

ROGER LI (UTM)
BILLY JOSEFSSON (AAM)

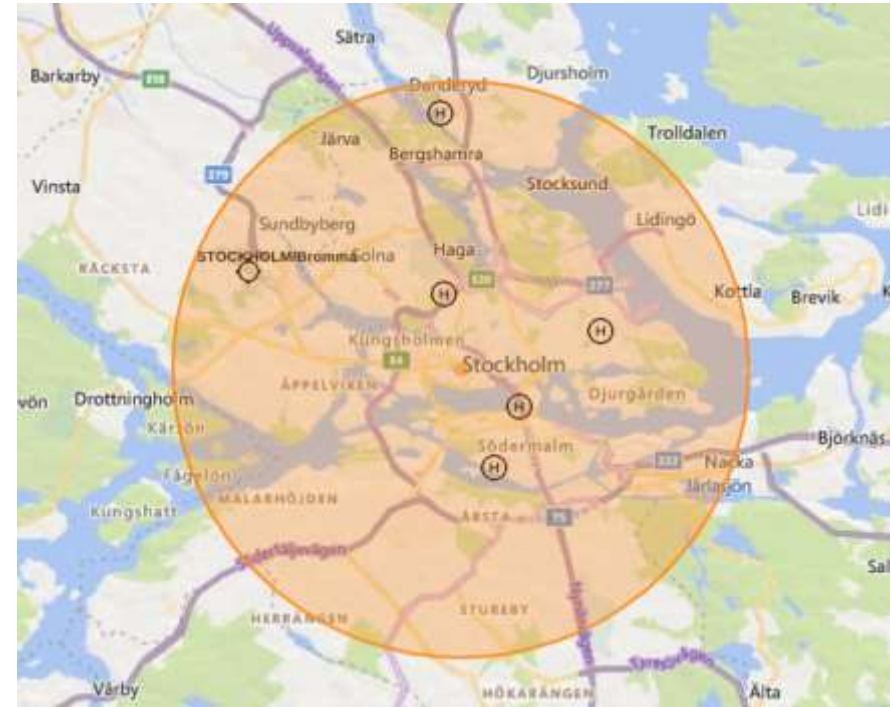
A photograph of a drone flying over the ocean at sunset. The drone is silhouetted against the bright orange and yellow sky, with the dark blue ocean below. The drone has four rotors and a camera mounted underneath.

UAS TRAFFIC MANAGEMENT (UTM) AND ADVANCED AIR MOBILITY (AAM)

