U-SPACE SEPARATION IN EUROPE

INTRODUCTION AND CHALLENGES

The access of drones to any kind of airspace is marked by safety concerns. The U-space services will allow the integration of drone operations at **very low level airspace.** Two key services related to the safe operations of drones are **strategic and tactical conflict resolution**. They are even more important in situations of turbulent wind common in environments with buildings and urban furniture.

USEPE aims at finding and validating a separation method that can be used in urban environments. USEPE faces the following challenges:

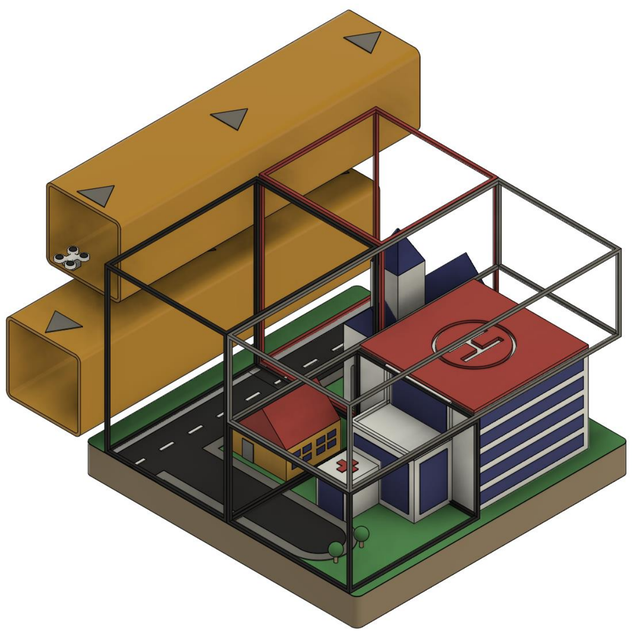
- Inclusion of **real turbulent wind fields** as part of the separation management processes.
- Feasibility of using **machine learning algorithms** to optimize the separation methods.
- **Coexistence of manned and unmanned vehicles** in city environments.

VALIDATION EXERCISES

Three validation exercises will be accomplished taking the city of Hannover as the real scenario (real wind conditions, streets and buildings layout) .

D2-C2 DYNAMIC DENSITY CORRIDOR CONCEPT

USEPE agreed on a new separation method, "Dynamic Density Corridor Concept" -D2-C2-



AIRSPACE

- Considered to be organized in dynamic segments.
- Considers drone performances for separation.
- Multi-layered segmentation in high density areas.

CORRIDORS

- Addition of predefined higher-speed corridors.

GEOVECTORING

- General syntax for drone velocity and heading speed limitation.

LAST MILE DELIVERY

A drone transporting goods flies through the city up to the top of one building to deliver a package, being subject to traffic disruptions caused by wind adverse situations and surveillance or emergency drone traffic.

EMERGENCY FLIGHT

Hospital A - in city centre- is running out of blood, and hospital B - in the outskirts of the city - operates drones to carry blood where is needed.

At the same time riots are taking place in the shorter route between both hospitals while the are is being surveyed by drones.

URBAN SURVEILLANCE

Drones participating in surveillance activities are surrounded by background traffic, but also manned aircraft performing surveillance activities are present. Sunny day and road traffic heat the ground surface generating air convection and thus wind turbulence in the vicinity of buildings.

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