

# The CORUS ConOps for U-space

Andrew Hately, EUROCONTROL  
CORUS technical coordinator



# The CORUS project

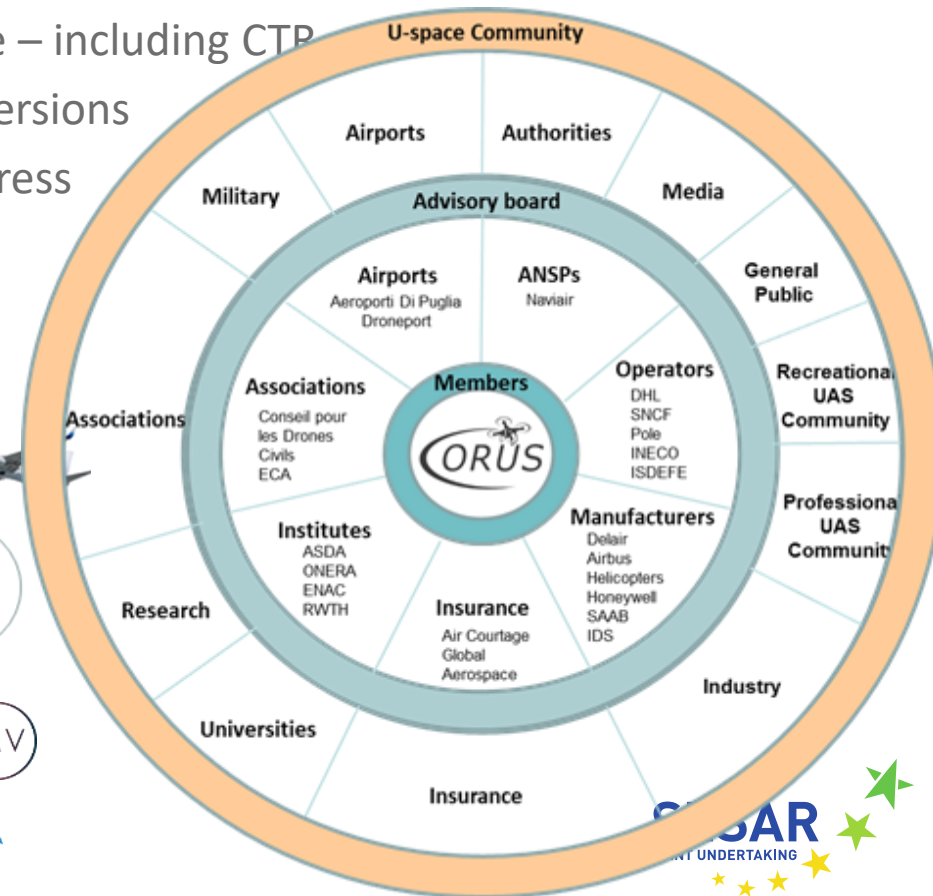
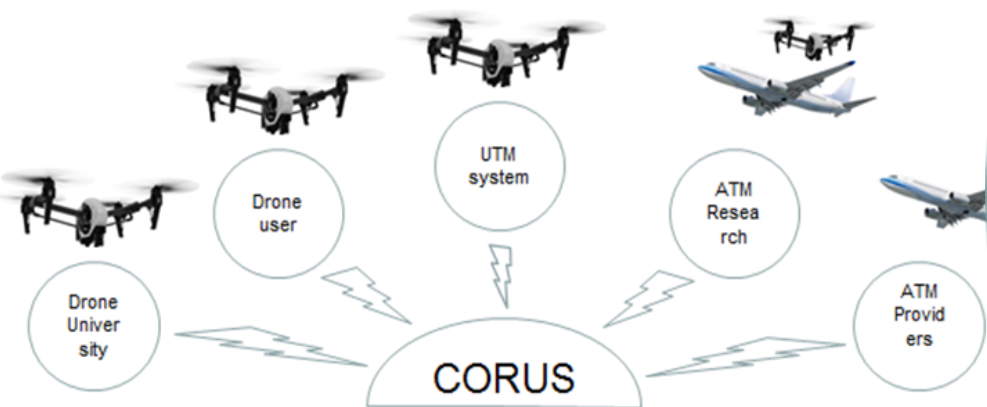
Define the Concept of Operations for European UTM Systems – U-space

