

# Publication of Traffic Management Regulations of Unmanned Aircraft Systems in Europe

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## 1. Background

In Europe, the traffic management of unmanned aircraft systems (UTM) has been called “U-space,” and been studied since 2018.

In July 2019, the European Union Aviation Safety Agency (EASA) announced an initial draft of safety regulations for airspace pertaining to unmanned aircraft systems in order to prevent aircraft collisions and reduce other in-air and on the ground risks. Concurrently, EASA also started consultation with related industries. In October of that year, a workshop specializing in the topic was held.<sup>1)</sup>

In this process, over 2,500 comments were submitted in response to the initial draft of regulations. EASA consulted with an advisory body on this matter and reviewed the submitted comments.

After much discussion and consideration, EASA compiled a regulation draft and in March 2020, proposed it to the European Commission.<sup>2)</sup> At that point, it was expected to be formally adopted by the Commission in the fourth quarter of 2020, however in reality it fell slightly behind schedule. The new regulations were finally adopted and announced by the European Commission on April 22, 2021.<sup>3)</sup>

Despite some delays in the schedule, these U-space regulations lead the world in unmanned aircraft systems traffic management regulation. The following section outlines those regulations.

## 2. Summary of Published U-space Regulations

### 2.1 Regulation Structure

The published regulations consist of the following 6 sections:

- "Principles and General Requirements,"
- "U-space Airspace and Common Information Services,"
- "General Requirements for UAS Operators and U-space Service Providers,"
- "U-space Services,"
- "Certification of U-space Service Providers and Single Common Information Service Providers," and
- "General and Final Provisions."

The "Principles and General Requirements" section describes the purpose and subject of these regulations, UAS operations exempt from the application of these regulations, and definitions of terms. Specific UAS operations that are excluded from these regulations include the operation of model aircraft approved by other regulations, the operation of extremely lightweight aircraft with a maximum takeoff weight of under 250g and UAS operations which are carried out by instrument flight rules based on other regulations.

The "General and Final Provisions" section describes the capabilities and tasks required of each competent authorities, with regulations starting on January 26, 2023.

The specific content of the remaining four sections: "U-space Airspace and Common Information Services," "General Requirements for UAS Operators and U-space Service Providers," "U-space Services," and "Certification of U-Space Service Provider and Single Common Information

Service Provider" are as follows.

## 2.2 Regulations for "U-space Airspace and Common Information Services"

First, Member States are required to specify the airspace (U-space airspace) to which the traffic management of unmanned aircraft systems is applied, based on the risk assessment of the airspace. All UAS operations in this U-space airspace must comply with the four mandatory services described in Section 2.4: Network Identification Service, Geo-awareness Service, UAS Flight Authorization Service and Traffic Information Service. Also, in response to the above risk assessment, Member States may request additional U-space services, and determine UAS capability and performance requirements, U-space service requirements, and applicable operating conditions and airspace restrictions.

Furthermore, U-space airspace can also be set across the borders of Member States. In such cases where U-space airspaces are designated across international borders, the provision of U-space services and the provision of Common Information Services are to be jointly decided between the countries concerned.

A Common Information Service is defined as a service consisting of static and dynamic data distribution that enables the provision of the U-space service. Member States must make the following data available to each U-space airspace as part of a Common Information Service:

- Horizontal and vertical limits of U-space airspace
- UAS capability and performance requirements and U-space service requirements
- List of certified providers to provide U-space services
- Adjacent U-space airspace

Member States may also delegate the provision of Common Information Services in all or part of U-space airspace to a single provider of Common Information Services. The certification procedure of this is described below in Section 2.5.

It should be noted that the provider of the Common Information Service must meet the necessary data quality as well as latency and protection requirements for the above information, the requirements for which are stipulated in the annex. However, the content of this annex does not

specify any particular means of data quality or protection, but are objective statements. Additionally, access to Common Information Services is given equally to relevant authorities, air navigation service providers, U-space service providers, and UAS operators.

## 2.3 Regulations for the "General Requirements for UAS Operators and U-space Service Providers"

First, UAS operators operating in U-space airspace must meet the UAS capability and performance requirements determined for the U-space airspace. They must comply with applicable operating conditions and airspace restrictions, and they are required to use the necessary U-space service that is provided. The UAS operator can also provide the U-space service for its own UAS operation by receiving approval to be a U-space service provider.

To actually operate in U-space airspace, UAS operators must obtain operational approvals or certificates from the competent authorities in advance and comply with the operational limitations set by the Member States. In addition, for each UAS flight, UAS operators shall request a flight authorization from the U-space service provider, and when the flight is ready, shall request the U-space service provider to activate that flight authorization. Once the required U-space service provider's activation is confirmed, the flight may commence. UAS operators are also required to develop emergency measures and procedures and make them available to U-space service providers.

