



CAA Innovation Hub: Regulatory Sandboxes

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- Overview of the Civil Aviation Authority and Innovation Hub
- Definition and a framework for a Regulatory Sandbox
- Learnings from Regulatory Sandbox



CAA Innovation Hub



Mission

To create an environment where innovation in aviation can flourish in line with our principles

1. **Gateway** to **make it easier for aviation innovators** to work with us as regulators

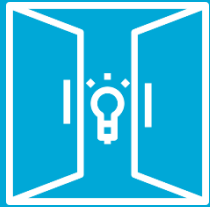
2. **Sandbox** to **maximise regulatory readiness** by enabling the exploration and testing of Innovation concepts in a safe space.

3. **Regulatory Lab** to **anticipate and respond to complex emerging aviation challenges** in order to shape the future regulatory landscape.

4. **Business Ops** to provide the **governance and structure** to enable the smooth running of the Innovation Team.



Insights 1 Year of operations



Gateway

- Circa 300 innovators supported
- 2 quarterly Horizon Scanning reports completed
- 8 Innovation Clinics hosted
- 3 Podcasts published



Sandbox

- 10 total participants
- 2 Regulatory Challenges issued on BVLOS detect and avoid systems and FAM
- 21 applications received for BVLOS sandbox



Lab

- 4 key workstreams established on AI & Automation, UTM, BVLOS and FAM
- Call for Insight issued to industry on FAM
- 8 publications released
- Publication of “A unified approach to UAS traffic management”

Regulatory Sandbox

What is our Sandbox?

An environment where we partner with innovators to explore - through iterative testing - regulatory challenges and the solutions that could unlock the approval of their trial around a specific challenge.

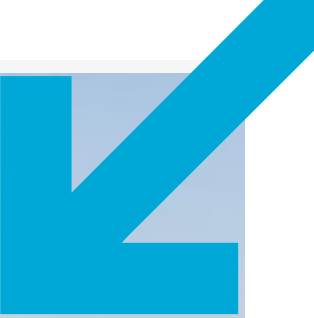
Utilises the flexibility inherent in aviation regulations.

Innovators receive:

- Dedicated case officer
- Roadmap for regulatory approvals and the evidence needed
- Support to develop test plan
- Access to the regulatory toolbox
- Access to a community of partners across the innovation ecosystem.

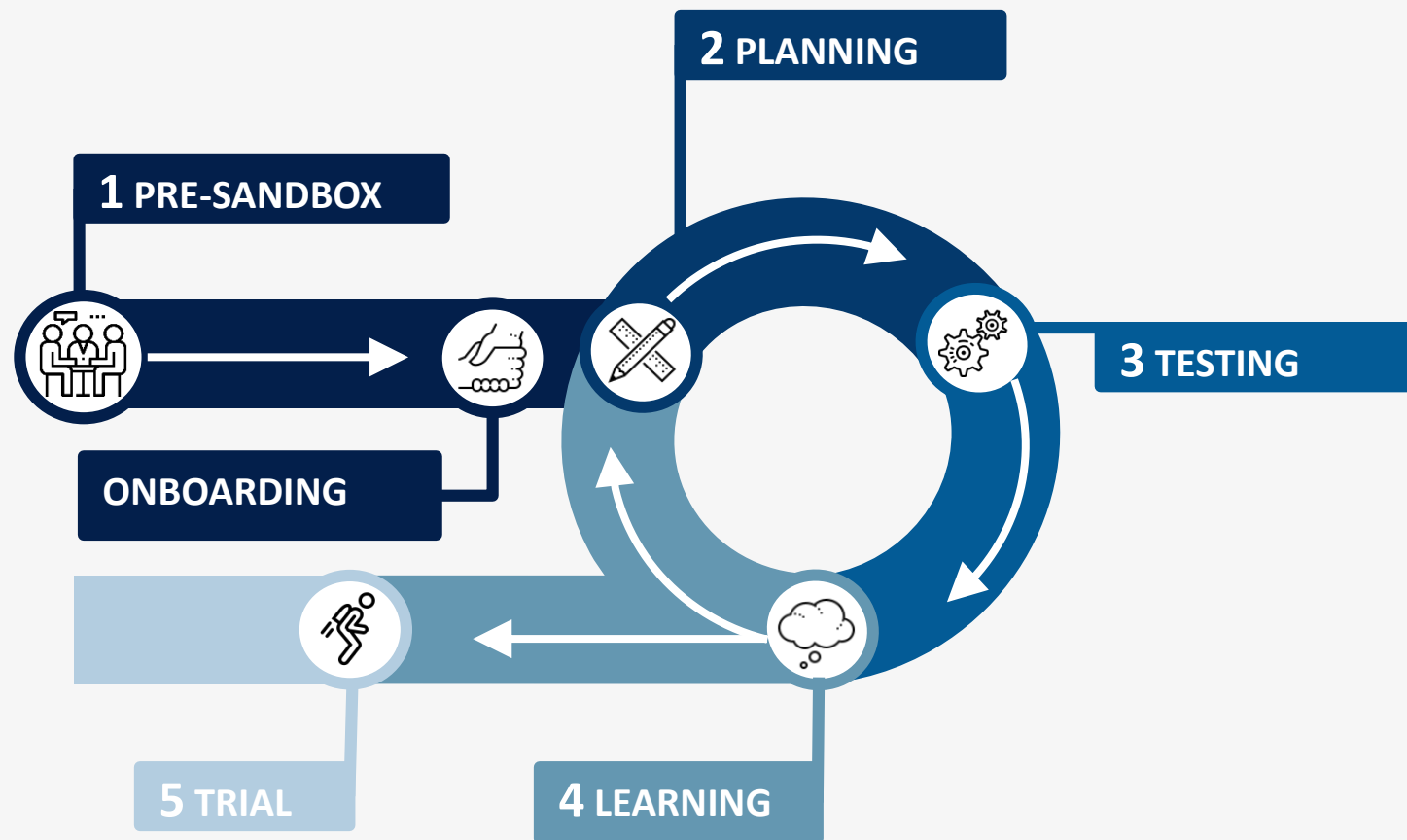
We do not:

