



DELIVERY UTILISING AUTONOMOUS UAVs
A TRANSFORMATIONAL TECHNOLOGY OPPORTUNITY

ACP-2021-025 Initial Assessment Meeting

June 2021

Strictly private and confidential

AGENDA

- Introduction
- Statement of need
 - SATE Project
 - WR participation
- Issues and opportunities arising from proposed change
 - Use cases
 - ULTRA UAS technology
 - Airspace
- Process requirements (CAA)
- Stakeholder Engagement Strategy
- Provisional timescale
- Next steps
- AOB

STATEMENT OF NEED



SUSTAINABLE AVIATION TEST ENVIRONMENT (SATE)

OBJECTIVE

To create the UK's first operationally based, low-carbon aviation test centre at Kirkwall Airport in the Orkney Islands in Scotland and to help decarbonise the aviation industry.

CONSORTIUM



FEATURES

- Flight trials demonstrated in a real-life context
- Trials including low-carbon aircraft using electric, hydrogen and Sustainable Aviation Fuels (SAF) as well as Unmanned Autonomous Vehicles (UAV)
- Airport infrastructure improvements
- Improved regional air connections
- Local supply chain and employment impacts
- Contribute to Net-Zero aviation goal by 2040

PART FUNDED BY UK RESEARCH AND INNOVATION (UKRI) THROUGH THE INDUSTRIAL STRATEGY CHALLENGE FUND

- Based at Kirkwall Airport.
- Industrial and community based use cases for alternatively fuelled and alternatively piloted aircraft.
- Outcomes:
 - Road-mapping reports: technology, legislation, regulation and policy.
 - Contribution to decarbonising aviation, lower cost operations, new applications.
 - Develop test environment: physical, digital and operational airport infrastructure.
- The Future Flight Challenge is investing up to £125 million to develop greener ways to fly, such as all-electric aircraft and deliveries by drone, by advancing electric and autonomous flight technologies. The investment is matched by £175 million from industry.
- The challenge aims to bring together technologies in electrification, aviation systems and autonomy to create new modes of air travel and capability.



Innovate UK Project No: 75903

OPPORTUNITIES

ULTRA UAS COULD FILL IN THE EXISTING GAP IN THE LOGISTICS FOR ISLAND POPULATIONS

Use-cases (routes) identification meetings



NHS

- On-demand delivery of urgent pharmaceuticals and high cost portable medical equipment
- Regular direct service to remote health centres

Logistic providers

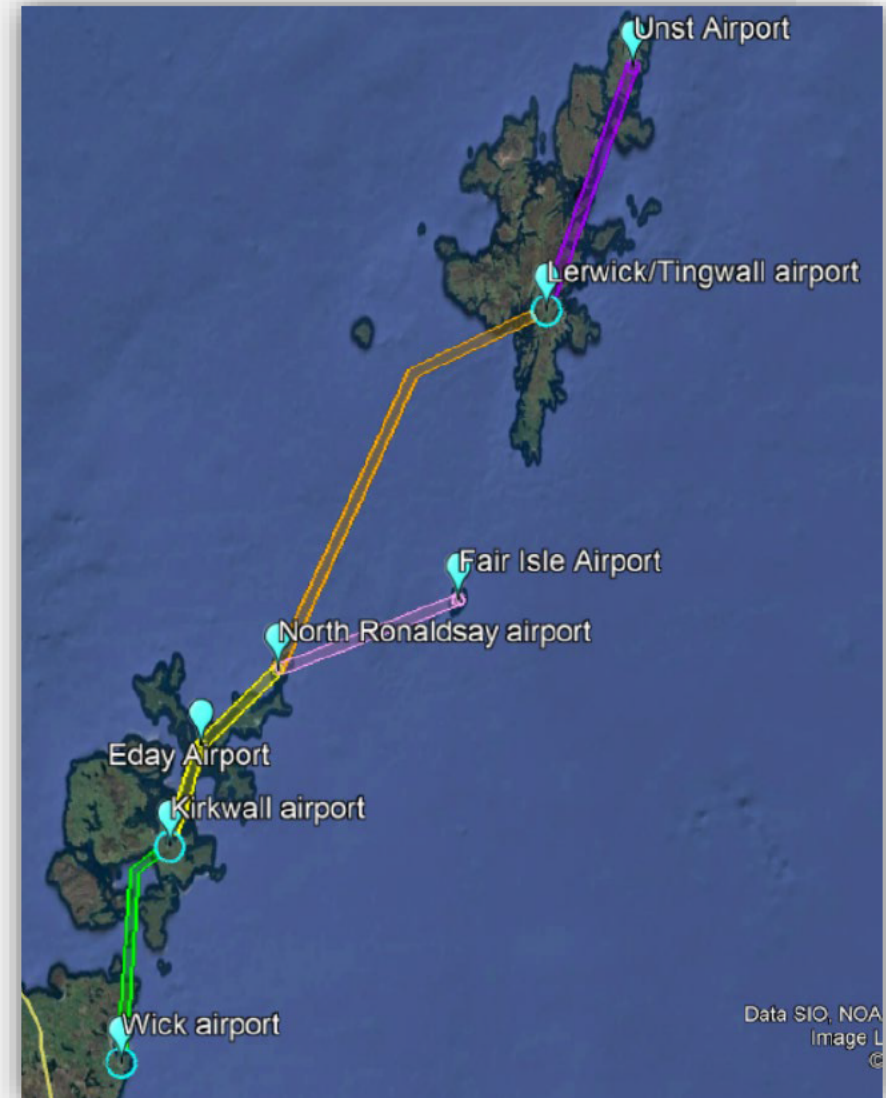
- Reliable service to remote communities affected by reduced and discontinuous logistics

