



UK Research
and Innovation

The Future Flight Challenge

The UK Making Future Flight a Reality



Gary Cutts
Kerissa Khan

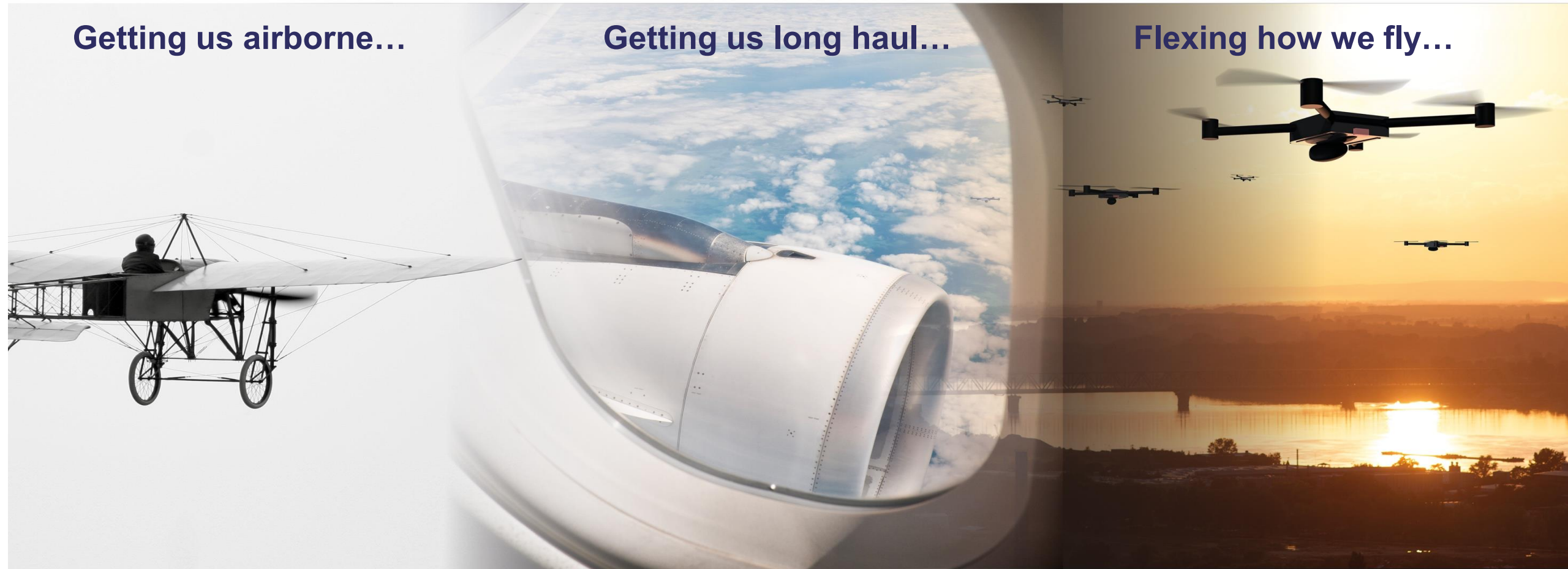
Global Urban and Advanced Air Summit
March 2022

Our ambition is to drive a 3rd revolution in flexible and green aviation...

Getting us airborne...

Getting us long haul...

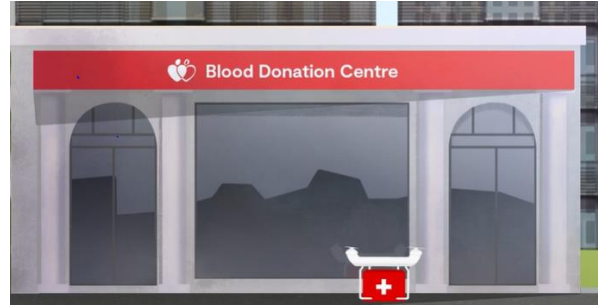
Flexing how we fly...



