AT A GLANCE

Requested by the TRAN Committee

European Parliament

Unmanned Aircraft Systems integration into European airspace and operation over populated areas

See the full study

The study is based on research into the issues, barriers and possible solutions facing Unmanned Aircraft Systems (UAS) integration into European airspace. It focuses on the specific issues of operating over populated areas, military and civil integration and good practices identified. The study also provides an assessment of the Drone Strategy 2.0 published in November 2022 by the European Commission and concludes with a set of policy recommendations to consider.

Main observations

The EU has made important first steps in developing a regulatory framework for UAS operations within European airspace which specifies categories of operation and requirements for the implementation of U-space. However, there remain complex regulatory, technical and operational procedures which need to be addressed. Safe integration with manned aircraft will require defined procedures, changes to air law and the regulation of the 'Certified' category. These are currently being looked at as part of Research & Innovation (R&I) programmes and will require a data led approach to implementation.

The study

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While UAS have a lot of similarities to manned aviation, the fact that they are integrated systems, have different flight characteristics and operate without a pilot on board requires many new solutions for airspace integration. As a result, there are some safety issues regarding occurrence under-reporting (meaning a detailed description of a safety issue), collision avoidance and counter-UAS technology where further work is needed.

Scalable UAS operations will be dependent on the safe operation of UAS within multiple environments and by different stakeholders, including those outside of the traditional aviation industry. Operations over populated areas require a specific focus on ground and third-party risk. Integration into airspace over these areas needs to account for dynamic changes in population densities as well as safety, privacy, security, noise, and social acceptance concerns.

Good practices on UAS airspace integration and operations over populated areas have been identified in

Member States and third countries which could inform the approach of the EU. These include user tools to support the operation of UAS and guidance on privacy and operations in adverse weather. Social acceptance guidelines and step-by-step approaches to UAS adoption in high risk areas, including demonstrators, have also been identified. Further good practices have been identified in the use of demonstrators and industry partnerships to increase the support of stakeholders by directly involving them in key decisions regarding UAS operations. Military and civil integration schemes that are already ongoing in third countries have also been identified as good practices.

Airspace integration of military drones will benefit from a history of integrating manned equivalents, however their dynamic operations require a flexible Air Traffic Management (ATM) approach. Military and civil cooperation on systems, research and concepts is

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ongoing, however, dual use technologies will need to be carefully managed to prevent security risks. Procurement barriers could be eased in the EU to support wider the Mutual agreement with manufacturers and operators concerning responsibilities and procedures, greater UAS familiarity among ATM personnel and an understanding of how to manage the 5% of more complicated UAS operations should all be achievable and present no serious problems for the EU airspace environment. Planning should be approached with the understanding that errors and unforeseen issues will arise and hence the efforts should be regarded as a fluid and evolving process.

The Drone Strategy 2.0 provides good coverage of the issues currently facing the UAS industry. However, it may underplay some of the difficulty in achieving full integration, which requires further coordination and prioritisation to keep the EU on track to achieve a large-scale drone market in the EU by 2030. The Strategy also fails to provide a clear set of actions on how to overcome issues of social acceptance of UAS and issues relating to ground risk.

Conclusions and policy recommendations

Overall, we conclude that Europe is making good progress in the support elements necessary for UAS adoption, mostly driven by its regulatory frameworks and R&I schemes. The economic potential of the UAS market is significant and research and innovation (R&I) into the technical development of UAS for various operational use cases is already underway. However, there remains a need to develop specific programmes to address the adoption of these technologies at scale as well as the operational and regulatory mechanisms required to support them.

There are elements of good practice identified in Member States and third countries that could be applied more widely to the EU as a whole. On the global scale, incentives to industry is an area in which the EU is arguably slightly lagging behind the US and China, where government programmes are seeking to reduce cost and risk for private sector development in the UAS and electric vertical take off and landing aircraft (eVTOL) markets.

The Drone Strategy 2.0 constitutes an important step in consolidating the required actions needed to achieve the vision for 2030. Achieving complete integration of UAS in airspace will nonetheless require prioritising and careful monitoring of the progress of the flagship actions identified in the Strategy. Scalable technical, commercial, and operational solutions will also be required while maintaining the current level of European safety standards, protecting national security interests, and encouraging the social acceptance of stakeholders.

Recommendations for policy action are set as follows:

- The European Parliament should ensure that large-scale, long-running demonstrators across different environments are supported.
- The EU should prioritise R&I calls and associated funding foron the most challenging airspace integration issues.
- The European Parliament should continue to promote the role of citizens in UAS operations and encourage the development of EU-wide social acceptance guidelines.
- The European Parliament should ensure that the European Commission takes a data-led approach to delivering the strategy.
- The European Parliament should promote the sharing of information across private and commercial users of UAS.

The present note is based on the study *Research for TRAN Committee: Unmanned Aircraft Systems integration into European airspace and operation over populated areas.*, authored by: Steer: Fabrizio CARIPPO, Arthur FUNG, Edward HUNT, Valentina LO PASSO, Sam MARSLAND, Alberto PRETI, Paul RAVENHILL, Clémence ROUTABOUL, published in: July 2023

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