Local business

- Food and Drink Association, Oil & Gas, Shell fish
- Flexible and on-demand delivery

ULTRA SATE OPERATIONS WILL CONNECT MAINLAND SCOTLAND, THE ORKNEY AND SHETLAND ISLANDS

- Demonstrate capability of the ULTRA UAS to deliver on-demand supplies to remote communities that suffer from limited logistics
- Routes:
 - Wick – Kirkwall
 - Kirkwall – Eday – North Ronaldsay
 - Kirkwall – Fair Isle
 - Kirkwall – Lerwick
 - Kirkwall – Unst
- Implementation Summer/Autumn 2021



ULTRA UAS HAS BEEN
DESIGNED AND BUILT
FOR ROBUSTNESS AND
RELIABILITY

- [REDACTED] MTOW
- [REDACTED] payload
- [REDACTED] cargo capacity
- [REDACTED] Wingspan
- Fully autonomous mission capability – remotely controlled from GCS
- Independent Health Monitoring System
- [REDACTED] flight control system
- Multiple redundancy of critical systems
- Electronic conspicuity [REDACTED]
- [REDACTED]



WINDRACERS PIONEERED THE POINT-TO-POINT BVLOS OPERATIONS IN THE UK



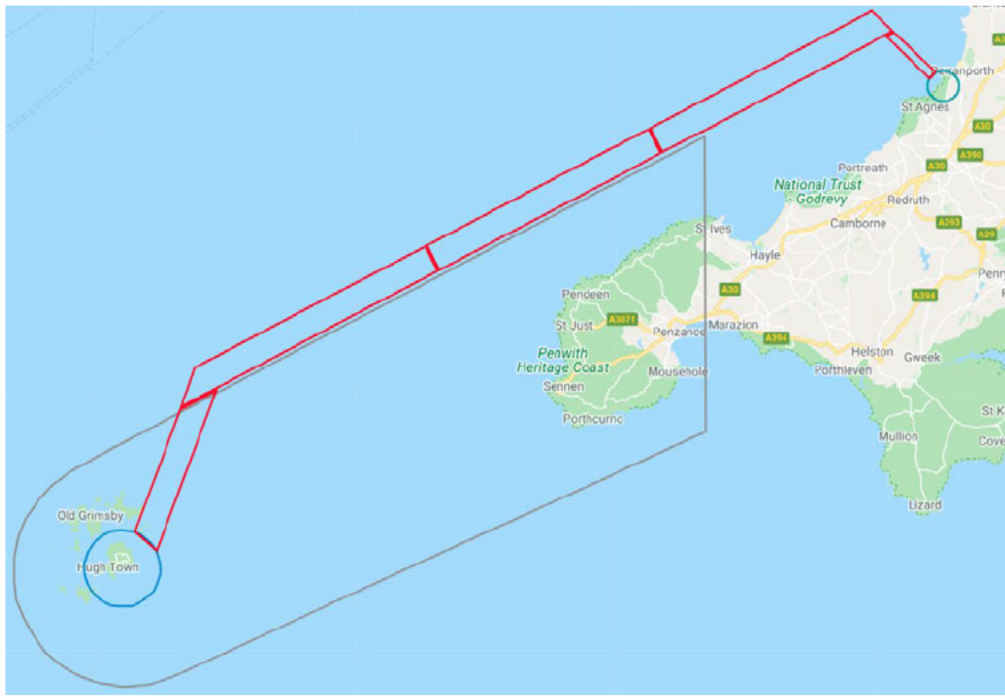
On 9th May 2020 First point-to-point BVLOS flight in the UK

ULTRA UAS completed a BVLOS flight between mainland England and the Isle of Wight



December 2020

27 Nm (50 km) BVLOS flight completed in December 2020 between Lands' End and the Isles of Scilly



ISLES OF SCILLY AIRBRIDGE

- airbridge service delivering parcels to the Isles of Scilly
- Scheduled flights four days per week over four weeks (April/May 2021)
- Completing 211 km flight distance and unloading in the Isles of Scilly in under two hours
- Limited time window for return flights



OTHER OPPORTUNITIES

- Proven technology and type of operation
- Low ground risk scenario
- Active participation of ATSUs
- Involvement of local operators from planning
- LARS availability

