Enabling Airborne Awareness

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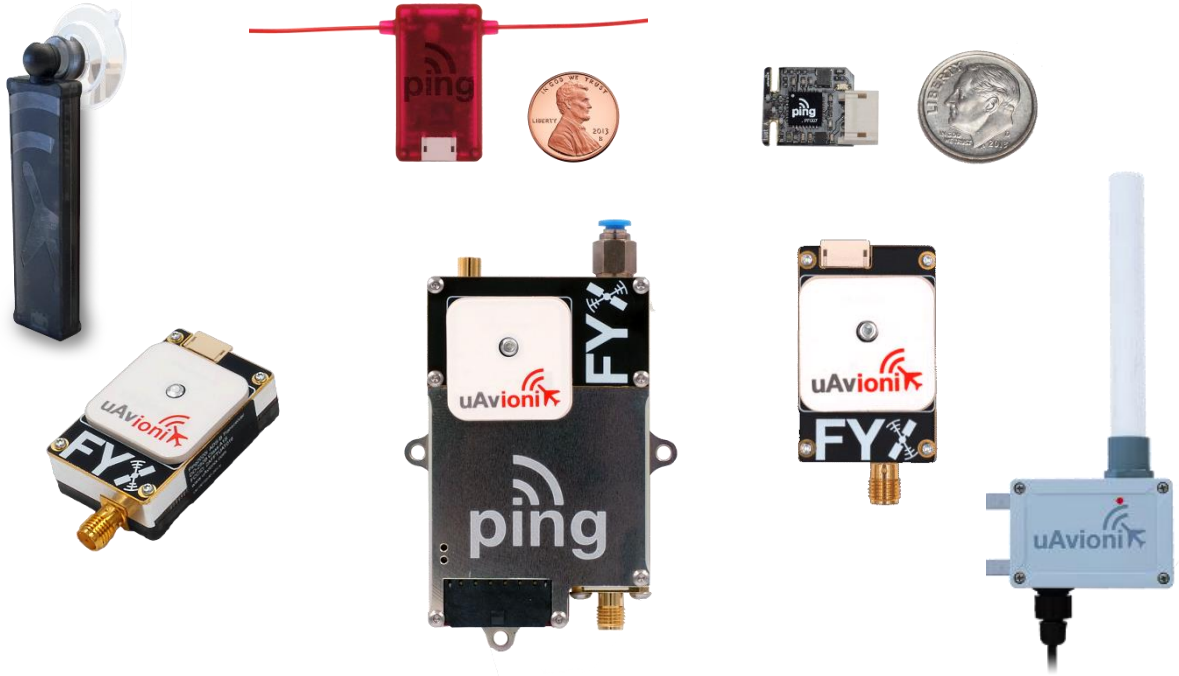
Business Development & Support Europe

uAvionix

- Enabling Airborne Awareness
- Communications, Navigation, & Surveillance (CNS)
- Low Size, Weight, & Power (SWaP)
- All Airspace Users



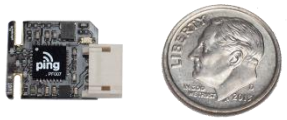
Unmanned Systems

- Large and small UAS
- uAvionix UAS ADS-B and transponder solutions provide airborne conspicuity and identify friendly UAS
- Command and Non-Payload Control (CNPC) Data Link, performance standards of RTCA DO-362 and aimed at a certification under TSO-C-213

UAS Solutions

ADS-B Receivers

PingRx
Rx Dual Band
Optional 1/2W Tx
5 grams



T-UAT
Tx/Rx UAT
0.01W-0.1 Tx Power (Optional)
1 gram

ADS-B Transceivers

Ping1090i
20W 1090 OUT
Dual 978/1090 IN
25 grams
Integrated GPS

truFYX
Global Positioning System
(GPS) source

Mode A/C/S ADS-B Transponders

Ping200X/Sr
200W Transmit Power
Mode A/C/S 1090 DF-17
FCC Approval
TSO C-199 TABS
TSO In Process
DO-260B Class A1
70 grams
Option for integrated GPS

Ping20Si
20W Transmit Power
Mode A/C/S 1090 DF-17
30 grams
Integrated GPS

GA Solutions

Portable

Scout (ForeFlight)
Portable Receiver
1090/UAT Rx
Wi-Fi GDL90

Sentry (ForeFlight)
Portable Receiver
1090/UAT Rx
Integrated GNSS/Baro
CO Sensor
Wi-Fi GDL90