Last Mile Delivery System demo day – October 5, 2022

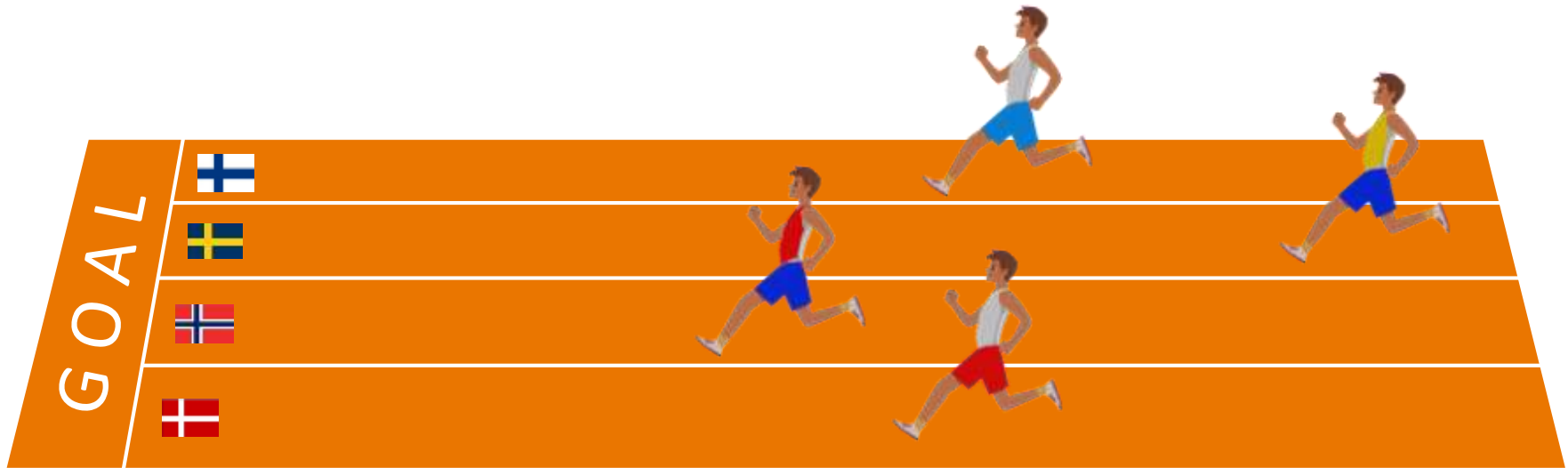
Current situation

- ✓ The use of drones has great commercial potential and also can provide services which will benefit society (safety and security, infrastructure, search and rescue, health) – but...
- ✓ >4500 drone flights detected in central Stockholm during summer 2021
- ✓ Depending on place and time the highest allowed flight altitude is 0, 50 or 120 m.
- ✓ >60% did not comply to current regulations
- ✓ Similar problem nationwide, also in less populated areas
- ✓ Services to unmanned aviation is needed to prevent the above -
read ***UAS Traffic Management (UTM) services***



...another view of the current situation

Nordic Championship in UAS Traffic Management (UTM), October 2022



Government assignment, December 2021

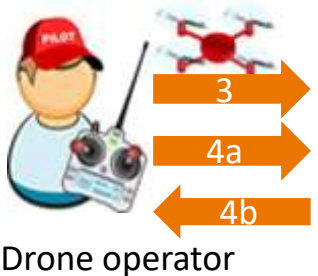


Within the framework of its assignment, LFV – the Swedish Air Navigation Services – shall establish systems and services for unmanned aviation, UTM (Unmanned Aircraft System Traffic Management), in a socio-economically efficient manner and in accordance with the regulation for airspace where applicable. The work shall be carried out in accordance with national and European regulations, in order to ensure the airspace capacity for a structured and safe development of drone traffic in the lower airspace.

Funding still lacking... 😞

U-Space Services and Common Information Service

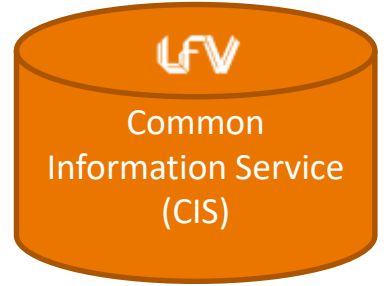
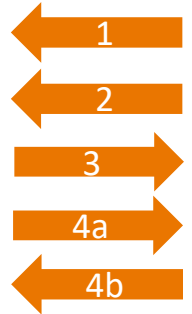
1. Geo-awareness service
2. Traffic Information Service
3. Network Identification Service
4. UAS Flight Authorisation Service
 - a. Request
 - b. Reply



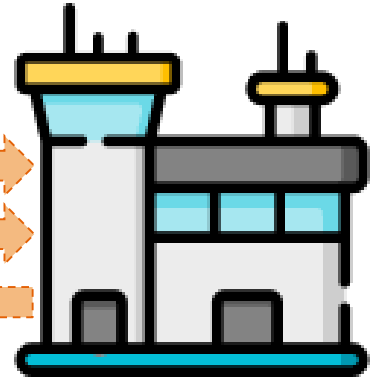
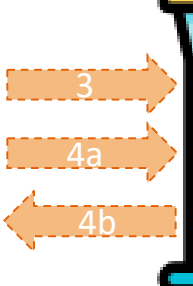
Drone operator



