Advancing aviation, keeping the skies safe.
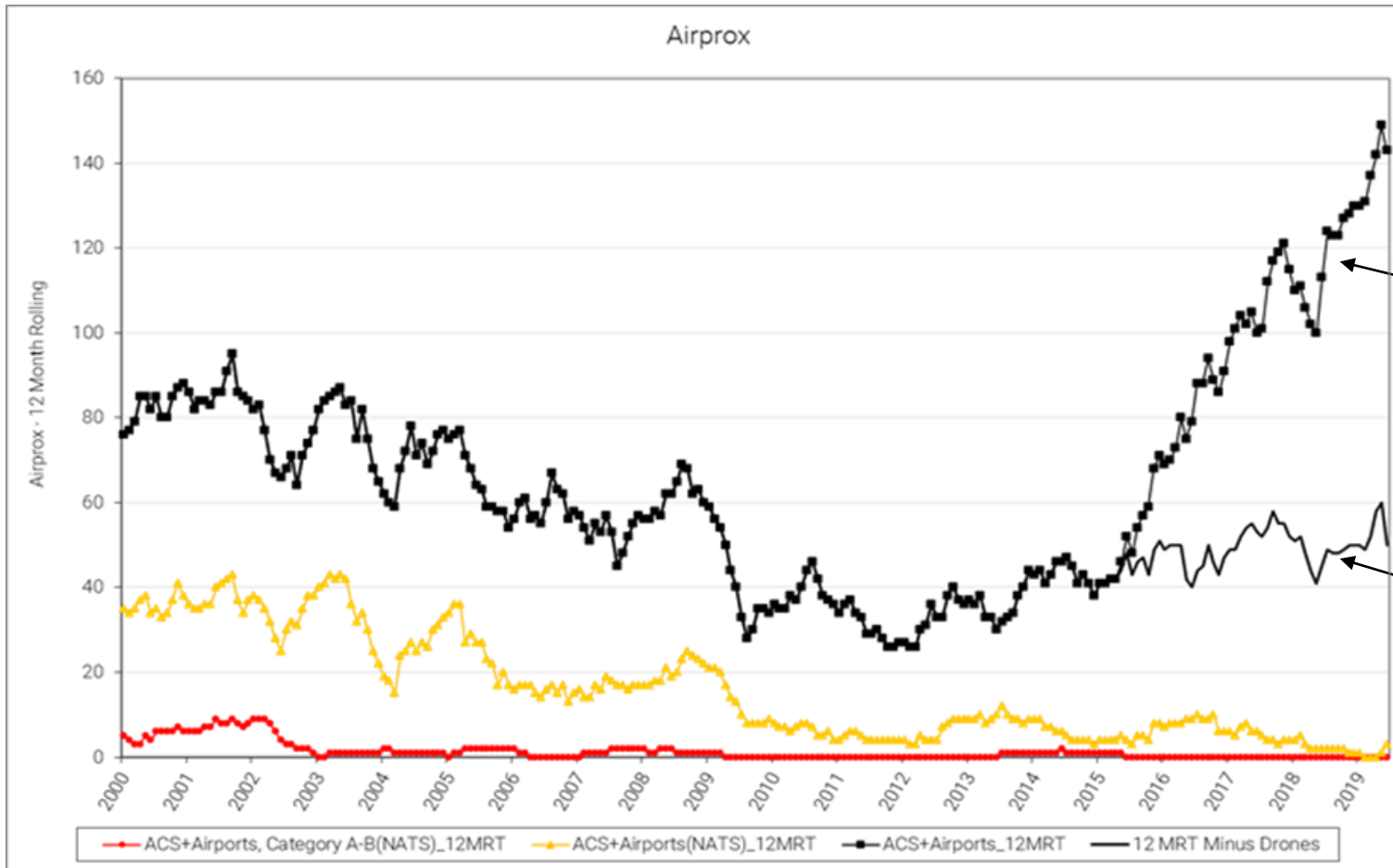
The safe integration of drones into UK skies
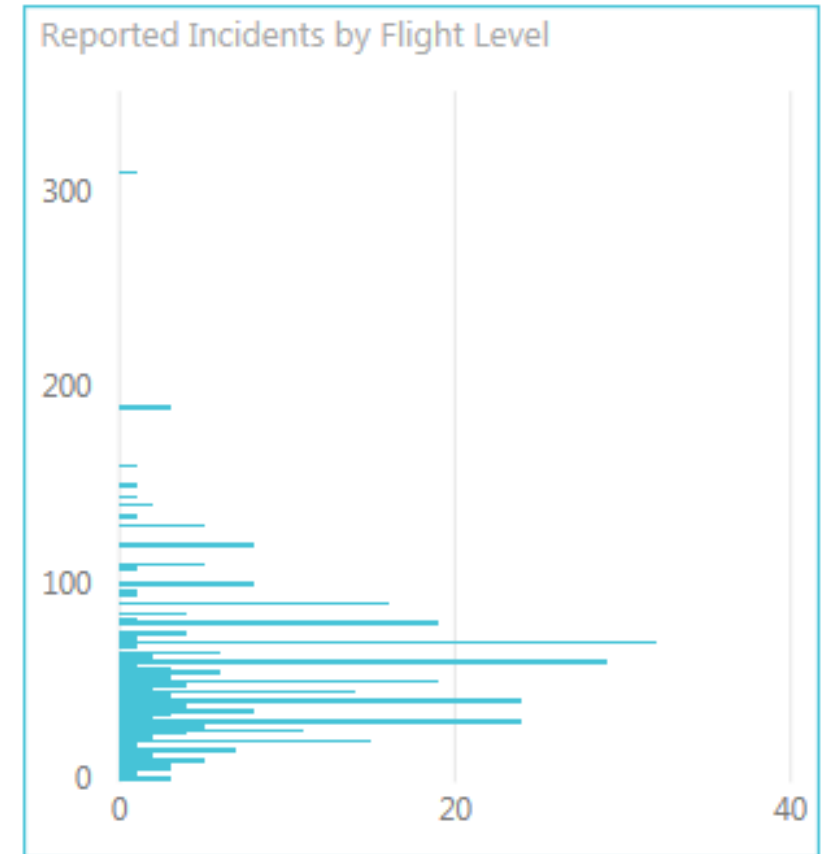