But what does that mean to people outside our industry?

For the public, it means...

...faster medical deliveries and disaster relief



...last mile deliveries to your door



...remote maintenance reducing HSE risks



...integrated transport systems



...better and inclusive connectivity reducing congestion



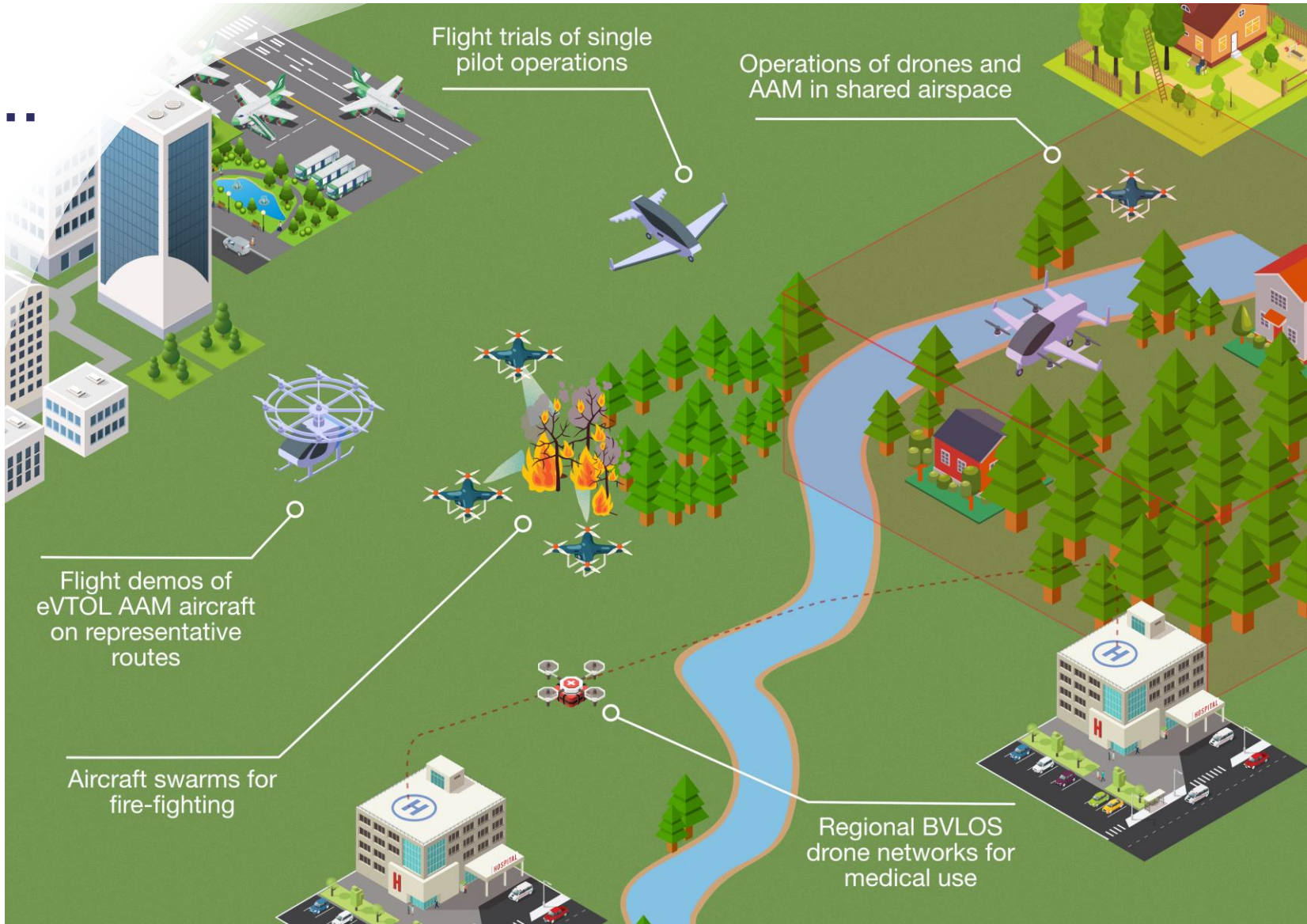
...green flight connecting remote rural locations



but also raises legitimate questions from many publics

Our broad-based approach is to...

