

Aerospace

Exploring the opportunities
for businesses in the
South East Midlands

25 May 2021 - 10 am-1 pm



Guest Speakers:

- Peter Horrocks CBE | Chair | SEMLEP
- Hitendra Hirani | EU Programme Manager | University of Nottingham
- Jon Rawcliffe | Business Development Manager | SEMLEP
- Edward Anastassacos | CEO | HEROTECH8
- David Tetlow | Project Manager | P.A.K Engineering Ltd
- Vicky Hlomuka | Growth Hub Manager | SEMLEP Growth Hub
- Dr Pamela Farries | Technology Manager | Midlands Aerospace Alliance
- Lisa Brewer | Business Development Officer | University of Nottingham
- Liz Boadi | Ecosystem Manager | Cranfield Eagle Lab
- Andrew Chadwick | Technology Initiative Lead Aviation | Connected Places Catapult
- Iain Gray CBE | Director of Aerospace | School of Aerospace, Transport and Manufacturing, Cranfield University, Chair of OCAVIA – the Oxford to Cambridge Arc Virtual Institute for Aviation, Arc Universities Group
- Dr Katy Milne | Head of Industrial Strategy | FlyZero, Aerospace Technology Institute
- David Vazquez | Head of Sustainability | London Luton Airport
- Andrew Mair | CEO | Midlands Aerospace Alliance



Aerospace: Exploring the opportunities for businesses in the South East Midlands

Hitendra Hirani

EU Programme Manager – Institute for Aerospace Technology

University of Nottingham

Institute for Aerospace Technology at the University of Nottingham



Established in 2009

Supports students, businesses,
policy-makers and media

Represents over 50 academic staff
and more than 300 researchers

Integrates, develops and promotes
the University's substantial
aerospace research portfolio

Key ATI Funded Projects

3 Shaft Test Facility



Future Automated Aircraft Assembly Demonstrator Phase 2 (FA3D2)



Some Interesting Results

ACHIEVE Project:

- Motor Generator Unit for Safran Helicopter Engines
- PI: Dr Tao Yang



4MW RR Electrical generator :

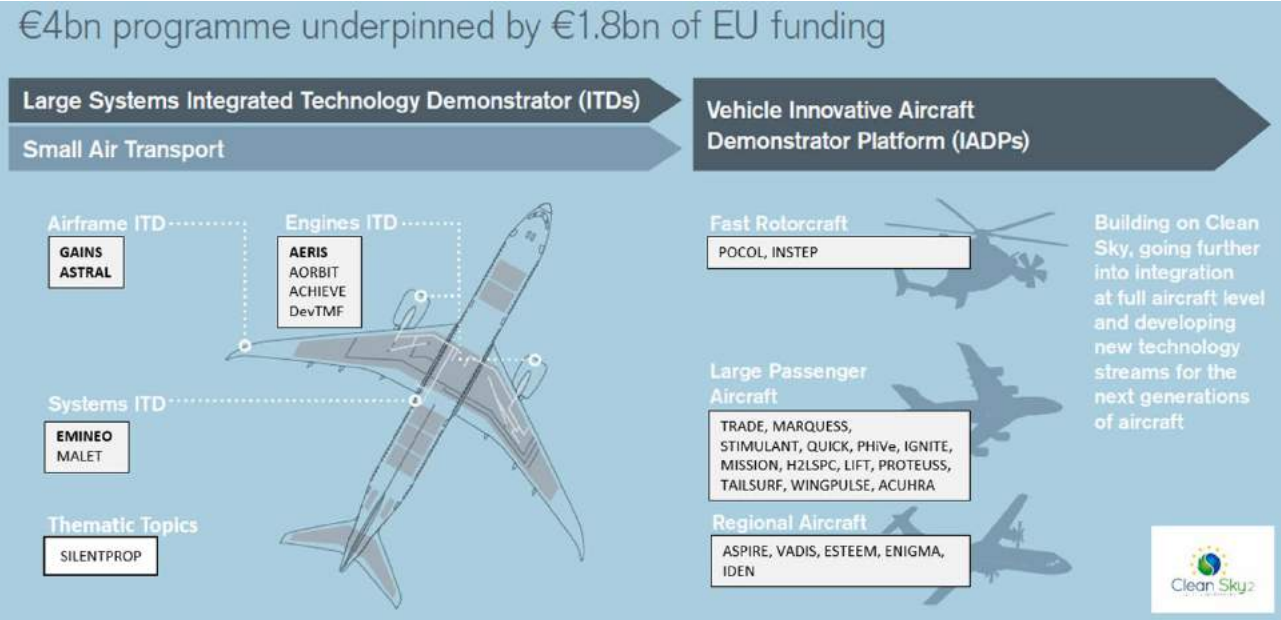
- Delivering novel wing configuration for Airbus Helicopters RACER demonstrator
- PI: Professor Chris Gerada



Clean Sky 2 Participation

Top 10 of UK beneficiaries in Call for Core Partners and Call for Partners³

1	€ 28,236,082	THE UNIVERSITY OF NOTTINGHAM	UNI
2	€ 12,884,049	AIRCRAFT RESEARCH ASSOCIATION LIMITED	RES
3	€ 6,522,426	TWI LIMITED	RES
4	€ 5,479,536	CRANFIELD UNIVERSITY	UNI
5	€ 4,646,108	THE UNIVERSITY OF SHEFFIELD	UNI
6	€ 4,054,415	GE AVIATION SYSTEMS LTD	IND
7	€ 2,556,385	THE UNIVERSITY OF MANCHESTER	UNI
8	€ 2,499,398	IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY AND MEDICINE	UNI
9	€ 1,764,905	BAE Systems (Operations) Ltd	IND
10	€ 1,736,088	Triumph Actuation Systems - UK, Ltd.	IND



Other Relevant Programmes

UK Electric Aircraft Propulsion Facility



Productivity Through Innovation

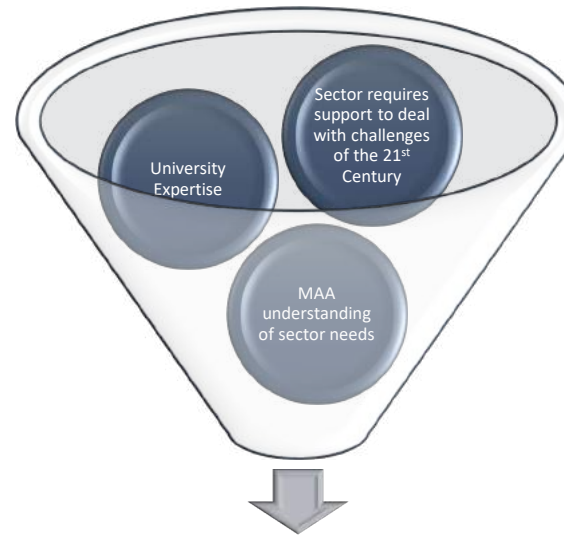
- Available in D2N2 to support manufacturing businesses with access to technical services and facilities within the Advanced Manufacturing Building at the University



Driving the Electric Revolution ISCF National Centre



Why Aerospace Unlocking Potential



Delivery of Business Support

AEROSPACE

UNLOCKING POTENTIAL



Funded innovation support for the aerospace supply chain:

- **Workshops and dissemination events**
become part of an innovation eco-system
- **Consultancy services**
identify and unlock the innovation potential of your business
- **Technical support projects**
receive technical support from the University's Precision Manufacturing Centre
- **Grant funding for R&D projects**
develop new technologies, processes and products



1. Stoke-on-Trent & Staffordshire
2. Black Country
3. Greater Birmingham & Solihull
4. Coventry & Warwickshire
5. Derby, Derbyshire, Nottingham & Nottinghamshire
6. Leicester & Leicestershire
7. South East Midlands
8. Greater Lincolnshire

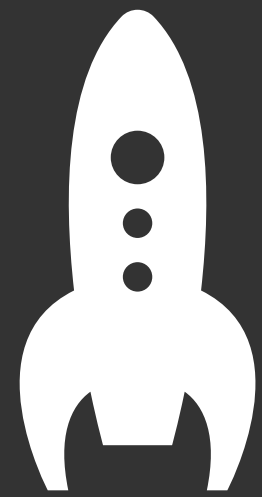


HEROTECH8

OPEN AIR

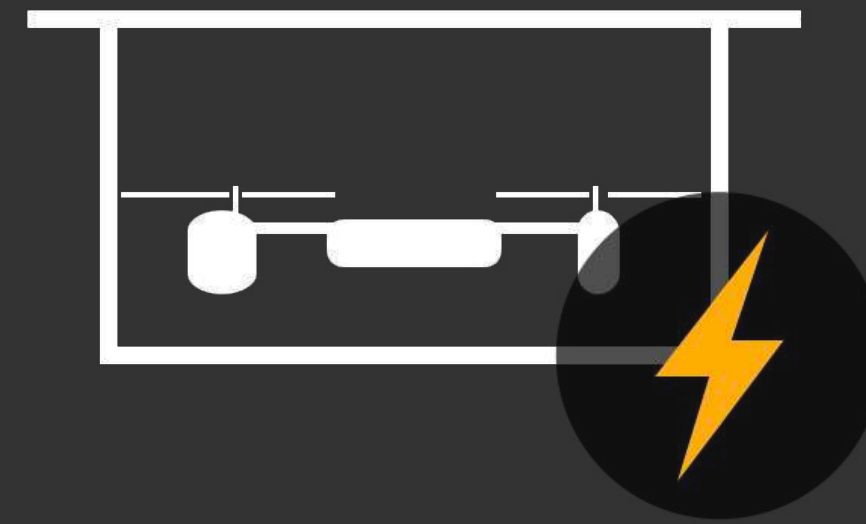


HEROTECH8



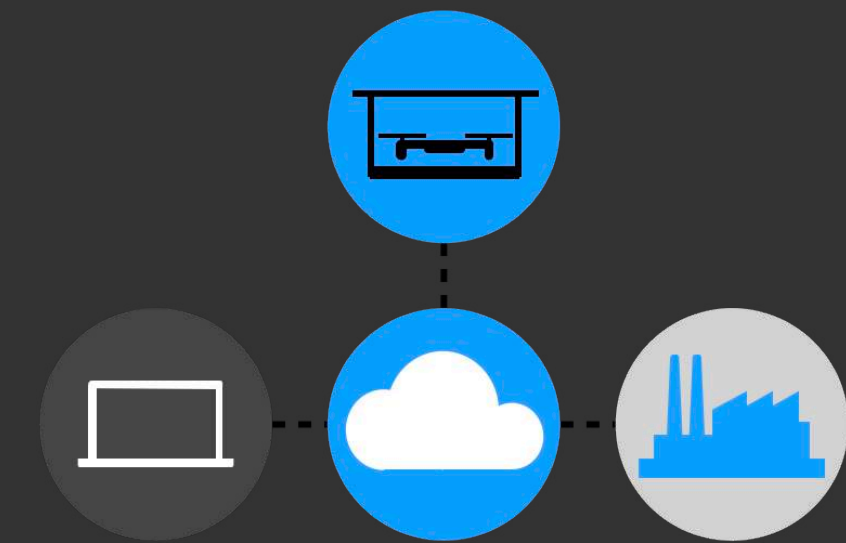
Robotics Startup

Startup based between
Cranfield (UK) and
Berkeley (US) Universities



Automated Drone Station, ADS

Automatically deploys,
recovers and recharges
drones without on-site pilots



Connected and Networked

Networked ADS addressing
large-scale infrastructure
challenges

Applications



Security and Surveillance

1. Perimeter patrolling
2. Automated alarm response
3. Site monitoring



Facility/Asset Management

1. Asset inspection
2. Rooftops, wind turbines, substations
3. Site monitoring



Technology

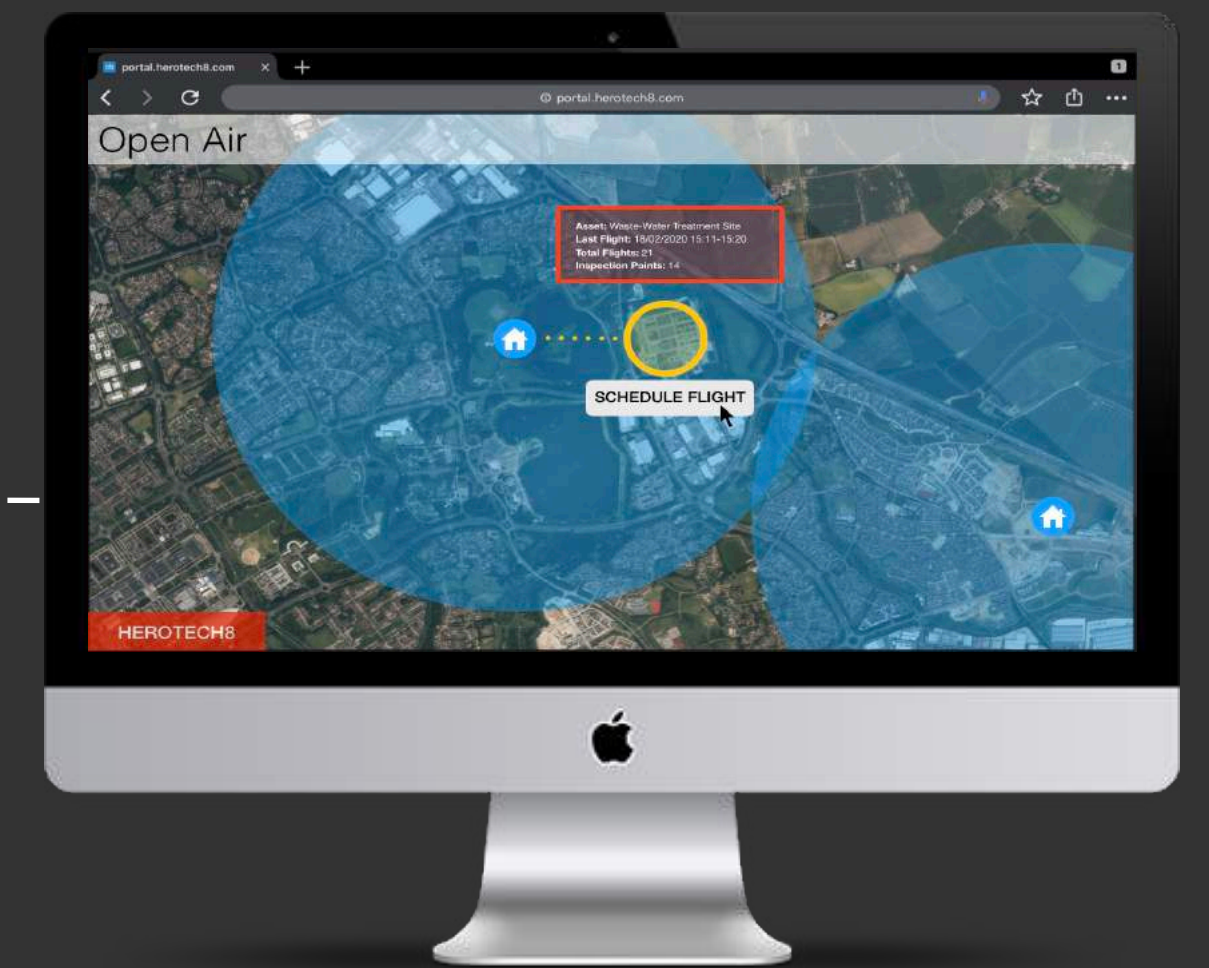
Data Storage

Videos, images, flight-logs, reports made available and stored securely online.



