UK Research and Innovation

INDUSTRIAL STRATEGY

Future Flight Challenge

World Aviation Conference, Republic of Korea

Mobility Revolution & Transformation of the Air Transport Paradigm

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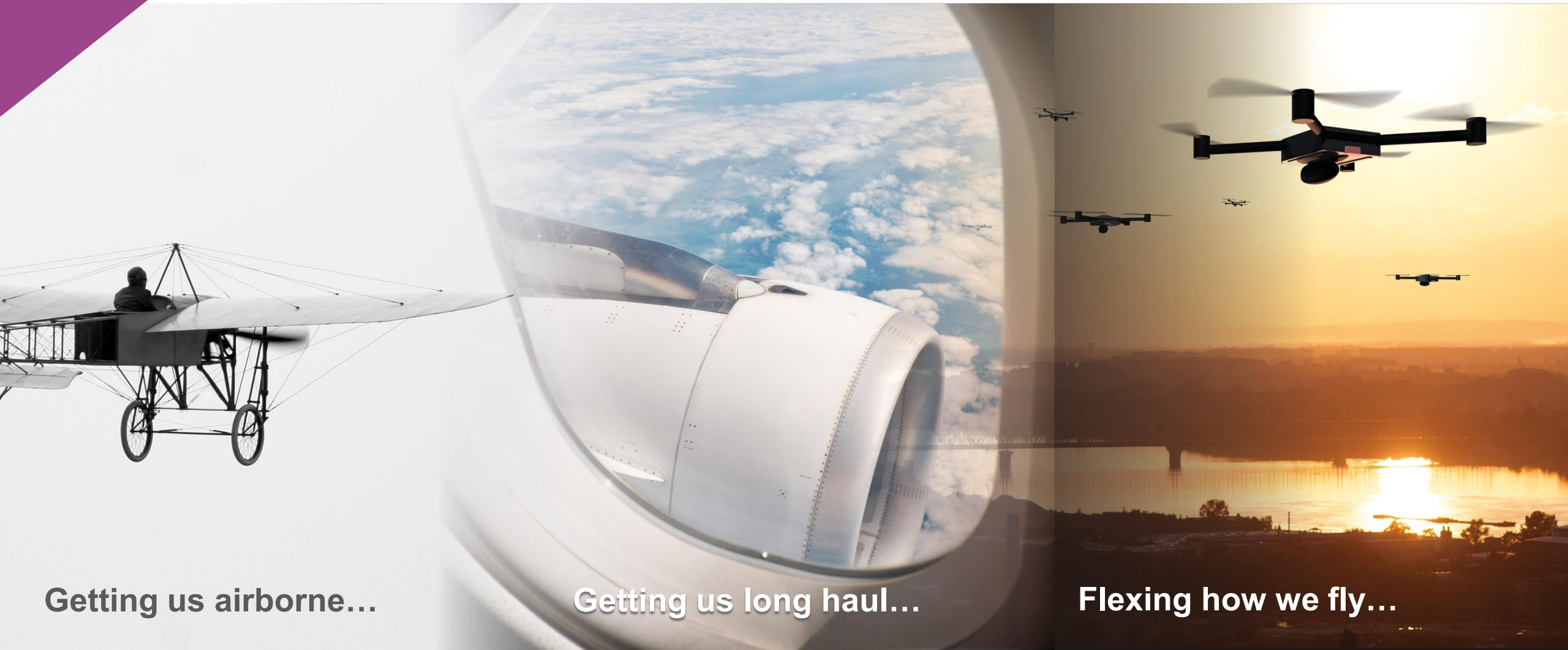
The Ambition…

Future Flight is a £300m programme that will assure the UK's position in the third revolution of aviation.

It will inspire the next generation of sustainable aviation and revolutionise how we connect people, deliver goods and provide services, using new classes of electric/hydrogen and autonomous vehicles.