- Provide or guarantee regulatory approvals
- Provide live test environments
- Financing



Sandbox Methodology

- Framework is designed to accelerate the development of the evidence base that will support regulatory approval for the trial.
- This will be done through iterative cycles of Planning, Testing, and Learning stages.
- Participants agree with us a “technical proposal” which sets out what is expected from both parties



Regulatory Sandbox

First Sandbox Cohort

- Initially focused on firsts “cohort” of innovators.
- Very broad areas of focus - AI/Highly autonomous systems, UAS BVLOS operations, UTM and FAM
- Driven by individual use cases not by specific technology challenges

NATS

amazon
Prime Air



Sandbox Challenges

Challenge focused Sandboxes

- Pivoted to focus on tech challenge led approach
- Internal review board considers applications and conops

Challenge 1: “*We are looking for organisations that want to work towards operating Unmanned Aircraft Systems (UAS) Beyond Visual Line of Sight (BVLOS) in unsegregated airspace*”

Launched August 2019, 21 Applications received, 1 applicant immediately on-boarded with 3 further added over 6 months

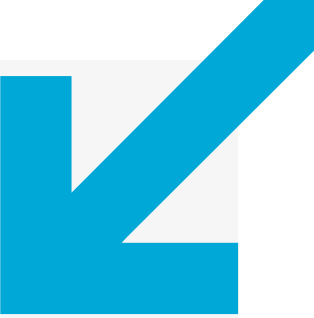


Challenge 2: “*We are inviting organisations to join our regulatory Sandbox to explore with us the requirements for the approval of Future Air Mobility operations.*”

