

IAG drone roadmaps

Round 2



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CATAPULT
Transport Systems

The Goal

To place the UK as a leader in drone services:

- Drones adopted at scale with proven productivity gains
- Public acceptance
- Safe operation
- No monopolisation / space for new entrants
- UK regulation/framework/practices adopted globally
- UK companies exporting at scale
- UK first to deploy a national UTM 'system'

Outputs from this project

Draft roadmap for UK drone development

Draft set of prioritised initial actions/interventions

- Things IAG can do
- Things IAG can influence
- Things IAG cannot do

UTM integration

OSC

Sense + avoid,
Electronic ID

Market factors

Comms

BVLOS

Reliable robust system

UTM definition

Spectrum availability & sharing capacity

Commercial sustainability (Ops, BVLOS etc.)

Developmental airspace

UTM rollout

Routine commercial operations



Nominated Airspace

Drone DVLA

IT infrastructure for ATM/UTM

Business case

Public acceptance

Public acceptance

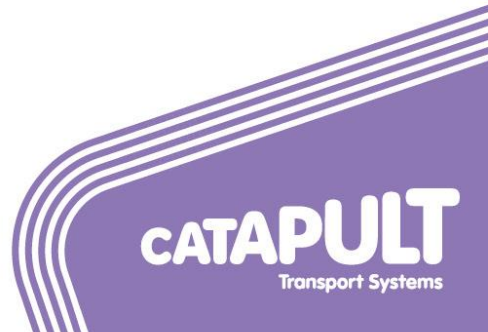
Regulatory toolbox

Commercial operating framework

Market pull

Validation + enforcement

- IAG can do
- IAG can influence
- Beyond control of IAG
- IAG actions



OSC

	Workshop	Discussion
what	<p>Provide a more specific retail / OSC framework</p> <p>Simplify and accelerate the process</p> <p>Develop & understand :</p> <ul style="list-style-type: none"> - Safety standards - Tech - Aviation - Design <p>Safety case experts? (CAA or new service on behalf of CAA?)</p> <p>Standardisation for reduced distances</p> <p>Identify industry BVLOS needs & benefits</p>	<ul style="list-style-type: none"> - Wide variety of opinion – Still a lot of work to define - Just an index of OSC and/or mitigation to main risk - No evidence to suggest that this is holding back industry - Does CAA know what it wants / desired criteria? - Lack of expertise in industry (and CAA) on drone safety - Develop with CAA roadmap for future approval - Can they provide standards to avoid key approval wait? E.g. machine to machine approval – still need competent people to fill out - What is resourcing plan for above? - What is requirement for CAA to change - CAA have had negative experiences engaging with industry before – now is a good time to reengage (young team etc.)
IAG actions	<p>Work with CAA to provide a roadmap of safety cases + resource requirement (including skills) + resulting standards</p> <p>Link safety cases to market needs and opportunities</p> <p>Explain need to develop standards & where they fit in the likely safety cases</p>	<ul style="list-style-type: none"> - Need to be clear we are not CAA bashing as this is often the perception - Possibility to leverage existing senior relationship between DfT & CAA - Need to be clear about CAA's role – they are the jury that approve or reject safety cases, it is not necessarily their role to bend over backwards to make them easier - Should IAG highlight areas where need for standards exists?
Govt ask	Influence regulator	

Overview

Recommendations:

Publish roadmap through available channels:

- ARPAS
- Catapult
- IAG members' social media

Form 3 working groups based around:

- Dev airspace (Future Airspace Testbed?)
- Public perception
- Future safety case methodology

Each to bring back deliverables to next IAG / 3 months

Dev airspace

Need:

- Be renamed
- Be non-segregated airspace
- Include all types of drone operations (e.g. BVLOS)
- Receive govt funding (not necessarily entirely) for first two years (existing market failure)
- Be moveable and temporary (i.e. NOTAM-like)
- Act as an MVP/precursor for future airspace regulation and management

IAG role

Write and publish white paper to requirements of dev airspace. Need to ensure that such airspace meets the needs of the drone community. White paper to include:

- Recommendations for critical aspects such as size, segregation, floor and ceiling etc.
- Focused on what it need to do as opposed to what it needs to look like
- Business case & longer term funding possibilities
- Further define requirements and interventions

Working group:

- TSC, NATS, Altitude Angel, DfT, Thales?
- To be circulated for feedback through wider IAG before submission

To be submitted by end of November

OSC for standard scenarios

Need:

- Scalable future methodology for safety cases
- Provide access to safety cases for standard scenarios to reduce complexity, lead time of trials & regulatory burden
- Great throughput of safety cases and shorted lead times for feedback

IAG role:

- Plan to engage with head of CAA
- Propose developing a roadmap of safety cases for standard scenarios

Working group

- Define which 'standard scenarios' will need to be covered
- Develop outline scenario definitions with common factors which safety case addresses

Public perception & market engagement

2 main needs:

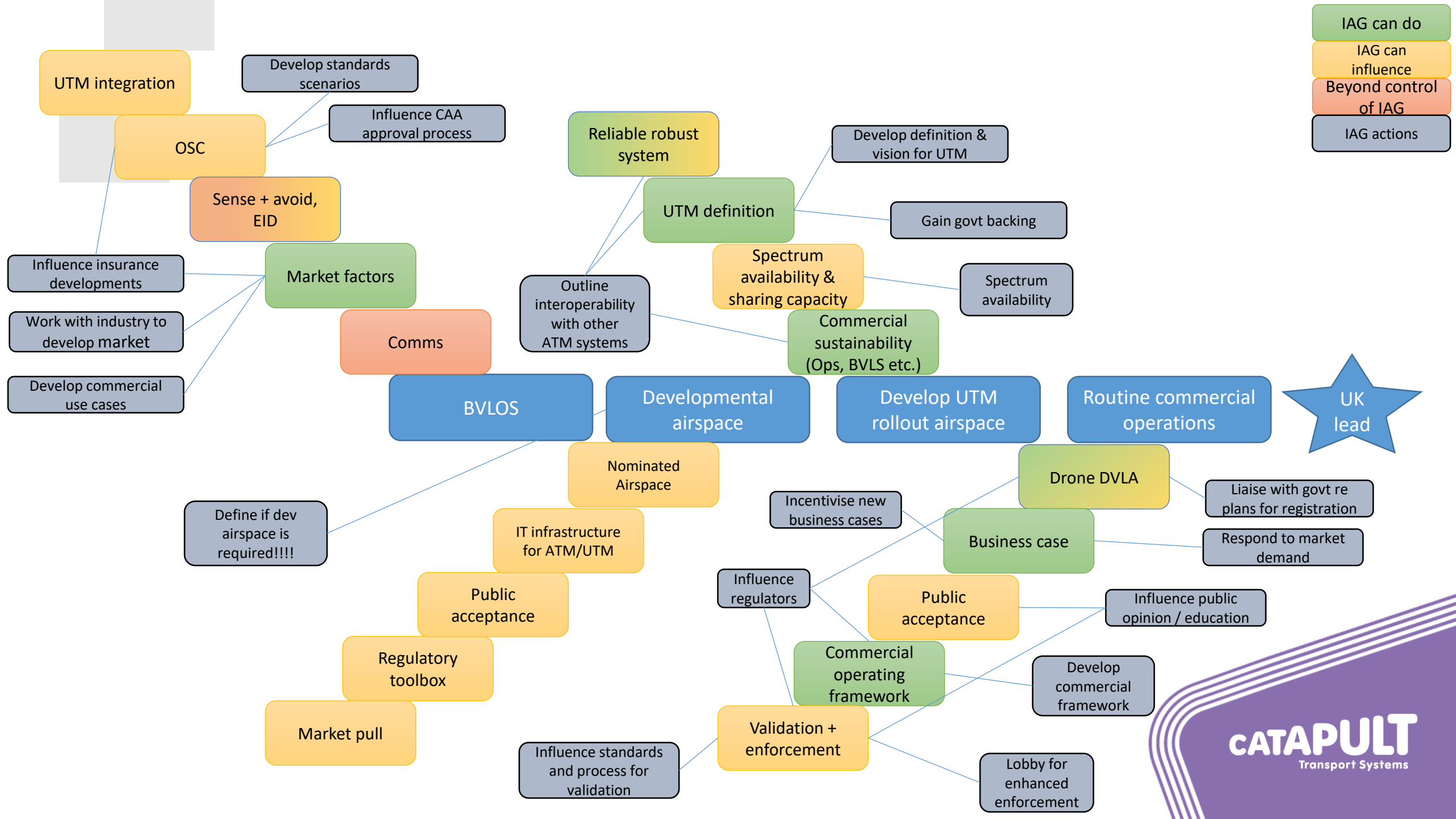
1. Educate public in terms of benefits offered by drones and importance of safe operation
 - Helps to overcome possible resistance
2. Educate industry (demand side) on possible applications of drones to support market development

IAG role:

- Inform government on plan for public education
- Lead engagement with industry to address market growth

Working group:

- Develop 12 month strategy for education including actions, actors and funding requirements
- Define key industries to target & plan for doing so
- Create use cases for different applications



- Work with industry to develop market
 - Develop specific use cases (Draw on IAG members' business/experiences)
- OSC (standardisation, democratisation)
 - Standard scenarios
 - Support & influence CAA approval process
- Electronic conspicuity / SAA / DAA (seek to influence)
- Contribute to development of insurance frameworks
- Build & disseminate clear definition of UTM including requirements for interoperability with other airspace (and land?) management systems
- Spectrum availability
- Establish government backing where required
- Carry out trials
- Positively influence public perception of drones
- Develop commercial operating framework including checklists
- Contribute towards development of standards + process for validation
- Lobby for enhanced enforcement

Must

1

- Line up industry at proof of concept stage
- ATM/UTM interface
- Define technology requirements for UTM rollout
- Define redundancies to support 'safe enough' rollout
- Liaise with govt/regulators regarding proposals for legislation
- Influence regulations regarding change to:
 - Airspace / aviation regulations
 - Role of regulator
 - Information + privacy
 - Communications
- Incentivise new business cases

2

Should

Could

3

- Establish and define industry pull
- Look at options for non-aviation UTM interoperability
 - e.g. driverless cars
 - Office of AI
- Seek capital investment
 - Internally (within IAG)
 - Externally (e.g. venture capital)

4

Won't

- End users -> commercial model
- V2X
- Comms
- Vehicle/Ops

**24 MONTH
TIMEFRAME**