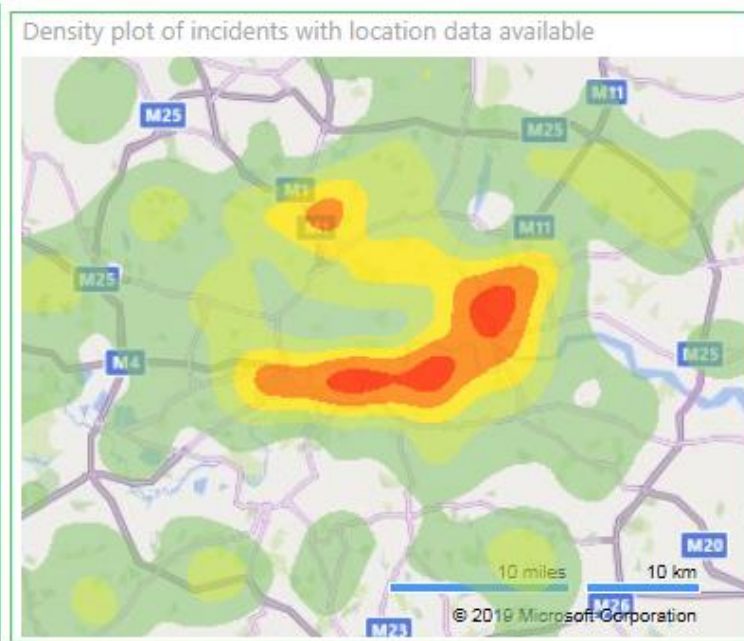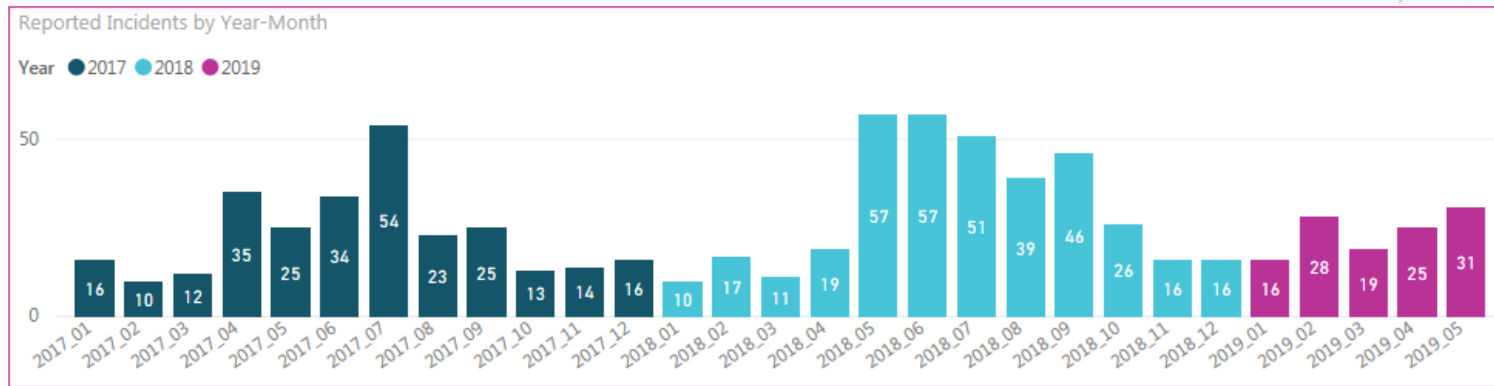
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Drones have consistently accounted for over 50% of