...create challenging, real-world use cases...



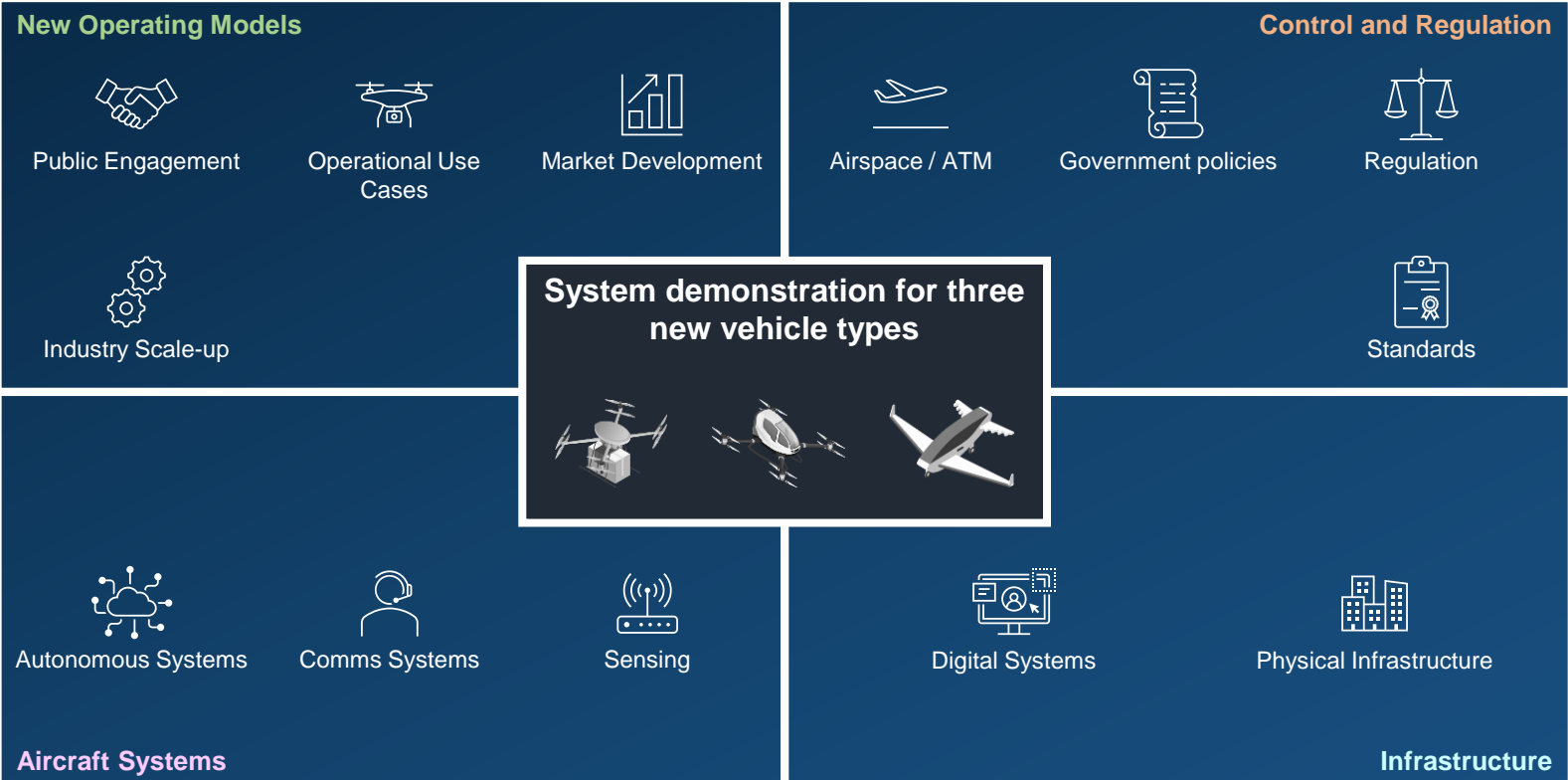
Our broad-based approach is to...