SkyEcho2
Portable 20W 1090 OUT
1090 IN
978 or FLARM IN
Integrated GNSS
Integrated Baro
Integrate Battery
Integrated Wi-Fi GDL 90
Mode C/S Detection
External Receivers

Airborne

echoESX
Mode S Transponder with 1090ES

truFYX
Global Positioning System (GPS)
position source
NMEA 0183 + RAIM

skyBeacon / tailBeacon => USA
20W UAT OUT
Near Zero Install
NAV/Strobe Light Replacement

Ground and Surveillance Solutions

Vektor
Airport Surface Vehilcle Transceiver
1090 or 978 Tx
1090 and 978 Rx
Integrated GNSS/Baro
Integrated Geofence System
Wi-Fi GDL90

PingStation
Ground Networkable ADS-B Rx
IP67
Integrated GNSS
Multiple Data Outputs

PingUAT
Ground ADS-B Tx
UTM-B / TIS-B
non-cooperative Mode C/S-UAVs
IP67
ATM/UTM integration

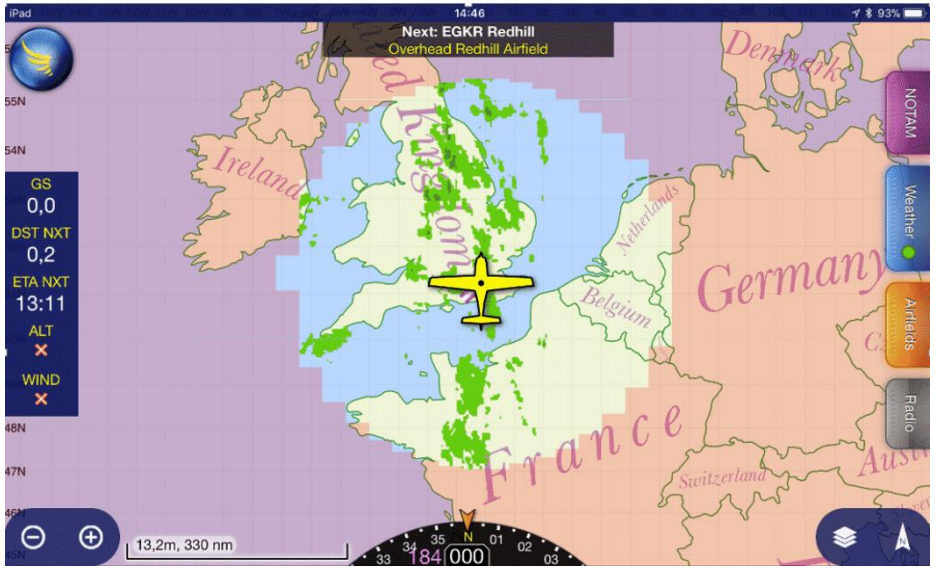
Weather Broadcast Trial

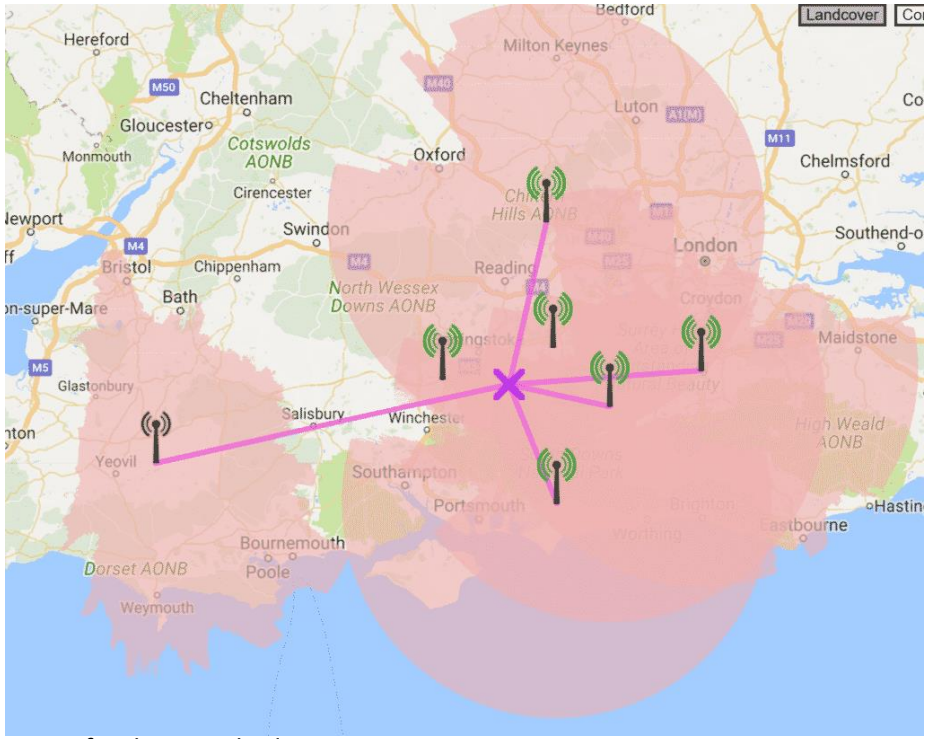
- UAT trial up and running for nearly 18 months:

