Law Commission
Reforming the law

Aviation autonomy:

responses to the second consultation

Introduction

THE LAW COMMISSION'S PROJECT ON AVIATION AUTONOMY

1.1 The Civil Aviation Authority ("CAA") and the Department for Transport have asked the Law Commission to review the UK's regulatory framework to prepare for autonomy in aviation. The project forms part of, and has been partly funded by, the UK Research and Innovation Future Flight Challenge.

1.2 The focus of the project is on reforms that will enable remotely piloted and autonomous flight to take place safely, lawfully and with appropriate legal mechanisms for attributing criminal and civil liability when things go wrong.

1.3 We have been asked to look at three use cases: drones (defined as remotely piloted, non-passenger carrying vehicles), advanced air mobility (in particular vertical take-off and landing or "VTOL" aircraft providing short journeys for up to ten people), and air traffic management and air navigation services ("ATM/ANS").

1.4 In February 2024 we published our first consultation paper, which looked at drones and advanced air mobility (our first two use cases). In the paper, we asked several questions about potential legal uncertainties which might prevent the safe deployment of highly automated and autonomous uncrewed aircraft systems ("UAS").

1.5 We published a second consultation paper, which considered ATM/ANS in April 2025. Our aim for this paper was to propose law reform measures to facilitate the safe provision of ATM/ANS to uncrewed aircraft. The shorthand we use for provision of ATM/ANS to UAS is uncrewed aircraft systems traffic management ("UTM").

UTM

1.6 In our second consultation paper, we made proposals and asked several questions about the regulation of UTM services and service providers. We also looked at enforcement of UTM regulation and issues related to criminal and civil liability.

1.7 The consultation ran from 16 April 2025 to 18 July 2025. We received 23 responses from a range of consultees including companies developing UTM services, UAS operators, existing ATM/ANS providers, legal experts and aviation regulators. We are grateful to all those who responded, and for the thoughtful comments we received.

1.8 Consultees views on both the first and second consultation, along with further analysis of these issues, will be considered in our final report with recommendations covering all three use cases. The final report will be published early 2026.

THIS DOCUMENT

1.9 This document compiles all the individual responses to our **second consultation paper**. Consultees were able to submit responses for each question through an online Citizen Space platform, or by completing a word version of the online survey. Both allowed consultees to click Yes/No/Other to certain questions. We also accepted

responses from consultees outside of these formats. We have kept those responses which were not submitted through the online Citizen Space platform in their original format wherever possible.

Individual responses to the consultation

The individual responses are set out in alphabetic order.

Anonymous 1	110
Anonymous 2	118

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

Please note that this consultation response has been reproduced from information entered on the Citizen Space online portal.

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Unanswered questions have been deleted from this document.

About you

What is the name of your organisation?

British Gliding Association

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Other

Please expand on your answer below

Thanks for consulting.

Following our response to the earlier consultation, most of what is described in this consultation is beyond BGA expertise to comment, other than our keen interest in ensuring legislative change doesn't result in additional obligations/activities (whether in-flight or pre-flight) on manned aviation, particularly in uncontrolled airspace. We don't apologise for repeating this important point that was clearly made in the BGA responses to the previous consultation.

The issues raised in this consultation around liability, relationships, between controlling authorities, and certification, etc are issues that BGA does not have an expert view on and does not need to get involved in provided it remains the case that there is always only one over-riding authority (per specific volume of airspace) -

except in uncontrolled airspace where there is none.

Apologies for the brevity of our response

Your partner in progress

Law Commission

Response to Aviation Autonomy Consultation on Uncrewed Aircraft Systems Traffic Management

Dear [redacted],

Following our recent meeting, please find enclosed a response to the Aviation Autonomy Consultation on Uncrewed Aircraft Systems Traffic Management that covers the areas we discussed. Standards play a key role in enabling government to deliver smart, safe and sustainable transport systems, including the transition to more autonomous forms of aviation. Airspace Modernisation and integration of new airspace users is an integral component to this this.

BSI is appointed by government as the UK's National Standards Body (NSB) and is responsible for developing national technical and management standards covering all sectors of the economy as well as representing UK interests in international standards through our membership of the international and European standards organizations.

Standards are a smart, low-cost, and pro-business way to resolve policy problems in a way that is compatible with inclusive growth, productivity, and market access. Standards protect the wellbeing and safety of UK citizens, help secure our supply chains, promote innovation, and advance our international competitiveness.

We bring together businesses, civil society, and policymakers, to define what 'good' looks like and identify practical, consensus-led solutions to the challenges facing the country.

Standards and compliance with them have a crucial role to play in supporting government's interests in harnessing innovation for the public good while also fostering productivity and efficiency in public services, within a cash constrained environment and as part of the regulatory landscape through product or systems certification, earned recognition or co-regulation.

I look forward to continuing to engage with the Law Commission on this important emerging regulation.

Yours sincerely,

[redacted]

Head of Sector, Aviation

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By Royal Charter

Response Consultation

	Theme	Description and recommendation
1.	Policy framework development	The consultation seeks to identify legislative gaps and uncertainties in the existing regulatory framework for UTM services. However, we note that the underlying policy framework for UTM remains nascent and emerging, making it challenging to accurately determine specific legislative requirements without a more comprehensive policy foundation. While the Civil Aviation Authority's Airspace Modernisation Strategy (AMS) provides important strategic direction and establishes key principles for integrated airspace, it requires further elaboration and deeper industry engagement to translate high-level policy objectives into actionable regulatory constructs. We recommend that the development of UTM legislation should proceed in parallel with continued policy refinement, ensuring that industry stakeholders, including service providers, technology developers, and end-users, are actively engaged in co-creating a robust policy framework that can effectively inform and guide legislative development. This collaborative approach would help ensure that future legislation is both technically feasible and operationally practical, avoiding the risk of regulatory frameworks that may inadvertently constrain innovation or create barriers to the safe deployment of UTM services.
2.	Role of standards in emerging regulatory development	During this period of emerging policy and regulatory development for UTM, standards play a crucial bridging role in aligning industry practice, building consensus, and informing the evolution of both policy and regulatory frameworks. Standards provide a practical mechanism for establishing technical and operational baselines that can guide regulatory development, particularly when formal policy frameworks are still emerging. A compelling precedent for this approach can be found in the autonomous vehicles sector, where industry standards development proceeded in parallel with policy formulation and directly informed the creation of the Automated Vehicles Act 2024. As the National Standards Body, standards developed by BSI played an integral role in informing the act. We recommend that a similar standards-led approach be adopted for UTM development, with formal recognition of the role that consensus-based standards can play in de-risking regulatory development and accelerating safe market deployment. This would involve proactive engagement between standards development organisations, industry stakeholders, and regulators to ensure that technical standards development proceeds in alignment

		with emerging policy directions and can provide evidence-based input to regulatory frameworks.
3.	Standards as flexible compliance mechanisms	The consultation highlights concerns regarding potential over-inclusion and under-inclusion in applying existing regulatory frameworks to UTM services. Standards offer an effective solution to this challenge by serving as detailed compliance mechanisms that support broader regulatory principles. This model enables legislation and regulation to establish the fundamental requirements - the "what" needs to be achieved in terms of safety, performance, and operational standards - while technical standards provide the detailed specifications and methodologies - the "how" these requirements can be met in practice. This separation allows regulatory frameworks to remain principles-based and technology-neutral, while standards provide the granular technical detail and acceptable means of compliance that industry requires for implementation. Such an approach offers significant advantages as the UTM sector matures, providing the flexibility to adapt technical requirements and compliance methods through standards development rather than requiring legislative or regulatory amendments. This model has proven successful in other sectors and would enable UTM regulation to evolve responsively with technological advancement and operational experience, avoiding the risk of regulatory frameworks becoming outdated or overly prescriptive before the sector has fully matured.
4.	Organizational maturity and proportionate assessment frameworks	The emerging UTM sector is characterized by a diverse ecosystem of service providers, many of which are startups and small-to-medium enterprises (SMEs) with innovative technologies but varying levels of organizational maturity. The current ATM/ANS certification framework, designed primarily for established aviation organizations, may present barriers to entry for these emerging providers while potentially not adequately addressing the unique risks associated with new UTM technologies and service models. There is a critical need for a capability and maturity assessment framework that enables proportionate regulatory oversight based on the specific risks associated with the services and technologies being delivered. Such a framework should recognize that a startup providing basic geo-awareness services may require different organizational capabilities compared to a provider offering complex conflict management services in controlled airspace. We recommend developing risk-based assessment criteria that scale organizational requirements appropriately, building upon industry recognized standards such as ISO frameworks for organizational maturity and capability assessment. This could

		include graduated certification pathways, mentorship programs with established providers, or collaborative oversight models that support organizational development while ensuring service safety. This approach would foster innovation and market diversity while maintaining the regulatory rigor necessary for safe UTM operations.
5.	Parallel development of regulation and AMC	We recommend establishing more structured processes for developing Acceptable Means of Compliance (AMC) that leverage the expertise of Standards Development Organisations (SDOs) in the UTM context. Currently, AMC development often occurs after regulatory frameworks are established, which can create uncertainty for industry about practical compliance pathways. For UTM services, where technical approaches and operational models are still evolving, early and structured AMC development would provide critical clarity on how emerging technologies and service models can demonstrate compliance with regulatory requirements. This approach would be particularly valuable for UTM, where innovative service models may not fit neatly within traditional compliance frameworks. By establishing clear processes for AMC development that involve both regulators and industry through standards bodies, the regulatory framework can provide greater certainty for UTM service providers while maintaining the flexibility needed to accommodate technological advancement and operational innovation.
6.	Consultation question 3	Consultation question 3, which explores whether designated ATS providers should be permitted to enter into agreements with UTMSPs to provide air traffic services to UAS, is critical to the development of future UTM legislation and represents a significant policy decision point. The Airspace Modernisation Strategy currently sets out two primary pathways for UTM integration: UTM providers can either operate as technology platforms used by existing ANSPs (analogous to radar technology providers in conventional ATM), or they can become regulated UTM service providers (UTMSPs) requiring full ANSP certification and oversight. Question 3 appears to be identifying a potential third pathway that would create a hybrid model of service provision through contractual agreements between established ATS providers and emerging UTMSPs. However, careful consideration would be required regarding how this arrangement would operate in practice, particularly in scenarios where future legislation might permit multiple UTMSPs to operate within a given airspace volume. Critical issues would include the delineation of operational responsibilities, coordination protocols between multiple service providers, and

		most importantly, how liability would be allocated and managed when incidents occur. The complexity of liability management becomes particularly acute when multiple parties are involved in service provision, potentially creating ambiguity about responsibility and accountability that could undermine both safety and legal certainty.
7.	Common Information Service (CIS)	The consultation acknowledges that a CIS would serve as "a single reliable source of information for all service providers and relevant ATS units" and would be essential for enabling UAS operations at scale in integrated airspace. Given the critical role that a common information service (CIS) would play in coordinating multiple UTMSPs and ensuring safe airspace management, there needs to be careful consideration as to whether such a service should be designated as Critical National Infrastructure (CNI) and whether it should be treated as a regulated utility service similar to current arrangements with NATS NERL. Standards development in this area is currently nascent, and we recommend prioritizing early standards development given the complexity of integration between legacy ATM systems and emerging UTM infrastructure. This would ensure that CIS implementation is supported by robust technical standards that address interoperability, data integrity, cybersecurity, and operational resilience requirements from the outset.
8.	UTM ecosystem security and data integrity	The existing ATM ecosystem is built upon secure, robust private network infrastructure that provides high levels of reliability and security for safety-critical operations. In contrast, the emerging UTM ecosystem is increasingly based upon public network technologies including the internet and 4G/5G networks, which present fundamentally different security and integrity challenges. Furthermore, emerging UTM models include concepts such as "crowdsourcing" surveillance data through data marketplaces, where multiple sources contribute operational information to build situational awareness. While these approaches offer potential benefits in terms of cost-effectiveness and scalability, they introduce significant concerns regarding the security, integrity, and reliability of safety-critical data transmitted over public networks and sourced from distributed providers. The aviation sector's stringent safety requirements demand that any data used for separation and collision avoidance purposes maintains the highest levels of accuracy, timeliness, and authenticity. There is a critical role for standards to develop best practice guidelines and assurance frameworks for this emerging ecosystem, addressing issues such as data validation, cybersecurity protocols, network

		resilience requirements, and quality assurance for crowdsourced information. These standards should establish minimum security baselines and verification processes that ensure public network-based UTM systems can deliver the same level of safety assurance as traditional private network ATM infrastructure.
9.	Command and control (C2) link criticality	Building upon the network infrastructure considerations, the emerging UTM ecosystem is likely to be fundamentally dependent on the fusion of onboard aircraft data and ground-based Communication, Navigation, and Surveillance (CNS) data to make safety-critical decisions in real-time. This operational model means that the command and control (C2) link becomes a critical safety component, representing a potential single point of failure for UTM operations. The regulatory framework needs to explicitly recognize this criticality, and we note that the CAA is developing the concept of C2 Certified Service Providers (C2CSPs) to address this requirement. Standards will be a key enabler for C2CSPs to demonstrate means of compliance with future regulatory frameworks, establishing technical requirements for link performance, redundancy, security, and reliability that are commensurate with the safety-critical nature of the data being transmitted. However, standards development in this area is currently nascent and requires a clear understanding of the policy and regulatory requirements to ensure that technical standards align with safety objectives and operational needs. We recommend prioritizing the development of C2 link standards that address performance criteria, security protocols, and certification processes, while ensuring these standards are developed in close coordination with emerging regulatory frameworks to provide industry with clear and achievable compliance pathways for this critical infrastructure component.
10.	Aircraft performance specification for UTM	Known performance specifications of aircraft will be essential to enable UTM systems to provide appropriate advisories or instructions to uncrewed aircraft, as there is no operational value in providing instructions that the aircraft is technically unable to comply with. As the volume of UAS operations increases, we anticipate seeing a large range of non-Commercial Off-The-Shelf (COTS) aircraft with broadly varying performance characteristics, particularly when considering the differences between rotary wing and fixed wing aircraft configurations. These variations in climb rates, turn radii, maximum speeds, emergency descent capabilities, and environmental operating limits will directly impact the type and timing of UTM instructions that can be effectively executed. Currently, there are no established standards for specifying and communicating aircraft

		performance characteristics in a standardized format that UTM systems can reliably interpret and utilize for decision-making. The development of these performance specification standards will be critical to support the UTM ecosystem, enabling automated systems to make informed decisions about separation requirements, conflict resolution manoeuvers, and emergency procedures based on the actual capabilities of individual aircraft. We recommend prioritizing the development of standardized performance data formats and communication protocols that can accommodate the diverse range of UAS platforms while providing UTM systems with the granular performance information necessary for safe and effective traffic management.
11.	Transition from ATM “in the loop” to UTM “on the loop”	The transition from traditional Air Traffic Management (ATM) with humans "in the loop" to UTM systems operating "on the loop" presents significant human factors challenges that require careful consideration and standardized approaches. During the transitional period, human controllers and automated UTM systems will need to coexist and interact within the same airspace, creating complex operational scenarios where human decision-making must interface with automated processes. This hybrid environment introduces new cognitive workload considerations, situational awareness challenges, and potential mode confusion as controllers adapt to supervising automated systems while maintaining direct control over conventional traffic. The consultation acknowledges that automation will enable "humans to evolve to system supervisors" but notes that this transition will impact "the training and expertise required by operators to diagnose complex problems in highly automated systems." Standards will play a critical role in supporting this transition by establishing human-machine interface requirements, defining competency frameworks for controllers operating in mixed ATM/UTM environments, and specifying training protocols that address the unique skills needed for supervising automated systems. We recommend developing comprehensive human factors standards that address workload management, situation awareness maintenance and emergency intervention procedures to ensure that the transition to UTM maintains or enhances safety while supporting effective human oversight of increasingly automated airspace management systems.

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

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About you

What is the name of your organisation?

Civil Aviation Authority

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Other

Please expand on your answer below

1. it may not capture all UTM services;

The current legislation does not capture all proposed UTM services, albeit it has the capacity to be developed to do so.

2. it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM;

Disagree – with current ATM, there are varying levels of regulation applied depending on the nature of services and the level of safety criticality, or otherwise, that they offer. This variability is essential for regulation to be proportionate and appropriate, and in our view a similar approach should be taken for additional of UTM services.

3. exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

We recognise that one of the conceptual ideas for UTM is that of multiple providers in a volume of airspace being commercially competitive. Practically speaking though the range of service providers that could be accommodated will have to be driven by the safety requirements of the operational solution and that is where it there may be difficulties with safely accommodating that commercially competitive concept in the way some have proposed. However, it is easier to envisage an efficient and safe operational solution with more than one provider where two or more parties agree to offer services that complement one another with clear responsibilities and accountabilities in the provision of services within an airspace volume, underpinned by contractual arrangements and supported by Letter of Agreements and Memoranda of Understanding

Consultation Question 2

We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers.

Please share your views below

We do not currently envisage this approach. Revisions to the ATM Regulation to accommodate UTM services should take into account the nature of services being regulated and as previously described the level of Regulation applied should be proportionate to the service being provided. Therefore, there should not be a need for a limited certificate due to not being able to comply with broader requirements; instead, the regulation should enable the CAA to issue a certificate that relates specifically to the services being provided.

Consultation Question 3

We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Please share your views below

Yes provided both organisations were acceptably fit for purpose, and held the appropriate approvals, this is a logically sound option. Provided there remains one accountable provider for the safe operation of the airspace.

Consultation Question 4

If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CISPs. We invite consultees' views on these rights and duties.

Please share your views below

Yes, we consider that rights and duties should be the same for all providers listed proportionate to their role. This would ensure that all available data has a guaranteed level of accuracy, integrity and quality. This is something to be considered within the SWIM Project and the DAT Project at the CAA.

Consultation Question 5

We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review?

Please share your views below

System Wide Information Management (SWIM) and information services environment as well as the role of the existing Data Service Providers should be considered in the context of UTM. It would also be meaningful to consider how the Duty of Care requirement is placed upon a UTMSP in the same way that they are already for ANSPs and Air Traffic Control Officers.

Enforcement and liability

Consultation Question 6

We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM.

Please share your views below

Yes, we consider that the regime should be replicated for UTM. The provision of services by UTMSP should be subject to the same standard as ANS/ATM providers. We note that as the UK's independent safety regulation we adopt the approach of prioritising Just Culture over enforcement when appropriate to safeguard a strong aviation safety culture and would adopt this approach with UTM, as with ATM.

Consultation Question 7

We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA.

Do consultees agree?

Yes

Please share your views below

We agree that the provision of services by UTMSP should be subject to the same standard as ANS/ATM providers. That is that enforcement tools are needed both for the provision of the service and in relation to the equipment used to provide the service. However, it is conceivable that some services that might be provided will be viewed as not safety related in any way, in which case there may be an argument for equipment associated with those to not require approval.

Consultation Question 8

We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services.

Do consultees agree?

Yes

Please expand on your answer below

We consider that the prohibited acts are adequate for UTM services.

Consultation Question 9

We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Whilst suspending or withdrawing the certification of a UTMSP may be appropriate for the most severe breaches of the regulations, whilst other regulatory tools are available to address other instances of non-compliance for ATM they should equally be available for UTM. These tools are rarely if ever used, as the CAA has a wide

range of regulatory enforcement tools available which address safety as UTM service providers and service users must be integrated into the existing aviation system, the same tools should be available.

Consultation Question 10

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

(1) have in place measures to cover any liability incurred during the course of the provision of their services; and

(2) where using the services of another ATM/ANS service provider (including UTM service providers), should have in place arrangements to allocate liability.

Do consultees agree?

Yes

Please expand on your answer below

UTM service providers and service users must be integrated into the existing aviation system. The CAA regulates safety - as opposed to civil liability for a failure to comply with those safety regulations (albeit in some cases our regulatory functions include checking an aviation service provider is insured). Nonetheless service users should have the same protections under the law whether they have used or benefited from ATM or UTM services. Our views is that the answer to question 10 and 11 is Yes.

Consultation Question 11

We invite consultees' views on whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision.

Please share your views below

Please refer to our response to Consultation Question 10.

Consultation Question 12

We invite consultees' views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.

Please share your views below

How Duty of Care requirement is placed upon a UTMSP, in the same way that they are already for ANSPs and ATCOs, should be considered.

In addition to the legal aspects there are characteristics of Safety Science and theory that need to be taken into account since the aviation system is a complex Socio Technical System.

With humans involved in the system, one of the major topics we consider is Just Culture and its importance in fostering essential safety behaviours. Due consideration will need to be given to that aspect with increasing automation, because humans will still be involved but in different roles and with different responsibilities.

Impact

Consultation Question 13

We invite consultees' views regarding the likely costs and benefits of our provisional proposals in relation to UTM.

Please share your views below

We view that UTM, by design, should support growing UAS demand for service provision that addresses both simple and complex BVLOS operations, while ensuring seamless interoperability with ATM services. By definition UTM is part of the overall air traffic management system; and therefore it needs to be held to the same safety standards and as such, proportionately regulated particularly as we anticipate it being an essential element in integration of a diverse range of airspace users, not just UAS. We acknowledge that compliance to these safety standards is not without cost.

Conceptually there are cost benefits to the use of UTM provision that complements current ATM/ANS provision to enable the integration of airspace users and deployment of beneficial services to society. However, focus must be maintained on the safe provision of service and its oversight. Therefore, a robust regulatory framework must be maintained. There is no agreed cost/charging mechanism for UTM provision at the moment and a full cost benefit analysis cannot be conducted without one.

The main socioeconomic benefits of UTM lie in enabling expanded uses of innovative vehicles, such as drones and VTOLs, in the context of a more modern and flexible airspace. We agree that there is a lot of uncertainty in the precise timing and quantification of the benefits that might be unlocked by such expansion, but those benefits are likely to be realised in the long-term. There may also be environmental benefits if drones and VTOLs' services replace more polluting traffic or allow more effective services, such as those required for certain medical flights, search and rescue or law enforcement. Although we have not done any further

economic analysis of costs and benefits of the proposals, we consider that they will be instrumental in unlocking significant socioeconomic benefits which are likely to outweigh transitional costs.

Noting that the real-world solutions are still in development or in the early stages of testing in the UK. For UAS to thrive in the UK environment, they will need to be able to operate in non-segregated airspace and UTM will likely help to some extent particularly in controlled airspace. However, it may be that detect and avoid capability is more significant in solving the integration questions, particularly in uncontrolled airspace which is a significant volume of the operational environment at low levels in the UK.