Launched May 2020

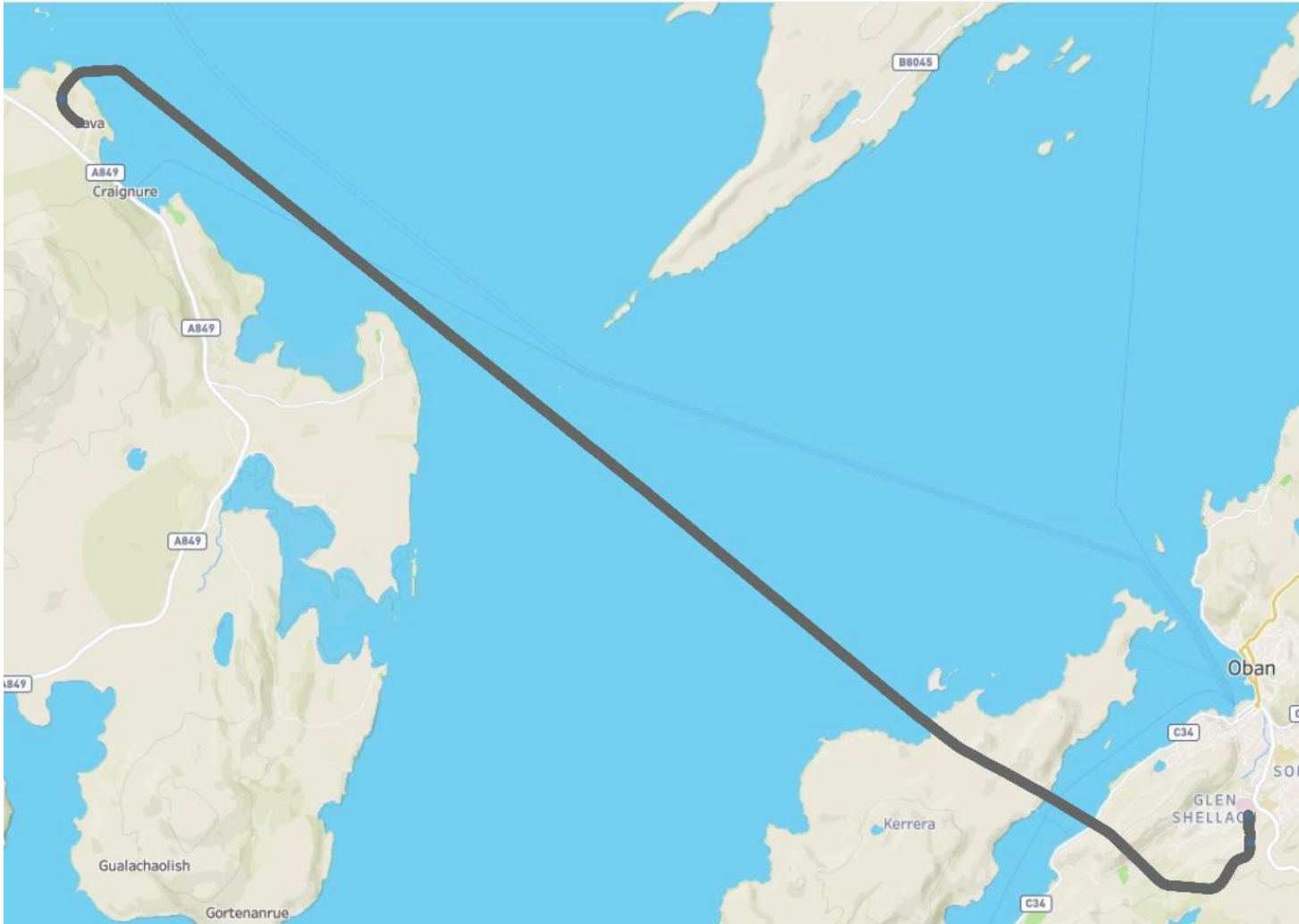
Sandbox Challenges: CoVID19

Innovate UK



- Innovate UK is the UK's innovation agency, develops and funds industrial challenges which seek to solve specific technology problems.
- In April 2020 launched a specific aviation focused challenge seeking applications for public funding to support operations utilising UAS to respond to the CoVID19 situation.
- To support this work 'pivoted' our Sandbox activity to support this challenge. Innovation team provides upstream support to enhance the regulatory readiness of applicants including assisting in the optimisation of applications to stand the best possible chance of receiving a regulatory approval, prior to submission.
- Received 21 applications for the initial 'regulatory readiness' assessment. We review and return within the week (subject to them containing all required information).
- Secured prior agreement from regulatory teams that they will prioritise our cases.
- This project will run for up to 3 months.

Sandbox Challenges: CoVID19



- Skyparts, Thales and Wingcopter joint proof-of-concept with client Argyll and Bute Health and Social Care Partnership
- Trial consisted of two-way flights between the hospital Lorn and Islands Hospital (Oban) and Mull and Iona Community Hospital (Mull) 10 miles (16km) away on the Isle of Mull
- Alternative route is 6 hours one-way by ground transport and ferry
- Support provided 'upstream' by Innovation Hub using Sandbox methodology

