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SESAR-JU IR PJ.34-W3 AURA EXE#02: Deconfliction strategies during a DAR in a fast-time simulation

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SESAR 2020 SHOWCASE

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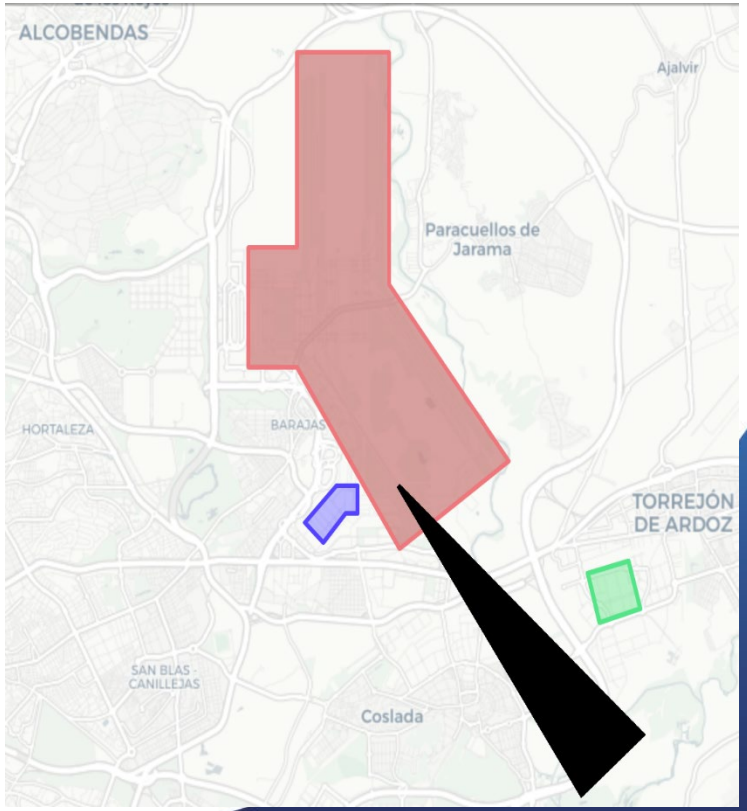
Fast-time simulation exercise

Goal

- Airbus has studied how different DAR configurations influence the safety and efficiency of manned and unmanned operations in a controlled airspace with a U-space airspace.
- In addition, several deconfliction strategies have been studied in different scenarios between UAS and DAR.

Context

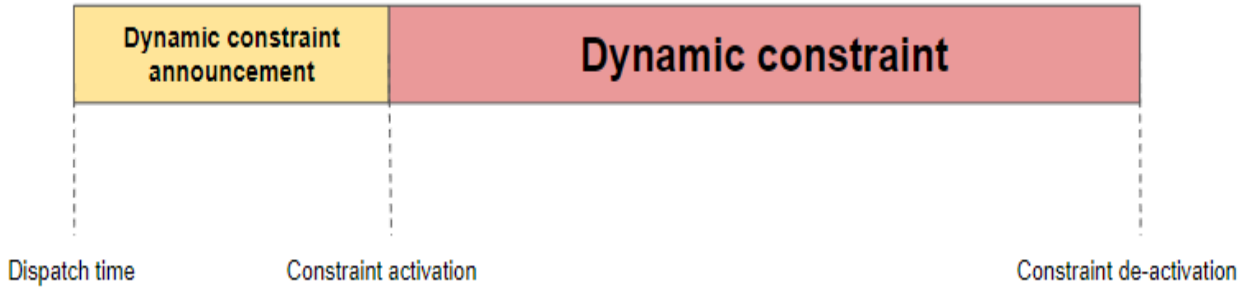
- The scenarios are run in the surroundings of Adolfo Suárez Madrid-Barajas airport (in red) where UAVs transport goods from a logistics facility in the airport (in blue) to a delivery center in San Fernando de Henares (in green) and vice versa.
- A known DAR (in black) is used for take-off and landing of manned aircrafts (14R/32L)from time to time, maintaining UAS out of this area.
- In accordance with AURA Sol2, a big number of drones operates in the U-space.



