



Future Flight Challenge

Innovate UK KTN Interim Report 2020 - 2022

Innovate UK KTN

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Future Flight Challenge

Innovate UK KTN Interim Report

2020 – 2022

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1. Executive Summary

The Future Flight Challenge (FFC) is a £125m programme delivered by UK Research and Innovation (UKRI), which seeks to position the UK as a world leader in the third aviation revolution.

The challenge focuses on the development and deployment of both digital and physical infrastructure, as well as the regulation and control systems required to deploy new aircraft practically and safely. The ambition is that these new modes of travel will increase mobility, reduce road congestion, improve connectivity, increase UK manufacturing opportunities, and reduce the environmental impact of air travel.

The aim of Innovate UK KTN's 2020 - 2022 work programme, on behalf of UKRI, was to build the community that would deliver on this ambitious goal. The capability required spanned not just legacy industries such as aerospace and aviation, but non-aviation sectors such as AI, agriculture, materials and medical. Innovate UK KTN's objective was to support the development of 'super-consortia' across all three phases of the competition, enable access to the UK's innovators over a variety of sectors and capabilities, and deliver a communication channel to promote progress of the challenge.

The purpose of this interim report is to collate all the activities conducted by Innovate UK KTN between 2020 and 2022 and highlight the deliverables and impact made to enable the creation of innovative aviation solutions.

Innovate UK KTN's Future Flight team delivered a variety of resources and events including: the technology showcase; Future Flight Landscape map; newsletters; competition briefings, launch and cohort events; Future Flight Fridays; and Future Flight Cafes.

Between 2020 and 2022 Innovate UK KTN engaged with over 2350 individuals, 1070 organisations, including 68 universities, and over 40 key sector areas. By virtue of Innovate UK KTN's cross-sector expertise, 590 introductions (503 cross-sector) were made, 35 collaborations brokered and 24 successful grant funding outcomes.

Innovate UK KTN will commence a further two-year programme from 1st April 2022 to focus on supporting Future Flight projects in deployment, scale up and commercialisation of their solutions.

2. Introduction

The global market for drones, advanced air mobility (AAM) and supporting services is set to reach US\$74 billion by 2035 (UKRI, 2021; Figure 1) and US\$1 trillion by 2040 (ainonline, 2019). For the UK, this market scale-up predicts an operational fleet of 321 eVTOLs (Vertical Aerospace, 2021) and 76,000 drones across health, agriculture, mobility, construction, manufacturing, technology, finance and insurance industries by 2030. The operation of this future aviation system brings benefits across a variety of key use-cases including: improved

connectivity for both urban and rural communities; delivery services; rapid first response emergency services support and; safer maintenance and inspection operations.

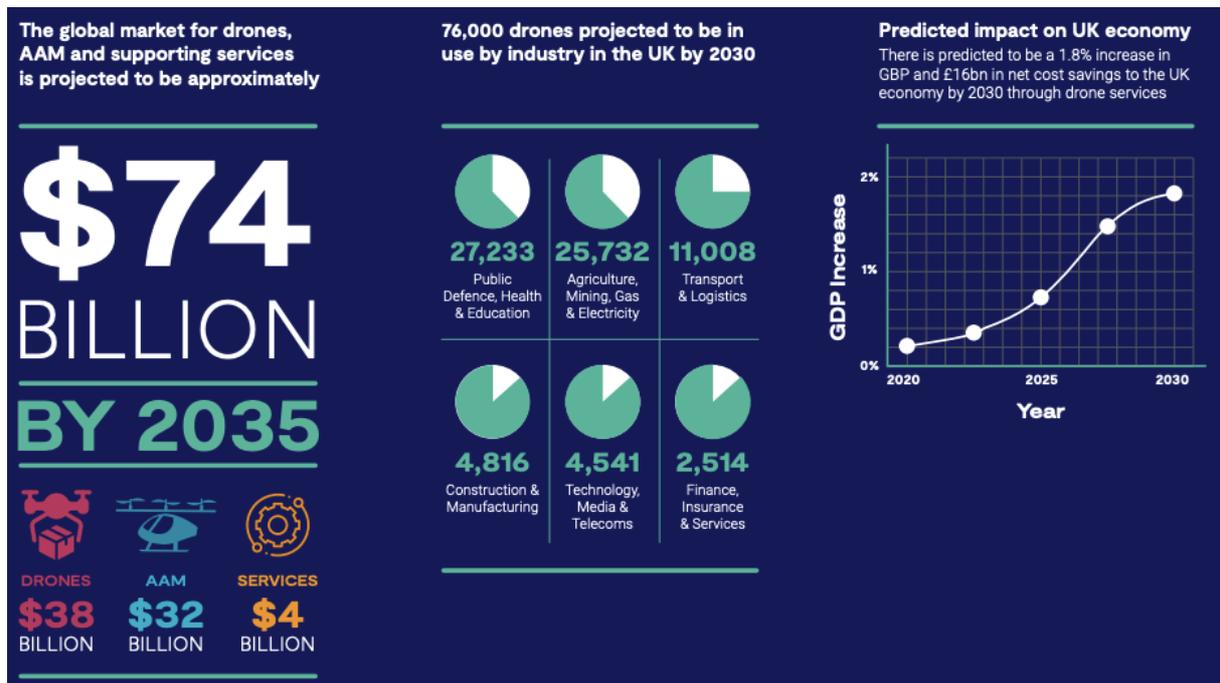


Figure 1: Market opportunities for Future Flight (UKRI, 2021).

To capitalise on this opportunity and place the UK at the forefront of the third aviation revolution, the FFC aims to stimulate the development and application of these new aviation technologies in the UK. The programme supports technologies from drones to AAM vehicles, as well as the regulation, control systems, and digital and physical infrastructure that will be required to enable widespread and safe uptake of these new modes of air vehicles.

The FCC is split into three phases (Figure 2):

Phase I – a phase of **discovery** stimulating stakeholders from across aviation, aerospace and beyond to consider how they would address a suite of identified problem statements.

Phase II – a phase of **development** with investment from government and industry seeking to execute early research and development into potential demonstrations. Could also include initial demonstrations.

Phase III - a phase of real **use-case demonstrations** showcasing a novel aviation system involving multiple air vehicle types.