Consultation Question 14

We invite consultees' views as to whether any of the issues raised in this Consultation Paper could result in advantages or disadvantages to certain groups or those with particular characteristics (with particular attention to age, disability, transgender identity, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or gender, and sexual orientation).

Please share your views below

We have not identified any issues raised in the consultation that could result in advantages or disadvantages to certain groups with characteristics protected under equality law.

However, we agree that, as in wider transport policy, the needs of people with disabilities and reduced mobility merit particular attention when designing aircraft systems and the support systems provided alongside it.

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About you

What is your name?

David Sheppard

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

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(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Other

Please expand on your answer below

Your just going to do what you want there's no real point to this process

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About you

What is the name of your organisation?

D-RisQ Ltd

Regulation of UTM services and providers

Consultation Question 1

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(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Other

Please expand on your answer below

I am not convinced of the need for UTM. There has been a marketing exercise that suggests that by pre-booking airspace, drone use will be safely managed; this is not correct. Once the ground power goes off (it's a 'when' not an 'if') for example, there is no 'control' over the aircraft in the space. Furthermore, should any other non-autonomous aircraft enter the airspace, for whatever reason, there is a disruption to 'safe' UTM. The safety of all current aircraft rests with the pilot (specifically the Captain); the safety of any autonomous aircraft therefore has to be an on-board real-time capability and not vested in any ground based system. If this was not the case, it is somewhat difficult to decide what may have been at fault if an accident occurs and therefore who might be liable.

Consultation Question 10

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

(1) have in place measures to cover any liability incurred during the course of the provision of their services; and

(2) where using the services of another ATM/ANS service provider (including UTM service providers), should have in place arrangements to allocate liability.

Do consultees agree?

Yes

Please expand on your answer below

No further comment to the above

Consultation Question 12

We invite consultees' views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.

Please share your views below

As per the response to Q1, the focus seems to be solely on UTM and my position is that it is inadequate for safe operation of aircraft. There should be a focus on aircraft safety, not the planning of a flight

Drone Alliance Europe

Consultation question 1: <u>Do consultees agree that the existing legislation does not adequately accommodate UTM because:</u>

1. *It may not capture all UTM services;*
2. *It may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and*
3. *Exclusivity agreements, such as those in place for ATS, may complicate the provision of similar UTM services? Please expand on your answer below*

- **Yes**

Drone Alliance Europe (DAE) strongly concurs that the current legislative framework, designed for traditional crewed aviation, is fundamentally insufficient to meet the unique and evolving requirements of Uncrewed Aircraft System (UAS) Traffic Management (UTM). To unlock the immense potential of the UK's drone economy, DAE advocates for a new, forward-leaning regulatory approach built on the core principles of innovation, competition, and proportionate risk mitigation, enhancing safety.

The existing legal architecture is a product of a different era, designed for a centralised, human-centric paradigm managing a low volume of aircraft. It is obsolete for the modern UTM environment, which is a distributed, highly automated and digitally-oriented system built to handle a large volume of diverse drone operations, often in dynamic and less structured low-altitude environments of under 500 feet above ground level (AGL). As such, the current regulatory framework actively impedes growth and is ill suited to address the potential of the UAS industry. They are simultaneously overinclusive, imposing burdensome requirements from crewed aviation that are irrelevant to UTM, and under-inclusive, failing to cover the critical digital services that are the backbone of UTM.

Therefore, the UK's primary goal should be to create a tailored legislative framework that is clear, scalable and proportionate to the actual risks of UAS operations, providing the certainty required to foster investment and innovation for the emerging UAS environment. While this new framework is developed, it is imperative that the CAA is granted the explicit powers to issue limited, flexible certificates as an enabler to integrate BVLOS UAS operations. Without this crucial interim step, new entrant integration will be difficult to impossible, and the UK will fall short compared to other markets.

Consultation question 2: <u>We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers. Please share your views below</u>

It is imperative that progress not be stalled this time. Stakeholders should actively be allowed to use tailored existing UK CAA frameworks and initiatives, such as Operational Authorisations, specific permissions for Atypical Air Environments (AAEs), and the Airspace Modernisation Support Fund initiatives, to promote BVLOS operations using UTM. These existing avenues allow for crucial data collection and the rigorous testing and assurance of new technological

capabilities like Strategic Conflict Detection (SCD) and Network Remote Identification (NRID) to establish a robust operational implementation strategy. By diligently leveraging these current mechanisms, the industry and regulators can gain invaluable experience, demonstrate the safety and significant societal and economic benefits of BVLOS operations, and refine operational concepts, all of which will critically inform and accelerate the crafting and implementation of updated, performance-based legislation and the CAA's roadmap for routine BVLOS operations by 2027.

Consultation Question 3: We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS. Please share your views below.

- **Yes**

DAE supports legal mechanisms enabling designated Air Traffic Service (ATS) providers to formalise agreements with UTM service providers (UTMSPs) for the provision of select digital exchanges of air traffic services to UAS within controlled airspace.

Consultation Question 4: If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CIS providers. We invite consultees' views on these rights and duties. Please share your views below.

The architecture of the UK's UTM ecosystem will be the single most important factor in its success. We strongly advocate for a competitive marketplace of multiple UTMSPs and for enabling a UTM system that is efficient, secure, and conducive to innovation while maintaining the highest standards of safety and privacy protection. These objectives should be carefully considered when designing the UTM architecture. Therefore, it's important to evaluate the challenges that a centralized Common Information Service (CIS) may pose if implemented for information exchange between UTMSPs. At the same time, proven alternative UTM models warrant consideration. A distributed model with multiple, interoperating UTMSPs fosters innovation, enhances resiliency, ensures better availability, and promotes efficiency. By contrast, mandating a single CIS may create a bottleneck, a single point of failure, and significant data privacy risks by concentrating all sensitive flight data in one place. Our members' extensive operational experience in the United States has demonstrated that direct, peer-to-peer information sharing between UTMSPs, governed by robust technical standards, is highly efficient, safe and scalable. In case the UK still decides for the establishment of a CIS, DAE strongly urges that its main focus should be to facilitate the coordination and data exchange between crewed and uncrewed aviation, i.e. the seamless integration between ATS providers and UTMSPs. Long term, as the UTM ecosystem matures, careful consideration should be given to whether a CIS is required and, if so, what scope would best serve the UK's aviation needs.

Consultation Question 5: We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review.

Consideration should also be given to lessons learned from UTM (U-space) implementation in the EU demonstrating that UTM alone does not address all airspace integration challenges. Other issues remain, such as the management of unequipped crewed traffic entering UTM airspace and the need for dynamic airspace reconfiguration, which impacts ongoing drone operations. These challenges highlight the importance of maintaining flexibility in our approach to safety solutions. The regulatory framework must focus on safety outcomes and remain technology-agnostic, allowing for a diverse ecosystem of solutions to enhance UTM. This includes electronic conspicuity requirements for crewed traffic, on-board and ground-based Detect and Avoid (DAA) systems and other emerging technologies. While ADS-B is a proven solution for aviation safety, DAE believes that mandating traditional transponder technologies for all UAS operations may create unnecessary barriers for light and low-cost UA in Very Low-Level Airspace (VLL). For this reason, we urge CAA to consider multiple technical solutions, including ADS-L technology, ground-based rebroadcasting systems, and UTM integration frameworks. This holistic view recognises that different solutions may be appropriate and complementary in different contexts and that integration with traditional aviation may leverage supplementary technologies.

Consultation Question 6: We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM. Please share your views below.

- **No**

The enforcement and liability regime must be tailored to the realities of UTM, not simply copied from the framework for crewed aviation

It is crucial that the CAA's enforcement rules and policies are adjusted to align with the realities of UAS operations. A direct 1:1 adoption without a comprehensive assessment of what is appropriate for the drone ecosystem could be counterproductive. Treating a small or private UTMSP like an ANSPs would likely lead to increased costs and impede innovation and progress in the sector.

To ensure effective enforcement, we recommend developing a UTM-specific escalation framework that clearly outlines when a finding should lead to a suspension or revocation. This framework should be sufficiently detailed to avoid a situation where operators frequently need to pursue exemptions and waivers due to overly broad regulations.

In summary, DAE advocates for a right-sized, drone-focused enforcement approach that maintains sky safety while keeping the compliance burden realistic for both UTM users and future providers. This approach would involve careful consideration of the unique characteristics of drone operations and UTM systems, ensuring that enforcement mechanisms are both effective and proportionate.

Consultation Question 7: We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA. Do consultees agree? Please expand on your answer below (Yes No Other)

- **Other**

DAE believes that it should be an offence to offer UTM services with non-approved equipment. However, the following points should be addressed:

1. Proportionate Enforcement:
   It is important to distinguish between deliberate non-compliance and cases of negligence or accidental misuse that do not compromise the performance, quality, or security of the UTM service. While punitive action may be proportionate to intentional violations, unintentional or minor infractions should be considered for alternative responses rather than criminalisation to ensure that penalties remain proportionate to the severity of the behaviour.
2. Liability Protection and Due Diligence:
   - A due-diligence defense mechanism should be established for operators who maintain records demonstrating they verified their provider's approval status
   - Operators should be protected from liability for the actions of third-party UTM service providers when they have conducted appropriate due diligence
3. Equipment Approval Process:
   - A fast-track process should be implemented for routine software updates to prevent compliant systems from becoming non-compliant due to normal maintenance and improvements
   - The approval process should be agile enough to accommodate the rapid pace of technological advancement in UTM systems

Consultation Question 8: We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services. Do consultees agree? Please expand on your answer below. (Yes No Other)

- **Other**

DAE agrees that the specific offences listed under Section 3 of the Aviation Security Act 1982 are fundamentally adequate in principle.

It is crucial, however, to draw a clear distinction between malicious actors and operators acting in good faith. The following activities should not trigger criminal liability: CAA-approved security testing, routine system troubleshooting, non-malicious misconfigurations, other legitimate operational activities

This approach would maintain the focus on intentional or truly reckless interference while avoiding the unintended criminalisation of responsible operators. It also prevents unnecessary duplication of existing law, as the current statute already adequately targets malicious conduct

Consultation Question 9: We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services. Do consultees agree? Please expand on your answer below. (Yes No Other)

- **Yes**

DAE agrees with the provisional proposal to adopt offences and penalties similar to those found in the Penalties Order for UTM services.

However, we recommend implementing a proportionate penalty structure where:

- The highest sanctions (unlimited fines, potential imprisonment) are reserved only for conduct that genuinely threatens safety, such as operating an uncertified UTM in controlled airspace
- Routine administrative non-compliance should attract lower, civil-level fines

This graduated approach would ensure penalties align with the actual safety risk posed by different types of violations.

Consultation Question 10: We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

1. *Have in place measures to cover any liability incurred during the course of the provision of their services; and*
2. *Where using the services of another ATM/ANS service provider (including UTM service providers), have in place arrangements to allocate liability.*
3. *Do consultees agree? Please expand on your answer below. (Yes No Other)*

- **Yes**

1. DAE agrees with this
2. We recommend that the liability framework explicitly establish:
    - Each party should be liable only for its own acts and omissions
    - Operators cannot be held responsible (directly or vicariously) for UTM provider's failures, delays, or defects

- Corporate groups may allocate liability between flight operations and in-house UTM services without invalidating coverage or creating cross-liability

This clarity would prevent distortion of the insurance market and protect operators from unmanaged risk exposure.

Consultation Question 11: We invite consultees' views as to whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision. Please share your views below.

DAE's view is that an extension of the current law on ATM/ANS liability is more than sufficient, and potentially even excessive, to adequately address civil liability as it relates to UTM service provision.

If ATM/ANS negligence rules are extended to UTM, two critical principles must be clearly established:

1. Liability must follow control of risk:
    a. UTM providers and their insurers are responsible for harm caused by faulty or late UTM data
    b. Operators are responsible for losses stemming from their flight decisions
2. Contractual arrangements must explicitly define these liability boundaries, and UTM providers should not be permitted to shift their responsibilities to operators.

Consultation Question 12: We invite consultees' views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.

DAE believes the following aviation-specific liability issues should be considered:

1. Single Event, Single Claim:
    - UTM software faults should trigger either a service-failure or product-defect claim, not both
    - Prevent double penalties for the same event
2. Third-Party Property Claims:
    - Large claims from drone incidents could be unlimited, making insurance unpredictable
    - Consider implementing liability caps or an industry fund to keep coverage practical
3. Integrated Operations:
    - For companies operating both drones and UTM services, specify how liability is divided internally
    - Prevent claimants from recovering twice for the same loss

These considerations are crucial for developing a balanced liability framework that supports autonomous aviation growth while ensuring appropriate stakeholder protections.

Consultation question 13: We invite consultees' views regarding the likely costs and benefits of our provisional proposals in relation to UTM. Please share your views below.

Cost implications for operators and their impact on commercial viability should be carefully considered, as should international harmonisation of UTM standards while maintaining flexibility for local implementation.

For this reason, DAE advocates for:

1. A distributed UTM model, which can deliver equal safety and efficiency at lower cost, especially as drone operations scale. A decentralised approach encourages competition among UTMSPs, fostering innovation, reducing costs, and aligning with the UK's multi-ANSP framework, while avoiding fragmented information systems.
2. Preventing new costs for data already publicly available through existing services like the UK AIP. Core information, e.g., terrain, obstacles, or airspace restrictions, should not be duplicated or monetised unless clear added value justifies it.
3. Harmonisation in architecture across global markets to avoid multiplication of the cost of development and allow to leverage the experiences gained in other areas.

Lastly, DAE would like to reiterate that the commercial viability of any UTM system depends on the UAS operators and their ability to fly and build sustainable business cases. It is for that reason that multiple technical solutions, including ADS-L technology, (SRD-860 and mobile telephony) ground-based rebroadcasting systems and UTM framework should be endorsed for UAS.

In conclusion, DAE stands by the view that adopting a regulatory future that moves beyond legacy concepts to embrace a distributed, cost effective, competitive and technologically-agile UTM ecosystem represents the most effective path to establishing the UK as a world leader in safe, efficient and scalable drone operations. In our representation of the needs and interests of the incredibly diverse drone industry, DAE firmly believes implementing this approach is essential to fostering innovation that is both meaningful and effective, ultimately benefiting the entire UK.

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

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Any personal email addresses and phone numbers have been excluded from this document.

Unanswered questions have been deleted from this document.

About you

What is the name of your organisation?

Federal Aviation Administration

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Yes

Please expand on your answer below

Yes, with an emphasis on #1 (it may not capture all UTM services). The FAA recognizes that the airspace has grown past the limits of small unmanned aircraft systems' current regulations. In response, the FAA is currently engaged in a rulemaking effort that would dramatically expedite the introduction of BVLOS operations. The FAA sees BVLOS as the next step in incrementally integrating UAS into our national airspace. This action would create a defined regulatory approval pathway for third-party services, including UAS Traffic Management (UTM) service suppliers. This is intended to assist with simplifying and supporting current and future UTM Services. There are also examples where ATM/ANS provisions are overinclusive and complications with the current ATM/ANS provisions to exclusively control airspace. For these reasons, bespoke rules for UTMSP would appear to be needed.

Consultation Question 2

We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers.

Please share your views below

Agree - In certain scenarios, the CAA having more freedom can be beneficial to the public, especially in cases where the current framework is limited. For example, requiring human controllers may be limiting for UTM/AAM scenarios with automation. However, research will be needed to ensure that such systems do not negatively impact aviation safety. UAS and AAM are projected to operate at low altitudes and overpopulated areas and thus have profound safety implications for non-participants (e.g., pedestrians).

Consultation Question 3

We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Please share your views below

Designated ATS providers will need to enter into agreements regarding the provision of common information services or information that must be shared whether or not the ATS provider is the CIS provider. These agreements could also include agreement on how UTMSPs will provide air traffic services to UAS and how UAS flight information will be shared with the designated ATS providers.

Consultation Question 4

If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CISPs. We invite consultees' views on these rights and duties.

Please share your views below

Neutral - While a common information service may alleviate concerns with inconsistent airspace pictures among operators, this CONOPs would need a proof test. In addition, such a service would need to be able to resolve inconsistent data, for example, different weather reports or aircraft locations that may have a downstream impact on USS's. Information providers to a CIS provider may have upstream impacts. I think more specific details and work are needed before evaluating the potential imposition of rights.

Enforcement and liability

Consultation Question 7

We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA.

Do consultees agree?

Yes

Please share your views below

Yes, UTMSPs should use approved equipment and data exchange mechanisms, including common industry standards for interoperability such as ASTM F3584-21 and other appropriate standards. This would also prevent an unapproved “bad actor” from impacting aviation safety.

Consultation Question 12

We invite consultees’ views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.

Please share your views below

Neutral - FAA recommends this review on autonomy to consider non-explainable autonomy, that is an algorithm that is a black box. While an autonomous UTMSP may receive data from various sources, such as radars on the ground or weather stations, it may not be clear how the autonomous UTMSP is using the data. In this case, where the autonomy is not traceable, it may become difficult to pinpoint the root cause of any accident (e.g. did the data exceed tolerances or did the algorithm incorrectly handle the data). In these events, understanding how liability is assigned may be crucial.

GATCO

Consultation Questions

1. Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;
(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and
(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services? YES to all.

2. We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers. NO! No framework around issuing of limited certificates. We would require further info on what a limited certificate consists of.
(Paragraph 4.88)

3. We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS. No due to 60+ ANSPs in the UK. There would need to be standardised application of any agreements that need to put be in place.
(Paragraph 4.98)

4. If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CIS providers. We invite consultees' views on these rights and duties. There would need to be impositions and legal rights of these duties laid down in law/regulations. These would need to detail the legal obligation of UTMSPs, ATS units and CIS providers to each other.
(Paragraph 4.107)

5. We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review. There will be considerable additional issues that will need to be regulated such as business continuity plans, assurance of data provided by UTMSPs and responsibilities of alerting services/SARs etc. This list is not exhaustive.
(Paragraph 4.112)

6. We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM. Revoking licenses and certification of equipment. Yes, will the CAA have the resource to enforce it?
(Paragraph 5.17)

7. We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA. Do consultees agree? Yes.
(Paragraph 5.33)

8. We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services. Do consultees agree? Yes, however, the use of the word intentional may not apply to autonomous systems where the human operator is not directly controlling the system in question.
(Paragraph 5.44)

9. We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services. Do consultees agree? Yes however if future autonomy is to be considered, then further penalties would need to be considered where a human is not physically operating an autonomous air system.
(Paragraph 5.59)

10. We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers.
They should be required to:
(1) have in place measures to cover any liability incurred during the course of the provision of their services; and (2) where using the services of another ATM/ANS service provider (including UTM service providers), have in place arrangements to allocate liability. Do consultees agree? Yes.
(Paragraph 5.122)

11. We invite consultees' views as to whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision. Yes provided it makes appropriate provision where liability lies when it comes to autonomous aircraft (i.e. no human in the loop)
(Paragraph 5.124)

12. We invite consultees' views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation. Yes but liability issues would need to be reviewed as and when leaps in technology/autonomy in aviation emerge.
(Paragraph 5.163)

13. We invite consultees' views regarding the likely costs and benefits of our provisional proposals in relation to UTM. Safety will have to be the primary focus not capacity, cost savings and economic benefits.
(Paragraph 6.17)

14. We invite consultees' views as to whether any of the issues raised in this Consultation Paper could result in advantages or disadvantages to certain groups or those with particular characteristics (with particular attention to age, disability, transgender identity, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or gender, and sexual orientation). We are not aware of any.
(Paragraph 6.21)

IUA Response – Law Commission of England and Wales

Consultation Paper: Aviation Autonomy

Response submitted by email: aviationautonomy@lawcommission.gov.uk

The IUA welcomes the work of the Law Commission of England and Wales in respect of Advanced Air Mobility (AAM).

The International Underwriting Association of London (IUA) represents international and wholesale insurance and reinsurance companies operating in or through London. It exists to promote and enhance the business environment for its members. The IUA's London Company Market Statistics Report shows that overall premium income for the company market in 2023 was £48.432bn. Gross premium written in London totalled £42.995bn while a further £5.437bn was identified as written in other locations but overseen by London operations. For further information about our organisation and membership, please visit our website, www.iua.co.uk, under the section "About the IUA".

We are actively engaging with our member (re)insurers to support the safe and effective deployment of AAM technologies. We strongly support the development of a proportionate and balanced regulatory framework that prioritises the safety of AAM users, existing airspace users, and the public. Such a framework is essential to enable the successful adoption and integration of AAM into the broader aviation ecosystem.

Below we set out our overarching views on aviation autonomy which we have been discussing with our members. We would be very pleased to work with the Law Commission as this project evolves.

Role of insurance

(Re)insurers will play a critical role in enabling the safe and sustainable roll-out of AAM. The London Market already supports the global commercial aviation sector, insuring major airlines, manufacturers, airports, as well as the general aviation sector. Insurers have a strong history of supporting the uptake of new technology and have already embraced the growing use of Unmanned Aerial Vehicles (UAVs). (Re)Insurers will be asked to support AAM trials and their gradual production and uptake and some companies have already prepared specific, innovative products addressing AAM.

To support AAM trials and commercial deployment, insurers require confidence in the safety and reliability of operations. This confidence can be underpinned by a robust regulatory framework that includes a comprehensive certification process. Such a framework should address the entire lifecycle of AAM, from design and build to certification, maintenance and use, and provide clarity on the roles and responsibilities of those in control, whether defined as 'operators' or 'pilots'.

A focus on safety is paramount. Early-stage incidents could undermine public trust and deter insurers from participating in the market. A clear and enforceable regulatory regime will help mitigate these risks and support the development of appropriate insurance products, whether through adaptation of existing policy wordings or the creation of new ones.

Certification

The IUA supports the introduction of a comprehensive certification regime for autonomous aircraft and UTM systems. Certification should include:

- Technical reliability and safety standards for autonomous systems.

- Operational protocols for integration into shared airspace.
- Cybersecurity resilience to address the risk of malicious interference in autonomous systems.

A strong certification regime will enhance public confidence, reduce operational risk, and enable insurers to develop tailored coverage solutions.

It is also important to distinguish between different levels of autonomy during the certification process to consider the extent to which a 'human-in-the-loop' must be involved in the operation of the aircraft / system, specifically:

- Fully autonomous operations with no pilot / UTM controller present;
- Autonomous operations with a backup pilot / UTM controller;
- Hybrid operations where control alternates between system and pilot / UTM controller.

Allocation of liability

We welcome the Law Commission's efforts to clarify liability in the context of autonomous aviation. The current legal framework, which is largely based on human pilot error, must be reconsidered in light of the complexities of machine-led decision-making. We advocate for:

- Clear delineation of liability among operators, manufacturers, software developers, and UTM providers.
- A legal framework that supports predictable outcomes, which is essential for underwriting and claims resolution.

