



MILITARY AND U-SPACE: GUIDELINES

Unmanned aircraft systems (UAS), commonly called drones, are a growing business in Europe, performing operations in all kinds of environments, including urban areas. In this context, the concept of U-space has emerged and is now under implementation, offering a set of new services relying on a high level of digitalisation and automation of functions and specific procedures designed to support the safe, efficient, and secure access to airspace for large numbers of drones.

With the strong increase in the number of drones expected to be operating at low altitude in the coming years, it is important that the military sector also engages with all other airspace users and authorities in order to avoid negative implications on safety, security, and defence. The European Commission's Drone Strategy 2.0 recognises the military's experience with drones and sets forth flagship actions to reap synergies between the civil and military use of drones.

This low-level airspace is regularly used by military aircraft for operations and training. Taking into account the fact that those military aircraft will not be able to comply with all U-space requirements, the **key objectives** are to maintain the level of **safety** for military (low-level) operations, to guarantee the **security** of infrastructures, assets and operations, and to quantify the **financial impact** of the U-Space implementation on the military.

During 2021 the EDA study "Military and U-Space: guidelines" addressed four key questions:

1. Can the military ignore U-space?
2. What are the likely impacts on military missions and operations?
3. How could the military mitigate the related risks?
4. How much will it cost for the military to adapt to U-space?

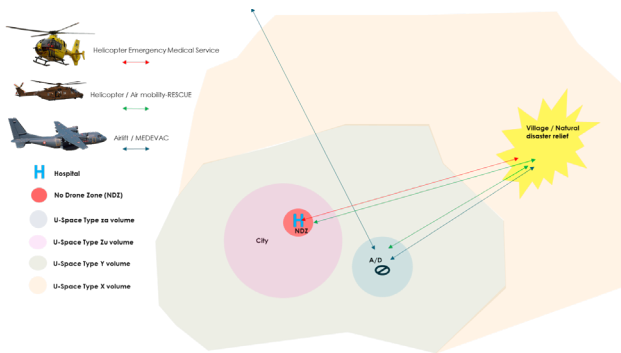
This study was meant to help better understand military operations in the future U-space environment. It raised significant interest and participation from both military and civilian actors as it was destined to facilitate a smooth and effective coexistence of civil and military operators in the future U-space drone 'ecosystem'.



The deliverables of the 2021 study include:

D1 – U-SPACE EVALUATION

Interactions between unmanned civilian activities and military activities in lower airspace (below 500 feet) were investigated through the development of 7 use cases (e.g., MEDEVAC/airlift as part of natural disaster relief operations, as illustrated below).



The 4 main principles to be followed in the U-space were detailed in D1:

- Static & dynamic U-space airspace management
- Dynamic Airspace Reconfiguration
- Coordination and communication between military Air Traffic System and Command and Control Unit, U-Space Service Providers (USSP), UAS operators
- Connectivity methods between Air Navigation Service Providers (CISP), Common Information Service (CIS) Providers, U-Space Service Providers (USSP), UAS Operators

The military objectives and constraints need to be part of the U-space's development. The right not to be conspicuous to the USSP, and to control the sharing of information on military flights with civil entities is emphasised.

D2 – COST AND BENEFIT ANALYSIS (CBA)

The implementation and operating costs were estimated, based on assumptions as several U-space parameters are not yet defined. It showed that there are some financial savings, but no revenue. A preliminary assessment estimated costs up to €40.2 million for the required adaptation to U-space, depending on the level of cooperation targeted by the military.

D3 - PROPOSED RECOMMENDATIONS

The study findings point to the need to have the military involved in the U-space definition and proposes ways ahead to involve civil and military stakeholders in regulation, U-space airspace design and management and interoperability of civil and military systems. Indeed, the military should monitor the progress of U-space implementation, be systematically involved in the rulemaking process, and regularly update their

position. Although some of these recommendations have been acted upon, e.g., in the Drone Strategy 2.0, there is a continuing need for the military to align their position and to coordinate with civil stakeholders involved in U-space.

In 2022, the study updated the D1, D2 and D3 deliverables to account for the adoption of the U-space regulatory framework by the European Commission and initiated a monthly communication to EDA's Member States on the progress in U-space definition and implementation.

In 2023, the study again updated the D1, D2 and D3 deliverables developed in 2021 to align them with the recent progress in U-space definition and implementation:

- Drone Strategy 2.0
- Acceptable Means of Compliance and Guidance Material for the U-space regulatory framework
- Results from SESAR 2020 projects
- Local implementation projects

In addition, the study looked at the applicability of two key mechanisms defined in the U-space regulation to ensure the safety of flights ([e-conspicuity](#) and [the Dynamic Reconfiguration of Airspace](#)) to the context of military operations, and particularly so in uncontrolled airspace. Because of the shortcomings of these mechanisms, the study proposed options that would allow improving the safety of military flights in uncontrolled U-space airspaces at a limited cost.

Next steps

EDA continues to monitor the development and implementation of the U-space and will regularly update the deliverables of the U-Space study, including the recommendations for a safe and secure drone 'ecosystem'.

EDA will also launch additional studies on open questions related to the U-Space, such as the interfaces needed between USSPs/CISPs and the military from operational and technical perspectives, the management of lower-level airspace, or the e-conspicuity issues for military assets in/out of U-space airspace.

More information and all deliverables are available on eda.europa.eu/u-space-study