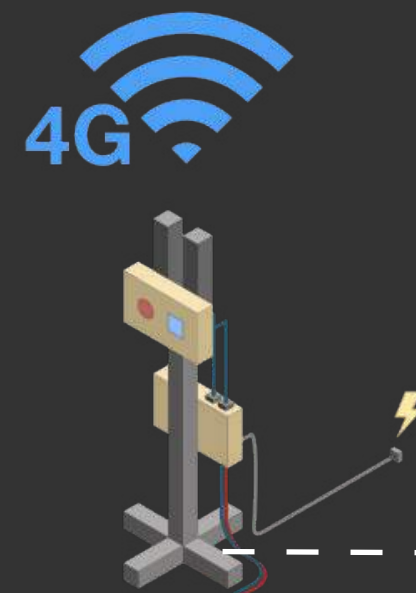
Web-App

Plan flights, remotely monitor flights, navigate data storage.



Drone

Off-the-shelf drones are used to massively reduce production costs.



Station

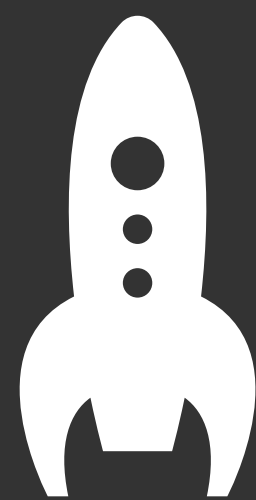
Housing, automated recovery and recharging systems. Embedded with patented hyperlocal proximity sensors to guide the aircraft into the box.

Open Air Cloud

Communications

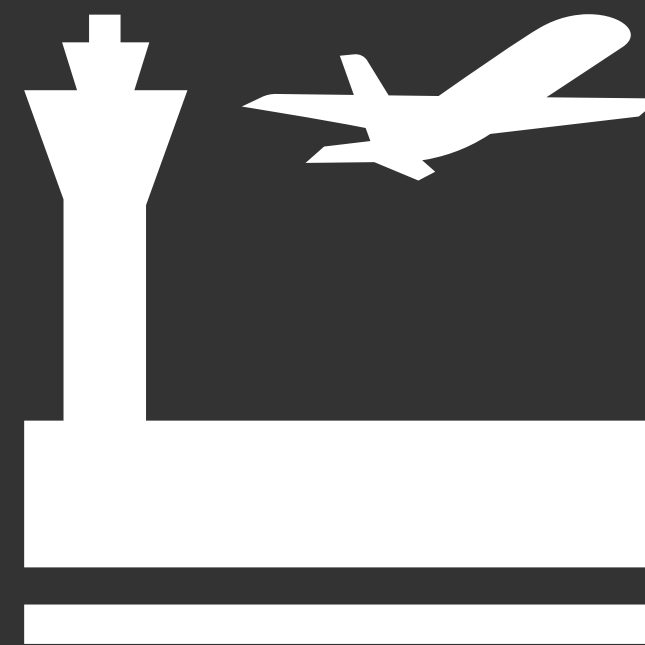
Communications module connecting Operator to Station over Wifi/4G/Ethernet.

Cranfield University



Investor

-
1. Initial shareholder
 2. Funded initial R&D
 3. Supported w/ IP



Infrastructure

-
1. Ideal Test Infrastructure
 2. Aviation Environment
 3. Early Adopter



Academia

-
1. R&D Appetite
 2. Innovation Network
 3. Talent Pool

Collaborative R&D



[dstl]



AiResponse
when response matters

Intelsius are proud to lead AiResponse; a consortium that aims to showcase the advantages of using drone technology to support current U.K. healthcare processes. A user-led project with the express purpose of delivering a first-of-its-kind solution in U.K. healthcare settings, AiResponse will allow for faster, safer, and more economically viable transport solutions for medical supplies and patient samples.

Keep up to date with the project's progress by bookmarking this page and following Intelsius [LinkedIn](#) and [Twitter](#) social channels.

How drones could help and why they need to adapt

Using autonomous drones effectively in healthcare facilities has the potential to:

- Decrease delivery times of critical medical supplies
- Decrease reliance on single deliveries
- Improve socially distancing
- Improve staff efficiency
- Reduce road congestion
- Reduce costs

Given the potential benefits, you may ask why drones aren't currently used at healthcare facilities across the U.K.?

One of the biggest obstacles preventing this change is the pending approval of drones for use in urban areas. Equally important is the lack of clear process and standard operating procedures (SOPs) around introducing drones to a healthcare setting. Without a clear process, the value of the benefits listed above could be eliminated due to increased short-term disruption.

At a time when there is great pressure on global healthcare systems it is vital new

Le drone autonome prend son envol dans l'Oise

Une société britannique teste actuellement sur le campus Inovia de Noyon un drone capable de voler sans intervention humaine. Une première dans le département.



Noyon, ce mardi. C'est la première fois que des expérimentations autour du drone autonome sont menées sur le campus Inovia. LP/Mexis Bisson

commercialdroneprofessional.com

NEWS EVENTS TECHNOLOGY INNOVATION IN-DEPTH OPINION

APPLICATION / HEADLINE NEWS / UK by ALEX DOUGLAS on JUNE 4, 2020

FACEBOOK TWITTER LINKEDIN



H8 has confirmed that its drone-in-a-box technology now incorporates Flock's en insurance as standard.

ays the move makes it easy for any organisation to deploy safe, secure and fully autonomous UAVs.

H8's mission is to overcome the 'one pilot per drone' mindset which it believes is limiting the potential of UAS technology and hindering widespread adoption.

Story continues below

THE COURIER.CO.UK

Angus first for UK shore-to-ship medi-drone delivery trials

Drone-in-a-box

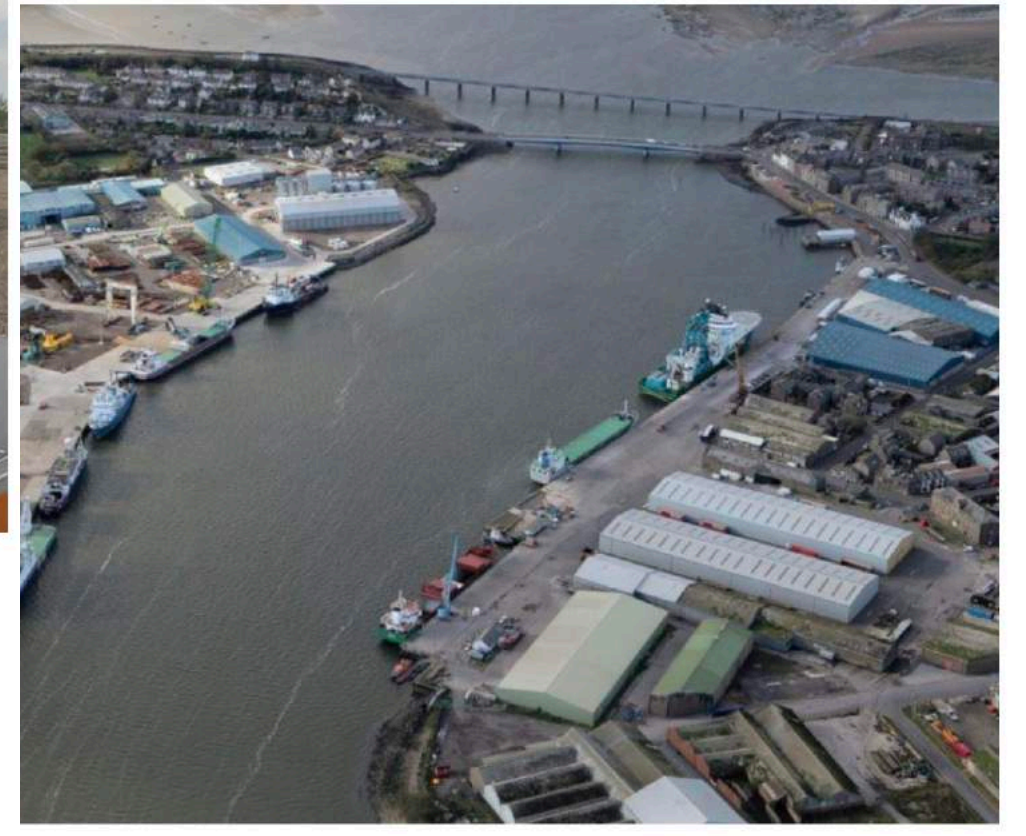
Remarkable advances in technology could see the Montrose drones flown by pilots hundreds of miles away.

e-in-a-box' solution comprises an automated recharging station on relay.

to be operated remotely and on-demand by a pilot situated at Cranfield University – 450 miles from Angus.

atically takes off and lands and follows pre-programmed waypoints

to monitor the drone during flight to ensure the safety of the public e users.



Story continues below

Contact

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edward@herotech8.com

HEROTECH8
www.herotech8.com
Unit 1, Medway Court, Cranfield, MK43 0FQ





Dr David Tetlow

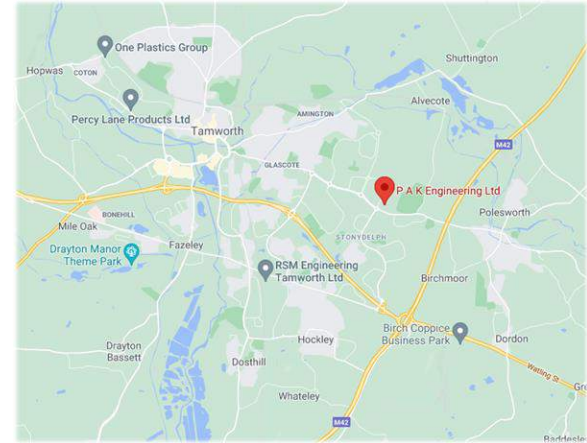


R&D Project Manager
SEMLEP Growth Hub & Aerospace Up
Engagement Activities

Who are we?



- Trad-Manufacture & Prototyping SME
- Energy Systems & HVAC Design
- R&D Project Development
- R&D Project Management



Finned Tube

Wire Wound Tube

Tube Material

- Copper
- Steel
- Brass
- Stainless Steel
- Cu/Ni
- Titanium

Wire Material

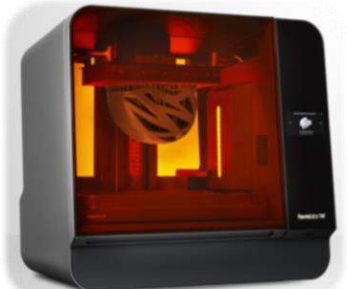
- Copper
- Steel
- Brass
- Stainless Steel
- Cu/Ni

