PRESENTATION

SENHIVE

Airspace Awareness & Risk mitigation in an urban environment

USE CASE 1

Inspection of power lines

- Over 100 km of powerlines to inspect
- BVLOS
- Large VTOL (87 kg – rotor diameter 2.8 meters)

→ How to create airspace awareness?

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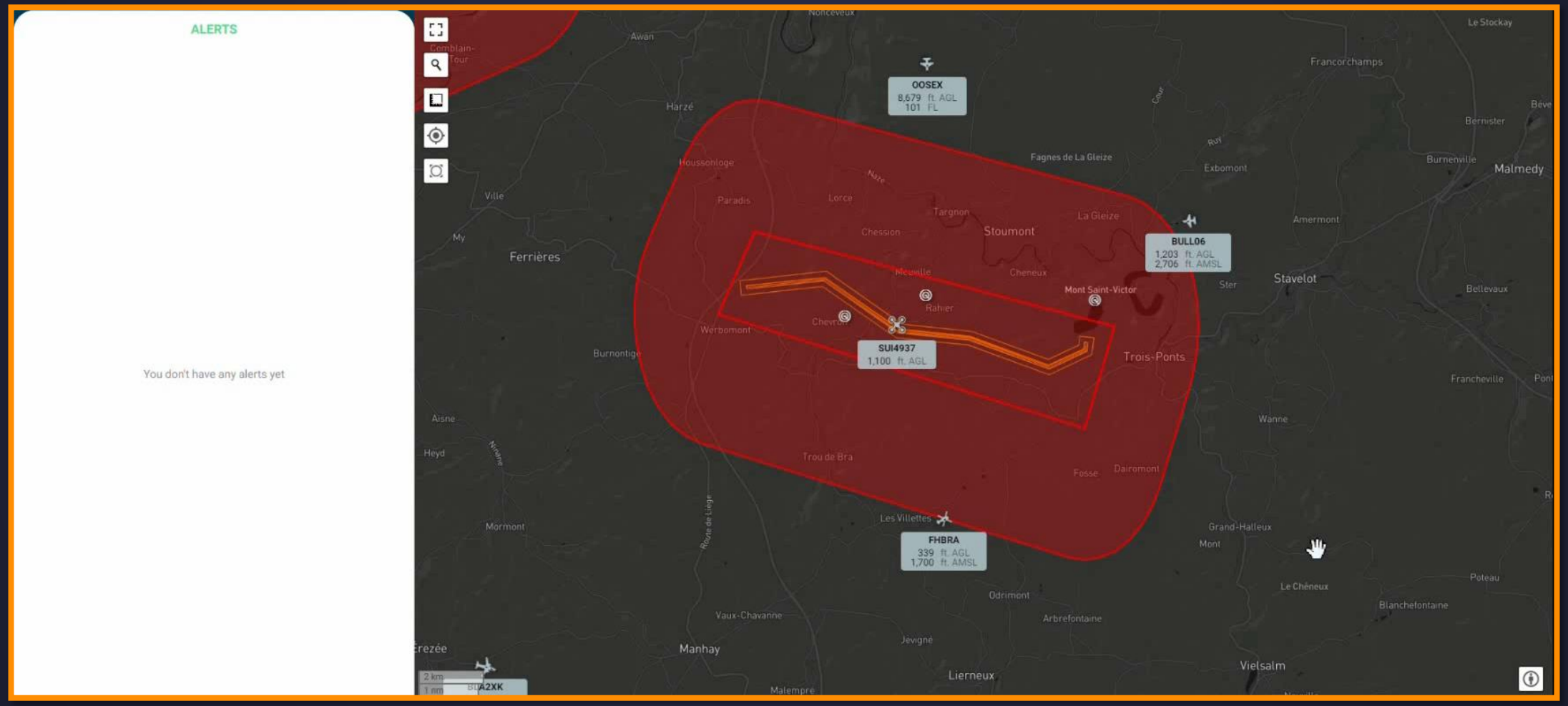

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SENID

Detection & visualization of

- Remote-ID : Cooperative drones
- ADS-B : Manned Aviation
- Mode-S & A/C : Small & low-flying aircraft

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USE CASE 2

Geozone Management

- Over 12.068 hectares to manage
- Authorizations
- Criminal activity

How to minimalize risks for people and drones ?

