistake they made. This reluctance is notably due to the potential consequences which may follow their reporting, in particular from their employer (Recital 33) such as losing their job or being blamed. In addition to pressure within the immediate working environment, reporters may also suffer from the pressure of being judged by others, such as society. Moreover, some reporters may also fear potential prosecution for an action which did not have the expected outcome. There are cases in the past that illustrates the dramatic impact that such action had on the level of reporting (Delta case).

Failure to ensure reporting of safety occurrences is detrimental to aviation safety as it prevents aviation industry and authorities from being aware of the risks they might face.

In summary, without reporting there is no information, and without information it is not possible to understand how and where to take action in order to prevent future accidents. Therefore, the efficient functioning of the aviation safety system partially depends on the trust the aviation professionals have in the reporting systems.

Regulation 376/2014 establishes strong provisions to create this trust relationship through an efficient 'Just Culture' environment in the EU and its Member States, with the view to promote reporting of occurrences and its consequential use for accident prevention in a forward-looking way.

**A substantially improved 'Just Culture' with Regulation 376/2014**

The 'Just Culture' principles set up in Regulation 376/2014 rely on two main pillars:

-The access to and use of collected information is strictly limited (Article 15), and
-Reporters and other persons mentioned in the report are protected from blame and punishment, in particular from their employer (Article 16).

However, the end purpose of 'Just Culture' being the improvement of safety, it is clarified that this should not prevent actions to be adopted where necessary to maintain or improve aviation safety (Recital 36 and Article 16(5)).

On the basis of the above-mentioned principles, the Regulation includes a number of detailed provisions which transpose them into legal requirements.

- **A significantly expanded scope of protection:**

During the decision-making process, the European Parliament argued that aviation professionals might be reluctant to report occurrences involving a mistake or an error they had made but also occurrences involving a mistake or error from their colleagues. The Parliament therefore proposed to extend the protection rules to any other person mentioned in the occurrence report. This proposal was agreed and all the provisions detailed below are therefore applicable not only to the reporter but also to any other person mentioned in the report (Recital 38 and Article 16).

Furthermore, the development of new business models in the aviation industry and the increasing number of self-employed pilots led the co-legislators to ensure that not only employees but also persons whose services are contracted or used by an industry organisation are equally protected (Articles 4(6) and 16(6) (7) (9)).

- **Confidentiality and protection of the reporter and of other persons mentioned identity:**

Regulation 376/2014 establishes the principle that collected safety information shall be handled in such a way that it protects the confidentiality of the reporter and of other persons mentioned in the report (Recital 40 and Articles 6(1) (3) (4) and 15(1)), including through de-identification of details related to the persons involved (Recital 35 and Article 16(2)). To achieve this objective the division between the departments handling the occurrence reports and the rest of the organisation is encouraged (Recital 34). Moreover, the Member States and EASA are prevented from registering personal details, including names of persons, in their databases (Recital 35 and Articles 16(3) (4)).

- **Prevention from prejudice by employer:**

Regulation 376/2014 includes an essential principle which states that employees and contracted personnel shall not be subject to prejudice on the basis of information collected through occurrence reporting systems (Recital 37 and Article 16(9)) except in cases of wilful misconduct or unacceptable behaviour. Should employers infringe this legal requirement, the Regulation specifies that they should face penalties (Recital 51 and Article 21).
This legal provision is essential in a safety system mainly relying on Safety Management Systems put in place by the industry. It is the transposition into direct legal requirement of the 'Just Culture' definition, in a corporate context.

- **Clarify the line between acceptable and non acceptable behaviour:**

'Just Culture' does not mean full immunity; it means that actions, which are commensurate with experience and training, shall not be punished but that *"gross negligence, wilful violations and destructive acts are not tolerated"* (Article 2). While the meaning of destructive acts and wilful violations is commonly agreed, 'gross negligence' left a lot of room to interpretation.

The lack of clear legal delimitation between acceptable behaviour under which professionals are protected and unacceptable behaviour, which could lead them to be

punished, was considered by co-legislators as preventing an efficient implementation of 'Just Culture' and of the Regulation itself.

Indeed, in practice the protection not only depended on the cultural and legal environment within each Member State but also on the internal culture and practices of each industry organisation. Co-legislators considered, as did the Commission in its legislative proposal, that this would have led to a situation where the Regulation would have been implemented in very diverse manners and have created different levels of protection for aviation professionals.

An agreement was therefore found to include a description of which behaviours are acceptable and which are not (Recitals 37, 39 and Article 16(10)). According to the Regulation, gross negligence or unacceptable behaviour are therefore understood as "*a manifest, severe and serious disregard of an obvious risk and profound failure of professional responsibility to take such care as is evidently required in the circumstances, causing foreseeable damage to a person or property, or which seriously compromises the level of aviation safety*" (Article 16(10)).

It has to be understood that such definition does not interfere with possible other definitions of 'gross negligence' under national criminal Law. Indeed, the description contained in Article 16(10) is only applicable in the context of Regulation 376/2014 and of legal obligations covered under this Regulation. In a situation where a criminal proceeding is open, the definition of 'gross negligence' under national law remains applicable. In practice, it means that the limitation between acceptable and unacceptable behaviour is the same in all Member States, which ensures a similar level of protection to aviation professionals across the Member States and across the various aviation organisations. This common definition is applicable by the industry and the Member States, including their administration of justice, outside criminal proceedings, if it has to determine whether or not Regulation 376/2014 has been infringed (e.g. civil or labour Law context).

- **Requirement for an industry internal 'Just Culture' policy:**

Regulation 376/2014 also contains a requirement for industry organisations to adopt an internal 'Just Culture' policy (Recital 34 and Article 16(11)), which notably describes the safeguards and processes put in place to prevent punishment on the basis of reported occurrences.

This provision is an important component of the confidence and trust in the relationship to be built between potential reporters and the reporting system of their organisation as it imposes the adoption of internal rules that can be consulted by employees and through which their management commits to their protection in defined circumstances.

- **Limitation to access and use of information:**

Regulation 376/2014 also includes very protective provisions regarding the possibility to access or use information contained in occurrence reports. It provides that information derived from occurrence reports shall only be used for the purpose for which it has been collected and prevents Member States, EASA and industry organisations

from making this information available or being used for purposes other than maintenance or improvement of aviation safety (Recitals (33) (34) and Article 15(2) (3)).

In practice, this means that occurrence reports cannot be accessed or used by judicial authorities for any purpose other than aviation safety (i.e. not for blame or liability Article 15(2) a)) except in the situations foreseen under Regulation (EU) No 996/2010[9].

- **Requirement to establish advance arrangements**

Regulation 376/2014 also requires the adoption of advance arrangements between judicial and aviation authorities (Recital 45 and Article 15(4)) with the view to enhancing and formalising their cooperation. Such advance arrangements will have to comply with the requirements of the Regulation, including provisions related to the limited possibility to access and use information contained in occurrence reports.

- **Limitation to institution of proceedings:**

In addition to the requirement of establishing advance arrangements, the Regulation also contains provisions related to possible interaction of judicial authorities, such as the obligation for States to refrain from instituting proceedings on the basis of occurrences collected under Regulation 376/2014 (Recital 43 and Article 16(6)). It is specified that this provision does not apply, in principle, if national criminal Law states otherwise as well as in the situations of exceptions as detailed in section d) above but that Member States can adopt or retain measures that are more protective towards the reporter or persons mentioned in the report (Recital 43 and Article 16(6)). This is the case, for example, in Denmark where national Law forbids any proceedings to be instituted on the basis of an occurrence report, including in cases of gross negligence. It is clarified that this is only applicable to proceedings instituted by States and that it does not limit the right of a third party to institute civil proceedings under national Law (Recital 43).

- **Principle of non self-incrimination:**

Regulation 376/2014 completes the previous provision by preventing, in cases where disciplinary or administrative proceedings are instituted, the use of information contained in occurrence reports against reporters or persons mentioned in the report (Recitals 43, 44 and Article 16(7)). In this situation, the possibility is also given to the Member States to apply more protective measures and in particular to extend the principle of non self-incrimination in the context of civil or criminal proceedings (Recital 44 and Article 16(8)).

- **Appeal mechanism:**

Member States are required to designate a body for the implementation of several clauses (Recital 42 and Article 16(12)), namely the limitation to institute proceedings (Article 16(6)), the prevention from prejudice by the employer (Article 16(9)) and the requirement for the industry to adopt an internal 'Just culture' policy (Article 16 (11)). The body can in particular receive complaints in cases where employees and contracted personnel consider that Article 16 of Regulation 376/2014 has been in-

fringed.

**Remaining challenges – the way forward**

As described above, Regulation 376/2014 introduces a number of legal requirements to create an environment where aviation professionals feel confident to report safety information so that this information can subsequently be used for the purpose of accident prevention. However, while these legal provisions aim to ensure an efficient and strong implementation of 'Just Culture' principles, it is recognised that legislation alone, while necessary, will be insufficient to establish an environment leading to trust and facilitating the reporting of occurrences.

To better understand the impact of Regulation 376/2014 on the existing situation, Member States are requested to report every five years to the European Commission (Article 16(13)) on the implementation of Article 16 and in particular on the activities of the body designated to handle the complaints foreseen under Article 16(12).

Furthermore, additional action will be necessary to ensure that Regulation 376/2014 fully reaches its objective. In this context, the European Commission, with the support of all stakeholders including ECA and IFATCA, intends to develop a number of initiatives to accompany the application of the Regulation. Such actions include in particular the development of guidance material, the preparation of a model for the industry internal 'Just Culture' policy, the adoption of promotional and communication material and the organisation of a high-level Conference at the end of 2015.

The success of Regulation 376/2014 and its ability to improve aviation safety will require a collective effort of all stakeholders: pilots and operators, safety analysts and civil aviation authorities, staff and employers organisations, the European Commission and the European Aviation Safety Agency.

One of the main challenges for all the actors involved will be that, in parallel to Regulation 376/2014, the aviation sector will have to evolve towards a more systemic thinking approach. This new approach should allow the operator's actions to be explained not at the human level, but at the level of the system itself, thus providing a unique view of how the system behaves. In doing so, a better and more useful description of the system behaviour will be available. Making investigation and analysis based on the actors' reporting, leads to a better understanding of the boundaries of the system, as it is designed or prescribed in procedures and rules. The importance of the systemic thinking approach will thus contribute to improving the overall understanding and improvement of the current system.

The legal framework is there but there are many challenges ahead to ensure it fully meets its objectives and this will only be possible with the involvement and commitment of those who work at preventing aircraft accidents for safely transporting thousands of European citizens through the air every day.

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[2] Regulation (EU) No 376/2014 of the European Parliament and of the Council on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007, OJ of the European Union L 122 of 24.4.2014 page 18.

[3]Proposal for a Regulation of the European Parliament and of the Council on occurrence reporting in civil aviation amending Regulation (EU) No 996/2010 and repealing Directive No 2003/42/EC, Commission Regulation (EC) No 1321/2007 and Commission Regulation (EC) No 1330/2007, COM/2012/0776 final - 2012/0361 (COD).

[4]COM/2011/0670 final.

