Critical elements of Advance Air Mobility requiring global interoperability and harmonization

The view of CORUS-XUAM

EUROCONTROL

SUPPORTED BY sesar JOINT UNDERTAKING

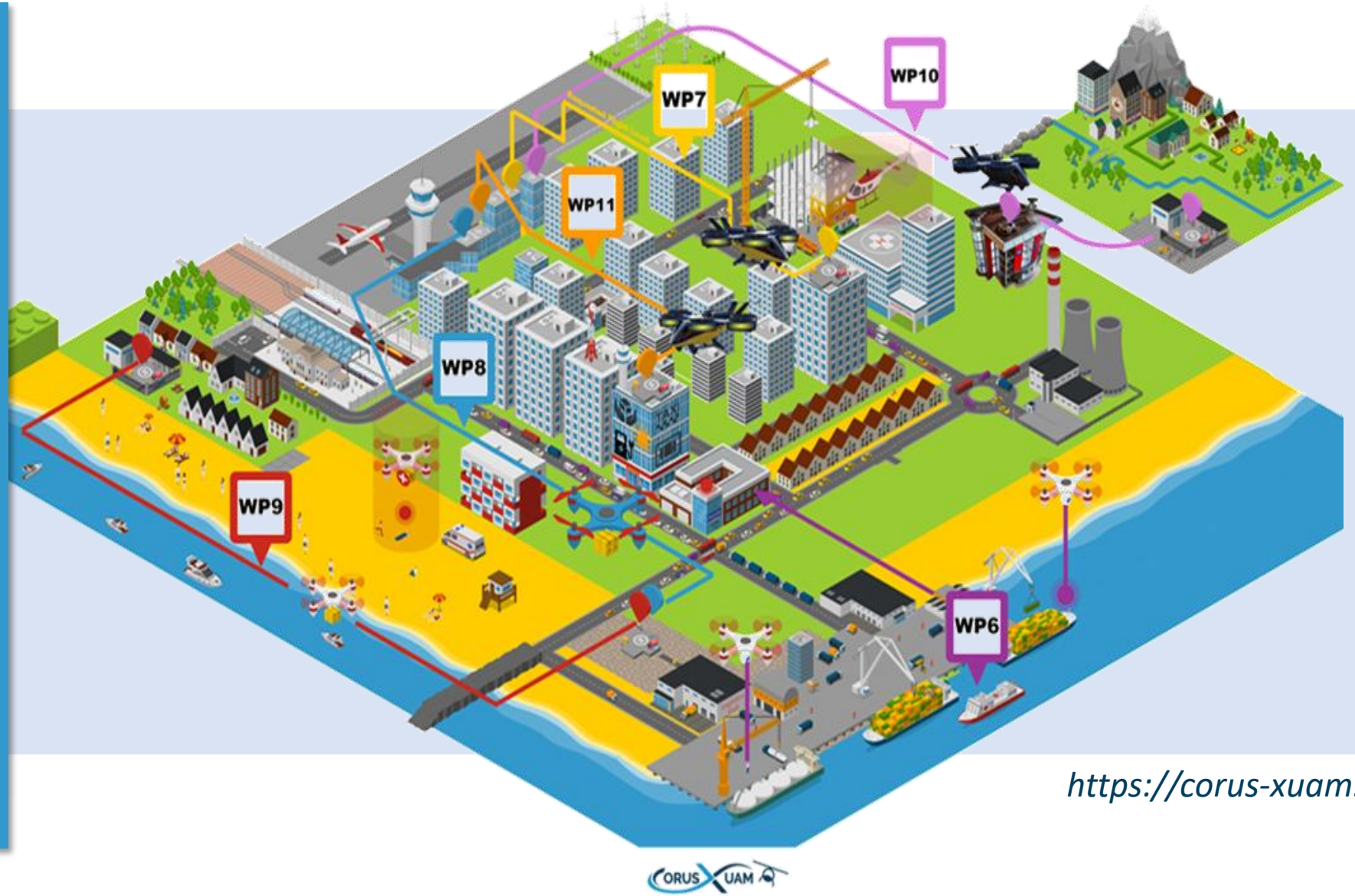
This project has received funding from the SESAR Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 101017682.