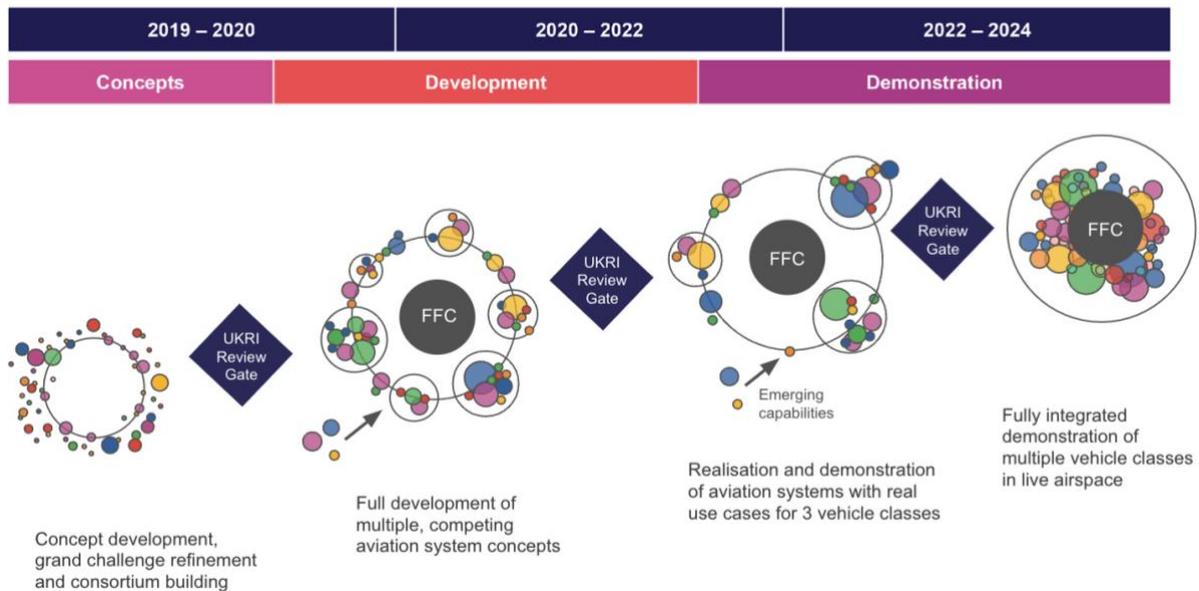


Figure 2: The three phases of the FFC.

Phase I of FFC involved an initial competition to select a variety of experts to a Discovery Workshop held in Birmingham in February 2020 with the aim of shaping the first grant competition. UKRI and Innovate UK KTN ran a formal competition to select 200 individuals to attend the workshop. The selection process to attend the workshop involved completing an application detailing how the consortium will address the challenges towards creating a fully integrated, electric/electric-hybrid and autonomous, air transport system of systems.

Phase II of FFC saw the launch of the first grant funding competition where £30 million was invested across 34 projects. A key feature of the consortia was to ensure they included diverse expertise from a variety of sectors. Innovate UK KTN played a key role in building these consortia, setting the foundations towards creating the ‘super-consortia’ required to demonstrate and deploy at scale new, innovative aviation solutions.

Phase III of FFC saw £73 million available for projects demonstrating integrated aviation systems and vehicle technologies that enable new classes of electric or autonomous air vehicles. Innovate UK KTN played a pivotal role in dissemination of competition scope and development of project consortium required to deliver on the ambitions of this phase.

3. Aims and objectives of the programme

The FFC requires the creation of new supply chains and new, non-aviation partnerships to work together with aviation experts. An ambitious engagement programme was needed to achieve this. Innovate UK KTN is uniquely placed to achieve this and between 2020 and 2022, worked across sectors and technologies to convene and broker impactful connections amongst the range of companies, academics, local authorities and regulators required to successfully deliver the challenge.

Innovate UK KTN had four main objectives:

1. Raise awareness of the FFC, particularly to sectors not traditionally associated with aviation
2. Build the value chain through strategic business and academic connections
3. Support businesses and the broader research community to apply to the FFC and join existing consortia
4. Foster knowledge exchange to support new entrants and maintain cross-fertilisation between consortia

4. Outputs of the programme

4.1. Phase I: Discovery

The Future Flight Challenge began on 7th October 2019 where Phase I of the FFC was launched resulting in 200 individuals being invited to attend the Discovery Workshop in February 2020 to help shape the first grant competition. These 200 individuals formed the initial cohort of talent to deliver the UK's first fully integrated, electric/electric-hybrid and autonomous air transport system.

To help build and develop the multi-sectoral consortia, Innovate UK KTN worked with this cohort and in parallel delivered a suite of activities to attract further interest in FFC and showcase UK leadership to a global audience.

4.2. Phase II: Development

Innovate UK KTN created a comprehensive set of activities to help build consortia, provide technical guidance on proposals, and built UK's first new aviation community and showcased this new capability to the world (Figure 3):

4.2.1. Workshops.

- **Modelling and simulation.** The aim, in collaboration with Bath Institute for Mathematical Innovation, was to examine the possibilities of collaboration between the mathematical community and the ISCF FFC.
- **Global scoping workshop.** The aim was to understand UK strength in advanced air mobility (AAM) and drones whilst understanding strengths to inform an international engagement programme.
- **Creating an accessible Future Flight.** The aim was to empower those developing drones and AAM to ensure their technologies and services can be utilised by everyone.

4.2.2. Cohort and competition briefing events

- **Phase II competition briefing event and themed networking events.**
- **Drones to negate the impact of COVID-19 consultation and competition launch.** Innovate UK KTN worked with UKRI to develop and run a consultation to inform the scope of a new competition to negate the impact of COVID-19 by utilising drones. This competition resulted in 14 projects being funded.
- **Phase II competition briefing event.** To disseminate information around the £30 million available for innovation projects in Phase II of the FFC.

5. Creating the world's first advanced aviation community

Innovate UK KTN's breadth of expertise has been key to engaging organisations with FFC. Mobilising 180 subject matter experts, reaching across 22 sectors, the Future Flight team at Innovate UK KTN have created a new, and globally unique, aviation community of diverse innovators.

The community (as of March 2022) includes over 1070 organisations, with 68 universities and 2350 individuals, spread over 11 countries (Figure 4) and 31 sectors (Figure 5).



Figure 4: Locations of the new Future Flight community created by Innovate UK KTN.