DAR configurations

The studied DAR parameters are:

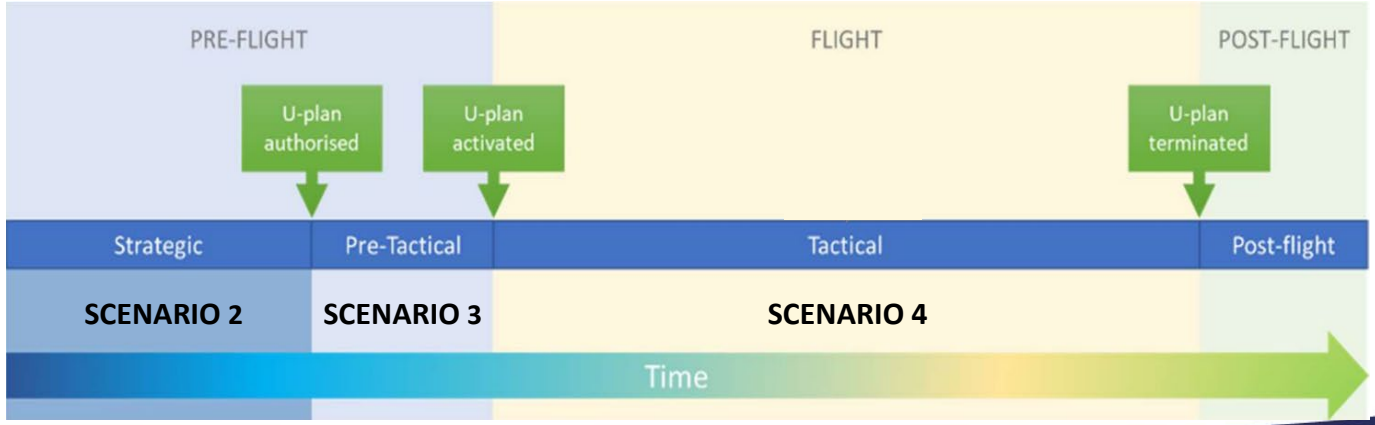
- **DAR notice period**, or the time in advance of the DAR is going into effect when the U-Space Service Provider (USSP) is informed of the DAR;
- **DAR size**, where different scales of a baseline DAR were studied



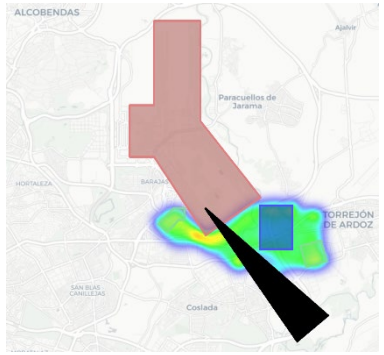
Deconfliction strategies UAS-DAR

There are 4 incremental scenarios

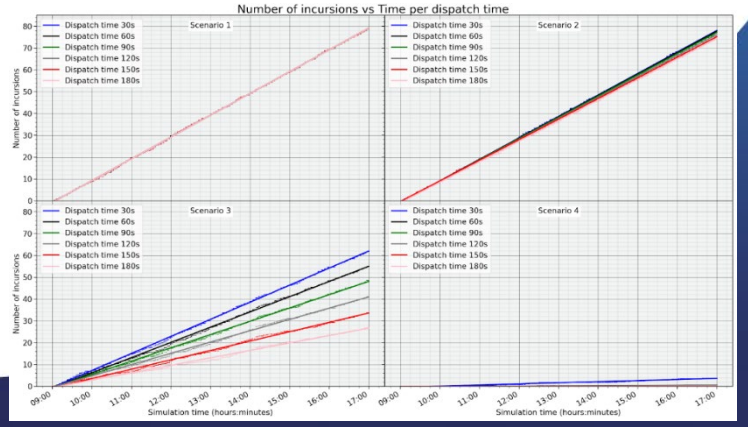
1. Baseline with no strategic deconfliction
2. New operation plans modified to avoid DAR
3. Authorized operation plans modified to avoid DAR
4. Activated operation plans modified to avoid DAR



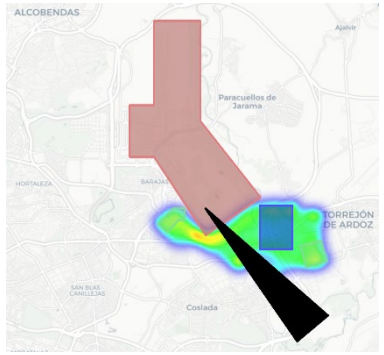
Main conclusions (1/2)



