CILT Policy Committee

Submission to Public Consultation

Development of a Policy Framework for Unmanned Aircraft Systems

8th March 2024

1. **How can Ireland position itself as a leader of innovation in the UAS sector to benefit our economy and society from the development and uptake of new technologies and services associated with UAS?**

CILT Ireland welcomes the Public Consultation to inform the development of a policy framework on unmanned aircraft systems. Ireland is actively working to position itself as a leader of innovation in the Unmanned Aircraft Systems (UAS) sector through a series of strategic initiatives and public consultations, which could significantly benefit both our economy and society. Numerous benefits have already been realised by global economies and societies from the development and implementation of UAS. Two of the most promising markets for UAS, as seen around the globe, are precision agriculture and public safety. These comprise of approximately 90% of the known potential market demand. UAS technology not only enhances the ability to monitor crops and livestock and efficiently apply pesticides or nutrients, but it also alerts farmers to potential threats. UAS could aid in the achievement of the UN Sustainable Development Goals 1 and 2. UAS have also been widely utilised in emergency response, law enforcement and disaster management as they offer a safer and more cost-effective alternative to manned aircraft. In addition to agriculture and public safety, UAS have also been employed in telecommunication, weather monitoring, freight transportation, thermal infrared power line surveys and for mapping wildfires (Jovovic, 2020). They have also been shown to play a critical role in responding to disasters and emergencies by possessing the ability to reach places that are inaccessible to manned vehicles. They support search and rescue efforts, facilitate the distribution of emergency supplies to victims and assist in monitoring and predicting natural disasters.

In line with the rapid adoption of UAS technology across the global arena, The Irish government is now looking to actively develop and imbed UAS technology in various aspects of our economy and society. The development of UAS in Ireland is seen as a significant opportunity to foster innovation across various industries, including the medical field for transporting samples and prescriptions to remote areas, enhancing public safety through search and rescue operations, and supporting emergency response. To not only achieve this but to also position itself as a leader of innovation in the UAS sector, CILT believe that the first step in this process would require conducting public consultations to help shape a policy framework; a step which The Irish government has already taken. The Department of Transport in Ireland is actively seeking public input to shape a policy framework that will guide the responsible and sustainable growth of the UAS sector, primarily focusing on safety, security, environmental concerns, and societal benefits.

When citizens feel that their inputs are valued and they are informed about how their suggestions have influenced policy decisions, it enhances transparency and understanding of the policy-making process. Fostering a feeling of shared values and collective enterprise amongst community members through their involvement can also help to create social cohesion. By including the public in the policy-making process, the Irish government can also help alleviate some of the concerns that they may have pertaining to the widespread implementation of UAS in society. Through the inclusion of a variety of viewpoints, public consultations can improve policy outcomes by enhancing the design, quality, implementation, and outcomes of policies. Policies are more likely to represent the needs and considerations of all parties involved when a variety of perspectives and opinions are gathered through consultation processes.

In order to position itself as a leader of innovation in the UAS sector, collaboration with aviation companies is essential. The development of UAS in partnership with aviation firms could yield notable advantages in terms of pooling resources, experience, and technological advancements. By combining the advantages of both established aviation and cutting-edge unmanned technology, this collaboration is essential for promoting innovation, guaranteeing safety and legal compliance, and accelerating economic growth. Collins Aerospace, in collaboration with several Irish aviation companies, has received funding to develop a flight ecosystem in Ireland. This project involves building an end-to-end ecosystem at vertiport in Shannon that supports safe operations of unmanned flights, integrating both conventional and unmanned aircraft safely (Rees, 2022).

2. What are the core elements necessary for the development of the UAS sector in Ireland?

- *Addressing Public Concerns:* The growth of the UAS industry in Ireland depends critically on addressing and alleviating public concerns regarding the increasing use of UAS in both urban and rural regions, particularly with regards to their privacy, safety, and the environment. The negative public perception of drones is arguable one of the biggest hurdles that will need to be overcome in order to further develop the UAS sector in Ireland. This negative connotation can be attributed to their military background, and this has now been exacerbated with the invasion of Ukraine as the public increasingly see drones on the news being used in battlefields. CILT believes that the development of the UAS sector in Ireland necessitates the

state being aware of and taking precautions against concerns pertaining to privacy, safety, and the environment. The government also needs to work towards overcoming the negative public perception by showcasing how drones can be used for good, from medical interventions to being deployed as first responders.