[5]Convention on International Civil Aviation - ICAO Doc 7300.

[6]Article 2 of Commission Regulation (EU) No 691/2010 of 29 July 2010 laying down a performance scheme for air navigation services and network functions and amending Regulation (EC) No 2096/2005 laying down common requirements for the provision of air navigation **services;** OJ L 201, 3.8.2010, p. 1.

[7]Directive 2003/42/EC of the European Parliament and of the Council of 13 June 2003 on occurrence reporting in civil aviation; OJ L 167, 4.7.2003, p. 23.

[8]Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC.

[9]Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC Text with EEA relevance, *OJ L 295, 12.11.2010, p. 35.* Article 14 of that Regulation foresees that occurrences reports cannot be disclosed for other purposes than aviation safety unless the authority competent to decide on the disclosure of records decides that the benefits of the disclosure outweigh the adverse domestic and international impact that such action may have on that or any future safety investigation.



# THE FIRST UK CONVICTION FOR THE ILLEGAL USE OF AN UNMANNED AIRCRAFT AND HOW IT CAN HELP IMPROVE REGULATIONS WITHIN THE EU

Benjamyn Ian Scott*

## Introduction

The history of unmanned aerial systems (UAS) is almost as long as piloted aviation. Their widespread use, however, did not materialise until World War II where pilotless aircraft, such as the V-1, were used as flying bombs that were programmed to crash after a certain period of time. Due to their history, UAS have predominantly been used for military applications with the most well-known modern example being the Predator, which has been flown by the United States (US) Air Force in the skies over Afghanistan, Bosnia, Iraq, Korea, and Kosovo. During these operations, the Predator was used to broadcast live video footage of enemy actions, destroy enemy targets with its own weapons and locate targets for precision weapons fired from a distance.

The market is, however, changing and UAS are becoming more relevant for governments and private entities within the civil sector. Not only are UAS becoming more relevant, their civil application is also expanding; for example, they are being used for safety inspections of infrastructure, such as rail tracks, dams, dykes and power grids. National authorities are utilising UAS in disaster relief actions, such as in flooded areas and for forest fires. Private entities are also actively participating in this area, for instance engineers are currently developing micro-UAS which may be able to fix gas pipe leaks or imitate bees by pollinating plants. Finally, individuals for non-commercial purposes are partaking in amateur building and flying of UAS for recreational use.

There are currently around 500 UAS manufactures in the world, in which Europe hosts approximately one third and with its continuous expansion it is predicted that this growth will create up to 150,000 European jobs by 2050[1]. The growth is further demonstrated as more than 1,000 operators have been granted operating licences in Europe. In France the amount of approved operators was 86 in December 2012 and this has since increased to 431 in February 2014. All of this evidence has led some to estimate that in the next 10 years civil UAS could be worth 10 percent of the world's aviation market amounting to €15 billion per year. Therefore, this emerging sector has a significant application within the European Union (EU) and it should, as a result of this, be taken seriously by the regulators in order to ensure that the market thrives and is properly regulated.

In light of these new developments, it is the purpose of this essay to explore whether the current EU legal regime is sufficient enough to regulate civil UAS. This essay will achieve this by firstly defining what UAS are, thus giving further clarity. Secondly, the recent and first United Kingdom (UK) conviction for the illegal use of a civil UAS will

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be explored in order to act as a base that may highlight lacunas in the current EU law. Thirdly, significant elements of EU aviation law, the Chicago Convention 1944 (CC44) and the current competences of the European Aviation Safety Agency (EASA) will be examined to show the current status of the law regulating UAS in the EU. It will therefore be possible to observe any shortcomings in the law that may result from the analysis of the UK case. Fourthly, the European Commission (Commission) is currently engaged in preparing policy on civil UAS, therefore this proposal will be examined in order to see if it is sufficient enough to remedy the issues raised in this essay. Finally, the impact of the findings of this work will be evaluated.

**Terminology**

In order to examine the potential problems for the regulation of UAS highlighted by the recent case in the UK, the practicalities of UAS must be examined, therefore allowing the activity in question to be better understood. An UAS is an 'aircraft' whereby a pilot is not located within the vehicle. In its Annexes to the CC44, ICAO provides the standard definition of an 'aircraft'.

> "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."

As both winged and helicopter UAS's operate in the same manner as conventional aircraft, it follows that they satisfy this definition. Support for this reasoning is found within Article 8 of the CC44 as it demonstrates the possibility of 'pilotless aircraft' as aircraft. Additionally, UAS must be unmanned, either being remotely or autonomously controlled, which is demonstrable by factual observation. Therefore, UAS currently do not pose any new definitional problems[2].

UAS have been identified throughout their history under several different titles and this can lead to some confusion and because of this the terminology will be clarified. The term 'drone' was often used in pre-Gulf War times, but this term is becoming politically unpopular, so governmental and non-governmental entities often avoid using this term. The US Federal Aviation Administration (FAA) and the National Aeronautics and Space Administration (NASA) have often referred to them as 'Remotely Operated Aircraft (ROAs)'. However, there has been a recent shift in the terminology which has seen 'Unmanned Aircraft (UA)' and 'UAS' being used within the US. In addition to this, the EU, EASA and ICAO widely refer to 'UAS'. Finally, the term 'unmanned aerial vehicle (UAV)' is often popularly used. Due to the general consensus among the international community and because all of the terms refer to the same type of vehicle, this paper will adopt the term 'UAS'.

There is a distinction within UAS and this needs to be briefly addressed. Firstly, there are 'Remotely Piloted Aviation Systems (RPAS)' which are UAS that are controlled by a human pilot from a remote location. Secondly, there are 'unmanned drones' which are vehicles that are autonomously operated, and as stated by the Commission in its Memo dated 8th April 2014, are not yet authorised for use by ICAO or under EU rules. However, in order to make this essay more inclusive and because unmanned drones are likely to be authorised in the future, this distinction will not be made in this essay, thus following the same position of Joint Authorities for Rulemaking on Unmanned Systems (JARUS).

**The United Kingdom Civil Aviation Authority v Robert Knowles**

In recent years there has been a proliferation of EU Member States, such as France, Germany, Italy, Sweden and the UK, adopting legislation to regulate the operations of UAS. As a result of this, the UK in 2014 saw the first successful prosecution for the illegal flying of an UAS under its national law in the unreported case UK Civil Aviation Authority (CAA) v Robert Knowles. While this is a UK case, the regulations in this area, both nationally and internationally, are fragmented and in their infancy, and because of this the case may prove influential and beneficial in the development of UAS regulation within the EU.

On the 25th August, 2013 an UAS was recovered from the waters located near to a nuclear submarine testing facility operated by the public limited defence company BAE Systems in Barrow-in-Furness, UK. BAE Systems then handed the UAS to the police. The UAS was a £2,000 delta-wing which had a wingspan of 1.35m and weighed 1.86kg. Attached to the vehicle was a camera and analysis of the video footage by the police "revealed that during its flight it had skimmed over the busy Jubilee Bridge over [the] Walney Chanel" and in addition to this, the footage revealed that it "had also flown through restricted airspace around the nuclear submarine facility before it inadvertently landed in the water"[3]. The police then traced the UAS back to Mr Robert Knowles who admitted building and then operating it on the day in question.

The relevant UK law relating to this subject is contained within CAP393 Air Navigation: The Order and the Regulations 2009. The overriding Article within the legislation is Article 138, which covers the subject of endangerment and applies to all aviation activity at all times.

> "A person must not recklessly or negligently cause or permit an aircraft to endanger any person or property."

CAP393 makes a distinction between UAS depending on weight and because Knowles' UAS weighed less that 20kg, it is classified as a 'small unmanned aircraft' pursuant to Article 255.

> "Small unmanned aircraft' means any unmanned aircraft, other than a balloon or a kite, having a mass of not more than 20kg without its fuel but including any articles or equipment installed in or attached to the aircraft at the commencement of its flight."

Knowles was convicted of two offences relating to the unlawful operations of a small unmanned aircraft. The first offence was for flying a small unmanned surveillance aircraft within 50 metres of a structure pursuant to CAP393 Article 167.

> "(1) The person in charge of a small unmanned surveillance aircraft must not fly the aircraft in any of the circumstances described in paragraph (2) except in accordance with a permission issued by the CAA.
> (2) The circumstances referred to in paragraph (1) are: […]

> (c) within 50 metres of any vessel, vehicle or structure which is not under the control of the person in charge of the aircraft."

This Article was satisfied as the UAS was flown over the Jubilee Bridge. The flight path and the location of the crash took the UAS within close proximity of several vessels. This would result in further breaches of Article 167(2)(c). The offences could have been more as the bridge is frequently used by pedestrians which could have resulted in a violation of Article 167(2)(d) if any persons were in the vicinity. Furthermore, the UAS landed near vessels and if they were inhabited at the time, this would breach Article 167(3).

The second conviction was for flying the UAS in restricted airspace over a nuclear installation pursuant to Regulation 3(2) of the Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007.

> "Subject to regulations 4 to 13, no aircraft is to fly over a nuclear installation to which this regulation applies below the height above mean sea level specified in Column 4 of the Second Schedule opposite its name."

As Knowles' acts breached the UK's Air Law and as the UK CAA deemed the incident to be of 'sufficient seriousness' to warrant prosecution, the case was then brought in front of District Judge Gerald Chalk at Furness and District Magistrates'Court[4]. Knowles was found guilty on 1st April, 2014 and fined £800 plus costs of £3,500. The UK CAA is currently investigating several other possible violations.

**Chicago Convention 1944**

The CC44 is directly applicable to civil aircraft pursuant to Article 3(a). As stated above in Section 2, UAS are aircraft as prescribed under the Annexes to the CC44. The emerging market for UAS is within the context of civil use, so the CC44 is applicable to the current analysis. In addition to this, Amendment 43 of Annex 2 AN 13/1.1-12/19, 10th April, 2014 specifically modifies the Annex to cover UAS. Thus, ICAO rules are applicable to UAS and as every EU State is a Party to the CC44, it may provide some relevant regulations for UAS within the EU.

The CC44 under Article 8 makes specific reference to UAS.

> "No 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 insure 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."

Therefore, there is a clear obligation for 'pilotless aircraft' not to be operated above the territory of another contracting State without prior consent. Article 8 CC44 makes reference to aircraft that are "capable of being flown without a pilot". This can be interpreted to mean that the pilot is not physically on board the aircraft (RPAS). Alternatively, it can also be interpreted to include only pre-programmed autonomous

aircraft, whereby there is a complete absence of a pilot on board and outside of the aircraft (unmanned drones). It is unclear which interpretation prevails from the text of the Article. However, ICAO appears to favour the first interpretation. Article 8 poses few problems within the context of CAA v Knowles as the UK does not share any land borders with other States. Furthermore, pursuant to Article 166(3) CAP393, small unmanned aerial vehicles under UK law are required to be flown with unaided visual contact.

> "The person in charge of a small unmanned aircraft must maintain direct, unaided visual contact with the aircraft sufficient to monitor its flight path in relation to other aircraft, persons, vehicles, vessels and structures for the purpose of avoiding collisions."

