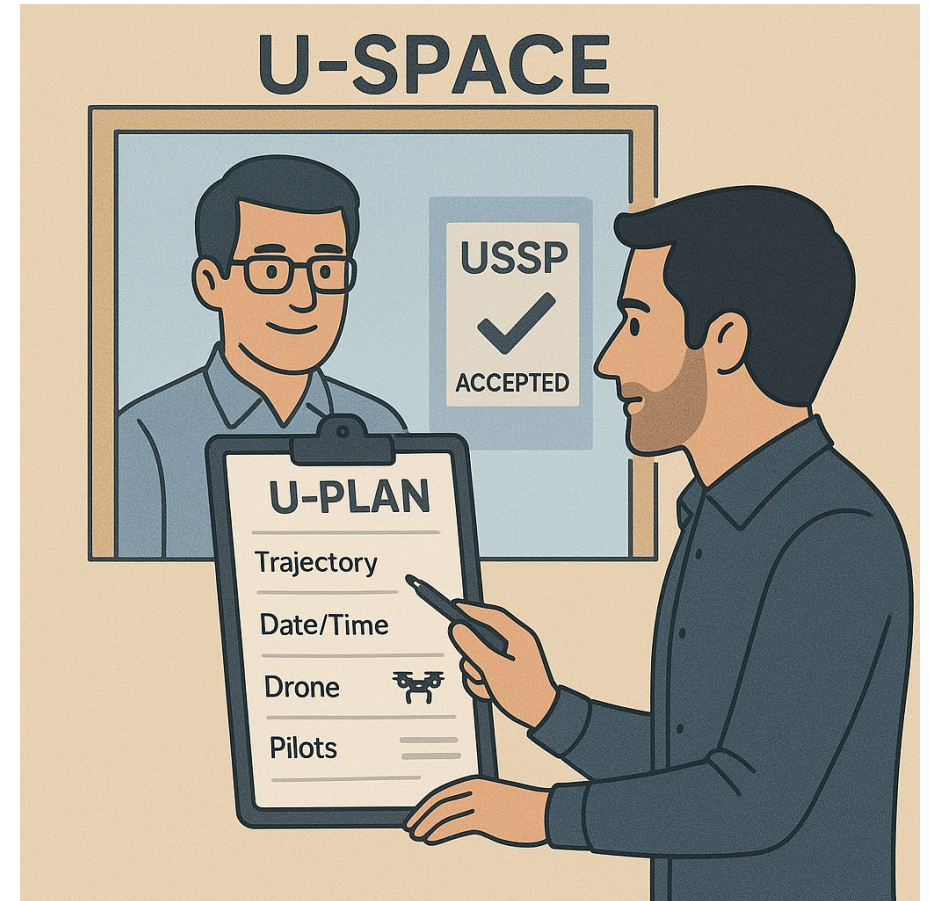


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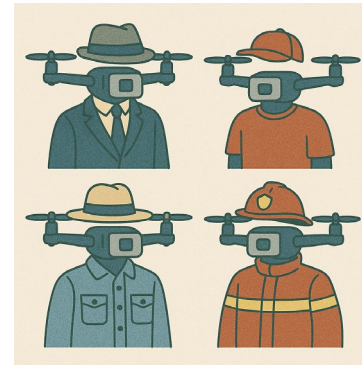
Thematic Area: Airspace User Operations AUO

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CORUS five 2nd Workshop

- The plan for an operation in U-space is referred to as a **U-plan**:
 - Describes the U-space access **request**.
 - When accepted describes an **authorization**.
 - The request is managed through your selected **USSP provider**.
 - U-plan contains:
 1. Operator details
 2. Type of operation
 3. Where (trajectory / volume)
 4. When
 5. Drones



U-plan definition



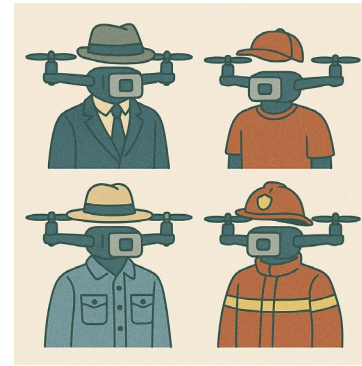
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- Vehicle and operation description:

- Annex IV requires a number of items:

- **Endurance:** For current missions and even for the medium/long term, to provide an "**airborne energy state**".
- **ID technology, Connectivity methods:** It is the operator responsibility. It may determine areas within U-space Airspace which cannot be operated. USSP should double check and take into consideration in case of amendments.
- **Aircraft type:** All agreed that aircraft type is important and that mission type or category is useful.
- **Performance models:** both for dynamics and energy state.
- **Pilot information:** Not necessary the pilot, but Fleet manager or someone with which dialogue on the state of the flight will be fast.