Insurers require legal certainty to assess risk accurately and to ensure that coverage is appropriate for the risks presented. Ambiguity in liability attribution could lead to increased litigation and higher premiums, potentially hindering innovation and market growth.

Access to data for insurers

As AAM remains in its early stages, there is a significant lack of historical data to support actuarial analysis for underwriting and pricing. Insurance is fundamentally a data-driven industry: premiums must be aligned with the risk that individual activities contribute to the overall risk pool. As such, access to operational data is essential to enable insurers to develop appropriate and sustainable products.

We urge the Law Commission to consider how relevant experts, including insurers, can be granted access to data necessary for determining liability in the event of an incident. This issue was also raised during the development of the Automated Vehicles Act (AV Act), which includes provisions for data sharing by 'licensed no-user-in-charge operators' and 'authorised self-driving entities'. Similar mechanisms should be considered for AAM, including access to flight data recorders, onboard sensors, and camera systems. Without such access, liability disputes are likely to increase, undermining confidence in the market.

Product Liability and Artificial Intelligence

The increasing use of artificial intelligence (AI) in AAM parallels developments in other sectors, notably the automotive industry. The AV Act, which came into force in May 2024, introduced new legal actors

to assign liability for driving offences and accidents based on the level of automation involved. Similar considerations are needed for AAM, particularly where aircraft are remotely piloted or fully autonomous.

Software developers may bear liability for incidents that would previously have been attributed to human pilots. Product liability law must evolve to reflect the growing role of AI in aircraft operation, air traffic management, route planning, weather forecasting, and maintenance.

In relation to the revised EU Product Liability Directive (EU PLD), which expands the definition of a product to include software, we note the introduction of:

1. An expanded concept of 'defect';
2. Rebuttable presumptions of causation.

While these measures aim to ease the burden of proof for claimants, their application needs to be carefully considered. An unbalanced burden of proof could deter innovation and investment in emerging technologies. However, we support enhanced disclosure obligations for manufacturers, building on the UK's existing legal framework, to ensure claimants are not disadvantaged by information asymmetries.

Knowledge of battery technology

We strongly encourage the Law Commission to engage with battery manufacturers involved in AAM to ensure that associated risks are well understood by users and (re)insurers. Lithium-ion batteries, and future alternatives such as solid-state batteries, present unique challenges, particularly the risk of thermal runaway and fire, both in-flight and on the ground.

These risks must be carefully managed by operators and assessed by insurers, including consideration of:

- Battery life and degradation;
- Safe disposal and recycling;
- Risks posed by batteries within cargo.

A comprehensive understanding of battery technology is essential to ensure appropriate risk management and insurance coverage.

Cyber Security and Systemic Risk

Cybersecurity is a critical concern for AAM, particularly where systems rely on external technologies such as 5G networks. As with Automated Vehicles, there is a risk of systemic failure, whether through malicious interference or technical malfunction, that could affect multiple aircraft simultaneously, resulting in significant bodily injury and / or property damage.

We expect rigorous cybersecurity testing of AAM systems and any supporting infrastructure. Fail-safes should be implemented to ensure safe landings in the event of system failure. Additionally, the growing threat of GNSS interference and spoofing must be addressed, as these could have serious implications for AAM operations.

Congested Airspace

We welcome ongoing efforts to integrate AAM into shared airspace and encourage continued collaboration between regulators, air traffic controllers, and airspace users. Automation will likely play a key role in managing increased airspace usage, but staffing and operational resilience must also be considered.

The disruption to the National Air Traffic Services (NATS) network in August 2023 highlighted the potential impact of system failures. We would strongly support efforts to reduce the likelihood and severity of such events.

Finally, the increased proximity of AAM to people and property raises important questions around nuisance and privacy rights. This is particularly relevant for smaller UAVs equipped with cameras or recording devices. We encourage the Law Commission to explore how existing legal protections may need to evolve in response.

The IUA welcomes the proactive approach taken by the Law Commission toward regulating aviation autonomy. We believe that a clear, consistent, and forward-looking legal framework will be essential to unlocking the benefits of autonomous aviation while ensuring that risks are manageable and insurable. We remain committed to working with regulators, manufacturers, and operators to support the safe and sustainable evolution of this sector.

If you have any questions or would like to discuss the above further, please do not hesitate to contact [redacted]

July 2025

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

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About you

What is your name?

Liz Meek

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Other

Please expand on your answer below

How will unmanned aircraft avoid hot air balloons (or gas balloons)?

Consultation Question 2

We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers.

Please share your views below

Please don't grab yet more airspace. Unmanned aircraft should not be allowed until they can avoid existing air users. And powered aircraft always have to give way to unpowered aircraft. It's up to the unmanned ones to work out how they can stay out of the way.

Consultation Question 3

We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Please share your views below

As mentioned above

Consultation Question 4

If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CISPs. We invite consultees' views on these rights and duties.

Please share your views below

As mentioned above

Consultation Question 5

We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review?

Please share your views below

As mentioned above

Enforcement and liability

Consultation Question 6

We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM.

Please share your views below

As mentioned above

Consultation Question 7

We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA.

Do consultees agree?

Yes

Please share your views below

As mentioned above.

Consultation Question 8

We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services.

Do consultees agree?

Other

Please expand on your answer below

As mentioned above.

Consultation Question 9

We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Consultation Question 10

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

(1) have in place measures to cover any liability incurred during the course of the provision of their services; and

(2) where using the services of another ATM/ANS service provider (including UTM service providers), should have in place arrangements to allocate liability.

Do consultees agree?

Yes

Please expand on your answer below

Consultation Question 11

We invite consultees' views on whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision.

Please share your views below

I don't know

Consultation Question 12

We invite consultees' views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.

Please share your views below

How can they stay out of the way of existing users? I don't want to have to spend any more money - any expense should be all theirs

Impact

Consultation Question 13

We invite consultees' views regarding the likely costs and benefits of our provisional proposals in relation to UTM.

Please share your views below

No idea, but I don't want any more costs

Consultation Question 14

We invite consultees' views as to whether any of the issues raised in this Consultation Paper could result in advantages or disadvantages to certain groups or those with particular characteristics (with particular attention to age, disability, transgender

identity, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or gender, and sexual orientation).

Please share your views below

Disadvantages to balloonists

Lloyd's market association

Facilitating a better future

lmalloyds.com

Lloyd's Market Association
Suite 426 Gallery 4
One Lime Street
London EC3M 7DQ
T. 020 7327 3333

By email: aviationautonomy@lawcommission.gov.uk

Dear Sirs,

Lloyd's Market Association's response to: Aviation Autonomy

Thank you for the opportunity to comment on the Law Commission's work on Aviation Autonomy and the work towards uncrewed aircraft systems traffic management.

About the Lloyd's Market Association and its members

The Lloyd's Market Association (LMA) represents the fifty-one managing agents at Lloyd's, with seventy-seven active syndicates underwriting in the market and the four members' agents, which act for third party capital.

For 2024, total gross premium was £55.5billion. The Lloyd's Market distributes products in over two hundred countries including in the EU through Lloyd's Insurance Company. The EU is Lloyd's second largest market.

Marine and aviation business are of historic importance to the Lloyd's insurance market and represents approximately 8.1% of total gross premiums. Our members are able offer specialist aviation related insurance products, such as hull, war, and product liability, due to its unique structure and expertise in dealing and handling complex risks. The subscription market structure of the Lloyd's market enables the risks associated with insuring innovative technologies to be spread across multiple insurers. This facilitates the placement of such cover, as no single insurer is exposed to the full extent of any one loss.

For UK originated internal flights, our members will be providing the great majority of cover. We would note it is unclear how incoming flights from abroad would be handled from the operational, commercial and security aspects.

Our Views

Certification

The LMA supports the introduction of comprehensive certification regime for autonomous aircraft and UTM systems. Certification should include:

- Technical reliability and safety standards for autonomous systems;
- Training and competence testing of operators
- Differentiation between commercial and private use
- Differentiation between cargo and passenger carrying autonomous aircraft
- Differentiation between fixed wing and rotor wing drones
- Size, weight and performance characteristics (foreseeable impact damage)
- Operational protocols for integration into any shared airspace; and
- Signal security resilience against interference and misdirection
- Cybersecurity resilience to address the risk of malicious interference in or interruption of autonomous systems.

A strong certification regime will enhance public confidence, reduce operational risk, and assist insurers in developing tailored coverage solutions. This should encompass an ownership database so owners/operators can be readily traced in the event of an incident. We previously responded in 2017 that drones under 250g should be excluded from registration and that remains our view. Certification regimes establish agreed standards that can be relied upon and create accountability and certainty, which allows insurers to price risks appropriately.

It will be important to distinguish different levels of autonomy during the certification process to consider the extent to which a 'human-in-the-loop' must be involved in the operation of the aircraft/system, specifically:

- Fully autonomous operations with no pilot / UTM controller present;
- Autonomous operations with backup pilot / UTM controller; and
- Hybrid operations where control alternates between system and pilot / UTM controller.

Insurance

As you will see from our response to question 10, we also support a requirement for appropriate insurance cover, but would caution against over prescription in the detail. This will allow insurers to tailor cover appropriately – this ability would be a key factor in fostering the creation of a competitive insurance market which will in turn enable the development of the autonomous aviation market in the UK. As it is a legal requirement in the UK that all models with a maximum take-off mass (MTOM) exceeding 20Kg must carry at least £750,000 third party public liability insurance, it would be helpful to understand the plans for autonomous aircraft up to 20kg when it is thought necessary to register drones over 250g.

Our response to relevant questions in the consultation follows below.

Responses to questions

6. **We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM.**

Yes. UTM service providers will be providing critical services and thus, ultimately, should be subject to control by the regulator. Other parts of the aerospace sector operate on this basis with subcontractors having varying levels of certification within the supply chain.

From an insurance perspective, formal certification provides greater assurance of safety, accountability, and operations standards which would help provide support on the underwriting confidence and address concerns raised in the risk assessment

7. **We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA. Do consultees agree?**

Yes. As stated earlier we support an appropriate certification regime that would ensure that certain standards of integrity and performance are met for UTM equipment.

Currently UAS benefit from a significantly reduced certification burden. The certification process for conventional aircraft, and equipment to be used in a conventional aircraft, is a major burden for aircraft manufacturers and in many cases at the smaller end of the industry,

becomes a prohibitive cost factor. Therefore the Law Commission must appropriately balance the risks and the need for lighter regulation to ensure UTM equipment which is used operates to a high standard of integrity and reliability.

8. **We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services. Do consultees agree?**

Yes.

9. **We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services. Do consultees agree?**

Yes.

10. **We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:**
    a. **Have in place measures to cover any liability incurred during the course of the provision of their services; and**
    b. **Where using the services of another ATM/ANS service provider (including UTM service providers), have in place arrangements to allocate liability.**

    Do consultees agree?

We agree that there should be measures to ensure that UTM service providers cover any liability incurred during the course of the provision of UAS services. This should address liability for cargo if damaged, lost or stolen on the ground while awaiting collection.

We agree that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. Strict liability for the UAS operator would reduce complexity and eliminate the need to prove negligence or intent, making it easier to enforce and administer in the event of an incident. There does not seem to be any reason why a third party impacted by the uncrewed aircraft should find it more difficult than in the case of a manned aircraft obtain a remedy and avoid prolonged legal disputes on the liability. For UTM providers, a fault-based liability regime, combined with regulatory requirements for transparency, oversight, and insurance, is proportionate and would be in alignment with international practice, given that, as the Law Commission points out, there is currently no international framework that imposes strict liability on UTM service providers.

The EU ATM/ANS Regulation 2017/373, ATM/ANS.OR.D.020, as applied in the UK, enables the appropriate level of cover to be adjusted based on the potential loss and damage in question, taking into account the level of commercial insurance cover available. The Lloyd's market, as a speciality insurance market, is well placed to be able to facilitate the appropriate commercial insurance cover for this developing area through its subscription model (which allows the risk to insurers from developing technology to be shared amongst a number of insurers so no insurer is overly exposed).

However, we would caution against overly prescriptive minimum levels of cover or strict requirements of cover as this removes the ability for flexibility for underwriters in terms of the coverage they want to offer and may lead to fewer insurers entering this market. Flexibility is essential to ensure that insurance products can evolve with the rapidly emerging risks and technologies in this sector. Regulatory prescriptions that dictate precise terms, scope, or exclusions of insurance policies may deter insurers from offering coverage in this area. This would also be out of step with the existing regime for ATM/ANS, without a clear

justification. We therefore suggest that any statutory requirement to insure should set out only the high-level obligation to hold adequate financial cover, while leaving the details of policy structure, mandatory covers, prohibited exclusions and risk allocation to be determined through contractual arrangements and market practice. This should be kept under review as the technology develops.

We also agree that it is important for ATM and UTM service providers to allocate their liabilities. Previous experience in the aviation market has shown that these areas are difficult to assess, but we do not think prescriptive regulations to try to address this will be an improvement. At most we would suggest that the law assigns a default position as to liability, perhaps making clear that primary liability is imposed upon the party highest in the chain (i.e. the UTM service provider). This would encourage that party to address the issue, at least in designing their business model. This would also enable underwriters to have a default provision to rely on when assessing risk exposure, setting premiums and determining the scope of coverage in the absence of explicit contractual terms discussing apportionment of liability. This type of framework would preserve commercial flexibility while providing a clear fallback structure to support accountability and efficient claims resolution.

11. **We invite consultees' views as to whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision.**

Yes - the current ATM/ANS approach is agnostic to the aircraft, and delivery of traffic management and therefore would allow flexibility to new use cases.

12. **We invite consultees' views on whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.**

Ensuring alignment with other jurisdictions

We would strongly support the UK keeping in line with international standards and maintaining interoperability of rules with international jurisdictions and conventions.

Where UTM services are offered alongside another ATS provider or where there are multiple UTM service providers operating together in a particular jurisdiction then this may raise questions of liability. As aligned with our response to Question 10 b, this would need to be appropriately accounted for in any agreements to share management of the space or service contracts.

The LMA and its members are open to further discussions with the Law Commission or address any further questions the Law Commission may have.

Kind regards,

[redacted]

Lloyd's Market Association

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

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Unanswered questions have been deleted from this document.

About you

What is your name?

Mark Warby

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Yes

Please expand on your answer below

Consultation Question 5

We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review?

Please share your views below

I suggest that the Commission should consider the rich potential that increased use of UTMSPs would have for the creation of unacceptable levels of unregulated nuisance and intrusion into the home, private and family lives of individuals. I suggest that regulation should be introduced to address noise nuisance and interference with private life by UTMSPs. I would further suggest that this should be part of a wider review.

Currently, aircraft, including helicopters, and noise from the sirens of emergency vehicles, can create considerable levels of noise nuisance. Much of the nuisance and in my experience the most intrusive forms of it, are generated by the public sector. It amounts to state interference with the Article 8 rights of the individual. It should therefore be no more than is necessary and proportionate to the pursuit of a legitimate aim. Yet none of this activity is subject to any sufficient level of supervision or regulation.

Some aspects of these forms of nuisance do come under some scrutiny in the context of planning control. For instance, planning permission is required to install a helipad. But experience shows that local authorities conduct only superficial scrutiny of the nuisance that will be caused, and there is almost no monitoring and no effective method of enforcing, any conditions they attach. Police helicopters appear be under no effective external supervision. The CAA is concerned only with safety.

The use of emergency sirens is a separate matter from aviation , but relevant as part of a cumulative picture of noise nuisance to which - in particular - urban residents are subjected. This is not under the control of the Mayor of London but left to the emergency services, who have no oversight on this issue. In principle, individuals might be able to bring legal proceedings to enforce their rights against those responsible for these matters , either in public law or in private law. In reality, individuals are in no position to address these matters in that way.

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

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About you

What is your name?

Mark Wingad

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Choose an item.

Please expand on your answer below

1. UTM is probably the wrong word as these systems will become fleet management software overall and companies may deploy there own UTMs as such for there fleets making them fleet management systems

Consultation Question 2

We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers.

Please share your views below

as long as the CAA is not influenced in any way by lobbyists for one system over another...

Also does the CAA have the staff technical knowhow....

Consultation Question 3

We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Please share your views below

No, this may create conflicts of interest as such where the ATS providers only accept one UTM and not another....

Also why is a UTM required...

Already UTMs are looking to be out dated as such

Consultation Question 4

If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CISPs. We invite consultees' views on these rights and duties.

Please share your views below

So anyone operating an UA or aircraft are responsible for there flight - no UTM or ATS etc is responsible so the only legal rights or duties would surely they provide the right data to the UAS / operators

Consultation Question 5

We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review?

Please share your views below

Are these systems already out of date....

Enforcement and liability

Consultation Question 6

We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM.

Please share your views below

Problem is right now systems like Altitude Angels Skyway system detects manned aviation breaking the rules of the air, from entering areas of airspace that is restricted or controlled etc However there is no enforcement now on manned aviation and you want it on UTMs... don't do double standards as such on enforcement

Consultation Question 7

We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA.

Do consultees agree?

No

Please share your views below

No as in testing at a test area maybe required before deploying or submitting to the CAA for review - this could stifle innovation and systems as the technology gets improved over time

Consultation Question 8

We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Problem is right now systems like Altitude Angels Skyway system detects manned aviation breaking the rules of the air, from entering areas of airspace that is restricted or controlled etc However there is no enforcement now on manned aviation and you want it on

UTMs...

don't do double standards as such on enforcement

it just means someone actually does this without bias

Consultation Question 9

We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services.

Do consultees agree?

No

Please expand on your answer below

Problem is right now systems like Altitude Angels Skyway system detects manned aviation breaking the rules of the air, from entering areas of airspace that is restricted or controlled etc

However there is no enforcement now on manned aviation and you want it on UTMs...

don't do double standards as such on enforcement

it just means someone actually does this without bias

So is enforcement going to be brought to manned aviation already being detected to breaking rules of the air ?

Consultation Question 10

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

(1) have in place measures to cover any liability incurred during the course of the provision of their services; and

(2) where using the services of another ATM/ANS service provider (including UTM service providers), should have in place arrangements to allocate liability.

Do consultees agree?

Yes

Please expand on your answer below

Consultation Question 11

We invite consultees' views on whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision.

Please share your views below

yes

Consultation Question 12

We invite consultees' views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.

Please share your views below

The UAS operator is liable for the flight - regardless of in autonomy mode or not it makes no difference the Buck stops with the operating company

Impact

Consultation Question 13

We invite consultees' views regarding the likely costs and benefits of our provisional proposals in relation to UTM.

Please share your views below

Its going to out price itself

Even now when you look at airfields charging UAS flights now they want 25 pounds or so to fly inside the FRZ - for no good reason and they want 7 or 14 days notice - these prices and more for a limited service is not value for money for operators and in some cases airports charge more for a UAS flight than it does to land a Cessna at the airfield !

Benefits....

Consultation Question 14

We invite consultees' views as to whether any of the issues raised in this Consultation Paper could result in advantages or disadvantages to certain groups or those with particular characteristics (with particular attention to age, disability, transgender

identity, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or gender, and sexual orientation).

Please share your views below

Treat everyone as Human and then there won't be an issue However that would be to simple wouldn't it !

Met Office

[redacted]
Met Office, Fitzroy Road
Exeter, Devon, EX1 3PB

[redacted]
www.metoffice.gov.uk

31 July 2025

FAO: Consultation lead,

The Met Office welcomes the launch of the Law Commission's second consultation on aviation automation. We are responding to this consultation in our role as the UK's National Meteorological Service (NMS) and as the organisation responsible for the delivery of a range of weather-safety related services across the range of transport domains (land, air, sea).

As an Executive Agency of the Department for Science, Innovation and Technology (DSIT), the Met Office is responsible for monitoring and forecasting the weather. We work extensively with the aviation community through our responsibility as one of only two World Area Forecast Centres for civil aviation, via our remit as the designated provider of regulated aviation services for Civil Aviation Authority (CAA) and through our embedded services at airports such as Heathrow. We run the UK's Volcanic Ash Advisory Centre for aviation risk advice related to the eruption of Icelandic volcanoes. We are also responsible for providing the UK's space weather monitoring and forecasting service through the Met Office Space Weather Operations Centre (MOSWOC), providing 24/7 forecasts and warnings of space weather for Government and responder communities, critical national infrastructure providers and wider industry.

Beyond operational services, we are a Public Sector Research Establishment and undertake targeted research in support of the further development of these services and to deliver key research for the UK Government. This includes the work of the Met Office Hadley Centre which provides climate science and services to help departmental, business and public understanding of and preparation for climate change.

Our response builds on our previous submissions: Aviation Autonomy consultation paper 1, AV098, AVRF064 and HARPS060. Our response is also informed by our work on DBAS, SEES.AI, FFC3, BAE Prismatic, and our work on the Droneport Framework Guidance Document.

Responding to the approach outlined in the consultation paper, the Met Office agrees that uncrewed aircraft systems (UASs) should be expected to achieve an equivalent level of safety to that of a competent and careful human pilot, including the safe provision of air traffic management systems and air navigation services for an integrated airspace. As the UK's National Meteorological Service, we support all efforts to improve safety decisions involving weather and climate factors. While weather impacts in conventional aviation systems are relatively well understood, automation of aviation systems introduces new weather sensitivities and vulnerabilities, including for air traffic management systems and air navigation services. Our previous work with connected and autonomous vehicles (CAVs) focused on communicating and quantifying these sensitivities, and their uncertainties, to inform the mechanisms for understanding and managing safety-related weather risks. Through this, and experience in the civil aviation industry, we have learned that weather impacts require consideration when demonstrating safety in UASs.

Below are some considerations in response to your inquiry's consultation questions.

My teams stand ready to support on this, and future policy developments where weather or climate change could be a relevant factor. We would be happy to engage with your team or others prior to public consultation to help answer any questions and help inform your evidence base as you take forward your work. Please do not hesitate to get in touch with myself or my colleague [redacted] to follow up on this.

Many thanks,

[redacted]

Met Office

[redacted]

Met Office Response to the Consultation Questions

Consultation Question 1: Do consultees agree that the existing legislation does not adequately accommodate UTM because:

1. It may not capture all UTM services;

We concur with the position outlined in the consultation paper and support the examples provided in sections 4.31–4.37 and 4.47, which highlight the limitations of the current regulatory framework in accommodating the full scope of UTM services.

2. It may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and
3. Exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

We are neutral on whether exclusivity arrangements generally complicate UTM service provision. However, we wish to highlight an important exception in the context of meteorological services, as discussed in section 4.75.