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SENID+

Detection & visualization of

- Non-cooperative drones
- Based on radio-frequency
- Pilot/Home location

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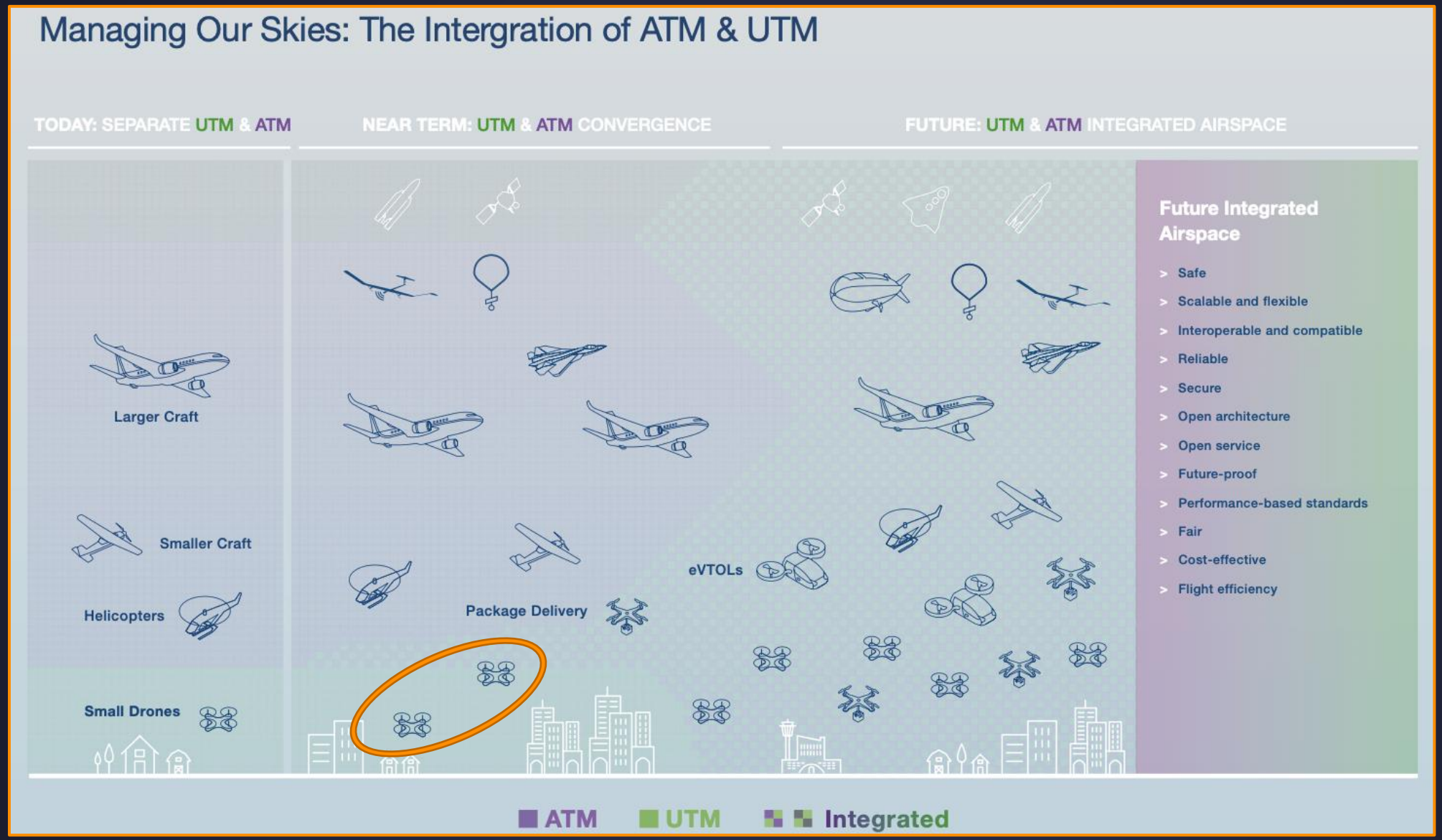