CORUS-XUAM Consortium

CORUS-XUAM Demonstrations

Research question

“[how] can U-space support urban air mobility including passenger carrying operations?”



https://corus-xuam.eu

CORUS-XUAM U-space ConOps

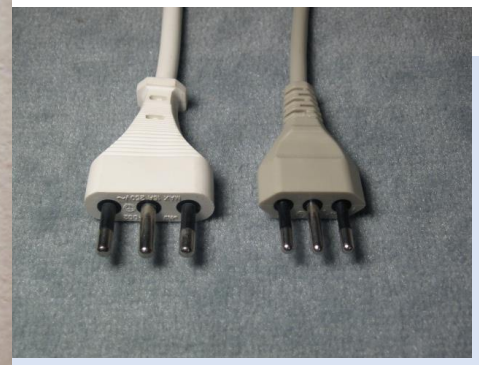
- Edition 4, August 2023
- Combines inputs from 17 European projects
- U-space will be the control service of Advanced Air Mobility in Europe

https://corus-xuam.eu/final-uspace-conops/

Diversity ➔ There is a need for a standard

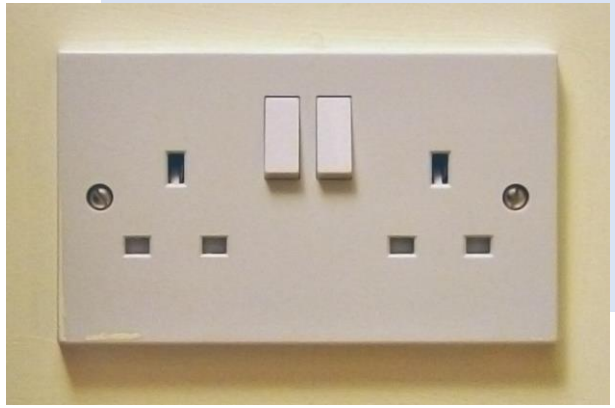
International Commission on the Rules for the Approval of Electrical Equipment (IECEE) CEE 7/5

IECEE CEE 7/3

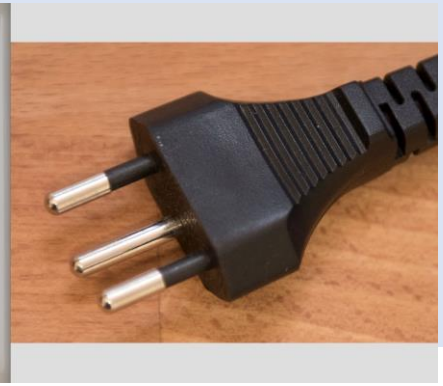


CEI 23-50, Italy

Danish Plug Equipment Section 107-2-D1 Standard sheet (SRAF1962/DB 16/87 DN10A-R)



British Standard 1363 (G)



SN 441011 type 12 Switzerland

Images from commons.Wikimedia.org

Diversity ➔ There is a need for ~~a standard~~ harmonisation!

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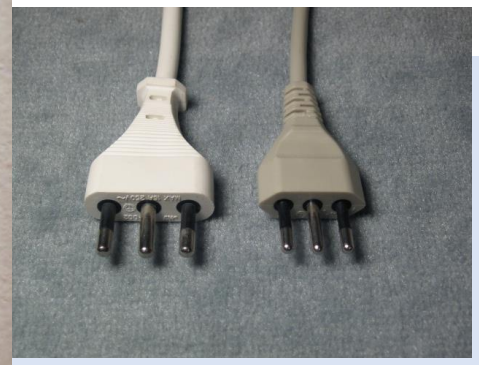

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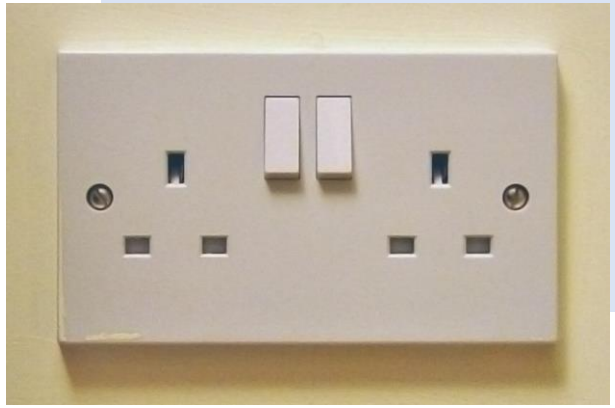

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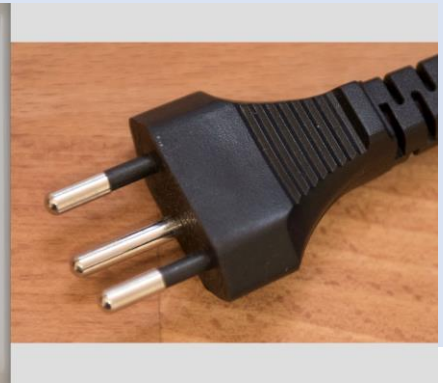

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Why harmonise AAM?