- Objectives
  - Demonstrate “low cost” SBS infrastructure
  - Pave way to paid services
  - Open conversation on 978MHz
  - Drive regulations

- Locations
  - Milborne Port (SkyDemon Office)
  - Goodwood Aerodrome
  - Redhill Aerodrome
  - Dunsfold Aerodrome
  - Wycombe Air Park
  - Popham
  - Farnborough

- Objectives have been met…

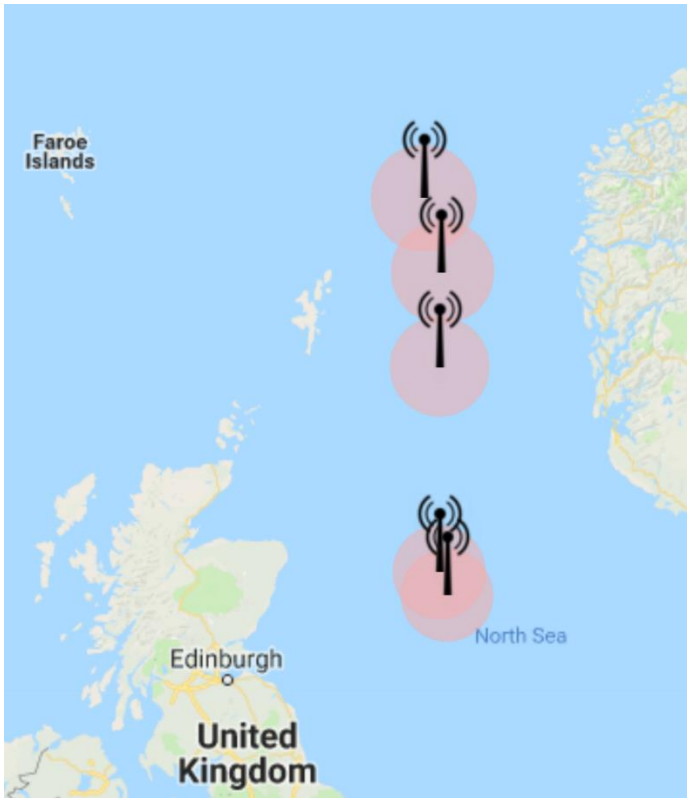




Line of Sight Viewshed at 3000AGL

North Sea UAT

- UAT Weather and Rig Identification in North Sea
- Paid trial
- 12 Months
- Widespread stakeholder group
- Start with 4 on shore UAT stations
- Services
  - METAR
  - TAF
  - Radar
  - triggered lightning info