Heat Exchangers

- Small & Adaptable
- We Say Yes
- We're Quick

USPs

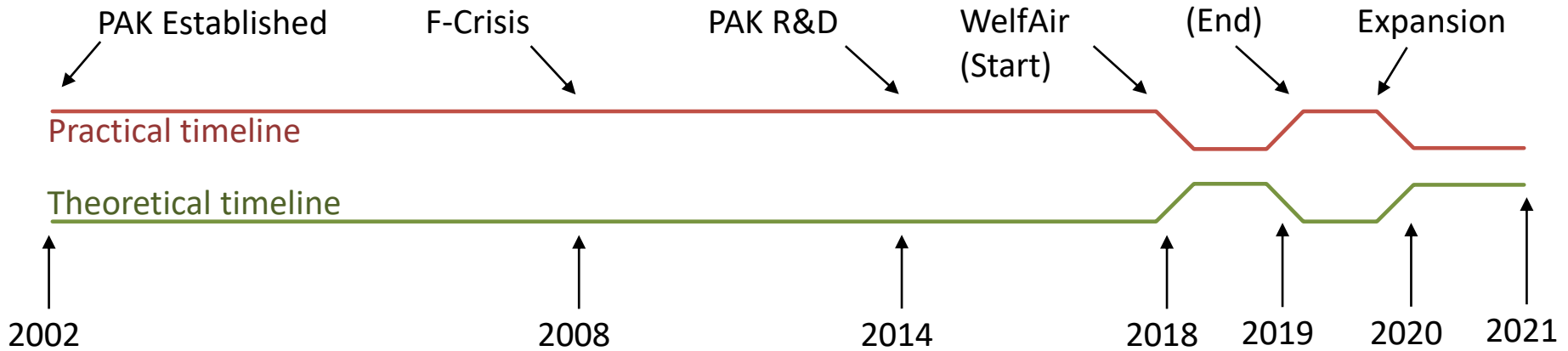
**Additive
Manufacturer**



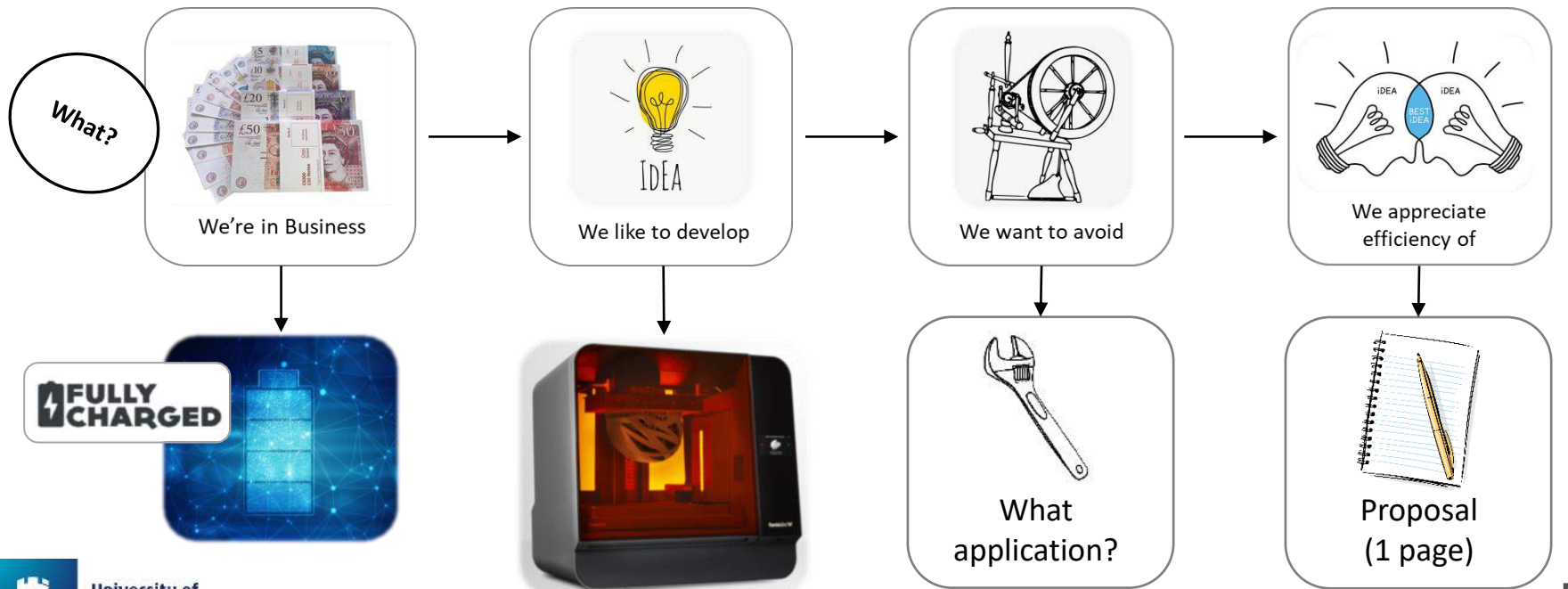
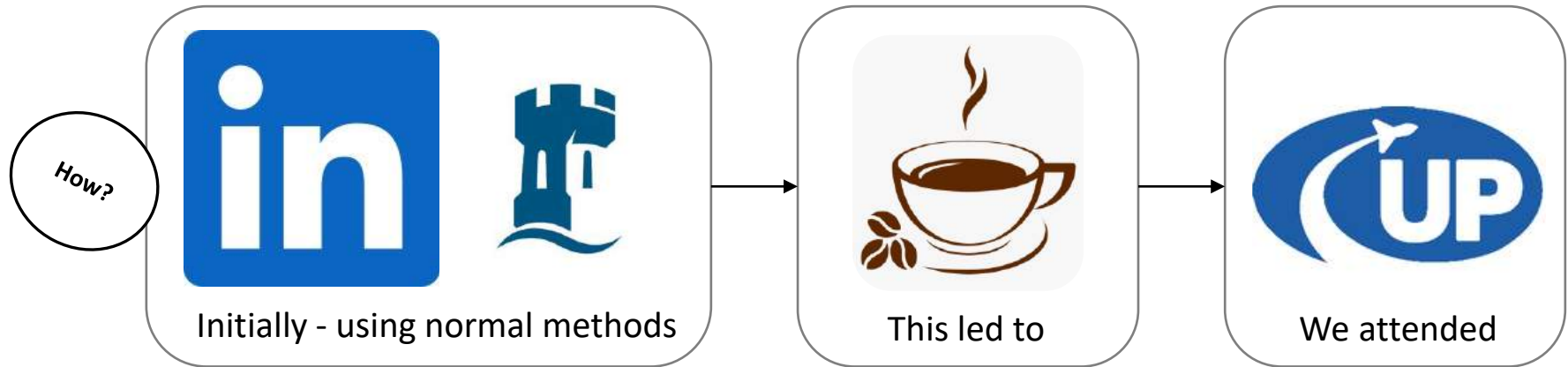
Global Trading

45 Countries

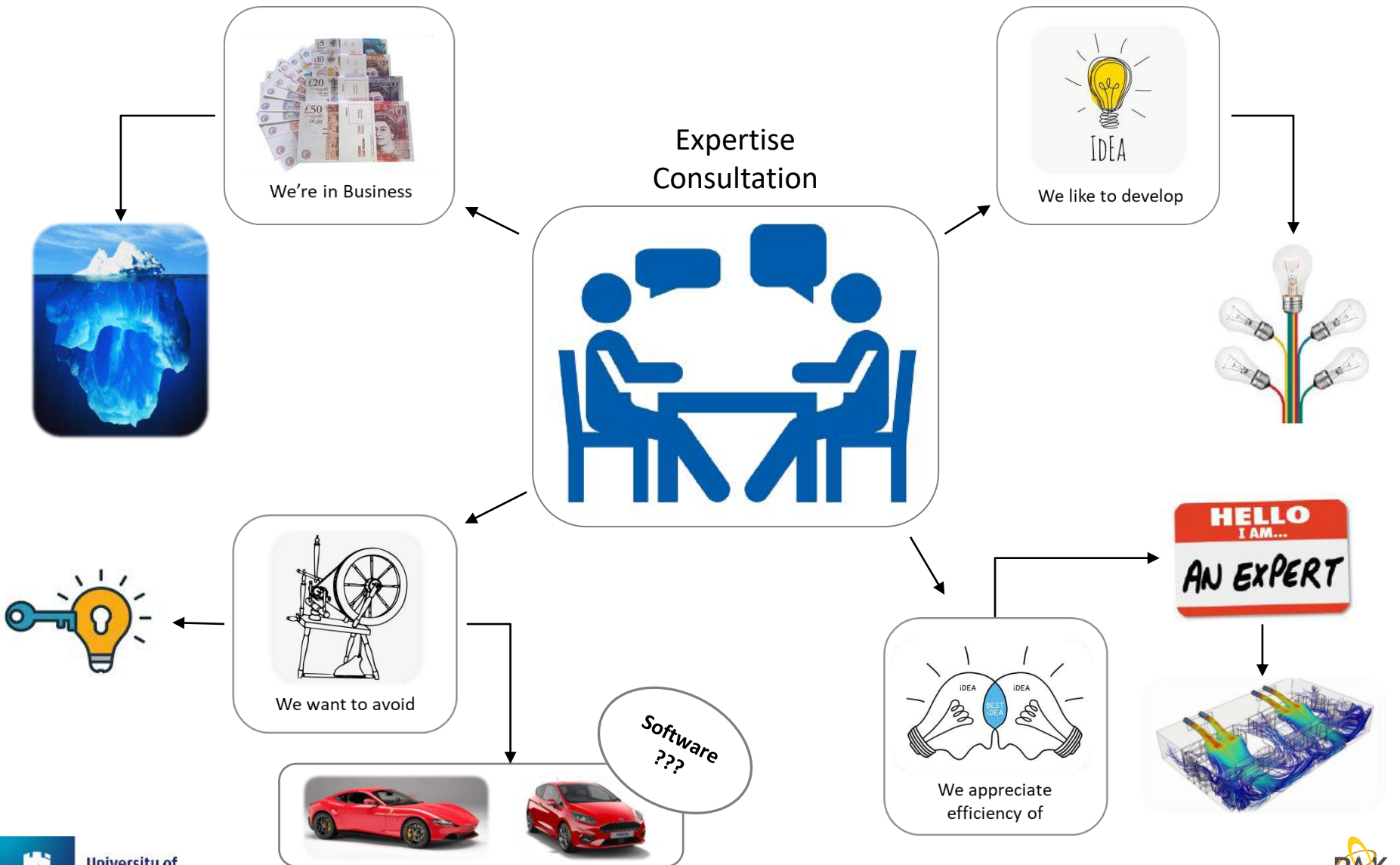
What we were looking for with Aerospace Up?



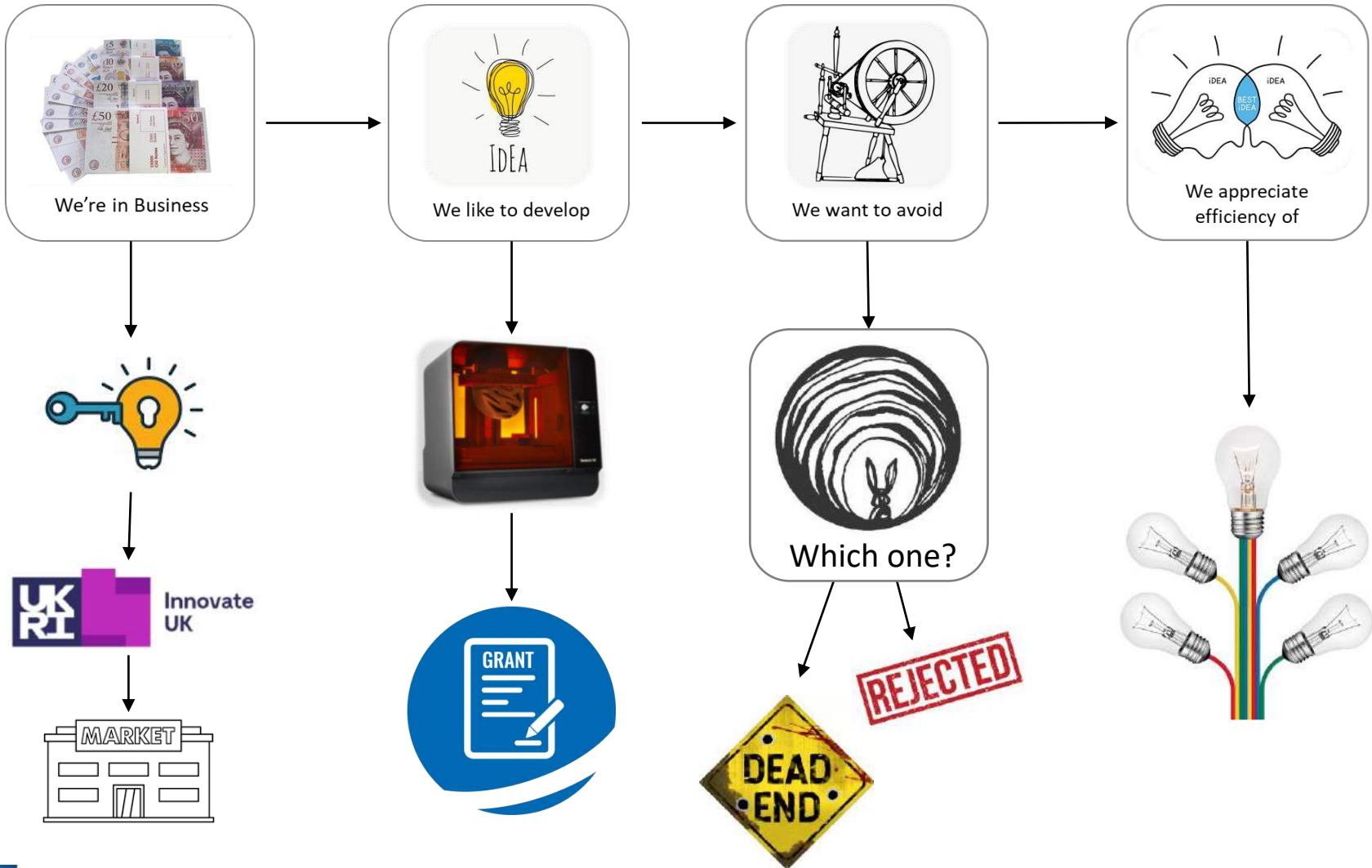
How & why we approached Aerospace Up?



What Aerospace Up are providing us now?



Where we are aiming for with our Aerospace Up collaboration?





Thank you

Open for Questions?

The future of aerospace

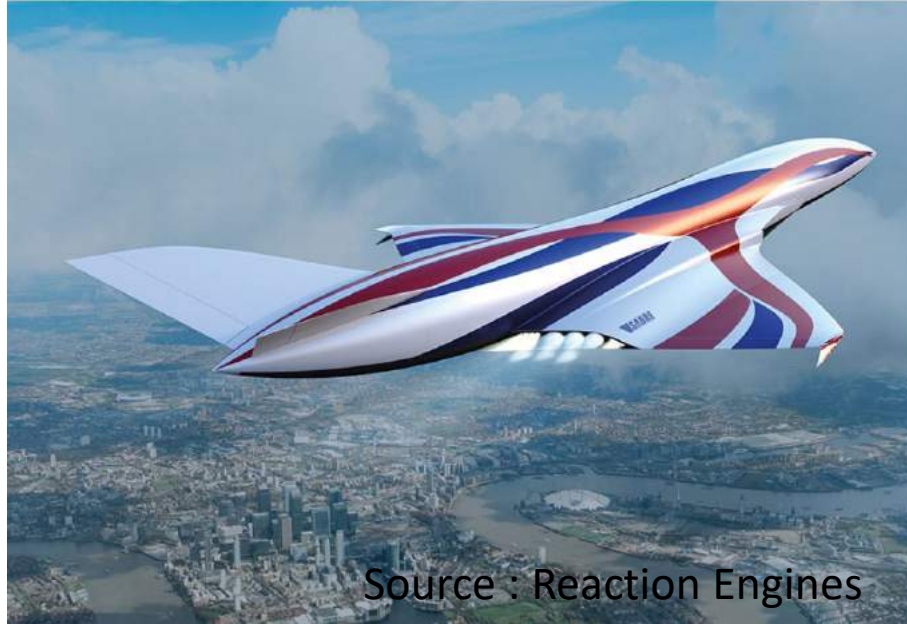
– how to capitalise on the expertise in the South East Midlands



SEMLEP 25th May 2021
Professor Iain Gray, Cranfield University



And yet ... unprecedented levels of Innovation



Source : Reaction Engines



Source : Airbus



Source : SAMAD Aerospace



Source : Vertical Aerospace

The pace of announcements is increasing .. 2021

Europe's aviation sector launches ambitious plan to reach net zero CO2 emissions by 2050