- *Enhanced Legal and Regulatory Frameworks:* CILT believes that in order to develop the UAS sector in Ireland, more needs to be done to develop the legal and regulatory landscape. It will require drafting national legislation that addresses privacy rights and enforcement powers. This includes aligning with EU regulations and supporting the development of regulations for certified UAS passenger operations. UAS certifications should require a more stringent testing regime for operators as this could help to improve public perception and faith in the safety, security, and environmental aspects of drones. Safeguards should also be built into the system to restrict untrained, reckless operators from gaining possession of drones over 250 grams.

- *Research, Development and Industry Support:* Several countries across the globe have begun to support drone testing and research initiatives with the goal of promoting innovation in the industry. For example, Canada is working to integrate drones into its transport system through trials, test sites, and partnerships with key organizations. This includes research and development projects to advance drone safety and collaborative efforts to promote economically viable drone applications. Similarly, the IAA actively supports drone testing and research initiatives in Ireland with the goal of promoting innovation in the industry. CILT thinks that industry collaboration and support could be vital for accelerating the development of the UAS sector in Ireland. One of the ways that this could be achieved is through UAS operators openly sharing their data sets with one another for testing/development, as is done in the self-driving autonomous car industry. In the UAS industry, AI data sets could be used to improve detection of pedestrians, cyclists, vehicles and so on. However, these data sets are not available in the drone sector as drone operators keep those data sets to themselves.
- *Education and Awareness:* Pilot training modules for UAS must be provided and there must be active and persistent efforts to improve public and leisure UAS operators' awareness of the law.

- *Counter-UAS Plans for Airports:* Supporting the ongoing development of Counter-UAS plans for airports must also be prioritised to ensure safety and security in these critical areas.

- *Integrated Spatial Planning for UAS:* It is essential to create a thorough roadmap for the application of UAS in several areas, including the enforcement of EU laws. For reasons of safety, security, and privacy, this also entails the creation of UAS geographic zones and U Space.

By emphasising innovation, safety, legal compliance, and public acceptance, these core elements represent a holistic approach to developing and growing the UAS sector in Ireland.

3. **What concerns do you have about the increased UAS use in urban and rural areas? How can these concerns be alleviated?**

CILT believes that the increased use of UAS in both urban and rural areas poses a set of challenges and concerns that need to be addressed. In urban areas, the primary concerns are centred around the complexity of airspace management due to the presence of tall buildings and dense populations amongst other obstacles. This requires a sophisticated Unmanned Traffic Management (UTM) system in order to prevent collisions whilst also ensuring safe flight paths. Urban UTM systems must conduct frequent checks for obstacles while also having the capability to handle more complicated flight paths than those of their rural counterparts which encounter fewer obstacles and far less air traffic. CILT think that a UTM system could greatly alleviate these concerns, in addition to preventing collisions, UTM systems could be used to provide alerts on non-compliant actors coming into the airspace. The development of UTM systems will be a significant undertaking and will involve both the public and private sector and requires substantial investment in technologies such as 'detect-and-avoid' systems along with other navigational tools.

On a global scale, the market for UAS supported transport and logistics is expected to grow significantly, this will then necessitate an effective regulatory framework for safe management. The International Civil Aviation Organisation (ICAO) is currently working

to develop standards and recommended practices (SARPs) and procedures for air navigation services (PANS) for international operations by certified remotely piloted aircraft systems (RPAS). This includes amendments to airworthiness requirements and communication systems related to RPAS. There is also a focus on multidisciplinary efforts to ensure the integration of unmanned aviation into the global air transport system, including addressing noise-related concerns and developing technical requirements for vertiports as part of the infrastructure needed for urban air mobility/advanced air mobility (UAM/AAM) operations.

Technological developments, legal frameworks, and international collaboration are all necessary to address these issues. In order to ensure the safe and effective integration of UAS into both urban and rural areas, it is imperative that complete UTM systems and supporting infrastructure, such as vertiports, be developed as well as the formulation of international norms and standards.

4. **What do you think is required to develop a roadmap on integrated spatial planning for UAS use in urban and rural areas? What immediate steps should Ireland be taking to implement the U-space Regulation? How should the development of U-space be funded?**

CILT believe that developing a roadmap for integrated spatial planning for UAS use in both urban and rural areas will require a comprehensive approach that also takes into consideration the insights from the United Nations Development Programme's (UNDP) Integrated Spatial Planning Workbook.