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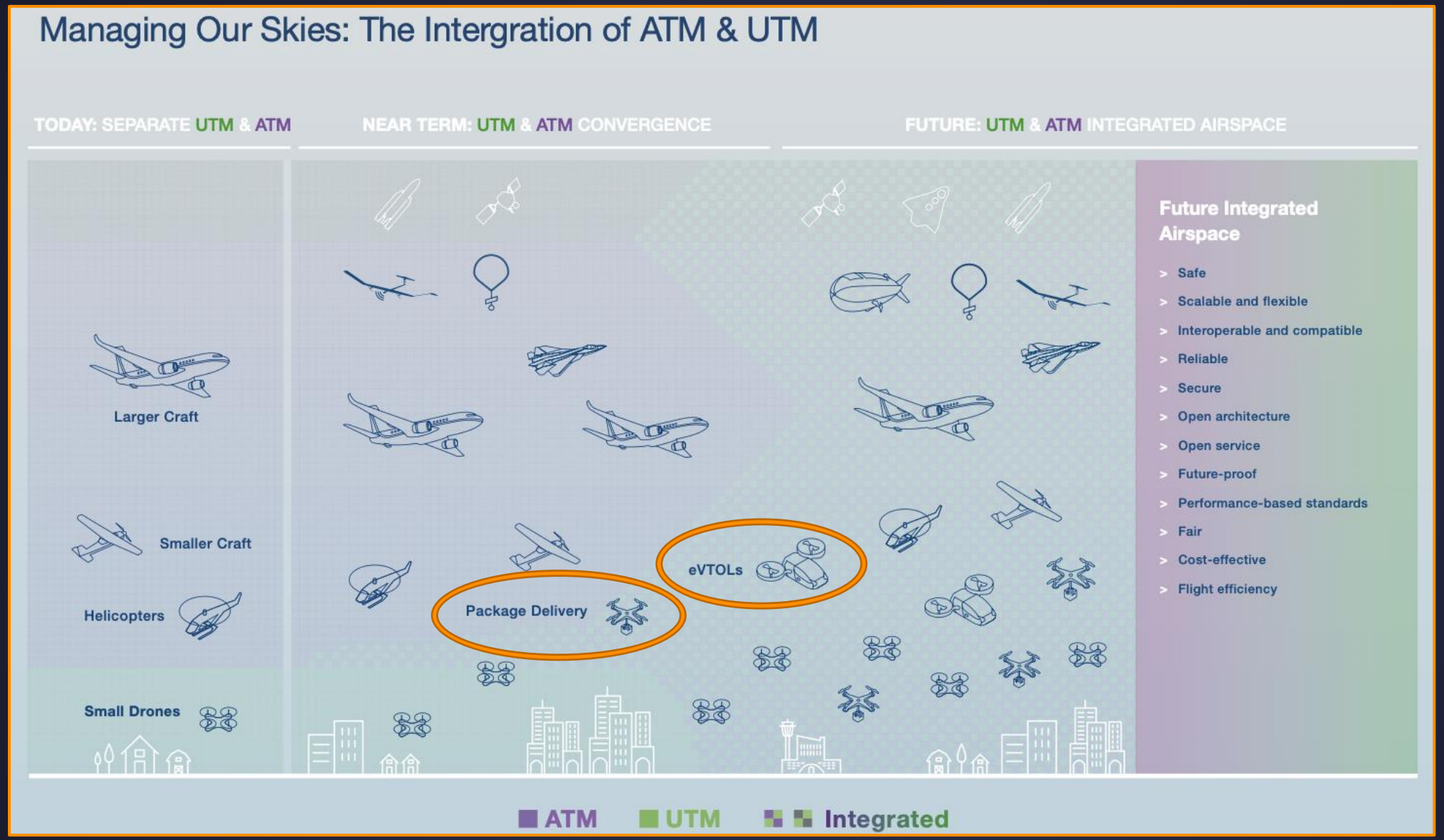

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SENAIR City of London (UK)

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that is planned [illegible] for UAM vehicle operations.

UAM operations will need to be informed of non-cooperating RPAS vehicles (e.g., those RPASs that are not reporting their position and/or identification to the UAS Traffic Management (UTM) or ATM system). UAM operators will need to inform relevant airspace users about when and where UAM operations will be active. RPAS operations will need to inform UAM vehicles of their operations

L AIRSPACE

2.3 OVERVIEW OF UAM OPERATIONS

UAM OPERATING ENVIRONMENT IN LOW-LEVEL AIRSPACE

while some will be dynamic (e.g., emergency response or some forms of Temporary Reserved Airspace (TRA), Temporary Danger Area (TDA) or Restricted Area (RA(T)). Traditional airspace users will periodically need to use airspace that is planned [illegible] for UAM vehicle operations.

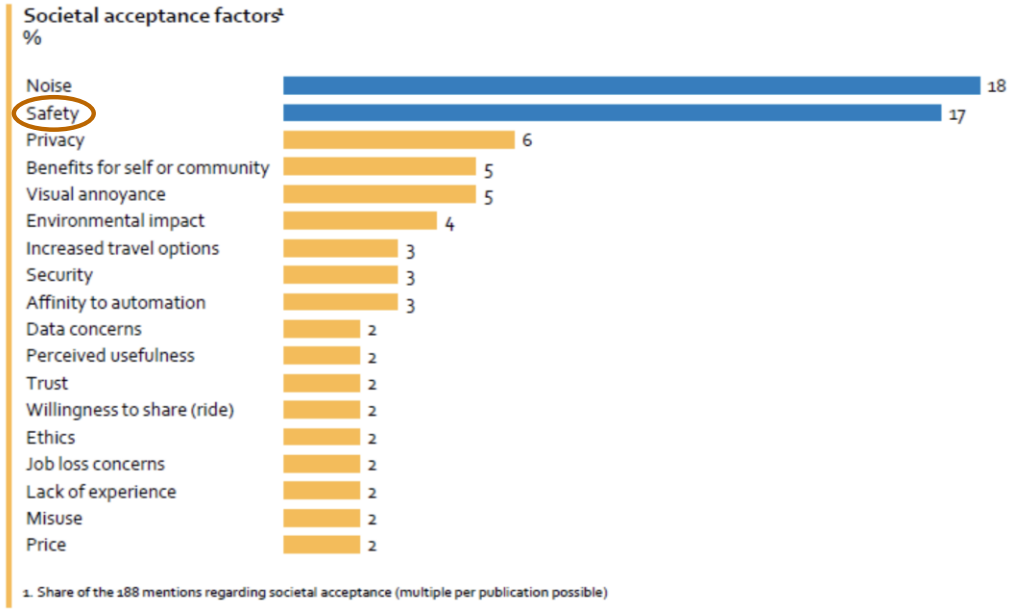
UAM operations will need to be informed of non-cooperating RPAS vehicles (e.g., those RPASs that are not reporting their position and/or identification to the UAS Traffic Management (UTM) or ATM system). UAM operators will need to inform relevant airspace users about when and where UAM operations will be active. RPAS operations will need to inform UAM vehicles of their operations around vertiports or when operating above a defined altitude.