11/02/2021

FEB 1, 2021

Rolls-Royce conducts first tests of 100% SAF for use in business jets

British Airways, LanzaJet Team up in Low-Carbon Fuel Production

By John Huston - February 10, 2021

bp and Qantas collaborate to advance net zero emissions

Release date: February 2021

AIR TRANSPORT

Boeing Commits To Certifying Jets for Pure SAF Power by 2030

by Gregory Polek - January 22, 2021, 12:38 PM

French Aviation Players Put Out Call For Interest In Hydrogen

Thierry Dubois February 11, 2021

KLM, Shell and the government of the Netherlands conduct the first flight with sustainable fuel



Wed February 10, 2021

SUSTAINABILITY TRANSPORTATION AIRLINES



Cranfield's 2050 View of Civil Aviation

'Seamless, Safe and Sustainable Air Travel for all'

Airspace



Aircraft



Airports



Airlines



Passenger Experience (*inc. impact on the general public*)

- Overflying aircraft (manned & unmanned) (passenger/freight) and drones no longer an issue to people on the ground
- Aircraft accepted as having close to zero impact on the environment (Zero carbon operations)
- Joy of flying returns
- *No more delays from technical failures*
- *Always connected to rest of world*
- *Personalized Flight Experience*
- Invisible check-in, Security & Border Control – Touch-Free
- Separation of baggage
- No more queues or congestion
- A leisure destination
- Less disruption when the unexpected happens
- Flying becomes seamless and enjoyable part of their journey
- Delivering a relaxing and pleasurable experience with improvement in wellbeing
- Delays - a rare event but still enjoyable!
- My personal information is safe

Feel safe throughout journey (inc. Zero accidents? and Bio safe)

I am not damaging the environment

Delays a rare event

Crantfield University - unique aviation facilities

- .. Runway, Airport, Aircraft, Pilots, ANSP, Fuel



Cranfield's global research airport

A national asset for the UK

Multi-User Environment for Autonomous Vehicle Innovation (MUEAVI)

This instrumented transport corridor runs through the middle of the campus and is used for the development of intelligent and autonomous vehicles. Sensors include lidar (laser scanners that can measure distance), radar that can detect pedestrians and cyclists at up to 200 metres, and thermal imaging cameras.
Opened 2017

Digital air traffic control centre

Housing the UK's first operational remote air traffic control tower, the centre provides air traffic services for the airport.

Operational December 2018

Boeing 737

Donated by British Airways, the aircraft is used for research and teaching and will be an important part of DARTeC.

Holographic radar

State-of-the-art Aveillant drone detection radar for research as part of DARTeC

Research ready 2021

Digital Aviation Research and Technology Centre (DARTeC)

A unique centre addressing the global challenges of digital systems integration across aviation.

Operational Q4 2020

Gas turbine and propulsion laboratories

Living laboratory

Sensors around the airport monitor air quality, soil moisture, temperature and noise levels, including sound from wildlife. Other sensors monitor water quality and levels, and runway and ground movements.

Aviation Innovation and Technology Entrepreneurship cluster (AVIATE+)

Operational Q1 2021

Cranfield Eagle Lab

A partnership between Barclays and Cranfield University. Opened 2019

HyPER Hydrogen Production

Operational Q2 2020

'Smart' car park connected to MUEAVI

Aerospace Integration Research Centre (AIRC)

Major research facility with Airbus and Rolls-Royce dedicated to future aerospace integration challenges.

Opened 2017

National Beyond visual line of sight Experimentation Corridor (NBEC)

Designed to enable drones and unmanned aircraft to fly in the same airspace as manned aircraft, NBEC will open in phases as surveillance systems are approved. The first NBEC test flights were undertaken in February 2019 in collaboration with the CAA innovation team and Blue Bear Systems.

Operational late 2020

SAAB 340B Flying Test Bed

Operational Q1 2021

National Flying Laboratory Centre (NFLC)

The NFLC's 'flying laboratory' provides a viable alternative to flight test and research work using simulators, wind tunnels, or more expensive turbine aircraft, often testing new parts and equipment for industry partners. The NFLC also has other light aircraft used for research.

Air Park Future

FAAM Airborne Laboratory

Dedicated to the advancement of atmospheric science, the specially-modified BAe-146 research aircraft is owned and run by the Natural Environment Research Council (NERC). This is used by many UK and overseas universities and by the Met Office.

Cranfield Aerospace Solutions Ltd

Wholly-owned subsidiary company specialising in aircraft prototyping, modifications and approvals.

Solar power farm

Clean, renewable energy for the airport flows from a solar power farm located on the other side of the airfield.

Data from MUEAVI is relayed into the **Intelligent Mobility Engineering Centre (IMEC)** control room. Within IMEC there are vehicle workshops, vehicle electrification and autonomous vehicle research capabilities.



AVIATE +



Overview

- Cranfield University has been designated as a University Enterprise Zone and has been awarded £1.2 million from Research England. The funding will help to create a UK Aviation, Innovation and Technology Entrepreneurship cluster.
- The clustering of world class aerospace SMEs at Cranfield, alongside major players in the aerospace market, and the world renowned aerospace research capabilities of Cranfield University along with an [operational airport](#), provide a unique opportunity to re-build the UK's whole aircraft design and manufacturing capability.
- AVIATE+ funding will enable innovative companies to grow and leverage the success of Cranfield's world recognised initiatives such as the [Integrated Vehicle Health Management Centre](#), the [Digital Aviation Research and Technology Centre](#), the [Centre for Air Transport Management](#) and the [Safety and Accident Investigation Centre](#).

The UK's Leading Aerospace Universities



“Advancing UK Aerospace Research through University Collaboration”

1. Creating a UK-wide infrastructure of integrated and world-class university strategic facilities.
2. Creating a future aerospace technology skills base that aligns with priority needs.
3. Actively promote and engage with the global aerospace industry.
4. Providing a single point of contact for equivalent national bodies aerospace bodies operating in close proximity to the ATI, EPSRC and leading industry consortia.



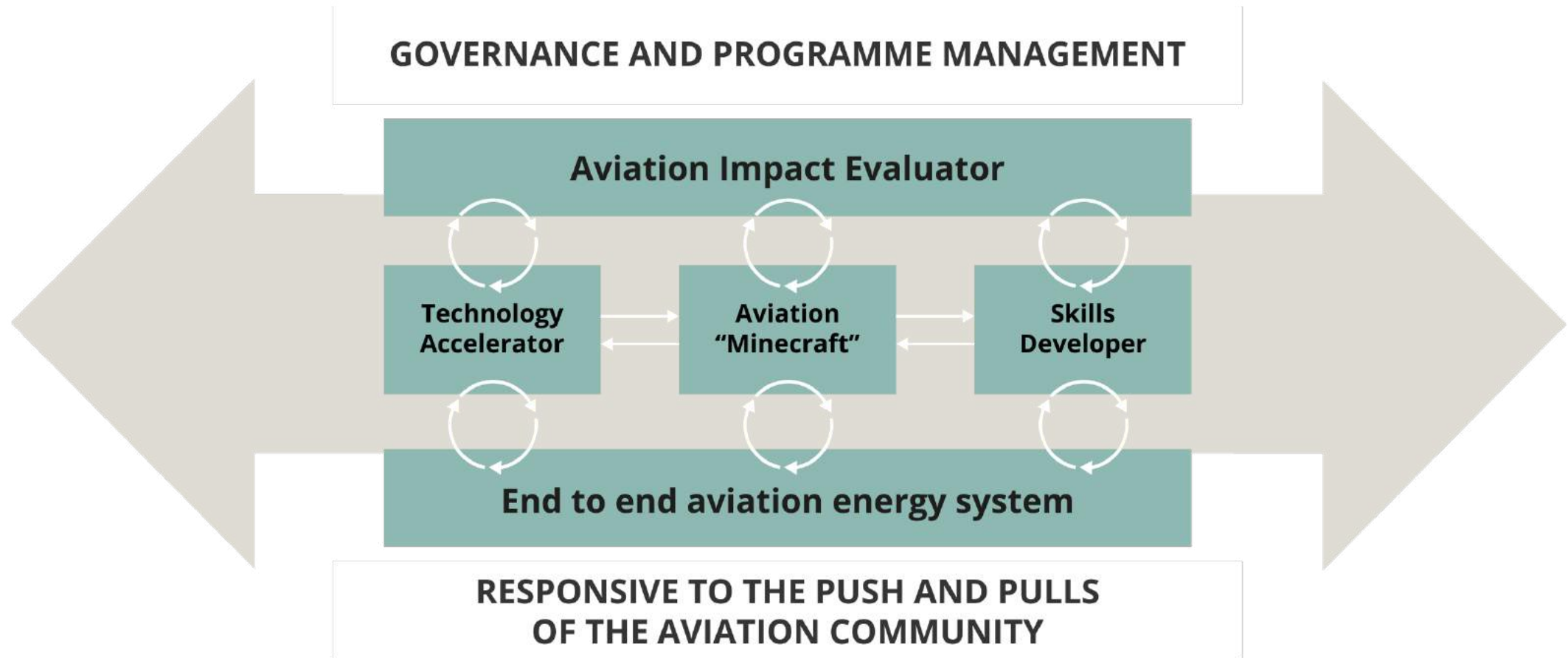
SUSTAINABLE AVIATION: AN INTEGRATION CHALLENGE



**OXFORD —
CAMBRIDGE
ARC**

UNIVERSITIES GROUP

OCAVIA:



What does the future look like?
– now is the time to think and act differently



Thank You for listening

Source : Airbus



FlyZero

Be Part of It

May 2021

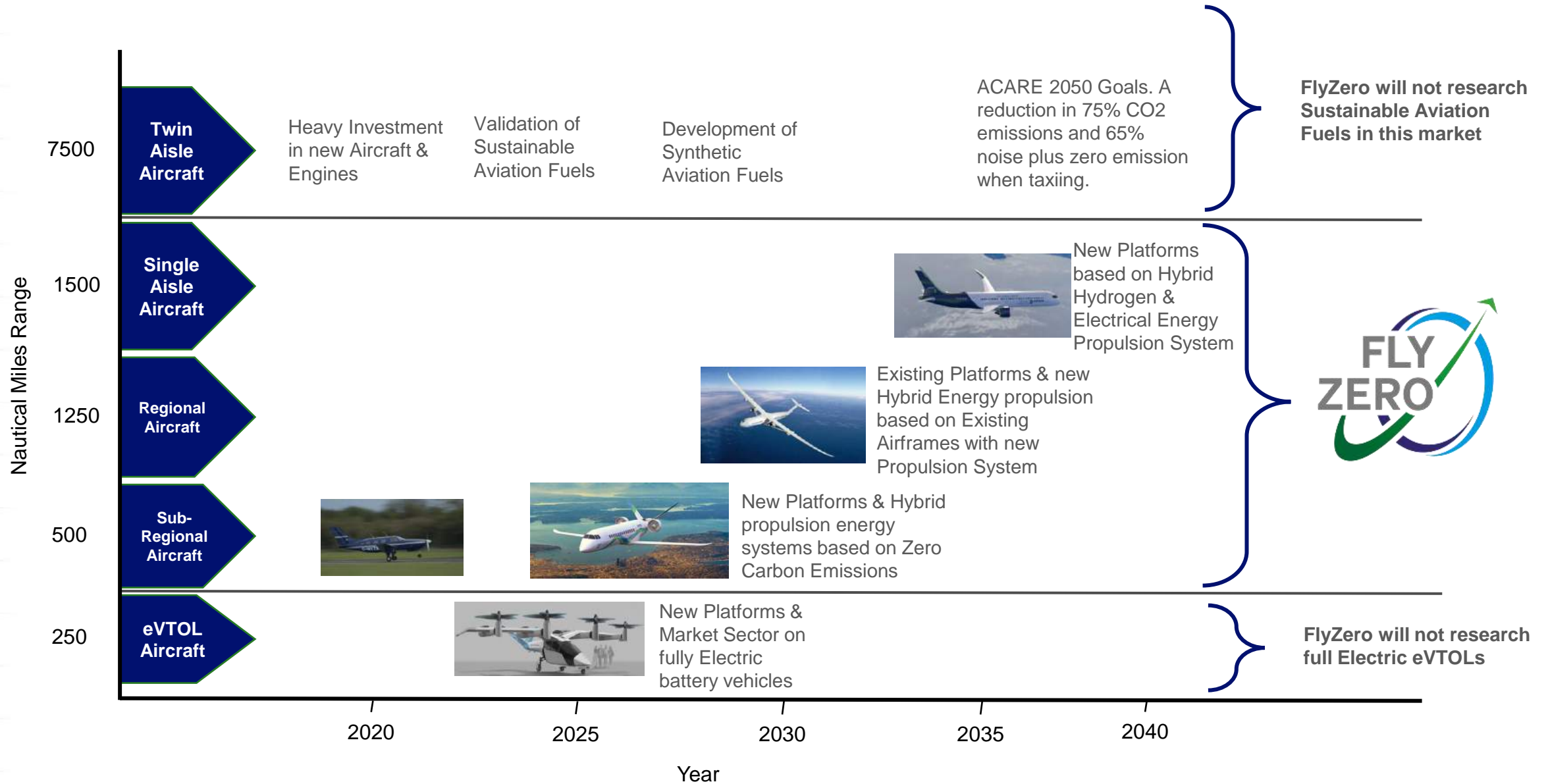




To realise
zero-carbon
emission
commercial flight
by the end of the decade


















Project focus



FlyZero Technology Bricks

On-Aircraft Technologies

							
Hydrogen Storage & Distribution	Ammonia Storage, Cracking & Distribution	Cryogenic Systems	Novel Fuel Gas Turbines	Fluid and Thermal Management	Control Systems	Handling & Stability	Aerodynamic Structures
							
Batteries	Fuel Cells	High Voltage Distribution and Power Electronics	High Power Electrical Machines	Powertrain	Thrust Generation	Landing Gear	Airframe Integration

Underpinning Technologies

			
Materials	Lifecycle Management	Compressed Design & Validation	Emissions Impact Modelling

Operations Technologies

			
Alternative Fuel Supplies at Airports	Air Traffic Management	Rapid & Safe Turnaround	Passenger Experience