U-Space Service Provider (USSP)



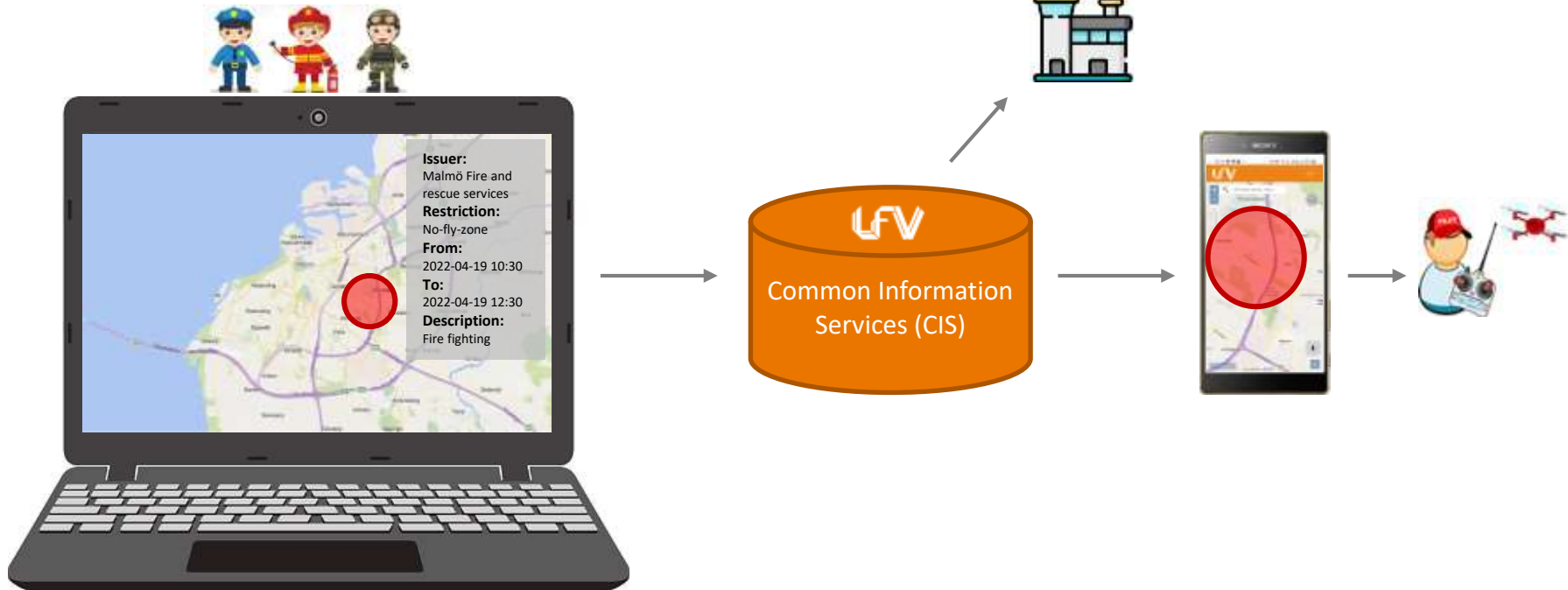
Common Information Provider (CISP)



Air Traffic Service (ATS)

Other services

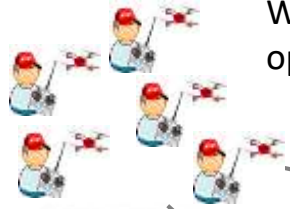
- ✓ **Services/interfaces for stakeholders with a need to be able to impose drone restrictions in the very low level airspace:** E.g. police, fire and rescue services, CAA, military, cities/municipalities, etc