Yes - the Met Office agrees with this statement
No
Other

Please expand on your answer below

Met Office expanded response:

In civil aviation, the concept of a single authoritative source of truth for meteorological data is foundational to safety, consistency, and interoperability. This principle ensures that all airspace users – regardless of platform – operate based on the same validated and quality-assured weather information. It reduces the risk of conflicting data interpretations and supports coordinated decision-making across the aviation ecosystem.

As UAS operations scale, particularly in complex low-altitude environments, this principle becomes even more critical. UAS will rely on highly localised, real-time weather data to navigate safely. Without a unified source of truth:

- *Operators may act on inconsistent or unverified data, increasing operational risk.*
- *Fragmentation of weather services could undermine trust in uncrewed aircraft systems traffic management (UTM).*
- *The integration of UAS-collected observations into national forecasting systems may be compromised.*

We therefore recommend that any future regulatory framework for UTM:

- *Mandates the use of certified meteorological data sources, such as the Met Office.*
- *Establishes clear protocols for data sharing and validation between UTM service providers and meteorological authorities.*
- *Preserves the principle of a single authoritative source for aviation weather, adapted to the needs of both crewed and uncrewed operations.*

Moonrock Insurance response to Law Commission Consultation:

As a specialist insurer in the drone and eVTOL sector, we believe the introduction of UTMs carries significant implications for liability, both in terms of legal responsibility and insurability. Before addressing the specific liability framework, I would like to take a step back and reflect on how UTM should be introduced into the UK's aviation ecosystem.

I strongly believe that the initial rollout of UTM should be managed by a state-owned or partially state-owned entity, such as NATS. This is not a call to stifle innovation, but rather a recommendation to establish a stable, accountable, and safety-first foundation. A government-backed operator can provide the necessary oversight, infrastructure, and public trust to support the safe integration of UTM into national airspace.

Once this foundation is in place, it can serve as a springboard for a more competitive and innovative market, where private UTMSPs can enter with confidence, clarity, and a shared baseline of operational standards.
Without this phased approach, we risk a fragmented and overly competitive marketplace where multiple UTMSPs, each vying for market share, may prioritise speed over safety, leading to increased risk of service errors and potentially catastrophic outcomes.
My view, a carefully managed transition from public to mixed or private provision is essential to ensure that liability is clearly defined, risk is appropriately allocated, and the insurance market can respond with confidence

A key question that must be addressed in the context of UTM is: who will ultimately bear responsibility when something goes wrong? While third-party liability will, in most cases, rest with the drone operator, the situation becomes significantly more complex when an incident is caused by faulty data, system errors, or cyberattacks originating within the UTM ecosystem.

In such scenarios, it is unclear whether liability would or should, be subrogated to other actors in the chain, such as:

- Software developers responsible for the UTM platform
- Sensor or data providers supplying real-time inputs
- Or third-party communication infrastructure providers

This fragmentation of responsibility introduces uncertainty for insurers, operators, and regulators alike. Without clear legal guidance on how liability is distributed across the UTM supply chain, there is a risk of prolonged litigation, underinsurance, or liability gaps, particularly in scenarios involving autonomous decision-making or AI-driven systems.

To mitigate these risks, I strongly recommend the **implementation of independent third-party 'software assurance' programmes**. These programmes would provide objective validation of the safety, reliability, and compliance of UTM software systems before they are deployed. Much like airworthiness certification aviation, such assurance mechanisms would help ensure that UTM platforms meet rigorous standards, thereby reducing the likelihood of faults and clarifying accountability in the event of failure.

I believe the Law Commission should consider how liability can predictably allocated across all contributors to a UTM-enabled operation, not just the end operator. This will be essential to ensure that claimants are compensated, risks are insurable, and innovation is not stifled by legal ambiguity.

Consultation Question:

We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services. Do consultees agree?

Yes, this is an adequate criminal deterrent. However, I feel it should be supported with:

- Clear certification standards for UTM equipment.
- Defined responsibilities for UTMSPs (service providers).
- Civil liability frameworks to ensure victims can claim compensation

Consultation Question:

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:
(1) have in place measures to cover any liability incurred during the course of the provision of their services; and
(2) where using the services of another ATM/ANS service provider (including UTM service providers), have in place arrangements to allocate liability.
Do consultees agree? Yes

As UTM services will be delivered via commercial contracts, clear liability allocation is important. This is especially true when multiple providers (e.g. weather data, flight planning, or conflict avoidance) are involved in a single UTM
Holding UTMSPs to the same liability standards encourages responsible innovation. It ensures that new entrants build robust systems and maintain adequate insurance.

As UTM systems become more autonomous, it may be harder to determine who is at fault—the operator, the software provider, or the UTMSP. This could complicate claims and may require updated legal tests or shared liability models.

While Moonrock and others are innovating, not all UTMSPs may be insurable under current models, especially those using novel AI-driven systems. The law should ensure that minimum coverage thresholds are realistic and accessible.

Consultation Question:
We invite consultees' views as to whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision.

While extending the current ATM/ANS liability framework is a logical starting point, it may not be sufficient on its own. A hybrid approach might be needed, one that builds on existing ATM/ANS liability principles.

- Introduces clarity around autonomous systems and shared responsibilities.
- Ensures third-party protections are not diluted by contractual arrangements.

Consultation Question: We invite consultees' views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.

In autonomous operations, there may be no pilot to hold responsible. This raises questions about who assumes operational responsibility? How liability is distributed between the UTMSP, the aircraft operator, and the system manufacturer? Whether 'pilot discretion' remains applicable.
Autonomous UTM systems may also rely on machine learning algorithms that evolve over time. This introduces opacity in decision-making. There's potential for liability gaps where no party can be clearly identified as responsible.

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

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About you

What is the name of your organisation?

National Highways

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Yes

Please expand on your answer below

Particularly with point 3 - how would competition law facilitate exclusivity arrangements, without hindering emerging providers becoming UTMSPs? Would the intention be to follow the current model used for manned aviation with NATS?

Consultation Question 2

We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers.

Please share your views below

Disagree. If UTMSPs are unable to comply with all existing requirements, certificates should not be issued by the CAA. The end user of these systems us unlikely to know the difference between full and limited certificates, or which areas the UTMSPs do/don't comply with.

Consultation Question 3

We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Please share your views below

Agree

Consultation Question 4

If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CISPs. We invite consultees' views on these rights and duties.

Please share your views below

Agree. The current essential requirements (correct, complete and current) must still stand, with robust penalties in place if these are not met.

Enforcement and liability

Consultation Question 6

We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM.

Please share your views below

Partially disagree, in particular with the term 'replicated'. With new UTM technologies being developed and implemented, enforcement mechanisms must be specific to those ways of working. Whilst the current enforcement mechanisms may be used as a basis, they will need to be suitably adapted.

Consultation Question 7

We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA.

Do consultees agree?

Yes

Please share your views below

Agree, although thought must be given to what approval will look like - perhaps in the form of BSI or ISO standards. Again, suitable penalties will also need to be developed for those who do use or permit the use of non-approved equipment.

Consultation Question 8

We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Consultation Question 9

We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Partially agree, although noting that this will likely be a fast-developing technology and any offences and penalties must keep pace.

Consultation Question 10

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

(1) have in place measures to cover any liability incurred during the course of the provision of their services; and

(2) where using the services of another ATM/ANS service provider (including UTM service providers), should have in place arrangements to allocate liability.

Do consultees agree?

Yes

Please expand on your answer below

Impact

Consultation Question 14

We invite consultees' views as to whether any of the issues raised in this Consultation Paper could result in advantages or disadvantages to certain groups or those with particular characteristics (with particular attention to age, disability, transgender identity, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or gender, and sexual orientation).

Please share your views below

None were identified, however a full EqIA (which is refined at key milestones) would be the correct means to establish any advantages or disadvantages to the aforementioned groups.

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

Any personal email addresses and phone numbers have been excluded from this document.

Unanswered questions have been deleted from this document.

About you

What is the name of your organisation?

NATS

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Other

Please expand on your answer below

We agree that the existing legislation is not purposed for UTM and would require adaptation. It should be noted that there are similarities between regulating UAS and existing crewed aircraft, that could provide a good basis for comparing the gaps for legal changes. However, we do not agree that exclusivity arrangements complicate the provision of similar UTM services. (1) Existing legislation does not capture all UTM services Referencing an example used, the 'network registration and identification service' (Para 4.50 - 4.51) for UAS operators to register their UAS and provide any required data related to their UAS, has a similar rationale as the existing aircraft registration service[1]. There is a difference however on the access of registration data, because

[1] How to register an aircraft | UK Civil Aviation Authority

UAS data might need more immediate access by authorised stakeholders e.g. regulators or police services.

Referencing another example in the same section, the discovery and synchronisation service (Para 4.53- 4.56) is portrayed as incompatible with the existing flow of information between service providers because there is no Common Information Service (CIS) to support the information exchange among multiple UTMSPs submitting data which can be accessed by all. The CIS can provide useful data to UAS operators seeking to manage risks, which is not currently provided by the UK Aeronautical Information Service e.g. detailed ground infrastructure data (beyond airports/ aerodromes), historic crewed traffic movements and population density data. We agree that legal adaptations should hence be made to create the role of CIS, allowing the market to support both centralised and peer-to-peer means of service provider coordination. NERL, as the UK licensed ANSP, must be fair and equitable, and must therefore support all use cases of different safety mitigations, while ensuring a high level of data integrity is upheld.

(2) Existing legislation may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM

The level of legislation should be commensurate to the service provided by UTMSPs and the associated risks in these operations. It is written in the report (Para 4.72), that most UTMSPs only wish to cater for UAS and not wish to be designated as controlling authorities. This targeted level of operation would provide the basis for UTMSPs to adapting rules of the air which currently require air traffic control services to service all the airspace users in the airspace classes listed in Para 4.61. If the UTMSPs seek to provide services to UAS only, in segregated or atypical airspace that is adjacent to or within controlled airspace, it is reasonable to expect the UTM service to meet legislation that does not compromise the safety of the service provision to aircraft in adjacent airspace. The underlying requirement for all of this is that existing airspace safety should be maintained or improved. Moreover, legal adaptations should also take into consideration the role of automation in providing the UTM service, to adequate regulate the role of the human in overseeing or designing the system rather than actively directing or informing.

However, should an UTMSP seek to provide ATM solutions for both UAS and crewed aircraft, we should not be pursuing a pared-down list of responsibilities for the UTMSP under rules of the air, but rather expand the relevant responsibilities to ensure safe operations for relevant airspace users. From an operational perspective, as the UK is pursuing integrated airspace, where no airspace is segregated for one particular type of aircraft, there needs to be clarity between UTMSP(s) and ANSP(s) on their respective responsibilities when highly automated flights exist in the same airspace as human controlled crewed flights. Further research is needed in adapting the rules of the air for UAS which are likely to be highly automated or autonomous.

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services

Existing designation does not prevent a UTMSP from providing ATS in that airspace. It is possible for reviews of airspace blocks to assess if it is needed by the incumbent, or if it can be reassigned.

It's been cited that NERL is the only entity licenced under the Transport Act 2000 *to 'provide ATS exclusively for the majority of UK airspace, providing ATC in controlled airspaces and a flight information service ("the basic service") throughout*.' NERL is subject to an economic regulatory framework, i.e., price control, which is designed to ensure that NERL provides a high standard of safety in the provision of ATS in UK and delegated airspace. Therefore, the CAA sets incentives (penalties) on NERL to provide resilient, efficient, and high-quality services. These are both reputational and financial incentives based on NERL's performance against safety, capacity and environment targets.

If sharing the airspace management responsibility with another entity is assessed to be safe, there are also existing examples of non-exclusivity in practice, through Autonomous Radar Units (ARUs) agreed with NERL (see our related response to consultation question 3). This flexible and pragmatic mode of working permits rationalisation of services so that a single set of digital services may be available for both crewed and uncrewed, including autonomous vehicles. For instance, NATS is exploring service provision models such as digital flight information service which would bring benefits to this larger group of airspace users.

Consultation Question 2

We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers.

Please share your views below

Consistent with our response to question 1, the level of legislation should be commensurate to the service provided by UTMSPs and the associated risks in these operations. Therefore, the appropriateness of limited certificates depends on the associated risks.

There is acknowledgement within the consultation document, that "appropriate safety and coordination measure would need to be in place and there would need to be sufficient regulatory oversight of the agreement" (Para 4.96). From an operational perspective, NATS would want to be involved in agreeing the conditions for limited certificates to UTMSPs, in the airspace for which NATS is the controlling authority to ensure safety, fair and equitable access to airspace for all users. We welcome a proportionally phased certification process to first test the criteria for limited certification in a regulatory sandbox environment, before applying the validated criteria at scale in integrated airspace environments.

Consultation Question 3

We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Please share your views below

We think the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Drawing from existing operational experience, NATS has several agreements[2] in place with other ANSPs and military units to permit the provision of ATS in joint Airspace. This means that these units are authorised to instruct aircraft to penetrate the ATS route structure without NATS' ATS clearance, within specified geographical limits. These permission and operating procedures have been in place for many years.

As part of Future Flight Challenge 3 (FFC3), NATS proposed a concept of operations, and tested aspects of it through simulations. This concept allowed an ATS provider to dynamically approve an UTMSP to provide services to UAS within a volume of airspace under the control of the ATS provider. This dynamic delegation of airspace volumes changes the access to, and provision of services within, the airspace volumes. This is determined according to the respective demands on the airspace from crewed and uncrewed traffic and their relative priorities, for example, when a high priority medical flight and a scheduled flight need to use a volume of airspace.

The FFC3 concept of operations was aligned with research NATS has been undertaking through the Single European Sky ATM Research programme within the context of U-space. Specifically, NATS has been collaborating with international partners to develop the "Dynamic Airspace Reconfiguration" service and in doing so derive requirements on future ATM platforms to enable the temporary reconfiguration of granular volumes of shared airspace between ATM and U-space control to allow the safe integration of new airspace users dynamically and efficiently.

Safe operations would require interface and management processes to be agreed by all parties prior to use, including standards around flight separation and prioritisation. Hence, the law should allow agreements between ATS providers and UTMSPs to enable this interoperability of operations.

[2] *At Prestwick Centre, NATS has agreements with military units including BAE Warton, Royal Air Force (RAF) Control and Reporting Centre (CRC) Boulmer and RAF Lossiemouth. Within the London Swanwick Operation, the units include Royal Naval Air Service (RNAS) Yeovilton, Warton, and Plymouth Military Radar.*

Consultation Question 4

If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CISPs. We invite consultees' views on these rights and duties.

Please share your views below

NERL has been developing OpenAir, as a common information service, in our aim to provide aeronautical data, flight plans and traffic information, in a regulated, open and transparent basis to ANSPs and UTMSPs. We have been consulting the industry and the CAA, on making this service as affordable and supportive of market competition – the latter requires clear separation and economic regulation at the state level.

While it is not for NATS to determine the legal rights and duties behind a common information service, we have been in exchange with European Union member states and their ANSPs to advise the CAA and DfT to learn from others' implementation of common information service. The EU's SES2+ regulation[3], specifically Article 12 Provision of common information services, sheds light on legal rights pertaining to the obligation to exchange air traffic information:

> *1. Where CIS are provided, the data disseminated shall present the integrity and quality necessary to enable the safe and secure provision of services for the management of traffic of unmanned aircraft in a way that enables the shared use of the airspace together with manned aircraft.*
>
> *6. Data necessary for the operation of unmanned aircraft in the U-Space airspace shall be made available on a non-discriminatory basis, without prejudice to national security, public order and defence policy interests, by air navigation service providers. CIS providers and U-Space service providers shall use those data only for operational purposes of the services they provide. Prices for access to such data shall be based on the additional costs of making the data available and the cost for generating the data, where the latter costs are not covered under Article 30 and unless other financial resources are used by Member States to cover such costs*

For a common information service to be effective, there should be legislation to require the exchange of aeronautical data of adequately high integrity in a standardised format, among ANSPs, UTMSPs and CISP, to enable shared use of airspace between crewed and uncrewed aircraft. Along this line of reasoning, there should also be a requirement for controlling airspace authorities, UTMSPs or ANSPs, to use the common information service to assist in flight planning, with their usage of CISP functions appropriate to the operations. For example, an UTMSP may need the geographical awareness aspect of CISP functions, but not the airspace authorisation aspect, for UAS flights in uncontrolled airspace.

[3] Regulation (EU) 2024/2803 of the European parliament and of the council on the implementation of Single European Sky, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=OJ:L_202402803

Consultation Question 5

We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review?

Please share your views below

As UAS operations increase in number and complexity, other enabling regulations and standards should be developed at pace:

- mandating Electronic Conspicuity, strengthening the principle of 'see and avoid' by adding the ability to 'detect and be detected' for both crewed and uncrewed aircraft

- performance-based standards for UTM service to support tactical deconfliction by UAS operators to unexpected aircraft. One mitigating measure is having a data exchange with the CISP to support situational awareness (complementary to our response to consultation question 4)

Enforcement and liability

Consultation Question 6

We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM.

Please share your views below

It is agreed that UTM needs enforcement mechanisms, and it is considered that replicating the mechanisms currently used in ATM/ANS would be a good starting point.

The extensive regulatory requirements and the "just culture" approach in ATM/ANS ensure high safety standards and accountability and encourages the reporting of safety incidents without fear of punishment (if there's no gross negligence or wilful misconduct).

By adopting similar mechanisms for UTM, the CAA can effectively monitor UTM service providers, issue findings, and, if necessary, revoke certifications. This approach would help maintain safety and reliability in UTM.

To replicate the enforcement mechanisms from ATM/ANS for UTM, several key elements should be considered:

1. **Regulation**: Establish a comprehensive regulation like those in ATM/ANS like the Easy Access Rules, which cover safety management systems, human factors, and training requirements (*adopted by CAA, and based on Regulation (EU) 2017/373, to ensure high safety standards and effective oversight of ATM/ANS*

providers). Furthermore, a grade enforcement, like the level 1 and level 2 finding of non-conformance but for UTM could also be considered this could be, adapted through a common information framework; maybe even a notice category around automation / AI regulatory breaches

2. **Safety Management Systems (SMS)**: Implement SMS requirements that align with ICAO standards *(such as safety policy and objectives, safety risk management and assurance).*

3. **Formal Authorities**: Designate authorities responsible for the oversight and enforcement of UTM regulations, like the role of the CAA in ATM/ANS.

4. **Training & Qualification**: Introduce stringent training and competence assessments for UTM personnel. Implement certification processes like those in ATM/ANS

5. **Enforcement**: Establish clear procedures for any safety issues that arise.

6. **Culture**: Promote a culture where safety incidents can be reported without fear of punitive action.

Consultation Question 7

We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA.

Do consultees agree?

Yes

Please share your views below

Agreed, but the offence must be embedded in a modern, software approval regime. We therefore recommend that the CAA publish Acceptable Means of Compliance (AMC) for the use of equipment, which includes the requirement for controlling airspace authorities, UTMSPs or ANSPs, to use the common information service to assist in flight planning, with their usage of CISP functions appropriate to the operations. By making it illegal for anyone to use or allow the use of equipment for UTM services which hasn't been approved by the CAA, is crucial in ensuring that all UTM equipment meets specific safety and performance standards/requirements.

By requiring CAA approval, this will help ensure that standards are met and will help in preventing the use of unsafe equipment in UTM operations.

Consultation Question 8

We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services.

Do consultees agree?

No

Please expand on your answer below

Section 3 of the Aviation Security Act 1982 addresses acts that endanger or are likely to endanger the safety of aircraft, including interference with air navigation facilities and the communication of false information. Whilst these provisions are important for protecting physical aviation infrastructure and can be applied to UTM services to ensure safety and security in unmanned traffic management, there is a risk that they may not cover all the needs from a UTM services perspective, particularly in relation cybersecurity.

As it is expected for increased autonomy in the provision of ATM/ANS to UAS, for these services to be resilient, they will need strong cybersecurity measures to protect against digital threats, which do not appear to be specifically addressed by Section 3 of the Act. Therefore, to ensure protection for UTM services, specific regulations that cover both physical and cybersecurity threats which address all potential vulnerabilities, including intentional spoofing of UT data links, and ensure drones are safely integrated into the airspace would be helpful.

Consultation Question 9

We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Yes, we agree with the provisional proposal to adopt offences and penalties like those found in The Air Navigation (Single European Sky) (Penalties) (Amendment) Order 2018 (Penalties Order) in relation to UTM services.

To ensure effective enforcement and compliance, this approach ensures consistency and clarity in term of the regulatory framework which will be applied. Implementing penalties for unauthorised access to UTM systems, like those set out in Provision 7 of the Penalties Order, unauthorised access to protected computer systems, will help deter such activities and maintain the integrity of UTM services. This may also go some way in addressing the cybersecurity risks as described above.

Consultation Question 10

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

(1) have in place measures to cover any liability incurred during the course of the provision of their services; and

(2) where using the services of another ATM/ANS service provider (including UTM service providers), should have in place arrangements to allocate liability.

Do consultees agree?

Yes

Please expand on your answer below

Yes, we agree. UTM service providers should be subject to the same liability requirements as ATM/ANS service providers and be required to:

1. **Liability Cover:** UTM service providers are to have measures in place to cover any liability incurred during the provision of their services. This could include insurance policies or other financial guarantees to ensure that they can compensate for any damages or losses resulting from their operations. This requirement ensures that UTM providers are financially prepared and able to handle any incidents.

2. **Liability Allocation:** When UTM service providers use the services of another ATM/ANS service provider (including other UTM service providers), they should have arrangements in place to allocate liability. This means establishing clear contractual arrangements detailing who is responsible for what in the event of an incident. This will help to clarify responsibilities and ensure that liability is appropriately shared among the parties.

Consultation Question 11

We invite consultees' views on whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision.

Please share your views below

The current law on ATM/ANS liability, enforced by the CAA, effectively ensures safety and compliance through regular monitoring, audits, and findings. Extending these provisions to UTM services would maintain high standards and accountability. However, unique aspects of UTM services, such as BVLOS operations, high levels of automation, cybersecurity risks, integration with existing airspace, environmental impact, and scalability, may require additional or modified liability provisions and addressing these aspects will help manage the specific risks associated with UTM services.

Consultation Question 12

We invite consultees' views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.

Please share your views below

Yes, UTM-specific measures for negligence and product liability are essential due to the unique challenges and risks of unmanned traffic management. Establishing clear legal standards and accountability mechanisms will ensure high safety and quality standards, protecting users and the public. These measures will also promote trust and confidence in UTM systems, aiding their integration into airspace management.