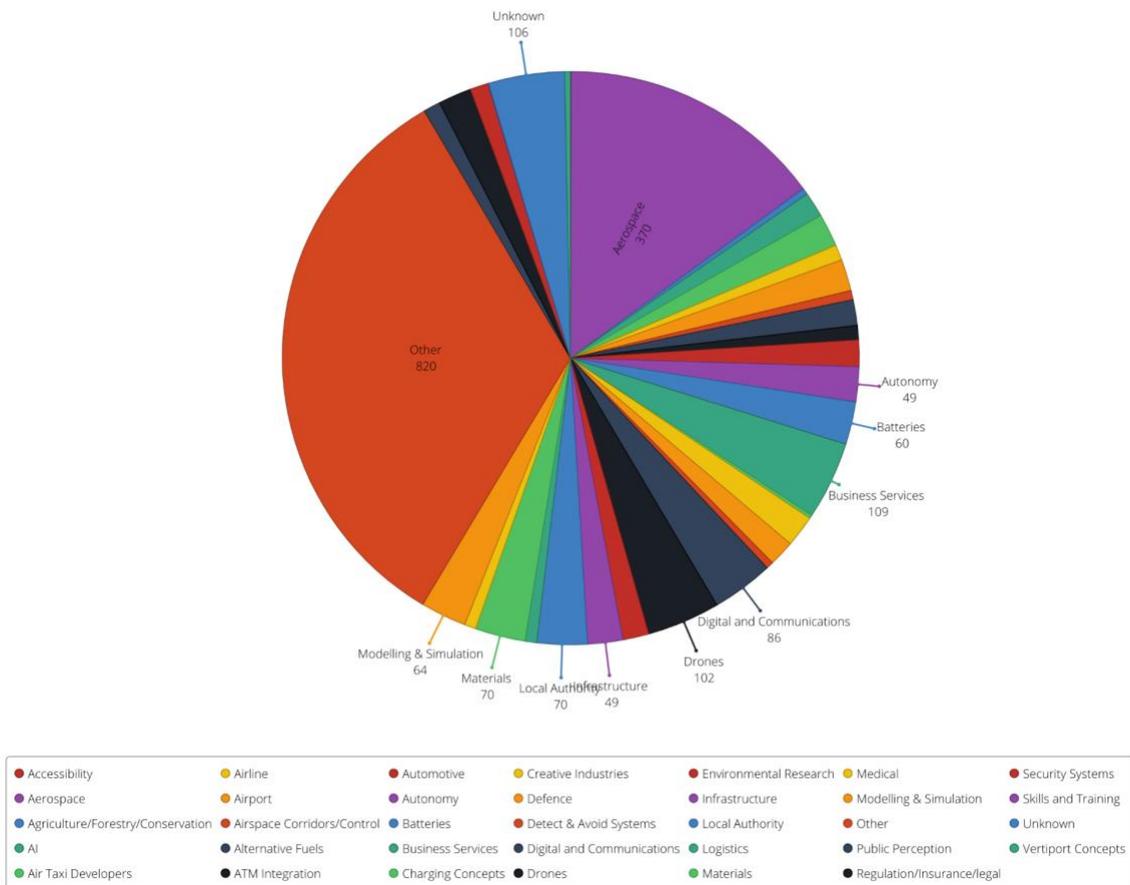


Figure 5: Sectors Innovate UK KTN mobilised and convened to create the world's first advanced aviation system.

6. Deliverables

6.1. Workshops

6.1.1. Modelling and simulation

This online workshop was delivered in collaboration with the Bath Institute for Mathematical Innovation with the aim of identifying themes where mathematical sciences can unlock the challenges to creating a new aviation industry. The session built on the [Mathematical Sciences and ISCF workshop in 2019](#), where a group of mathematical scientists met at the International Centre for Mathematical Sciences to discuss areas where the mathematical sciences could support the array of ISCF programmes.

85 attendees joined the workshop, 22 universities and 63 industry representatives. Attendees explored four topic areas critical to advancing the development of a new aviation industry:

1. Risk and uncertainty
2. Communication - Understanding and communicating, especially to the public, varieties of risk and uncertainty as potentially the case of unmanned air vehicles.

3. Data Assimilation - Combining theory with real-time observations of aircraft trajectories.
4. Modelling of complex aviation systems with large scale operations and modelling collective dynamics of autonomous-human hybrid systems.

The session highlighted that mathematical sciences have significant potential to support the development of a new aviation system. within the challenge, supporting both scale up and operations of future flight technologies.

Following this session all mathematical attendees were included in KTN's FFC communications to maintain engagement with future calls and activity.

6.1.2. Global scoping workshop

The Global Scoping Workshop was delivered to inform UKRI's international strategy for the FFC. Discussions focused on three platforms, (1) drones, (2) advanced air mobility, and (3) small electric aircraft and the associated physical and digital environment to enable them to fly.

Workshop attendees included:

Atkins
ATI
Blue Bear Research
Connected Places Catapult
Cranfield University
Department for International Trade
Department for Transport
Honeywell
NATS
Royal Aeronautical Society
Swanson Aviation
Thales

Participants were asked to identify technologies, services, use cases and aircraft manufacturing strengths amongst global nations and compare it against UK capability. Countries identified as a priority for international collaboration were the USA, China, Rwanda, Ghana, Australia, Norway, Dubai and Switzerland. Developing countries can benefit from the deployment of drones for critical healthcare, deliveries and land management. The USA is seeing large investment in developing AAM with new regulatory laws being implemented. Dubai is also implementing regulatory laws to enable the deployment of drones and AAM. Both countries offer attractive deployment opportunities for UK developed platforms and systems. The full [report](#) on potential international opportunities for the UK can be found [here](#).

6.1.3. Creating an accessible Future Flight

Businesses lose approximately £2 billion per month by ignoring the needs of disabled people. More than 1 in 5 consumers have a disability with 75% walking away from a UK business because of poor accessibility. The UK is playing a key role in the global effort to revolutionise the way we move people and goods through the development of new innovative aviation solutions. To fully realise the economic and social benefits of these new aviation solutions, they must be accessible to all.

Empowering innovators to embed inclusive solutions in their future flight projects at the concept stage is the key to unlocking the full economic and social benefit. Many companies fail to consider the needs of disabled people and often solutions are an afterthought. To address this, InnovateUK KTN, in collaboration with CCD Design and Ergonomics Ltd (now Mima Group), worked with a selection of organisations to encourage them to think about different scenarios and consider inclusive solutions.

