

The AURA logo is displayed in a blue, sans-serif font. The letter 'U' is stylized with an orange and yellow wing-like shape above it. The background of the slide features a photograph of an Airbus A320neo aircraft on a runway at sunset, with a small drone flying in the sky to the right.

AURA

CORUS-XUAM 2nd Workshop

AURA PJ34 Overview

16th March 2022



European
Commission

AURA in a nutshell

- Objective:
 - To lay the foundations for the **integration of drones in current and future air traffic environment**, developing the required concept of operations and validating U-space services information exchange with ATM systems.
- Context:
 - Industrial Research project.
 - More than 25 partners, including ANSPs and ground and air industry.
 - Duration 30 months from January 2021 to June 2023.

Budget

11.4 M€

AURA Solutions



Long-Term (10-15 years)
Top-down approach to identify
required capabilities

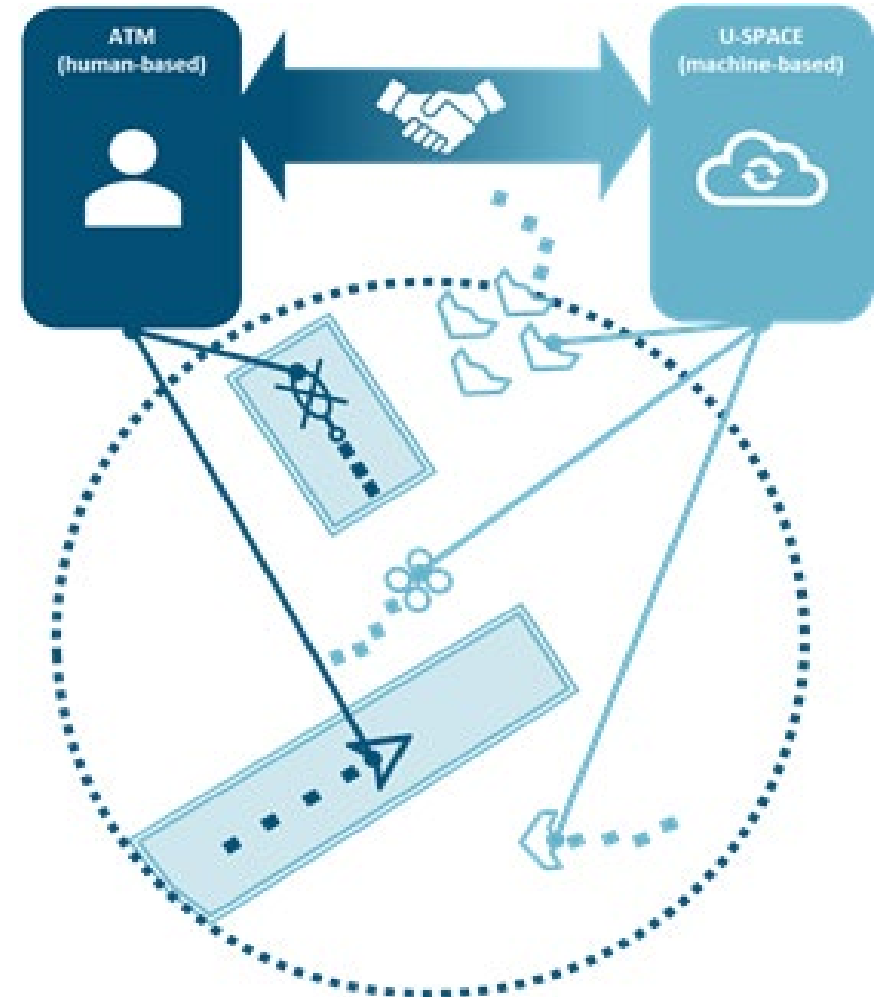
Short-term
Bottom-up approach based on
existing SWIM capabilities