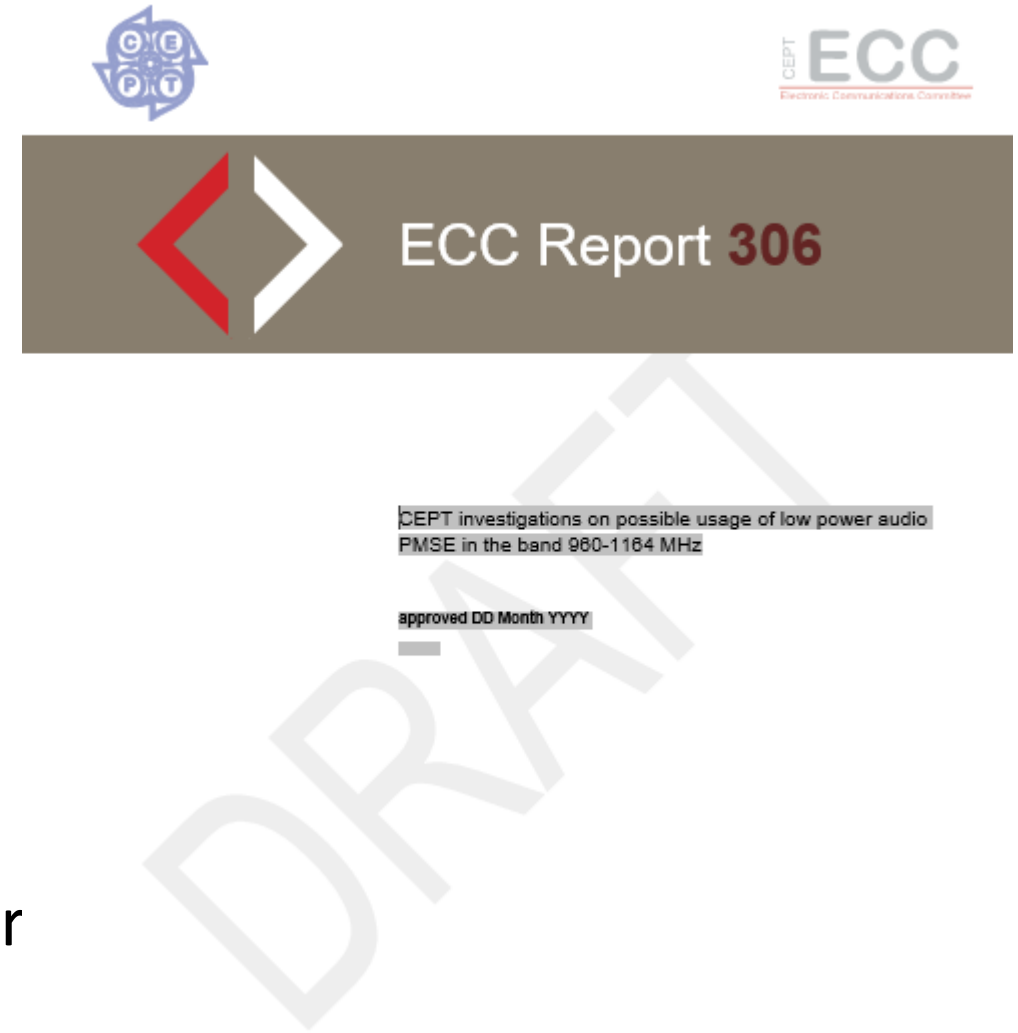


978MHz

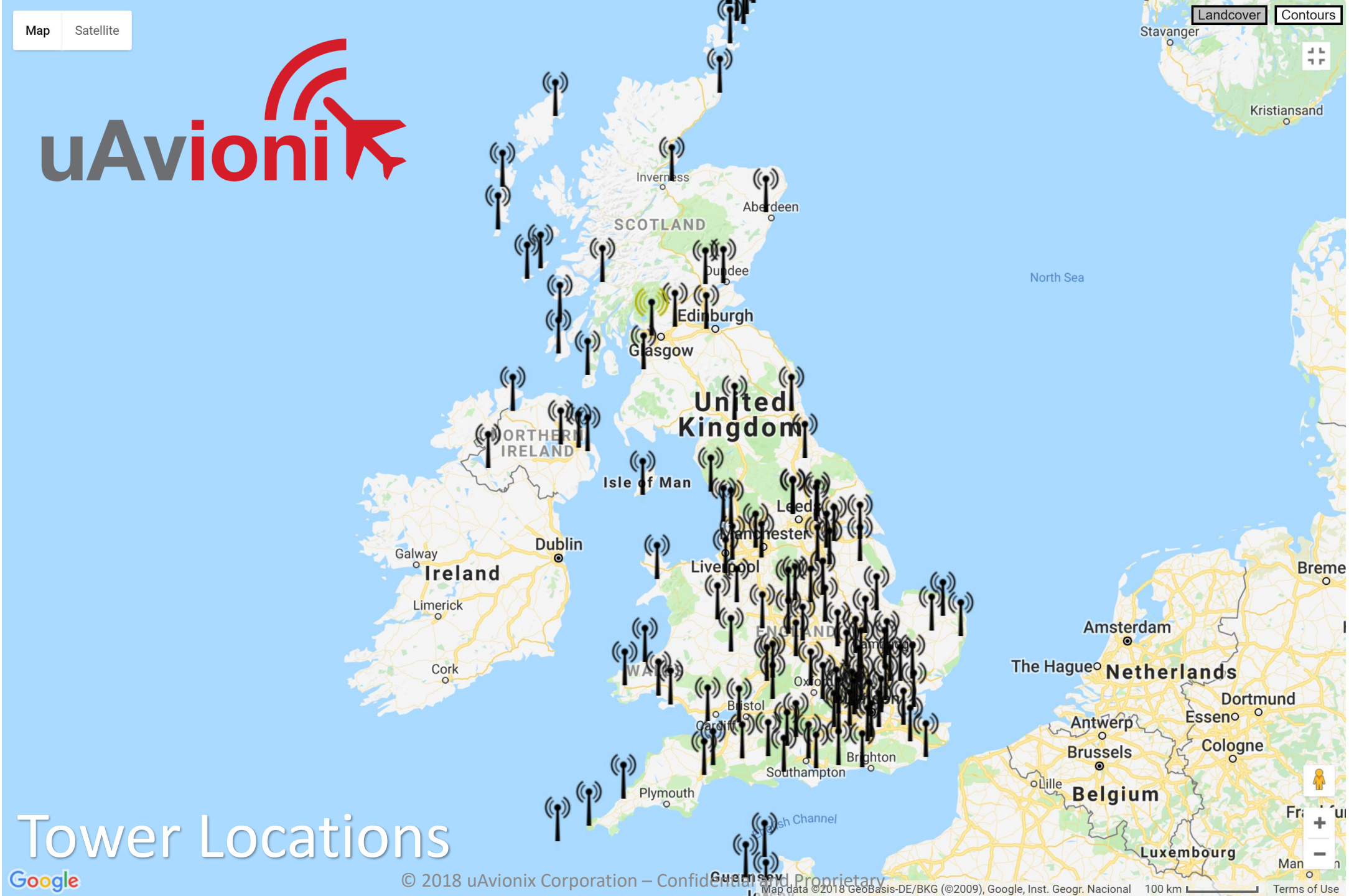
- Aviation protected spectrum
- UAT frequency in U.S. and for UK trials
- Used as a DME test frequency
- Current trials utilize “non-operational” spectrum licenses from OFCOM
- “Operational” licenses are required for expansion beyond a trial
- The CAA is currently exploring the use of the band 960-1164MHz by Programme Making and Special Event (PMSE)stakeholders.
  - CAA negotiating with OFCOM to secure 978MHz for UAT
  - Expected outcome by the end of the year – CAA has high confidence
- The use of 978MHz opens up the possibility of UAS on 978MHz