Three commercial scenarios and personas were assessed:

- 1) **Drone delivery service for someone with a visual impairment**
 - a. What products might drone delivery be available for?
 - b. What platform, technology or method of updates might be most appropriate?
 - c. What information will be included?
 - d. How will individuals know the item is being/has been delivered?
 - e. How will individuals know where the item has been left?
 - f. How easy is it to reorder?
- 2) **Urban journey for two people with mobility impairments**
 - a. How will the service and journey to vertiport be booked?
 - b. Will staff be available at the vertiport? who are they, how will they help and what training do they need to provide this?
 - c. What assistance will be available for pre-boarding and boarding?
 - d. Have you considered storage for mobility aids including wheelchairs?
 - e. How will individuals be supported to disembark?
- 3) **Sub-regional journey for family with cognitive impairments**
 - a. What can help alleviate anxiety?
 - b. When booking, what information should be provided and what information will the operator require?
 - c. Who will be at the airport to greet them?
 - d. How will the family fill their time whilst waiting for their trip?
 - e. Will there be any specific facilities the family may need to know about? How will they find them?
 - f. What will be included in the onboard experience to ease anxiety?

g. How will the experience differ from traditional flight?

Some common themes to emerge from the work:

- The need for a trained customer engagement team to support people through their whole journey
- Clear wayfinding, signage and flight information in a range of formats
- Being able to accommodate assistance dogs and/or mobility aids
- Adjustable and flexible designs to cater for a range of impairments (e.g. seat height, charge points)
- Physically accessing the new aircraft and onboard comfort
- Ensuring pre-service familiarity to negate anxiety and/or potential safety issues

Innovate UK KTN will deliver a follow-on accessibility workshop, building on these findings to further empower innovators developing new aviation solutions.

6.2. Cohort and competition events

6.2.1. Drones to negate the impact of COVID-19 consultation and competition

The COVID-19 pandemic hit the UK in early 2020 leading to a national lockdown in March 2020 and a requirement to social distance. This presented a significant challenge in delivering critical operations and services in healthcare, transportation, mail logistics and asset management and servicing. It became clear that the utilisation of drones could help create national resilience and ensure delivery of medicines, vaccines, COVID-19 tests and personal protective equipment (PPE).

UKRI felt they could play a critical role in enabling the rapid deployment of drones to address some of these logistical challenges. Innovate UK KTN worked with UKRI to develop and run a consultation to inform the scope of a new competition. A selection of stakeholders from drone operators, NHS, Local Authorities, airports, CAA, Police and Fire Services were convened for a consultation workshop to identify the most urgent challenges. The resulting competition resulted in 14 projects being funded and the demonstration of impactful use cases and publication of a new procedure.

Use cases

Between those 14 consortia several significant achievements were made through the application of drone technologies including:

- [receiving permission for remote drone flight testing across three UK sites](#)
- [the first UK drone delivery carrying chemotherapy drugs](#)
- [the first UK trials of shore-to-ship medical supply drone deliveries flown offshore](#)
- [the first drone to carry NHS supplies from the mainland to the Isles of Scilly](#)

New guidance on carrying hazardous goods

As a result of this consultation and competition, CAA and UKRI delivered a feasibility study to define clearer guidance for the use of drones to carry dangerous goods in crash proof containers¹. A further test procedure was published in April 2022 through the Vehicle Certification Agency to enable the safe operation of drones carrying hazardous goods².

6.2.2. Future Flight COVID-19 drone projects cohort event

As indicated in 6.2.1, there were 14 projects funded through the £3.5 million FFC COVID-19 Drone grant competition.

On June 16 2021, these 14 consortia attended a Cohort Workshop to learn about follow-on funding opportunities; receive an update from the CAA; share best practice and lessons learned with other projects. Representatives from Trax International, Comma Secured, VTOL Technologies, ARANA Technologies, Motion Robotics, SKYFARER, DronePrep, Apian Aero, Sees ai, Plane Finder, Sigma Associates and E2e Satcom were in attendance alongside BEIS, CAA and DfT.

Discussions centred around:

- challenges of public perception
- interoperability
- future CAA collaboration
- regulatory blockers (Dangerous Goods, BVLOS, Airspace Integration)

6.2.3. Phase II cohort event

Cohort events are a critical part of any innovation grant funding programme. They aim to gather essential information from the projects on best practice and lessons There were 34 projects funded in the FFC Phase II competition and 14 in the COVID-19 cohort, representing £33.5 million in government investment between 2020 and 2021. The Phase II and COVID-19 Biannual event, hosted and delivered by Innovate UK KTN in March 2022, provided a forum to share outcomes and plans beyond Phase II. Around 100 individuals attended the event including the UKRI Future Flight team, UK Civil Aviation Authority (CAA), Innovate UK KTN and consortia members from the two competitions.

The event saw presentations from FFC Challenge Director, Gary Cutts; Kerissa Khan, Innovation Lead; The CAA; and FFC Research Director, Fern Elsdon-Baker. The afternoon session included two panel discussions on skills and infrastructure with representatives from Drone Cloud, Zeroavia, Coventry City Council, ARPAS-UK, AGS Airports, Skyports, Neuron Innovations and Vertical Aerospace.

¹<https://publicapps.caa.co.uk/docs/33/RPF2%20Containers%20for%20Dangerous%20Goods%20on%20RPAS.pdf>

² https://dc346c11-9b06-4f11-8326-4d9532cfa24c.usrfiles.com/ugd/dc346c_55a117d638ab4062a5531cef5fbb872b.pdf

Gary Cutts, FFC Director, UKRI: 'The FFC has always been a highly collaborative programme where this new aviation industry comes together to co-create the future. It was amazing to see the breadth of Phase 2 projects represented at this event, but especially the enthusiasm to continue to share and work with each other to make the challenge a success for the UK.'

6.2.4. Phase III cohort event

There were 17 successful projects in FFC Phase III competition, representing £75 million in government investment. The Phase III event, hosted and delivered by Innovate UK KTN in July 2022, provided a forum to highlight Phase III projects, outline project management and details how projects can integrate their activity with wider FFC activities.

117 individuals attended the event including UKRI Future Flight team, CAA Innovation Hub team, Innovate UK KTN and Project Monitoring Officers, alongside Phase III project consortia.

The event saw presentations from FFC Challenge Deputy Director, Simon Masters; Katy Milne, Chief Engineer, MTC; Vicki Murdie, Innovation Lead; and The CAA. The event concluded with a congratulations from FFC Challenge Director, Gary Cutts to all those present for leading the UK in the third aviation revolution.