UTM system and drone detection system integration

Well-mannered drone operators using UTM services




Bad-mannered drone operators not using UTM services

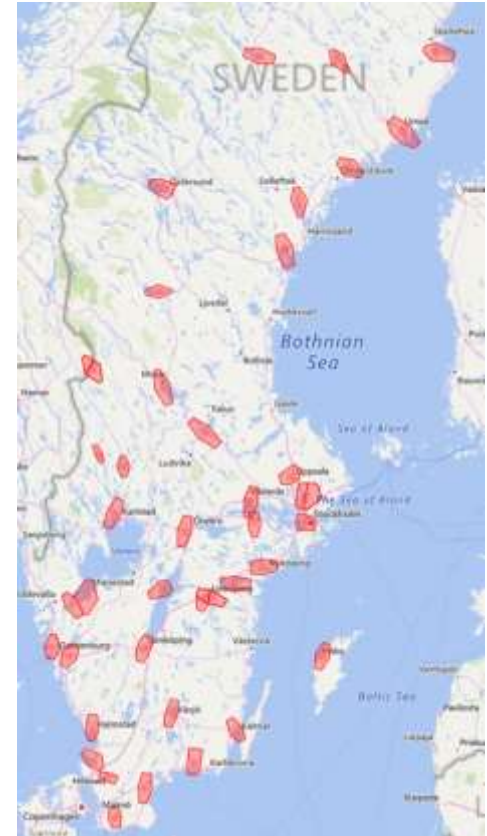


Drone detection system

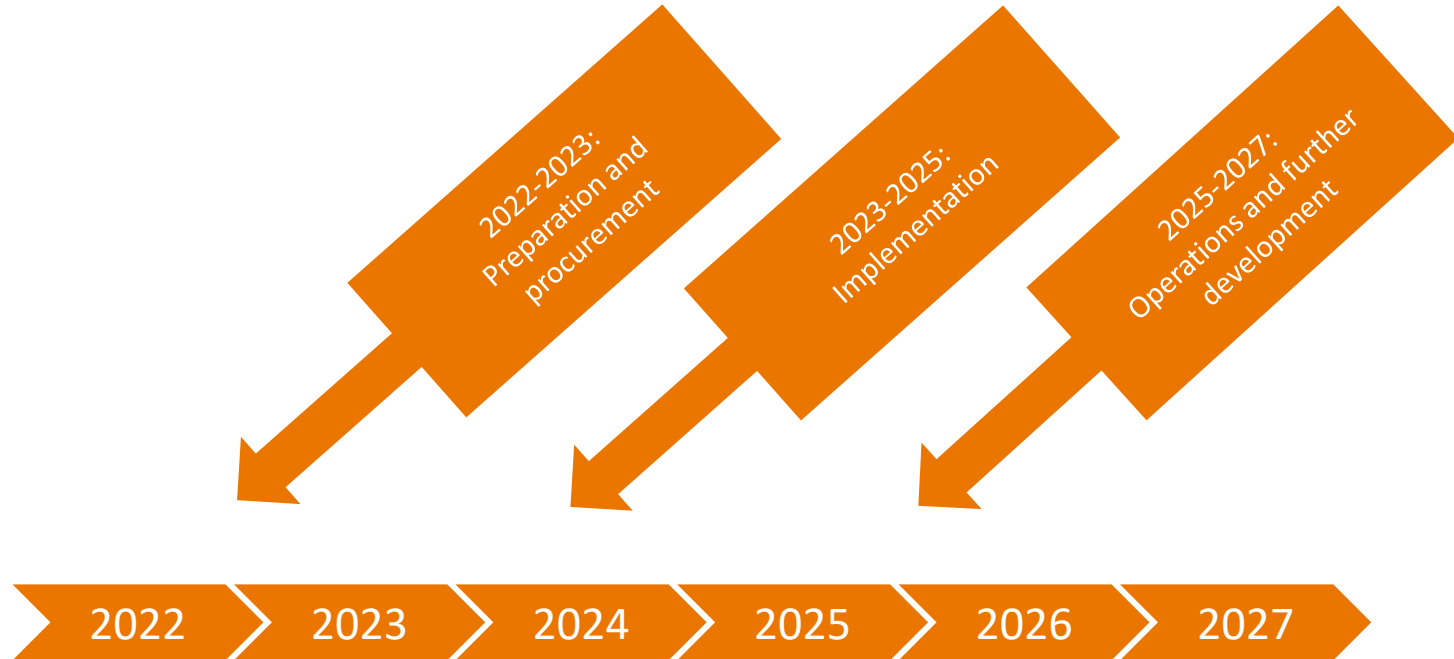


UTM Implementation Project – Sweden U-Space

- ✓ Project by: 
- ✓ Scope: UTM services, in accordance with previous slides.
(additional scope: UTM and drone detection system integration)
- ✓ In cooperation with (on drone detection):  **Swedavia
Airports**  **Polisen**
- ✓ Two to three geographical areas initially
- ✓ Start during Q2 2022, implementation in initial areas during following 36 months, thereafter nationwide implementation. Subset of the services might be put in operation earlier.



Time plan Sweden U-Space



The expectation 😊

Nordic Championship in UAS Traffic Management (UTM), 2025



...over to Billy!

flying cars, flying taxis, VTOLs and hover bikes

About to fly...maybe



VIMANA AAV



Sting VTOL

Terrafugia
Transition

Dufour aEro2

Zenith Altitude
EOPAVerdego Aero
PAT200

Terrafugia TF-2

PteroDynamics
Transwing

Terrafugia TF-X

Airbus Vahana
(Archived)

AIRIS AxisOne

AeroMobil 4.0
STOLAeroMobil 5.0
VTOLVRCC
NeoXCraft

XTI TriFan 600

Transcend Air
Vy 400VTOL Aviation
IndiaJETcopter
VTOL

KAITE-VTOL



ZEVA ZERO

Aurora