Airprox reports since summer 2017
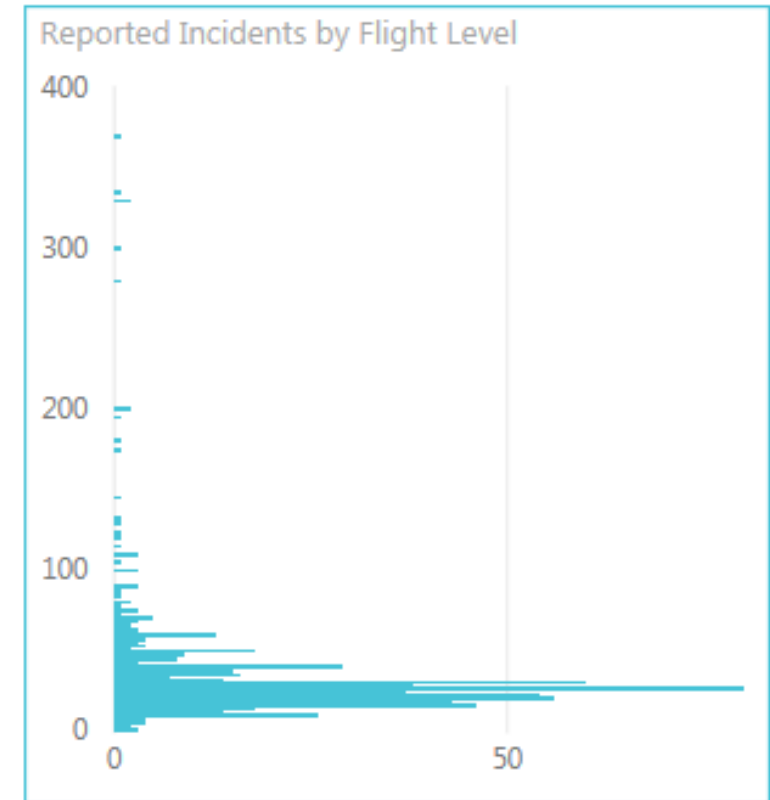
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Airprox
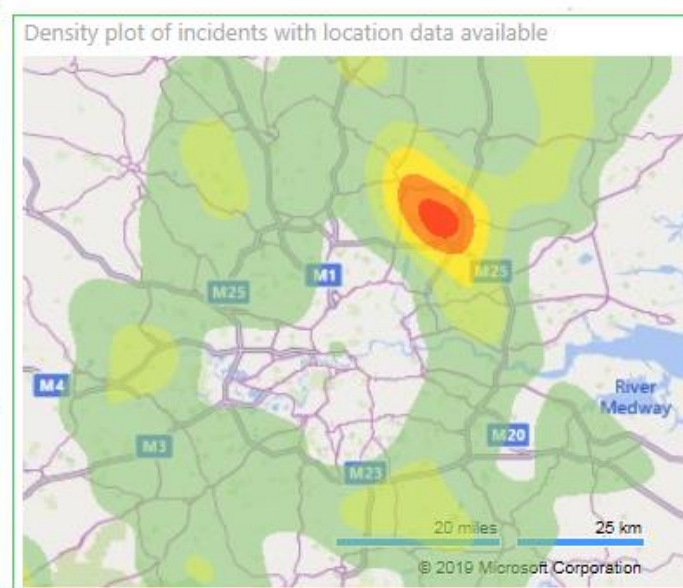