6.3. Networking Events

6.3.1. Future Flight Friday webinar series

The Future Flight Challenge requires the development of new technologies and the adoption of non-aviation technologies to create a new aviation system. Innovate UK KTN is uniquely placed to work across a myriad of sectors, capabilities and technologies (e.g. creative industries, Local Authorities, social sciences). To that end, the objective of the Future Flight Friday webinar series was to provide a forum to share insights from non-aviation sectors with the capability to support the ambitions of the Future Flight Challenge. Each webinar showcased new topics and engaging speakers from sectors such as immersive technology, batteries and infrastructure.

The Future Flight Friday webinar series delivered 13 sessions over a 17-month period, saw 2422 delegate registrations and acquired over 4800 views on YouTube.

6.3.1.1. Impact of the Future Flight Friday webinar series

Of those who participated in the Future Flight Challenge Engagement Survey 50% had attended a Future Flight Friday webinar, making the series the most popular form of event run by Innovate UK KTN .

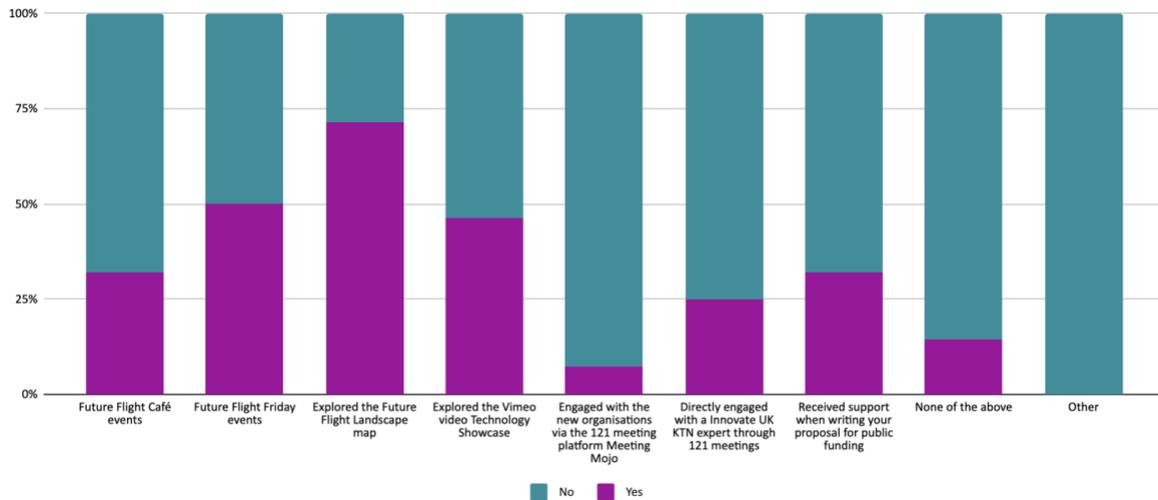


Figure 6: Results from a survey conducted to assess the community’s preferred method of engagement.

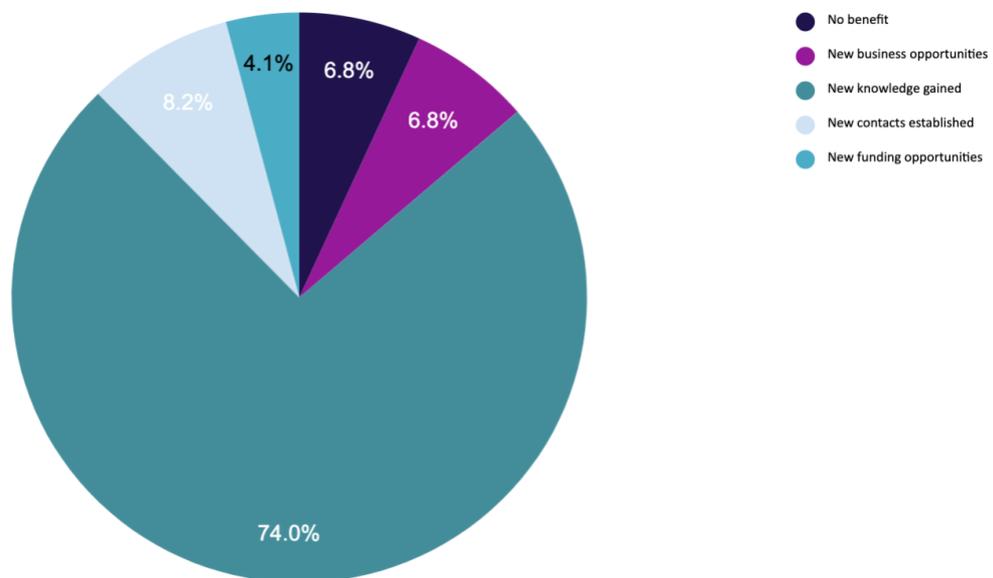


Figure 7: Types of outcomes as a result of participating in the Future Flight Friday webinar series.

Individuals reported they had created new business opportunities and contacts by engaging with the webinar series. New knowledge was reported most widely as an outcome - a key aim of the webinars.

To ensure that the Future Flight network can continue to access and benefit from the Future Flight Friday series a playlist has been created on Youtube (Figure 8). On average from upload date to March 2022 the viewership of the recordings increased by 3 times the initial number of attendants.

[The Future Flight YouTube playlist is accessible here.](#)