Safer, Cheaper, Better

There is a global market for vehicles, avionics, ground equipment, staff, services.

One set of global, harmonised safety requirements are cheaper to implement than many different.

That one set is easier to implement ➔ more likely to be correctly implemented.

Common standards allow mobility of aircraft, service providers and crew

Market growth

Lower costs ➔ more business opportunities ➔ more flying ➔ more rapid identification of best practice

Volocargo at DLR Cochstedt, Dec. 2022
CORUS-XUAM flights

Global standards can implement global goals

Sustainability, Social acceptance

Subjects for international harmonisation in AAM

Operational concept

- Terminology
- Roles
- Reponsibilites
- Requirements
- Principles
- Processes

Regulation & operational procedures

- Flight rules
- Airspace structure, services
- Aviation with reduced human involvement: Responsibilities & Liabilities
- …

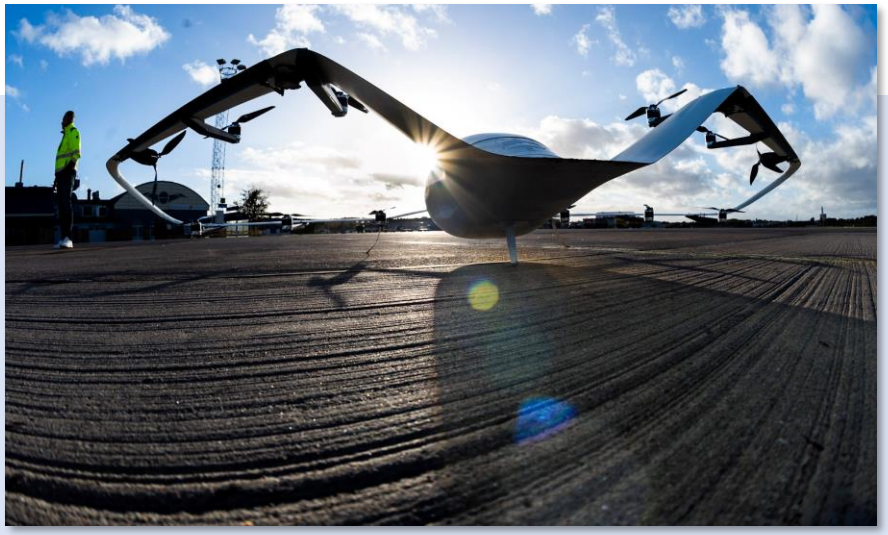
Standards

- Data exchange models
- Aircraft & equipment certification & performance categories
- Vertiport & infrastructure
- Surveillance at low altitude
- Automation / autonomy…