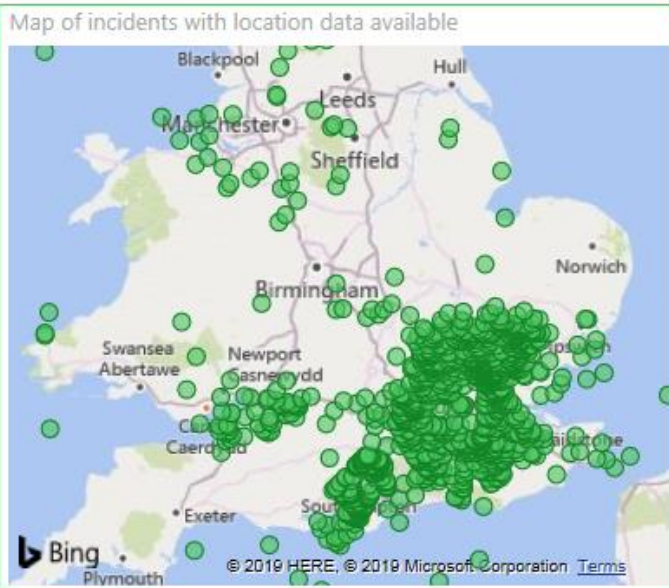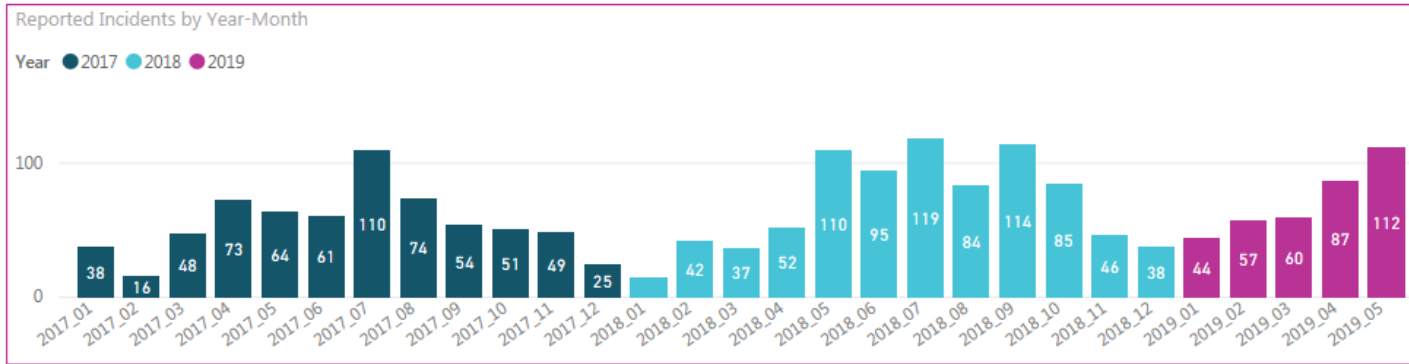
How much of these incidents are really drones and what does it mean in terms of safety risk?