U-plan definition



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- Swarming or coordinated operations:
 - The ConOps v5 shall address the difference between swarm and coordinated operations, and how the U-Plan can fit both.
 - The same U-Plan is used for all drones in a swarm operation.
 - Individual U-Plans may be filed for coordinated operations, but they need to inform this condition so that the strategic deconfliction is disabled for them.

- The **U-plan** is a **4-D construct** in which **time** is a relevant dimension.
 1. Most agree that the process is overly complicated and that some other “more simpler mechanism” should be in place.
 2. Waypoint-based rather than only based on volumes.

- **Higher-fidelity U-plan** that describes UAS mission constraints could be incorporated into **Strategic** processes to improve deconfliction and capacity:
 1. It is unclear if such additional accuracy is needed at this point. Seems a lot effort when maybe operations will be limited to a few operators.
 2. Given its complexity: it is good to start investigating and developing for a potential near future.
 3. However, many expressed the idea that U-space airspace may fill up fairly quickly due to the way operations are constructed at the moment.

- If the USSP expects to receive a set of timed volumes (4D trajectory), the responsibility to construct those volumes resides on the UASO?
- Mixed bag of responses:
 1. Operator as they know the type of operation, with feedback from USSP.
 2. USSP: as the volumes are critical and thus need to be somehow “certified” in their construction process.
 3. USSP: by sending them the operator requirements and receiving a set of alternatives.
 4. What about Required Navigation Performance (RNP)?

- Should the USSP provide additional services to assist UASO on constructing the 4D trajectory.
- Strong YES:
 1. Indicate areas of conflicts to enable resubmit.
 2. Send U-plan with some mechanism to indicate user preferences or areas in which the USSP may change the request to fit the U-plan request.
 3. Let the USSP plan your routes according to UASO business objectives.
 4. Completely change the way U-plans are constructed by employing a matrix of volumes that are managed in a collaborative way.

- Should USSPs provide information about the level of occupancy in order to prevent blind requests of occupied volumes?
- Mixed responses:
 1. Yes, but in which form?
 2. Sets the responsibility on the operator to find where and when fit the operation, and this is a burden that many would like to transfer to the USSP.
 3. What about sharing all U-plans from other operators? Or maybe just the occupancy of a given sector.
 4. Interrelation between the U-space regulation and the European privacy regulations.


- The goal may be to achieve a **fair use of U-space airspace**, but a sloppy U-plan may imply a huge airspace reservation.
- Hard to focus the discussion:
 1. What is your definition of **fair**? **Unclear**.
 2. Clearly different **business model exits and the airspace is a public commodity**.
 3. Apply **cost** as a mechanism to balance fairness or just **cost-recovery**?
Not used un current aviation.
 4. **First come first serve** policy at strategic phase seems to be the element that enables such potential unfair use of the authorization process.



- May **amendments** be suggested? By the USSP? Or maybe a mutually agreed solution may be reached so that more UASO simultaneously fly?
 1. USSP should be able to submit amendments to a U-plan during execution according to needs.
 2. Such amendments should conform to the operator / aircraft capabilities, specially those associated to its energy state.
 3. Collaborative decision making in order to increase the capacity of the system.

- Some **special operations** may have **high priority** or be **except** from the U-plan requirements. Which mechanisms should be employed to **guarantee deconfliction**?
 1. Encourage the use of U-plan priorities rather than exceptions.
 2. Geographical zones seem more appropriate.
- What if public safety agencies do not what to disclose any information? Is this **reasonable**?
 1. **NO.**
 2. Not in line with current status in aviation.



- Some UASO have indicated that they prefer their U-plans not being disclosed to other operators.
-  • Should this limit the possibility by U-space services to exploit that information in order to increase efficiency or safety? **NO, some form of sharing should be assumed, which should be defined in the SLA with the UASO.**
- Sharing trajectory “**intent**” to conflicting traffic is identified as a way to increase situational awareness, rather than just sharing the position of the UAS:
 - Do you think that receiving the **short-term intentions** of conflicting UAS may allow you to **better plan a separation / CA manoeuvre**? **YES**
 - Do you think that **sharing a limited view** of your trajectory (your immediate intent) would **affect your business model**? **NO**

- UAS emergency procedure technology is at an early stage.
- Emergency procedures will imply U-plan non-conformance and thus may impact other UASO.
 - Include emergency procedures in the U-plan. Do not block that airspace, but use it as a measure to indicate the probability of interaction with potential aircraft in distress.

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THANK YOU
FOR YOUR ATTENTION