The Third Revolution in Aviation…



Getting us airborne…

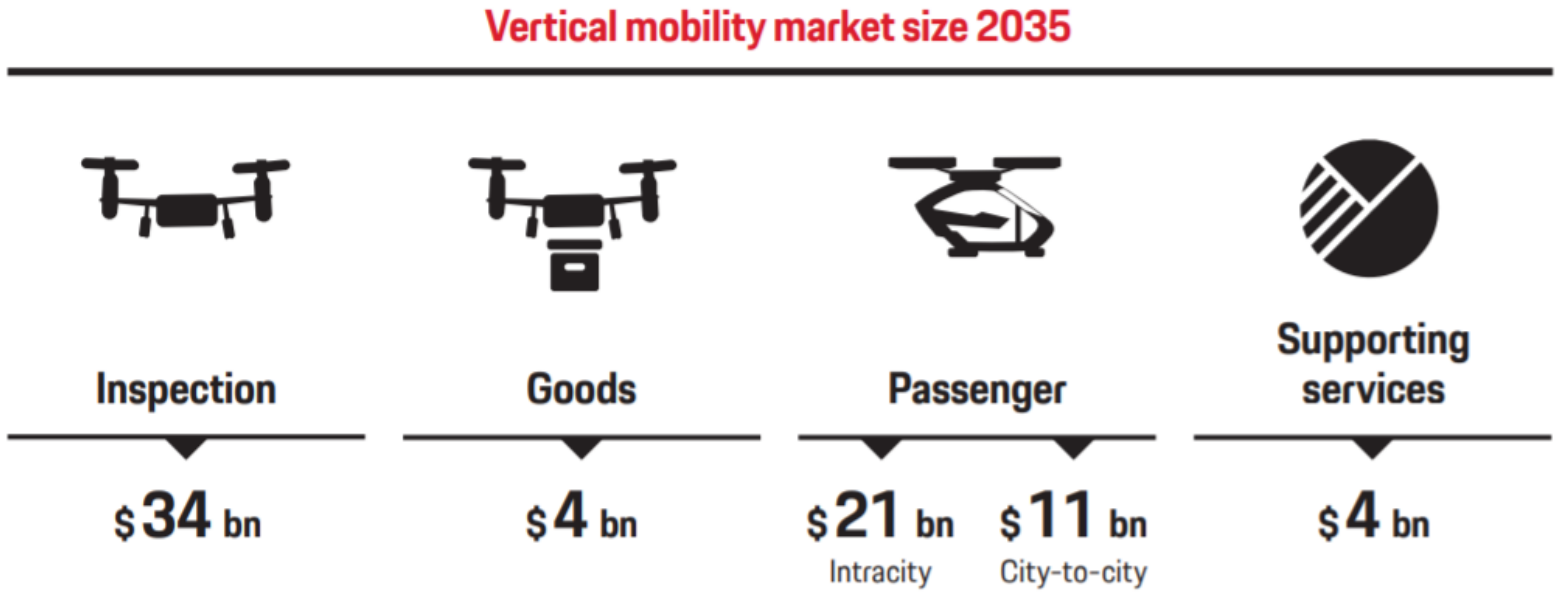
Getting us long haul…

Flexing how we fly…

The Global Market…

"We expect that the passenger UAM market will grow to USD 90 billion by 2050, from around USD 1 billion in 2030." - *Urban Air Mobility |USD 90 billion of potential: How to capture a share of the passenger drone market,* ***Roland Berger, 2020***

"The combined market for inspection, goods, and passenger drones and supporting services is projected to be roughly $74 billion in 2035."- *The Future of Vertical Mobility, Sizing the market for passenger, inspection, and goods services until 2035,* ***Porsche Consulting, 2018***



The Economic Benefits…

- Future Flight technologies can be up to 48% cheaper, deliver faster journey times and improve worker safety compared to current methods
- Rural and urban air taxis can be more costly (based on single occupancy) during initial uptake but offer time savings and is expected to become more economic as the technology becomes more pervasive