Excluding AIRPROX reports classified as Drones related

Legend: ACS+Airports, Category A-B(NATS)_12MRT — ACS+Airports(NATS)_12MRT — ACS+Airports_12MRT — 12 MRT Minus Drones

Drone Safety Dashboard

NATS Airspace Infringements Dashboard

The growing mix of airspace users

Drones – new pressures on airspace

NATS Drone Assist application – over 130,000 voluntary users

Nearly 6,000 commercial drone operators licensed in the UK

The most commercially valuable operations are often near cities – this means they will typically be close to major airports, airfields and controlled airspace

Flight plans do not follow predictable paths – requires free route principles

Demand is immediate and requires automated and strategic de-confliction

Solutions that work for one-off trials such as temporary danger areas are not sustainable in the long term for repeatable operations

Integrated operations in UK airspace

BVLOS depends upon increased electronic conspicuity of all users

Any increase in situational awareness reduces minimum required capability of airborne vehicle

Safety cases are likely to require increased automation and flight conformance monitoring

The way in which we supervise the airspace will require new flight rules and operational practises

Necessary safety measures

- Drone capability
- Situational awareness
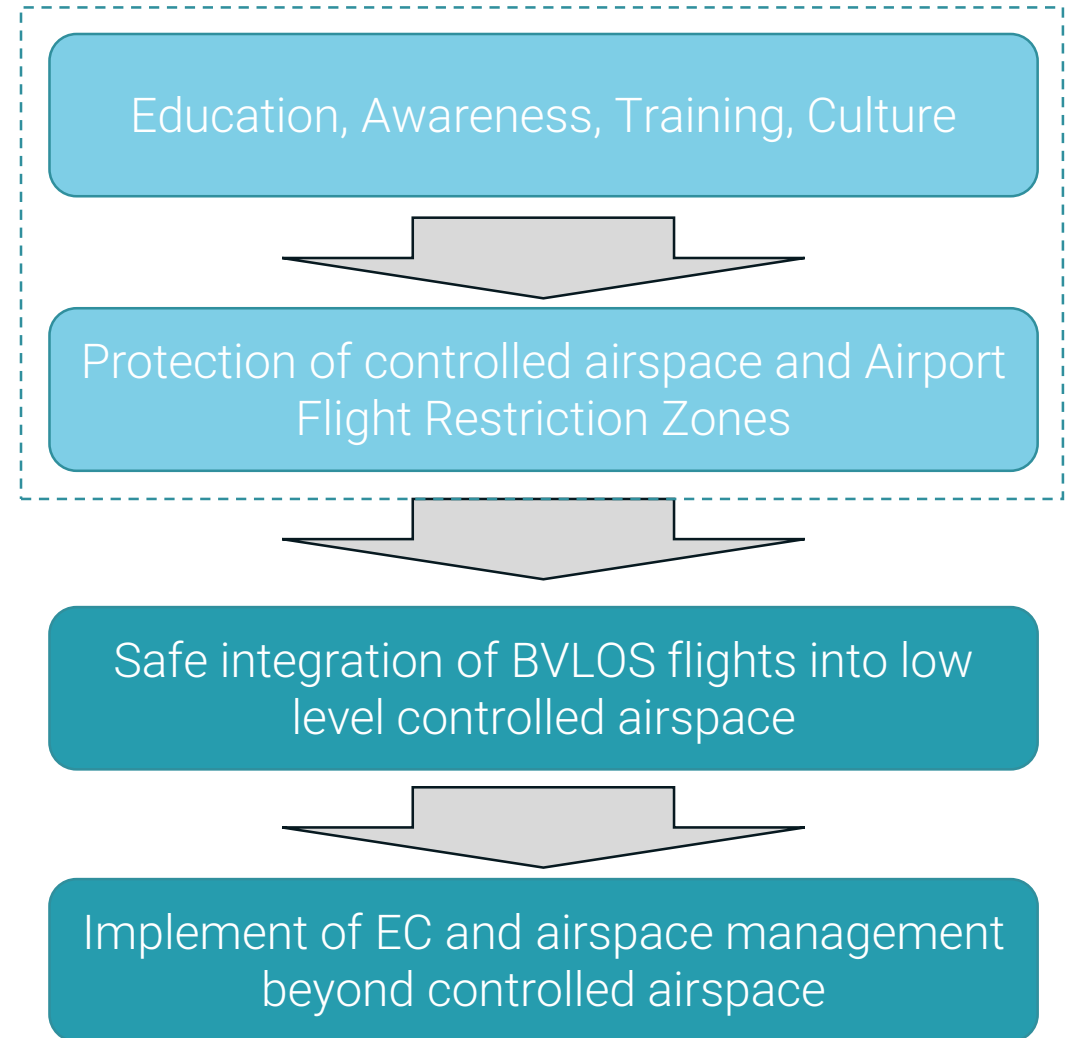- Human factors
- Concept of operations
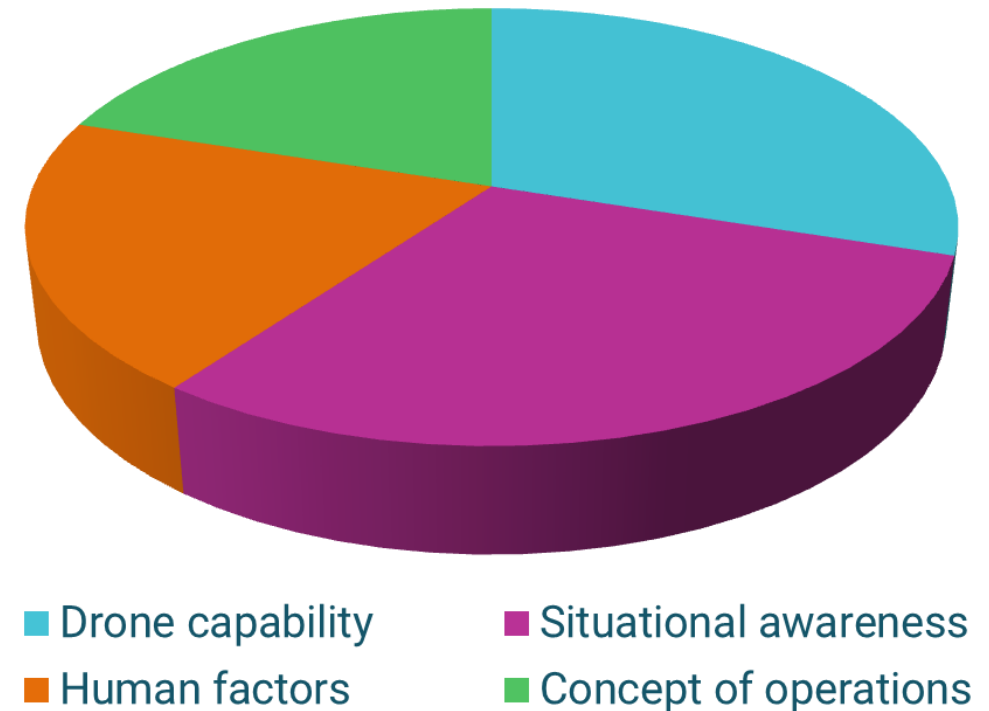
Phased approach to drone introduction