European Platform on Sustainable Urban Mobility Plans

PRACTITIONER BRIEFING

URBAN AIR MOBILITY AND SUSTAINABLE URBAN MOBILITY PLANNING

Figure 15: A ranking of UAM societal acceptance factors
(Source: EASA 2021, p.18)



1. Share of the 188 mentions regarding societal acceptance (multiple per publication possible)

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Liliu
m

Vertical

Volocopte

Joby

Supernal-
Hyundai

eHang

FACILITATE VERTIPORT OPERATIONS

Airspace safety

Airspace health

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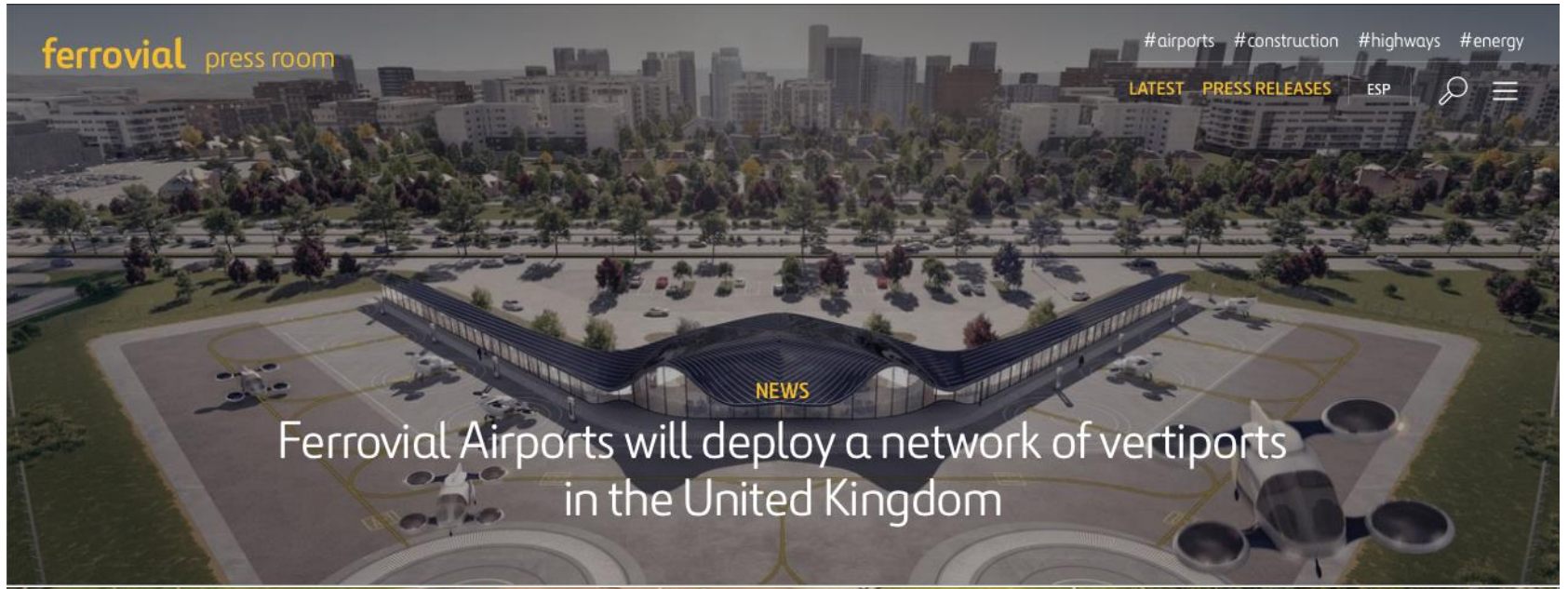

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Figure 2-1: Relationship and Dimensions of TLOF, FATO, and Safety Area

