

U-Space Sandbox in Germany

Lessons Learned

Drone Enabler Conference 2022

Andreas Udovic – DFS

Jan-Eric Putze – Droniq

DRONIQ FOR FLIGHT



DFS Deutsche Flugsicherung

DRONIQ 

Sandbox in Hamburg - Overview

Partners

Funded by Federal Ministry of Digital Infrastructure and Transport

Project partner Droniq and DFS

Strong local associated partners from business, politics and research

Project content

- Provide EU mandatory U-space services
- Establishing a U-space sandbox in the harbour area
- Test and showcase flights
- Flight weeks for third parties

Challenges:

- Pioneering work, short project duration
- Simulate the future with today's tools
- Highly complex area in the port environment:
 - Area of public interest
 - Air traffic, ship traffic and special ground infrastructure
 - Controlled airspace

Sandbox Hamburg – U-space area

Sandbox area

30 km²

Test flights

Application scenarios to test U-Space services primarily in the southern area of Hamburg

Flight weeks

Operation of U-Space Sandbox by third parties in the northern part, directly in the Port of Hamburg



© Map Tiler © OpenStreetMap contributors

BVLOS routes

24 km in total

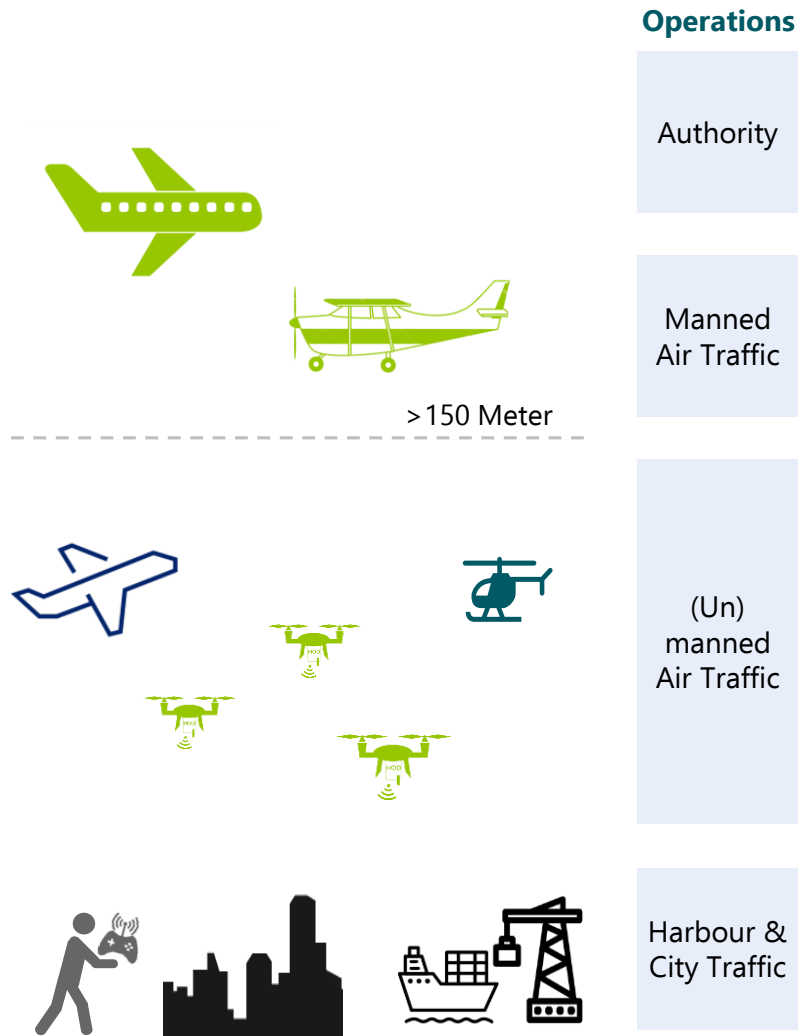
Maximum altitude

150 m

VLOS area

approx. 800 x 150 m

Interplay between stakeholders

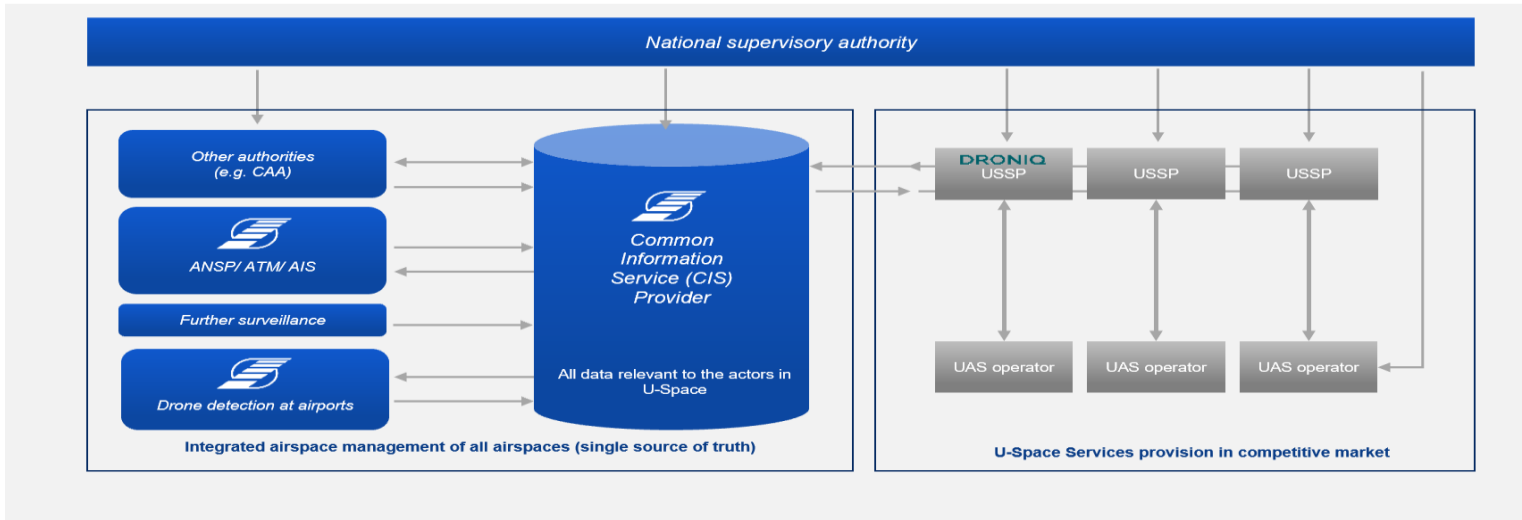


Actors in U-Space



Sandbox Hamburg – DFS is acting as CISP

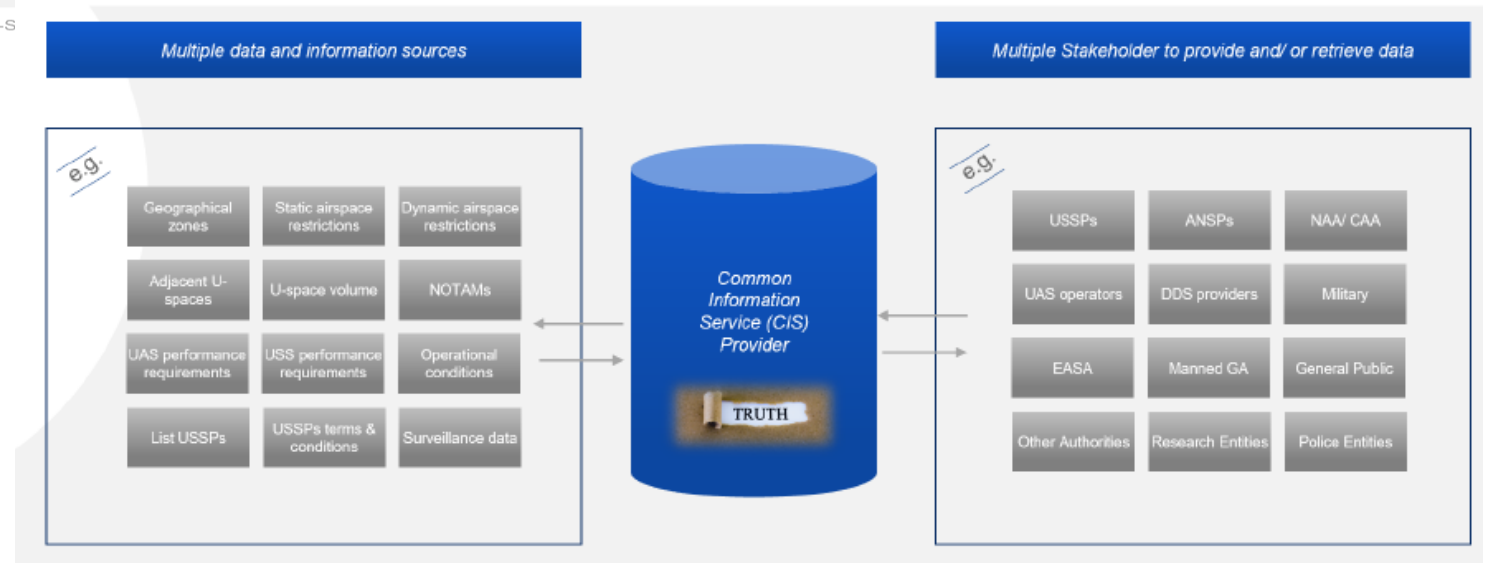
DFS target design of U-Space in Germany



Selected abbreviation(s): AIS - aeronautical information service; UAS - Unmanned aircraft system; USSP - U-S