The UNDP's Integrated Spatial Planning Workbook provides an expanded framework on how integrated spatial planning can be used to achieve a multitude of nature-based goals. This approach involves utilising maps to identify areas for protection, management, and ecosystem restoration to achieve unique goals. By emphasising nature's role in tackling global challenges, the workbook highlights the significance of bolstering cross-sector collaboration and decision making. It also offers guidance on implementing the Convention on Biological Diversity's Kunming-Montreal Global Biodiversity Framework, suggesting a methodological approach that can be adapted for UAS spatial planning.

Creating a roadmap for both the development and deployment of UAS in both urban and rural areas necessitates an all-encompassing strategy that consists of:

1. Addressing concerns and aspirations pertaining to UAS use by engaging stakeholders and the public.
2. Establishing the fundamental technological, regulatory and infrastructure components of sector development
3. Implementing a strategic framework for spatial planning that combines economic, social, and environmental objectives.
4. Promoting greater public and UAS operator awareness and compliance with existing regulations
5. Enabling sustainable UAS integration into airspace management systems by balancing development and conservation needs using integrated spatial planning tools.

CILT thinks that to achieve sustainable and responsible integration of UAS into urban and rural settings, a successful roadmap is required. One that strikes a balance between innovation and safety, addresses concerns raised by the public and stakeholders, and incorporates comprehensive spatial planning principles.

To effectively implement the U-space regulation, Ireland, like other EU member states, needs to adhere to several key steps outlined by the European Union Aviation Safety Agency (EASA). These steps were designed to ensure the safe, secure, and efficient integration of drones into their airspace, facilitating longer-distance automated drone operations, and further expanding the European drone services market from January 2023.

1. *Adopt Acceptable Means of Compliance and Guidance Material:* An array of Acceptable Means of Compliance (AMC) and Guidance Material (GM) has been published by EASA to facilitate the uniform deployment of U-space throughout the European Union. A key component of this is guaranteeing the safe coexistence of unmanned aerial vehicles with other entities using the same space, particularly in urban areas.
2. *Regulatory Modifications:* The implementation of U-space regulation has required modifications to existing regulations, including adjustments to air traffic management and air navigation service provider requirements within designated U-Space airspace. This involves amending current laws to satisfy U-space standards and guaranteeing UAS operators' fair access to airspace via a market for competitive services.

3. *Phased Implementation of U-Space Services:* The U-space system's implementation is planned in four phases, starting from basic services like registration, electronic identification, and geofencing (U1), to more complex services supporting flight management (U2), services for complex situations including automation for conflict resolution and obstacle avoidance (U3), and ultimately, full implementation with high levels of automation and interconnectivity (U4)
4. *Collaboration and Support:* The Global UTM Association (GUTMA) supports the European Commission and EASA in their efforts to implement these rules across Europe. Transparency in the deployment of internationally interoperable UTM systems depends on collaboration with groups like GUTMA, which promotes the safe and effective integration of drones into national airspace systems.

A concerted effort including regulatory changes, the adoption of new compliance and guidance materials, phased service implementation, and cooperation with important parties is needed to implement U-space regulation. This approach aims to enhance the safety, security, and efficiency of drone operations across Irish airspace, both in rural and urban areas.

The development of U-space, which is crucial for managing drone traffic safely and efficiently in the Irish airspace, involves various funding and financial sustainability strategies. A multifaceted approach is required to fund U-space development, including government investment, international cooperation, and partnerships between public and private sectors. In Germany, the German Transport Ministry has committed €870,000 towards the development of U-space digital infrastructure, illustrating direct government investment as a key funding model (Butterworth-Hayes & Beechener, 2022). This project aims to establish process models for the technical and operational implementation of U-space airspaces, including suitable pricing concepts for U-space services. As part of this effort, a consortium of corporate and academic partners is collaborating to create practical suggestions for the safe integration of unmanned aviation into German airspace.

The development of U-space and urban air mobility has also benefited greatly from financing provided by the SESAR Joint Undertaking, with initiatives tackling issues of liability, certification, and the integration of automated technology made possible by Artificial Intelligence. One prominent project that received funding from the SESAR Joint Undertaking was the "Impact and Capacity Assessment Framework for U-space Societal Acceptance," which provided a framework to help U-space stakeholders and local

governments implement urban air mobility in cities that is both advantageous and socially acceptable.