The likelihood of infringing Article 8 within the UK is minimal. However, this may be a point of concern for States that share land borders, especially those with non-EU States, such as Russia, Belarus, Ukraine and Turkey. Thus, this must be taken into consideration when drafting the new EU regulations.

If UAS fall under the scope of the CC44 then it follows that other obligations set forth in the CC44 will be applicable, such as Article 20 which declares that "[e]very aircraft engaged in international air navigation shall bear its appropriate nationality and registration marks." Thus, UAS must be registered and those involved in international air navigation must bear certain marks that indicate the nationality and such registration.

It has been shown above that UAS satisfy the definition of 'aircraft' set forth in the CC44's Annexes. Under this definition, there are many kinds of aircraft, such as balloons, gliders, aeroplanes and rotorcraft, and each of these may potentially have unmanned versions in the future. However, ICAO has noted that "[i]n the broadest sense, the introduction of UAS does not change any existing distinctions between model aircraft and aircraft"[5]. ICAO has defined 'model aircraft' as those generally recognised as intended for recreational purposes only, such as that used by Knowles[6]. Knowles' activities fall outside the scope of the CC44 and are exclusively the subject of the relevant national regulations. In the absence of any national laws regulating this activity, it may be possible to enter the territorial sovereignty of a State with a model UAS in contradiction of a fundamental principle of air law without fear of prosecution. In addition, such vehicles will not have to comply with the other provisions on safety and security.

**European Union**

The EU Member States have divested some of their aviation competencies to the EU pursuant to Article 100(2) of the Treaty of the Functioning of the European Union (TFEU) (ex-Article 80 TEC).

> "The European Parliament and the Council, acting in accordance with the ordinary legislative procedure, may lay down appropriate provisions for sea and air transport. They shall act after consulting the Economic and Social Committee and the Committee of the Regions."

Therefore, EU law must be examined in order to assess the legal status of UAS. Although there is currently a lack of regulation that specifically encompasses UAS, the EU has extensively regulated aviation, of which UAS may fall under its scope.

Regulation (EC) No 1008/2008, one of the main building blocks of air law within the EU, pursuant to Article 1, regulates

> "the licensing of Community air carriers, the right of Community air carriers to operate intra-Community air services and the pricing of intra-Community air services."

Within the context of UAS, it is important to examine the meaning of both 'Community air carriers' and 'air services' in order to assess whether UAS come under the scope of the Regulation. Firstly, a 'Community air carrier' as defined under Article 2(11) is "an air carrier with a valid operating licence granted by a competent licensing authority in accordance with Chapter II." Chapter II Article 3(3)(a) declares that the Regulation shall not apply to "ultralight power-driven aircraft". While the Regulation does not quantify 'ultralight', it is possible that Knowles' 1.86kg model UAS would be exempt as its weight falls well below that of traditional aircraft. Secondly, 'air service' is defined under Article 2(4) as "a flight or a series of flights carrying passengers, cargo and/or mail for remuneration and/or hire." Factual observations of UAS show that they do not carry passengers and the carriage of cargo and mail is very limited. The carriage of cargo and mail is likely to increase due to the commercial push by companies like DHL and this must be appreciated by the regulators. Thus, it is clear that a fundamental component of EU air law, Regulation 1008/2008, does not apply to UAS. Therefore, an important body of EU law pertaining to aviation has a very limited or no application to UAS.

These activities are also likely to fall outside the context of the current air service agreements negotiated by the Commission. This can be highlighted by one of the most liberal air service agreements; US – EU Open Skies Agreement 2007. If an EU aircraft wishes to exercise transit and/or traffic rights with the US, then this is permitted pursuant to Article 3. However, such rights will only be granted to 'air transportation'. Under Article 3 of the current Agreement this refers to

> "carriage by aircraft of passengers, baggage, cargo, and mail, separately or in combination, held out to the public for remuneration or hire."

It is clear that UAS do not currently facilitate such a service and subsequently, they do not have such rights. It is also unlikely that bilateral air service agreements will be phrased in such a way to allow such a service, however this will have to be dealt with on a case-by-case basis.

**European Aviation Safety Agency**

EASA's competencies are set out in Regulation 216/2008 (the Regulation) which sets forth EASA's role in establishing and maintaining a high uniform level of civil aviation safety in Europe.

> "On this basis, save where otherwise provided, the design and manufacture of the UAS must be in accordance with the relevant certification specifications similar to manned aircraft and they must be issued with a Certificate of Airworthiness"[7].

Due to this, the Commission has envisaged that EASA is best placed to develop a set of common rules that will bring UAS in line with ICAO standards. However, when the Regulation is applied to the facts of CAA v Knowles, there may be certain limitations which could have a profound impact on the regulation of UAS in the EU.

Article 1(2) of the Regulation declares that it does not apply to those UAS "engaged in military, customs, police or similar services." Even though this does not pose an issue under CAA v Knowles, it is a point that should be considered in the Commission's new proposal. This is because, firstly, the inclusion of "similar services" leaves the situation open to wide interpretation. Secondly, the design of UAS, especially those fitted with surveillance equipment, means that they may already be capable of non-civil uses without modification. Therefore, this may result in many UAS falling outside the scope of EASA's competencies. While, in a recent unreported case, the UK CAA has demonstrated that it is observing the use of UAS, as Mr Lawrence Clift received a caution for selling photographs obtained from an UAS as this is in violation of UK aviation law. However, this may not be the case in other jurisdictions.

Under Annex II(b) of the Regulation, an aircraft of any mass that is "specifically designed or modified for research, experimental or scientific purposes, and likely to be produced in very limited numbers" falls outside the scope of EASA's competencies. Knowles admitted to building his own UAS, thus demonstrating that constructing "specifically designed or modified" technologies is within the capacities of members of the public. Furthermore, due to the nature of UAS, they are often used for surveillance which may bring them into line with "research, experimental or scientific purposes". Thus, a significant portion of UAS may be exempt from the Regulation.

Annex II(c) of the Regulation declares that an "aircraft of which at least 51 % is built by an amateur, or a non-profit making association of amateurs, for their own purposes and without any commercial objective" are exempt. Therefore, it is clear that Knowles' personally built UAS falls within the scope of this provision and outside the scope of EASA.

Aircraft that have been used in the service of military forces are exempt pursuant to Annex II(d) of the Regulation. Those aircraft, however, which are "of a type for which a design standard has been adopted by the Agency" will fall under the scope of the Regulation. The initial UAS had a military application, thus it is possible that certain models or technologies from the military have or will flow into the civil market and this could result in them being exempt from the EU law.

Finally, Annex II(i) of the Regulation declares that "unmanned aircraft with an operating mass of no more than 150kg" are exempt. There is a clear division in the competencies of EASA between aircraft above and below 150kg as aircraft lighter than 150kg have been left to national legislators to regulate. Although the UK has been active in filling the gaps, as it has constructed its law to cover aircraft of all weights, this contradicts the Commission's goal of comprising a comprehensive set of rules governing UAS across Europe as this has led to further fragmentation. Thus, the new regulations should take all weights into consideration. This is important as the weight

does not affect security concerns, as a 1.86kg UAS is equally competent in carrying a surveillance camera as compared with a 500kg Predator. Secondly, the weight does not necessarily relate to the amount of damage that can result from a crash as demonstrated by the Smethwick Chinese Lantern Fire in the UK in 2013. In this case a Chinese lantern, a lighter than air object, caused a fire involving 100,000 tonnes of plastic recycling material which produced a 6,000ft smoke plume and £6m worth of damage in 30th June, 2013. Finally, UAS pose a problem to other aviation activities. They are capable of operating in both the segregated and non-segregated airspace, just as manned aircraft, and as an object as small as a bird or volcanic ash can cause an aircraft to crash, the potential damage caused by a UAS collision is significant due to mid-air and ground collisions. There are clear safety and security concerns posed by all tiers of UAS.

It is apparent that EASA's competencies are significantly limited in the context of UAS. Therefore, the Commission would have to broaden the applicability of its rules, by modifying the Regulation, in order to encompass this emerging UAS market. Additionally, in order for the Commission's proposal to become a comprehensive set of rules, the Commission must take the gaps of EASA's rules into consideration.

**European Commission's Proposal**

The Commission has observed that there is a "lack of a European regulatory framework encompassing civil and military unmanned aircraft [which] prevents the development of legally authorized unmanned aircraft operations"[8]. As a result, the Commission has concluded that this is significant as the current legal situation does not permit the UAS industry to build pertinent business plans and develop new products adapted to their clients. The Commission has since begun to assess its potential role in the support of this emerging sector.

> "Before launching concrete actions, it is necessary to fully understand the potential European industry baseline, the potentialities and benefits offered by UAS to the European citizens, and the existing obstacles to the market emergence"[9].

In order to achieve this, the Commission has opened up a Communication whereby it has invited all of the "stakeholders to build together a policy framework for the development of a competitive drones market as well as rules that will tackle all citizens' concerns"[10]. Therefore, in light of the lack of EU regulation, the Commission aims to construct a policy framework that will concern civil and commercial operations, in line with EU competence which will be done via its six action proposal[11].

- **Common Certification Processes and Standards**

As safety is paramount to the objectives of the EU aviation policy, the Commission under Action 1 of its proposal has suggested a common certification process and standards for UAS. This is deemed necessary as "in many States, the grant of an aerial work license to a UAS operator is almost impossible, as no appropriate framework for certification of the unmanned aircraft systems exist"[12]. Therefore, this is required to ensure that UAS "will have an equivalent level of safety in comparison to regular, manned, aviation"[13].

The proposal has pre-empted the weight problem observed in CAA v Knowles. The Commission recognises that the "UAS sector below 150kg is composed of aerial vehicles of very different types, capabilities, size and weight" therefore regulation should encompass this wide scope[14]. Therefore, "in this respect, the restricted scope of EASA competence to unmanned aircraft above 150kg on the basis of traditional airworthiness considerations is an arbitrary cut off point and should be reconsidered"[15]. Such a change could increase safety and help reduce accidents; for example, Knowles'UAS was built with a failsafe return to home function which, when engaged, did not work. Higher levels of safety standards may have resulted in the UAS returning to the operator and not crashing.

- **Support Market Development and European Industries**

Actions 2 and 6 have the aim of supporting and encouraging the emergence of the UAS market by promoting the development of UAS "applications and the related technologies, stimulate user-driven innovation, and foster the creation of cross sectorial industrial value chains, appropriate support infrastructures and clusters"[16]. While this has beneficial implications for people like Knowles, as it will make the market grow and potentially lower costs, it may increase the number of participants, so increasing the potential for further violations. Additionally, the creation of new laws may leave many unaware of the changes, so increasing the chances of further violations. Knowles was flying in a popular UAS site which was close to restricted air space. If the law is made clearer and more accessible, then such sites may not develop and members of the public are less likely to violate the law. The proposal should thus encourage the dissemination of information on the status of the law in the EU with the aim at mitigating violations.