To address negligence and product liability in UTM, several measures should be implemented:

1. **Hold Manufacturers Accountable:** Manufacturers and distributors should be liable for any defects in UTM equipment and software, regardless of negligence, and therefore retain strict liability for defective products

2. **Set Clear Standards for Service Providers**: Clear standards requiring proof that providers failed to exercise reasonable care in their operations, maintaining strict liability for defective products.

3. **Insurance Requirements**: UTM providers and manufacturers should carry adequate insurance (which is mandatory) to cover potential liabilities, ensuring fair and prompt compensation for victims.

4. **Ensure Proper Training**: Implement stringent training and certification requirements for UTM personnel to manage the complexities of unmanned traffic.

5. **Create Detailed Safety Rules**: Comprehensive safety regulations specific to UTM, covering operations, maintenance, and incident reporting, aligned with ATM/ANS standards.

6. **Audits**: Conduct regular audits and inspections to ensure compliance with safety standards and regulations, proactively identifying and mitigating risks.

Impact

Consultation Question 13

We invite consultees' views regarding the likely costs and benefits of our provisional proposals in relation to UTM.

Please share your views below

As mentioned in our response to consultation question 4, NERL has been developing OpenAir, as a common information service, aiming to provide aeronautical data, flight

plans and traffic information, in a regulated, open and transparent basis to ANSPs and UTMSPs.

NERL has consulted with the industry and suggested that the CAA applies a regulatory framework in the form of a price and performance monitoring framework for the economic regulation of OpenAir. This framework could be based on the fair, reasonable and non-discriminatory (FRAND) model which would ensure that NERL provides the necessary information to its users via regular consultation and to the CAA, which if required would have the power to intervene promptly. Within this framework, we will ensure that the OpenAir services are as affordable and supportive of the downstream market competition for ANSPs and UTMSPs.

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

Please note that this consultation response has been reproduced from information entered on the Citizen Space online portal.

Any personal email addresses and phone numbers have been excluded from this document.

Unanswered questions have been deleted from this document.

About you

What is the name of your organisation?

Neuron Innovation Ltd

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Yes

Please expand on your answer below

Drones present a lower risk, and so there are likely to be different risk thresholds imposed, thereby needing different levels of safety

Consultation Question 2

We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers.

Please share your views below

Yes, give the CAA more flexibility to regulate new technology. This is sensible

Consultation Question 3

We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Please share your views below

In a free market economy, this of course should be permitted, assuming required safety standards are met, and market competition is retained

Consultation Question 4

If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CISPs. We invite consultees' views on these rights and duties.

Please share your views below

A CIS is not required. Existing standards by ASTM show its not necessary, and in fact the leading work in the US by Google Wing, Manna, Amazon, and Anra Technologies, show its not necessary. This appears to be a lobbying effort to centralise/ monopolise data services and limit consumer choice through data control. I would strongly recommend the government leave the free market alone in this area. The market has solutions that are much more healthy for the future of UK aviation, which bypass incumbent actors who tax the industry with unnecessary services on the grounds of "safety"

Consultation Question 5

We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review?

Please share your views below

UTMSPs should have to conform to an agreed data standard voted on by super majority.

Enforcement and liability

Consultation Question 6

We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM.

Please share your views below

Reviewed and replicated where it makes sense.

Consultation Question 7

We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA.

Do consultees agree?

Yes

Please share your views below

Sensible

Consultation Question 8

We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services.

Do consultees agree?

Other

Please expand on your answer below

Not sure

Consultation Question 9

We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services.

Do consultees agree?

Other

Please expand on your answer below

Not sure

Consultation Question 10

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

(1) have in place measures to cover any liability incurred during the course of the provision of their services; and

(2) where using the services of another ATM/ANS service provider (including UTM service providers), should have in place arrangements to allocate liability.

Do consultees agree?

Yes

Please expand on your answer below

Consultation Question 11

We invite consultees' views on whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision.

Please share your views below

Yes, i suspect so.

Impact

Consultation Question 13

We invite consultees' views regarding the likely costs and benefits of our provisional proposals in relation to UTM.

Please share your views below

Let the free market set rates. If government needs to control the price, the design is wrong.

Consultation Question 14

We invite consultees' views as to whether any of the issues raised in this Consultation Paper could result in advantages or disadvantages to certain groups or those with particular characteristics (with particular attention to age, disability, transgender identity, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or gender, and sexual orientation).

Please share your views below

Silly question

Peter Keith-Lucas

There is a reason why drones are called drones. They drone, and they whine, and because they do so from the air, they affect many more properties than your normal Saturday morning Black and Decker, and they have the potential to do so in their thousands, morning and afternoon, day and night, seven days a week and 365 days a year.

Let us assume that the current review of ”autonomous aviation” recognises the potential cost benefits of using drones for deliveries and results in allowing the use of drones for commercial deliveries.

Under current planning law, the use of drones to make deliveries from a commercial site would be treated as a normal incident of the principal use of that site, and would not require any additional planning permission. So your local post office, chemist or Amazon depot could start sending off a hundred drones an hour, flying at relatively low altitude, over your garden, past your windows, and you would have no way to prevent it, and no recompense for the nuisance which it causes (Section 76, Civil Aviation Act 1982).

Commercial delivery drones will not be limited to flying within the sight of the operator, as at present, but will be sent off on routes pre-set by the operator. Inevitably, an operator will have a series of standard flight plans, the far end of which can be tailored depending on the specific destination. That means that drones on the first part of their flights will all use the same few standard routes.

Further, if a drone drops, or drops a parcel, on your roof or your head, whilst the operator is strictly liable for the damage (assuming that you can identify the operator), the amount of compensation is restricted to £10,000 (but only £5,000 in respect of damage to property, which will hardly mend the hole in the roof) by Section 42 and Schedule 5 of the Civil Aviation Act 1949 and unchanged since then despite inflation in the UK reducing the real value of that sum by a factor of 50.

So how can we ensure that the nuisance caused by the commercial use of drones is minimised?

One would hope that the current review will provide “no fly zones” for the more sensitive locations, including not just Heathrow, Faslane, 6GCHQ and Buckingham Palace, but also primary schools, open-air theatres and music venues, nature reserves and London Zoo. How these can be enforced is another matter, but that offers no protection for the rest of us.

The most serious problems will arise at or near the point of dispatch, just because of the concentration of flights in and out of the operating base. So we need to ensure that premises are not used as operating bases where their use is most likely to cause an unacceptable nuisance. That means ensuring that, where possible, commercial operators use sites as operating bases which are reasonably remote from houses and other sensitive properties. So the Post Office and Boots the Chemist may need to operate their drones from sites in industrial estates, rather than from their High Street premises. Our neighbourhood take-away restaurants may not be allowed to operate drone deliveries. Volume users, such as Amazon and DPD, may need to route flights around sensitive sites. But to do that requires that

commercial premises need to go through some regulatory process to determine whether their premises are appropriate for use as a drone operating base and, if so, requires the ability to set conditions to minimise such nuisance.

The obvious means of achieving this is the established process of planning permission.

The Town and Country Planning Act 1971 requires the occupier of land to get planning permission before making a “material change” in the use of land. The Town and Country Planning (Use Classes) Order 1987 then provides in Schedules One and Two a list of land uses. So, for example, it specifies use as a “shop”, as a restaurant, including a take-away restaurant, or as a “storage or distribution centre”, and any use within each such broad definition does not constitute development and so does not require planning permission. further, Clause 3(3) provides that where the use of land falls within any of those listed uses, the use of that land for a purpose incidental to that use is not excluded from that use (and therefore does not require any additional planning permission) merely because that incidental use is specified in a different use class. So, the incidental use of a shop or a take-away restaurant as a drone operating base for the purpose of that business would, currently, not require planning permission, and merely specifying the use of land as the operating base for drones for a commercial purpose as a separate use class would not achieve our purpose.

However, Clause 3(6) contains a list of uses, such as use for waste disposal and incineration, as a night club or as a hot food take-away restaurant, which are likely to cause particular nuisance and so are not to be considered to be included within any of the listed use classes. Here lies the answer. Amend Clause 3(6) to include “operating base for the flying of autonomous aircraft for a commercial purpose”, and then such use requires specific planning permission, and such planning permission can be granted subject to appropriate conditions to minimise any nuisance. Local planning authorities are best placed to assess whether such use of a particular site is likely to give rise to nuisance, and there is an established route of appeal to the Secretary if the applicant feels that the local planning authority has unreasonably refused or conditioned such planning permission.

But this change must be introduced soon, before the new rules come into force to allow such commercial drone use, and before businesses have established the use of unsuitable sites for drone flying.

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

Any personal email addresses and phone numbers have been excluded from this document.

Unanswered questions have been deleted from this document.

About you

What is the name of your organisation?

Royal Aeronautical Society

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Yes

Please expand on your answer below

The ALM-SG provides the following specific comments expressing their views as to why the current frame does not adequately accommodate UTM:

Under-inclusive Capture of UTM Services:
The existing legal structure, including the UK's assimilated ATM/ANS regulations, was developed with traditional air navigation service providers in mind. As the LC's Consultation Paper 271 notes, it lacks the granularity to accommodate the broad and evolving ecosystem of UTM services. UTM entails a suite of dynamic and largely digital services, such as strategic deconfliction, realtime trajectory management, and discovery/synchronisation protocols, that were not envisaged in the legacy regulatory model for ATS/ANS provision. This is consistent with the RAeS view that novel digital and autonomous infrastructure needs a redefined regulatory scaffold to support scalable AAM and drone integration.

Over-inclusivity of Regulatory Requirements:
Many of the requirements applicable to traditional ANSPs—such as organisational certification, safety case approvals, and security compliance—may be disproportionate or misaligned with the risk profile and operational context of many UTM service providers (UTMSPs). The LC highlights that current certification under UK Regulation (EU) 2017/373 may impose obligations (e.g., human-centric ATS procedures or legacy CNS performance standards) that are irrelevant to automated, digital UTM services. The RAeS President's Paper also argues for regulatory agility, noting that treating new entrants by default as traditional aviation actors risks stifling innovation and safety potential inherent in new technologies.

ATS Exclusivity Constraints:
The traditional model of monopolistic or exclusive air traffic service provision (e.g., NERL's en-route monopoly) is ill-suited to UTM, which anticipates competitive, distributed service provision by multiple UTMSPs in the same volume of airspace. This raises barriers under existing arrangements, such as the designation of a single ANSP for controlled airspace volumes. The RAeS identifies the need for collaborative, open architectures—rather than exclusive provision models—to support safe and scalable UTM integration. The LC correctly points out that exclusivity rules could create ambiguity or conflict, particularly in environments where UTM services need to interoperate with ATS under a federated model.

Conclusion:
Reform is needed to ensure that legislation reflects the fundamentally different service delivery models, risk environments, and technological infrastructures associated with UTM. The current framework lacks the flexibility, scalability, and proportionality required to regulate UTM effectively and safely. Both the RAeS and the LC point to the need for a modern, adaptive regulatory regime that facilitates innovation while maintaining aviation's core safety standards.

Consultation Question 2

We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers.

Please share your views below

Again, across all specialist groups within the RAeS we agree, and we note that this could be used to help transition to a new framework for UTMSPs.

The ALM-SG provides the following specific comments:
Yes, we support granting the CAA greater discretion to issue limited certificates to UTM Service Providers (UTMSPs) where full compliance with the existing ATM/ANS regulatory framework is disproportionate or misaligned with the operational context and risk profile of UTM services.

The RAeS President's Paper, emphasises that the integration of digital, automated, and highly scalable UTM services within a mixed conventional and novel aviation ecosystem necessitates an agile and adaptive regulatory framework. The paper notes that legacy aviation systems are ill-suited to accommodate new entrants and technologies if regulated solely under rules designed for crewed, centrally controlled airspace environments.

The RAeS highlights five key enablers for a safe and modern AAM/UTM environment, including: Building regulatory capacity and capability, and Encouraging industry-led collaboration and layered service models. These principles support a risk-based and flexible certification framework, allowing UTMSPs to be regulated in proportion to the safety-criticality, maturity, and scope of their services. The concept of limited certificates aligns with this philosophy—enabling the CAA to authorise UTMSPs for specific functions or environments without requiring compliance with irrelevant or burdensome ATS obligations (e.g. traditional CNS infrastructure performance, or personnel licensing requirements tied to air traffic controllers).

Moreover, allowing limited certificates would foster innovation while maintaining safety by ensuring that minimum essential regulatory protections are in place. This approach is consistent with the RAeS recommendation for early and proactive safety intervention in fast-evolving airspace operations through targeted regulation and performance-based oversight.
Finally, such flexibility would help prevent the creation of artificial barriers to market entry for smaller or more specialised UTMSPs, and supports the RAeS's call for a federated, resilient, and dynamic airspace ecosystem fit for both legacy and emerging users.

Conclusion:
If the existing ATM/ANS framework continues to apply, the CAA must be empowered to issue limited certificates to UTMSPs where appropriate. This will help ensure regulatory proportionality, support innovation, and enable a safer and more inclusive path toward integrated airspace management.

Consultation Question 3

We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Please share your views below

Generally, we agree across all specialist groups.

As our ATM-SG notes, we support a legal framework that explicitly permits designated Air Traffic Services (ATS) providers to enter into agreements with UTM Service Providers (UTMSPs) for the provision of air traffic services (ATS) to Uncrewed Aircraft Systems (UAS). Such an approach aligns with the RAeS's recommendation for a collaborative, integrated, and flexible airspace system capable of safely accommodating both conventional and emerging airspace users.

The RAeS President's Paper emphasises the need for a safety ecosystem that embraces new technologies while retaining aviation's high safety performance. It recognises that the introduction of Advanced Air Mobility (AAM) and UAS operations at volume will require "enhanced information sharing and coordination between actors with different operating models, safety cultures, and technological capabilities".

Facilitating formal agreements between certified ATS providers and UTMSPs is a pragmatic and scalable solution to manage that complexity. Moreover, RAeS has repeatedly emphasised the importance of ensuring that emerging operations do not erode the integrity of existing safety systems. By enabling designated ATS providers, who are already subject to stringent regulatory oversight and safety accountabilities, to formally coordinate with UTMSPs, the law can ensure that UAS operations benefit from existing ATS experience and infrastructure, while also fostering innovation in service delivery models.

Importantly, such arrangements could support: The safe integration of crewed and uncrewed traffic in shared volumes of airspace (a central tenet of the CAA's AMS and RAeS's airspace resilience recommendations), Flexible delegation of roles and responsibilities, reducing regulatory bottlenecks while maintaining a single accountable operational architecture, Incremental pathway to integrated service provision, allowing for varying levels of automation, autonomy, and geographic scope to be accommodated within a consistent legal framework.

These partnerships may also help avoid duplication of infrastructure and enable more cost-effective deployment of services—particularly valuable in the early phases of UTM roll-out and in lower-density or underserved regions.

However, our AL-SG does caution that such commercial agreements would be commercially negotiated between the parties. Thought needs to be given to the need for statutory limits to provide for and enforce risk allocation, and liability, to be confident that contracted risks are properly mitigated. There is a risk that a contractual imbalance of power may give rise to a party not having a meaningful remedy in the event of a breach. Without statutory certainty, legal risks may not properly be covered, leaving an uncertain outcome with, for example, insurers.

Conclusion:
The law should explicitly enable designated ATS providers to enter into operational and technical agreements with UTMSPs for the provision of ATS to UAS. This approach supports the RAeS's vision for a resilient, layered, and interoperable airspace ecosystem; enhances safety assurance during the transition to new service models; and ensures coherence between legacy and future systems. However, caution does need to be given to ensuring that risks are properly mitigated and there is legal certainty in the event of breach.

Consultation Question 4

If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CISPs. We invite consultees' views on these rights and duties.

Please share your views below

We agree in principle across all specialist groups of the RAeS, however the scope would need to be limited.

This limitation of scope is further elaborated by the ATM-SG:
We support the establishment of a Common Information Service (CIS) as a critical enabler for safe and efficient integration of uncrewed aircraft systems (UAS) and advanced air mobility (AAM) operations within the UK's shared airspace. As recognised by both the RAeS President's Paper and wider RAeS Air Traffic Management Group contributions, the implementation of CIS should be underpinned by a clear legal framework that defines the rights and obligations of all participating actors—UTMSPs, ATS units, and CIS providers—in order to ensure system interoperability, accountability, and safety.

Legal Rights and Duties:
UTM Service Providers (UTMSPs):
Duties:
• Mandatory participation in CIS where operating in designated areas (e.g. complex, high-density, or mixed-use airspace).
• Provision of timely, accurate, and validated data on flight intent, real-time positions, operational status, and contingency planning.
• Compliance with interoperability, cybersecurity, and data protection standards.
• Coordination with ATS and CIS providers, including adherence to dynamic airspace usage rules and priority protocols.

Rights:
• Equitable access to CIS data, including ATS-supplied constraints and other UTMSP flight intents.
• Ability to flag inaccuracies or system issues in shared data.
• Right to receive updates to defined operational data standards and CIS protocols.

Air Traffic Services (ATS) Units:

Duties:
• Integration of relevant data into CIS, including airspace status (e.g. NOTAMs, capacity constraints, tactical interventions), real-time traffic information, and separation instructions.
• Timely coordination with UTMSPs on dynamic airspace management and deconfliction activities. Alignment of ATS procedures with UTM-enabled operations to ensure a unified traffic picture in integrated airspace.

Rights:
• Authority to override UTM trajectories in emergent situations to preserve overall

airspace safety.
• Access to full operational picture from CIS, including strategic UTM data and UAS conformance monitoring.

Common Information Service (CIS) Providers:

Duties:
• Ensure real-time, secure, and equitable dissemination of relevant aeronautical and operational information across all actors.
• Maintain data integrity, latency tolerances, and system availability standards.
• Provide transparent and auditable access protocols.
• Facilitate a federated, standards-based architecture that supports interoperability among heterogeneous systems.

Rights:
• Authority to enforce compliance with data exchange protocols.
• Right to require conformance certification from UTMSPs and ATS units interfacing with the CIS.
• Recourse to regulatory enforcement in case of non-compliance by connected parties.

Rationale (RAeS Perspective):
As outlined in Shaping the Future of AAM Safety, the safe realisation of future aviation concepts will depend heavily on predictive, system-wide information sharing, strong safety culture, and collaborative governance. A legally defined CIS architecture would operationalise these principles, enabling timely deconfliction, airspace optimisation, and equitable access while safeguarding safety and trust.

The RAeS has consistently advocated for a layered, federated model of service delivery in future airspace, where a neutral, authoritative CIS acts as the digital backbone linking actors with different operational capabilities and safety maturity. Formalising rights and duties through law would support this model while ensuring resilience, accountability, and transparency across the ecosystem.

Conclusion:
A robust statutory framework should impose reciprocal legal duties and entitlements on UTMSPs, ATS units, and CIS providers to support a trusted, secure, and interoperable common information environment. This is essential to enable scalable UTM operations, maintain legacy system integrity, and deliver the RAeS vision of a safe and resilient future airspace.

Consultation Question 5

We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review?

Please share your views below

Our ATM-SG comments as follows:
Yes, there are several additional issues that merit attention in the regulation of UTM Service Providers (UTMSPs), particularly when viewed through the RAeS lens of a safe, interoperable, and forward-looking airspace ecosystem. The RAeS President's Paper stresses that the successful and safe integration of Advanced Air Mobility (AAM) operations will depend not only on the certification of new aircraft types but also on the regulation of enabling digital infrastructure, services, and operating models. The following regulatory issues should be considered:

1. Operational Safety Assurance and Safety Management Systems (SMS)
UTMSPs may operate in a predominantly digital and automated environment, often without human-in-the-loop oversight. Nevertheless, they must be subject to robust safety management system requirements, proportionate to the risk and volume of operations they support. The RAeS stresses the importance of developing a strong safety culture from the outset—particularly for new entrants who may not have deep roots in traditional aviation safety systems.

Recommendation:
The CAA should require UTMSPs to demonstrate scalable and verifiable SMS capability, potentially through tiered requirements depending on function and risk class, and supported by continuous monitoring and reporting.

2. Cybersecurity and System Resilience
As highlighted in the RAeS Resilience and ATM Modernisation briefings, UTM systems are inherently dependent on digital infrastructure and data exchange. They represent a significant surface for cyber threats and systems failure. Given their role in real-time airspace safety, UTMSPs must be subject to a baseline of cybersecurity, redundancy, and data assurance requirements.

Recommendation:
UTMSPs should be regulated under a cybersecurity framework aligned with civil aviation standards (e.g. ICAO Annex 17, EASA NIS principles) and demonstrate resilience to cyber intrusion, denial-of-service attacks, and data corruption.

3. Interoperability and System-of-Systems Integration
The RAeS has consistently advocated for an open, federated, and standards based approach to digital service delivery in future airspace. UTM regulation should ensure that UTMSPs can integrate and interoperate with other actors, including ATS providers, CIS platforms, and other UTMSPs.

Recommendation:
UTMSPs should be required to conform to technical interoperability standards (e.g. ASTM, EUROCAE WG-105, ICAO UAS Traffic Management framework) to avoid fragmentation, vendor lock-in, and competitive safety degradation.

4. Accountability, Liability, and Incident Investigation
The RAeS highlights the need to develop predictive, non-punitive safety cultures for AAM and UTM operations. However, legal clarity is needed in terms of operational liability, data retention, and the obligation to support post-event investigations.

Recommendation:
UTMSPs should be obliged to retain operational data (e.g. flight trajectories, coordination records, decision logic) for a defined period and make this available to regulators and investigators in the event of an incident. Liability frameworks should reflect their functional role in separation assurance and safety-critical decision support.

5. Workforce Competency and Organisational Maturity
RAeS notes that many UTMSPs may emerge from technology sectors without aviation heritage. There is a risk that organisational safety maturity lags behind service deployment.

Recommendation:
Minimum competency and organisational readiness standards should be defined, particularly for technical leads, safety managers, and those interfacing with ATS. This may include structured pathways for regulator engagement, training, and audit-readiness.

6. Environmental and Airspace Efficiency Objectives
RAeS has argued that airspace modernisation must support Net Zero objectives and that UTM services should not inadvertently degrade airspace efficiency or increase emissions through poor routing or deconfliction logic.

Recommendation:
UTMSPs should be required to operate in line with defined performance-based navigation and environmental impact principles, ensuring their services align with the UK's wider airspace modernisation and decarbonisation policies.

Conclusion:
In addition to legal certification and service scope, regulation of UTMSPs must address safety assurance, cybersecurity, system interoperability, liability, organisational competence, and environmental performance. These elements are central to the RAeS vision of a safe, scalable and sustainable airspace ecosystem and should be considered integral to the LC's review.