The financial viability of Unmanned Traffic Management (UTM) systems and services, which are essential to the development of U-space, has also been addressed by the International Civil Aviation Organisation (ICAO). In ICAO's webinar focussing on UTM Financial Sustainability Strategies, it addressed topics such as financing strategies for new infrastructure, ownership alternatives (such as totally private, fully public, and public/private partnerships), and business models for UTM. It also explored possible approaches to cost distribution and funding mechanisms to ensure long-term sustainability.

5. **Who should be able to initiate a request for the establishment of UAS geographical zones (on safety, security, privacy, or environmental grounds) and on what criteria should one be established?**

UAS geographical zones are typically established based on several key criteria aimed at ensuring safety, security, and environmental protection. These zones are designed to reduce risks to safety, preserve privacy, address security problems, and deal with environmental difficulties. The process for establishing these zones entails classifying the airspace in which drone operations are permitted, limited, or excluded, and then applying particular guidelines to each category so that users of the airspace may quickly and easily identify them.

Regulations from the European Union states that Member States may put limitations or requirements on drone operations for safety, security, privacy, or environmental reasons when creating UAS geographical zones. This can involve imposing restrictions on certain UAS operations, establishing guidelines for operations, or demanding operational authorization in advance. Zones may also be subject to environmental regulations, restrict access to particular drone classes, or only permit drones that have certain technological features, such as geo-awareness or remote identification systems. In Latvia, for example, these are established up to a height of 120 metres above the ground or water surface but may extend up to 300 metres in specific cases. The criteria for establishing these zones include ensuring that restrictions on drone operations comply with regulatory standards, are established for the minimum necessary airspace for a defined period and assess the possibility of imposing gradual restrictions (Sarah Nilsson, 2023).

The development of geographical zones has been a contentious topic with many people being quite vocal and arguments being made from both sides. Many people have been openly critical of UTM operators carving up strips of airspace and then requiring drone operators to pay a subscription to fly down these corridors. They believe that commercial corridors that are under the control of one operator are 'anti-competitive' and 'unsustainable'. CILT understands the arguments being made from both sides and believe that both viewpoints have merit. On one hand, UAS geographical zones could potentially limit access to certain areas for commercial drone operators, possibly affecting competition. For instance, restrictions around airports, military installations, or other sensitive areas mean that operators cannot freely use these spaces for drone activities, which could impact businesses that rely on drone technology for services like aerial photography, surveying, or delivery. There is also an argument to be made that strict geographical restrictions could stifle innovation and deter new entrants to the drone market. If the process of obtaining permissions to fly in restricted zones is cumbersome or the zones themselves are too restrictive, it might limit the potential for companies to innovate or use drones in new and beneficial ways.

However, the primary aim of UAS geographical zones is to ensure safety and compliance with regulations, rather than to impose competitive restrictions. By establishing clear rules around where drones can operate, these zones help prevent accidents and conflicts in airspace, which could otherwise arise from unregulated drone usage. The establishment of geographical zones could also be seen as an attempt to standardize drone operations across regions, providing a clear framework within which all operators must work. This could also be perceived as a way to ensure fairness in the industry, as all players, regardless of their size or resources, must adhere to the same rules. In theory, this could prevent larger companies from dominating the market by operating in ways that could be unsafe or disruptive if unregulated.

CILT believes that the arguments brought forward by both sides should be thoroughly considered. In principle, anybody should be able to initiate a request for the establishment of UAS geographical zones, we must be careful that we strike the right balance between ensuring safety and security, on the one hand, and promoting innovation and fair competition, on the other. This delicate balancing act requires ongoing evaluation as drone technology and its applications continue to evolve.

6. **How can we improve both the public's and leisure UAS operator's awareness of the law in relation to the use of UAS?**

CILT believe that a multimodal strategy that emphasises education, outreach, and integration with current national and EU regulatory frameworks is needed to increase the public's and recreational UAS operators' understanding of legislation regarding the use of UAS in Ireland. Strategies based on the regulatory environment and best practises in UAS management that could be employed include:

1. *Enhanced Education and Training Programmes:* Establish thorough training programmes for UAS operators that highlight the safety precautions, legal obligations, and moral issues surrounding UAS utilisation. This can involve implementing mandatory training sessions for new registrants and refresher courses for established operators.
2. *Public Awareness Campaigns:* Leverage various media platforms to initiate public awareness campaigns designed at educating the public and prospective UAS operators on the laws, safety regulations, and best practices. This could include printed materials disseminated in strategic locations like airports, clubs, and educational institutions, as well as social media, television, and radio commercials. To date, there has been a lot of resources invested into trying to raise public awareness through television advertisements, radio commercials and via the Internet, with a considerable amount of money being invested by the state into marketing last year. CILT believes that this could be one of the cornerstones to improving UAS operators' awareness of the law.
3. *Collaboration with UAS Clubs and Associations:* Collaborate closely with UAS associations and clubs to promote safety and legal compliance among their members, as well as to spread information. These groups have the potential to be extremely important for peer education and self-regulation.
4. *Online Resources and Mobile Apps:* Provide simple access to the most recent rules, regulations, and guidelines for UAS operating in Ireland and the EU by creating and maintaining current online resources, such as websites and mobile apps. Additionally, these tools may include interactive elements like surveys, online courses, and channels for reporting safety issues.
5. *Integration with EU Regulations:* Make sure that national awareness and education campaigns comply with EU rules and regulations on the use of UAS. Using EU-

wide campaigns and resources is one way to do this, as is publicising the rules set forth by the EASA.

6. *Stakeholder Engagement and Partnerships:* To encourage widespread awareness and compliance, engage a wide range of stakeholders, such as local governments, educational institutions, UAS manufacturers, and the tech sector. Collaborations have the potential to increase awareness campaigns' efficacy and reach.
7. *Feedback and Continuous Improvement:* Provide avenues for UAS operators and the general public to provide feedback on the success of awareness and education initiatives. Utilise this feedback to update and improve programmes and materials on a consistent basis.

Through employing these strategies, the community of UAS operators will become more knowledgeable, committed to safe and responsible UAS operation, and will be fully aware of their legal responsibilities. The effective execution of these strategies is contingent upon cooperation between the public, industry stakeholders, and regulatory bodies.

7. What more can be done to stop the misuse and illegal use of UAS?

CILT believes that there are several strategies that could be employed to mitigate against the misuse and unauthorised use of UAS, centred on governmental, regulatory, and technological initiatives. These measures are aimed at finding a compromise between the advantages of drone technology and the conditions needed to safeguard privacy, maintain public safety, and stop illegal or potentially dangerous activity.

1. Legislative and Regulatory Measures: Laws pertaining to UAS operations have been passed by several states, with a focus on privacy, security, and usage by law enforcement. For instance, several countries have already passed legislation limiting the use of drones by police enforcement without a warrant, prohibiting drone flights over private property without permission, and controlling their use in public safety operations. These laws also forbid some invasive behaviours, such deploying drones for surveillance without the required authorisation, and they regulate the use of drones for emergency management, including managing wildfires. CILT believes that the IAA should be at the forefront of ensuring that these legislative and regulatory measures are adhered to as they will play a significant role in integrating drone operations into national airspace, ensuring

that drone operators, whether recreational or commercial, adhere to legislation designed to promote safety and privacy.

2. Technological Solutions: The implementation of technology solutions, such as Remote ID systems that require drones to be detectable while in operation and geo-fencing that prohibits drones from flying into restricted airspace, can dramatically limit misuse. By facilitating the enforcement of no-fly zones around airports, sensitive locations, and important infrastructure, these technologies improve security and regulatory compliance. CILT firmly believes that technological solutions are key to mitigating against misuse and illegal use of UAS. By adopting innovative technological solutions, we could improve surveillance and our capability to detect whether a system is authorised or if it is a rogue system. Having that robustness built into the system could mitigate against the potential risks posed by rogue operators as they become easier to detect, allow for alerts to be broadcasted to other operators, preventing the risk of collisions. This would also help with gathering evidence for prosecution.

3. Education and Awareness: It is crucial to raise operator awareness of the safety and regulatory requirements for drone operation. This includes recognising the potential repercussions of using drones without authorisation, protecting private rights, and obtaining the necessary certifications. CILT thinks that it is necessary for the IAA to provide resources that offer guidance for different types of drone users, including public safety agencies, commercial operators, and recreational flyers, to ensure that they all fully understand their responsibilities and the regulations that govern drone usage.

4. Property Rights Approach: Privacy concerns could be addressed by adopting a property rights-centric approach to aerial surveillance, in which landowners have the authority to prohibit drones from a specific airspace over their property. This strategy, along with limitations on continual surveillance, data retention, and transparency concerning government drone usage, may offer a fair framework that protects privacy while permitting valuable drone usage.

By combining these strategies, authorities can establish a comprehensive framework that minimises the use of drones for unlawful purposes and infringements of privacy, maintains accountability, and maximises the positive social effects of this technology.

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