- **Tough Controls to Ensure Security**

Action 3 of the Commission's proposal covers security aspects. The Commission holds the view that UAS are not immune to potential unlawful actions; for example, they "could be used as weapons, the navigation or communication system signals of other RPAS could be jammed or ground control stations hijacked"[17]. It has been suggested that Knowles may have been exposed to "malicious hacking of a drones control system, and in such a situation Knowles could be just an innocent victim" and this may be possible as Knowles was "flying his drone is a popular location for drone enthusiasts, and there is the risk that the radio frequency they use runs the risk of them interfering with each other's ability to control their aircraft"[18]. It has been stated that Knowles was unsure how he lost control of the UAS and that 'outside influence' could not be ruled out. However, this point was not raised in Court. Thus, to stop unwanted interference from happening and to limit false claims of outside influence as a defence for illegal use of a UAS, tight rules on security are required.

- **Protect Citizens' Fundamental Rights**

One of the main functions of UAS in civil use is to remotely record information with information recording equipment installed onto the vehicle. This is commonplace with recreational UAS, as demonstrated by CAA v Knowles. Consequently, this has resulted in the Commission proposing Action 4 which aims to protect citizens' fundamental rights including the respect for the right to private and family life, and the protection of personal data. This has led the Commission to cite Directive 95/46/EC

and the Framework Decision 2008/977 which determine that any processing of personal data will need to be based on legitimate grounds. The Commission has concluded that the "privacy situation would need continuous monitoring by the competent authorities including the national data protection supervisory authorities[19]" in order to ensure that the data is recorded for legitimate grounds. However, as shown by CAA v Knowles, this will not be an easy goal to achieve as the current case only came to light once the crashed drone was recovered by the BAE employee and analysed by the police. While this is a legitimate goal, more needs to be done at a national and EU level in order to ensure compliance.

- **Liability/Insurance**

Under Action 5 of the proposal, the Commission has tried to address third party liability and insurance. This is viewed as an important element of the Commission's proposal because, while the aviation industry has high safety standards, accidents still happen, therefore victims of these accidents should be compensated for any injury or death and such a regime would ensure the parties can meet their financial obligations. CAA v Knowles demonstrates the importance of this as Knowles has claimed that he may face bankruptcy as he is unable to afford the fine and costs. If this is the the case, then the UK taxpayer will have to bear the cost.

The current third-party insurance regime within the EU was constructed with manned aircraft in mind and because of this Regulation (EC) 785/2004 declares that the starting weight for determining the minimum amount of insurance is 500kg. This is not in line with the factual situation of UAS as the majority of civil UAS weigh below 500kg. This point is exacerbated as Article 2(b) of Regulation 785/2004 declares that this Regulation shall not apply to model aircraft that weigh less than 20kg. Therefore, Knowles' UAS would not come under the scope of the Regulation and he would not be required to get insurance, so still leaving the UK CAA potentially unable to recover damages.

**Conclusion**

In conclusion, it has been shown that UAS are no longer used only for military applications and are being used for civil purposes. This transition is predicted to have a significant impact on aviation within Europe and because of this, it should be taken seriously. However, despite this, there is currently no overarching EU law regulating UAS. In light of this, the purpose of this work is to highlight the first ever conviction in the UK for the illegal use of a UAS and how its conclusions can be utilised as a tool to help construct a comprehensive set of rules to regulate the law in the EU.

It has been shown that the CC44 can be applicable to UAS within Europe. However, ICAO has stated that the CC44 does not apply to 'model aircraft', so the CC44 would not apply to Knowles' situation. Thus, there is a lacuna between the law and the factual situation. Consequently, such a distinction between aircraft and model aircraft must be rethought in order to encompass such activities. It has also been shown that there are numerous EU laws pertaining to UAS under the EU's comprehensive aviation rules, however due to terminological and substantive issues, UAS are exempt from these rules.

As EASA is central to the EU's aviation policy and is highly active in UAS regulation, it has been given special consideration in this paper. It has been shown that in light of CAA v Knowles, there are limitations to EASA's competencies and consequently, these must be considered when revising Regulation 216/2008 and by the Commission in their proposal. The most notable limitation is the weight requirement, as it is highly unlikely that this new recreational UAS market will include vehicles as heavy as 150kg.

Finally, the Commission's proposal was examined in order to show any strengths or weaknesses that may have come to light following the analysis of CAA v Knowles. It has been shown that the Commission's work is a large step in the right direction, but it may fall short of being as encompassing as it desires. For example, it wants to include a liability and insurance system for UAS. This would have proven valuable to Knowles as the fines, costs and loss of his £2,000 UAS may bankrupt him. However, the Commission is looking at pre-existing rules on insurance and this would result in a significant portion of civil UAS being excluded due to weight restrictions.

Therefore, in overall conclusion, the Commission has noted that there are gaps in the law that regulates UAS within the EU and that these gaps need to be filled in order to sufficiently govern the growing civil UAS market. However, through an analysis of CAA v Knowles, it has also shown that the Commission's proposals are not comprehensive enough to sufficiently regulate UAS in the EU. The UK CAA is currently reviewing other cases that may lead to prosecutions and these must also be considered as they may highlight other gaps in the Commission's proposal. Therefore, further steps need to be taken in order to ensure that the Commission's proposals are appropriate.

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[1]Commission, 'Remotely Piloted Aviation Systems (RPAS): Frequently Asked Questions', Memo, Brussels, 8th April, 2014, page 1. [Herein: Commission Memo] All of the data in this paragraph has been taken from the Commission Memo.

[2]Issues may arise with the emergence of hybrid drones, those which utilise both aircraft and rocket technology, as well those that simply rely on rocket technology. This has been the case in the emerging area of suborbital activities. *See*, Scott, Benjamyn Ian, 'The Regulation of Personal Injuries in International Carriage by Suborbital Vehicles under Air Law', *15 Aviation and Space Journal 2* (2014).

[3]Civil Aviation Authority, 'First Conviction for Illegal Use of an Unmanned Aircraft', www.caa.co.uk/application.aspx?catid=14&pagetype=65&appid=7&mode=detail&nid=2348. The retrieved footage is accessible on YouTube. *See*, YouTube, 'Walney Channel, Robert Knowles Prosecution Flight', www.youtube.com/watch?v=hriyv8WRHg4.

[4]Justices of the Peace are locally sourced volunteers with no required formal legal qualifications and these usually preside over cases at the Magistrates' Court. However, in more complex or sensitive cases District judges, which are legally qualified, paid and full-time professionals, may hear the case. Most cases held at a Magistrates' Court are brought to Court by the Crown Prosecution Service (CPS), but due to the content of the case, the UK CAA prosecuted.

[5]ICAO, Unmanned Aircraft Systems (UAS) - *Cir 328 AN/190* (2011), page 3.

[6]The EU has an additional category that UAS may fall under; 'toy aircraft'. These aircraft will fall under the scope of Directive 2009/48/EC (2009) which "shall apply to products designed or intended, whether or not exclusively, for use in play by children under 14 years of age." Directive 2009/48/EC of the European Parliament and of the Council of 18th June, 2009 on the safety of toys.

[7]Schellinck, Melchior and Macara, Peter, 'European Union: Next Generation Civil Aviation: Unmanned Air Vehicles - Applicable Legislation and Shortcomings', www.mondaq.com/x/164228/Aviation/Next+Generation+Civil+Aviation+Unmanned+Air+Vehicles+Applicable+Legislation+And+Shortcomings. *See*, EASA, 'Policy Statement – Airworthiness Certification of Unmanned Aircraft Systems (UAS)', *E.Y013-01* (2009).

[8]Commission, 'Hearing on Light Unmanned Aircraft Systems (UAS)', *TREN F2/LT/GF/GC D* (2009), page 2. [Herein: Commission TREN (2009)].

[9]Commission TREN (2009), page 3.

[10]Commission Memo, page 3.

[11]Communication from the Commission 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', COM. 207 Final (2014), page 5. [Herein: COM. 207 Final (2014)].

[12]Commission TREN (2009), page 8.

[13]COM. 207 Final (2014), page 5.

[14]Commission TREN (2009), page 8.

[15]COM. 207 Final (2014), page 5.

[16]COM. 207 Final (2014), page 8.

[17]COM. 207 Final (2014), page 7.

[18]McKenna, Alan, 'First UK Drone Conviction', www.alanmacblog.wordpress.com/2014/04/03/first-uk-drone-conviction/.

[19]COM. 207 Final (2014), page 8.

# THE GROWING SPACE REGIONALIZATION OF THE GLOBAL SPACE REGIME COMPLEX

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**Abstract**

The continuous proliferation of regional space regimes is noted as a trend of space regionalization in the development of the global space governance architecture. These regional regimes, consisting of the international treaties, multilateral arrangements, formal and informal international organizations created in the different given geographical areas by a group of nations, are dedicated to deal with various global and regional space-related issues. The end of the space regionalization is to facilitate all individual states to use outer space and enjoy the benefits from the space technology applications. The increasing number of space regimes seemingly bridged the gap between the global and the national governance levels on the one hand. It, one the other hand, led the entire global space governance architecture toward a expanding and fragmented *global space regime complex* where an array of partially overlapping and non-hierarchical institutions governing the global space affairs. In this paper, we aim to take stock why and how the regional space regimes were bred to their birth then continue their respective space regionalization of their kind. The informative study is expected to assist our further study on understanding the relevance between the space regionalization and the growing global space regime complex. In the first section, we briefly overviewed the growing space regionalization of global space governance. Furthermore we indentify that three major motivations, formally noted as strategic, functional and organizational logics, jointly steer the space regionalization processes to pursuit respective states' objectives of (1) *aligning regional astropolitics*; (2) *harmonizing the regional space capacity building efforts*; and (3) *establishing and consolidating the regional space governance architecture*. Moreover, it is perceivable that the influences from (1) *the intra-regional geopolitical dynamics;* (2) *a 'mirror effect' inspired from other regional space regionalization model*; (3) and *the endorsement from the global space regimes* have jointly bred the birth of different space regionalization processes. Finally, we argue that together with other fragmentation forces, the growing space regionalization sounds also scatter the architecture of global space governance toward a regime complex. For this observation, further study need to be pursuit.

## The growing space regionalization of global space governance

Before probing to understand why and how the regional space regimes were bred to their birth, several basic concepts need to be clarified, such as *regions*, *regionalism*, *regionalization* and *regional regimes*. In this article, *region* refers to an intermediary level between that of global and national. It, composed of geographically clustered sets of such units and embedded in a larger system, has a structure of its own (Buzan & Wæver 2003)[1]. *Regionalism* is defined as an 'institutionalized practice'. And *region-*

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*alization* refers to 'a process that engages actors' (Katzenstein 2006)[2]. A *regional regime* is a 'set of implicit principles, norms, rules, and decision-making procedure around which actors expectations converge in a given area of international relations' (Krasner 1982)[3] established by a cluster of nations in a predefined geographical region. In our study, the *regional space regimes* deal with general or specific *homo-astro* (human being-star) affairs and can be an international treaty, multilateral arrangement, an international organization (IO), an intergovernmental organization (IGO), or an informal multilateral forum created by a group of nation in a given region. With these definitions, we study why and how the growing space regionalization became one of the factors that expands and fragments the extant 'global space *regime complex'* (Liao 2014)[4] where '*an array of partially overlapping and non-hierarchical institutions* (Raustiala & Victor 2004)[5] coexist and govern the *homo-astro* affairs.