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...drive for challenging, real-world use cases...

...which require us to convene the wider industry and beyond...



Our broad-based approach is to...

...create challenging, real-world use cases...

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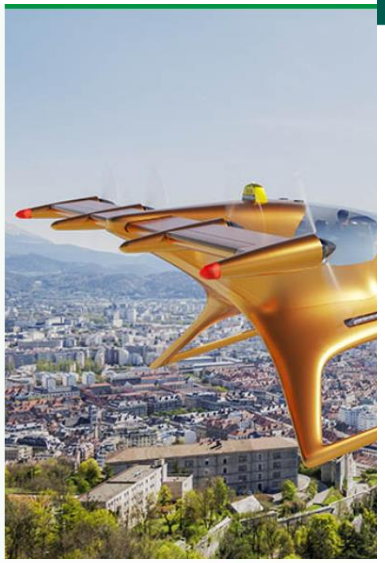
... with a people-based focus on social benefits and desirability

UKRI Innovate UK | ktn

Home - Events

Creating an Accessible Future Flight Workshop

The Future Flight Challenge is a £125m government investment delivered by UKRI to advance the next generation of aviation solutions. To help businesses consider how to make their vehicle or technology more accessible to their prospective customers, KTN and UKRI have commissioned CCD Design and Ergonomics to deliver an online workshop focusing on human-centred design.



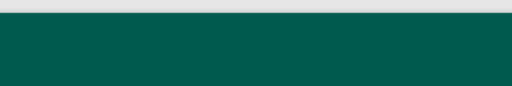
ktn Future Flight Fridays: Economic Benefits of Future Flight

ISCF Future Flight Friday

Economic Benefits of Future Flight

LIVE

Watch on YouTube



This forward strategy paper provides an initial assessment of the research landscape, to identify five broad and interconnected research themes that the Future Flight Challenge consider priorities for social and economic research attention.

- 1 Understanding the Innovation Ecosystem:** governance, organisational trust, new business models, logistics and operations management.
- 2 Public and Social Readiness:** public perceptions, social desirability, images and narratives.
- 3 Impacts on Rural and Urban Environments:** urban/rural planning, infrastructure development, and broader environmental issues (including privacy, noise and visual pollution).
- 4 Communities and Social Impacts:** accessibility, socio-economic factors, equality and social inclusion.
- 5 Trustworthiness, regulatory frameworks and implications:** safety, risk, insurance and legal issues.

This forward strategy paper outlines the starting position for wider engagement across academia,



Our phase 2 Development Projects are progressing well



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- 48 projects with £33.5m funding
- Cover entire aviation system
- SMEs and new entrants prominent
- Global partnerships

Inmarsat Joins Consortium of Tech Leaders to Develop the Future of UK Aviation

January 21, 2021 | Inmarsat

Reading time 2 min (619 words)



Nine UK organisations have announced The Airspace of the Future (AoF) Consortium, which comprises Inmarsat, Thales, Cranfield University, Cranfield Airport Operations, Altitude Angel, Ocado Group, Blue Bear, Satellite Applications Catapult, and Connected Places Catapult. The group, which will work to integrate drone services within the wider UK transport ecosystem, has been formed in response to UK Research and Innovation's (UKRI) Future Flight Challenge (FFC).