Phase 1: Foundation services to build safety culture and public awareness. Drone Assist App now has 130,000 voluntary users

Phase 2: Implementation of basic UTM services. Protection of controlled airspace and automation of airspace access requests by GA and drones.

Phase 3: The integration of more complex BVLOS drone operations at Very Low Level (VLL) within controlled airspace in a known traffic environment.

Phase 4: The expansion of BVLOS operations outside controlled airspace which will require increased situational awareness and electronic surveillance of all aircraft.

Education, Awareness, Training, Culture

Protection of controlled airspace and Airport Flight Restriction Zones

Safe integration of BVLOS flights into low level controlled airspace

Implement of EC and airspace management beyond controlled airspace

Sharing the Air − Project Zenith

A world's first in manned/unmanned user integration

Demonstrating cooperative and uncooperative manned and unmanned aircraft in a variety of scenarios near a busy international airport

Drone position information to other users, improving situational awareness

UTM/ATM interoperability using ATM infrastructure and ATC procedures.

Demonstrate the information flow to and from a UTM system

Including a safeguarding solution for an airport

OPERATION ZENITH

Sharing the Air – Airspace User Portal

- Currently evaluating Airspace User Portal to automate and route airspace requests
- A single means of gaining access to controlled airspace for ALL users
- Open to third party service providers
- Building a single picture of traffic intent
- Providing airspace alerts and situational awareness
- Gives airports access to approved flights and enables informed risk assessments
- Supports enforcement agencies
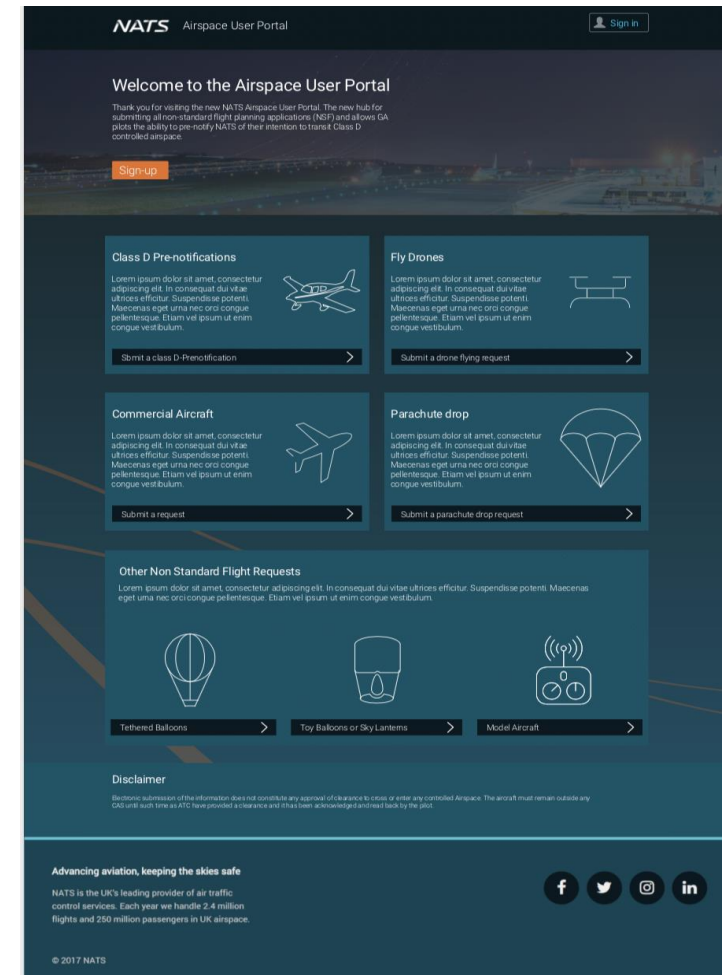
Sharing the Air – Co-operative surveillance

Oceanic services in North Atlantic
- Space-based ADS-B fully operational and in trial since April 2019
- Real-time air traffic surveillance extended from 30% to 100% of globe
- Delivering capacity and fuel benefits without the need to deploy ground infrastructure

North Sea Helicopter operations in uncontrolled airspace
- Combination of radar and co-operative surveillance to extend ATC service out to furthest oil and gas rigs
- ADS-B approved by CAA as sole source of surveillance
- Provides case study of future surveillance and 'Sharing the Air' in uncontrolled airspace
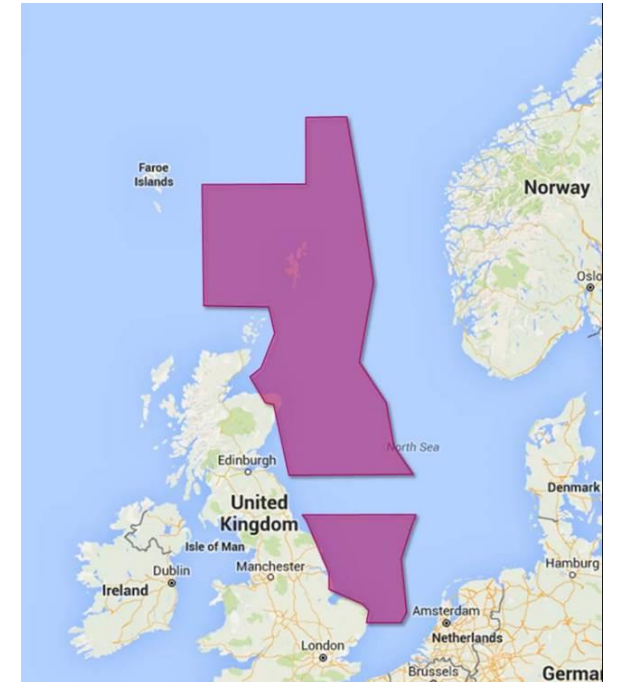
UTM - our guiding principles

1. Safety of our existing commercial airline customers will always be first priority

2. Drones have an equal right to airspace as other airspace users

3. Airspace is a scarce resource – fair and equitable access to all is key

4. 'Share the air' – integration, not segregation is the only long term solution

5. Enable choice and competition between service providers

6. Sharing of data to support safety and maintain commercial/security interests

7. Use of emerging open standards that enable interoperability between service providers

8. A cost recovery model for regulated services that charges all types of airspace user in a fair manner

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