Team FlyZero

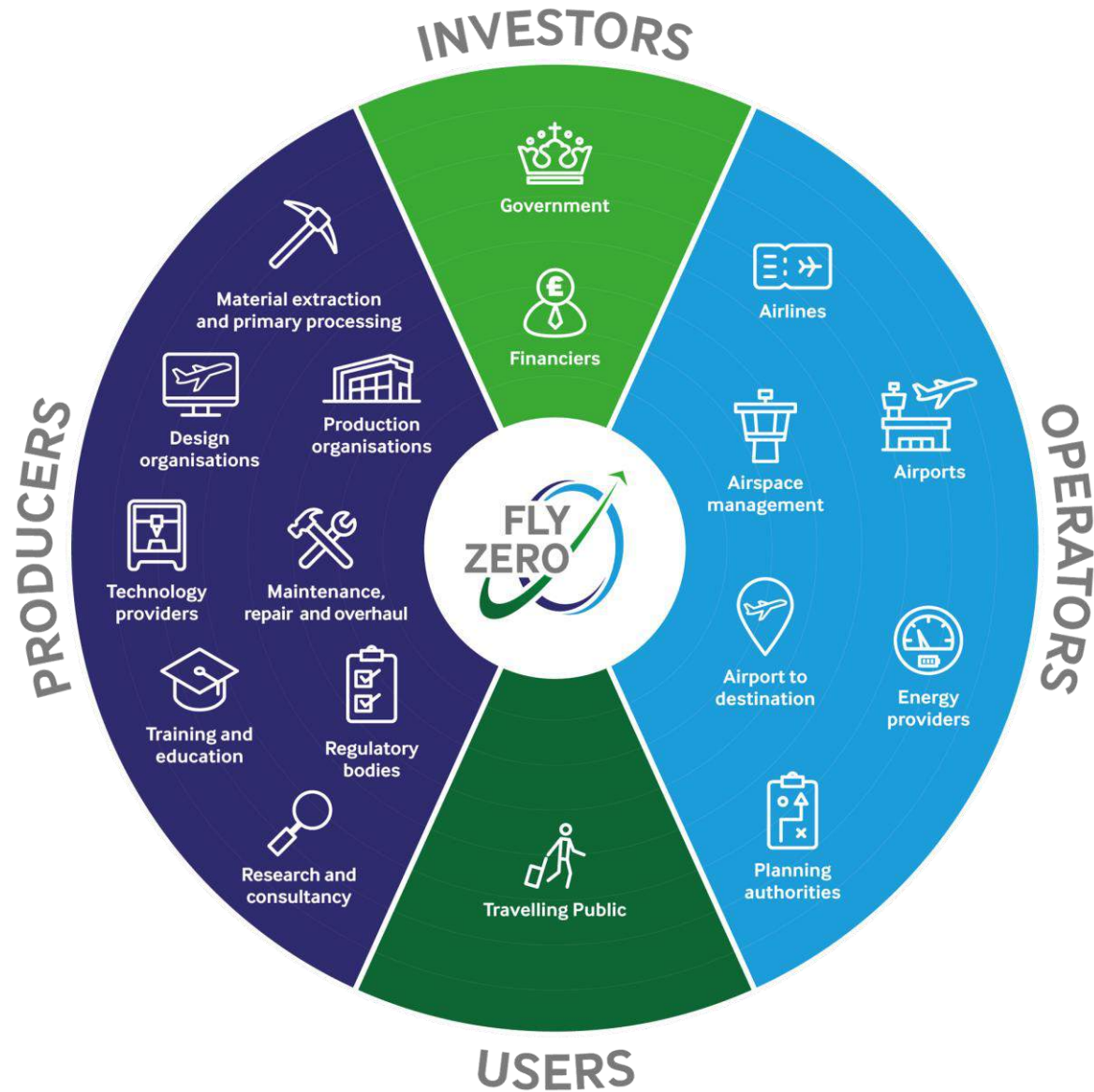
The FlyZero Team is made up of experts on secondment from the organisations shown here as well as independent applicants.



AIRBUS



Working with the whole ecosystem

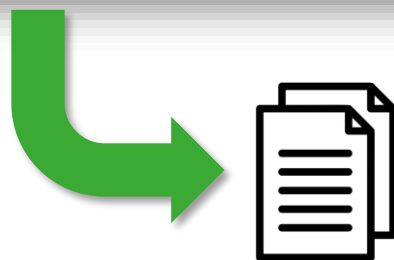
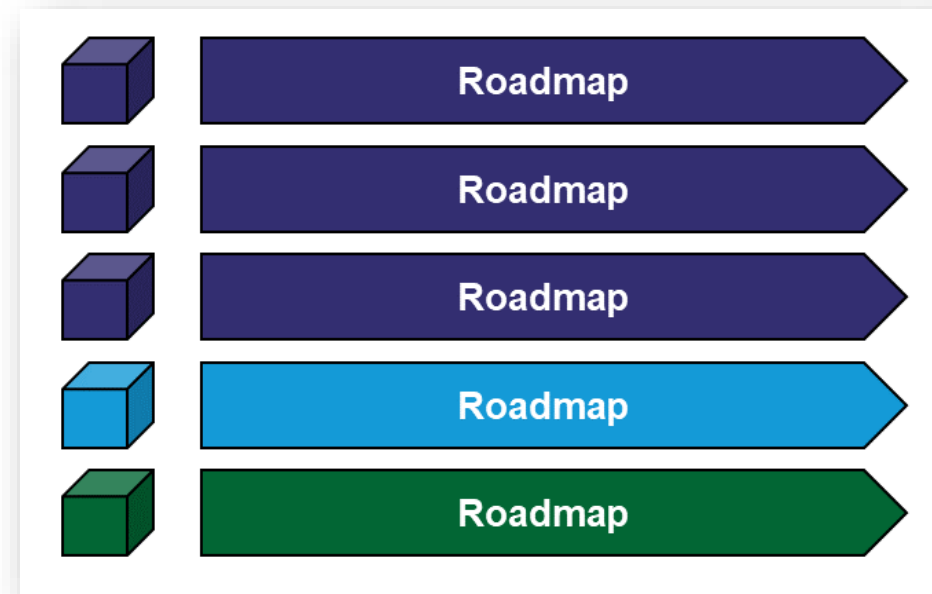


UK capability and roadmaps

We are currently mapping UK capability against the 24 areas identified below, prioritising capability around energy and propulsion.



By the end of the project we will consolidate these to 6-10 roadmaps, each around one technology grouping.



UK capability & opportunities



UK strategic case

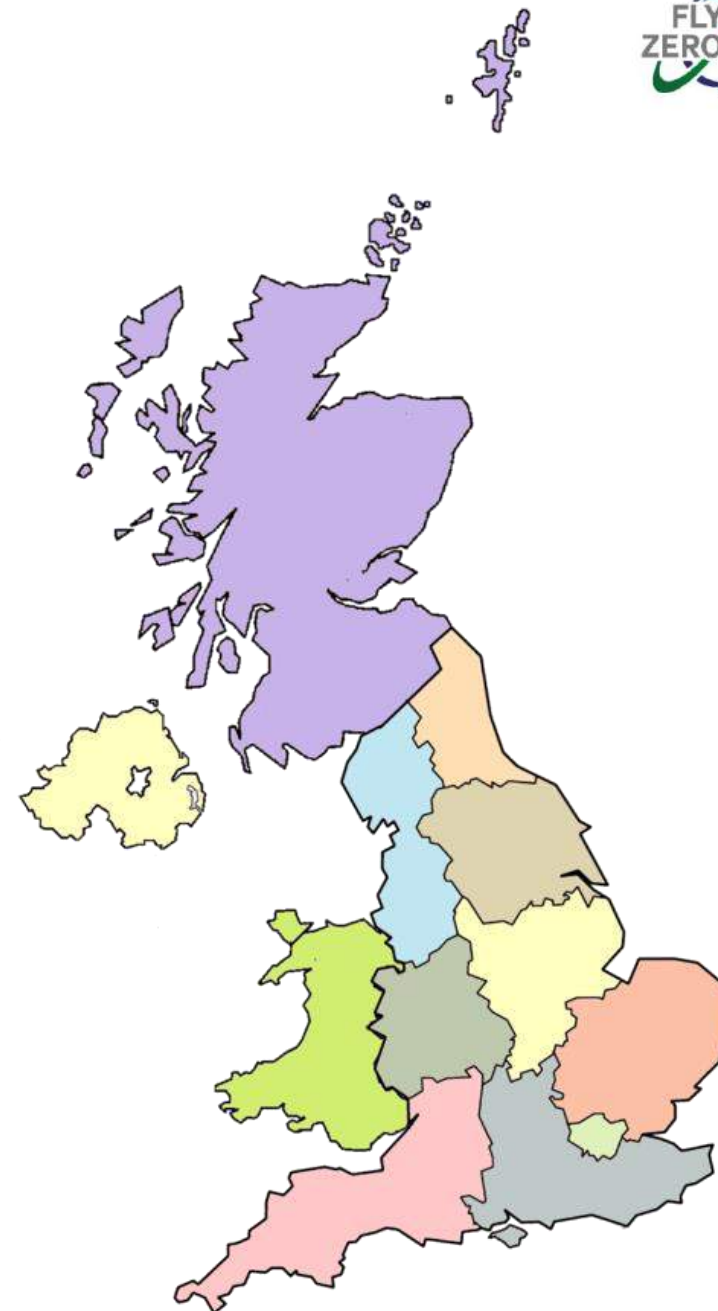


UK capability and roadmaps

We are planning workshops across UK nations and regions working with the devolved administrations and with aerospace trade and cluster bodies.

Our aims are:

- To understand the current state of the aerospace industry across the UK regions – especially post Covid and post Brexit.
- To identify regional capability and strengths relevant to zero-carbon emission commercial aviation.
- To obtain a view from industry and other stakeholders on what the UK could or should contribute to the global efforts to achieve zero carbon aviation, and what support is needed to realise this.
- To understand what each region could contribute to this effort.



Other ways to get involved



Work Packages. FlyZero is inviting organisations of all sizes from across the UK with specialist expertise to tender for subcontracting opportunities across a range of areas including energy storage, propulsion systems, airframe design and integration, commercial, industry and sustainability.

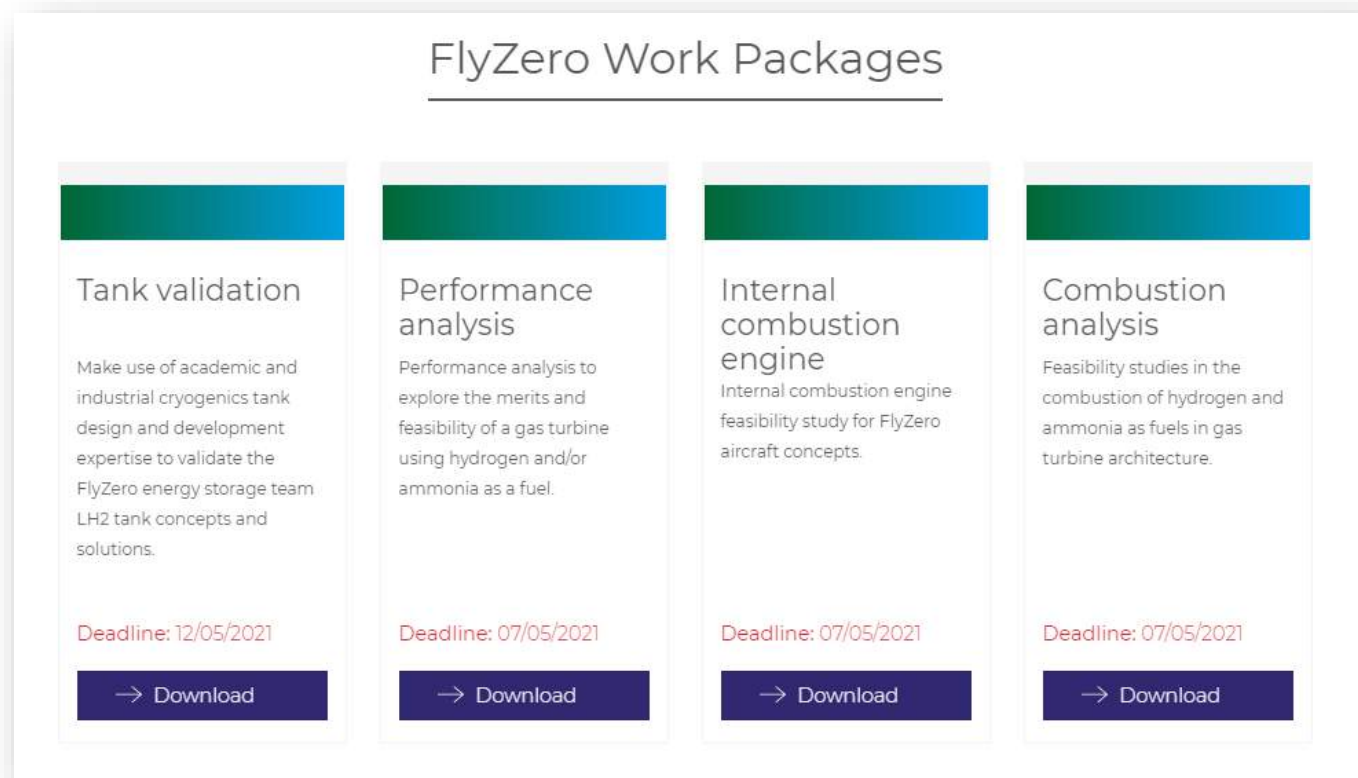


Forums, Workshops and other Events. FlyZero will be running a broad programme of engagement with stakeholders to identify priorities for future activity.



Work packages

Over the next 3 months, we will be launching tenders for work packages on the FlyZero website. You can register to be alerted when new work packages are added.