WP3 Highly-automated
collaborative U-space-ATM
environment

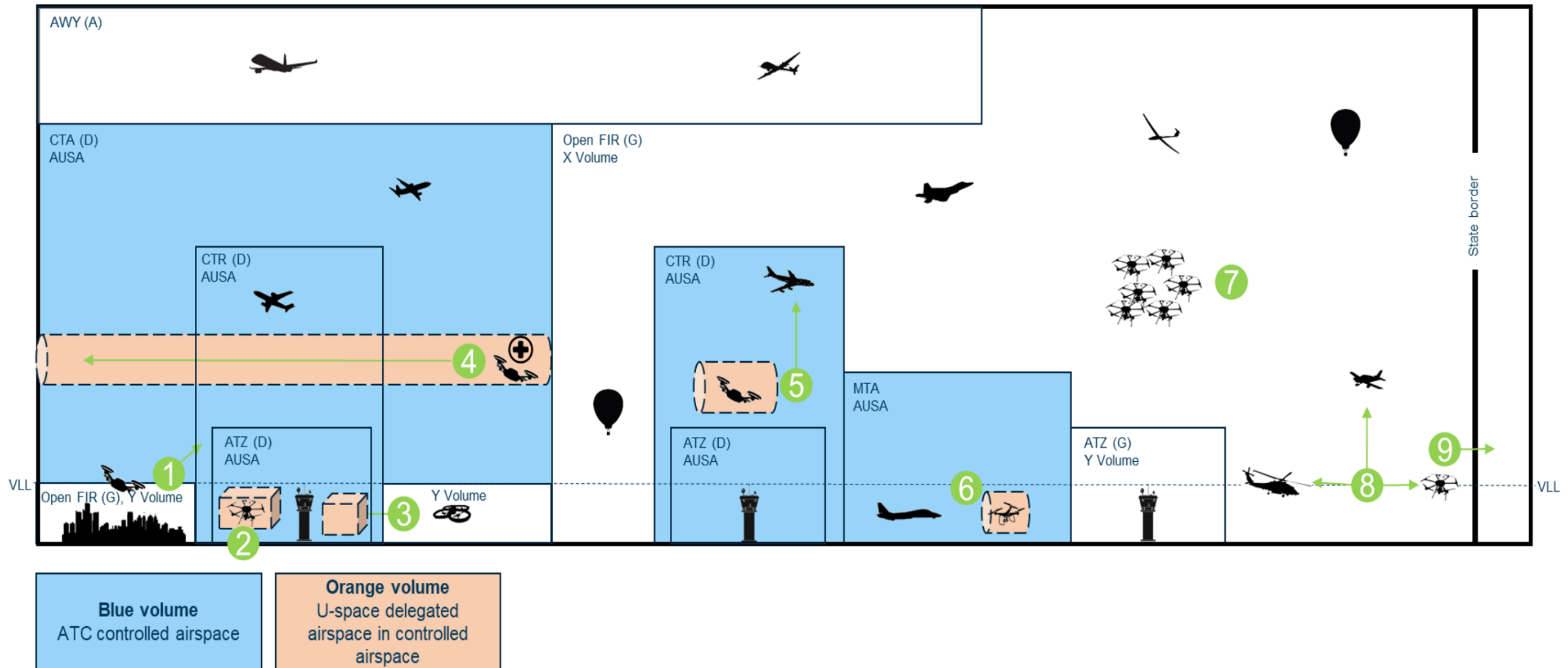
WP2 Collaborative U-Space-ATM
Interface

Solution 2 > Main characteristics

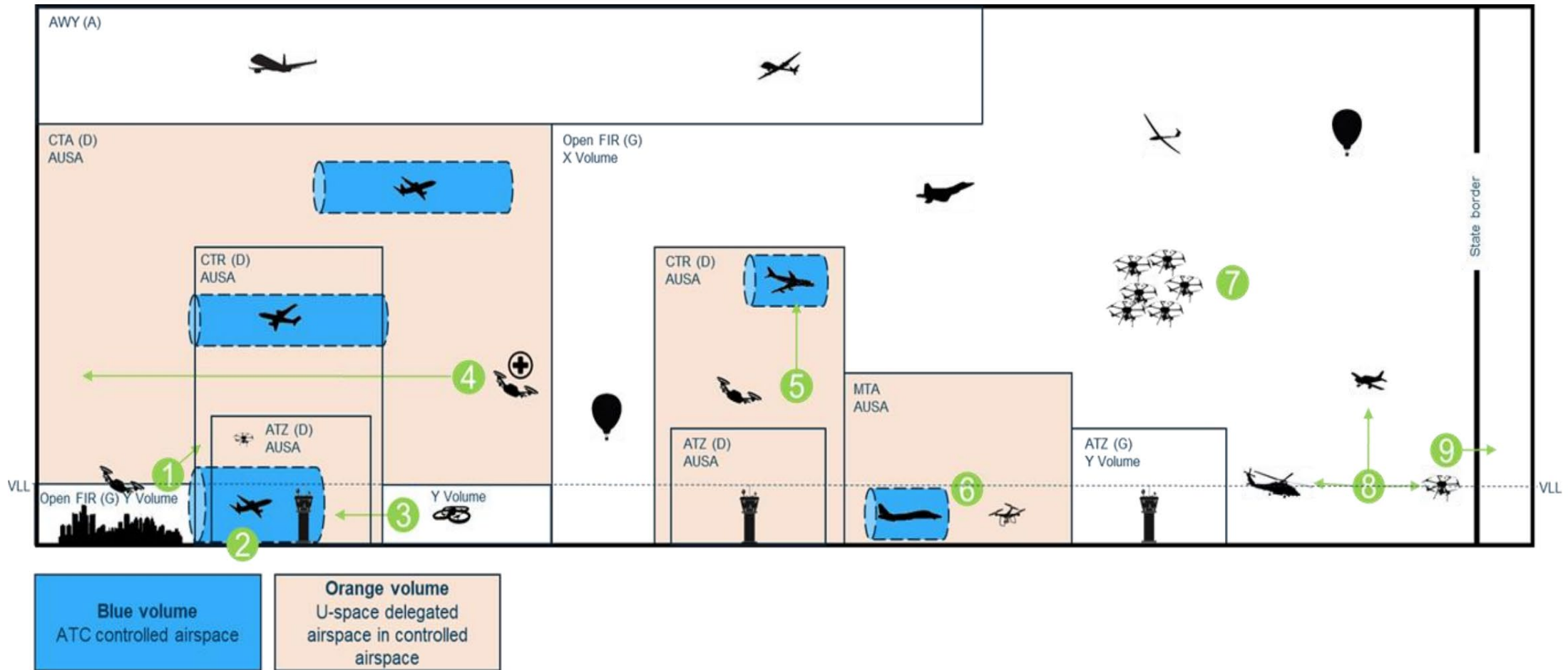
- Highly **dynamic management of AUSA** airspace, governed by ATC in controlled airspace.
- Assessment of DAC impact on manned and unmanned operations.
- **High levels of automation** in the ATM-U-space processes.
- Majority of autonomous or highly automated UAS operations.
- Methods to manage contingency and non-nominal situations.