Enforcement and liability

Consultation Question 6

We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM.

Please share your views below

With respect to LC consultation question 6, there is a range of opinion. The AL-SG and RPAAS-SG consider that the current enforcement mechanisms may be adequate as they facilitate a safety first 'just culture' such that the existing regime would still work well for UTM, provided the sanction was proportionate to the severity of the breach.

However, in the opinion of our ATM-SG the current enforcement mechanisms are not adequate. The ATM-SG explains that while certain core elements of the current enforcement regime (such as safety oversight and the ability to impose proportionate sanctions) should be preserved, a direct replication of the existing ATM/ANS enforcement framework for UTM would be inappropriate and potentially counterproductive. A more tailored, proportionate, and adaptive enforcement model is needed—one that reflects the distinct operational, technological, and organisational characteristics of UTM service provision.

The RAeS President's Paper highlights that the future aviation ecosystem will be marked by a mix of conventional and novel operators, a diverse safety culture among new entrants, and increasing reliance on automated and digital systems. Against this backdrop, the enforcement approach for UTM must:

1. Be Proportionate to Risk and Scope
Unlike traditional ATS providers, many UTM Service Providers (UTMSPs) may deliver highly automated, narrowly defined services (e.g., strategic deconfliction or discovery/synchronisation) in specific airspace volumes. The enforcement regime must reflect this variation in complexity, volume, and criticality. A one-size-fits-all model from ATM/ANS regulation could stifle innovation and impose unnecessary regulatory burdens.

Recommendation:
Enforcement powers should be scalable and modular, enabling the CAA to apply different levels of oversight, penalties, or remediation depending on the nature and severity of the non-compliance and the operational risk presented.

2. Support Predictive and Preventative Safety Culture
The RAeS strongly advocates for a forward-looking safety model—emphasising learning, continuous improvement, and pre-mortem analysis over punitive action. Traditional enforcement mechanisms, which are often reactive and focused on compliance infractions, may not foster the kind of safety management culture required in digital UTM environments.

Recommendation:
Enforcement mechanisms should embed a non-punitive reporting environment, especially in early stages of market maturity. Regulatory frameworks should encourage self-reporting, voluntary disclosure, and collaborative problem-solving between the regulator and UTMSPs, aligned with contemporary safety management principles.

3. Address Data Integrity, Cybersecurity, and System Interoperability
UTMSPs operate largely in a digital domain. Therefore, enforcement frameworks should address system performance, data provision obligations, and cybersecurity compliance—areas not fully covered by the current ATM/ANS enforcement regime.

Recommendation:
The enforcement model should include powers to audit digital conformance, enforce technical interoperability standards, and impose corrective actions for failures in

data sharing or information security. These digital performance failures can have safety-critical implications in an automated traffic management context.

4. Encourage Organisational Maturity and Sector Development
Many UTMSPs may be new market entrants with limited aviation experience. Strict replication of the ATM/ANS enforcement framework may create barriers to entry or discourage engagement with the regulator.

Recommendation:
A staged or progressive compliance model should be adopted—similar to regulatory "sandboxing" in other sectors—allowing UTMSPs to scale their compliance obligations as their operational scope and risk profile evolve.

Conclusion:
While foundational enforcement principles such as safety oversight, regulatory authority, and sanction powers should carry over, the enforcement regime for UTM should not be a direct replica of the ATM/ANS model. It must be proportionate, digitally aware, supportive of emerging safety cultures, and flexible enough to evolve with the sector. This approach aligns with the RAeS vision for a resilient, modernised, and inclusive aviation ecosystem capable of safely integrating future airspace users.

Consultation Question 7

We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA.

Do consultees agree?

Yes

Please share your views below

We agree with this proposal across all specialist groups of the RAeS, subject to the caveat that approval might also be permitted by Recognised Entity approved by CAA.

Our ATM-SG comments further as follows: It should be an offence to use or permit the use of equipment for providing UTM services unless that equipment has been approved by the CAA. This position aligns with the RAeS's strong emphasis on preserving the safety integrity of the aviation system, particularly as we integrate increasingly automated, digital and autonomous capabilities into UK airspace.

The RAeS President's Paper underscores that as we transition to a mixed-traffic environment, comprising both legacy and novel aircraft types, technological assurance and system-level validation will be foundational to preserving aviation's exceptional safety record. UTM equipment (e.g. decision-support algorithms, conflict detection tools, position-reporting interfaces, discovery and synchronisation

services) will, in many cases, replace or supplement human judgement. These systems therefore represent a new class of safety-critical infrastructure.

Justification for CAA Equipment Approval

Digital Automation and System Accountability:
UTM systems will operate autonomously or semi-autonomously, making real-time decisions that directly affect aircraft separation, airspace integrity, and flight safety. The RAeS has stressed the importance of ensuring that such systems are certified, reliable, and interoperable across different service providers and airspace users. Unregulated or non-approved equipment risks undermining trust and operational predictability in shared airspace environments.

Cybersecurity and Data Integrity:
As highlighted in both the RAeS President's Paper and RAeS resilience briefings, UTM systems are highly dependent on secure data flows and resilient digital architectures. Equipment that has not undergone CAA oversight could introduce vulnerabilities related to spoofing, jamming, or data corruption, posing risks not only to UAS operations but also to wider aviation safety and national infrastructure resilience.

Interoperability and Common Information Services:
The implementation of Common Information Services (CIS) will depend on all connected equipment adhering to uniform technical and performance standards. Allowing unapproved equipment to operate in this environment would compromise system-wide situational awareness, deconfliction logic, and equitable access to airspace, undermining one of the core design principles of integrated UTM.

Scope and Implementation Considerations:
While we support the proposal, we recommend that the offence provision be:
• Risk-based and proportionate, with differentiated requirements for tactical vs. strategic services, or for services operating only in segregated airspace;
• Accompanied by clear guidance on the approval process, including the certification of software components, updates, and AI-based decision logic;
• Supported by transitional arrangements, allowing emerging providers to innovate and test technologies within sandboxed or limited deployment frameworks prior to full approval.

Conclusion:
We agree that the use of unapproved equipment for UTM services should be an offence. Such a measure is essential to uphold aviation's safety standards, ensure cyber-resilience, support interoperability, and foster trust in the future airspace ecosystem. It also aligns with the RAeS's vision for a safe, modern, and digitally enabled airspace, as articulated in the RAeS President's Paper.

Consultation Question 8

We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Generally we agree across the specialist groups, subject to the caveat that sanctions should be proportionate to the severity of the breach.

However, we do raise caution that that the current offences under section 3 of the Aviation Security Act 1982 may, in isolation, not be fully adequate to address the emerging risks associated with Uncrewed Aircraft System Traffic Management (UTM) services. While section 3 provides an important baseline for protecting against acts of violence and unlawful interference with air navigation installations, it was conceived for a conventional, physical infrastructure model and does not fully reflect the digital and distributed architecture of modern UTM systems.

Our UTM-SG highlights this particular risk in greater detail below:
The RAeS President's Paper explicitly highlights the growing dependency on automated systems, digital infrastructure, and cyber-secure operations in the context of UTM and Advanced Air Mobility (AAM) integration. These changes present new vectors for interference and manipulation that were not envisaged in the 1982 Act.

Key Considerations

Digital and Cyber Vulnerabilities:
Section 3 is primarily aimed at physical acts of sabotage or interference. However, as UTM systems rely heavily on real-time data, algorithmic decision-making, and cloud-based communications, cyberattacks (e.g. jamming, spoofing, data corruption, denial-of-service) now present a material threat to the safe operation of airspace. These threats may not be adequately addressed by current language focused on "damage" or "interference" with "installations".

Decentralised and Non-Physical Infrastructure:
UTM services are often virtualised, distributed across software platforms and networks, with no fixed location or physical facility. As such, enforcement under section 3 may be ambiguous if there is no identifiable "aerodrome" or "navigation facility" that can be shown to have been physically interfered with.

Emergent Classes of Actors and Threats:
As RAeS notes, the integration of new entrants, many from the tech and software sector, will diversify the safety culture and threat landscape. Malicious or negligent actors may attempt to tamper with or operate unauthorised digital services (e.g., counterfeit UTM functions or rogue data injection), which may not be caught under traditional aviation security offences unless those services are recognised explicitly in law.

Recommendation:
We recommend that section 3 of the Aviation Security Act 1982 be supplemented or

clarified in light of UTM-specific risks. In particular:
• A dedicated offence should be considered for intentional or reckless interference with digital UTM systems, including falsification of flight data, disruption of common information services, or unauthorised access to UTM networks;
• The definition of “navigation facility” should be updated (or interpreted through guidance) to clearly include digital services, software-defined infrastructure, and cloud-based systems used in UTM;
• UTM operators and service providers should be brought under explicit security obligations, including mandatory incident reporting, cyber resilience standards, and cooperation with relevant authorities (e.g. CAA, NCSC).

These recommendations align with the RAeS’s emphasis on developing a proactive safety and security culture for digital aviation systems, and are consistent with the broader principle of “designing-in safety and resilience” that underpins the RAeS President’s Paper.

Conclusion:
While section 3 of the Aviation Security Act 1982 provides an important starting point, it is not by itself sufficient to address the full range of risks posed by interference with UTM services. We recommend that the legislative framework be updated to reflect the digital, autonomous, and distributed nature of UTM systems, in line with RAeS principles of modern aviation safety and security assurance.

Consultation Question 9

We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services.

Do consultees agree?

Yes

Please expand on your answer below

All specialist groups are broadly in agreement with this proposal.
Our ATM-SG further comments as follows: we broadly agree with the provisional proposal that a system of offences and penalties akin to those found in the Air Navigation (Single European Sky) (Penalties) Order 2009 (“the Penalties Order”) should be adopted in relation to UTM services. However, we believe this approach should be carefully adapted and modernised to reflect the unique characteristics and operational environment of UTM, as emphasised in the RAeS President’s Paper.

Justification for Alignment with the Penalties Order Framework

Regulatory Consistency and Oversight:
As the RAeS notes, ensuring safety in the integration of novel operations such as UTM into shared airspace depends on effective oversight, accountability, and conformance with approved standards. A penalties framework for UTM—aligned

with that used for conventional ATM/ANS—will reinforce regulatory parity and foster trust in the evolving aviation ecosystem.

Incentivising Compliance in a Digitally Mediated Environment:
UTM services will often operate with minimal human oversight and significant autonomy. As such, it is critical that operators and service providers understand their regulatory obligations and face meaningful consequences for non-compliance with safety, performance, interoperability, or data-sharing requirements. The Penalties Order provides a precedent for targeted, proportionate enforcement through civil sanctions.

Key Considerations for UTM Adaptation:
However, as RAeS has consistently highlighted, UTM differs markedly from traditional ATM in terms of its digital infrastructure, automation, and diversity of actors. Simply transposing the Penalties Order without modification risks regulatory misalignment or disproportionality.

The following considerations should inform its application to UTM:

Proportionality and Tiered Penalties:
UTM providers will range from large integrated service platforms to smaller, function-specific actors. Penalties should be tiered based on risk, scope of operations, and compliance history, to ensure smaller or early-phase providers are not discouraged from entering the market.

Scope of Offences:
New categories of offence should reflect unique digital risks, such as:
• Failure to conform to data exchange or interoperability standards;
• Providing unauthorised or counterfeit UTM functions;
• Breaches of cybersecurity protocols or failure to report cyber incidents;
• Misuse or distortion of CIS information.

Prevention-Oriented Enforcement:
Consistent with the RAeS emphasis on predictive safety and safety culture, the penalty regime should also support preventative enforcement tools—such as improvement notices, corrective action plans, and structured regulatory engagement—prior to or in place of financial penalties in the first instance.

Transparency and Due Process:
RAeS supports transparent, rules-based enforcement to support stakeholder trust. The penalty framework should include clear routes for appeal, redress, and regulatory guidance, particularly as UTM is an emergent and fast-evolving sector.

Conclusion:
We support the adoption of a penalties framework for UTM services modelled on the Penalties Order, provided it is adapted to address the specific regulatory and operational context of UTM. This approach will help uphold safety, foster responsible innovation, and maintain public and stakeholder confidence in the UK's

future airspace architecture—consistent with the principles laid out in Shaping the Future of Advanced Air Mobility Safety.

Consultation Question 10

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

(1) have in place measures to cover any liability incurred during the course of the provision of their services; and

(2) where using the services of another ATM/ANS service provider (including UTM service providers), should have in place arrangements to allocate liability.

Do consultees agree?

No

Please expand on your answer below

As an initial point, our AL-SG notes that paragraph 5.69-5.70 is a slight mischaracterisation of the liability regime vis a vis carriers and pilots. The Montreal Convention regime provides a two tied liability regime. The first tier of liability is strict (Article 21(1)) while the second tier provides for a presumption of liability and reversed burden of proof above c.156,000 (Article 21(2)). This requires the carrier to prove that the accident was caused by a third party or was not caused by its negligence in order to limit liability to £156,000. Historically, in practice, this is rarely, if ever, achieved in aviation accidents (i.e. not trips, and spills). To the AL-SG's knowledge no carrier has actually ever succeeded in limiting their liability under the Montreal Convention in relation to a major aviation accident. An attempt was made by Ukrainian International Airlines following the shooting down of flight PS752 in Iran. That attempt failed. As such, historically, passengers and families of passengers have been provided with an unlimited liability regime against the carrier and the suggestion that "the total damages claimed for the air carrier or employee or agent must however not exceed the overall limits set by the Convention" is misleading.

However, as we noted in our previous LC Consultation response the development of automated systems is likely to result in passengers and families being unable to take advantage of the unlimited liability regime as automated systems provide key control of functions. Extensive automation, particularly where that automation is unknown to pilots (e.g. Boeing 737 Max and its MCAS system) provides a possibility that carriers may be able to take advantage of the liability limit under Article 21(2).
As noted in the previous LC Consultation, it is our view that consideration needs to be given to accommodate the novel nature and changeability of the end-to-end aviation supply chain (including systems and services in the air and on the ground) in a highly automated ecosystem. This point was also made within the RAeS

President's Paper.

The Montreal Convention regime is effectively an insurance regime that allows for funnelling of liability through the carrier in circumstances where the carrier or pilots are normally at fault. Insurance premiums are priced accordingly. The entire strict liability regime is necessary in circumstances where passengers and families are not party to any official accident investigation undertaken in accordance with the Chicago Convention Annex 13, meaning they have no access to wreckage, nor any access to key data. Those investigations frequently take 2-3 or more years to complete meaning that the limitation period for claims against other parties may have expired before the release of key data and the final investigation report. The Montreal Convention liability regime allows claims to be more simply brought against the carrier without needing to prove negligence, and relying on the presumption of negligence identified above.

In a highly automated system that presumption is potentially no longer valid rendering the entire Montreal Convention and the protection it provides as inadequate.
In those circumstances the regime relating to ATM/ANS service providers will be more exposed and consideration needs to be given to ensuring that passengers are not left without recourse. It is the simplicity of the existing Montreal Convention regime, coupled with (a) the current factual operational pattern that supports liability resting with carriers and (b) the challenges with launching a claim against any other party in circumstances where families are excluded from an investigation that explains the lack of case law against ATM/ANS service providers identified in 5.104. It would be a mistake for the LC to assume that this will remain the same in a highly automated system, where families may not have the benefit of the unlimited liability under the Montreal Convention and will be forced to pursue alternative parties.

With respect to paragraph 5.92, as noted in our previous LC Consultation response, we once again point out that Regulation 785/2004 is woefully inadequate in the context of UAS as it is a weight based regulation and the key driver in current UAS/eVTOL development is weight reduction. The actual insurance minimums provided by Regulation 785/2004 will be inadequate to properly compensate severely injured or deceased passengers (or ground victims). We agree with the suggestions of introducing legislation that requires insurance consistent with the risk of operation, not only in its flight path and complexity, but also its kinetic energy, and provides protection to third parties in the case of untraceable or uninsured UAS.

We accordingly disagree with paragraph 5.99 for the reasons given.

With respect to claims of negligence under the current regime against ATM/ANS Service Provider, we agree with the points made at 5.109 concerning the opaqueness of AI outputs, mistakes and effects. This potentially renders it impossible for claimants to prove breach, causation or foreseeability under a common law negligence regime. We further comment that even where claimants may have a theory of negligence relating to the actions of an AI it will be extremely challenging to source experts given this is a new technology and the majority of experts (if not all sufficiently qualified experts) with sufficient knowledge of the

systems are still working in the sector and unwilling to ‘burn bridges’ by acting against AI operators/manufacturers.

The application of res ipsa loquitur faces its own challenges in circumstances where families are not privy to the investigation in order to establish that the cause suggested is the only explanation. Furthermore, the failure of an AI system, even one utilised by a ATM/ANS Service Provider more properly falls into a product liability claim against the designer of the AI system than a negligence action against the ATM/ANS Service Provider and the doctrine of res ipsa loquitur is not available in product liability claims under English law.

We disagree that causation on negligence of an ATM/ANS Service Provider utilising AI technology would be obvious. Given that most AI technology utilised by an ATM/ANS Service Provider is unlikely to be developed in house, the ATM/ANS Service Provider may be able to argue that their conduct in selecting an AI developer did not fall below the standard expected. Questions will relate to the integration and utilisation of that technology and again claimants will not have access to that information as a consequence of Annex 13 of the Chicago Convention in order to prove their claim in negligence or prove that this negligent conduct was causatively linked to the damage.
For the reasons explained above, if the primary liability of the UAS operator is limited under the Montreal Convention then any contractual sharing of liability and risk with a UTM service as envisaged by 5.118 will also be limited. For the claimant they will simply be undercompensated.
We would encourage the LC to entirely rethink the liability regimes surrounding automated systems to adequately take into consideration this multi-party ecosystem and the risks and challenges that arise with highly automated systems.

Notwithstanding whether the entire regime is inadequate for both ATM/ANS Service Providers and UTM Service Providers utilising automated technologies as outlined above, we do agree that the liability position should be the same for both ATM/ANS Service Providers and UTM service providers. As explained by our ATM-SG in greater detail: UTM service providers (UTMSPs) should be subject to liability requirements broadly consistent with those applicable to traditional ATM/ANS service providers. As the RAeS President’s Paper stresses, preserving the UK’s exemplary aviation safety record during the transition to digitally enabled, autonomous and mixed-mode operations will require robust and clearly defined legal accountability mechanisms.

Justification

Safety-Driven Accountability:
The RAeS has consistently advocated for the principle that novel airspace users and service providers should be integrated into the regulatory and safety framework on a risk-equivalent basis. Where UTMSPs provide services, such as strategic deconfliction, dynamic airspace management, or coordination with CIS/ATS units, that influence flight safety, they must be held accountable for the reliability, performance, and integrity of those services.

Systemic Risk and Service Interdependence:

The RAeS President's Paper highlights that the AAM/UTM environment will consist of layered and distributed services, provided by multiple actors. This increases complexity and interdependence—and therefore the potential for failure propagation. Clear and enforceable liability arrangements, including indemnification and allocation of responsibilities between UTMSPs and other ATM/ANS providers, are essential to mitigate systemic risk and ensure incident response, investigation, and remediation can be conducted effectively.

Fairness and Regulatory Parity:
Applying equivalent liability standards ensures regulatory consistency and competitive neutrality across the ATM/UTM ecosystem. This guards against regulatory arbitrage, maintains a level playing field, and reinforces trust among operators, regulators, and the public.

Implementation Considerations:
While we support the application of general liability requirements, we recommend that:
• Liability coverage be proportionate to the scope, risk class, and operational impact of the services provided. For example, tactical deconfliction in high-density airspace may warrant more comprehensive coverage than simple geofencing advice in isolated Class G areas.
• The CAA provide guidance on acceptable forms of liability cover, including insurance, performance bonds, or risk pooling mechanisms, particularly for small or emerging UTMSPs.
• Multi-provider liability chains (e.g. when services are layered or subcontracted) be subject to mandatory contractual frameworks that clearly define the allocation of responsibilities, response protocols, and indemnities in case of failure or incident.
• Liability requirements be aligned with wider aviation obligations under the Chicago Convention, ICAO Annexes, and evolving EU and US practice to support international harmonisation and interoperability.

Conclusion:
This is a difficult area. In the opinion of our Air Law Specialist Group, the entire liability regime needs careful consideration and to be rethought as it is exposed to collapsing with the implications of automated technologies. These risks include: (a) the loss of the Montreal Convention as a viable funnelling tool for liability; (b) the inadequacy of insurance requirements with respect to UAS; (c) the inability to prove liability of other responsible parties because of (i) claimants' exclusion from the official investigation, (ii) the inability to source experts, (iii) the opaqueness of artificial intelligence failures, (iv) the unavailability of res ipsa loquitur arguments in a product liability context and (v) the deniability protection to UTM providers who do not develop automation technology in house.

With respect to consistency between ATM/ANS Service Providers and UTM Service Providers, we support the proposal to apply liability requirements to UTM service providers on a par with ATM/ANS providers. This approach is consistent with RAeS's position that safety, accountability, and systemic resilience must remain at the core of any future aviation regulatory framework. It ensures a sound legal

foundation for trust, transparency, and interoperability in the evolving airspace environment.

Consultation Question 11

We invite consultees' views on whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision.

Please share your views below

For the reasons set out above in response to question 10, in the opinion of the AL-SG, the current law on ATM/ANS liability is inadequate and needs to be rethought.

Our ATM-SG notes further that the law is not sufficient to address the emerging and distinctive risks associated with UTM service provision, approaching the issue from a technical rather than a legal perspective and explained further here: As the RAeS President's Paper emphasises, the introduction of highly automated, digital, and decentralised UTM services represents a paradigm shift in how aviation operations are managed—and this shift requires a liability regime that is proportionate, adaptive, and digitally aware.

Key Reasons Why an Extension Alone Is Insufficient:

New Risk Modalities
UTM systems rely heavily on software-driven functions (e.g. strategic deconfliction, flight intent coordination, dynamic airspace reservation, and digital identification), often with minimal human oversight. These functions introduce new types of risk, including software bugs, algorithmic misbehaviour, AI-related error propagation, and cybersecurity breaches, which are not well accounted for in the traditional ATM/ANS liability framework that presumes physical human intervention and infrastructure.

Decentralised and Federated Service Models
Unlike the vertically integrated model of ATM, UTM services will often be delivered by multiple, overlapping, and potentially competing actors in real time. This increases complexity in attributing causation and liability in the event of an incident. For example, fault may lie with a UTMSP, the data integrity from a supplementary data service provider (SDSP), or an upstream Common Information Service (CIS) component.

