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17. Conclusion to the legal evolution and regulatory challenges of unmanned aircraft systems in Europe

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This edited collection aimed to showcase the intricate landscape of international and domestic unmanned regulations governing unmanned aircraft systems (UAS) within Europe. By focussing on eleven jurisdictions, it has demonstrated that despite common European Union (EU) rules, notably Regulation (EU) 2018/1139 which provides the EU with the competences to adopt specific Commission Regulations for civil unmanned aircraft regardless of weight or size, there is still no harmonised system for liability issues. As such, the overall consensus that can be gleaned from this collaborative piece is that the UAS framework across Europe is still in its infancy stage, and significant development is both required and expected.

Except for the UK, all the States are EU Member States and are immediately subject to EU Regulations, which primarily revolve around the operational aspects of UAS. As regulations, the EU rules apply automatically and uniformly to all EU Member States, without needing to be transposed into national law. While certain States, notably Slovenia and Cyprus, merely adhere to the applicable EU legislative framework, other States like Romania, Hungary, Germany, France, and Finland further enrich UAS regulation by addressing areas that are not directly covered by the existing regulations. The UK, instead, is actively shaping its national governance. Indeed, while it retains EU Regulations within its broader UAS management, it operates independently of EU Regulations, placing them on equal footing with national legislation.

With UAS being an evolving technology, ever more advanced and with rapidly increasing use cases, the majority of the reviewed States' legislation on UAS operations is fragmentary and still requires completion. Based on the EU Regulations, the Slovenian legislature adopted two decrees containing some further rules on the issues that were left to the Member States to regulate

themselves. In Poland, there is no separate national legislation that solely addresses unmanned aircraft. While Germany has enacted general regulations for UAS, there are no specific rules concerning autonomous UAS so far.

The observable variation among Member States in the development of a regulatory framework for UAS, eventually going beyond European legislation, is primarily explained through reference to the innovative nature of the underlying technology. Indeed, while some States have only commenced regulating UAS operations in recent years (e.g. Slovenia, which introduced its first decree in 2016), others, such as Italy, took an early step by introducing dedicated UAS legislation in 2013.

Despite the overarching trend of EU Regulations creating the foundational format for UAS operations, there are distinctions among the States under review. For instance, the vast majority of the licensing rules are based on EU Regulations, which stipulate specific regard to the ‘open’ and ‘specific’ categories. Yet, there are implementation variations across the States. Romania sets an online multiple-choice test for the ‘open’ category A1–A3 like most other States, but unlike the other States, it only sets an additional online multiple-choice test for A2 and no practical test. Additionally, in Romania and Italy, for operations under the ‘specific’ category, the operator may require the pilot to take additional training modules. However, in Romania, there is no specific legislation detailing these exam conditions, and assessments are made on a case-by-case basis. In the UK, ‘specific’ category operating licences require the General VLOS Certificate (GVC), with pilots also required to keep a flying logbook of hours. For the ‘certified’ category in the UK, remote pilots are expected to hold a manned aircraft’s pilot licence associated with the type of operation being conducted. Similarly, Cyprus’ CAD 2015 provides for the licensing of remote pilots under ‘open’ and ‘specific’ categories, following the testing system of the EU. However, Cyprus adds the additional requirement of a medical certificate, which is not stipulated under EU requirements. In further contrast, the licensing rules for remote pilots of UAS in Poland are based on the weight and capabilities of the drone. UAS under 250 grammes do not require a licence, but UAS operators above this weight must register with the CAA, complete online training, and pass a test. Each flight also requires a prior Check-In using the DroneRadar App. Belgium too differentiates from the other States as operators programme the devices, so no pilots are involved in autonomous operations.

The EU also recommends the age limit on licences, but many States differ from this. In France, the minimum age is 14, unless the UAS is a toy, under 250 grammes, or the minor is supervised by an adult over 16, whereby no age limit applies. In Finland, the age limit is 12 for the ‘open’ category and 15 for ‘specific’. Poland has the minimum age set at 16 years, but a recent amendment allows individuals aged 14 to operate small drones after obtaining the

appropriate permit, subject to an exam taken with the consent and supervision of a legal guardian.

Similarly, under EU Regulation, all UAS operators must be registered regardless of the purpose of the operation, with the registration and authorisation process being dependent on the category of operation the operator will be using. The modalities and maintenance of registration are left to Member States to determine, meaning each country's system is different. For instance, Finland has the option to register online via the SkyNavX system and offline by filling out a form to Traficom; France has the AlphaTango online portal, and Italy has the 'D-Flight' web portal. Regardless of the registration mechanism, each operator will receive a unique registration number or QR code which will be recognised in all Member States. The exception to this, of course, is the UK, which has left the EU.

Most States have implemented EU Regulations requiring a risk assessment through JARUS's SORA procedure, alongside EU-guided practical and theoretical examinations for UAS operators to be authorised in the 'specific' category. However, Finland has announced that some aspects of the Finnish risk assessment for 'specific' category operator authorisation will deviate from JARUS's SORA procedure. In further deviation, the UK is currently working within the JARUS to develop a UK-specific SORA.