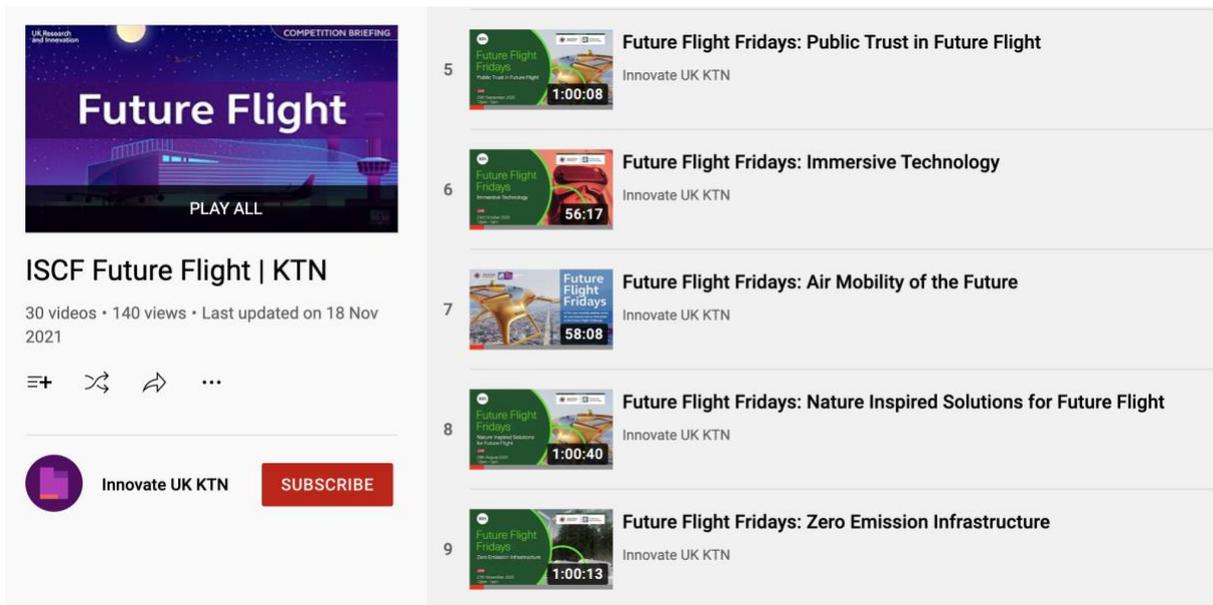


Figure 8: Future Flight Friday webinar series Youtube playlist.

6.3.2. Future Flight Café Series

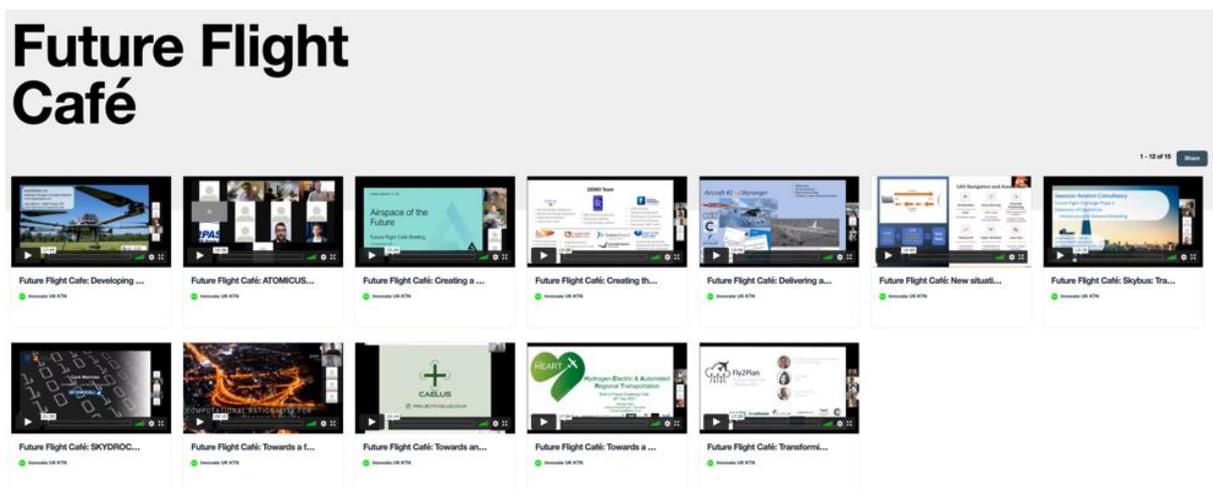


Figure 9: A selection of Future Flight Café presentations from Phase II consortia. All presentations can be viewed in Innovate UK KTN's playlist.

The Future Flight Café webinar series provided a forum to discuss ideas and create new opportunities for collaboration. Over a three month period the series spotlighted 15 Phase II Future Flight projects, offering a platform to share project outcomes, lessons learnt, next steps and call to action for new collaborators.

6.3.2.1. Impact

Overall, the Future Flight Café series was attended by 975 delegates (202 unique delegates) across 123 organisations and 6 countries. As a result of the series, Innovate UK KTN brokered 34 introductions,

Of those who participated in the Future Flight Engagement Survey 11% had attended a future flight café.

Individuals indicating that their introductions were enabled through an Innovate UK KTN mechanism, 6% said they were made by identifying suitable collaborators during a café session, with 14% going on to collaborate on a project.

6.4. Tools

6.4.1. Future Flight Landscape map



Figure 10: Future Flight Landscape Map.

The Future Flight Landscape Map is the first tool to comprehensively showcase UK capability across a myriad of sectors and technologies - all required to create a new aviation industry. The Future Flight Landscape Map aims to:

- Showcase UK capability to position the UK as a global leader in new aviation technologies
- Provide innovators with a resource to locate new business partners
- Provide innovators with a resource to locate experts in the knowledge base
- Showcase the organisations, projects and consortia in receipt of UKRI Future Flight Challenge investment
- Highlight the private investment into UK companies
- Attract inward investment by demonstrating the breadth of UK capability

[The Future Flight Landscape Map is accessible here.](#)

6.4.1.1. Impact

Since its launch in July 2021, the map has attracted 103 organisation registrations and 2,500 views (as of January 2022).

Innovate UK KTN conducted a Future Flight Engagement survey to understand the impact of all their interventions and found: 71% of respondents said they had explored the map and 32% of those who identified introductions as an outcome of working with Innovate UK KTN said they had been made through the map. A further 36% of respondents who recorded making collaborations through engagement with Innovate UK KTN said they had been enabled via the map.

Luke Jenkinson, ELIRE Group “We now have a great understanding of the players in the market and the industry landscape. We have been exposed to the market, allowing for credible and easier introductions through the platform - a common place to share, discuss, collaborate.”