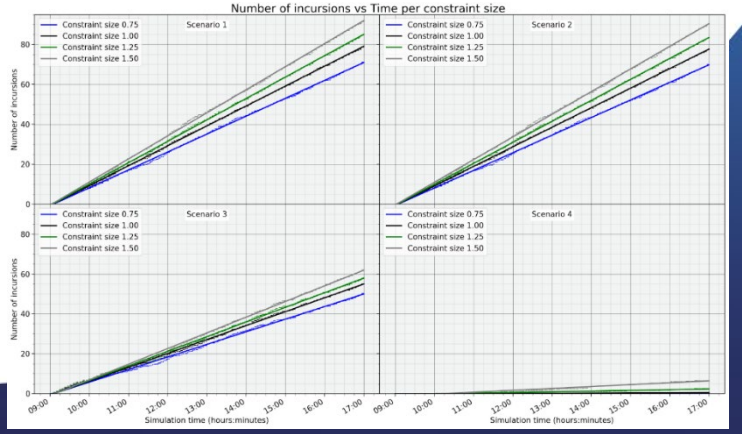
- As expected, the more deconfliction strategies applied between UAS and DAR, the less number of incursions.
- DAR announcement time identified to be as minimum of 1 minute, and advisable higher values.
  - Higher values are better, but might not be feasible in certain occasions such as HEMS operations. They need to be studied case by case.



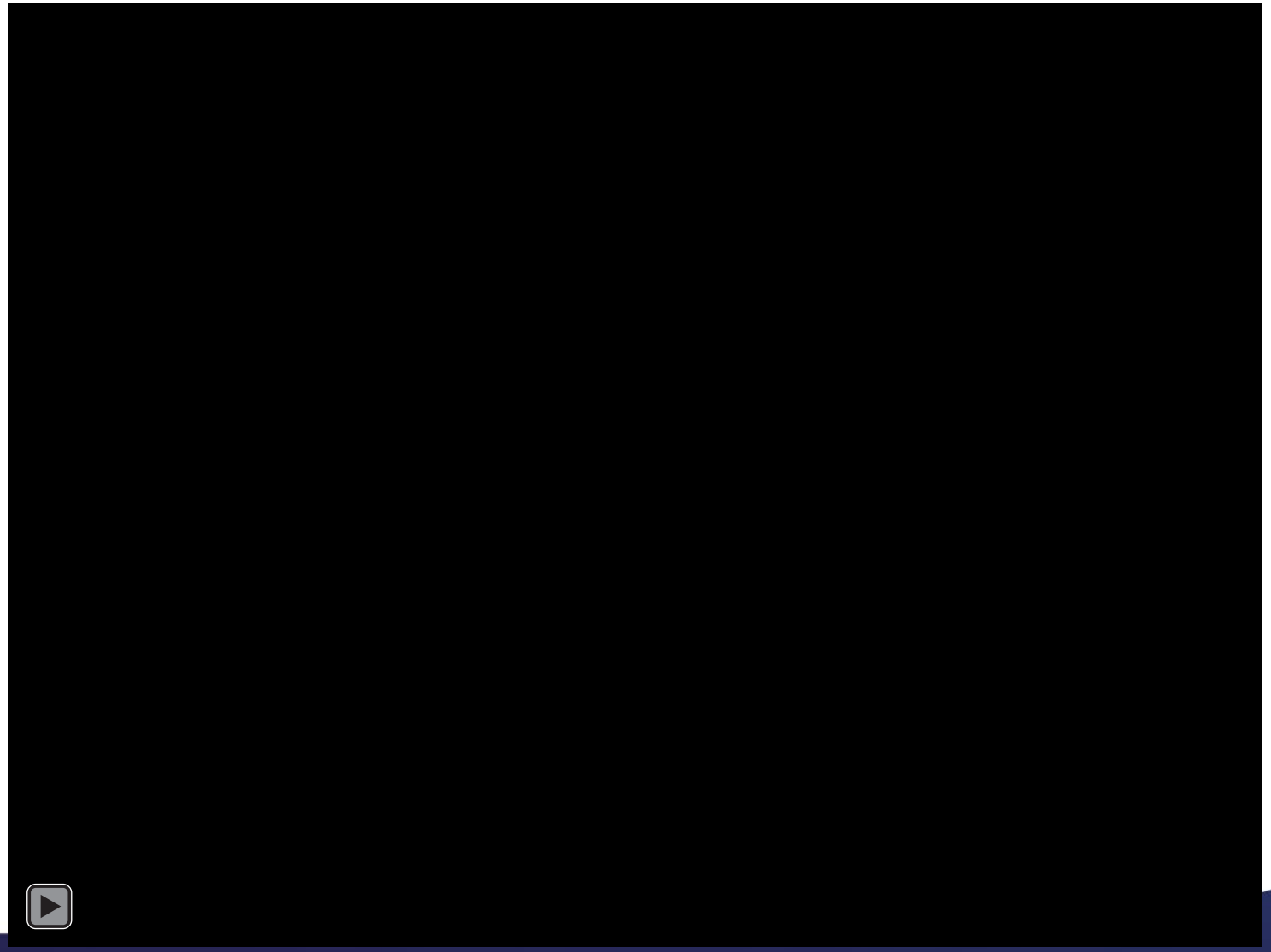
Main conclusions (2/2)