Enabling safe interaction between all airspace users

Starting in Very Low-Level (VLL) airspace – including CTR

Iterative process: 3 Workshops, 3 ConOps versions

1<sup>st</sup> CONOPS released in June, V2 in progress



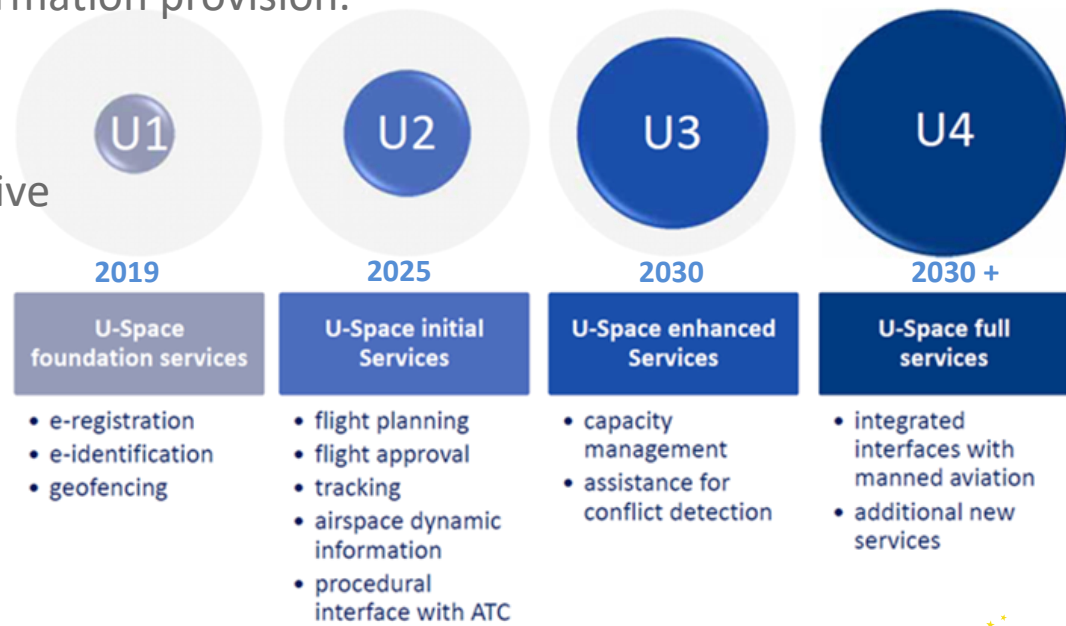
# The CORUS ConOps for U-space

U1 – Low density operations, VLOS (BVLOS by airspace reservation) by identification and geo-fencing

U2 – Higher density, BVLOS by use of Flight Plan, position transmitting, tracking, monitoring, traffic information provision.

U3 – Improved capacity: tactical conflict resolution, cooperative detect and avoid

U4 – the future: integrate drone operation with VFR also outside VLL  
- *Definition under work*



# CORUS Use Cases

Non-populated areas:

Photo and film activities, Seed sowing

Sparsely populated areas:

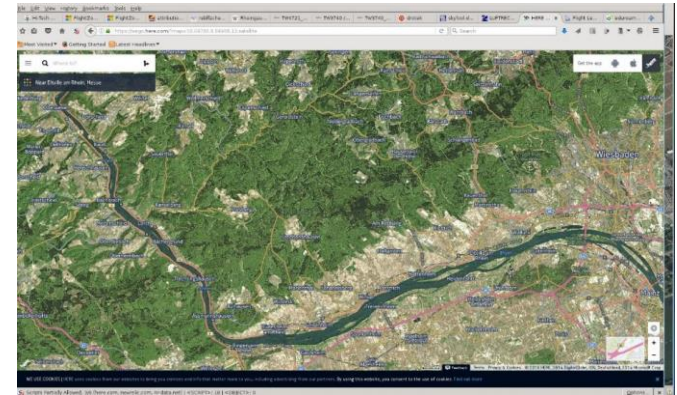
Farming: survey or spraying, Building and Infrastructure inspection

Populated areas:

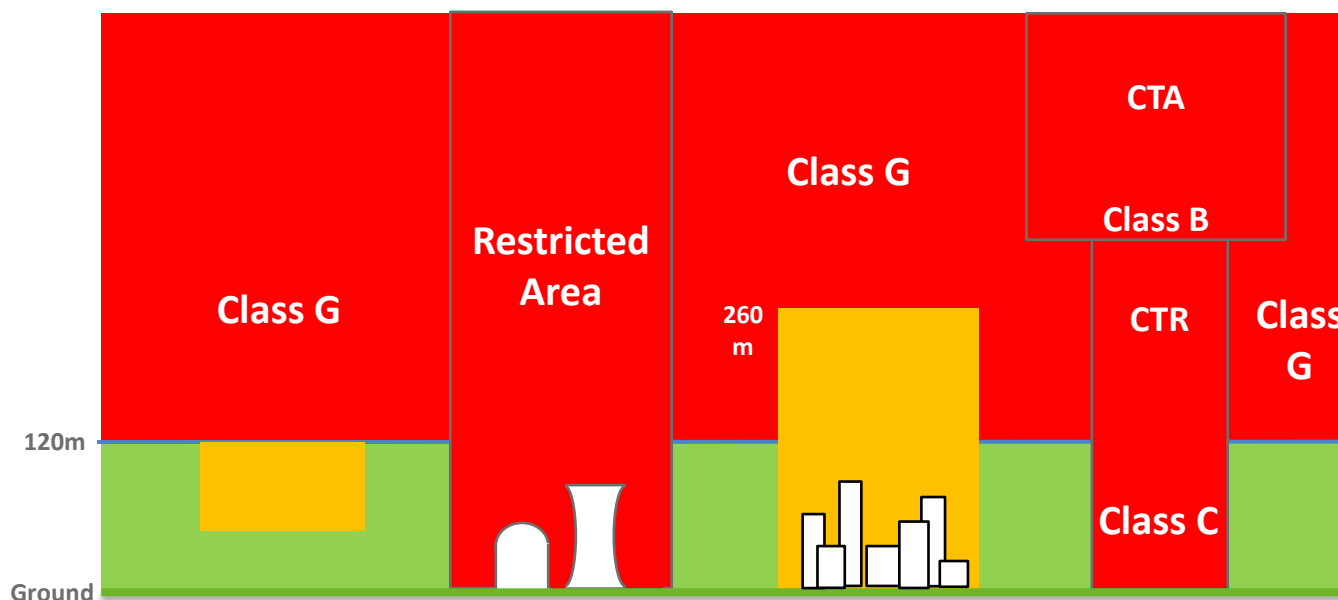
Police surveillance, Delivery, Passenger transport

Near airport, on movement area, on airport facilities, in departure or arrival paths:

Recreational activity (*safety management case*), Runway inspection, Building inspection, PAPI calibration, ILS Inspection and measurement