978MHz

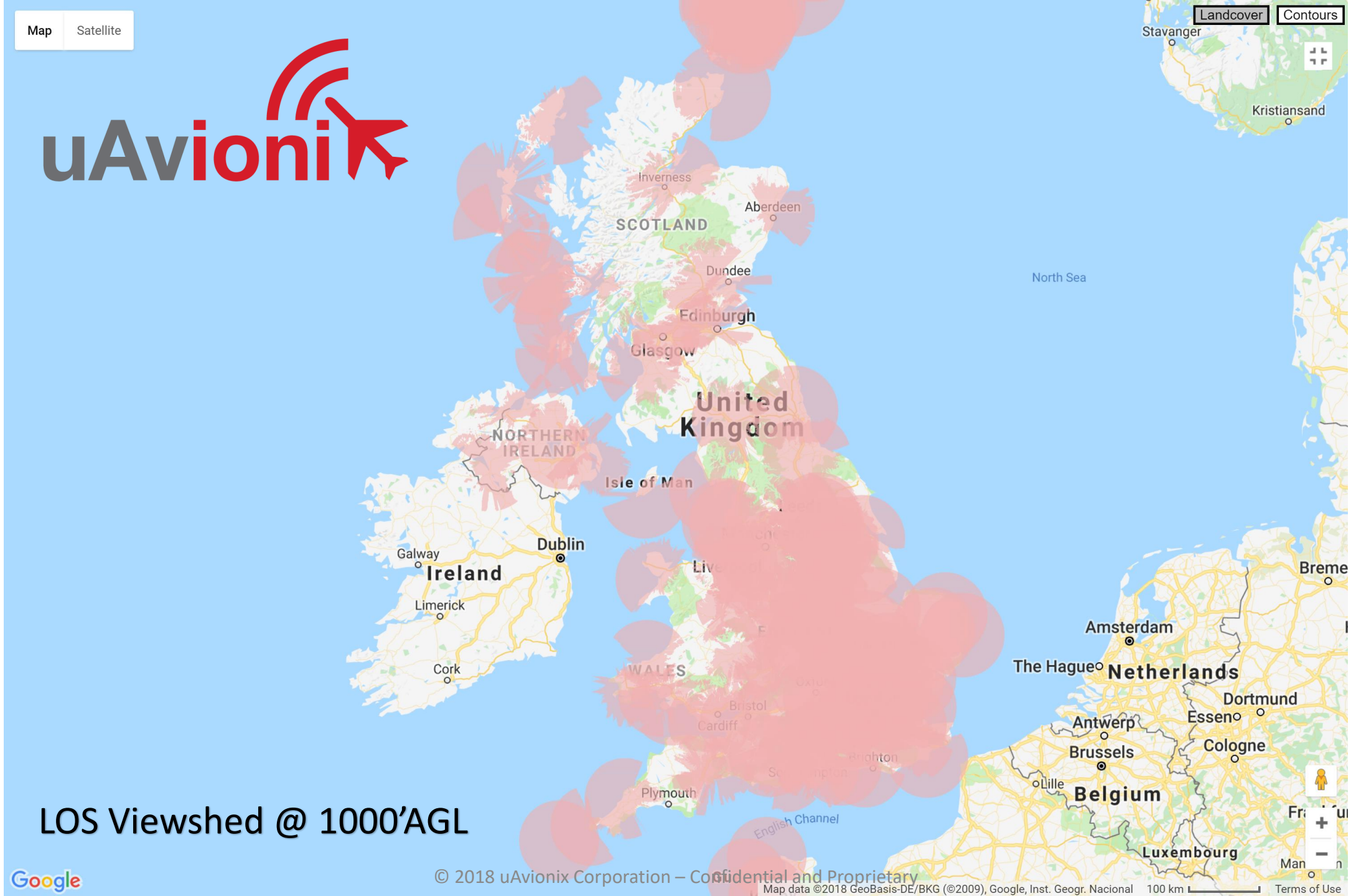
- RTCA wishes to inform its membership of a significant public consultation being conducted by The European Conference of Postal and Telecommunications (CEPT) Administration regarding possible usage of low power audio "Programme-Making and Special Events" (PMSE) equipment in the avionics frequency spectrum (960-1164 MHz).
- consultation period July 8, 2019 - September 13, 2019.