6.4.2. Future Flight Technology Showcase

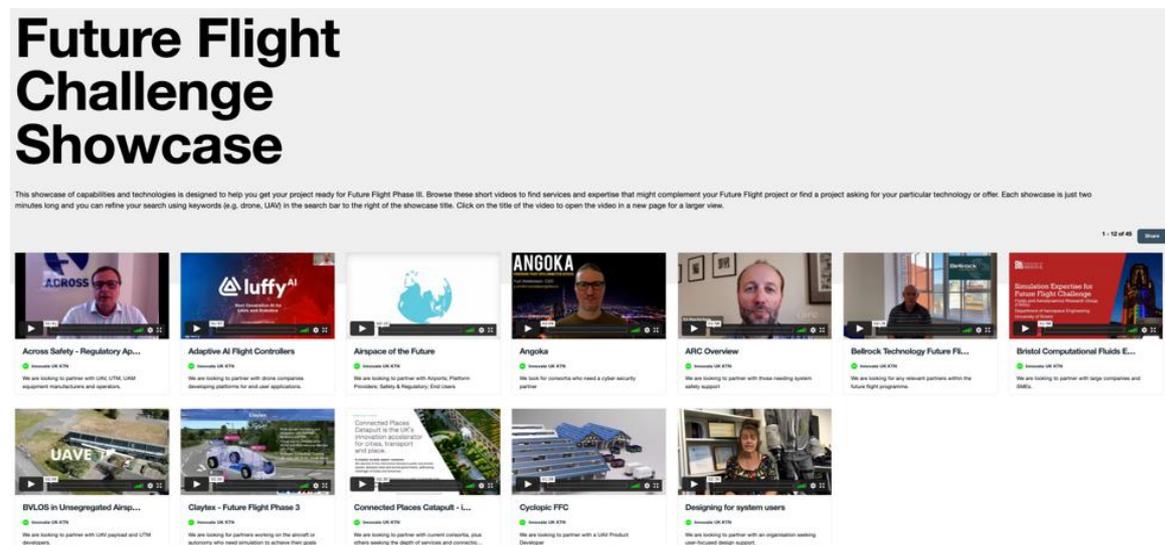


Figure 11: The FFC Technology Showcase Library.

The FFC Showcase provided Phase II projects with an opportunity to share a two-minute video highlighting their aims, outcomes and partners required to build a consortium for Phase III of the programme (Figure 11). There were 42 videos submitted, highlighting an array of expertise in the UK from modelling through to infrastructure.

6.4.2.1. Impact

The technology showcase received positive engagement and feedback from the FFC community with 17% of respondents in the Future Flight Engagement survey having explored the site. Of those who had identified introductions as an outcome of engaging with

Innovate UK KTN, 28% said they had been facilitated through the showcase. Of those progressing to collaborate, 32% had originated from the Technology Showcase making the showcase the most successful tool created by Innovate UK KTN for brokering collaborations.

Jonathan Page, Animal Dynamics “The FFC showcase gave us a much broader understanding of the technology being developed across the future flight landscape. This helped us identify collaborators, and also helped us tailor our application to the Challenge to ensure it focused on our strengths within the gaps we saw within the landscape.”

6.5. Newsletter

The FFC newsletters were commissioned by UKRI and Innovate UK KTN to challenge the misconception that FFC is solely about aerospace technologies, and to share positive stories from projects in the programme. April Six were asked to look at all aspects of aerial mobility to excite, inform and inspire those outside of Future Flight with how these technologies will change the way we live our lives.

April Six achieved this by curating and creating a series of exciting and informative interviews and stories on a quarterly basis for publication in the Future Flight KTN newsletter. Between 2021 and 2022 four newsletters were published:

Newsletter 1: Shared details about the FFC, projects funded and how organisations can get involved.

Newsletter 2: Took a closer look at two projects, Skyfarer and Airspace Integration for Drones, that are beating a path towards regulatory approval for drone deliveries of medical supplies to help in the fight against Covid-19.

Newsletter 3: Looked at the idea of sub-regional aviation: connecting smaller towns which often lack airports and even more remote rural locations.

Newsletter 4: Explored some of the projects that have made great strides in the future flight arena in 2022, as well as looking to the horizon of what future flight will bring in the coming years.

6.5.1. Impact

Between March 2021 and March 2022 four newsletters were published, reaching over 4600 individuals and receiving average open rates of 45% (Figure 12).



	Future Flight Challenge newsletter edition 1		Future Flight newsletter edition 2		Future Flight newsletter edition 3		Future Flight newsletter edition 4		
Subject	Future Flight Challenge Newsletter								
From name	Future Flight Challenge (sp@tes@info.ktnuk.org)								
Filter	No filter		No filter		No filter		No filter		
Last sent date	26 Mar 2021 8:55		14 Jun 2021 15:12		07 Sep 2021 14:22		17 Mar 2022 16:18		
Activity period	DATE RANGE: ALL TIME								
Metric	Total	%	Total	%	Total	%	Total	%	Grand total
Emails sent	225	-	307	-	2,049	-	2,024	-	4,605
Emails delivered	225	99.56%	306	99.67%	2,022	98.68%	1,981	97.88%	4,534
Unique opens	117	52.00%	149	48.69%	702	37.19%	842	42.50%	1,860
Opens	418	-	472	-	2,108	-	2,102	-	5,097
Social network views	0	-	0	-	0	-	0	-	0
Non opens	108	48.00%	157	51.31%	1,270	62.81%	1,179	57.50%	2,674
Unique user click through	30	13.33%	27	8.82%	96	4.70%	146	7.37%	298
Link clicks	46	-	41	-	208	-	463	-	807
Click to open rate	-	35.44%	-	18.12%	-	12.63%	-	17.34%	-
Page views	0	-	0	-	0	-	0	-	0
ROI	0	-	0	-	0	-	0	-	0
Replies	2	0.89%	1	0.33%	12	0.59%	14	0.71%	29
Hard bounces	0	0.00%	0	0.00%	2	0.10%	5	0.25%	7
Soft bounces	1	0.44%	1	0.33%	25	1.22%	38	1.88%	65
Unsubscribe	0	0.00%	1	0.33%	1	0.05%	5	0.25%	7

Figure 12: Future Flight Challenge Newsletter metrics.

Each newsletter on average resulted in 209 direct engagements whether that be email replies, link clicks or page views.

7. Impact of the programme

Innovate UK KTN operates across 22 sectors with 180 subject matter experts ideally positioned to identify the right experts and technologies to create UKs first advanced aviation system. To create this new system requires technologies from other sectors such as the creative industries to build the new aviation value chain.

Between April 2020 and March 2022 Innovate UK KTN engaged with over 2350 individuals, 1070 organisations, including 68 universities, and over 40 key sector areas.