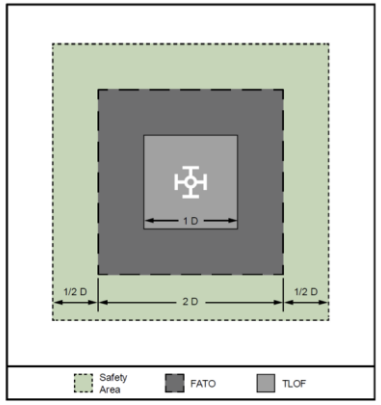
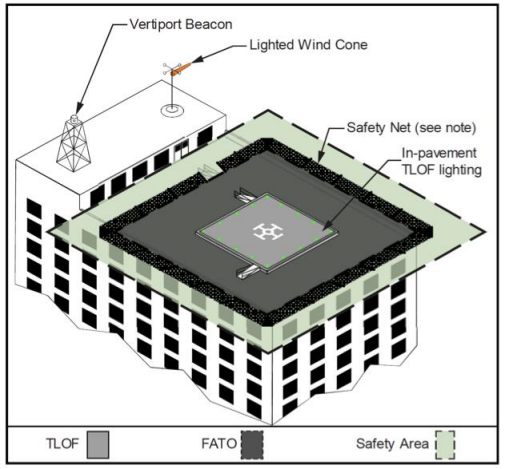
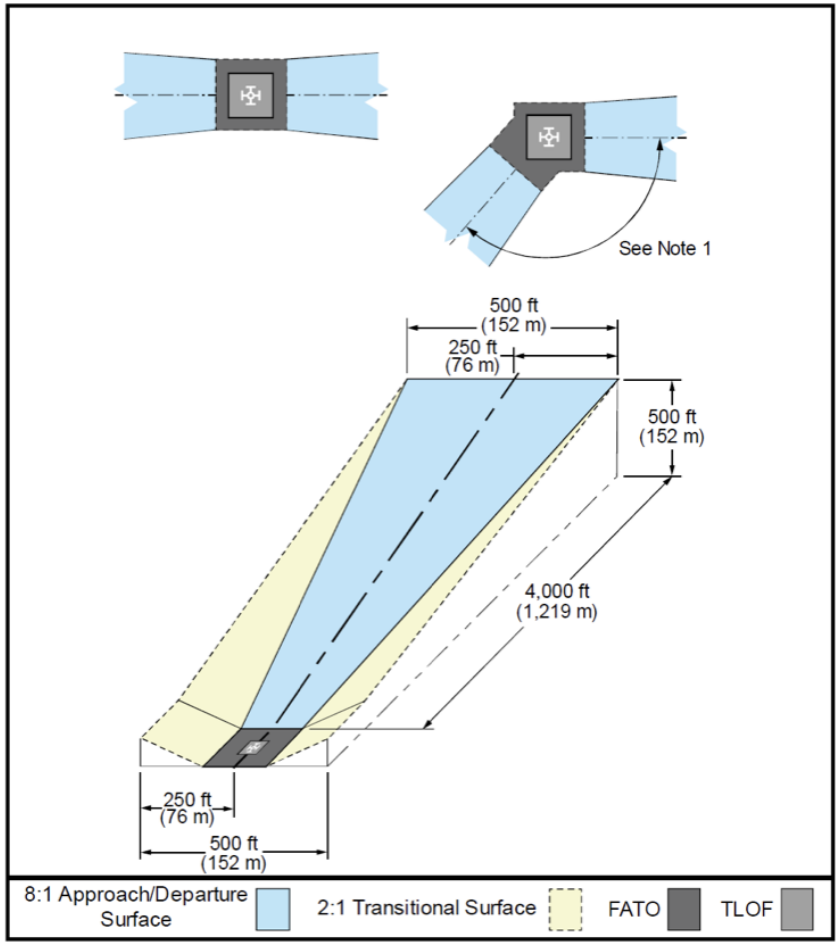


Figure 3-8: Elevated Vertiport Configuration Example



Note: See Figure 3-9 for safety net and lighting details.

Figure 2-3: VFR Vertiport Approach/Departure Surfaces



Note 1: The preferred approach/departure surface is based on the predominant wind direction. Where a reciprocal approach/departure surface is not possible in the opposite direction, use a minimum 135-degree angle between the two surfaces.