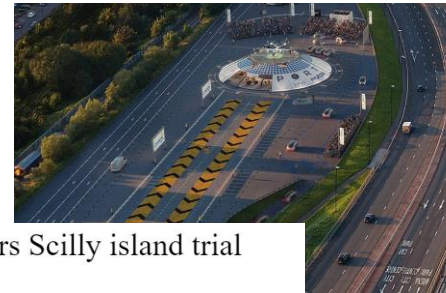
Infrastructure giants unite to develop advanced drone system for the urban environment

By Danny Longhorn January 21, 2021



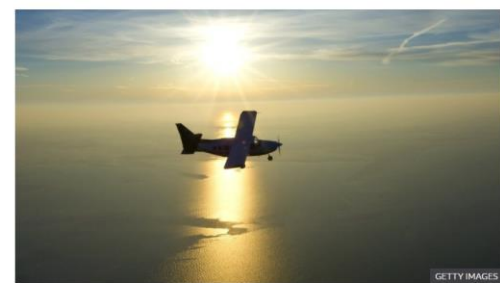
World's first pop-up airport for electric flying cars, air taxis and delivery drones to launch in Coventry in November backed by a £1.2m Government grant - and it can be installed in a matter of days

- Called Air-One, it has been unveiled as part of a joint collaboration between Urban Air Port and Hyundai
- The first site will be installed by end of the end of 2021 and located off the A444 near the Ricoh Arena stadium
- The former car park will be transformed into an airport with a 14-metre diameter landing platform and runway



Low-carbon aircraft to be trialled in Orkney

© 10 January



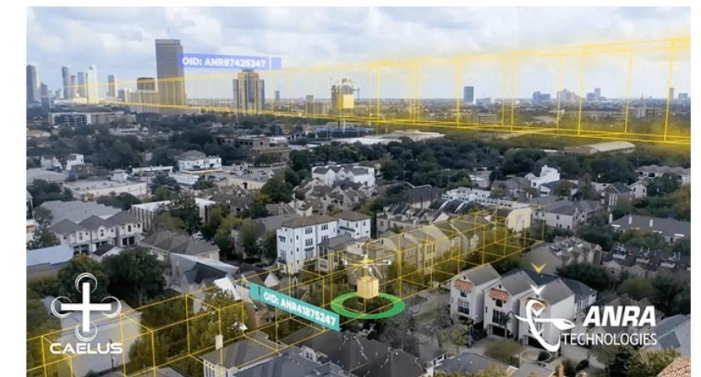
wn on the landing pad, it drop ternal section where they can

January 2021



Royal Mail and Windracers Scilly island trial

By Press 10 May 2021



News

ANRA Technologies powering development of first medical drone delivery network in UK

January 21, 2021

And already demonstrating potential impact in communities

But the activity goes way beyond project funding...



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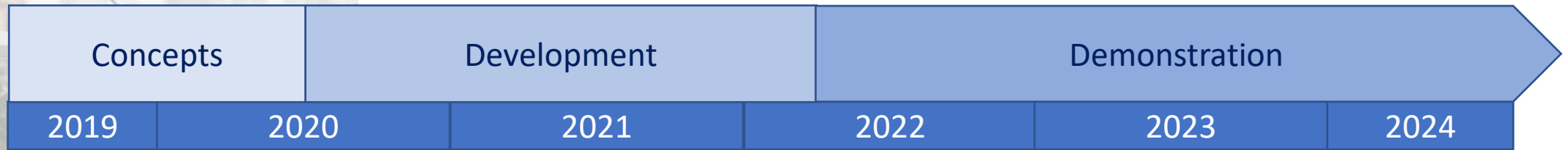
Aviation Safety Case Framework