In terms of safety and efficiency, a single CIS provider is the favorable option

DFS is creating a system for the safe integration of unmanned aircraft



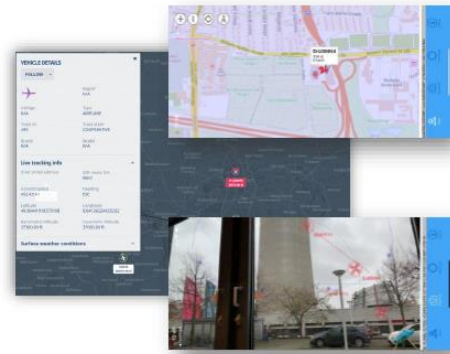
Sandbox Hamburg – Droniq U-space Services

Network Identification Service



EASA Requirements, e.g.

- UAS Operator Registration No.
- Unique Serial No.
- Geographical Position of UAS
- Route Course
- Emergency Status of UAS
- Make drones visible for authorized users

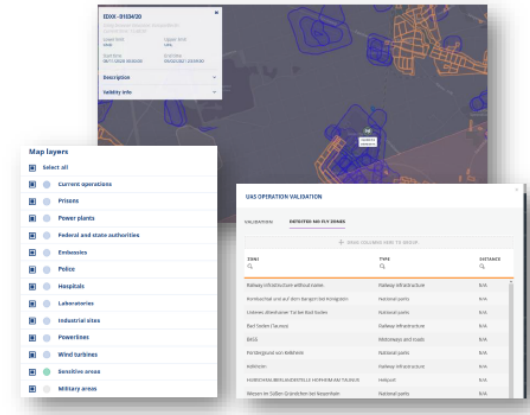


Geo-awareness Service



EASA Requirements, e.g.

- Information on operational conditions & airspace constraints
- Geographical zones
- Dynamic airspace restrictions
- Updates in a timely manner

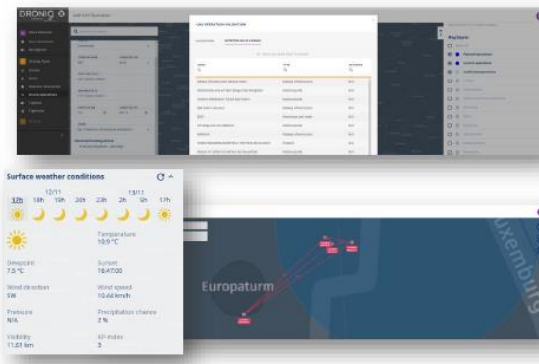


Flight Authorisation Service



EASA Requirements, e.g.

- Flight authorisation by USSP
- Check for completion and correctness
- Check for airspace restrictions or dynamic airspace conditions

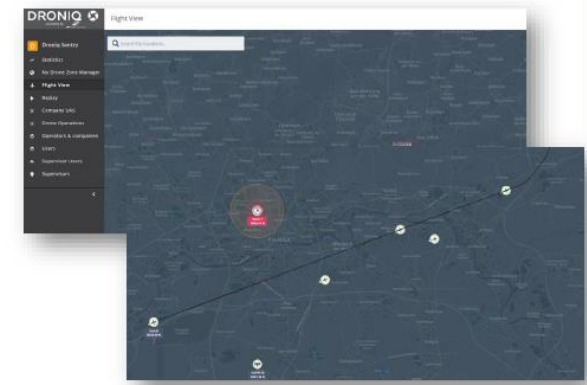


Traffic Information Service



EASA Requirements, e.g.

- Provide information on air traffic in proximity of UAS & intended route
- Include manned and unmanned air traffic



Sandbox Hamburg - Results and major lessons learned

Results:

- Successfully translated of the regulation
- Revealed the complexity of establishing and implementing U-space (close cooperation between various stakeholders)

This demonstrated that U-space and the European concept work.

Major Lessons Learned:

1. All stakeholders must be connected in an automated manner.
2. Clear rules should be defined about minimum separation distances.
3. U-space airspace should be easily accessible and understandable
4. Defined, transparent catalogue of criteria for when and where U-space is considered useful.
5. May introduce a further category UMC (UAS meteorological conditions) with specifically formulated conditions
6. Local interests must be seriously involved at an early stage
7. U-space in control zones: detailed operating procedures must be defined between ATC and USSPs.

Sandbox Hamburg – Project Information



Your contacts

**JAN-ERIC
PUTZE**



Droniq, CEO

jan-eric.putze@droniq.de
M +49 162 2337550

**ANDREAS
UDOVIC**



DFS Deutsche Flugsicherung

Andreas.udovic@dfs.de
M +49 6103 2007284