Lightning Strike
XV-24A
(Archived)ASX MOBIL-
ONEAutonomous
Y6SDeLorean
Aerospace DR7

DiGi Droxi

Rolls-Royce
eVTOLSabrewing
Rhaegal RG-1

Flyter 420-120



Flyter 720-200



NFT ASKA



EVA X01



Flexcraft



JAXA Hornisse

Jetoptera
Personal Drone

HopFlyt Venturi

Etroy Air
ChaparralKitty Hawk
Heaviseide

Zuri VTOL



AMSL Vertilia

Pegasus
Vertical
Business JetMoller M200
SkycarMoller M400
Skycar

Pop-Up Next

Neoptera
eOpterRay Civil VTOL
Aircraft

FLUTR Motors

Leonardo
Helicopters
AW609Beta
Technologies
AvaBartini Flying
CarSkytys
AirspeederSAMAD
Starling JetHoversurf
FormulaSamson Sky
SwitchbladeVickers WAVE
eVTOL

...och fler

Bristow signs order of up to 55 BETA Technologies ALIA-250 eVTOL aircraft

Old School....



ALIA = future
-Range 250 Nm
-1 hour charge
-6 ppl incl 1 pilot



Champions 1(2)

Farnborough 2022: New UK advanced aerial mobility consortium announced

Vertical Aerospace, Virgin Atlantic, Atkins, Skyports and NATS, along with Connected Places Catapult and leading academic institutions Cranfield University and WMG, University of Warwick, announced the creation of the Advanced Mobility Ecosystem Consortium. The organisations will develop key technology and infrastructure in a project that will significantly **accelerate the introduction of advanced aerial mobility** (AAM) in the UK.

