Towards a harmonised approach for the integration of Urban Air Mobility into the airspace.

Urban air mobility (UAM) is often considered as desirable yet unattainable, something that exists only in sci-fi movies. However, a world where cars fly may not be so implausible.

The CORUS-XUAM project intends to illustrate what a practical urban air mobility implementation will look like in the coming years based on experimental work happening now.

SESAR JOINT UNDERTAKING

CORUS XUAM

What is UAM?

A term used in the aviation industry, Urban Air Mobility refers to on-demand and automated air transportation services for carrying cargo or passengers, typically flown without a pilot on board. This ecosystem enables on-demand, highly automated, passenger or cargo-carrying air transport services with particular reference to the urban and sub-urban environments, where aviation is often highly regulated today.

The expectation is to have safe, secure, green and acceptable UAM solutions deployed by 2025-2030 to exploit seamless freight, emergency, security and mobility services.

The UAM industry has a significant potential for growth and it has been estimated that by 2035 around 23,000 UAM/eVTOL will be serving a global market worth some €60bn.

Of course, progress is never a straight line, especially when the technological, regulatory and industry transformation is as significant as introducing a new transport system.

The UAM challenges can only be met through an evolutionary development process.

How will CORUS-XUAM contribute to UAM?

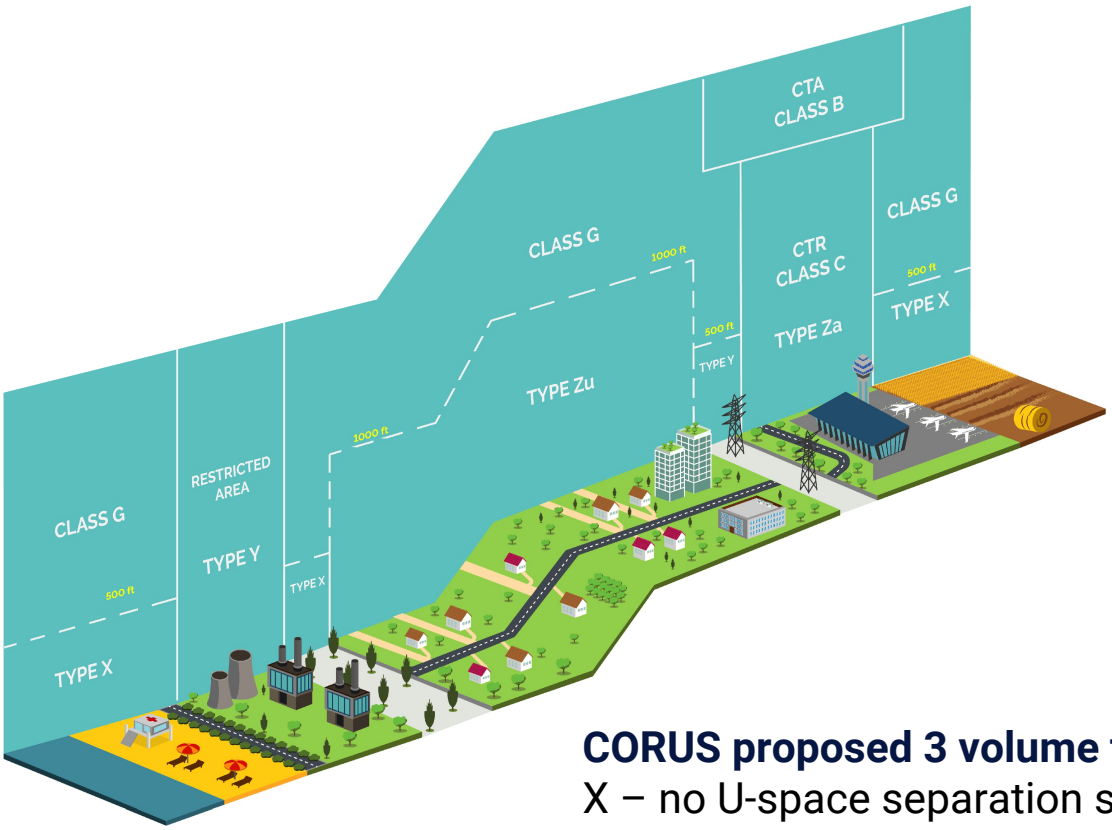
Carrying out 6 demonstrations in 7 different European countries, the CORUS-XUAM project will examine the effectiveness of services drafted out in the Concept of Operations (ConOps) as well as identify new and next-stage services that need to be included.