The EU rules on authorisation for operators in the 'certified' category are still being developed and have the least harmonisation of the operational aspects. For instance, Finland and Romania have not taken any steps concerning the authorisation of operators in the 'certified' category, whereas Slovenia, despite having no UAS that falls under the 'certified' category, has rules within the Slovenia Aviation Act to govern such scenarios. Poland too has domestic regulations for authorising operators in the 'certified' category, but these differ from Slovenia and even more so from the UK, which requires the UA to be registered. Therefore, with the lack of EU guidance, this is a clear area in need of development.

In continuation, the States vary in integrating EU Regulations on BVLOS and autonomous operations into national laws. Most States follow the EU guidance in this area, with Romania, Slovenia, and Belgium aligning with the EU Regulations without additional requirements. Similarly, Hungary, Germany, and Cyprus solely rely on EU rules, lacking any specific national rules for autonomous flights or flights BVLOS. Conversely, Poland and Italy introduce extra safety measures through national legislation. France and Finland maintain distinct features, but these closely mirror EU laws. The UK, while presently aligned, is contemplating deviations to accommodate BVLOS operations and autonomy, responding to commercial UAS operator needs. The UK's divergence might facilitate BVLOS operations, supporting remote-control

centres, and autonomy in non-segregated airspace, aligning with evolving industry demands.

It should be highlighted that while the EU has Regulations on operational aspects of UAS, the *lex specialis* unmanned aircraft rules in the EU do not regulate liability. Despite having the Montreal and Rome Conventions, which govern damages and liability issues and could be applied to UAS operations, these are not universally applied and wholly fit for unmanned operations. As highlighted in Chapter 3, the Rome Convention has only been ratified by 51 States, which does not include all EU Member States. This lack of harmonisation creates uncertainty, particularly in cases of in-flight collisions between UAS and manned aircraft. Equally, although the Montreal Convention has been widely ratified, as discussed in Chapter 3, many questions remain to be settled. For instance, the administrative requirements of the Montreal Convention, such as the issuance of a 'document of carriage', may be burdensome for UAS operators and require amendment.

Without an international or European level of harmonisation, the national jurisdictions must fill many gaps. This has created a patchwork system, revealing a diverse landscape of legal approaches unlike those of previous subject areas whereby EU Regulations play a guiding role. Generally, none of the States has specific legislation for UAS liability cases. Equally, there have been few cases where harm has been caused by UAS, resulting in a lack of case law. As a result, each State has relied on differing sources of national civil liability legislation, EU law, public law and international law to accommodate UAS operations that could result in liability claims. There are some trends among the States which have emerged, including strict liability for UAS operators and a consistent focus on product liability. However, each State's liability rules tend to differ significantly.

Looking forward, the future of UAS development across these States is closely tied to EU initiatives. Given the significant political and legal influence of EU law on all these nations, anticipations are centred around forthcoming developments at the EU level. The EU U-space programme is poised to exert a substantial impact on UAS advancements in multiple States. Some nations, including France, Finland, and Cyprus, are gearing up to modernise their domestic legislation, aligning them with evolving EU regulations. Poland, in particular, is actively adopting proposed amendments to the Aviation Law Act to ensure conformity with EU standards, reflecting a collective commitment to stay abreast of international and regional UAS regulatory frameworks.

Many States have highlighted the need for improving UAS legislation outside the EU remit. Most notably raised is the need for further clarity on the liability issues arising from UAS operations and accidents. This could even culminate in the adoption of special rules and conditions specifically applicable

to damage to third parties caused by the use of drones, or the potential harmonisation at a European level.

Moreover, the emerging regulatory framework on AI, certainly applicable to UAS, will also influence this domain. In particular, the reformed PLD is intended to theoretically ease the position of the claimant. Considering the increasing automation in the field, this should progressively lead to a shift of primary litigation, ever more targeting manufacturers over operators. However, the radical perplexities that affected the previous regime, preventing its vast and systematic application, appear to remain untouched. Thence, despite the reform, it is highly doubtful that a radical change will occur, and most likely national norms will maintain a leading role in solving liability-related claims.

At the same time, the proposed AILD, only applicable to h-AIS, among which certain UAS could be enumerated, when approved, could indeed interfere with existing national liability norms, for it provides rules of evidence intended to integrate existing Member States' liability frameworks. Whether such a piece of legislation will be approved, and how it will be implemented, is unsure. However, it is most likely that it will further increase fragmentation and discrepancies in the application of existing norms, certainly not contributing to a level playing field and unified market.

A sharp contrast from the other ten States in this edited collection is the UK, which is actively shaping its national governance instead of looking towards the EU rules for development. The most prominent of these developments is the integration of UTM with existing ATMs and the operation of BVLOS UAS in non-segregated airspace.

In conclusion, across all the States covered in this edited collection, UAS persist as a novel and swiftly advancing technology, outpacing the legislative frameworks designed to govern them. Although the EU holds a central position in shaping this evolving legal landscape, certain aspects still lack robust development. This gives rise to a discernible expectation of significant forthcoming progress in both the European and international arenas. These impending advancements are poised to wield a substantial and transformative impact on the regulatory structures of individual States.