Industry Working Groups



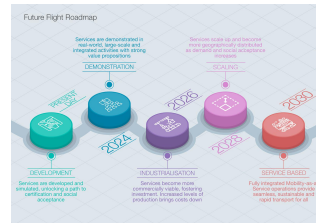
Social Science Research



CAA Partnership



Socio-Economic Studies



Roadmap



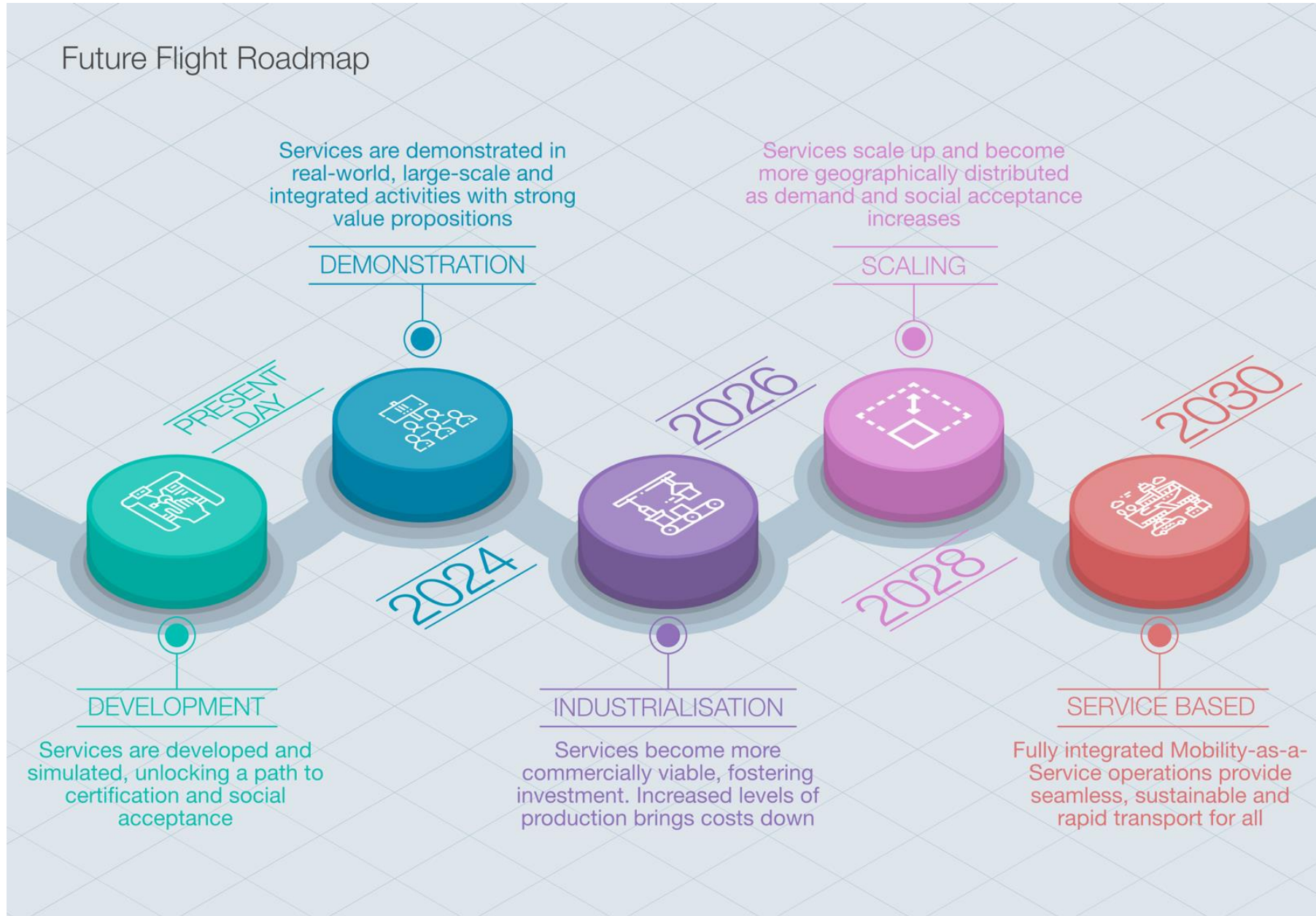
Market Forecast

... to catalyse this new eco-system

All our activities are guided by a clear roadmap



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Consumers are at the heart of this roadmap