Need for Digital Forensics and Data Traceability
Civil liability in a UTM context will depend on transparent and legally admissible data trails from system interactions, automation logic, and communication exchanges. These requirements go beyond existing ATM/ANS provisions and must be explicitly addressed through UTM-specific data retention, auditability, and evidentiary standards.

Blurring of Boundaries Between Providers and Technologies
The RAeS has noted that many new entrants in the UTM ecosystem may not come

from traditional aviation backgrounds. Liability frameworks must consider situations where responsibilities are shared between certified aviation providers and technology or platform providers, especially where decisions are influenced by AI or cloud-based systems operating under minimal human intervention.

RAeS-Aligned Recommendations:
To ensure an effective and future-proof liability framework for UTM:
• Liability rules must be modernised to reflect digital, automated, and networked environments, including provisions for software errors, autonomous system failures, and cyber-induced harm.
• There should be clear allocation of liability in multi-provider environments, supported by mandatory contractual obligations between UTMSPs, CIS providers, and ATS units.
• A UTM-specific liability regime should include mandatory data retention periods, forensic logging standards, and regulatory oversight of failure attribution processes.
• Consideration should be given to introducing a strict liability framework for defined classes of UTM service provision, particularly where failure may lead to third-party damage or harm on the ground, in line with the RAeS emphasis on proactive risk mitigation and safety assurance.
• The regulator (CAA) should be empowered to define service-level agreements and minimum assurance thresholds, and enforce compliance through proportionate penalties and operational restrictions.

Conclusion:
We do not believe that the ATM/ANS liability law is sufficient to respond to an increasing automated environment. Those risks are amplified for UTM service providers and the ATM/ANS liability law is insufficient to address the specific legal, technical, and operational complexities of UTM service provision. Instead, a dedicated, digitally aware liability regime should be developed in tandem with evolving safety assurance, data integrity, and cybersecurity frameworks—reflecting the approach advocated by the RAeS President's Paper.

Consultation Question 12

We invite consultees' views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.

Please share your views below

In the opinion of the AL-SG we invite the LC to consider the comments made in response to consultation question 10.

The concerns and implications addressed in response to consultation question 10 align with several aviation-specific liability issues that warrant detailed consideration in the context of increasing autonomy.

The RAeS President's Paper underscores that the integration of novel, increasingly autonomous systems into UK airspace challenges many of the foundational

assumptions underpinning traditional liability frameworks. In aviation, where public safety, regulatory oversight, and international obligations are paramount, the liability regime must be especially robust, adaptive, and internationally harmonised.

Key Aviation-Specific Liability Issues

1. Role of the Human Operator and the Transition to Autonomy
As noted by the ATM-SG, the existing liability model assumes a human pilot or operator retains direct control and accountability. However, as autonomy progresses, particularly in UAS and AAM operations, the human role may shift to one of supervision or system monitoring, or disappear altogether in fully autonomous operations. The AL-SG notes that this aligns with the potentially loss of availability of the higher tier of liability under the Montreal Convention, leaving passengers and families woefully undercompensated and needing to seek compensation from third party automated system designers in circumstances where (i) claimants are excluded from the official investigation, (ii) there is an inability to source experts, (iii) the opaqueness of artificial intelligence failures, and (iv) the unavailability of res ipsa loquitur arguments in a product liability context

The ATM-SG notes that RAeS highlights the need for clear attribution of legal responsibility in cases where decisions are made by algorithms, AI systems, or autonomous flight logic.
This includes determining how liability should be shared between the aircraft operator, the UTM service provider, the system designer/manufacturer, and the software developer. As the AL-SG notes that an unlimited strict liability regime is also necessary to avoid a risk of undermining just culture.

Recommendation: Reformulate the liability framework to be consistent with a multi-party highly automated ecosystem on a strict liability basis.

2. Failure Attribution in Multi-Actor Digital Environments
In a future aviation ecosystem with interdependent digital actors, including UTM service providers (UTMSPs), common information services (CIS), data suppliers, and remotely piloted aircraft operators, therefore assigning liability for operational failures may be challenging.
The RAeS notes that digital systems often lack clear causal chains, and failures may arise from emergent behaviour, data corruption, or incorrect system assumptions.

Recommendation: Develop aviation-specific frameworks for distributed liability, including shared responsibility models and duty-to-cooperate provisions for post-incident investigation.

3. Cross-Border Liability and International Harmonisation
Aviation is a globally regulated and inherently cross-border activity. Any domestic liability reforms must align with ICAO principles, EU and US developments, and relevant bilateral agreements.
Autonomous aircraft may transition between jurisdictions, requiring consistent liability treatment.
Multinational operators, cloud-based service providers, and international data

routing raise complex questions of applicable law and jurisdiction.

Recommendation: Work with ICAO and regional authorities to harmonise liability rules for autonomous aviation, particularly in relation to remotely piloted and software-defined services.

4. Liability for Ground Damage and Third Parties
RAeS has previously emphasised the importance of considering the third-party impact of low-level autonomous operations, particularly in urban environments where eVTOLs, drones, and autonomous aircraft may operate in proximity to people and property.

Current surface damage rules under the Civil Aviation Act may not fully reflect the risk posed by high-frequency, autonomous flight operations over populated areas.

Recommendation: Reassess third-party liability thresholds, mandatory insurance requirements, and compensation mechanisms in light of the volume, proximity, and autonomy of new aircraft types.

5. Product Liability and System Certification
Autonomous aviation increasingly involves complex systems of systems, where liability may shift from operators to manufacturers, software developers, or AI system designers.
Traditional aviation certification focuses on airworthiness and pilot competency, but may not account for dynamic or self-learning systems that evolve post-certification.

Recommendation: Review the interface between aviation regulation and product liability law, including the applicability of the Consumer Protection Act 1987 to certified autonomous systems. Further comments on issues concerning the Consumer Protection Act 1987 in the context of autonomous systems were provided in the RAeS response to the last consultation.

Conclusion:
The aviation sector presents distinct liability challenges in the context of increasing autonomy, particularly in relation to safety-critical decision-making, shared digital services, and cross-border operations. The RAeS strongly supports a modernised liability framework that balances innovation with public confidence and operational safety, as outlined in the Shaping the Future paper. This framework should be proportionate, clear, and internationally aligned, and must address both operator-level responsibility and system-level accountability.

Impact

Consultation Question 13

We invite consultees' views regarding the likely costs and benefits of our provisional proposals in relation to UTM.

Please share your views below

We agree that benefits outweigh the costs of the provisional proposals and note the following comments from the ATM-SG: The RAeS supports the LC's provisional proposals relating to the regulation of Uncrewed Aircraft Systems Traffic Management (UTM). We consider the proposals to be broadly proportionate, future-facing, and aligned with the strategic objectives set out in the UK's Airspace Modernisation Strategy. When viewed through the lens of the RAeS President's Paper, the likely benefits outweigh the costs, particularly when long-term safety, economic resilience, and system scalability are considered.

Anticipated Benefits

1. Safety Assurance in a Digitally Managed Airspace
The RAeS strongly supports a regulatory model that embeds safety into the fabric of digital UTM systems. The LC's proposals—such as CAA approval of UTM equipment, liability requirements, and enforcement mechanisms—will:
• Ensure only assured, tested, and monitored systems can influence real-time airspace decisions.
• Reduce the likelihood of mid-air conflicts, data corruption, and system-induced failures.
• Foster public and industry confidence in emerging aviation technologies.
This aligns directly with RAeS's recommendation to "design-in" safety as autonomous and advanced air mobility systems proliferate.

2. Regulatory Certainty and Market Confidence
Clarity in legal obligations, enforcement frameworks, and liability allocation creates a stable investment environment. The LC's approach offers:
• Greater predictability for innovators, insurers, and investors.
• A structured pathway for new entrants to demonstrate compliance.
• Enhanced confidence for public authorities and commercial end-users.

3. Airspace Efficiency and Interoperability
By enabling structured relationships between UTM providers, ATS units, and common information services, the proposals will:
• Allow dynamic management of shared airspace.
• Prevent fragmentation of air traffic data and decision-making.
• Support scalable, federated models of traffic management, a principle endorsed by RAeS as essential for long-term system resilience.

4. Support for Innovation and Economic Growth
A proportionate regulatory regime, including the use of limited certification, promotes:
• Entry of smaller, innovative service providers.
• Rapid prototyping and demonstration under safe, regulated conditions.
• Growth of a domestic UTM ecosystem aligned with the UK's Future Flight and Net Zero ambitions.

Likely Costs and Burdens

1. Regulatory and Compliance Costs for New Entrants
UTM Service Providers (UTMSPs), particularly SMEs or start-ups, may face:

• Upfront costs to meet certification, liability, and equipment approval standards.
• Ongoing costs for compliance, audit, insurance, and data management.
However, RAeS believes these costs are justifiable and necessary to ensure the safety and integrity of the aviation system. Moreover, mechanisms such as tiered certification, sandbox environments, and proportionate enforcement, if implemented as proposed, will help mitigate undue burden.

2. Increased Oversight and Resource Requirements for the CAA
Delivering on the proposals will require the CAA to:
• Build new technical and digital regulatory capabilities.
• Maintain oversight of a more diverse range of service models and actors.
RAeS supports the LC's implied recognition that regulatory capability must evolve alongside industry, including investment in digital expertise and systems assurance.

Conclusion:
The RAeS believes that the LC's provisional proposals represent a balanced, future-ready approach to UTM regulation. While there will be non-trivial costs, particularly in compliance, oversight, and system transition, these are proportionate to the scale of the safety, economic, and airspace integration benefits. The proposals are consistent with RAeS's vision of an aviation system that is safe, inclusive, interoperable, and capable of adapting to the demands of autonomy and advanced mobility, as set out in the RAeS President's Paper.
It is additionally worth noting that the costs of the provisional proposals in relation to UTM will ultimately be borne by the UAS operators that will pass them onto their customers. These costs are likely to be a fraction of total operating costs.

Consultation Question 14

We invite consultees' views as to whether any of the issues raised in this Consultation Paper could result in advantages or disadvantages to certain groups or those with particular characteristics (with particular attention to age, disability, transgender identity, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or gender, and sexual orientation).

Please share your views below

Generally, the view consistent across all specialist groups is that the proposals should not disadvantage any group, however there are some risks as outlined further below that require a degree of consideration.

Our ATM-SG in particular notes the following: We welcome the LC's attention to equality impacts and the Public Sector Equality Duty in the context of evolving aviation regulation. In line with the RAeS's commitments to equity, diversity, and inclusion, the principles outlined in the RAeS President's Paper, we believe that the proposals present both opportunities and potential risks to individuals with protected characteristics, which must be carefully addressed through inclusive policy design and implementation.

Potential Advantages:

1. Enhanced Accessibility Through Digital and Automated Services
Autonomous and UTM-enabled aviation services may reduce barriers to airspace use for groups traditionally underrepresented or excluded due to physical or cognitive accessibility challenges.
Disability: Future UAS and AAM platforms enabled by UTM may provide safer, more accessible mobility options for individuals with mobility or sensory impairments, especially where autonomy reduces the need for pilot qualifications.

Pregnancy and maternity: Seamless, localised air mobility services could offer safer alternatives for time-sensitive medical or logistical needs.

Age: Older individuals may benefit from services that reduce the need for manual piloting or complex interactions with traditional air traffic control.

2. Employment and Innovation Opportunities in Underrepresented Groups
The digitisation of aviation services and the emergence of UTMSPs may create new, non-traditional entry points into the aviation sector, with lower thresholds for participation compared to legacy pilot or engineer roles.

This offers the opportunity to broaden participation across race, gender, disability, and socioeconomic lines, especially if targeted outreach and STEM education are embedded in the regulatory and industrial rollout of UTM.

Potential Disadvantages and Risks

1. Digital Divide and Technological Exclusion
UTM and AAM systems depend heavily on digital access, real-time connectivity, and technical proficiency. There is a risk that these systems exclude individuals or communities who:
• Lack digital literacy or access to affordable, reliable connectivity.
• When automated systems are built using limited or narrow information data-sets that do not reflect the full range of people, places, or situations they may encounter in the real world.

Mitigation Recommendation:
Regulators and service providers should adopt inclusive design principles, ensure publicly accessible interface options, and commit to algorithmic transparency and bias monitoring.

2. Privacy and Identity Risks in Surveillance and Identification Systems
Mandatory Remote ID, surveillance, and digital conformance monitoring systems may introduce privacy and dignity concerns, particularly for individuals with protected characteristics related to gender identity, religious belief, or sexual orientation.
For example, the recording and sharing of personal data linked to operations or location could create vulnerabilities for minority group individuals in unsafe environments.

Mitigation Recommendation:
UTM regulation should enforce data minimisation, privacy by design, and identity

protection safeguards, particularly when mandating digital identity verification or flight tracking.

3. Safety, Noise, and Environmental Burdens in Disadvantaged Communities
Low-level airspace operations, especially in urban environments, may disproportionately affect communities already facing environmental and social disadvantage.
RAeS has noted that airspace modernisation must support equitable outcomes, and there is a risk that communities with limited political influence may bear the burden of noise, visual intrusion, or safety risks from low-flying autonomous aircraft.

Mitigation Recommendation:
The deployment of UTM-enabled operations should incorporate community consultation, environmental justice assessments, and equitable noise impact modelling, in line with the RAeS's wider sustainability and societal benefit principles.

Conclusion:
While the LC's proposals have the potential to unlock social, economic, and mobility benefits for a wide range of groups, there are identifiable risks that could disadvantage individuals with protected characteristics if regulatory safeguards are not put in place. We encourage the integration of inclusive design, public engagement, and ongoing equality impact assessment throughout the regulatory lifecycle of UTM implementation—consistent with the RAeS vision of a safe, inclusive, and socially sustainable airspace system, as set out in the Shaping the Future of Advanced Air Mobility Safety paper.

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

The following response is a summary of comments the consultee attached to the consultation paper.

Any personal email addresses and phone numbers have been excluded from this document.

Unanswered questions have been deleted from this document.

About you

What is the name of your organisation?

Windracers

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Yes

Please expand on your answer below

Yes to all 3.

Consultation Question 2

We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers.

Please share your views below

UTMSPs wont be ATM providers, therefore they need a bespoke set of requirements to meet certification, and not be subject to ATM/ANS requirements at all! There may be requirement overlap however.

Consultation Question 3

We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Please share your views below

Yes otherwise you will never have any UTM in controlled airspace, or will give a monopoly to existing ANSPs

The majority of Uk airspace is still Class G uncontrolled airspace, so due regard should be given to this airspace too.

Military units operate within mainly Class G airspace which they arent the controlling authority for. This includes providing a LARS service, Instrument approaches to one or more airfields, etc all while provide an ATS to the aircraft. How would the UTM service be any different to this? They provide a ATS to participating aircraft and seperation against such?

ATS providers have LOAs, MOUs and agreed procedures in the shared airspace, eg adjacent airields deconflict their approach and departure patterns etc. UTMS can do the same?

Consultation Question 4

If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CISPs. We invite consultees' views on these rights and duties.

Please share your views below

You need a robust set of requirements that the UTMSP has to follow to enable interoperability. The UTMSP has to demonstrate compliance with these before they are allowed to enter the UTM system.

Enforcement and liability

Consultation Question 6

We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM.

Please share your views below

Yes - single sky single ruleset for service providers operating within it.

This would all require significant expansion of the current CAA resources and a restructuring to meet the requirements incumbent in the specified oversight activities on the CAA.

Consultation Question 7

We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA.

Do consultees agree?

Choose an item.

Please share your views below

I think this will run into problems with the networks of personal ADS-B recievers that link into various clouds. The onus should be on the UTM to prove the quality of the data they use to provide the ATS rather than the approval of each instalation of ADS-B reciever?

Consultation Question 8

We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Consultation Question 9

We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Consultation Question 10

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

(1) have in place measures to cover any liability incurred during the course of the provision of their services; and

(2) where using the services of another ATM/ANS service provider (including UTM service providers), should have in place arrangements to allocate liability.

Do consultees agree?

Yes

Please expand on your answer below

Consultation Question 11

We invite consultees' views on whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision.

Please share your views below

Ultimately I think ATM/UTM will be one and the same so the same laws and penalties must apply to both?

[redacted]

Consultation question 1: <u>Do consultees agree that the existing legislation does not adequately accommodate UTM because: 1. It may not capture all UTM services; 2. It may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and 3. Exclusivity agreements, such as those in place for ATS, may complicate the provision of similar UTM services? Please expand on your answer below</u>

- **Yes**
- No
- Other

The current legislative framework is insufficient

We concur with the assessment that the current legislative framework is insufficient to fully encompass the complexities of UAS Traffic Management (UTM) at scale. This inadequacy stems from several fundamental distinctions between the services offered by UTM Service Providers (UTMSPs) and those traditionally provided by Air Navigation Service Providers (ANSPs), as well as the unique operational characteristics of uncrewed aircraft systems (UAS).

Specifically, the existing laws were primarily drafted with crewed aviation in mind, where the concept of centralized air traffic control and a limited number of high-value aircraft operating in a highly structured airspace predominated. In contrast, UTM is designed to manage a larger number of diverse UAS operations across a broader spectrum of use cases and in more dynamic, often less structured, environments. The services provided by UTMSPs encompass a wider array of functions, including but not limited to, strategic deconfliction, airspace authorization, interoperable data exchange, and potentially even dynamic airspace reconfiguration. These services often rely on highly automated systems and data processing, which differ significantly from the human-centric, procedural approaches common in traditional ANSP and crewed operations.The inherent flexibility and rapid evolution of UAS technology also necessitate a legislative framework that is adaptable and scalable, capable of accommodating future advancements without requiring constant, reactive amendments. Therefore, a comprehensive reassessment and significant legislative reform are imperative to adequately facilitate the safe, efficient, and equitable integration of UAS into the airspace.

We recommend, while legislative updates are being considered and new frameworks are being proposed, current regimes be adapted in updated policy directives and other mechanisms to enable commercial BVLOS operations supported by UTM. This allows for a more rapid iteration in the near term while updates to border legislation are considered and adopted.

It may not capture all UTM services

The current ATM/ANS legislative framework is primarily designed for human-centric, tactical control of crewed aircraft. While it addresses aspects of air traffic management, it does not comprehensively cover the unique, digitally-native services that are essential for safe and efficient UTM, such as automated flight authorisations, geo-awareness, and network

identification services specifically tailored for high-volume, low-altitude drone operations. Furthermore, the emphasis on system-centric design, resilience, and interoperability between multiple service providers, which are core to UTM, are not fully or adequately addressed within existing ANSP frameworks.

It may be overinclusive

Applying the full suite of ANSP certification requirements to UTMSPs would indeed be overinclusive and disproportionate. ANSP certification heavily focuses on elements critical to crewed aviation, such as:

- **Human Factors:** Extensive training, licensing, and management for human air traffic controllers who are directly responsible for real-time separation and intervention. While UTMSPs will have qualified personnel, their role is shifted towards system oversight and management rather than direct tactical control of individual aircraft. The UAS industry has demonstrated the efficacy of automation for their unique operations, transitioning away from remote pilots tactically controlling and monitoring aircraft and instead strategically managing and configuring automated systems. As UAS operations continue to grow and evolve, the need for direct human involvement in operations has significantly diminished and could even adversely impact safety, with organizations instead handling any off-nominals on an exception basis. As such, any future-proof legislative and regulatory framework for UTM must account for and accommodate this shift in operational management in the UAS industry.
- **Extensive Ground-Based Infrastructure:** Requirements for traditional radar, ground-to-air voice communication systems, and large-scale navigation aids are not directly applicable or are implemented differently (e.g., software-defined) for UTM, which relies more on interoperable digital data exchange and potentially smaller-footprint fit for purpose sensors.

To support UK airspace integration efforts, operational approval has been built and predicated from a risk commensurate oversight mode such as Specific Operational Risk Assessment (SORA). In following with the currently developed schema, a similar risk appropriate methodology for regulatory oversight for UTM services that manage the risk within the UAS ecosystem is recommended.

Exclusivity agreements would complicate the provision of UTM services

[redacted] envisages a competitive marketplace with multiple UTMSPs operating concurrently in specific areas. This model promotes innovation, resiliency, availability and efficiency. The exclusivity agreements common in traditional Air Traffic Services (ATS), which often grant a single ANSP monopoly over a given airspace, fundamentally conflict with this distributed multi-provider UTM model. Applying such exclusivity to UTM would stifle competition, limit service diversity, and hinder the scalable deployment of drone operations. A framework that facilitates interoperability between multiple UTMSPs, rather than enforcing exclusivity, is crucial

for the healthy development of the UTM ecosystem. However, to facilitate this multi-provider, interoperable environment, clear standards and governance agreements will be demanded for data sharing, system-to-system communication, and continuous automated testing to ensure seamless and safe operations across all providers. A robust oversight mechanism from the CAA would then complement this framework to ensure compliance with these standards, fostering a safe, secure, and interoperable UTM ecosystem. This oversight should focus on performance-based regulation and auditing of digital systems rather than prescriptive, human-centric processes.

Consultation question 2: We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers. Please share your views below

In time, a new, dedicated legislative and regulatory framework for UTMSPs would be preferable in order to provide:

- **Clarity and Legal Certainty:** A tailored regulatory framework would clearly define the unique roles, responsibilities, and specific performance requirements for UTMSPs. This avoids ambiguity and the need for constant "deviations" or "limitations" from ANSP rules, which is vital for industry investment and innovation. It also avoids the inefficiency and unnecessary costs of forcing compliance with requirements designed for crewed aviation and legacy air traffic control systems. It also allows for the development of tailored regulations that align with the rapid innovation cycle and specific needs of highly automated systems like UAS.
- **Proportionality:** It would enable the CAA to develop requirements genuinely proportionate to the risks and operational realities that UTM services support, unburdened by requirements and risk profiles that have been designed for crewed aviation.
- **Scalability:** A purpose-built framework would be inherently more scalable and adaptable to rapid technological advancements and the increasing volume of drone operations compared to an amended legacy system. It also facilitates the integration of these new technologies and operations with legacy operations for a more integrated airspace framework.
- **International Harmonization:** Aligning with established international frameworks (e.g., Federal Aviation Administration [FAA], ASTM International) would facilitate highly informed legislative updates that fosters a more harmonized global UTM environment, crucial for a rapidly growing industry.