WINGCOPTER



Skyparts

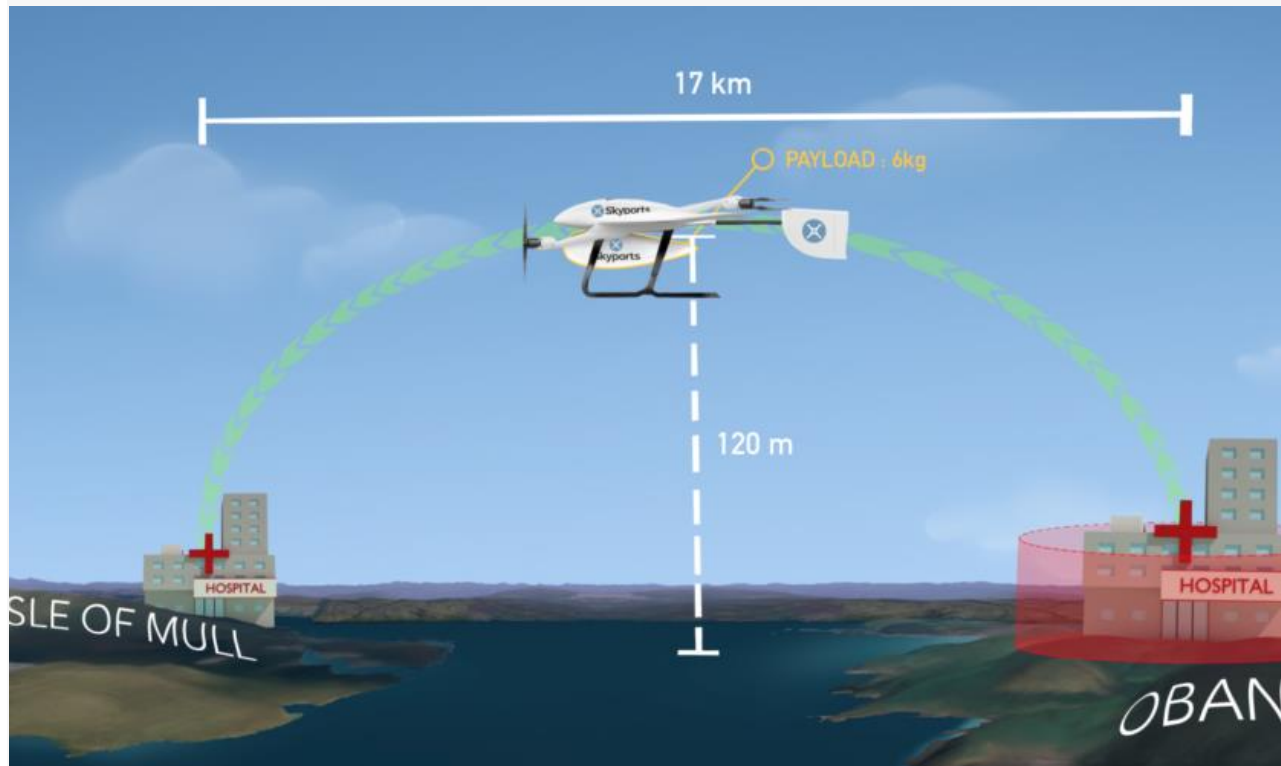
THALES

Sandbox Challenges: CoVID19



Highlight

- June 2020 the Mull hospital ran out of blood collection tubes the effect of this would have been to prevent any further collection. Replacement tubes could not be supplied same day using traditional logistics.
- The NHS asked the trial team to swap the cargo and bring more sample collection tubes from the Oban hospital.
- Replacement tubes delivered within 30 mins
- This ensured this facility continued to be available to the NHS without any diminution in service.

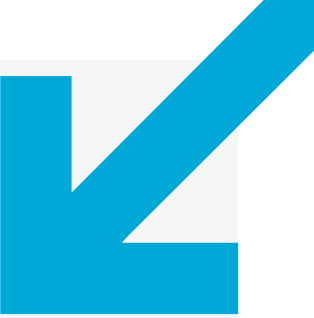


Operational Statistics

Total number of flights between the hospitals	40
Average number of transit flights per day	8
Maximum number of transit flights in one day	12
Total flown distance	805.4km
Total flight time	11h 26m 51s
Payloads of face masks, COVID-19 test kits and blood sample tubes	



Regulatory Sandbox: Key Learning



- Our initial hypotheses about the need for such a service have been proven correct
- Aviation benefits from having an experimentation friendly regulatory framework
- The challenge which faces most innovators is how to develop the necessary evidence base to take advantage of those regulations.
- Need for a clear technology “problem” or challenge
- Need for an agreed framework and timelines (technical proposal)
- Most innovators significantly overestimate their level of technical and operational readiness. Even the most well capitalised corporate innovators have struggled to deliver on their technology ambitions.
- Often smaller start-ups and scale-ups are a higher Technology Readiness Level and Regulatory Readiness Level than mature corporates and market incumbents.
- The most successful engagements have been with entities and consortia which have the flexibility and agility of a start-up/scale-up and the project management and delivery capability of a big corporate.



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