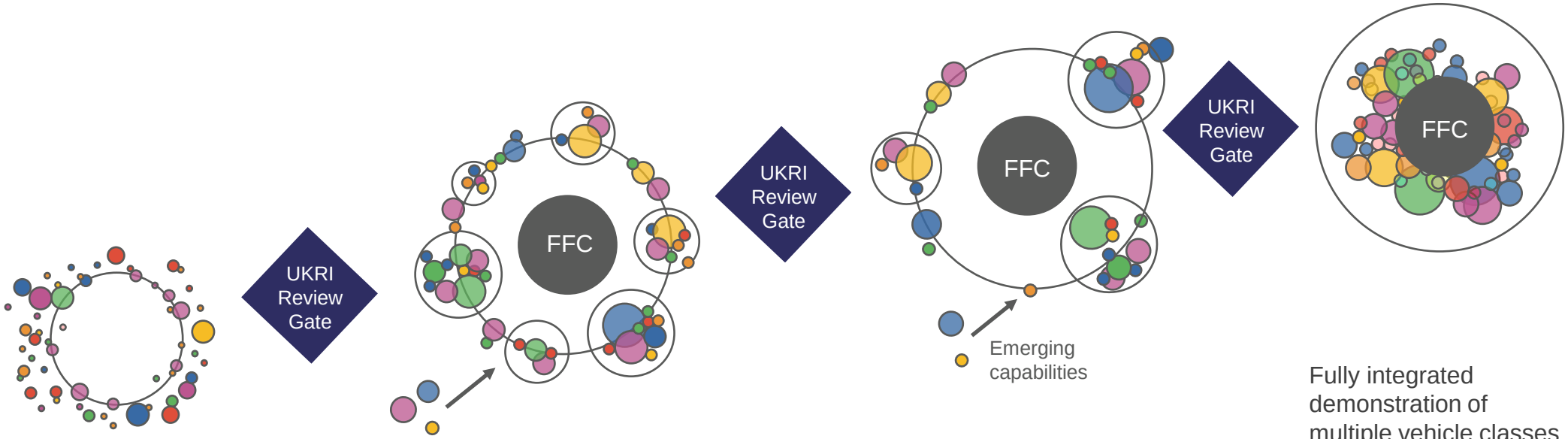
Technology	Use Case	Business as Usual	Use Case	Delta
Drone	Powerline Inspection	£193,141	£127,856	-34%
	Last mile delivery	£15	£12	-20%
	Cargo Delivery - Mail	£1,722	£1,117	-35%
Advanced Air Mobility	Sub-regional Air Taxi	£126	£66	-48%
	Rural Air Taxi	£24	£40	+67%
	Urban Air Taxi	£31	£38	+23%

Future Flight Challenge Socio-Economic Study (in association with PWC), 2021

The Programme…

The Future Flight Challenge has three phases

2019 – 2020	2020 – 2022	2022 – 2024
Concepts	Development	Demonstration



Concept development, grand challenge refinement and consortium building

Full development of multiple, competing aviation system concepts

Realisation and demonstration of aviation systems with real use cases for 3 vehicle classes

Fully integrated demonstration of multiple vehicle classes in live airspace

The Challenges…

- Lack of digital and physical infrastructure for new classes of vehicles.
- Current Air Traffic Management Systems are not scalable and will not cope with step-change in volume, density and increasing diversity of airspace users.
- There are no clear technology, regulatory or operational paths from piloted to remotely piloted through to fully autonomous air vehicle operation.
- There is a need to create pathways for electrification/autonomy from advanced air mobility vehicles to sub-regional to larger aircraft based on market driven technology.
- We need an aviation innovation/development environment that will allow real-life demonstration and evaluation of the new systems.
- We need to create positive public engagement in new types of aviation.