FlyZero Work Packages

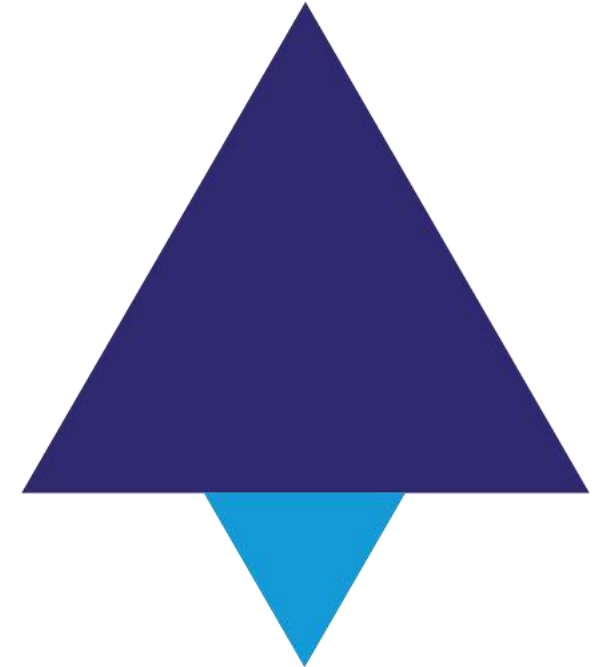
Tank validation	Performance analysis	Internal combustion engine	Combustion analysis
Make use of academic and industrial cryogenics tank design and development expertise to validate the FlyZero energy storage team LH2 tank concepts and solutions.	Performance analysis to explore the merits and feasibility of a gas turbine using hydrogen and/or ammonia as a fuel.	Internal combustion engine feasibility study for FlyZero aircraft concepts.	Feasibility studies in the combustion of hydrogen and ammonia as fuels in gas turbine architecture.
Deadline: 12/05/2021	Deadline: 07/05/2021	Deadline: 07/05/2021	Deadline: 07/05/2021
→ Download	→ Download	→ Download	→ Download

www.ati.org.uk/flyzero/work-packages

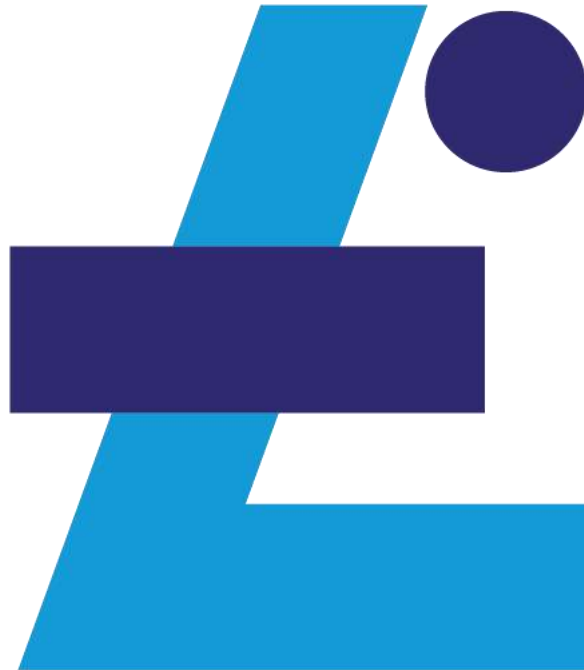
Work packages

Airframe

- Airframe technologies
- Integration of novel energy storage and propulsion systems into the airframe
- Airframe noise capability and assessment
- Sustainable cabin design and technology
- Airframe materials
- Through life analysis



Work packages



Commercial

- Safe rapid turn-around
- Airport infrastructure requirements for new fuels
- Aviation demand on hydrogen supply
- Comparison of zero carbon aviation with other transportation modes
- Assessment of the public perception on zero carbon flight
- Cost model development

Work packages

Propulsion

- Battery energy density
- Fuel cells
- Electric motor design
- Zero-carbon fuel internal combustion engines
- Combustion – flashback, NOx and thermo-acoustics
- Gas turbine performance and heat exchangers
- Liquid H2 tank design validation
- Cryogenics systems



Work packages

Spotlight on cryogenics systems

On cryogenics we are looking for support on:

- **Hydrogen tank design and validation** - exploring H₂ tank technologies and developing concepts that satisfy aircraft and fuel requirements
- **Cryogenic systems architecture development** - define options that satisfy aircraft and fuel system requirement
- **Cryogenic equipment technologies** – carry out a state-of-the-art review and assess enablers and blockers for aeronautical application

We want to hear from you....

If you have knowledge and capability which supports our goals, we want to hear from you.



Technology bricks. Are you developing a technology that you think could be critical to realising zero carbon aviation?



Integration challenges. Can you contribute solutions to some of the integration challenges?



Design-make-test. Do you have solutions for testing zero carbon systems, or tools that could help compress development cycles?



Future supply chain. Do you want to be part of the future supply chain?



Advice and guidance. Can you provide advice that will help the UK make good on the FlyZero mission?

Get in touch

Email: flyzero@ati.org.uk

Website: www.ati.org.uk/flyzero

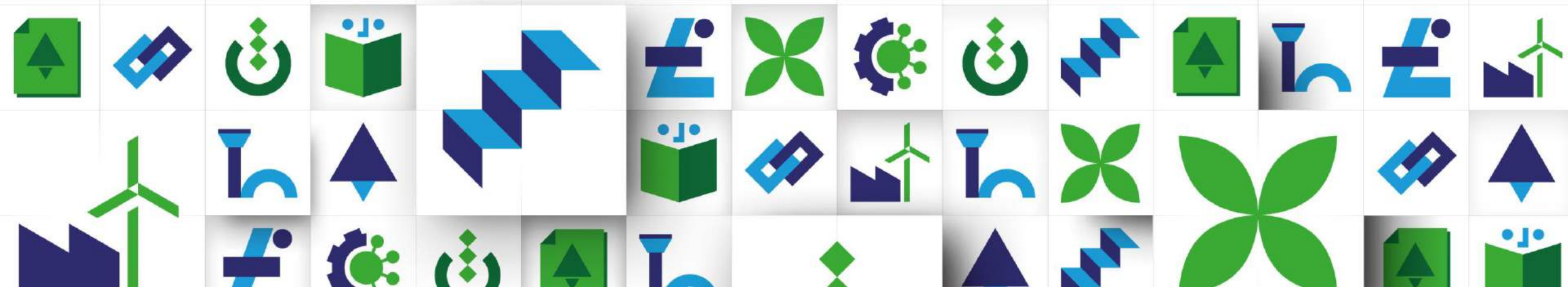
Twitter: @UKAeroInstitute

Linkedin: Aerospace Technology Institute



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Future of aerospace – challenges & opportunities as we come out of the pandemic

Dr Andrew Mair
Chief Executive
Midlands Aerospace Alliance

Some definitions



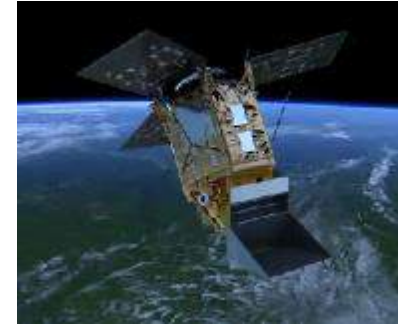
Aerospace = factories = designing, making and maintaining aircraft



Civil aerospace = making passenger aircraft for business and leisure



Defence aerospace = making fighter aircraft, missiles for national security

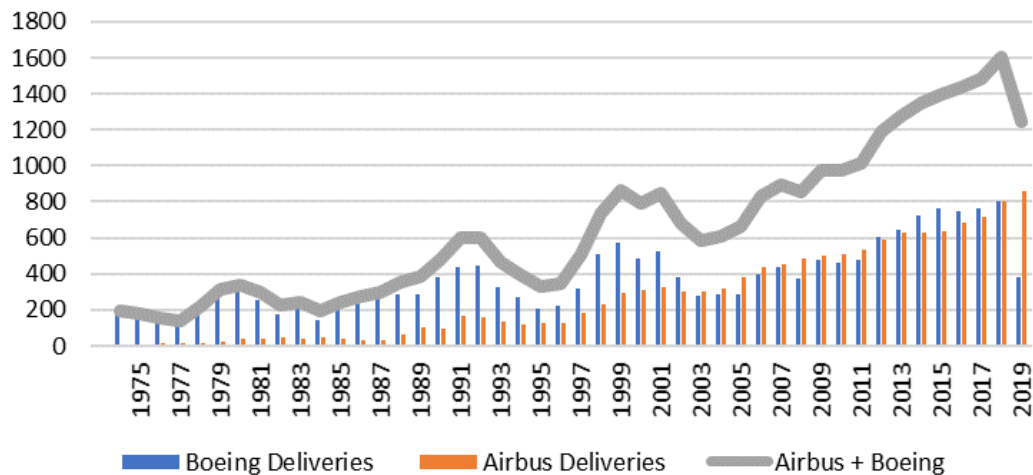


Space = making satellites and their launch rockets



Aviation = airlines and airports = air travel, using aircraft

Annual large civil aircraft deliveries
Boeing and Airbus



An industry that has

grown fast

- Long-term growth of air travel is faster than global GDP
- Aerospace industry doubled in size between recent peaks: 2000 to 2019, 3.7% growth p.a.

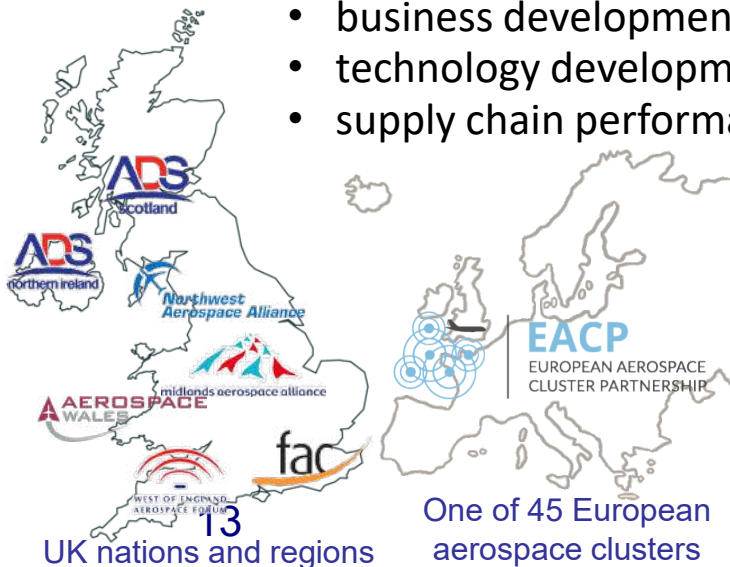
Midlands Aerospace Alliance: the place for collaboration

- a *regional cluster body*: encompass entire supply chain and all stakeholders
- 300 member companies: includes 80% of “flying parts” makers (core of the supply chain)
- Networking is the foundation: website, magazine, e-letter, social media, events . . .
- 50 regional leaders on MAA board & working groups
- board: the four major companies, supply chain, stakeholders (e.g. trade union, local authority)
- three working groups govern activities
 - business development (new business)
 - technology development (innovation)
 - supply chain performance (productivity)

MAA magazine



Working with OEM to set up new local supply chain

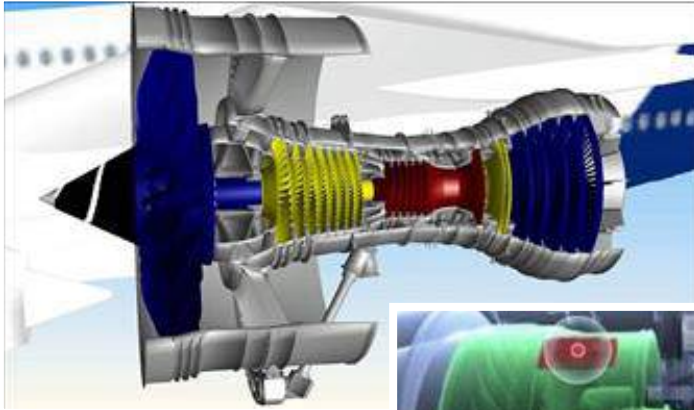


MAA Annual Dinner Birmingham Council House

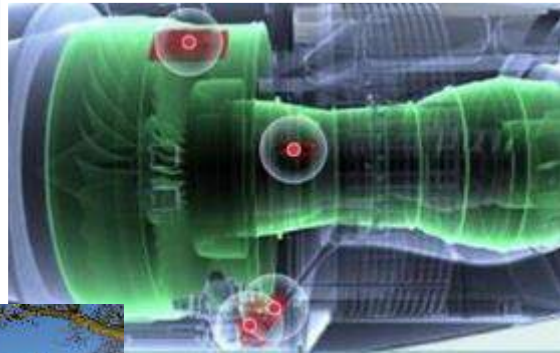


Exhibiting with member companies at the Paris Airshow

Key players in the Midlands



gas turbine engines and engine controls



Rolls-Royce Birmingham Business Park

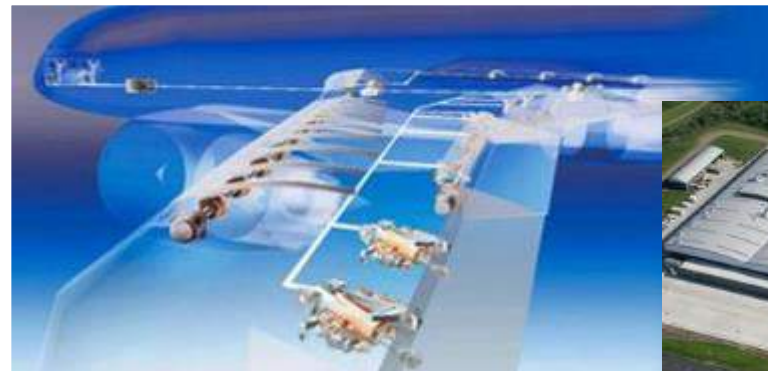


MOOG
Collins Aerospace



wheels and brakes, heat management systems, control systems for engines

control systems for wings, thrust reversers, helicopters, missiles



Meggitt Ansty Park

Moog i54



The aerospace industry is structured into supply chain tiers

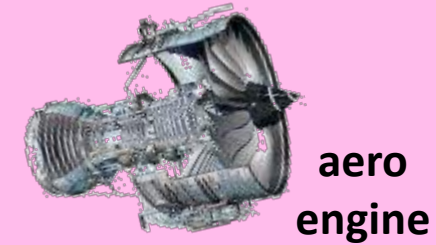
Aerospace primes (OEMs)



aircraft

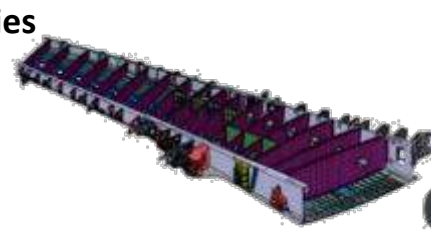


In aerospace, aircraft makers and engine makers are independent OEMs



aero engine

Tier 1 multi-technology systems companies

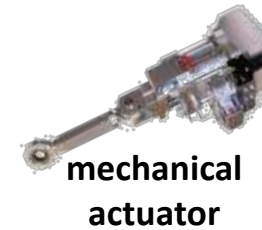


wing assembly



landing gear

Typical tier 1 technology systems



mechanical actuator



electronic engine control system

Thousands of companies at lower tiers (2, 3, 4)



