



U-space concept of operations (CORUS) Putting U-space services to the test in Denmark, France and the Netherlands (PODIUM)

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CORUS & PODIUM

- Two projects in which EUROCONTROL contributed to U-space research

— CORUS

- Exploratory research project
- Developed a Concept of Operations for U-space
- Emphasis on Consensus



— PODIUM

- Very large scale demonstration
- Demonstrated initial U-space
- Provide conclusions and recommendations on U-space



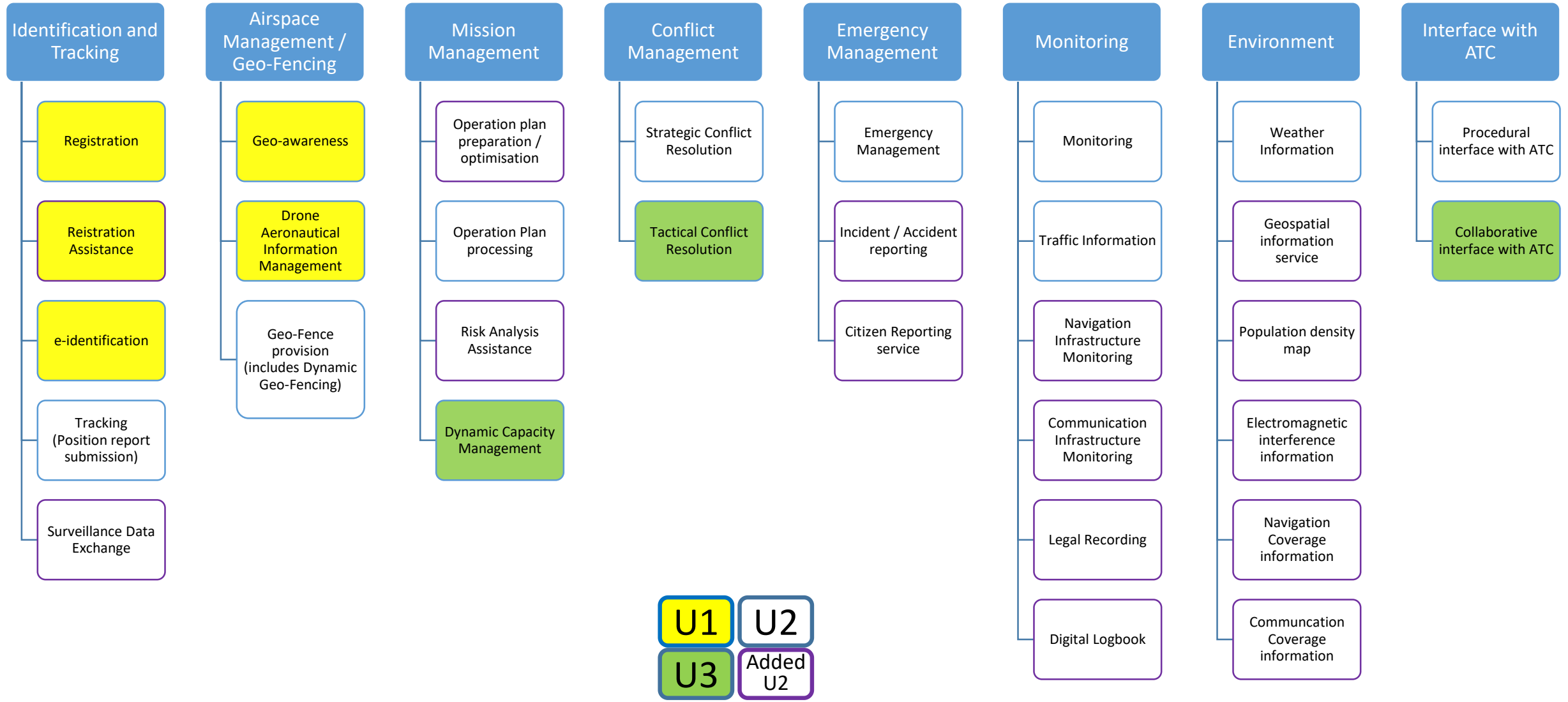
U-space Airspace Volumes



- Focus on VLL
- All VLL is divided into
- X, Y and Z volumes
- X = low risk
- Y = higher risk
 - Access only with approved operation plan
 - Specific technical requirements per volume
- Z = highest risk
 - Access only with approved operation plan
 - Za = ATC controlled airspace
 - Zu under U-space



U-space Services



The ConOps

Topics covered:

- **Operations**
- **Services, Architecture**
- **Safety, Contingency**
- **Social acceptability**
- **Best practices**
- ...