U-space service providers are certified as described below in Section 2.5 to provide services to UAS operators. It is required for U-space service providers to formulate an arrangement with the air navigation service provider to exchange relevant operations data and information. Additionally, certified U-space service providers, like Common Information Service providers, must meet the required data quality, as well as latency and protection requirements.

## 2.4 Regulations for "U-space services"

As mentioned in Section 2.2, regarding the U-space service, the following four services are mandatory: network identification service, geo-awareness service, UAS flight authorization service, and traffic information service.

Furthermore, the following two additional services are described: weather information service and conformance monitoring service.

The network identification service enables remote identification of the UAS in flight, and this information includes the UAS operator's registration number, aircraft serial number, position and altitude, direction and speed, the location of remote operator or take-off point, emergency status, and time. This information will be updated at a frequency determined by the competent authorities and is required to be provided not only to UAS operators but also to other U-space service providers, air navigation service providers, the competent authorities, and the general public.

Geo-awareness services provide information on applicable operating conditions and airspace restrictions, as well as temporary limitations on the use of geographic zones and airspace so that UAS operators can respond to contingencies and emergencies.

The UAS Flight Authorization Service grants flight authorization to operators for individual UAS flights. The U-space service provider receives a flight authorization request from the UAS operator, confirms whether the space and time intersects with other UAS flight authorizations, and then notifies the operator if their request is accepted or rejected.

If the request is rejected, the U-space service provider may propose an alternative flight authorization to the UAS operator. Or, if the request is accepted, a unique flight authorization number will be issued and the activation of the flight authorization will be confirmed. U-space service providers must also make appropriate arrangements to resolve conflicts of UAS flight authorization requests received by other U-space service providers. Furthermore, when requesting a UAS flight authorization, operations for public purposes such as firefighting and emergency medical services are prioritized, and other operations are handled on a first-come, first-served basis.

Traffic Information Services provide UAS operators with information on other prominent air traffic in the vicinity of UAS flight locations and intended routes, as well as information on manned or unmanned aircraft traffic

shared by other U-space service providers and air navigation service providers. UAS operators are required to take the necessary actions to avoid the risk of collision, depending on the traffic information received from the U-space service provider.

When providing weather information services, it is required to collect weather information from reliable sources and provide UAS operators with actual weather conditions and forecasts before and during the flight. This weather information service includes wind direction/velocity, cloud base altitude, visibility, temperature/dew point temperature, indicators of convection activity and precipitation, the location and time of observation, and the location and time where forecast is effective. It should also include the barometric altitude meter correction value (QNH).

The conformance monitoring service verifies compliance with UAS capability and performance requirements, operating conditions and airspace restrictions, and flight authorization conditions applicable to the operating U-space. In the event of a breach, it warns UAS operators. This warning will also be shared with other UAS operators operating around the UAS, other U-space service providers in the same airspace, and related air navigation service providers.

## 2.5 Regulations for "Certification of U-space Service Providers and Single Common Information Service Providers"

Regarding the certification of the U-space service provider described in Section 2.4 and the provider of the single common information service described in Section 2.2, an application should be made to the competent authorities having jurisdiction over the place where the main business is conducted. However, if the place where the primary business is conducted is outside the Member States, an application should be made to EASA.

The conditions for certification include:

- meeting the applicable performance requirements of the U-space service to the applicable U-space
- using systems and equipment that guarantee the quality, latency and protection of the

required data

- having appropriate net capital commensurate with the costs and risks associated with the provision of their services
- developing suitable business plans
- installing security management systems for retaining flight information and data
- having arrangements to cover debt related to business execution
- formulating an emergency management plan for cases such as security breaches.

Additionally, in the event of an emergency, U-space service providers are required to have a response plan to assist UAS operators, and an information sharing plan to contact relevant parties.

### 3. Conclusion

The formulation of these regulations clarifies the division of roles between UAS operators, U-space service providers, and common information service providers in the traffic management of unmanned aircraft systems in Europe. It is expected that regulations regarding UTM will be formulated in other countries based on this model of division of roles.

As described in Section 2.2, the requirements for data quality, latency and protection in these regulations are limited to objective statements. In this regard, it is expected that the pass/fail judgement of specific measures will be discussed between the competent authorities and the business operator through the approval process of U-space service and common information service.

### References

- 1) EASA, U-space draft Opinion Workshop  
<https://www.easa.europa.eu/newsroom-and-events/events/u-space-draft-opinion-workshop>
- 2) EASA, Opinion 01/2020 High-level regulatory framework for the U-space  
<https://www.easa.europa.eu/document-library/opinions/opinion-012020>

- 3) EASA, COMMISSION IMPLEMENTING REGULATION (EU) 2021/664  
<https://www.easa.europa.eu/document-library/regulations/commission-implementing-regulation-eu-2021664>