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Abstract

This deliverable contains the description of the AURORA decision support tool. The Decision Support tool has been designed in accordance with the September 2022 revision of the Easy Access Rules for Unmanned Aircraft Systems, Regulations (EU) 2019/947 and 2019/945. Its primary objective is to serve as a valuable resource for researchers and enthusiasts of Unmanned Aircraft Systems (UAS).

This document serves as a complementary document for the reporting purpose towards the funding agency and is not intended to be distributed. On the other hand, the tool itself is publicly available on the AURORA's web page and intended to be widely disseminated and hopefully of use to many stakeholders in the domain.

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About AURORA

Urban Air Mobility (UAM) has the potential to overcome challenges like congestion and a lack of surface transport whilst saving infrastructure costs and time. However, making it safe, secure, green, quiet and accepted is challenging due to many factors, such as environment, regulations, and safety-critical technologies. Focusing on emergency-related applications, where UAM brings added value on top of current mobility solutions, the EU-funded AURORA project aims at connecting technologies and key actors to foster the adoption of UAM. The project works on development of artificially intelligent, urban autonomous flight solutions for Unmanned Aerial Vehicles (UAVs) and self-piloting passenger-carrying UA (Vertical Take-Off and Landing) aircraft with flight path planning capability using vision and radar environment perception sensors, including autonomous selection of emergency landing sites and landing capability, interactable with Very Low Level Air Traffic Management and Smart City elements, and utilizing GALILEO High Accuracy Service. The overall research and technological development makes use of a digital twin paradigm, effectively combining the physical world with its digital model for the purpose of safety-critical flight testing of autonomous flight solutions for UAM operations. To find out more: <http://aurora-uam.eu>

Project partners



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Acronyms & Definitions

List of acronyms	
AURORA	sAfe Urban aiR mObility for euRopeAn citizens
UAM	Urban Air Mobility
EU	European Union
UAVs	Unmanned Aerial Vehicles
UAS	Unmanned Aerial System
ConOps	Concept of Operations
EASA	European Aviation Safety Agency

1. Introduction

The Decision Support tool has been crafted in accordance with the September 2022 revision of the Easy Access Rules for Unmanned Aircraft Systems, Regulations (EU) 2019/947 and 2019/945. Its primary objective is to serve as a valuable resource for researchers and enthusiasts of Unmanned Aircraft Systems (UAS). This innovative tool takes the form of a decision support questionnaire, designed to facilitate the selection of the most suitable UAS operational category, aligned with the UAS's Concept of Operations (ConOps). By pinpointing the appropriate operational category, this tool empowers users with a deeper comprehension of the requisite authorizations and certification processes, thereby enhancing their overall understanding of UAS regulatory compliance.

2. Decision support tool

The decision support questionnaire is created with the aim to assist researchers and enthusiasts in unmanned Aircraft Systems (UAS) in selecting the appropriate UAS operational category according to UAS's Concept of Operations (ConOps).

Understanding the appropriate operational category for UAS helps to gain more insights into the requirements of authorizations and certification. This has been proven to be challenging step for many stakeholders, hence within AURORA we have decided to deep dive into the topic in order to support those who will come during and/or after AURORA and might face the same challenges. In particular, the idea is to support research and innovation community in navigating through the relevant procedures and legal framework.

In particular, with the exponential growth of UAS operations in recent years, it has become imperative to align with the European Aviation Safety Agency's (EASA) legal framework, as delineated in EU Regulations 2019/947 and 2019/945. These regulations emphasize a risk-based approach, making no distinction between leisure and commercial UAV activities but focusing on crucial factors such as UAV weight and specifications relative to the intended operation.

Within the landscape of civil UAV operations, three distinct risk-based categories exist, as shown in Figure 1:

- the Open Category: Drones in low-risk operations (e.g., most of the leisure drone activities and low-risk commercial activities) are in the open category.
- the Specific Category: Operations that carry more risks and are not in the scope of the open category's operations are in the specific category.
- the Certified Category: UAS high-risk operations and future drones onboard passenger flights (e.g., air taxis) are in the certified category.

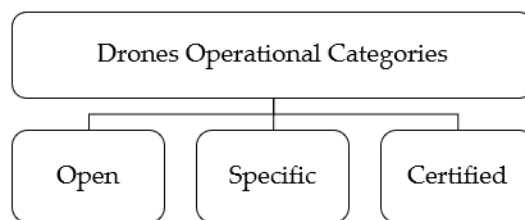


Figure 1 UAS operational categories

To ensure that we are targeting the appropriate audiences, the questionnaire initially solicits information about participants' geographical location and domain of expertise. Upon consenting to the "TERMS & CONDITIONS," the questionnaire will commence by posing a series of interconnected inquiries, aimed at determining the most suitable UAS operational category for one's UAS operation, thereby providing valuable insights into the requisite authorizations and certification procedures.