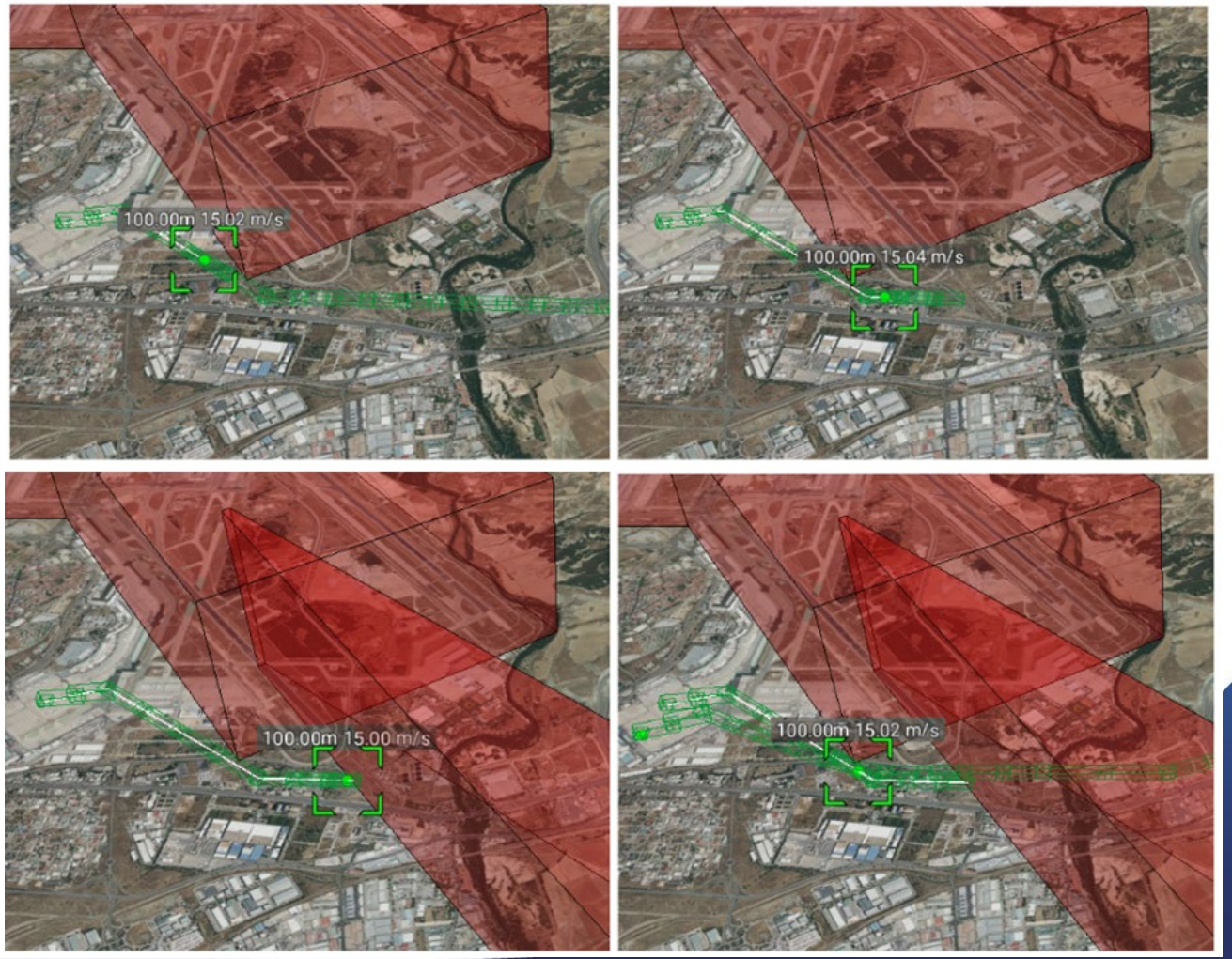


- DAR size will have an impact in the U-space and need to be design accordingly.
  - Unmanned vehicles operating in the U-space must be able to evacuate on time the DAR before its activation. Therefore, minimum UAS characteristics must be known to operate in a U-space with these DARs. It has to be studied case by case.



Video



Questions

Thank you for your attention!