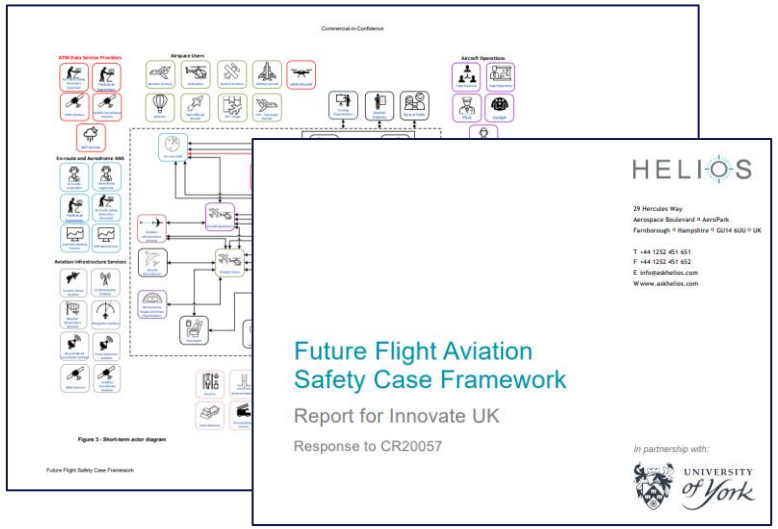
The Partners…

- Architects, engineers and world class operations of the worlds most advanced airports.
- Aircraft systems of communication, autonomy, carbon neutral power to transforming products.
- Diverse airlines moving people and goods regionally and internationally.
- New entrants to aviation bringing disruption and innovation to a mature sector.
- A range of customers of emerging markets in search and rescue, local services, inspection and more.
- Transport integration specialities to integrate road, rail and air for the first time.
- Transformational air traffic management of large and small aircraft, piloted and autonomous.
- A Government with the vision to grow, develop and lead innovation investments.

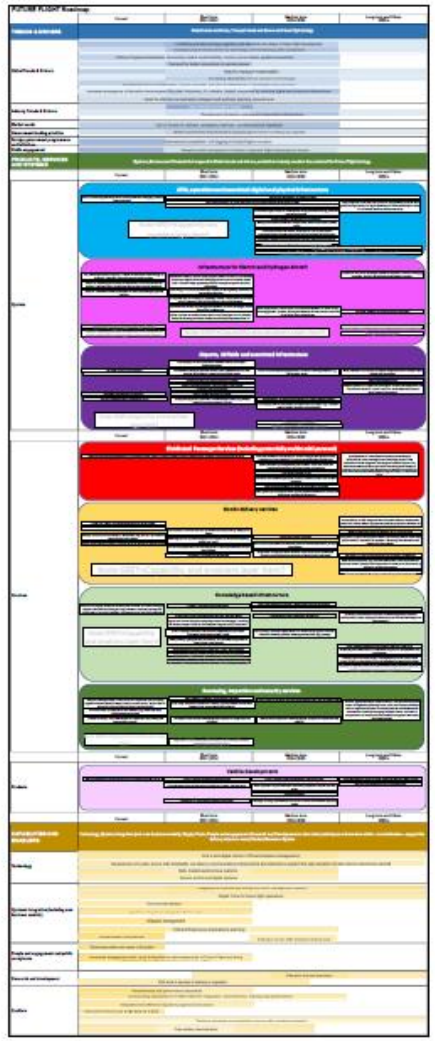
The UK Thought Leadership…

Socio-Economic Study

Aviation Safety Case Framework



Future Flight Roadmap



Civil Aviation Authorities Partnership

Civil Aviation Authority

Market Forecast

The Technology Depth…

- A diverse portfolio of 48 projects are in progress
- Tackling integration challenges of drones, advanced air mobility vehicles and regional aircraft, with electric/hydrogen and autonomous technologies (e.g., physical and digital infrastructure, ATM and UTM systems, public acceptance)
- A ‘system of systems’ approach addressing the interdependencies between vehicles, the airspace and the broader infrastructure of aviation, including operators, service providers and end users

The Partnerships…

Key cross-sectoral players from businesses, government, research organisations, universities and public sector bodies working in partnership

Example: Air-One - world's first pop-up airport for eVTOLs

- Urban-Air Port Ltd, Hyundai Air Mobility, Malloy Aeronautics Ltd, Coventry City Council, Coventry University, Six Miles Across London Ltd
- £1.2 million UK Government funding

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