To start, it is urged to take account of the phenomena that states constantly create new regional space related regimes is not a novelty. From the primary use of outer space, regional space related regimes have also become a platform where all partner states explore to minimize the burdens and maximize the benefits for their proper use of outer space. The liberal institutionalism literatures argued that the states intersect the *strategic*, *functional* and *organizational* logics (Keohane & Nye 1977[6]; Keohane & Victor 2011[7]; Lesage 2013[8]; Van de Graaf 2013[9]) to continuously create the general or specific issue-area regimes in order to satisfy their proper interest. The institutionalism argument sounds plausible for the constant creations of regional space regimes. Firstly, some regional space regimes were explored for a space power country to gain its geopolitical leadership *vis-à-vis* their adversaries and competitors. Some were used to amplify a collective voice by claiming the legitimacy of protecting the national sovereignty of a group of states. Secondly, the neighbouring states set up regional space regimes for a functional reason. For example, when the countries possess their own space systems for satellite communication, radio and TV broadcasting and navigation, it is beneficial for all parties to establish interoperable standards and conduct rules in order to broaden the systems' coverage and to reduce unintentional or malicious interferences. The regional space regimes are the optimal mechanisms to guarantee the good function of everyone's space system. Furthermore, a regional space regime can coordinate different national satellite systems to provide comprehensive services for the issues of regional security, navigation safety, disasters mitigation, rescue operations, and humanitarian actions in a geographical region. Thirdly, the global space regimes, such as the United Nations (UN), the International Telecommunication Union (ITU), have been promoting advantages of the regional regimes to not only be able to bridge the missing linkage between the global and national levels for a greater policy implementation. The regional regimes are also deemed as the vital interface to detect the coherence between the global policy and the needs of individual states in the heterogeneous geographical regions. States urge to create or modify a regional space regime for an organizational concern in relation to global space governance.

For those which were established for a strategic reason and also mixed with other rationales, to name a few, such as the Bogotá Declaration (1976) that was claimed by six Equatorial states for their extended orbital sovereignty, the creation of the European Space Agency (ESA) from 1975 which merged two extant separate regional space regimes - European Launcher Development Organization (ELSO) and the European Space Research Organization (ESRO) in pursuit of the collective European space pow-

er, the establishment of the Japan-led Asia-Pacific Regional Space Agency Forum (APRSAF) in 1993 for establishing Tokyo's regional space power leadership, the foundation of the China-led Asia Pacific Space Cooperation Organization (APSCO) in 2005 in the course of Chinese emerging space power. For the functional concerns though also with a strategic thinking or other motivations, we recall the Cairo-led Arab States Broadcasting Union (ASBU) created in the 1960s aimed to be an Arab satellite service platform for the Arab League states yet was heavily challenged by the Riyadh-led Arab Satellite Communication Organization (ARABSAT) founded in 1970s. Both regional space regimes were created for serving all Arab League states yet competed with each other due to the leadership competition between Egypt and Saudi Arabia. The ASEAN Committee on Disaster Management established under the ASEAN framework since 2003 carries the mission of coordinating the intra-regional efforts for regional disasters management. It also became a collective hub to accommodate the space capacity assistance provided by the ASEAN's competitive neighbours, such as China, Japan, India and other extra-regional spacefaring nations. Lastly, with the organizational logic for satisfying national interests and developing global space governance scheme, the UN chose to continuously sponsor the Space Conference of America (CEA) in the Latin America and Caribbean since 1990s. The UN Office for Outer Space Affairs (UNOOSA) selected different pivot countries to establish the UN regional centres for space education and training in Africa, Latin America and Caribbean, Western Asia-Pacific and in China recently. The ITU also organizes regional meetings to facilitate the negotiation on satellite spectrum frequency allocations as well as to promote the setting of regional operational standards. The choices for where allocating these regional space fora, training services and outreach braches sound no random. The relevant state actors' strategic, functional and organization concerns were interested and resulted in the creations of these regional space mechanisms.

As said, the fact that states constantly create new regional space related regimes is not a novelty. It is the increase of such practice trend that drew our scholarly interests for a greater understanding. In the continuous expansion and fragmentation of the global space regime architecture, we note that the above constant creations of new regional space regimes also sound a scattering factor that led the extant global space governance architecture toward a regime complex. Before we could further investigate the impacts of the space regionalization on the current global space governance regime complex, we firstly outline why and how various space regionalization processes were nourished.

**The input sources of the space regionalization**

The space regionalization normally undergoes a long progression of intertwining a regional space technology and economic interdependency, integrating the interests divergences and reducing competitive tension between major spacefaring nations, and last but not least, constructing a regional space rule-of-law architecture. The end of these processes is supposed to satisfy national and regional interests, or to assimilate various states of the region. In this section, we explore how the regionalization processes are sparked and how they grow. We will make distinctions about the inputs from the intra-regional dimension, such as the dynamics of the regional astropolitics, the quest for developing common regional space capacity, and the necessity of regional space governance, and those from the extra-regional dimension, which are the space power's stimulation, other regionalization mirror effects, and the global endorsements. We also note that none of them alone, but a combination of them, gives

rise to the creation of new regional gravity centres in the galaxy of homo-astro governance.

In the current trend of space regionalization that principally aim to consolidate the global space governance structure, countries are mostly deploying and exploring their self-interest by taking rational measures in pursuit of their own expected objectives. In general, when the states explore the space regionalism and start the institutionalization processes to create regional space regimes in a geographical area or among a group of neighboring nations, they expect to use the regional space regime to (1) *align the regional astropolitics* for either consolidating their intra-regional space power leadership or to amplify their influence on the global astropolitics. The other purpose for states to create regional space regimes is to (2) *harmonize the regional space capacity building efforts*; and the third one is to (3) *establish and consolidate the regional space governance architecture*. Consequently, various space relevant regional international treaties, inter-governmental organizations, regulatory mechanisms, and cooperation institutions - regional space regimes were continuously created to jointly fulfil these mixed objectives. With the strategic, functional and organizational logics noted previously the state actors design or choose their favourite regional space regimes to create and to take part of in a given geographical area with preferable parties for managing the selected issue-areas of the homo-astro affairs.

**The Intra-regional inputs**

First, we locate the inputs issued from the dynamics of regional astropolitics. Regional spacefaring countries are often the designers to start the space regionalisation for their cooperative supremacy. By leading a space regionalisation, the regional space power aims to demonstrate its regional space leadership and uphold the regional power-balance against the other neighbouring space powers. On the other hand, the power-driven space regionalisation can also gain strategic allies or business partners for the space power to extend the geographical coverage of its exclusive space system and enlarge the market of its space technology products and services. The regional space power determines what would be the centralities for their own cooperation networks. In the case there are more than one regional space powers in a given region, for example Egypt and Saudi Arabia in the Arab League, or Japan, China and India in Asia, once a regional space leading country starts up its proper space regionalisation process, the other follows in form of duplicating the same action to counter it. Each of leading regional space power establishes distinct regional space regimes and offers vital cooperation projects as incentives to satisfy its respective allies though remain rational regarding the loyal ‘fair return’ from their protégés.

**Dynamics of regional astropolitics**

Regional spacefaring countries often seek to demonstrate their regional leadership, or to ensure the regional power-balance equilibrium by creating a regional space-related regime under their cooperative supremacy. In order to counter their political adversaries and strategic competitors in the same geographical region, these regional space regimes provide technological facilities and space applications incentives to involve neighbouring allies into the interdependency of a regional space system. These regional space regimes determine what would be the centralities for the cooperation networks. They set up norms, rules or practical arrangements for security, safety, commercial and ecological cooperation. When one regional space power starts up a space

regionalism process, the other regional powers will duplicate the same action to counter it. Quite often, space regionalism of this kind might not aim to enhance substantial regional space cooperation, but aims to counter other space regionalization initiatives led by other spacefaring countries in the same region. In practice, these regional regimes offer cooperation incentives that are similar to what their counterpart organizations offers in order not to loose the overlapping member states that are affiliated with the competing regional space regimes. But, these regional space regimes normally only provide vital exclusive cooperation projects to satisfy the loyal allies who stand historically, ideologically or culturally on the same side of the leading space power. The regional space leaders cautiously release any critical technology or know-how if they are unsure about the possible fair return from or possible leaks lamed by their protégés.

An example, which demonstrates that the dynamics of regional astropolitics sparked duplicate space regionalization processes led by adversary or competitive regional spacefaring states occurred in the 1970s among the Arab League states. In principle, it would be perfect if a unique Arab regional satellite system regulatory and cooperation mechanism can be established in order to efficiently coordinate national satellite communication frequency attribution, avoid transnational radio signal interference, and to disseminate a pooled satellite TV and radio broadcasting program gathered from different Arabic-speaking states for the benefits of the entire Arab League states. But the reality was, when Saudi Arabia was arising during the 1970s oil boom and Egypt endured the subsequent expulsion from the Arab League following its 1979 peace treaty with Israel, the competing space regionalism between Egypt and Saudi Arabia has led to the consequence that the Cairo-led Arab States Broadcasting Union (ASBU) created in the 1960s was heavily challenged by the Riyadh-led Arab Satellite Communication Organization (ARABSAT) founded in 1970s. The two regional satellite related operations organizations, which shared the overlapping membership of the Arab League states, could hardly work together. Further to the ASBU-ARABSAT competitive regionalization story in the 1970s, it occurred recently that competition between the Japan-led APRSAF and the China-led APSCO, and perhaps soon the necessary addition of an India-led SAARC satellite network, are vying for leading a regionalism of their own in the Asia-Pacific region. The different regional space regimes with overlapping objectives and membership are created based on the competition between the leading regional spacefaring states. Since the functioning of these regional regimes is highly connected to the regional astropolitics, the regional member states will choose their affiliation by pragmatism to fulfil their own short-term interests, noted as ‘regime shopping’. In the case of APRSAF vs. APSCO, the overlapping member states are mostly from the ASEAN countries. These countries take part in both regional space regimes but only pick the issue-relevant cooperation, which fits their respective national interest instead of being fully engaged into any regional astropolitical strategic interdependency.

**The quest for regional space capacity-building**

The collective quest for developing common regional space capacity or a specific or exclusive regional space system (*e.g.* for satellite TV and radio broadcasting, disaster mitigation, navigation safety, and Earth Observation) can also stimulate and nourish space regionalisation. The regionalisation is therefore undertaken with actors’ functional or cost-benefit logic. By knowing the fact that developing space capacity and upholding it is an expensive and highly risky business, there is no country even not the

US that can handle it alone. Pooling different material or immaterial resources to develop regional space capacity doubtlessly becomes the optimal and legitimate strategy for collective and individual prosperity and benefits. Since the space 'democratization' after the Cold War, emergent industrial countries and developing continents have various ways to continue or to start up their own space capacity. Hence, they are all keen to enjoy the utilities of space technology applications for military, civil or dual-use.