“The Consortium has been awarded a **UKP9.5 million** grant by the UK Government’s Future Flight Challenge to develop the essential building blocks of a viable AAM ecosystem that has the potential to be progressed into full commercial operations. This first-of-a-kind ecosystem will accelerate AAM in the UK by creating and testing technological developments in aircraft electrification, airspace management, ground infrastructure, operational procedures and the systems and supporting business cases required to **implement a new model of aerial passenger transport in the UK.**”



Champions 2(2)

Drone bill introduced by US senators proposes grant programme to increase use of drones

August 9, 2022 Jenny Beechener UAS traffic management news, Urban air mobility

US Senators Jacky Rosen (D-NV), John Boozman (R-AR), and Richard Blumenthal (D-CT) have introduced the *Drone Infrastructure Inspection Grant Act*, which would authorize **USD100 million** in competitive grants to use American-made **drones to perform critical infrastructure inspection, maintenance, or construction projects**. This bipartisan bill would also authorize USD100 million in grants for **workforce training and education to prepare the next generation of workers in this field**.

A political decision to change how to do / perform a service or work.

Probably a booster is needed to stimulate establishment of fossil-free services and expose new Technology.

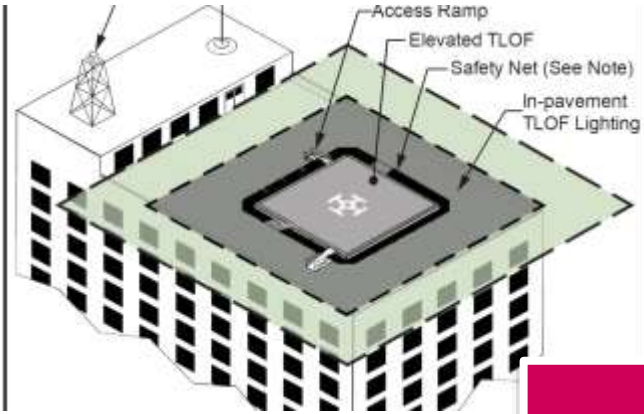
A political decision is needed to make a financial boost in order to start the learning process!



AirTAXI will happen



FAA releases AAM vertiport guidelines for future air taxi operations



✓ ISO standard 5015-2:2022 published for vertiports serving VTOL unmanned aircraft

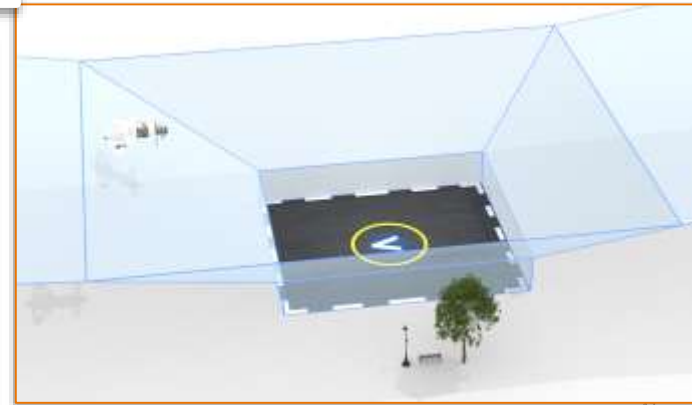
August 13, 2022 Jenny Brechener Emerging regulations, UAS traffic management news, Urban air mobility