Typical lower-tier products



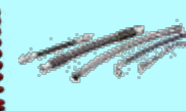
structural part



fasteners



spring



hoses & pipes



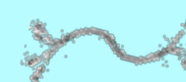
turbine blade



circuit board



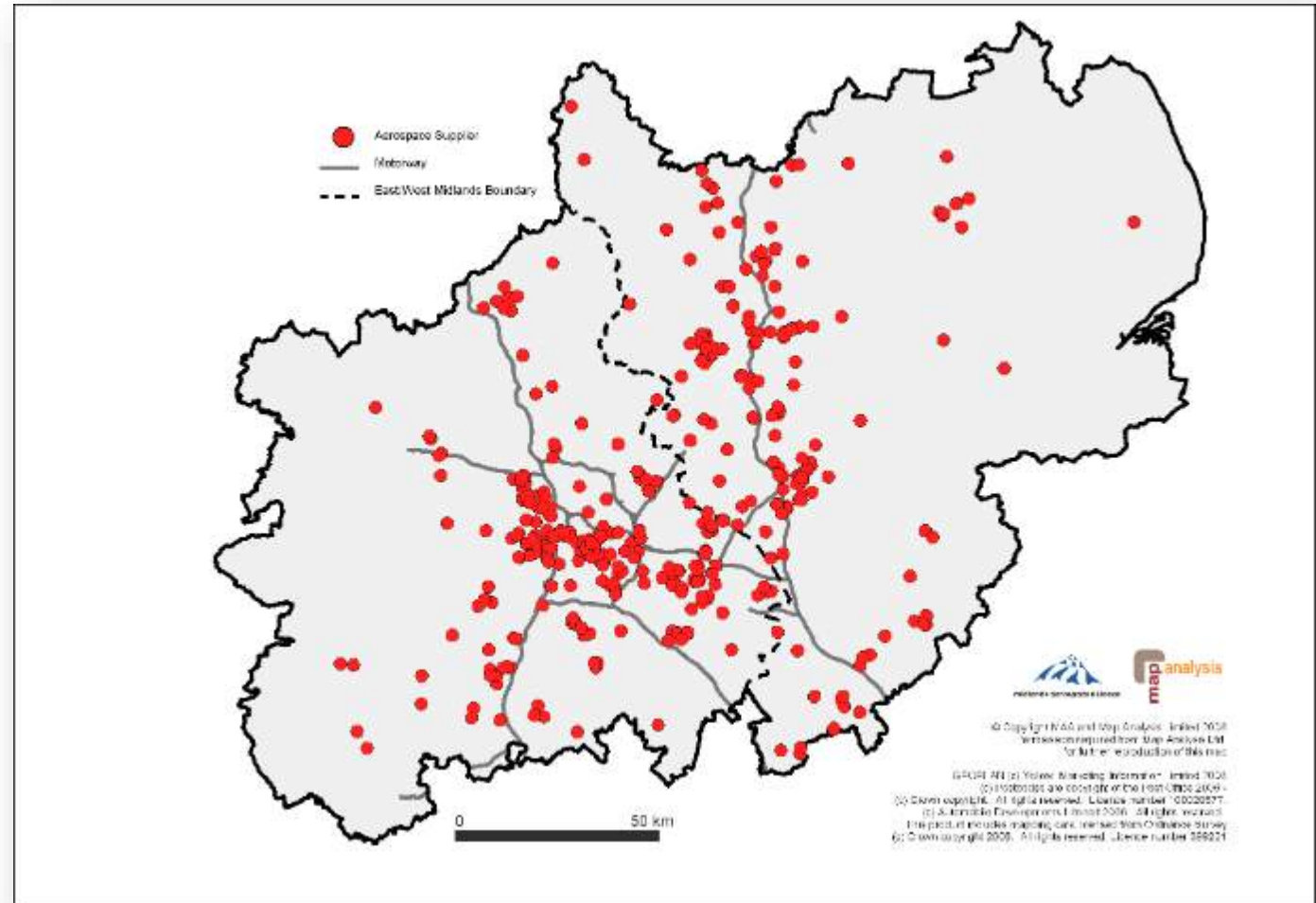
electronic component



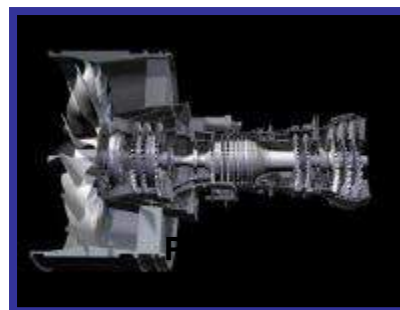
wiring

A substantial engineering and manufacturing cluster

- Overall Midlands: about $\frac{1}{4}$ UK aerospace industry so 1.5% of total global aerospace industry, £9bn revenue, about 45,000 direct jobs or 1% of region's employment
- Plus aviation (airports, RAF) approx. 70,000 jobs



The aircraft and aero engines that matter most to our region

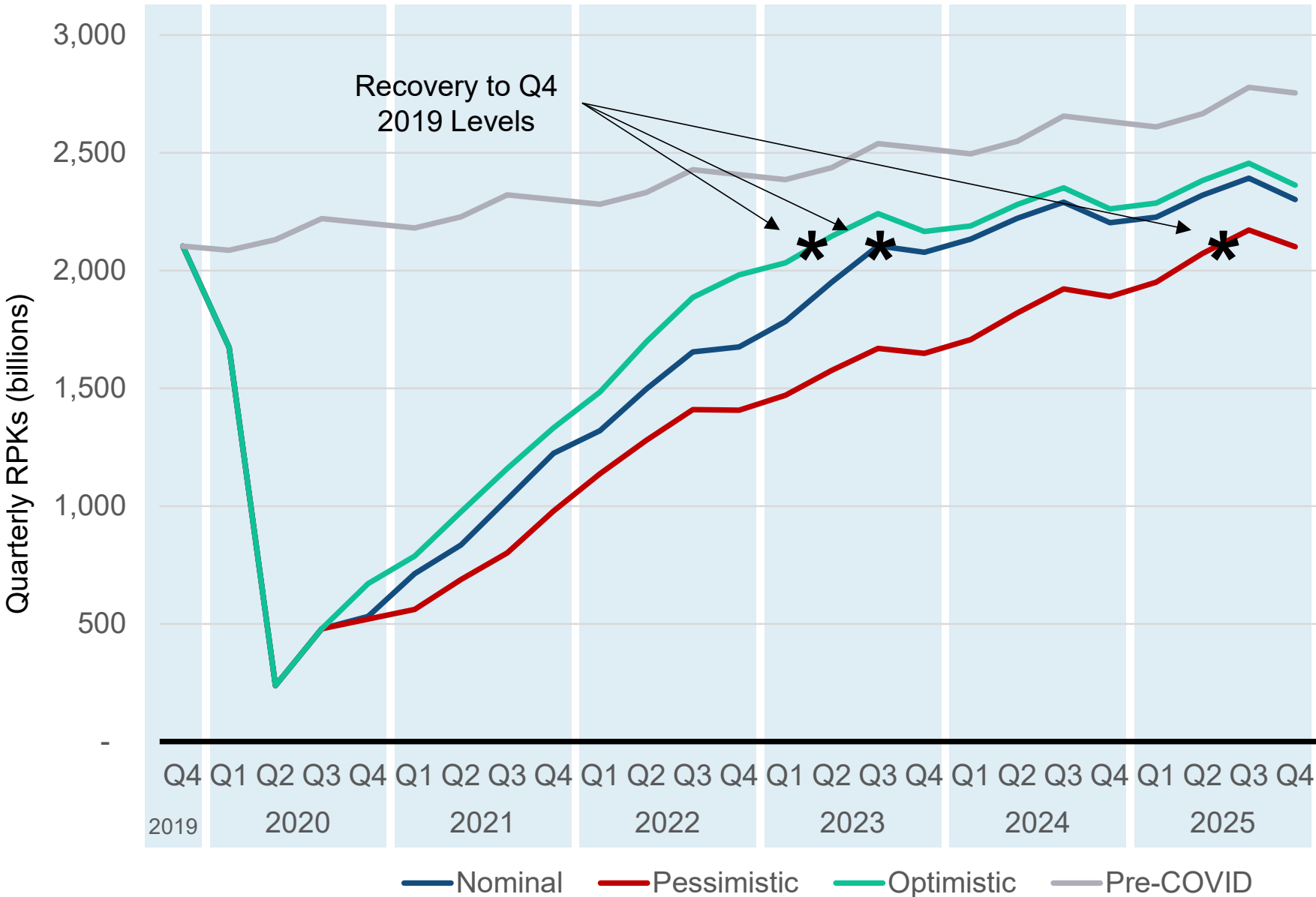




Impact of the Covid-19 crisis

AeroDynamic's forecast is for air travel to recover in late 2023...and possibly later

AeroDynamic's COVID-19 Global Traffic Scenarios

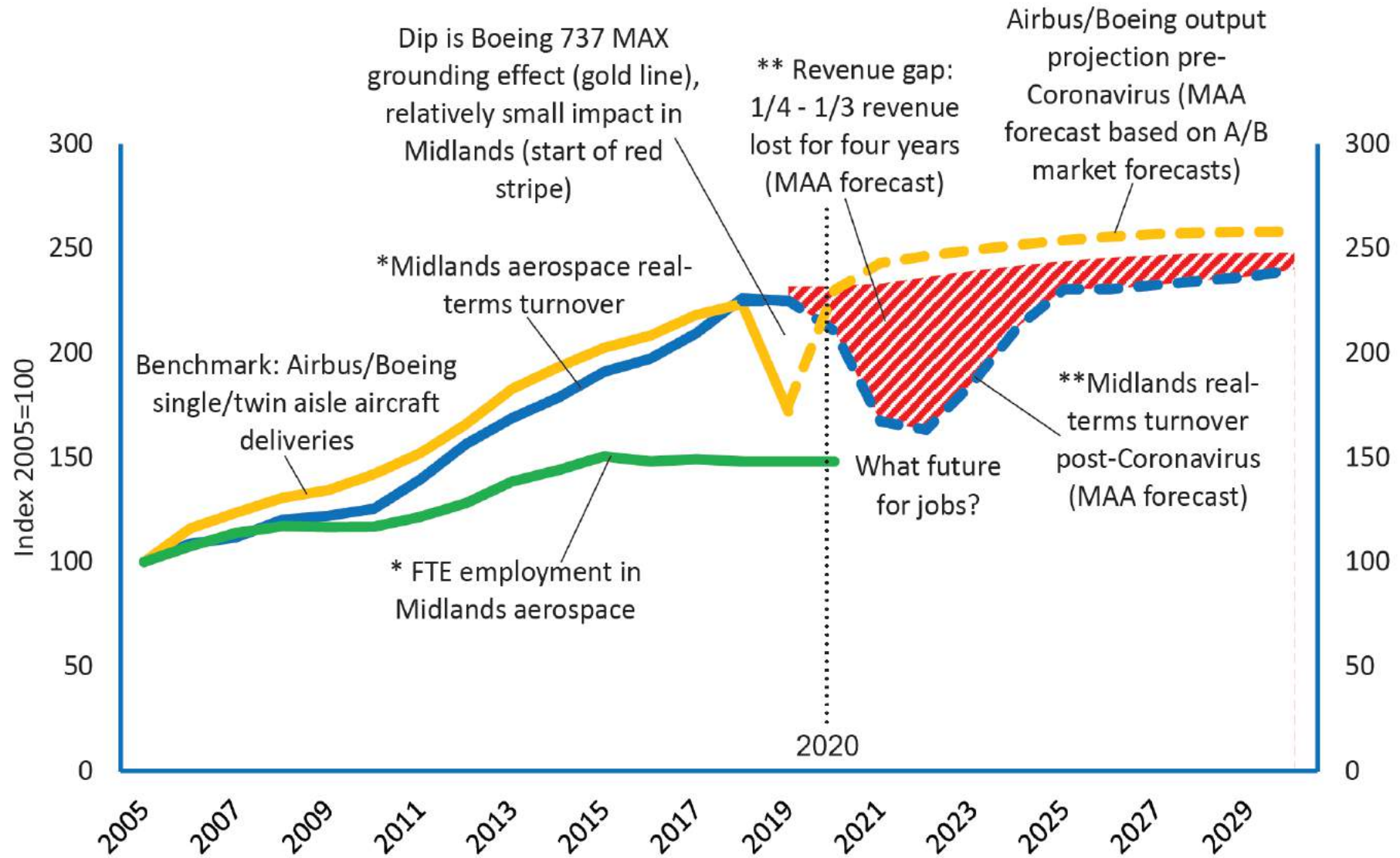


- The nominal scenario assumes vaccine initially introduced in early 2021 and widely distributed 6-12 months later
- The downside risk is greater than upside opportunities; it may take an additional two years for full recovery
- Even in the optimistic scenario, the industry loses three years of air travel...and demand for new aircraft

When people don't fly, jobs are lost in our manufacturing SMEs



The overall impact in Midlands: big dip in aerospace business lasting 2+ years – then recovery (but big risk competitors are better prepared, quicker off the mark, take our business)



Midlands aerospace cluster: projecting Covid-19 impact


Recovery assumes companies and people stay in industry. *2005-19 MAA annual survey. **2020+ = MAA forecast based on Midlands sub-sector portfolio data and Teal Group forecasts. All data real terms, 2005 = 100



Responding to the crisis: short and long term






MAA Five Point Plan

July 2020



midlands aerospace alliance

RESCUING AND RECOVERING AEROSPACE SUPPLY CHAINS AT THE HEART OF UK MANUFACTURING



PEOPLE NEW BUSINESS FINANCE SUPPLY CHAIN INNOVATION

PRIORITIES AND ACTIONS



PEOPLE: ENSURE SAFE AND PRODUCTIVE WORKPLACES

Safety is a top priority. We also need to protect capabilities and skills.



NEW BUSINESS: OPPORTUNITY CREATION

There are still real business opportunities but companies may need to be inventive to widen markets.