UAS Flights in Castelldefels, Mar. 2022
CORUS-XUAM

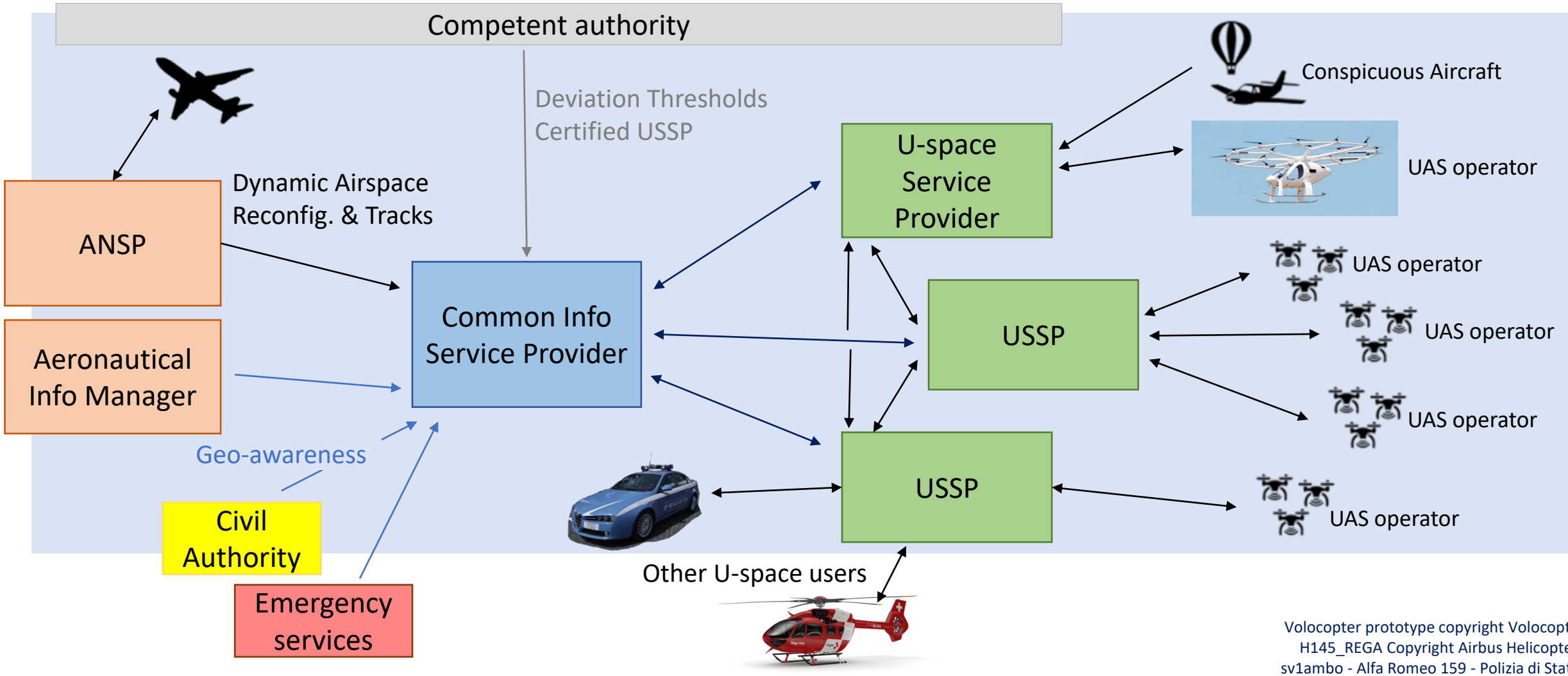
Flight Rules, Airspace structure

- UAS today cannot fly VFR
  - Some not IFR
- Many UAS today fly…
  - … By waiving requirements per flight
  - Or in restricted areas where the requirements are not applied
- A solution is needed that allows all aviation to fly safely without exception
  - Where everyone knows the rules
  - The impact of any change on existing aviation should be carefully considered