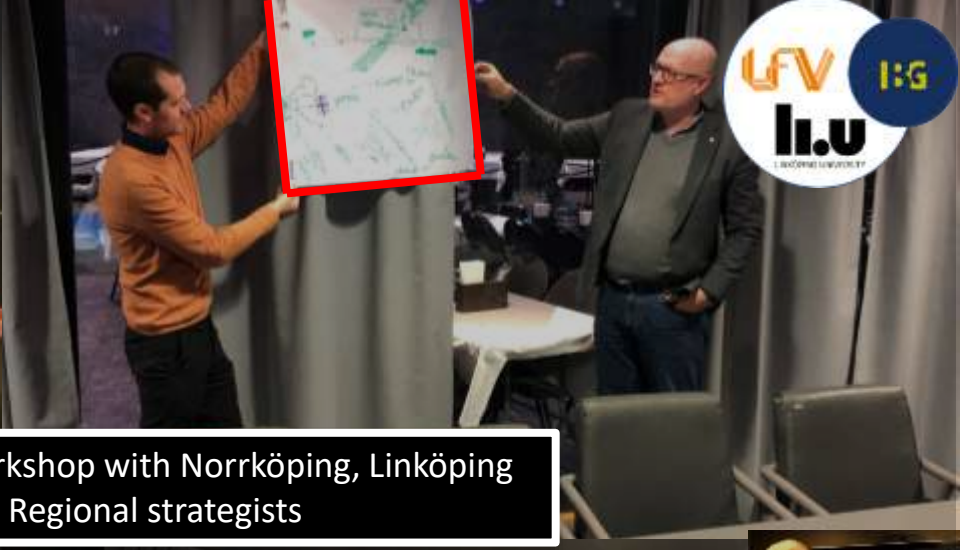
- ✓ ISO has published the standard 5015-2:2022 relating to Unmanned Aerial Systems (UAS) – Part 2: Operation of Vertiports for vertical take-off and landing (VTOL) unmanned aircraft (UA).
- ✓ The standard complements the generic ISO 9001 certification with regard to operations of vertiports serving vertical take-off and landing (VTOL) unmanned aircraft, with a mass from few kg to tons.

VERTIPORTS

COLOGNE, March 24, 2022 - The European Union Aviation Safety Agency published the world's first guidance for the design of vertiports, the ground infrastructure needed for the safe operation of Urban Air Mobility services such as air taxis in locations across Europe, including in urban areas.

The Prototype Technical Design Specifications for Vertiports offers guidance to urban planners and local decision-makers as well as industry to enable the safe design of vertiports that will serve these new types of vertical take-off and landing (VTOL) aircraft, which are already at an advanced stage of development





CORUS XUAM Workshop with Norrköping, Linköping municipalities and Regional strategists





CORUS XUAM



UTM
CITY

”LMDS”



AirMOUR



HAIKU

AI&UAM
/ Digital
ATS

PBN4UTM

UTMDUBAI

PJ34AURA



EDIS



Greenflyway



Swedavia

Brasilia



2023 ; SESAR3, VINNOVA, Nordic crossborder initiatives, National projects,....



*1st
Generation*

NOW

*Training ops
Recreation
2 seats*

*2nd
Generation*

2023-2025

*Recreation
Short range commercial
2-4 seats*

*3rd
Generation*

2026 onwards

*Commercial ops
Corporate transport
5 - 19 seats
.5 - 2 tonne Cargo*



TEAM AAM - Advanced Air Mobility at LFV FoID



Billy Josefsson,
Manager AAM &
Automation



Gustaf Fylkner,
operational expert FOiD



Johan Söderberg,
ATCO Malmö ATCC



Pim Boonsong,
ATCO, Op/AI
FoID



Erik Cederberg,
ATCO Arlanda
TWR



Roger Li,
LFV UTM Manager LFV
OPERATIONS



Kaija Sterner,
ATCO, Airspace
Expert.



Rickard Jörgensen,
ATCO, Safety & Risk
and operational
procedures



Marie Wahlin Tideklev,
Sr Legal Adviser LFV



Åsa Taraldsson, ATCO
System Specialist
Arlanda



Mike Henriksson, RTS /
Digital ATS Expert



Jonas Lundberg
MIT, LiU,
visulisation &
Exploration



Andrei Gurto,
LiU Cybersecurity



Dr. Lothar Meyer,
Senior Safety Expert,



John Hallander,
ATCO WS



Anders Carlsson & Björn
Stavås, dynamic ATCO duo in
charge of Stockholm Bromma
ATS

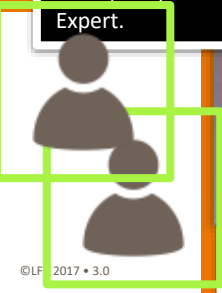


Mats Nilsson,
ATCO/ATM System
expert, SORA guru



Valentin Polishchuk, KTS LiU
UAM logistics & safety

Essential support





AIR NAVIGATION SERVICES
OF SWEDEN