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Consumer Vision 2030

How the future aviation environment will benefit consumers in 2030



Drones

Unpiloted, non passenger carrying vehicles varying in size from small to large



Delivery Convenience

Distribution and delivery services are rapid, convenient and within each reach for everyday goods and services



Supporting Services

Drones support emergency services and perform complex inspections / operations



Increased Acceptability

Drone operations are quiet, safe and acceptable as part of day-to-day life



Advanced Air Mobility

Electric vertical take off and landing vehicles that provide short journeys for up to 10 people



Reduced Congestion

Efficient use of airspace resources reduces ground congestion (especially in urban areas)



Increased Consumer Choice

Allowing consumers to choose between cost and environmental efficiency



Reduced Journey Time

Average journey times significantly reduced



Journey Convenience

Services are available on demand, reducing impact of travel and travel times



Regional Air Mobility

10+ person electric, hydrogen or hybrid aircraft providing short-medium range hops between fixed locations



Improved Connectivity

Rural and traditionally disconnected regions form part of a highly distributed transport system within close proximity



Seamless Journeys

Existing transport is integrate as part of a seamless end-to-end transport network including ticketing



Improved Affordability

Operations are affordable and widely available for the general public



Increased Sustainability

Operations are electric or hydrogen based, minimising the environmental impact



Improved Accessibility

Improved access to services and employment opportunities for those with reduced mobility