The path of the European space regionalization in pursuit of its collective prosperity and common benefits was a well-known example. Europe started its space regionalization from the early 1960s by having established two different space agencies. The European Launch Development Organisation (ELDO) to develop a European launcher system with six member states and one associate member. The other, the European Space Research Organisation (ESRO) with 10 members was created to develop European spacecraft. Soon after, the ELDO and the ESRO were merged to become the European Space Agency (ESA) in 1964. It was only in 1975 the ESA formally and operationally replaced the two organisations. One of the reasons for that the European states explored a regional space institutional centrality, such as the ELDO, ESRO and ESA, were based on the aforementioned strategic and functional logics for their respective national interests. These regional space institutions gradually created a interdependent space network which gathered the crucial space capability elements among the intra-regional partners and facilitate the member states to exchange resources, reinforce their own national space capability, share financial burdens and reduce the risks of marketing failure. Additionally, the space regionalization has strengthened European regional political and economic position to on the one hand, reduce the dependency on the US space capacity. It offered the leverage to allow Europe to explore possible space cooperation with the Soviet Union. Until now, the European space regionalization is subsequently viewed as the most inspiring model and was duplicated by other regional spacefaring countries that also try to create their respective space regionalization.

Another case was the ARABSAT, the ARABSAT established in 1976 was dedicated to answers the regional request for providing satellite services in order to facilitate telecommunication, promote common culture and education programs in the light of the commitments of the Arab League Charter member states. The ARABSAT became the major regional space mechanism for the Arab League member states to coordinate satellite industries and services operators. Similarly, the enthusiast initiatives and debates about a start-up of an expected Latin-American Space Agency (LASA) (Monroy 2010)[10] and the recent kick-off of the 1st Latin American Satellite Communication and Broadcasting Summit (*Space Mart* 2014)[11], an ASEAN Space Organization (ASO) (Noichim)[12], or an African Space Agency (ASA) (Martinez 2012[13]; Aganaba-Jeanty 2013[14]) took place constantly. These space regionalism initiatives mostly stress indigenous regional space capacity building. Yet, due to a lack of a strong spacefaring nation to continuously lead and carry on these space regionalization initiatives, concrete start-up hardly takes off. In these cases, extra-regional assistance is expected to bring suitable technology and sufficient means, but this causes worries of triggering an unexpected regional astropolitics reshuffle that can destabilize the equilibrium of the entire regional homo-astro ecosystem.

In the Asia-Pacific region, the Japan-led APRSAF and the China-led APSCO are both committed to establish a regional space technology cooperative regime for their over-

overlapping Asia-Pacific member states. The APRSAF, claimed as a voluntary regional space agency cooperation mechanism, aims to lead a long-term and mid-term space capacity building regionalization throughout space science and technology cooperation activities though the Japanese Space Basic Law, approved by the two Parliaments in 2005, explicitly states that 'space diplomacy' is one of the objectives that Japan shall integrate into its future national space policy. The APSCO, particularly after the launch of the Chinese Beidou (COMPASS) Satellite Navigation System, promotes APSCO regional partners *e.g.* Thailand, Pakistan (and it is expected other ASEAN states) to share the benefits of China's satellite navigation system by hosting the ground network facilities in their territories. Until now, the question whether these two regional space regimes could respond to the quest for regional space capacity needs further observation, particularly since the India-led South Asian Association of Regional Cooperation (SAARC) (*The Times of India* 2014)[15] seems also enthusiastic to gain the regional space leadership by exploring the similar method with a South Asian approach for proposing a tentative SAARC Satellite Service project.

**Necessity of regional space governance**

Nowadays, it occurs that the neighbouring states develop their own space systems for national satellite telecommunication, weather monitoring, TV and radio broadcasting, and navigation services for military or civil utilities. Subsequently, these systems are not compatible due to the blockage based on the national security concerns or simply caused by technical incompatibility. Throughout the regionalisation process, states negotiate common measures, such as regulations, standards, tariffs, and interference avoidance rules for heterogeneous national space systems within a given geographical region. Especially nowadays, the growing commercialization of space technology for its design, manufacture, launch and operations and its application for telecommunication, TV and radio broadcasting, remote sensing and navigation are increasingly taking more ground, the quest of establishing regional common conduct rules and operational standards become more and more important. The necessity for institutionalise such regional space governance architecture is doubtless uncontested. These space regimes are created to respond to these specific needs. Yet, whether the design as well as the perfection path for building any regional space regimes depends on whether the desired regime meets its member states' strategic calculation and functional concerns. This often made the managerial manoeuvre of a given space regionalisation more complicate and complex.

The aforementioned Arab Satellite Communications Organization (ARABSAT since 1976) that established an Arab Space Communication network, the Asia-Pacific Broadcasting Union (ABU since 1964) - a regional platform for national TV and radio broadcasters (which are mostly state-owned at least from their staring period) the Asia Pacific regional – set up the ABU Emergency Warning Broadcasting Systems (EWBS) to disseminate information to alert people of neighbouring countries before a disaster occurs. Together with ARABSAT and ABU the Regional African Satellite Communications Organization (RASCOM) were all created for the reason of regional space governance in Africa, and are examples of the space regionalization for improving regional space governance. To enable this space governance regionalization, the parties of a regional group seemingly need to posses similar space capacities and the willingness to share a common development strategy. Nowadays, as the commercialization of all development steps of satellite technology (production, launch and operations) and all utilities of satellite technology applications (communication, broadcasting, remote sensing and navigation) are growingly taking more ground, which increasingly

the quests of coordinating common regional conduct rules and operational standards may become more important but will also become more complex.

**Extra-regional inputs**

Apart from the intra-regional inputs, the inputs from the extra-regional dimension also offer sounding influences in sparking and to fuelling the rise of space regionalisation. These extra-regional inputs can be perceived from three dimensions of the global space regime complex: (1) the stimuli from extra-regional space powers, (2) the inspiration other regionalisation from other regionalisation (*mirror effect*), and (3) the endorsement from global space related regimes. It is important to state that never a single one of these inputs but always a mix of them results in the activation and the growth of these space regionalisation processes in different regions.

**Space powers' stimulation**

The stimuli from extra-regional space powers, namely from the US, Russia and nowadays China, India or others, are centripetal forces that congregate various new regional space centralities. These space powers, with their crucial technology *know-how* and financial supports, push to institutionalise a regional space centrality is either to enhance their ties with the extent allies, make new friends or attract new followers from non-spacefaring countries in a given region. This outreach toward the regional level is supposed to increase the respective space power's political and strategic influences on both regional and global astropolitics. It is also commercially interesting for the space powers to conquer foreign regional markets more efficiently. As for the choice where to do such space power stretch exercises, it depends on every space power's geopolitical concerns and strategic interests. Furthermore, while sponsoring a given space regionalisation, the space powers do not provide full space capacity assistance and do not offer it for free neither. The attractive incentives for the accommodating countries for having and keeping the deals are often accompanied with strict conditions.

The U.S. has supported most of their allies in the Western European and Asia-Pacific regions by sharing American space technologies, *know-how*, as well providing financial aid to the regional leading states for building their space capacities, though often through bilateral cooperation channel. This bilateral cooperation has indirectly facilitated the foundation of space regionalization. While building these strategic space interdependencies, Washington usually requires the beneficiary states of American space system and products to behave strictly under the US International Traffic in Arms Regulations (ITAR). The ITAR has unilateral power to decide whether a piece of technology can be sold to the US allies or interested states or companies, but it can also sanction the contractor if contracted project is leaked to a third party. Consequently, European states were somehow pushed to seek their independency or at least non-dependency from the US, and therefore wanted to create their own regional space cluster. The Soviet Union was doing the same during the Cold War by forcing the Eastern European socialist states into a closer regional space community.

Finally, whether a targeted region has political desires and adequate capacity to host and develop a given space regionalisation sponsored by extra-regional space powers has no co-relationship to the efforts provided by the space powers. The former Soviet Union has incorporated the Eastern European socialist states into a closer regional space community. These days, Russia is doing it again with the Eurasia states via the

space related regional cooperation, such as the Russia-Kazakhstan-Belarus formed Eurasia Economic Union (EEU). Russia also claimed to study Armenia's capacity of using space for peaceful purposes under the Russia-Armenia cooperation framework in scientific, technical and industrial areas. However, after the Russia-Ukraine stand-off, Russia cessed the longstanding space cooperation with Ukraine (*Space News* 2015)[16]. With a strong geopolitical mind-set, Africa, Latin America, ASEAN and Central Asia became nowadays the new power playground for the US, Russia and China to bid for allies or followers. In this circumstance, non-spacefaring states from a given regions often undertake the practice of 'regime shopping' (Keohane & Victor 2011) by opting the most advantageous regimes in accordance to their functional interests and preferences to gain beneficial issue linkages. The stimuli from the space powers are valuable to help the space regionalization. Yet, it can hardly be the only factor to lead such processes to its final goal.

**The Other Regionalization Mirror Effect**

The successful story of the European Space Agency (ESA) became an inspiring model for many space regionalisation initiatives to follow. The inspiring regionalization processes is noticed as a 'mirror effect' for many to follow. Without going into the details regarding the current governance complex between the European Union and the European Space Agency (ESA), as well as the continuously financial obstacles, the long European space regionalization kept standing out as a win-win-win sample for many space regionalization initiatives. The European space regionalization created a regional platform for cost-risk sharing among the European spacefaring and non-spacefaring countries helped to reduce the intra-regional tensions between the powerful ones and the vulnerable ones. It redistributed the developing working tasks and reinforced the European regional positions throughout the enlargement of its internal market hence became competitive against the extra-regional space economies from the US, the former Soviet Union, and Japan at that time. The successful stories of the European space regionalization created a 'mirror effect' for other regions to duplicate the ESA model in their proper space regionalization. Patterns of the ESA model were sometimes literally and practically reproduced in those inspired regions.

Firstly, the Charter of the China-led APSCO literally duplicated many clauses of the ESA Charter since they both seek the same goals of improving regional space capacity development in their own regions. The APSCO took reference of the ESA 'juste retour' clause and made it become the 'fair return' clause in the APSCO Charter. Debates about creating an African Space Agency (ASA) that could merge the extant African Leadership Conference on Space Science and Technology for Sustainable Development (ALC), the Regional African Satellite Communications Organization (RASCOM) and the African Resource Management System-Constellation (ARMS-C) have already occurred though they trigger no optimism due to a lack of industrial capacity, extra-regional financial supports, and critical mass from regional political communities. Actually, it was argued that creating such as new regional space agency might be less urgent than developing targeted national programs for the time being.

Secondly, the EU/ESA are dedicated to promote and carry the alleged inter-regional or bi-regional space cooperation with other regions by enhancing a EU-Africa partnership between the EU and the Africa Union (AU), and throughout the EU and the Asia-Europe Meeting (ASEM) between the EU, Asian countries and the ASEAN Secretariat. The APRSAF and the APSCO are both probing similar outreach inter-regional cooperation with the ESA, Africa and Latin America. This inter-regional or bi-regional cooper-

ation nowadays create a new diplomacy channel such as regional space diplomacy, which basically reflects what the EU/ESA has been probing for some time already. Thirdly, the EU, self-profiled as global actor, is promoting the draft International Code of Conduct for space activities (ICoC) to advance the global space governance construction. In this case, the EU considers the ICoC project as one of the most important diplomatic actions to promote European values and will bring benefits for the European citizens. This unique regional entity-led space diplomacy is doubtlessly going to inspiring other regional space regimes to follow in the future.