CORUS-XUAM will also develop and refine necessary operational procedures that prioritise public safety and social acceptance of drones. All findings will be consolidated into the current Concept of Operations document.

The Concept of Operations (ConOps)

In 2017, experts from manned and unmanned aviation, research and academia gathered to identify and develop in detail the operational processes and corresponding services necessary to integrate the increasing numbers of drones harmoniously and efficiently into Very Low Level (VLL) airspace.

This is the **U-space Concept of Operations (ConOps)**. The ConOps's goal is to enable a wide range of drone uses, to accommodate the level of traffic today as well as thay expected in the future, to take on board the best ideas from around the world and ensure acceptance by a wide range of stakeholders.



CORUS proposed 3 volume types

X – no U-space separation services
Y – plans strategically separated
Z – strategic and tactical separation
Za – tactical separation by ATC
Zu – tactical separation by U-pace

Expanding the ConOps for UAM

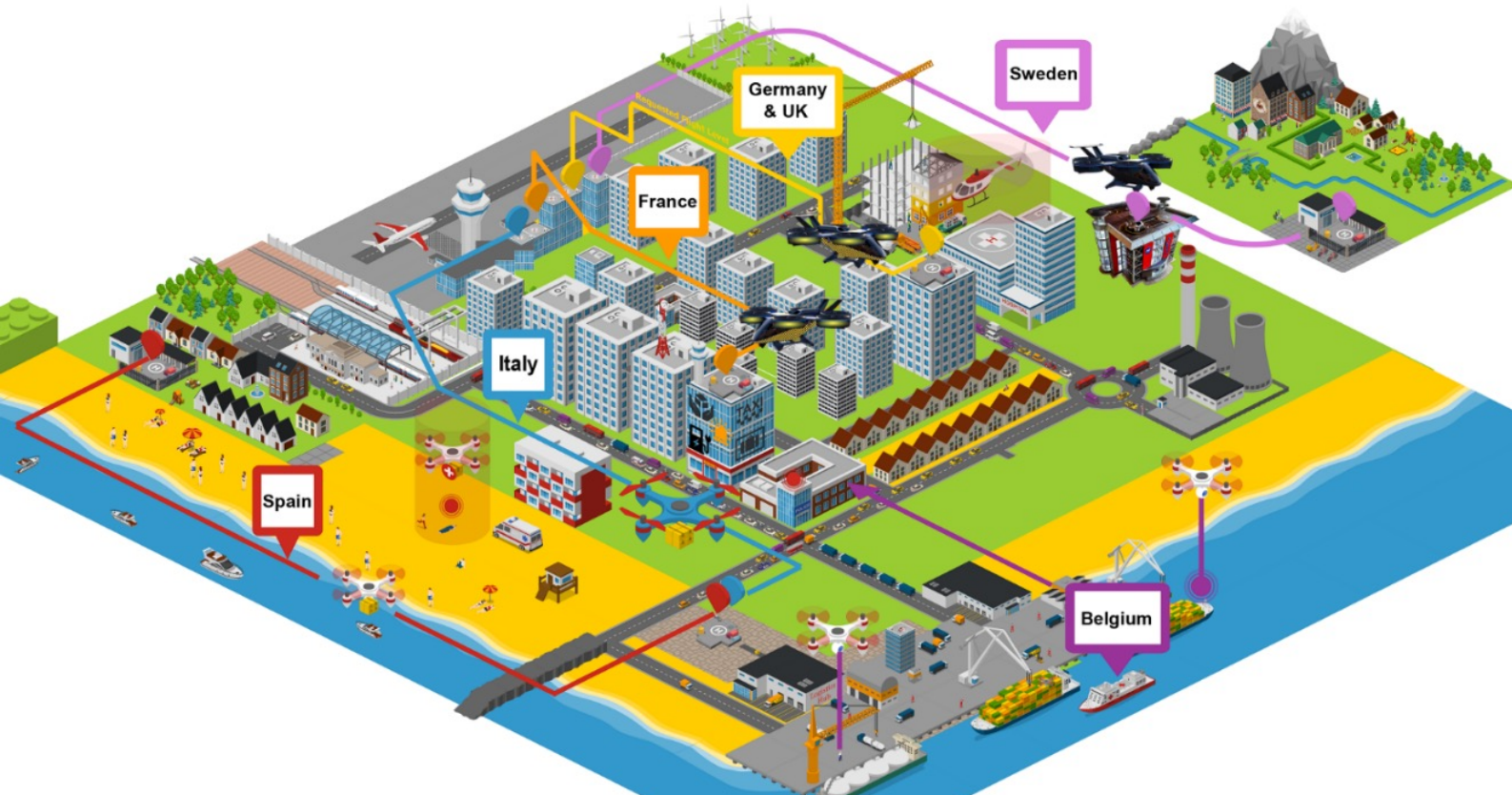
In CORUS-XUAM, this ConOps is extended and applied to enable mobility in the airspace above cities and busy urban environments.