How we see the airspace? > First Scenario

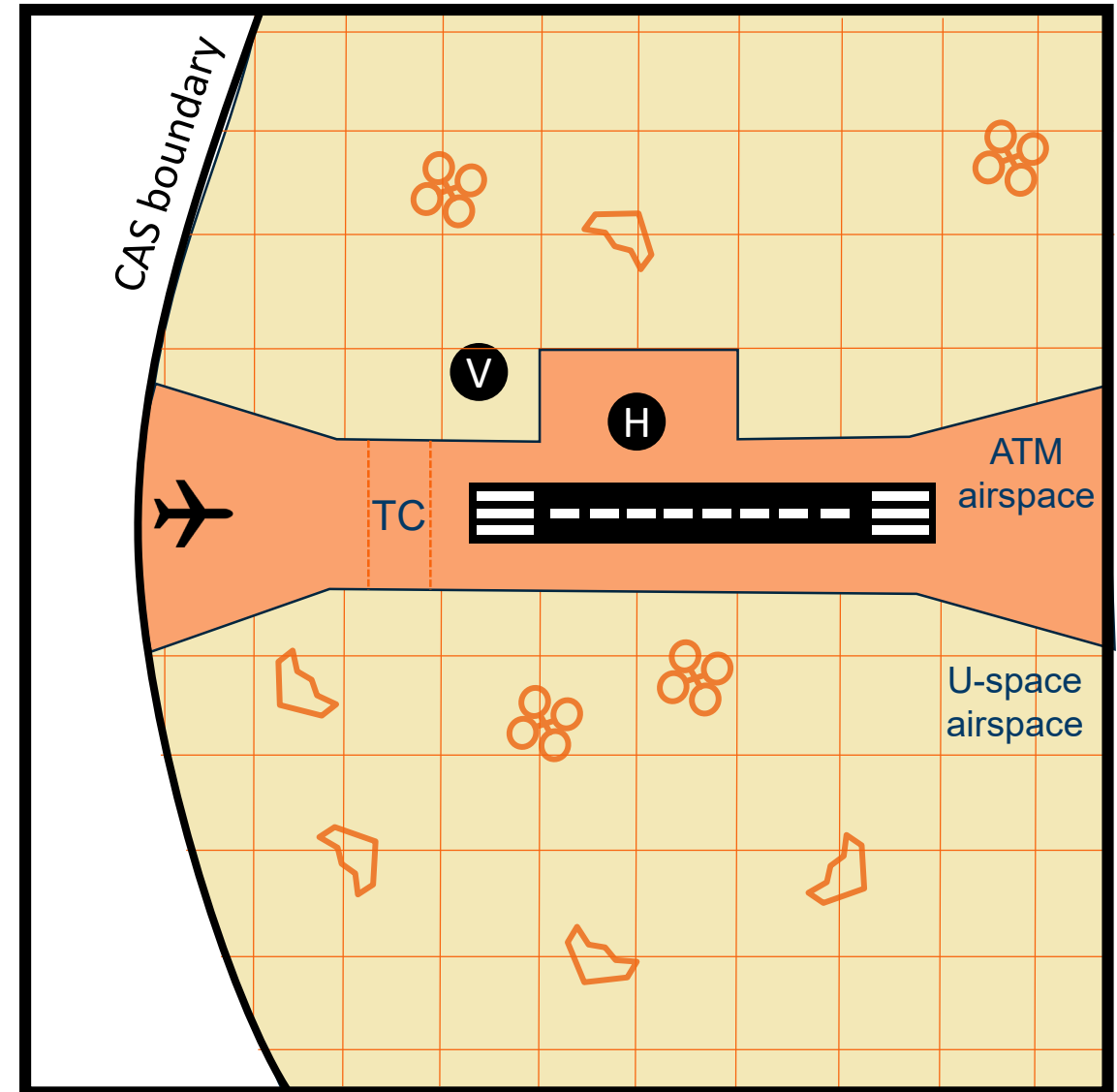


How we see the airspace? > Second Scenario



An example > Operational Environment

- Medium-sized regional airport:
 - Single runway.
 - Standard IFR and VFR operations.
 - Emergency helicopter operations.
 - Frequent routes protected through permanent segregation.
 - Ratio of U-space flights to crewed flights 10:1.
 - Vertiport for UAM in proximity.
- Management of AUSA airspace:
 - Most of the airspace reserved for U-space.
 - Pre-defined grid structure to enable ad-hoc operations (e.g. VFR flights or HEMS traffic).
 - Pre-defined UAS transfer corridors.
 - Single CISP and one or several USSPs.