Federal Aviation Administration

Memorandum

Date: September 21, 2022

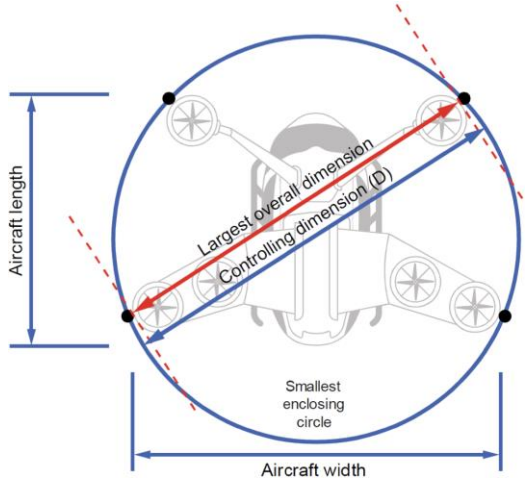
To: All Airports Regional Division Managers

From: Michael A.P. Meyers, P.E.
Manager, Airport Engineering Division, AAS-100

Prepared by: Robert Bassey, P.E., AAS-110

Subject: Engineering Brief No. 105, Vertiport Design

This Engineering Brief provides interim guidance for the design of vertiports for aircraft with vertical takeoff and landing (VTOL) capabilities. Note that this interim guidance will be subject to update as data, analysis, and VTOL aircraft and operations develop in the future.



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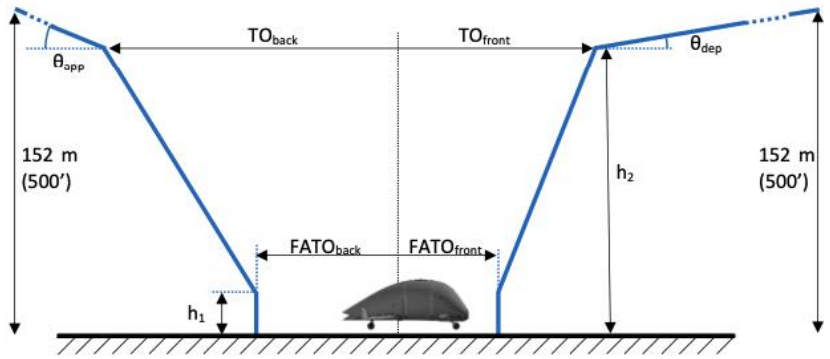


Figure D-13. Generic vertical take-off and landing procedure parameters

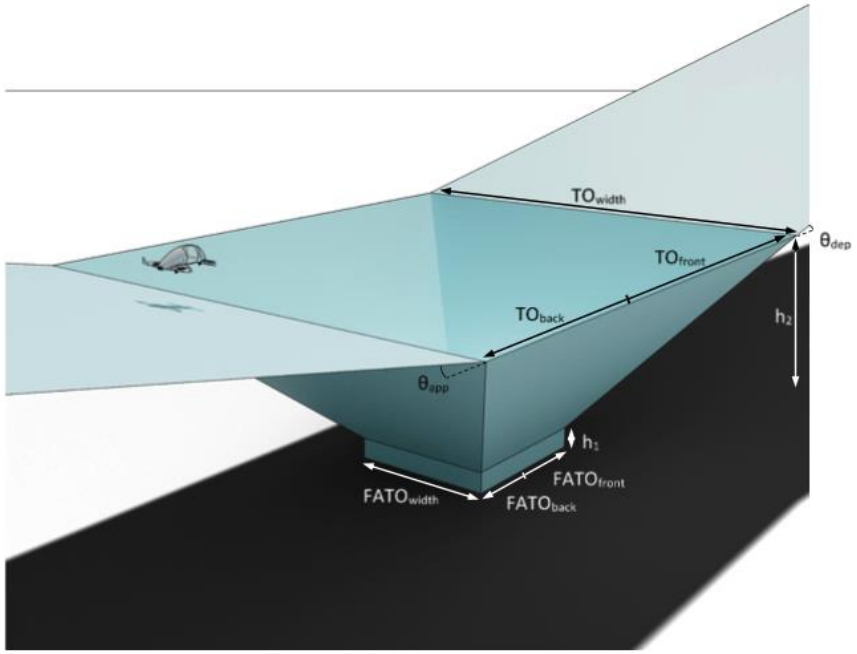
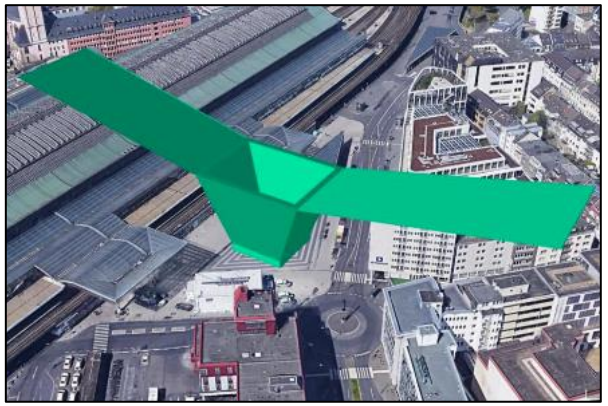
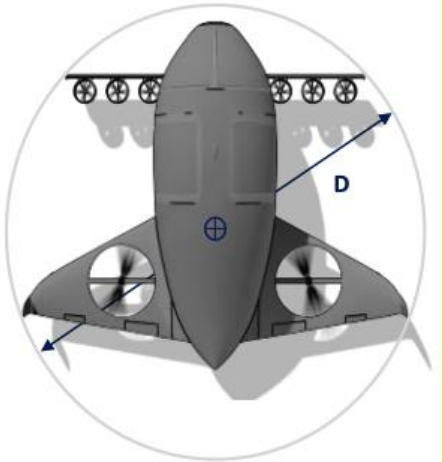