FINANCE: 'RE-LAUNCH' SUPPORT FOR SUPPLY CHAIN COMPANIES

A race to the bottom in terms of price could have damaging effects so companies need to think long-term.



SUPPLY CHAIN: DEVELOP A RESILIENT SUPPLY NETWORK

The whole supply chain needs to be factored into planning.



INNOVATION: TURN IDEAS INTO REVENUE

Innovation can be key to increasing productivity and diversifying in order to survive the crisis.



AEROSPACE EXPERTS



INDUSTRY SURVEY RESPONDENTS



REGIONAL AEROSPACE BUSINESS LEADERS



INDUSTRY AND STAKEHOLDER ORGANISATIONS



LOCAL STRATEGIC PARTNERSHIP



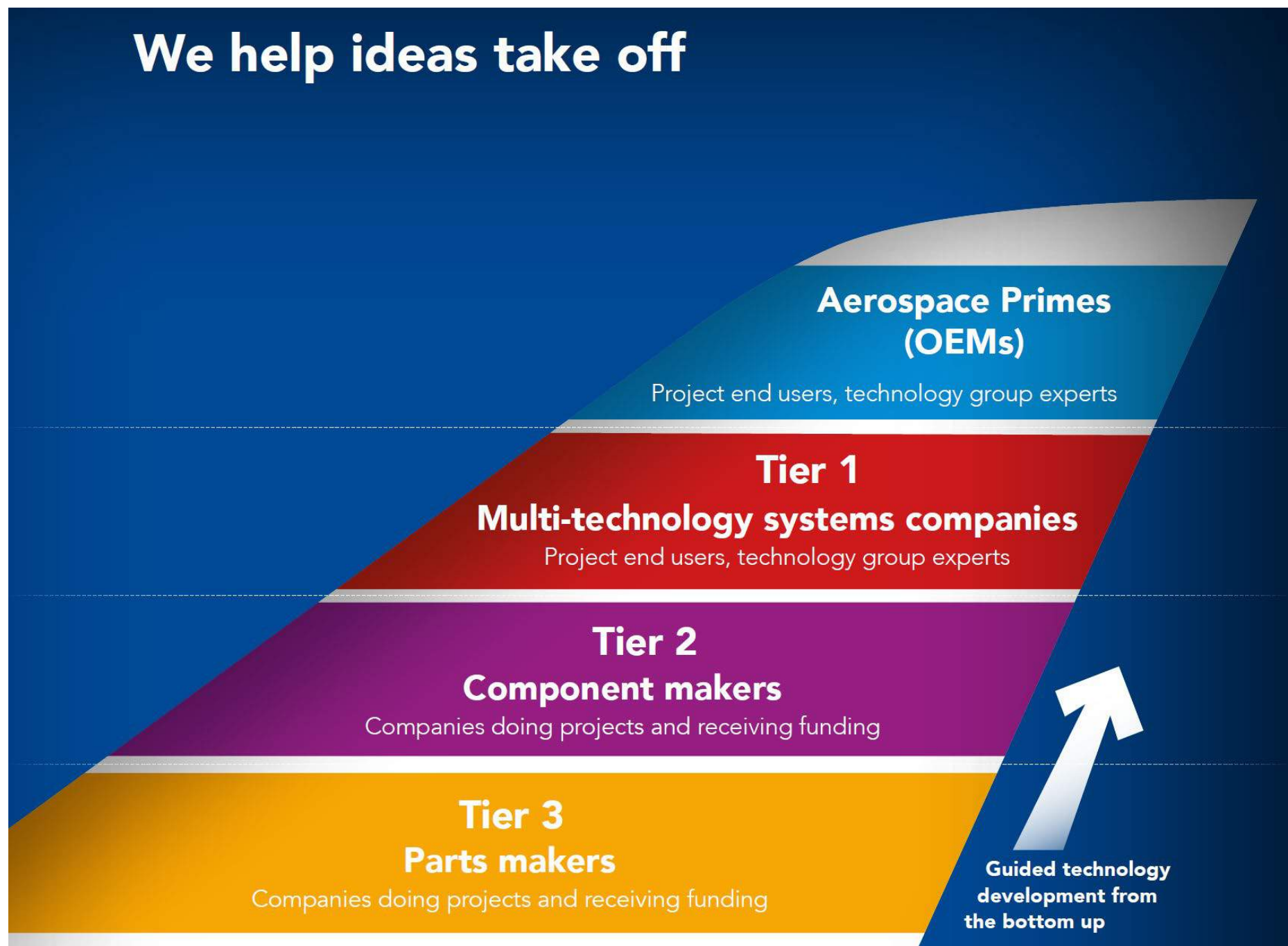
LEADING AEROSPACE UNIVERSITY

Longer term challenges

- UK political-economic environment
 - Brexit, cost base, competitiveness
 - Industrial strategy, laissez faire, levelling up?
 - Continued globalisation of supply chains?
 - R&D funding for aerospace: pick the big winners and/or more balanced policy?
- Greener aviation
 - What technology can UK supply chain contribute?
 - How can regions and localities support?

We help ideas take off

The MAA's
niche in
innovation and
technology
development



MAA innovation programmes continuously since 2005

Programme



SCIE



partner



NATEP



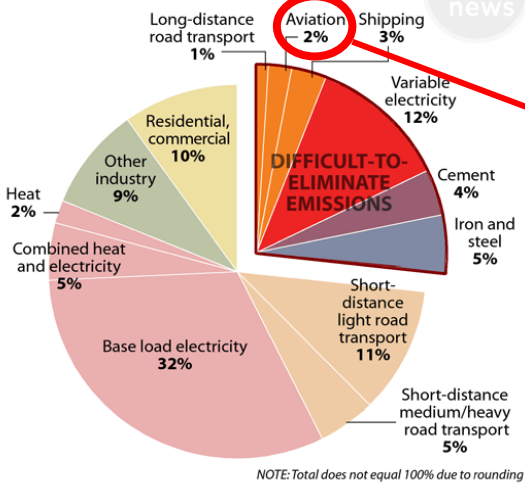
£109m of industry activity + grants so far, across UK

MAA members get 10x return on subscription fees

The Hardest Emissions to Eliminate

About a quarter of global industrial carbon dioxide emissions come from sources that are hard to eliminate with existing policies and infrastructure. A new paper explores what it will take to cut these emissions.

GLOBAL FOSSIL FUEL AND INDUSTRY EMISSIONS
33.9 gigatons CO₂, 2014

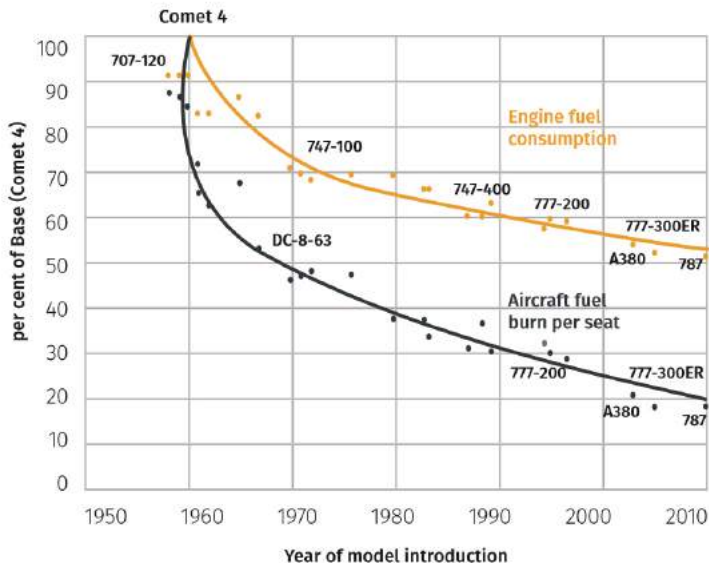


SOURCE: Davis et al., Science PAUL HORN / InsideClimate News

Greening of aircraft and aviation is the innovation imperative for civil aerospace

- Greener aircraft/aviation on agenda for many years . . . substantial investment in technology
- Constant battle to innovate, and needs to be at all tiers in the supply chain: electrification, additive manufacturing, composite materials, all to reduce aircraft weight, hotter engines, improve fuel consumption; also sustainable fuels

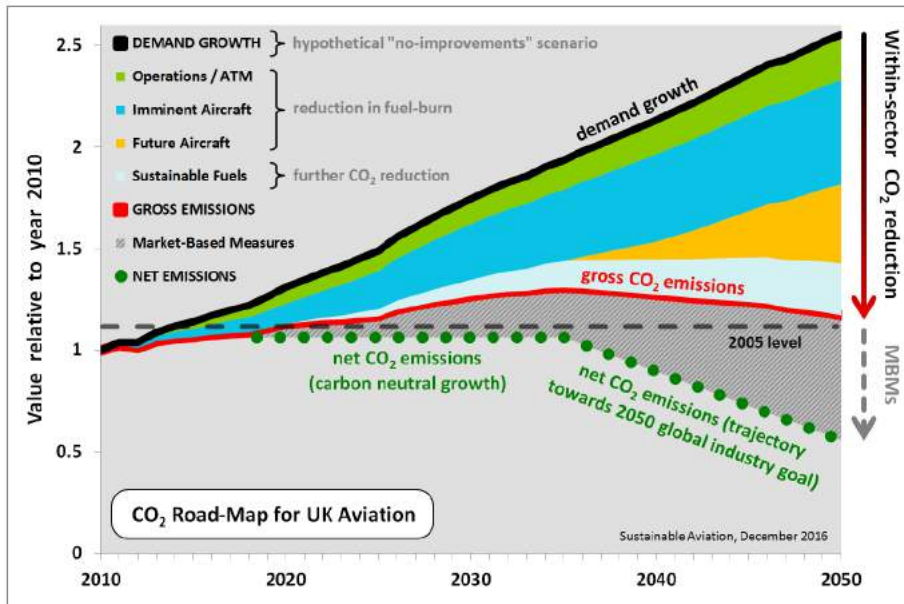
FUEL EFFICIENCY GAIN SINCE 1960



Past achievements

49 per cent
82 per cent

Future challenges

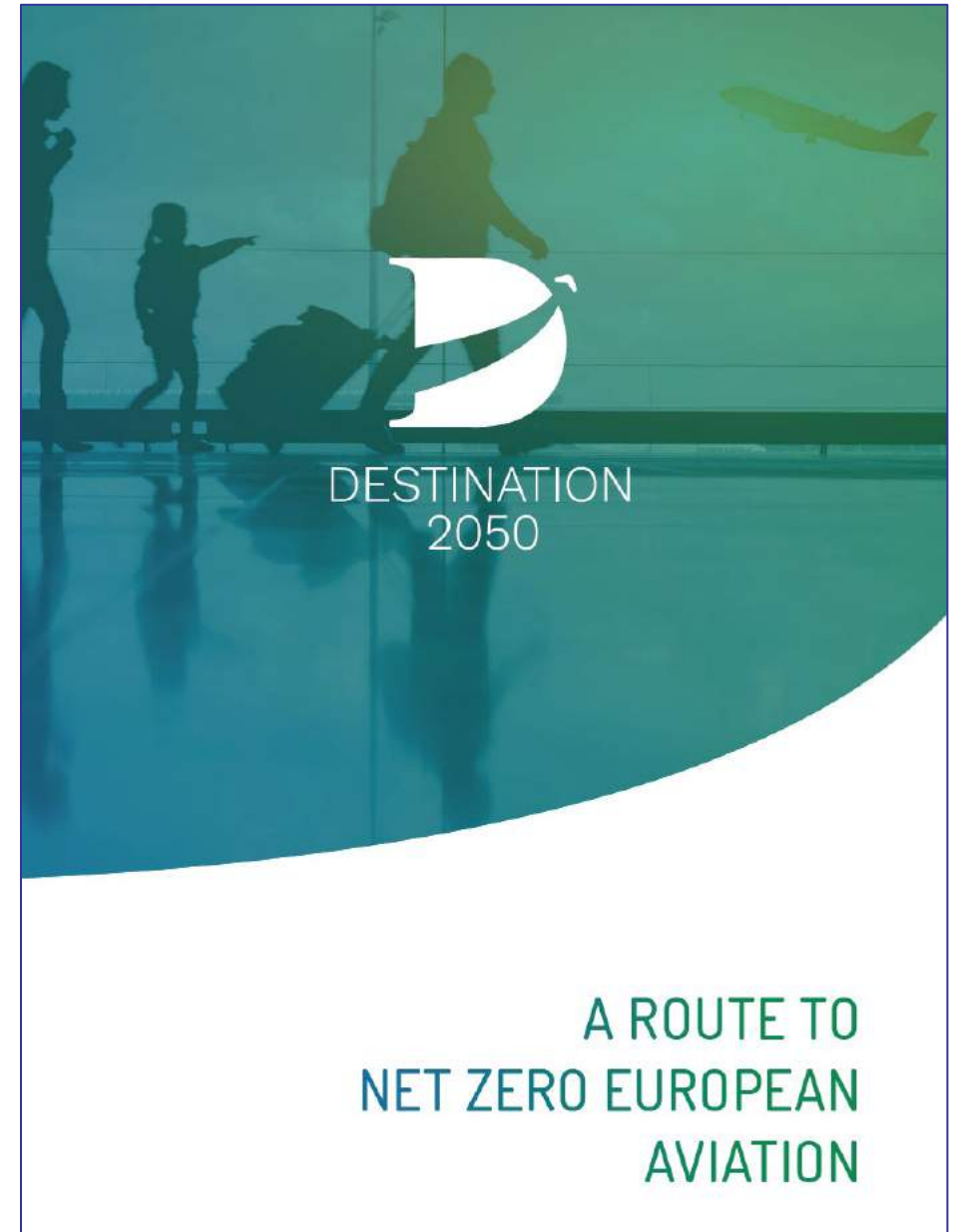


Required contribution of new aircraft technology (what we focus on in Midlands)



European routemap

1. New aircraft and engine technologies could achieve emission reductions of 37%
2. Using sustainable aviation fuels (SAFs) could achieve emission reductions of 34%
3. Economic measures could achieve emission reductions of 8%
4. Improvements in air traffic management (ATM) and aircraft operations could achieve emission reductions of 6%



With thanks to our guests for speaking today.

For further business support, if you would like to give any feedback or have any more questions please call or email the Growth Hub:

0300 01234 35

growthhub@semlep.com