However, the existing framework presents an opportunity for immediate and interim measures to enable near term innovation. It is essential that the CAA is granted explicit freedom to issue limited certificates. Without this flexibility:

- **Stifled & Unrealized Innovation, Delayed Deployment, & Increased Costs:** New UTM service providers, many of whom are agile technology companies, would face insurmountable barriers to entry if they had to comply with every facet of ANSP certification, which is established for large, established air traffic control organisations. The process of obtaining full ANSP certification for every UTM service would be excessively long and costly, significantly delaying the safe and beneficial deployment of drone operations across the UK. In addition to this process being unsuitable and disproportionate relative to a risk-balanced environment, going through a similar process or a full ANSP certification process would result in unmanageable costs and increased timelines for operators, users, and service providers within the UAS industry, both in maintenance and certification. This increased financial burden could stifle innovation and slow the adoption of beneficial UAS technologies. Furthermore, the associated cost of ANSP certification is not commensurate with the services required for BVLOS UAS operations. Costs would be passed on for services that aren't relevant to low-altitude UAS operations. Moreover, it could mandate the development of services which are not operationally demanded and therefore undermines the intent behind the UK's transition to SORA.
- **Unsuitable Requirements:** As detailed in our response to Question 1, many ANSP requirements are simply not relevant or necessary for UTM, and forcing compliance would be an inefficient use of resources and potentially counterproductive to safety goals specific to drones. Given that the current regulatory framework is a temporary solution for an evolving industry, it is imperative that the CAA be encouraged with appropriate, unambiguous, and flexible authority to issue limited certificates for UTM services. This critical flexibility is not merely a convenience; its absence would precipitate a cascade of negative consequences that would severely impede the growth and safe integration of drone technology and operations within the UK.

Consultation question 3: We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS, Please share your views below.

The operational framework we support requires air traffic services for UAS to be derived from operational needs and specified by performance and interoperability. From these specifications, UTMSPs could promulgate UTM services under regulator oversight in both controlled and uncontrolled airspace. Required services in controlled airspace would be identified by the airspace regulator as safety or security controls and provisioned by UTMSPs or ATS providers with required interoperability. Interaction between UTM service providers and ATS providers would necessarily be accomplished through use of agreements between the parties using agreed-upon interface control documents (ICDs) or similar documentation. In controlled airspace, we expect data pertaining to UAS operations to flow from UTMSPs to ATS providers for execution of their responsibility to controlled crewed traffic as needed.

We believe that the law should allow for UTMSP to provide regulator accepted services in controlled airspace. We advocate for legal provisions enabling designated Air Traffic Service

(ATS) providers to formalize agreements with UTMSPs for the provision of a subset of air traffic services to Uncrewed Aircraft Systems (UAS), particularly within controlled airspace. Given the distinct operational characteristics of uncrewed traffic in uncontrolled airspace, [redacted] anticipates that ATS providers will not assume a direct role. Instead, Operators and their UTMSPs will be responsible for the separation of uncrewed aircraft, which is partially contingent on crewed aircraft maintaining electronic conspicuousness and UAS demonstrating avoidance capabilities.

Operators may have multiple means to address crewed aircraft to UA separation including UA onboard DAA, ground based receivers and potentially, under agreement with the ATSP, air traffic data from the ANSP that can support operators avoiding crewed aircraft. The law should allow for crewed position data sharing from the ANSP aligning to the quality and fields provided in AMC and GM to SERA — Issue 1, Amendment 6 | EASA.

These agreements would enable UTMSPs to facilitate coordination between their highly automated services and existing Air Traffic Management (ATM) services, thereby avoiding conflict with the single-provider rule governing traditional ATS. The ability to interoperate and have a distributed system that is able to exchange data will enable an innovative airspace integration of all aircraft. With the aforementioned recommendation, it is imperative that these agreements should be clearly separated from UTMSP-UTMSP agreements. The UTMSP - UTMSP agreements will primarily focus on mitigating drone-to-drone risk, whereas the former addresses the integration of UAS with legacy aviation especially within controlled airspace.

Consultation question 4: If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CIS providers. We invite consultees' views on these rights and duties. Please share your views below.

If a Common Information Service (CIS) is created it should primarily focus on facilitating seamless coordination and data exchange for/between manned (ATS) and unmanned (UTMSP) aviation, particularly for aeronautical information and traffic information services. This includes the explicit obligation for ATS units to share relevant information with UTMSPs on a non-discriminatory basis, and for UTMSPs to consume and act upon this information.

However, [redacted] maintains that the CIS should not facilitate information exchange *between* UTMSPs. Our extensive operational experience, particularly with the highly successful UTM Shared Airspace initiative in the United States, has unequivocally demonstrated the viability and efficiency of direct, peer-to-peer information sharing between UTMSPs in a competitive and distributed environment. This initiative successfully implemented critical services such as strategic conflict detection and aggregated operational intent conformance monitoring and is significantly scaling nationwide. These services were developed and deployed in strict adherence to ASTM F3548-21, the Standard Specification for UTM USS Interoperability, ensuring robust and standardized communication protocols validated by a stringent automated testing capability.

A cornerstone of this successful model was the integration of automated testing, leveraging the InterUSS Platform. This platform facilitated seamless onboarding and validation of new service providers, significantly streamlining the process and reducing potential error areas. This proven approach has consistently maintained exceptionally high safety standards, even as operator demand continues to surge in areas with overlapping operations. Crucially, it achieved this without the necessity of a central CIS to mediate inter-UTMSP communication with four initial UTMSPs with many more onboarding currently.

We firmly believe that this direct, peer-to-peer data sharing model among UTMSPs offers substantial advantages. It is inherently more efficient, as it bypasses the potential bottlenecks and latency associated with a centralized intermediary. It is also more resilient, as it distributes the burden and reduces single points of failure. Furthermore, this decentralized approach fosters innovation within the broader UTM ecosystem by empowering individual UTMSPs to develop and deploy novel solutions and services without being constrained by a centralized system's capabilities or limitations. This direct interaction promotes competition and collaboration, leading to a more dynamic and responsive UTM environment.

Another critical area is as it relates to data privacy and information security. The risks created by a CIS that collects and aggregates vast amounts of UAS operational data, such as flight paths (operational intents), location information, and delivery zones can cause significant concerns on end users. Concentrating all this data in one place raises significant privacy concerns for drone operators and for individuals or entities using the service.

While the need for shared information in UTM is undeniable for safety, a Common Information Service model presents significant risks related to single points of failure, data privacy, innovation stifling, and governance complexity. A more resilient, agile, and privacy-preserving UTM ecosystem might instead prioritize distributed, peer-to-peer data exchange built upon robust, open standards and highly secure APIs, allowing independent UTMSPs to interoperate effectively without relying on a single, potentially vulnerable, centralized information.

Consultation question 5: We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review. Please share your views below.

Discovery and Synchronization Service (DSS) is a critical component to facilitate automated data exchanges between UTMSP's within the UTM network: ASTM F3548, Standard Specification for UAS Traffic Management (UTM) UAS Service Supplier (USS) Interoperability provides for a commonly deployed implementation of the DSS as a component of the Strategic Coordination Service. This capability allows USPs to identify one another and exchange relevant information when operations are in the same geographical service area. Within the UTM ecosystem this is the key enabler of interoperability among service providers for multiple services such as Strategic Conflict Detection and Network Remote Identification (RID) service. The InterUSS platform, provided by the Linux Foundation, has served as an open source mechanism to develop, mature, maintain, and update the DSS. Leveraging this mechanism, this service enables a distributed architecture to maintain the reliability, flexibility, and availability of various capabilities.

It is crucial to clarify that the DSS is a foundational enabler for services such as Strategic Conflict Detection, not a standalone service in itself. The DSS facilitates the necessary exchange of operational intent and other relevant data between UTMSPs, allowing for the execution of the service's functions like deconfliction, but it does not directly provide the conflict detection service. It is a component of each of the individual services developed rather than a standalone service. This distinction is vital for maintaining a clear understanding of the roles and responsibilities within the UTM ecosystem and ensures that regulatory efforts are appropriately targeted.

Consultation question 13: We invite consultees' views regarding the likely costs and benefits of our provisional proposals in relation to UTM. Please share your views below.

When considering the costs and benefits of the provisional proposals related to UTM, it's crucial to evaluate the underlying architectural assumptions. Many traditional approaches, and aspects of the proposed Common Information Service (CIS) model, appear to assume a centralised architecture, for instance the need for an authoritative and complete picture of air traffic information or for a provider of strategic deconfliction services.

It is [redacted] position that a distributed model achieves similar, if not superior, safety and efficiency outcomes at significantly lesser costs, especially when accounting for the anticipated scale of UAS operations. By moving away from a single, central provider, we can cultivate a diverse ecosystem where multiple UTMSPs compete directly for drone operators' business. This competition is key to creating a dynamic, low-cost, high-quality market that ultimately benefits industry and regulators. With the existing multi-ANSP environment in the UK, leaning towards a distributed UTM ecosystem model is more adaptable for future innovation and prevents fragmentation of the CIS.

Furthermore, we strongly emphasize the importance of not incurring additional costs for information that is already a core part of existing aeronautical information services and publicly disseminated. For instance, fundamental terrain and obstacle data, as well as information on

restricted or prohibited areas, which is currently published through sources like the UK Aeronautical Information Publication (UK AIP), should not be duplicated or incur additional costs if integrated into a new service like a CIS. Any proposed service should demonstrate clear value addition beyond what is currently available, ensuring that the benefits genuinely outweigh any new financial burdens on the nascent UTM ecosystem.

RESPONSE TO LAW COMMISSION CONSULTATION ON UNCREWED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT

(Law Commission Consultation Paper 271)

Please note that this consultation response has been reproduced from information entered on the Citizen Space online portal.

Any personal email addresses and phone numbers have been excluded from this document.

Unanswered questions have been deleted from this document.

About you

What is your name?

[redacted]

Regulation of UTM services and providers

Consultation Question 1

Do consultees agree that the existing legislation does not adequately accommodate UTM because:

(1) it may not capture all UTM services;

(2) it may be overinclusive, in that it requires UTMSPs to meet requirements which are unnecessary in the context of UTM; and

(3) exclusivity arrangements, such as those in place for ATS, may complicate the provision of similar UTM services?

Other

Please expand on your answer below

As a lawyer, it is hard to gauge the precise impact of these proposals in the absence of expert evidence. However, we accept the force of the Law Commission's arguments that the nature of UTM services is likely to be different in some respects from conventional ATS. This seems true even though UTM will share a number of fundamental elements with conventional ATS and, given the UK objective of full integration in all classes of airspace, needs to integrate with conventional ATC services.

What we do note is that conventional ATS, especially in controlled airspace, tends

to operate on a fairly binary approach: direct routes between predefined points and well established procedures for departures and arrivals. We anticipate UTM being more dynamic and that it will both enable, and require, more imaginative and flexible use of airspace if the scale of operations that is anticipated is to be achieved in an efficient manner. It seems to follow that the traditional approach is likely to be both overinclusive and underinclusive.

For the same reason we cannot comment authoritatively in relation to the impact of exclusivity. Again this is not necessarily a lawyer's issue but, if the technology enables more than one UTMSP to provide services in a given block of airspace, and integration with other service providers can be achieved while maintaining adequate levels of safety, then a rigid adherence to an exclusivity approach may limit the ability to achieve the objectives mentioned above.

Plainly if Chicago Convention Annex 11 does indeed require rigid adherence to the one service provider per block of airspace doctrine, then the UK would have a difficulty in departing from that approach.

In this context we note the following:

First, Annex 11 to the Chicago Convention (as quoted at paragraph 4.91 of the consultation paper) requires that "responsibility for the CONTROL of all aircraft operating within a given block of airspace shall be vested in a single air traffic control unit" (emphasis added). "Control" is only one of a number of types of air traffic service and whilst the principle that services should not come into conflict must apply to all ATS, it may be said that this does not preclude the provision of other types of ATS by other providers in a given block of airspace. There may be merit in exploring the possibility of providing different elements, whether that be control or information services, by different providers, and whether that would infringe the exclusivity principle.

Second, it remains unclear whether the expectation is that all UAS will become subject to "control" in both controlled and uncontrolled airspace. Conventional aircraft are only subject to control in controlled airspace, and not in uncontrolled space. If UAS operate with the benefit of ATS services that do not entail "control" at all, then it may be said that other types of services can be provided by multiple providers, at least in uncontrolled airspace, without the same concern of infringing the terms of Annex 11.

That said, the UK should be cautious of proceeding on the basis of a semantic interpretation of the words used in Annex 11. Without making any judgment as to the level of service to be provided in, for instance, airspace which is presently regarded as uncontrolled, the fundamental requirement is that operations may only be permitted on a basis that will assure adequate levels of safety and with the level of UTM services that are necessary to achieve this.

Consultation Question 2

We invite consultees' views as to whether, if the existing framework continued to be used for UTMSPs, the CAA should have more freedom to issue limited certificates to UTMSPs which cannot comply with all the existing requirements applicable to ATM/ANS providers.

Please share your views below

Again, given the technical nature of the issue, our ability to judge the safety and other operational implications is limited, but we see the force of the Law Commission's analysis and are inclined to agree, certainly if this provides a practical means to enable more advanced UTM services to be provided at an acceptable safety level.

Consultation Question 3

We invite consultees' views as to whether the law should allow designated ATS providers to enter into agreements with UTMSPs to provide air traffic services to UAS.

Please share your views below

Yes, so long as all parties can be satisfied of the technical compatibility of the services and the ability of UTMSPs to provide the relevant services at the standard required the relevant designated ATS provider. That is likely to require a degree of regulation of the subcontracted UTMSP, though whether that entails a formal approval or certification is a matter of technical judgement. See also our comments below on subcontractors operating within the quality system of a head contractor. I note, in this context, that the EASA U-space regulations clearly contemplate multiple service providers providing U-space services in a given volume of airspace. See for instance article 5(1)(c) of Regulation (EU) 2021/664 which refers to "certified U-space service providers" (in the plural) offering services in "the" U-space airspace.

Consultation Question 4

If the UK were to implement a common information service, this would require the imposition of legal rights and duties upon UTMSPs, ATS units and CISPs. We invite consultees' views on these rights and duties.

Please share your views below

I agree that there would have to be a mechanism whereby both providers and recipients of C.I.S. services define their rights and duties. In the absence of regulation or agreement the common law would no doubt impose rights and duties, but we do not have the time to wait for the courts to pronounce on these issues. Some aspects, such as information integrity and security would almost certainly

have to be determined by regulation; while it is tempting to say that matters such as reliability of provision, service standards etc. should be provided on a standard basis we believe that the starting point should almost certainly be to allow providers and recipients of C.I.S. services to negotiate these on a commercial basis, along with pricing. That said, if recipients contract for a low standard of service they would have to recognise that if a given provider did not deliver then that would have an impact on the ATS provider's to ability to deliver its onward service, whether to conventional aircraft or UAS. That might require contingency arrangements with alternative C.I.S. providers.

Consultation Question 5

We invite consultees' views as to whether there are any additional issues relating to the regulation of UTMSPs which we should be considering in the course of this review?

Please share your views below

The obvious point which arises is whether sufficient account has been taken of the potential for effective merger of the operator and ATS functions, or at least overlap. Is it possible to envisage a situation where the ATS provider takes over the role of the operator in effectively controlling the UAS once the origin and destination of the route is determined? We anticipate that highly automated vehicles will simply follow the predetermined route (with such amendments as the ATS provider may require during the course of the flight), and there is little if any manual handling of the vehicle to achieve this.

In this sense it may be said that the ATS provider effectively assumes the role of pilot between launch and recovery. Conversely, if the 'pilot' were armed with all appropriate situational information (perhaps through a CIS system) then that pilot can take the decisions that a traditional ATS provider might take and execute the flight accordingly. Either way, there may be a level of redundancy in maintaining a clear distinction between the operator and ATS functions and if so we can see the industry trying to consolidate them.

That does of course raise numerous issues: for instance having the ATS provider effectively control a UAS' flightpath (as opposed to merely giving instructions to a separate individual/entity) may be fine only so long as the UAS performs correctly; if a system malfunction required operator intervention to maintain control, would this be within the power of the ATS provider?

Equally, if an operator were effectively to set itself up as an ATS provider so that it could 'control' its own operations, protection may be necessary to other operators using the same airspace so that, if competitors, they are not disadvantaged. This begs the question of whether it is actually necessary to embed a distinction between the functions, even though that may result in duplication of activity.

Enforcement and liability

Consultation Question 6

We invite consultees' views on whether the current enforcement mechanisms provided for in the current regime should be replicated for UTM.

Please share your views below

Yes: UTSMPs will provide safety critical services and thus, ultimately, should be subject to control by the regulator. That said, we note that other parts of the aerospace sector operate on the basis that parties in the supply chain may have different levels of certification. For instance a design organisation holding a type certificate for an aircraft may subcontract work of a variety of subcontractors who may or may not themselves hold a comparable design approval. If the subcontractor holds a DOA, then the type certificate holder is able to rely on the subcontractor's work to a greater degree than if the subcontractor does not hold a DOA. In the latter case, in simple terms, the type certificate holder would need to extend its own quality management system to cover the subcontractor's work.

There is no reason in principle why models of this nature should not be adopted within a ATS/UTM environment, although it necessarily means the higher level service provider would need to have all the capability of the subcontractor.

In any event, the point then is that where the subcontractor is not a regulated entity, the regulator has different enforcement powers. The regulator may be able to instruct the regulated ATS provider not to use a certain subcontractor, which may have the same effect as taking direct enforcement action, but the formal legal process is rather different in terms of the regulator's powers with regard to the unregulated entity.

Consultation Question 7

We provisionally propose that it should be an offence for any person to use or permit the use of equipment to provide a UTM service if the equipment has not been approved by the CAA.

Do consultees agree?

Yes

Please share your views below

I am not familiar with the certification processes for conventional ATC equipment but, self evidently, it would need to meet certain standards of integrity and performance. In principle the same should be true of UTM equipment. What we do note is that the certification process in relation to conventional aircraft, and equipment to be used in conventional aircraft, is a major burden for aircraft

manufacturers and in many cases, especially at the smaller end of the industry, becomes a prohibitive cost factor.

One of the benefits of existing UAS, especially in the open and specific categories, is a significantly reduced certification burden. At one level it would seem anomalous to require a level of certification of equipment to be used for UTM purposes if that were to be disproportionate to the cost of the platforms in use. However, the risk to others, especially when conducting BVLOS operations, is significant and therefore UTM equipment which is used to assure separation (especially from crewed aircraft) must operate to a high standard of integrity and reliability.

There is a separate question of whether enforcement measures should extend to creating criminal offences. In principle, ultimately a criminal sanction is likely to need to be the ultimate deterrent, but, across the range of UTM services and the applications to which they are put, it may be that imposing a criminal penalty would be excessive. It would in any event be necessary to understand how far this extends to 'any' equipment used to provide UTM services.

Consultation Question 8

We provisionally conclude that the offences under section 3 of the Aviation Security Act 1982 are adequate for UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Consultation Question 9

We provisionally propose that offences and penalties similar to those found in the Penalties Order should be adopted in relation to UTM services.

Do consultees agree?

Yes

Please expand on your answer below

Consultation Question 10

We provisionally propose that UTM service providers should be subject to the same liability requirements as other ATM/ANS service providers. They should be required to:

(1) have in place measures to cover any liability incurred during the course of the provision of their services; and

(2) where using the services of another ATM/ANS service provider (including UTM service providers), should have in place arrangements to allocate liability.

Do consultees agree?

Other

Please expand on your answer below

To the first question, yes, noting that the "same liability requirements" do not translate to identical levels of cover. In our view Annex 3, ATM/ANS.OR.D.020 to the ATM/ANS Regulation is unsatisfactory, when compared with, for example, Regulation 785/2004 (on operators' insurance requirements) in not prescribing minimum levels of cover. Although one would hope it is the exceptional case, if the acts or omissions of a UTMSP result in the total loss of a large commercial aircraft, with 300 or more people on board, the loss, and thus the liability exposure, could be £1 billion. It is fair to say that the instances in which ATS providers have been seriously implicated in major accidents are relatively few, and less than that of the operator or equipment supply community. However the per event exposure is substantial, although we have no direct experience of the level of legal liability cover which major ATS providers typically carry.

ATM/ANS.OR.D.020 also requires, or perhaps enables, the appropriate level of cover to be adjusted to the level of commercial insurance cover available. Historically there has been significant anecdotal evidence that insurance cover for UAS operators' activities has been either unavailable or only available at disproportionate cost. Certainly this is said to be a significant issue for the UAS. This is frequently attributed to the relatively low volume of operations hitherto, and the a lack of reliable data available to the insurance sector to enable accurate rating of the risk. These factors may of course be into linked but one would anticipate, as we move to an era in which UTM services become widely available, the same issues will arise in terms of the ability to insure UTMSPs.

To the second question, I certainly agree it is commercially important for ATM and UTM service providers to allocate their responsibilities inter se. In our experience allocation of risk within the supply chain is frequently poorly handled in the aerospace sector, with parties taking diametrically opposed positions. The issue is frequently left to a late stage in the negotiation (and often only addressed because the lawyers raise it). The result is frequently an unsatisfactory negotiation on a point which, in reality, ought to have been addressed at the pricing stage.

However this is not a conundrum which can be addressed by regulation. It is not the role of the law to predetermine what the liability allocation should be: that is a matter for businesses to decide by reference to the impact on pricing once the true costs are determined by reference to the risk assumed by each party in the supply chain. Generally English law will then uphold the parties' bargain in a B2B setting. It also seems artificial to require the parties to allocate liability when, in the absence of a contractual allocation, the law will do so in any event. At most there should be a default setting, perhaps making clear that primary liability is imposed upon the party highest in the chain. This may encourage parties to address the issue, at least in designing their business models: whether they can then achieve those objectives is a function of commercial negotiating power in any given relationship.

Consultation Question 11

We invite consultees' views on whether an extension of the current law on ATM/ANS liability is sufficient to deal with civil liability as it relates to UTM service provision.

Please share your views below

Yes: as with many aspects of increasingly automated aviation, the principles that have been evolved over a number of years do not alter fundamentally with high levels of automation or the removal of human beings from their place in the loop or a reduction of their day-to-day operational decisions. For practical purposes, liability operates at a corporate level rather than an individual level (which is a separate issue from the extent to which a regulated individual might be subject to sanction through the safety management system in the event of failing to perform to inappropriate standard).

Consultation Question 12

We invite consultees' views as to whether there are issues specific to aviation in relation to liability that we should consider as part of this review on autonomy in aviation.

Please share your views below

I do not believe there are additional issues: many of the points made in relation to phase one of the consultation continue to apply, as do the comments in the previous answer. The liability issues that arise in increasingly automated aviation will continue to rely on ground that has been well trodden by previous generations of the aviation sector.