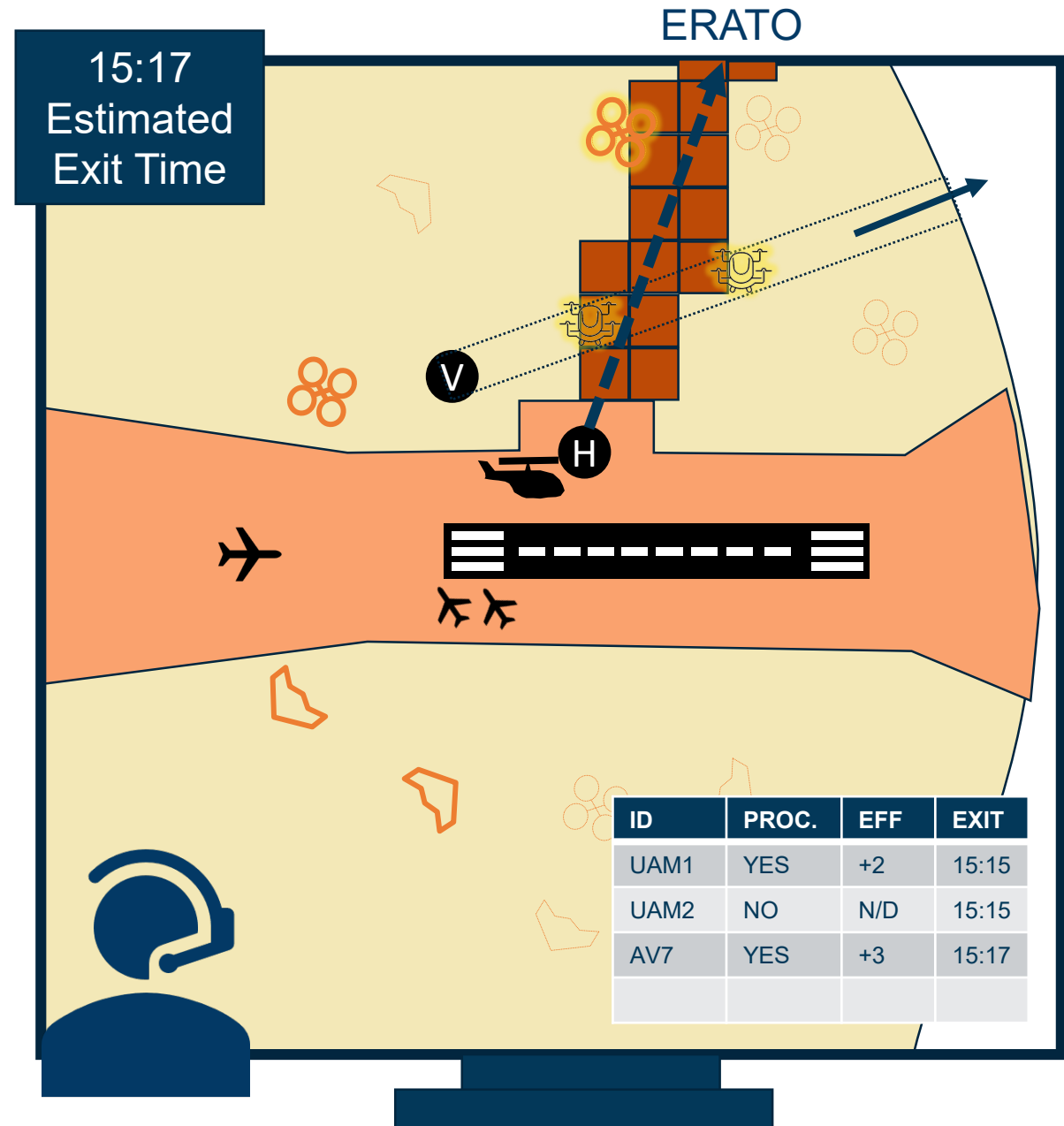


An example > Responsibilities

- ATC in charge of their standard tasks (“business as usual”).
- ATC controller or **Dynamic Airspace Reconfiguration Manager (DAR-M)** are in charge of DARs.
 - DAR is supported by predefined dynamic geo-fences which can be (de)activated in real-time by ATC.
- USSPs coordinate the **approval of UAS operation plans**.
 - No need of ATC approval of drone operations plans which are entirely in delegated AUSA airspace.
- **Separation between UAVs** is under the responsibility of USSPs or UAVs – autonomous or GCSs -.

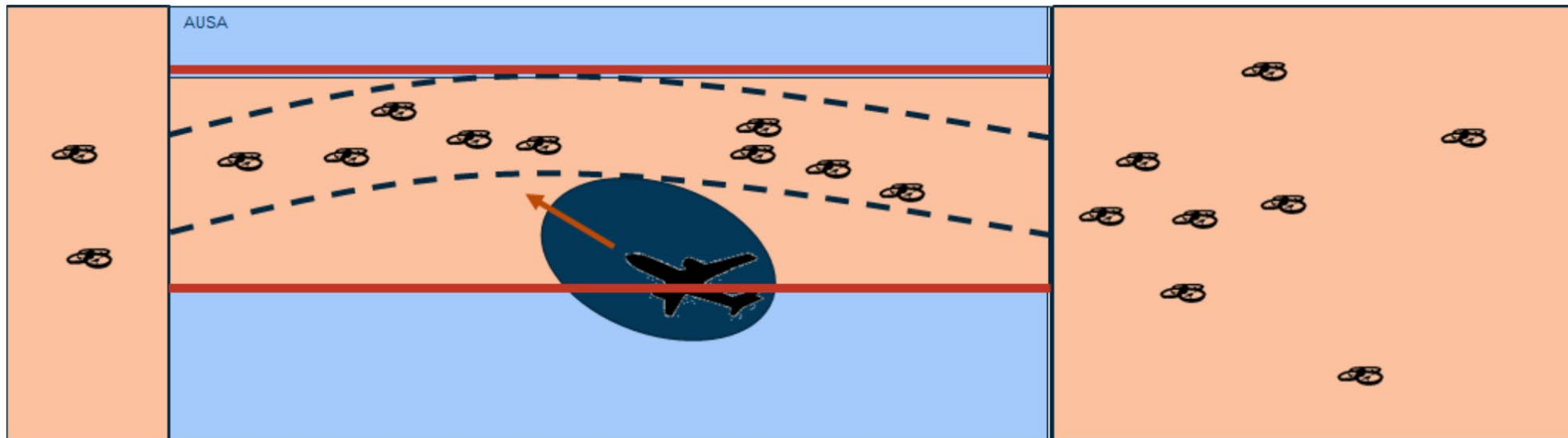
An example > Processes

- ATCO displays **airspace management tool** at 15:12.
 - Origin and CTR exit point – ERATO -.
 - Geofencing request of 15 minutes starting ASAP.
- What-if tool: **Cells to be geofenced** are automatically visualized.
- What-if tool: Quantification of **impact**:
 - Number of impacted high-priority and high-risk drone operations.
 - Cancelled missions.
 - Overall mission efficiency impact.
- What-if tool: **Estimated exit time** of all drones at 15:17.
 - Departure clearance estimation.



Other example > Towards seamless integration

- **Dynamic 4D airspace management:** Manned aircraft intruding U-space airspace.
 - Manned aircraft in AUSA airspace managed by ATC deviates from its cleared trajectory, which leads to a risk of penetrating U-space airspace.
 - U-space takes corrective actions to resolve the situation, such that the segregation is still ensured.



Thank you very much for
your attention!

AURA



This project has received funding from the SESAR Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 101017521