By all means, there is not any geographical region or any group initiative of neighbouring countries has completely succeeded their space regionalization following exactly the same path of the European space regionalization. Most of the duplicating attempts failed due to an immature environment for accommodate regional space capacity building assistances, such as in Africa, Latin America and other developing regions. Some resulted in a geopolitical imbalance for breeding an integrated force, like the competitions among China, Japan and India in Asia-Pacific.

**Global endorsements**

Finally, with a mind-set of organisational or managerial logic, the global space regimes, such as UNCOPUOS, International Telecommunication Union (ITU) often encourage the space regionalisation model in order to implement their global policy with tailor-made programs or projects adapted to respective regional needs and particular working methods. These global-led regionalisation offers vital immaterial endorsement (*e.g.* legitimacy or connection with international space community networks) and material support (financial means, administrative assistance and so on) for the start-up of a space regionalisation in pursuit the space capacity building goal, namely in the developing and under-developed regions.

For example, to improve the UN development goals, the UN sponsors (1) organising an intra-regional space forum/meetings as an effective mechanism to provide space education and awareness trainings and programs, (2) boosting national and regional space -driven economies and industrialisation to improve citizens' living quality and safety, create connectivity between urban and rural or remote areas, prevent natural or manmade disasters, facilitate emergency assistance (The UN *International Cooperation Declaration*, 1996), and (3) the regionalisation of the space related global regime. The UN has been sponsoring the Space Conference of the Americas (CEA) since to enhance social and economic development in the Latin America and Caribbean (LAC) region. The UN Office for Outer Space Affairs (UNOOSA) set up two regional centres in Africa - the African Centre for Space Science and Technology (CRASTE-LF in French), and the African Regional Centre for Space Science and Technology Education (ARCSSTE-E in English). There are also other UN Centres for Space science and technology education in Latin America and the Caribbean, Western Asia, Asia-Pacific, and in China. The ITU organizes the bottom-up model regional workshops, for example in the Commonwealth of Independent States (CIS), to disseminate relevant information and collect reflections regarding the issue of how space communication systems are in demand for the economic and social development of the CIS states and what are the major technical needs and hurdles to overcome throughout the regional collective and coordinated efforts. The international treaties also trigger the creation of regional regimes to more effectively implement their regulations or global policy in the regions.

The ITU also organizes the bottom-up model regional workshops, for example in the Commonwealth of Independent States (CIS), to disseminate relevant information and collect reflections regarding the issue how space communication systems are in demand for the economic and social development of the CIS states and what are the major technical needs and hurdles to overcome throughout the regional collective and coordinated efforts. Finally, international regimes that are related to space issues are equally inspiring for space regionalism. The 2005 ASEAN Disaster Charter, which technically relies on remote sensing technology, satellite communication and satellite navigation system to effectively organize regional disaster management and emergency responding actions, was in fact one of the extensive regional actions following the 2005 Hyogo Declaration and Hyogo Framework for Action 2005-2015 that deals with global disaster management and emergency response issues. The global endorsements are expected to bridge the space capacity gaps between spacefaring and non-spacefaring countries. However, the choices of the host geographical areas and the proportions of these global endorsements would unsurprisingly depend on the dynamic of global and regional astropolitics, and the strategic preferences and functional calculations of the major donor countries and host states.

The global endorsements are valuable for bridging the space capacity gaps between spacefaring and non-spacefaring countries. However, the choices of the host geographical areas and the proportions of these global endorsements would still unsurprisingly depend on the dynamic of global and regional astropolitics, as well as the strategic preferences and functional calculations of the major donor countries and host states.

**Concluding remarks**

In the light of our discussion, the launches of space regionalization were jointly motivated by the states' strategic, functional and organizational rationales. Countries explore the regional regimes in pursuit of their proper interests to (1) align regional astropolitics; (2) harmonize the regional space capacity building efforts; and (3) establish and consolidate the regional space governance architecture in a predefined geographical region or in a group of neighbouring nations. The regionalization processes were also supported by a mixture of different inputs from the intra-regional and extra -regional dimensions. In the intra-regional dimension, we noted there are (1) the dynamics of regional astropolitics, (2) the quest for regional space capacity, and (3) the necessity for regional space governance that are the major driving forces to fuel the processes of the space regionalisation. In the extra-regional dimension, the inputs were identified from (1) the extra-regional space powers' stimulus, (2) the inspiration from other regionalisation development (*mirror effect*), namely the European space regionalization model, and (3) the global regimes' endorsements. It was argued that it is not a single input but a mix of them together led the activation and the continuation of the space regionalization processes.

The above informative stocktaking investigation regarding why and how the regional space regimes were bred to get their birth and then to continue greater regionalization processes of their kind sounds valuable. These informative elements could support our further observations concerning the relevance between the growing space regionalization and the extant imperfect global space governance architecture – space regime complex. The growing space regionalization appeared to equally lead the extant global space regime complex toward its greater expansion and fragmentation. To this observation, further analyses need to be followed.

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*MISCELLANEOUS MATERIAL OF INTEREST*

# ECJ ON CONTRACTUAL PROTECTION FOR AIRLINES' ONLINE DATABASES

Anna Masutti*
Irene Otero Fernandez**

The Court of Justice of the European Union (hereinafter "the ECJ") has interpreted and clarified the scope of Directive 96/9/EC on the legal protection of databases with a recent judgment. The judgment, delivered in case C-30/14 *Ryanair v. PR Aviation*, was issued on 15th January 2015 and refers to the possibility to protect online flight booking databases through contractual limitations of the rights of users of the database.

This case originated from a reference for a preliminary ruling by the Dutch Supreme Court, before which Ryanair brought a claim against PR Aviation, a Dutch entity that operates a low-cost flight comparison website which allows consumers not only to search for flights with different airlines and compare fares, but also to book flights upon payment of a commission. Thus PR Aviation, rather than redirecting the user to Ryanair's website, directly sold flight tickets to consumers using a dataset linked to the Ryanair website. This practice is commonly known as "screen-scraping".

However, Ryanair's website terms and conditions at the material time of the case set out that its website had exclusive authorization to sell Ryanair flights. Furthermore, an express prohibition on the use of "automated systems or software to extract data" from the website was included, unless a license agreement with Ryanair was in place.

In light of the above, Ryanair launched proceedings against PR Aviation, claiming that the latter had infringed copyright law, along with the database sui generis right, and that it had acted contrary to the terms and conditions of use of Ryanair's website, which had been accepted by PR Aviation. Further to the first and second instance rulings, the case was brought before the Netherlands Supreme Court, which decided to stay the proceeding and to refer to the ECJ for a preliminary ruling.

The essence of the question was whether Directive 96/9/EC applies to databases which do not meet the criteria for copyright protection or those of sui generis protection, so that it must be interpreted as meaning that the freedom to use such a database cannot be contractually limited.

Directive 96/9/EC on the legal protection of databases provides for two grounds for protection. Firstly, copyright protection is granted where a database, by reason of the selection or arrangement of its contents, constitutes an original creation. No authorization is required for the normal use of the contents of such a database, unless such content qualifies for copyright protection. Secondly, protection is afforded in the form of a sui generis right where a certain investment has been made for obtaining,

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verifying or presenting the contents of a database. Where the sui generis right applies, the right holder cannot restrict users from extracting or re-using substantial parts of the database.

The ECJ rejected PR Aviation's argument that Directive 96/9/EC confers a wide scope of protection on the any database and clarifies that the Directive's protection only applies where either the conditions of copyright protection or sui generis are satisfied. It is not enough that the database corresponds to the general definition of database under Article 1(2) of the Directive.

The Court's view was that it is clear from the purpose and structure of the Directive that the mandatory rights established by it for the lawful use of databases are not applicable to a database which is not protected either by copyright or by the sui generis right, so that it does not prevent the adoption of contractual clauses concerning the conditions of use of such a database. The ECJ's analysis is supported by the general scheme of Directive 96/9, which aims to achieving a balance between the rights of the person who created a database and the rights of lawful users of such a database, i.e. third parties authorized by the author to use the database.

The ruling under consideration thus confirms that Ryanair can rely on its contractual rights to continue restricting and even preventing other entities from extracting data from Ryanair's flights database and using this information for commercial purposes. Moreover, owners of an online database such as Ryanair's may use contractual restrictions to prevent the copying or use of their databases whenever these databases do not meet the criteria under Directive 96/9/EC and provided this is in line with applicable national law.

In this regard, it is worth noting that already on 4th June 2013 the Court of Milan ruled in a similar case on screen-scraping, brought by Ryanair against Viaggiare, which is one of the biggest Italian online travel agencies. The conflict arose in August 2008, when Ryanair threatened not to board passengers who had purchased their flight tickets in websites other than Ryanair's. In its judgment, the Court underlined that the exercise of intellectual property rights on databases must be assessed in the light of competition law, so that such rights cannot be enforced in order to partition the market or hinder competition. Accordingly, the Court held that Ryanair's refusal to allow access to its data raised antitrust issues and the low-cost airline was condemned to compensate the damages caused to Viaggiare.

*MISCELLANEOUS MATERIAL OF INTEREST*

# EU STRENGTHENS CONSUMER PROTECTION FOR ONLINE FLIGHT BOOKING

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On 15th January 2015, the Court of Justice of the European Union ("ECJ") handed down a judgment that strengthens the protection of consumers when booking flights online, in its case C□573/13, *Air Berlin plc & Co. Luftverkehrs KG v Bundesverband der Verbraucherzentralen und Verbraucherverbände — Verbraucherzentrale Bundesverband e. V.* The ECJ held that the final price to be paid for flights booked online must be indicated upfront and at all times, and that this final price must be shown for all flights which correspond to the consumer's selection criteria.

This new case on price transparency of air fares originated in Germany, after a complaint brought by the *Bundesverband der Verbraucherzentralen und Verbraucherverbände — Verbraucherzentral Bundesverband e. V.* (Germany's Federal Union of Consumer Organizations and Associations) against Air Berlin. Again, the interpretation of provisions of the Regulation 1008/2008 on common rules for the operation of air services in the Community was at stake, as already occurred in previous cases, such as *ebookers.com Deutschland* or *Vueling Airlines*. Therefore, the German court referred the issue to the ECJ.

Proceedings before the German referring court concerned precisely the way in which air fares are presented in the computerized booking system of Air Berlin. Until the end of 2008, Air Berlin's booking system displayed, after the selection of a journey and a date, two fares for each flight, showing the taxes and charges as well as the fuel surcharge, while the 'price per person' including all those elements was set in a separate space. A double asterisk next to it explained that a service charge not yet included might apply. After entering their personal details, customers could finally establish the final price of travel, including the service charge.