We see the distinctive value of this decision support questionnaire in its role as an indispensable aid for UAS researchers and enthusiasts. By facilitating the precise selection of the most appropriate UAS operational category in accordance with the UAS's Concept of Operations (ConOps), it empowers stakeholders to navigate the intricate regulatory landscape with clarity. Notably, this tool represents a vital resource within the AURORA project, fostering informed decision-making and regulatory compliance.

The final version of the tool is publicly available at the AURORA's web page: <https://aurora-uam.eu/decision-support-guide/>.

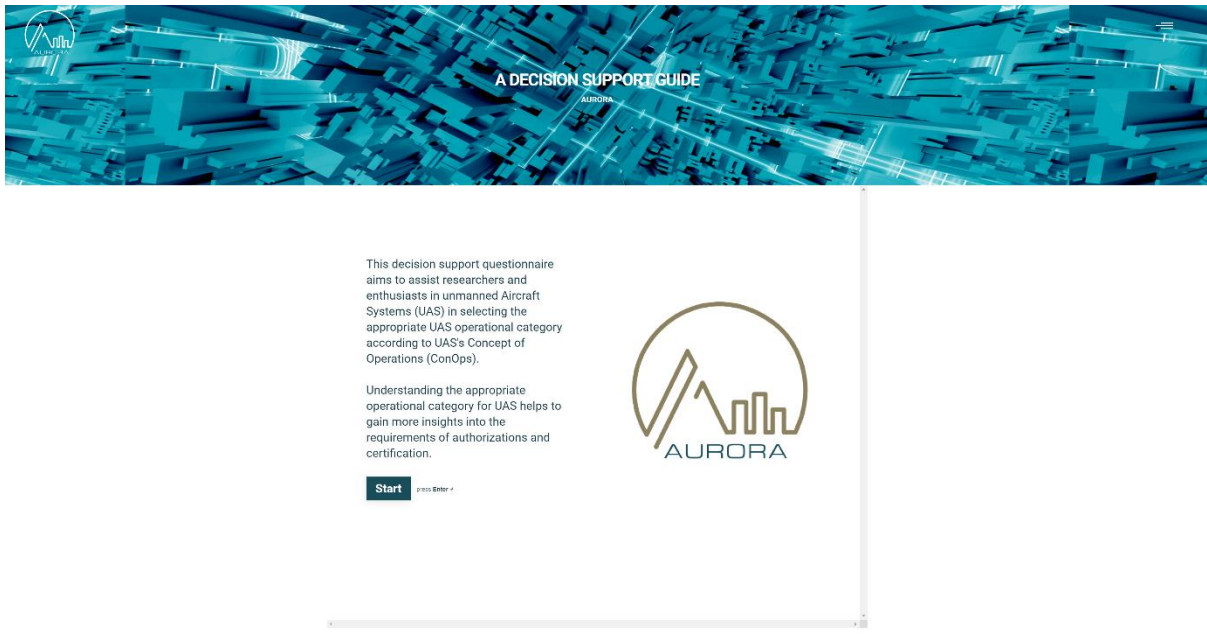


Figure 2 Starting screen of AURORA's decision support guide

3. Conclusion

Urban Air Mobility (UAM) represents a relatively new concept within the aviation community, seeking to revolutionize everyday transportation by introducing air mobility solutions tailored for urban environments. This paradigm shift requires the development of advanced, urban-capable vehicles and the creation of an airspace infrastructure capable of efficiently managing high-density operations. One of the fundamental prerequisites for the realization of UAM is the establishment of comprehensive regulatory frameworks. This includes the formulation of certification standards and operational policies that govern UAM activities. In the burgeoning landscape of UAM, the Decision Support tool emerges as a pivotal asset, offering substantial added value. It assists UAS researchers and enthusiasts in precisely selecting the appropriate UAS operational category. Furthermore, in navigating the complexities of UAM integration, it serves as a vital resource, to educate users about the development of safe and efficient UAM operations, and contributes to the realization of air mobility as a viable urban transportation solution.

The first key result of this innovative tool is serving as an invaluable resource for UAS researchers and enthusiasts by offering a decision support questionnaire. This questionnaire is tailored based on the latest regulatory framework, the September 2022 revision, of the Easy Access Rules for UASs, Regulations (EU) 2019/947 and 2019/945. It enables users to accurately determine the most suitable UAS operational category. Secondly, in the dynamic landscape of UAS operations, users gain a comprehensive understanding of the necessary authorizations and certification processes, enhancing their overall comprehension of UAS regulatory compliance.

4. List of attachments

Brief demo video as an illustrative example, demonstrating the step-by-step process of navigating the questionnaire, ultimately guiding users toward one of the categories, the Open Category.

<https://sealaeronautica.eu.teamwork.com/app/files/4576079>