https://cept.org/ecc/tools-and-ervices/ecc-public-consultation



Tower Locations



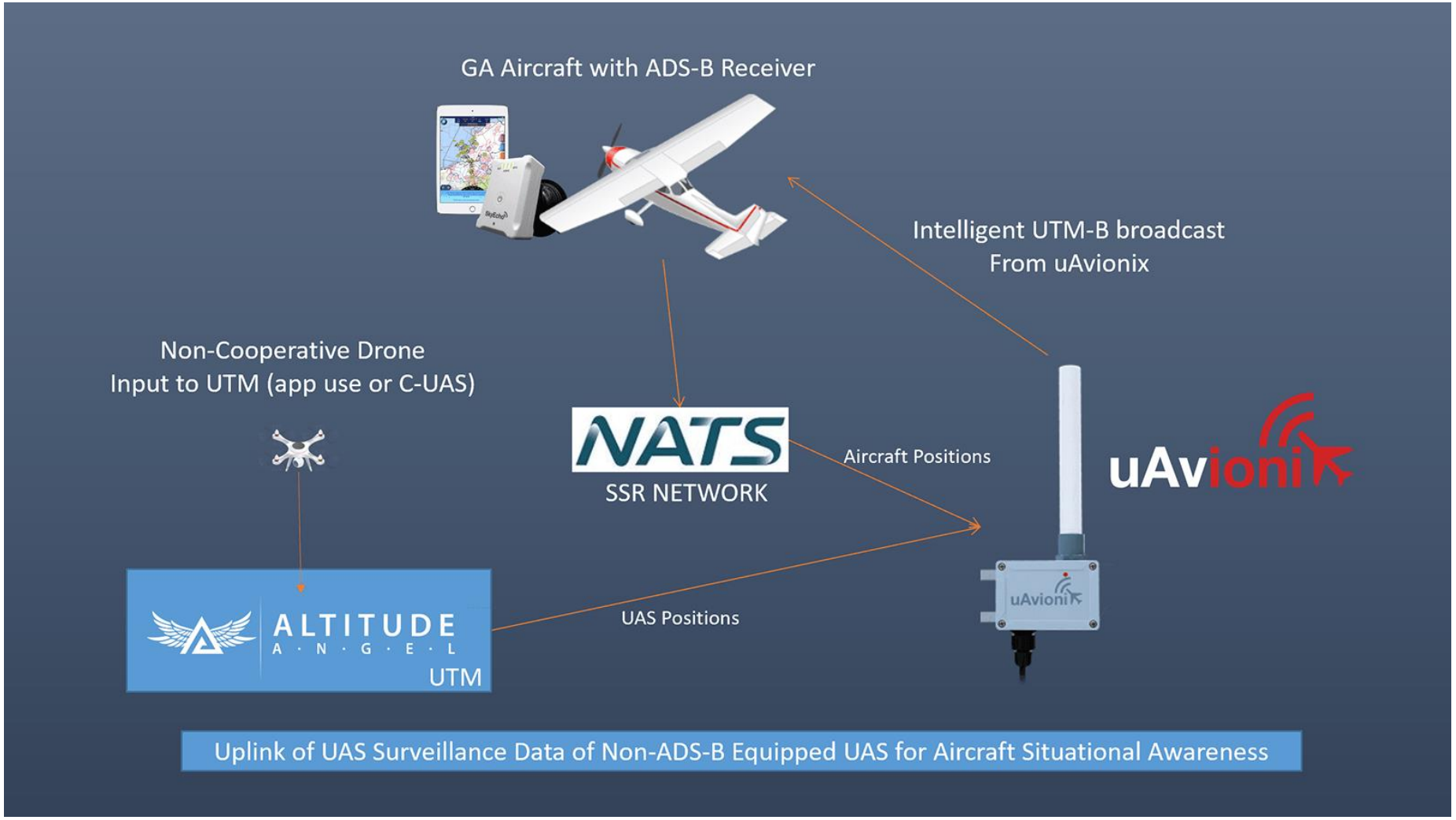
LOS Viewshed @ 1000’AGL

Air-Ground Coordination

- Ground based receivers for local and networked low-altitude surveillance.
  - PC or web-based displays
- Command center operations
- Portable receivers for ground personnel with mobile devices

Ground-Air Coordination

- See Operation Zenith Demo



What's On?

Drone Detection

Passive Drone Detection at Airport

Passive Drone Detection at Prison

Active Geo fencing

Procedures in the event of a Non Co-opeartive drone

Drone Operations

Co-operative Recreational User

Non cooperative users

Runway Inspection

Drone Delivery of spares on the airfield

Police Drone Search

BVLOS railway Inspection

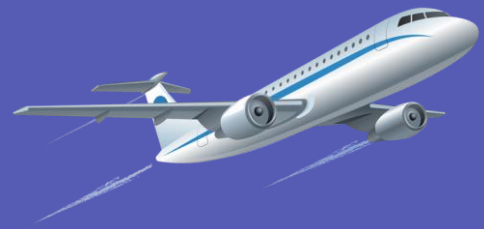
Agriculture Field survey

Combined Air Picture

Fusing all variable data sources to create a full surveillance picture of all assets inc;

- Primary and Secondary radar
- Drone Detection
- ADSB - 987 and 1090
- Flarm
- Post flight plans

Manned Aviation



Operations on or adjacent to Manchester International Airport plus

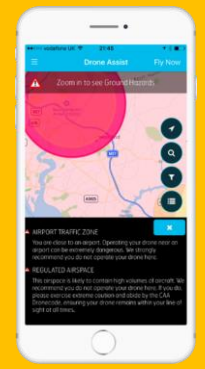
Business Jet flying an approach that has to abort

General action Class D Approach

Police Helicopter

Military Helicopter low level

Safe Integration



Using ATM and UTM technology and procedures it will demonstrate how the national ANSP can provide a safe enabling service whilst safely integrating all air assets

- Education / Registration
- Airspace Access
- Flight Planning
- De-confliction
- Track and Monitoring

Drone Detection Site

Non Co-operative drone flight

GA Transit

Business Jet Missed Approach

BVLOS drone railway inspection

Multiple Drone Operations

Styal Prison

Thank You

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