Getting a copy:

<https://www.eurocontrol.int/project/concept-operations-european-utm-systems>

<https://www.sesarju.eu/projects/corus>

Feedback, comments

<mailto:corus-mgt@eurocontrol.int>



PODIUM Demonstrations

BRETIGNY – enhancing business operations



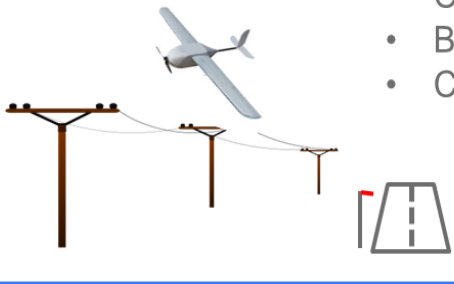
- 5 scenarios
- Reserved Zone
- CTR vicinity
- VLOS, BVLOS

ODENSE – Regular drone usage and interoperability with manned aviation



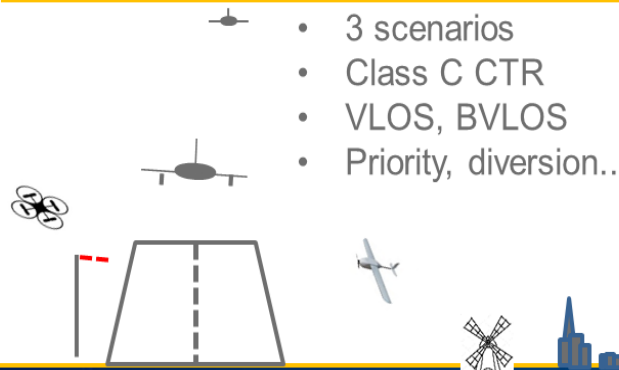
- 5 scenarios
- Restricted airspace
- Class G, TIZ, AFIS
- VLOS, BVLOS

Rodez - entering/exiting CTR, ATCO interactions

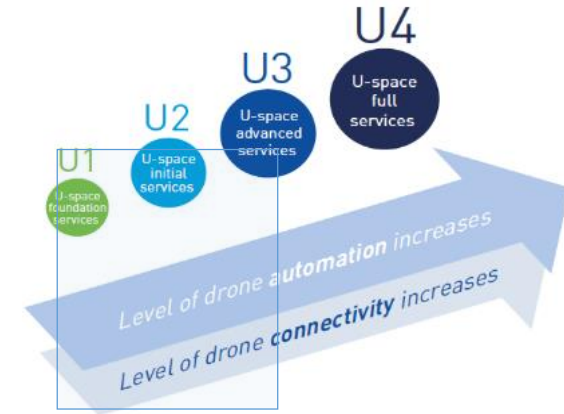


- 5 scenarios
- Class D CTR
- BVLOS
- C2 loss....

Marknesse & Eelde – “unexpected” scenarios



- 3 scenarios
- Class C CTR
- VLOS, BVLOS
- Priority, diversion..



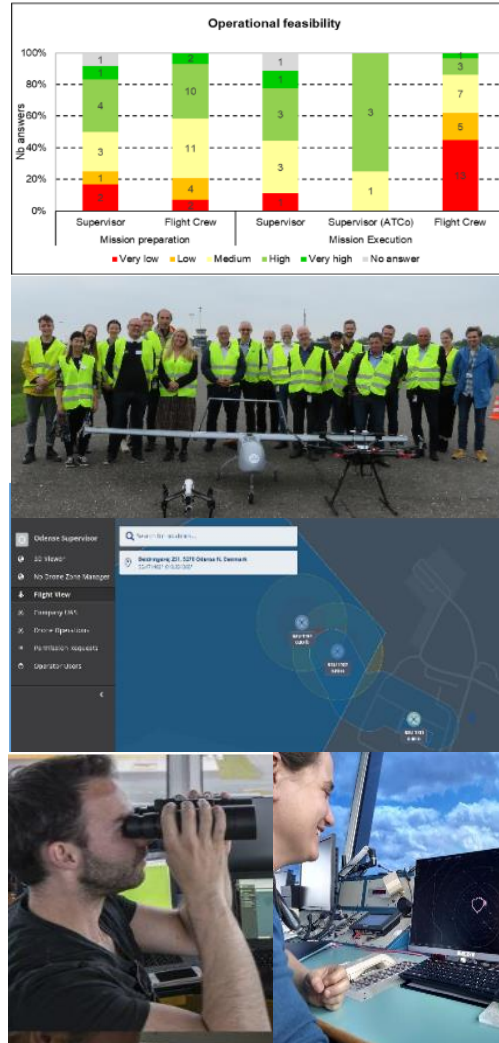
- Operator, ATCO/supervisor roles
- Registration & identification
- No-fly zones generation
- Automatic flight plan validation
- Automatic/manual flight permission
- Drone location & tracking (GSM, ADS-B/1090 MHz, UNB/L-band)
- Conflict detection/alerting
- ATC collaborative interface
- Airspace, national/local rules data



PODIUM Conclusions

What works well!

- Flight authorisations
- Single HMI for flight preparation
- Increased situational awareness
- The technology works
- Easy to use.....



What needs more thought!

- Access to trustworthy, official and up-to-date legislation& data
- Improve HMI usability and accessibility
- Effective procedures and phraseology
- Consistent drone-on-tracker performance/robustness/RF usage
- Seeing and avoiding GA



PODIUM Documents

Documents available:

- Concept & Architecture
- Demonstration Report
- Human Performance Assessment Report
- Odense Demo Report
- Rodez Demo Report
- Bretigny Demo Report
- The Netherlands Demo Report

Getting a copy:

<https://www.sesarju.eu/projects/podium>



EUROCONTROL Activities

- **Involvement in ICAO, EASA, EUROCAE activities**
- **Support to States on U-space Integration**
- **Airport Integration Exercise**
- **European Network of U-space Demonstrators**