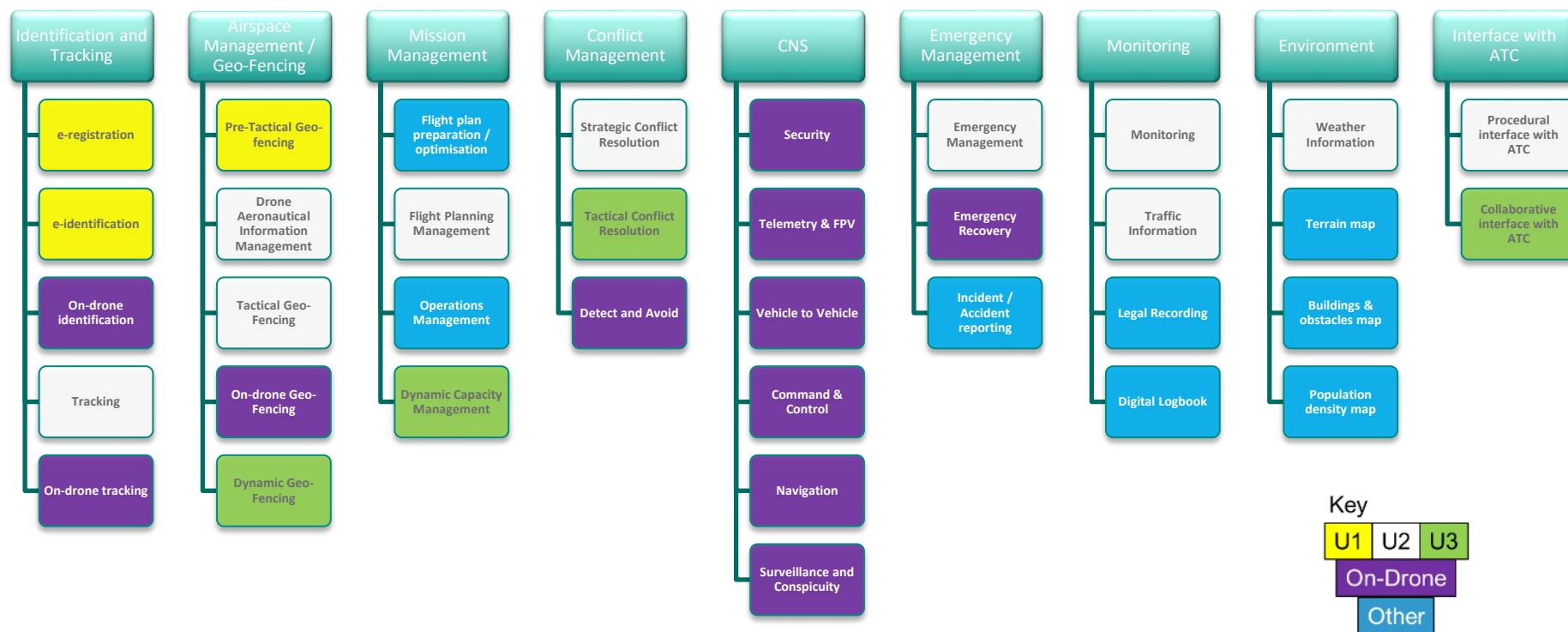


# CORUS colours airspace volumes by entry criteria



U-Space Level	Red	Amber	Green
U1	<b>No drone zone</b> (unless with special permission)  Protects airports, national parks, prisons, power-stations  May also exist to contain a BVLOS or other high-risk flight (with geo-caging)		<b>Open access</b>  Very few services provided: Maps Emergency management
U2		VLOS, EVLOS & BVLOS Strategic conflict resolution Flight plan and position reporting required	
U3		Dynamic Capacity Management	
U4		Tactical Conflict Resolution  Collaborative detect and avoid required	

# The services identified by the Blueprint, Roadmap and the CORUS ConOps



# An example of what is in the ConOps: Geo-fencing in detail

U1: pre-tactical geo-fencing.

Shows the locations of geo-fences on a map

Enables electronic download into the Remote Piloting Station

... and the drone itself if that is possible

U2: enhanced Geo-fencing

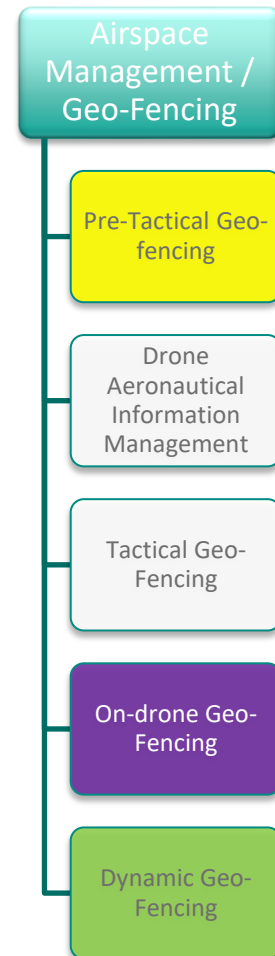
Dynamic geo-fences can be created at short notice

Drones will be expected to be able to prevent the pilot from crossing a geo-fence

Geo-fences will form part of a bigger set of Drone Aeronautical Information including Terrain and Obstacle data.