Figure D-14. Vertical take-off and landing procedure volume





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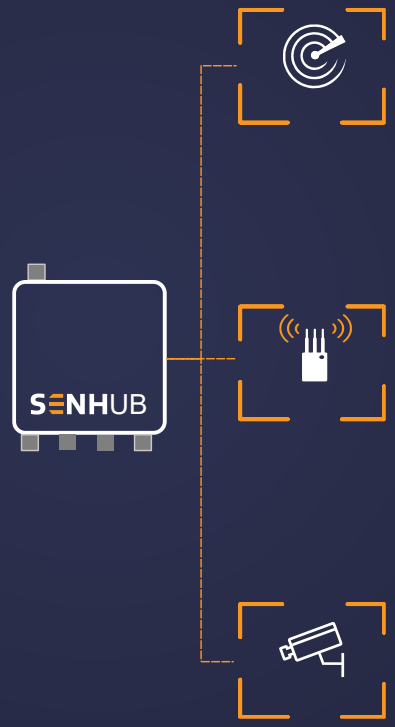
SENFUSION

Unified Sensor Network



- Brand agnostic
- Standardized C2 streams
- Standardized API
- Secure over the air updates

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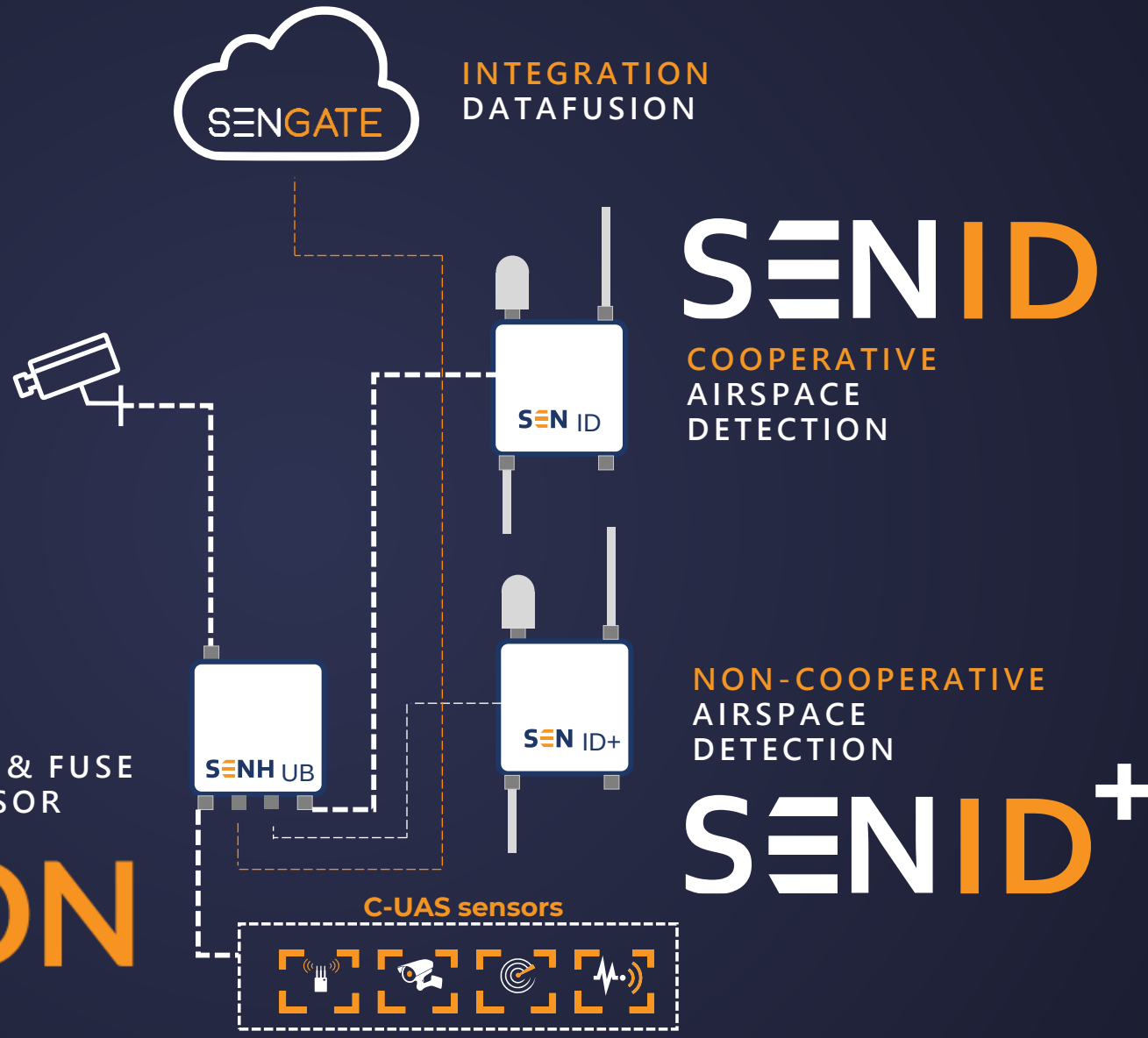