Owing to the entry into force of Regulation No 1008/2008 on 1st November 2008, Air Berlin modified its booking system so that the air fare for the selected air service was displayed separately from taxes and charges, the fuel surcharge and the total amount of those separately indicated elements. The price calculated on the basis of those figures, the service charge, and the final price per person for the selected flight were then shown.

However, the German Federal Consumer Association took the view that this presentation of prices did not meet the requirements laid down by the second sentence of Article 23(1) of Regulation No 1008/2008, and sought a court order requiring Air Berlin to discontinue this practice, along with reimbursement of the costs incurred in connection with a warning notice relating to that action. Air Berlin's practice was questioned on two grounds: firstly, that the Regulation obliges airlines to indicate the full

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price for air services when the prices are shown for the first time; secondly, it was argued that the Regulation obliges airlines to indicate the full price for all possible connections that match the consumer's selection criteria, and not only for the connection selected.

The requests of the Federal Consumer Association were granted by the court of first instance, whose judgment was upheld on appeal. But Air Berlin brought a further appeal on points of law before the *Bundesgerichtshof* (Federal Court of Justice), which decided to stay the proceedings and refer the following two questions to the ECJ: first, whether the Regulation requires that the full price is shown immediately at the beginning of the booking process, or whether it is sufficient to show the final price once the flight has been selected; secondly, whether the requirements of the Regulation are satisfied by indicating the final price for selected flights, or whether the full price for all possible flights needs to be displayed.

As noted by the European Court in its judgment, the second sentence of Article 23(1) of Regulation No 1008/2008 provides that the final price to be paid is at all times to be indicated and is to include the applicable air fare or air rate as well as all applicable taxes, and charges, surcharges and fees which are unavoidable and foreseeable at the time of publication.

The Court pointed out that it is evident from both the title and wording of the aforesaid Article 23 that this provision seeks to ensure that there is information and transparency with regard to the prices for air services and that, consequently, it contributes to safeguarding protection of consumers. It quoted its own case law on the cases *ebookers.com Deutschland* and *Vueling Airlines* on air fare transparency.

As a result, the ECJ answered the first question by affirming that no distinction shall be made between the moment when the final price is indicated for the first time, the moment when the customer selects a particular flight, and the moment when the contract is finally concluded. In the context of a computerized booking system such as the one at issue in the main proceedings, the final price to be paid must be indicated whenever the prices of air services are shown, including when they are shown for the first time.

In response to the second question, the ECJ declared that the obligation to indicate the final price applies to all flights which correspond to the consumer's selection, and not only to the flight specifically selected. This allows consumers to truly compare the prices for different flights.

In practice, the ECJ's judgment under analysis means that computerized flight booking systems should display final prices for each and every single flight that appears to the consumer from the very beginning of the booking process. Showing differences among air fares is insufficient. Therefore, as pointed out above, this judgment clarifies the requirement for online flight booking systems, while fostering the protection of the many consumers that book flights online.

# ITALY'S FLAG AIR CARRIER: NEW FINANCIAL STRUCTURE UNDER EU COMPETITION LAW

Irene Otero Fernandez*

Alitalia Cai, the Italian national air carrier, and Etihad, the flag airline from United Arab Emirates, reached an agreement for the acquisition of 49% of Alitalia's shares in August 2014, which was meant to tackle the Italian company's difficult financial circumstances. This agreement just came into effect on 1st January 2015, thus creating a newly incorporated subsidiary of Alitalia, which received its operating business by way of subscription of shares. In fact, a minute after midnight of the first day of the New Year, New Alitalia "took off" and became fully operational, and Alitalia's assets were transferred.

Following this transaction, a new joint venture, New Alitalia or Alitalia Sai, was created, and Etihad acquired sole control over Alitalia Loyalty, a subsidiary of Alitalia Cai that manages the latter's frequent flyer program. Control over New Alitalia is therefore jointly held by Alitalia Cai (51%) and Etihad (49%).

Nonetheless, the completion of the acquisition process, which began with the partnership agreement of last August, was dependent on two conditions. The first condition was the underwriting of an equity commitment of 300 million euro, along with the restructuring of 695 million euro of Alitalia's debt by Etihad; while the second necessary requirement was to obtain the proper clearance by the national and European regulatory authorities, including competition authorities.

The competition authority in charge of monitoring operations of this importance is the European Commission. *European Council Regulation 139/2004 on the control of concentrations between undertakings*, i.e. the "Merger Regulation", sets out the conditions on which the Commission substitutes national competition authorities. As specified in that piece of legislation, it applies to concentrations with a Community dimension, pursuant to its Article 1. The Community dimension is basically calculated in terms of aggregate turnover, either worldwide or within the Union, in accordance with the conditions of the aforesaid Article 1. The term "concentration" encompasses, in accordance to Article 3.1.b, "the acquisition, by one or more persons already controlling at least one undertaking, or by one or more undertakings, whether by purchase of securities or assets, by contract or by any other means, of direct or indirect control of the whole or parts of one or more other undertakings". Concentrations with a Community dimension must be communicated to the European Commission prior to implementation.

Etihad's acquisition of 49% of Alitalia's shares was indeed communicated to the Commission on 29th September 2014. The Commission then undertook its standard investigations in order to examine the possible effects on competition in the internal market, in accordance with the above-mentioned Regulation. In its investigation, the

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Commission took into account the interests held by Etihad in Airberlin, Darwin Airlines and Jet Airways.

The Commission concluded that on all affected routes, with one exception, the transaction did not raise serious competition concerns, mainly owing to the competitive pressure exerted by other carriers. However, the Commission's investigation indicated that the transaction would lead to a monopoly on the Rome–Belgrade route, where Alitalia and Air Serbia are the only carriers offering direct flights.

In order to dispel the Commission's competition concerns, Alitalia and Etihad submitted commitments to release up to two daily slot pairs at Rome-Fiumicino and Belgrade airports to interested new entrants. The airlines also committed to providing further incentives, such as the possibility of a new entrant to acquire grandfathering rights after a fixed period of time. Furthermore, Alitalia and Etihad committed to offering a special prorate agreement, a fare combinability agreement, an interline agreement and access to their frequent flyer program to new entrants.

The possibility for the involved parties to offer voluntary commitments with a view to rendering the concentration compatible with the common market, and thus acceptable for the Commission, is set out in the Merger Regulation, article 6.2. The Commission *Notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under Commission Regulation (EC) No 802/2004* ("Remedies Notice") provides companies with further guidance on the different types of commitments accepted, the procedure for their submission and the requirements for their implementation.

On 14th November 2014, the Commission cleared the proposed acquisition of joint control over New Alitalia by Alitalia Cai and Etihad under the Merger Regulation. A decision pursuant to Article 6.1.b of the Merger Regulation was therefore issued, with the commitments submitted by the airlines and accepted by the Commission attached as an annex, pursuant to Article 6.2. The acquisition of joint control over New Alitalia was declared compatible with the internal market and the functioning of the EEA (European Economic Area) Agreement.

However, it must be noted that clearance is conditional upon Alitalia's and Etihad's commitments, pursuant to Article 6 of the aforesaid Regulation. In that regard, in December 2014, the Commission approved the appointment of a Monitoring Trustee for this case, whose role is to monitor the compliance of Alitalia and Etihad with the commitments attached to the Commission's decision and to report to the Commission thereon.

In late January, the public version of the Commission's decision reached in November pursuant to Article 6(1)(b) in conjunction with Article 6(2) of the Merger Regulation was finally published, after the necessary confidential details regarding both companies were resolved.[1] This document offers an in-depth analysis of the economic situation of the parent companies, the operation, the market, as well as an assessment of the competition concerns thereof. The commitments and conditions are also included, as the 87-page decision encompasses the whole framework of the merger operation with respect to EU law.

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[1] Case M.7333 – ALITALIA/ ETIHAD, *Commission decision pursuant to Article 6(1) (b) in conjunction with Article 6(2) of Council Regulation No 139/2004, accessible at: http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_7333*

# RECAPITALIZATION OF A STATE-OWNED AIRPORT DOESN'T COMPLY WITH THE "PRIVATE INVESTOR" CRITERIA (Italian Constitutional Court, Sent. 07.11.2014, n. 249)

Diego Favero

On 7th November 2014, the Constitutional Court of Italy issued a judgment on the issue of constitutionality of The Regional Laws of Abruzzo no. 55/2013 and 14/2014 raised by the Prime Minister.

The dispute concerns financing established by The Abruzzo Region in favour of the S.A.G.A. S.p.A., a State-owned company managing the Airport of Abruzzo, an important airport located in the centre of Italy.

The financing consisted of the company's recapitalization and the funding of the pre-emption right, with the amount exceeding the minimum threshold set forth in the European Regulation of the Commission (EC) n. 1998/06, above which the Region should have previously notified the project to the European Commission.

The Court, only in order to assess the compliance with art. 108, n. 3, TFEU (i.e. if the proposed aid has been notified to the Commission), affirmed that in that case the operation could be deemed as state aid.

It should be pointed out that the Italian Constitutional Court resorted to the case law of the European Court of Justice, namely the judgment of 16th May 2002, C-482/89. In fact, the corporate operations financed with the contested provisions were deemed non-compliant with the criteria of the private investor operating in a market economy, as outlined by the European institutions. According to this principle, with regard to public undertakings, the conduct of the State shall conform to that of a private entrepreneur, which in principle aims toward profit making.

The Constitutional Court — since the Region did not communicated the bill to the European Commission— declared the above-mentioned aid constitutionally unlawful by virtue of its incompatibility with article 117, first paragraph, of the Italian Constitution and with the art. 108, par. 3, TFEU. On a previous occasion, the Court had already declared a similar aid established by Abruzzo region constitutionally unlawful.

# FORTHCOMING EVENTS

## University of Bologna

### INTERNATIONAL RESEARCH SEMINAR IN TRANSPORT & MOBILITY LAW

The University of Bologna organizes an International Research Seminar for PhD Students and post PhD Researchers in Transport & Mobility Law to be held from 29th June to 3rd July 2015 in Ravenna.

It will offer PhD students post PhD Researchers an opportunity to present their on-going research to each other and to receive valuable feedback on their on-going work from their colleagues from the fields of Maritime, Transport and Mobility Law. Lawyers and advanced law students interested are allowed to hear reports, and if necessary intervene with questions.

During the seminar, participants will have excellent networking opportunities to improve or extend their international academic contacts in the fields of Maritime, Transport and Mobility Law.

Target Group: PhD Students and post PhD Researchers in the fields of Maritime, Transport and Mobility Law (both Private and Public Law and including Procedural Law, Jurisdiction and Conflict Law) from all over the World. The international research seminar is also open for attendance by legal practitioners and advanced law students of at least master level who have already successfully completed their course(s) in Maritime and/or Transport Law and who are interested in specializing further in these matters.
Date: 29th June – 3rd July 2015
Venue of our meetings: Alma Mater Studiorum University of Bologna - Via Oberdan 1 – Ravenna.
Fees: no fees to participate.
Lectio magistralis: during the morning of each of the first four days (Monday to Thursday) will be held a lectio magistralis of 2 hours of a Full Professors.
Registration: within May 15th registration is to be made sending an email to the following address massimiliano.musi3@unibo.it.