U3: dynamic geo-fencing

a connected drone can receive an update to a geo-fence while flying



# The Architecture of U-space

CORUS defines a top-down architecture for U-space

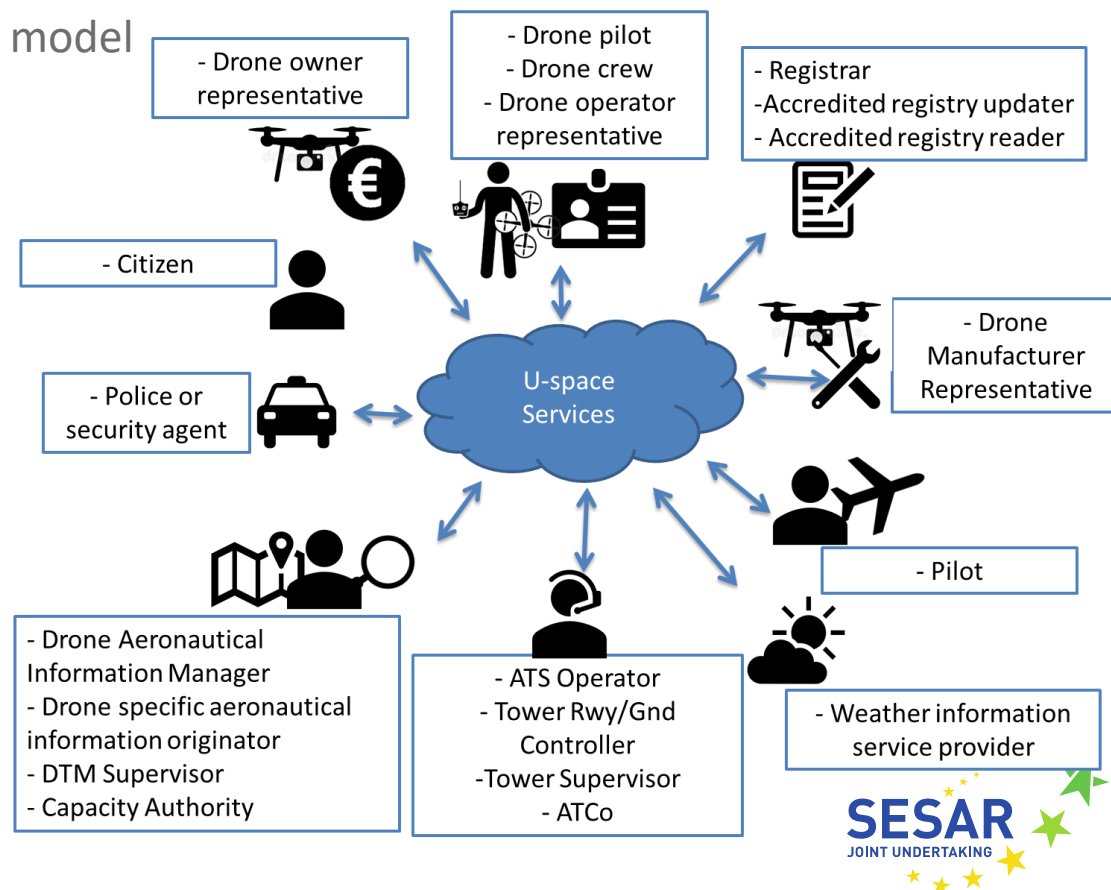
8 *sibling* projects explore the same architecture bottom-up

The architecture allows CORUS to model the business processes

- Which actors
- Exchange what information
- Using which services

The work supports Business Process Modelling

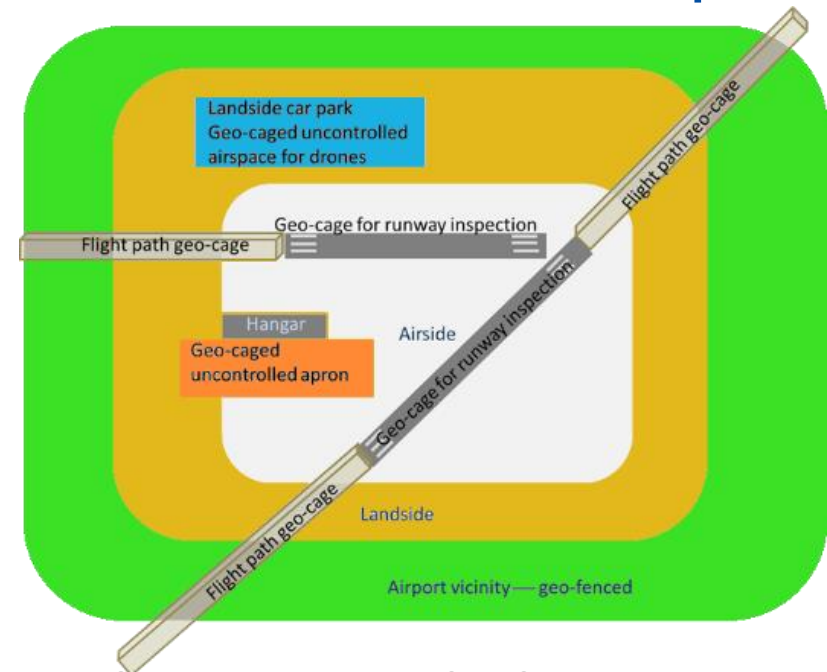
The process builds on EATMA



# CORUS Airport focus

CORUS initially studied four airport use cases:

- ILS flight inspection by RPAS
- Runway inspection by drone
- Aircraft inspection on ramp by drone
- Landside surveillance by drone



**The airport is a relatively safe place to fly a drone when ATC are involved**

- Low ground risk (generally) with restricted access
- Managed airspace

25 applications have now been identified by the CORUS Airport activity

The aim is to develop the most interesting of these more fully, leading to

- Generalised processes for each
- The best practices for each

We need your help for this.

For more information email [corus-info@eurocontrol.int](mailto:corus-info@eurocontrol.int)