CORUS-XUAM will conduct large-scale Europe-wide test trials to identify solutions that can effectively support drone operations relating to UAM.

Six demonstrations will take place in seven countries: Belgium, France, Germany, Italy, Spain, Sweden and the United Kingdom.

Preparatory work and flight trials will be performed throughout 2021 and 2022.

Insights and recommendations gained from the project will be compiled in a final report on early U-space solutions for UAM deployment in late 2022, and are also expected to be used by regulatory authorities.



Comprehensive traffic mix

- passenger-carrying air taxis
- both large and small drones, including those with vertical take-off
- co-existence with aircraft with pilots
- collaboration between controlled airspace and u-space for manned and unmanned operations mgt

Demonstration areas

- urban, suburban, rural
- controlled airspace within airports and ports
- uncontrolled airspaces namely above busy cities

Diverse types of operations

- door-to door transport of passengers and goods (logistics, delivery)
- emergency response
- surveillance of people, traffic flow and infrastructure

Discovery details

The demonstrations will use different U-space deployment architectures and explore the latest technology.

They will consider coordination and transfer between Air Traffic Control (ATC) and U-space, including interaction with human ATC officers and pilots.

They will combine flights by test vehicles with other traffic, performing flights into the controlled zones of major airports.

Vertiport processes and procedures, collision avoidance (separation), and data services will also be demonstrated.

CORUS-XUAM Project Phases

1 Using early versions of end-user systems, **test** mature and validated operational U-space concepts and services, in the context of UAM

2 **Refine** U-space services and solutions specifically relying on a high level of digitalisation and automation of functions enabling safe, secure, sustainable and fully integrated UAM

3 **Extend** U-space CONOPS to address the specificities of Urban Air Mobility

4 **Boost** the use of U-space capabilities and services in Urban Air Mobility

CORUS-XUAM Project Objectives

Update of the U-space concept of operations

addressing the integration of UAM/UAS operations into the airspace

Six large-scale live demonstrations

in Belgium, France, Germany and the UK, Italy, Spain and Sweden

Focus on different types of mission

such as passenger transport, delivery, emergency response and surveillance

Consider coordination between ATC and U-space

including interaction with air traffic controllers and pilots

Combine flights by eVTOLs with other traffic

and operations in the CTRs of major airports

Demonstrate vertiport procedures

as well as separation, and data services

Join our U-space Community Network!

Check out corus-xuam.eu

CORUS-XUAM Project Partners & Related 3rd Parties

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SESAR JOINT UNDERTAKING

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