Benefits to the UK Economy

Predicted 1.8% increase in GDP and 628,000 jobs supported by 2030

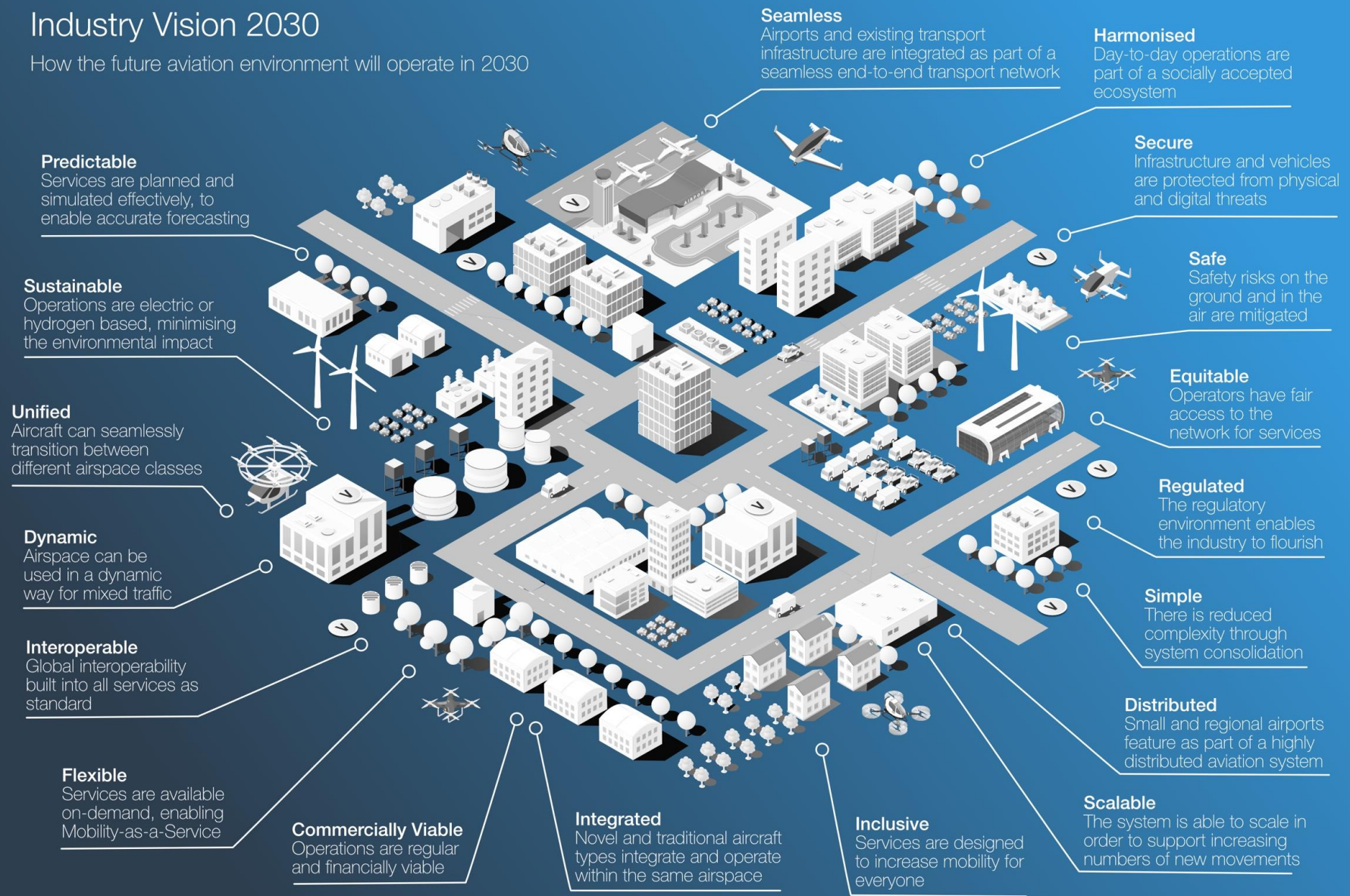
We are co-creating a total system view



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Industry Vision 2030

How the future aviation environment will operate in 2030



But its all about what we do with the system



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2030 Use Cases

Example use cases supporting the 2030 Vision

UC10 | Rapid Airport Transfer

Passengers have access to on-demand air mobility to provide transit between their homes and nearby airports, between hub airports and local airports for onward transfer or between airports and high volume cities and towns.

UC06 | Emergency Services Support

Emergency services have a deployable drone operation to support rapid first response in a range of scenarios including road traffic accidents, search and rescue, fire response and situational awareness.

UC04 | Intracity Journey

Passengers have access to autonomous Electric Vertical Take-off and Landing (eVTOL) vehicles for mobility between urban locations as an additional mode of transport.

UC01 | Inter-town Transit

Access to convenient air travel for mobility between towns and cities. Passengers can access a scheduled electric or hydrogen powered aircraft on high-density routes. The air travel element connects seamlessly with other forms of transport to create a kerb-to-kerb mobility system that users can access with a single ticket.

UC09 | Rural / Disconnected Transit

Air taxis for transit between rural and traditionally disconnected areas on a scheduled / on-demand service as part of a highly distributed aviation system.

UC07 | Drone Delivery

Retail organisations provide on demand last-mile delivery of cargo within each reach of consumers utilising a network of drones operating Beyond Visual Line of Sight.

UC02 | Cargo Delivery

Cargo is transported as part of an operational service, across the UK between distribution centres by fleets of zero emission eCTOL aircraft and autonomous drones.

UC08 | Maintenance and Inspection

Rapidly deployed and high endurance autonomous drones carry out maintenance and inspection operations of infrastructure in complex environments, reducing risk to personnel



We are now entering the final demonstration phase



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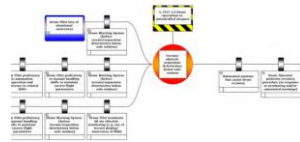
Airspace Integration Working Group



Community Integration Working Group



Safety Working Group



STEM / Education & EDI



Financing & Scale-up



2022

2023

2024



Public Benefits and Engagement



Regulatory Frameworks



Standards Creation



Government Policies



Bringing it all together to showcase a viable system that captures the public imagination

The Future Flight Challenge

a novel approach to air mobility

delivering a bold ambition

with a clear roadmap for success





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Thank you

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