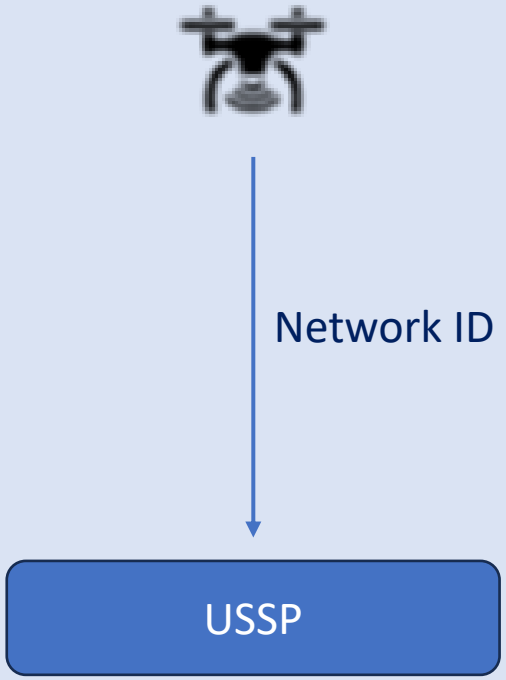


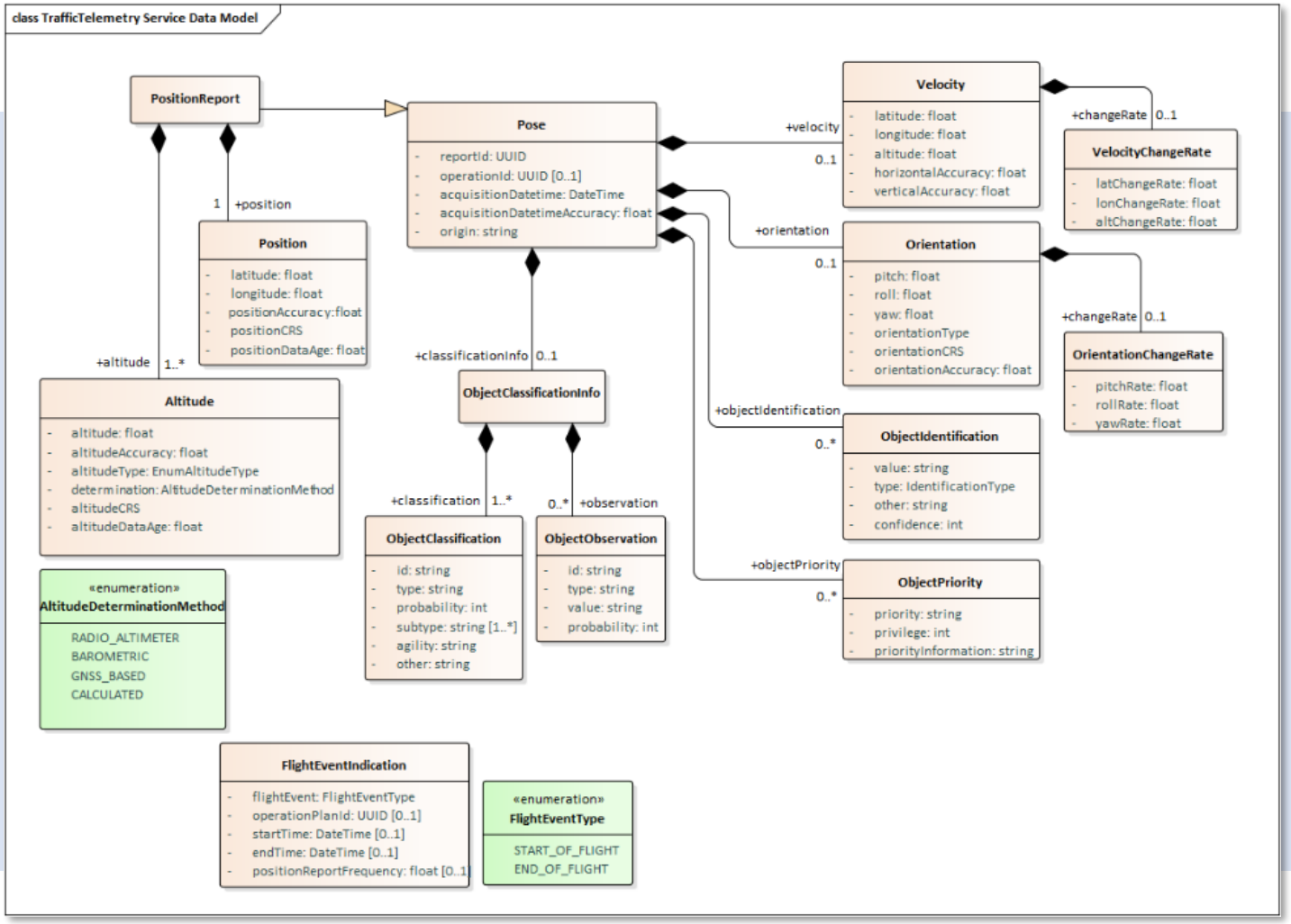
KATLA aircraft at Linköping airport, November 2022
CORUS-XUAM

Data exchanges today in U-space ≈ AAM



Data exchanges example: Reporting aircraft position





Traffic Telemetry Data Exchange Model
One of nine models developed by the GOF2 U-space project

https://gof2.eu/

Summary

- Aviation, including AAM, is a global business
- Global harmonisation of AAM will bring lower cost, higher safety than a patchwork of national schemes
- Key elements of a harmonised global regulatory framework
  - Roles, responsibilities and liabilities of those involved
  - Operations, including flight rules and airspace structure
  - Services to be provided and their associated data exchanges
  - Requirements on infrastructure and equipment
- In the longer term
  - Safe, secure Automation / Autonomy / AI

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Thank you, Drone Enable

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