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SENHIVE SEN-ID

SEN-ID is a multifunctional RF detection system, which can be used as a stand-alone module or integrated into the existing Senhive UAV detection architecture.

Our solution is the first cost-effective detection system capable of reading the "electronic license plate" of UAVs. It is already integrated into several of the latest UAV on-board electronic identification systems and compatible with various UTM systems. SEN-ID can also be used for ship detection (AIS), ADS-B, Mode-S and GPS spoofing. With its focus on critical applications and 99% availability, the SEN-ID is ideal for monitoring your airspace.

Features

- ✓ **Remote-ID** compatible with : EASA, ASTM, ASD-STAN, France, ...
- ✓ **UTM/ATM** integration
- ✓ **ADS-B** & **Mode-S** up to 250 km
- ✓ **MLAT** optional for Mode-S
- ✓ **FLARM** ready and can be added as an option
- ✓ **AIS** for ports and coastal protection
- ✓ **Plug & Play**, easy installation & rapid deployment (incl. mobile setups)

SENHIVE SEN-ID

SEN-ID Specifications

Detection type	Passive
Frequencies	eID (2.4 GHz, BLE) Mode-S, A/C, ADS-B
Range	5 km (Remote-ID) 250 km (ADS-B)
Antenna type	1x 360° Omnidirectional antenna & GPS 4x sector antennas (optional)
Dimensions	173 x 55 x 35.5 mm (without antennas)
Weight	3.4 Kg (without antennas)
Operating temperature	-30°c + 75°c
Connectivity	RJ45
Power	POE+ (IEEE 802.3at)
Consumption	25 W
IP	67
Warranty	1 year

Options

Frequencies	AIS FLARM
Connectivity	LTE, tactical radiolinks (MANET), Satellite
Power	Battery pack Solar panels
Antennas	Directional or sector antennas

Additional Features

Detection	GPS Spoofing
MLAT	Reversed MLAT
Blue Force Tracking	Custom solutions on-demand

***SEN-ID** also exists in a mobile version, that can be battery powered! Ask us for more details.*

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SENHIVE

SEN-ID+ Mobile

SEN-ID+ Mobile is our drone detection solution, which can be used during events like festivals, VIP visits, summits, prisons … by law enforcement, security professionals, government agencies and the military.

Thanks to the the quick and easy installation, its compactness and low power-consumption, the SEN-ID+ is the ideal solution to protect events, venues, buildings and sites against unauthorized drones.

Features

- ✓ **Detects** > 90% of commercially sold drones (Parrot, DJI, Yuneec, …)
- ✓ **Locates** > 70% of commercially sold drones + drones with remote-ID
- ✓ **Pilot location** of DJI drones
- ✓ **Compatible** with most popular UTM systems & Police CAD/VMS
- ✓ **Expandable** with our other C-UAS solutions, such as radar, EO/IR, …
- ✓ **EASA** remote-ID ready
- ✓ **In-house** designed, developed & assembled in our facility in Belgium
- ✓ **Plug & Play**, easy installation & rapid deployment (rugged laptop incl.)

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SEN-ID+ Mobile Specifications

Detection type	Passive
Frequencies	ISM bands (COTS drones)
Range	1 km (omnidirectional antenna) 5 km (Directional antennas)
Antenna type	1x 360° Omnidirectional antenna 4x sector antennas (optional)
Dimensions	28.1 x 22.5 x 9.5cm (without antennas)
Weight	3.7 Kg (without antennas)
Operating temperature	-30°c + 75°c
Connectivity	USB3
Power	USB3
Consumption	15 W
IP	67
Warranty	1 year

Rugged laptop included

Display	Full HD Touchscreen
Operating System	Windows 10 Pro
Internal Memory	16 GB RAM
Processor	Intel i7
Graphics	Intel Iris Xe
Storage	512 GB SSD

Options

Connectivity	LTE, tactical radiolinks (MANET)
Power	Battery pack
Antennas	Directional or sector antennas

***SEN-ID+** also exists in a fixed/permanent installation version! Ask us for more details.*

WWW.SENHIVE.COM

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