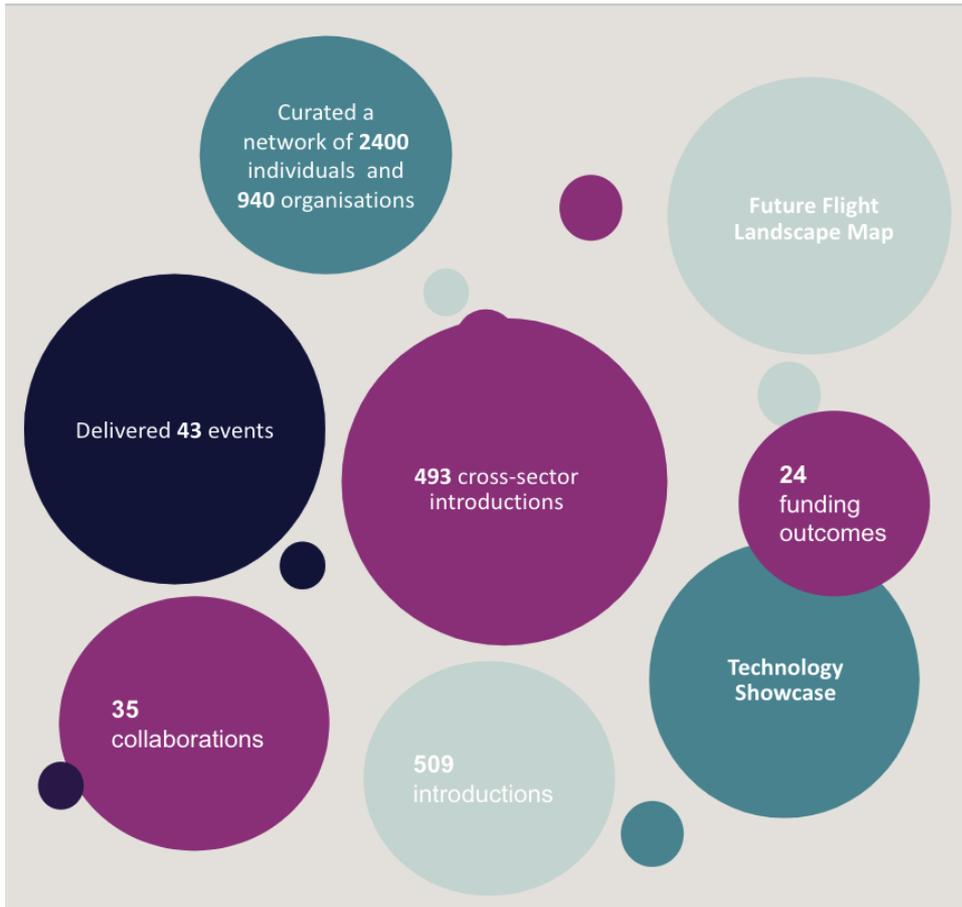


Figure 13: The outcomes and deliverables made by Innovate UK KTN (2020 - 2022).

By virtue of Innovate UK KTN's cross-sector expertise, 580 introductions were made, 35 collaborations brokered and 24 successful grant submissions made between 2020 and 2022.

Table 2 highlights the breadth of capability Innovate UK KTN engaged with and the extent of the value chain development. New connections were made across 31 different sectors in total. Connections between aerospace experts represent just 26 of the wider 580 connections made. This demonstrates that Innovate UK KTN have substantially increased the breadth of expertise and capabilities involved with the challenge and created the UK's first advanced air mobility network.

7.1. Case Study 1 – SATE

Project SATE will create, in Orkney, the UK's first low-carbon aviation test environment embedded within a rural air-transport system. In doing so it will improve the quality of life of the communities it serves (through job creation, adoption of the new technology leading to improved access to education and healthcare, etc.) and place the UK at the vanguard of the adoption of next-generation aircraft and spearhead aviation's response to climate change. The project is anchored on a series of real-world use-case demonstrations (including the existing inter-island and island-to-mainland-UK route networks, service requirements for the offshore-energy sector, and for the NHS) through a set of enabling developments, including:

- Aircraft Operations and Certification
- Energy and Physical Infrastructure
- Digital Infrastructure
- Operational Infrastructure
- Impact and Policy



How did your project engage with Innovate UK KTN?

“The KTN team encouraged and supported HIAL and our partners to apply for UKRI funding. They were approachable, knowledgeable and during the chaos of learning how to work from home at the start of and during the Covid lockdown were very calming and supportive. As HIAL had no previous experience of UKRI applications, the KTN team were invaluable in helping us as the lead partner understand how to present our business case, and we bounced ideas off them and discussed the best way to articulate our ambitions.”

What were the outcomes of your engagement with Innovate UK KTN and how did it support your project?

“The engagement with KTN was clearly a factor in helping us to achieve a successful FFC funding bid for SATE1. The 2020 networking event in Birmingham was a very well organised event and enabled us to build a consortium with some leading-edge technology innovators, giving us the right mix of private & public sector and academic partners. Being given opportunities to present at different events during SATE1 helped build our contacts database and gave us insights into other projects and ideas on how we could collaborate for mutual benefit going forward.”

8. Next steps

Over the course of this two-year programme Innovate UK KTN have built and engaged a supportive community of key stakeholders and organisations, as well as a portfolio of resources to support collaboration across the challenge. As the FFC moves into Phase III and technology deployment Innovate UK KTN's work will:

- Continue to raise awareness of the FFC, particularly to sectors not traditionally associated with aviation
- Support the value chain through strategic business and academic connections
- Enable businesses to grow and access private finance
- Support the delivery and scale the physical and digital infrastructure critical to enabling future aviation solutions to become a reality
- Identify international opportunities and attract AAM manufacturers to the UK
- Identify gaps and opportunities to create a resilient medical delivery supply chain
- Scope out the challenges around co-located energy assets
- Ensure end-users (e.g. Local Authorities) buy-in to the business case an advanced air system presents

9. Appendix

1. Key for Table 2: Introductions by sector April 2019 - April 2022

- A. Aerospace
- B. Business Services
- C. Digital and Communication
- D. Drones
- E. Materials
- F. Batteries
- G. Modelling and Simulation
- H. Regulation/Insurance/Legal
- I. Creative Industries
- J. Autonomy
- K. Air Taxi Developers
- L. Automotive
- M. Infrastructure
- N. Defence
- O. Environmental Research
- P. AI
- Q. Alternative Fuels
- R. Airport
- S. Security Systems
- T. Public Perception
- U. ATM
- V. Logistics
- W. Airline
- X. Airspace Corridors/Control

Y. Vertiport Concepts
Z. Agriculture/Forest/Conservation
AA.Detect & Avoid Systems
BB.Charging Concepts
CC. Unknown
DD. Other
EE.Medical

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