ISSUES (AND SOLUTIONS)

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Busy airspace

Spatial and time separation between UAS and scheduled crewed flights

Active short periods of time

Lack of flexibility of TDA

DAAIS/DACS service availability

Separation procedures

Changes on schedules

Activation periods to include time buffer

Tactical deconfliction

Non scheduled flights (rotary and GA)

Procedures to 'give way' to crewed flights

Logistics (crews and ground equipment)

Schedule of UAS flights

PROCESS REQUIREMENTS (CAA)

STAKEHOLDER ENGAGEMENT STRATEGY

OBJECTIVES

Reach all the stakeholders that could have interest on the use of the airspace

Inform all stakeholder of any changes to the ACP in a timely manner

Provide permanent channels of communication

Collate and process all feedback, and take action when necessary

Make our UAS operations as flexible as possible to reduce impact on current aerial activities

- **Preliminary engagement:**

- Project socialised with use cases and local airspace stakeholders.

- **Formal stakeholder engagement:**

- Request for feedback from ALL airspace stakeholders: local authorities, NATMAC list, known users

- Work with KEY stakeholders

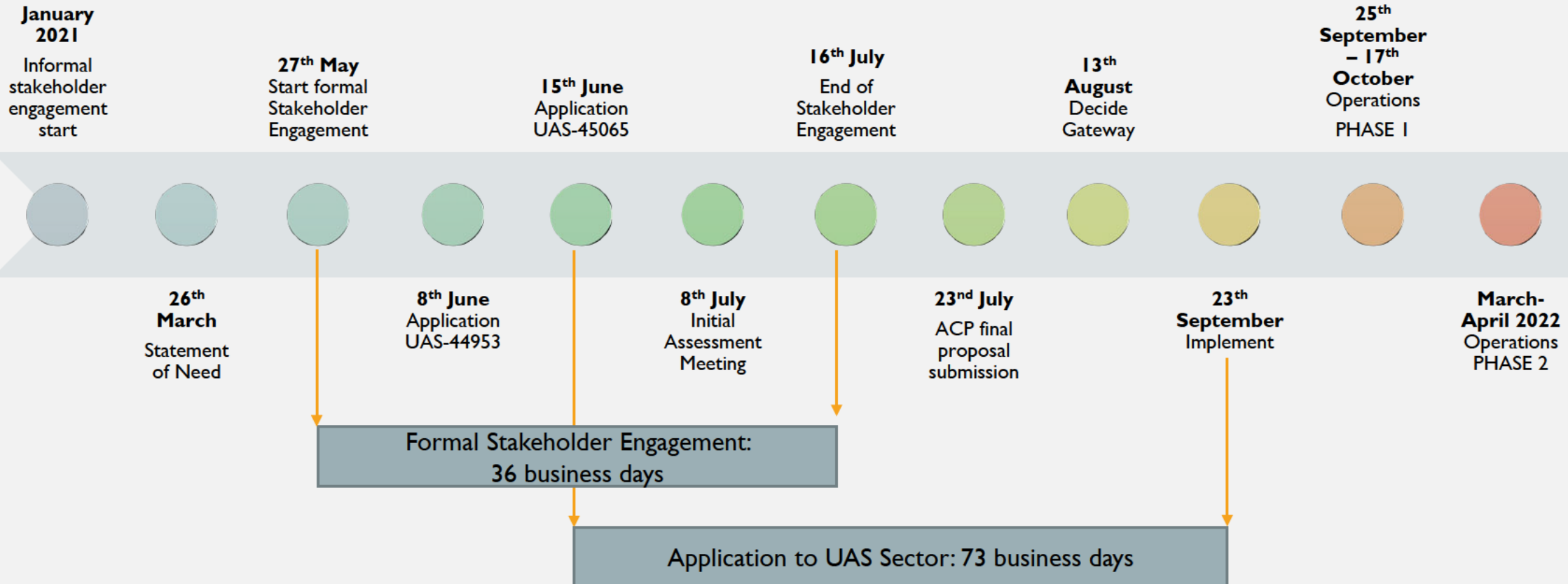
- ATSUs, Airports, local GA, Operators
- Keep broad group of stakeholders informed and provide channels of communication.

- **Live impact assessment:**

- Provide channels of communication before, during and after implementation.
- KEY stakeholder CHECKPOINT meetings.

PROVISIONAL TIMESCALE

CONTINGENCY TIMESCALE



NEXT STEPS

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CAA

- Approval of ACP timeline
- Agree on UAS OSC application timeline
- Increase period of implementation (>90 days)
- Meeting with ATSUs
 - Clear requirements for provision of DAAIS and DACS – CAP774.
 - When can other aircraft cross the TDA

SPONSOR

- LofA to define ATSUs participation and ConOps
- Submission of ACP and engagement summary
- Continue working on application towards UAS-OA
- Ofcom licensing

AOB

THANK YOU