DATE: 05/11//2020
LOCATION: Webinar
START TIME: 9:30 am | END TIME: 11:30 am

Government Drone Pathfinder Community Webinar Q&A

Q1. **Why did the Department for Transport choose to include Flarm and PilotAware for the electronic conspicuity funding? Is the strategy only for devices in the protected spectrum?**

Greg Easter, Department for Transport: I think I will not mention specific companies. However, there are a range of different devices using different systems at the moment. Jointly with CAA, at the moment we don't feel we're in a position to finalize any longer-term future strategy. However, in the interim, we're very keen to support voluntary adoption of equipment that could support increased conspicuity and therefore our attention being safety. I would say that there is very much an onus on people applying into the scheme to talk to the manufacturers and look at the guidance that is out there and to establish what the best continuity solution is for their particular type of flying and the airspace they're intending to fly in. This is in some ways and in some parts of sector quite a contentious issue with differences between different manufacturers products. Our position at the moment is certainly to support the overall market and enable pilots to choose the equipment they considered will best support their flying.

Q2. **Could you please provide the weblink for the six new research projects launched for UKRI Trustworthy Autonomous Systems (TAS) programme?**

Gordon Baker, Department for Business, Energy & Industrial Strategy: With pleasure. The Government announcement is in the link below, but more should appear on broader objectives when searched on Google.
https://www.ukri.org/news/new-trustworthy-autonomous-systems-projects-launched/

Q3. **How is the CAA Innovation Sandbox working effectively given that Boeing NeXt is shutting that division down and other existing aviation players in the Sandbox such as NATS are cutting back on their staff?**

James Bell, Civil Aviation Authority: The effects of COVID on the aviation sector is clearly very difficult for us all, and we are lucky to be able to continue operating the sandbox. But the CAA, as with Government and much of industry, recognizes that innovation is critical to the recovery of this sector and the economy.

The Sandbox is a free service offered by the CAA and so we need to carefully manage how we best utilize our resources. We operate our Sandbox on an open and transparent methodology, including the onboarding criteria. Lessons learnt from the Sandbox and Regulatory Lab activities will be fed back to the industry and aviation sector. Either directly or through updated policy and guidance that we hope will unlock new opportunities.

Mark Watson, NATS: In response to the question stating NATS is cutting its staff, NATS is not cutting its staff in this area and we intend to continue to be active in the areas of UTM and UAM to work with industry to develop it together.

Q4. **If there is no silver bullet for Detect & Avoid (DAA), is there at least a common approach or standardized scenarios emerging to those 4 DAA elements? If not, it implies every BVLOS operator must solve BVLOS safety case uniquely every time?**

James Bell, Civil Aviation Authority: At the moment, yes. Largely every operation is different, although there are similarities between some. But certainly, there are so many factors involved for categories or types of operation. As I am sure a lot of you will appreciate that some operation types might look the same at a high level, but there could be elements in there that make it quite different. So at this stage, it will be a case of unique solution per operation or per type of operation. But again, as the evidence base builds up and industries start to understand what works and what doesn't work, we should start to see building on those industry standards as well. Again, looking at organizations in the UK and there's in the US that are working on industry standards for detect & avoid solutions and we are keeping an eye on all those involved and keeping in touch with those. It's a big collaborative effort, but certainly at this stage it will be unique. The intention is that we are heading towards a more standardized approaches.

Q5. **What constitutes "dangerous goods" for UAS carriage?**

James Bell, Civil Aviation Authority: "Dangerous Goods" is defined by an international framework. International Civil Aviation Organization (ICAO) sets out the definitions and requirements for aviation. These are set out in several technical instructions. However, the United Nations Economic Commission for Europe (UNECE) also provides an easy access reference in their model regulations here: https://www.unece.org/trans/danger/publi/unrec/rev21/21files_e.html

As mentioned, CAP 722 will be updated shortly and will provide more information. We are also looking to produce some guidance for innovators in due course.
More info at www.caa.co.uk/dangerous-goods/

Q6. **Is CPC able to support early-stage startups as well as the large incumbents? Smaller businesses tend to be more innovative and more ambitious but have less resources and may need the help more.**

Andrew Chadwick, Connected Places Catapult: Yes, is the answer. We may not be able to provide you with funding, but we can provide you with access to support with that business and also make introductions to potential investors and other stakeholders that may be interested in the products and technologies you're developing. So, our role in the Catapult is to help develop all sizes and shapes of companies. We are here to help you as best we possibly can but we can't guarantee you any funding. We can help make those introductions and provide help and advice on your business and how you could operate.

Konstantinos Malandrakis, Connected Places Catapult: We have an SME team and platform that help small & medium sized enterprises and start-ups. You can get registered using the link below and the SME team will contact you and provide support and help you to grow.
https://cp.catapult.org.uk/opportunities/join-the-sme-network/

Q7. **Which industry stakeholders has the CPC been engaged with so far on the roadmap development? Not just trade bodies but any operators in particular?**

Andrew Chadwick, Connected Places Catapult: I think this comment was more regarding the future air mobility innovation center where we have engaged with a lot of industry partners varying shapes and sizes. On the roadmap itself, it has been shown with the programs such as the Future Flight Challenge and with the Regulatory Horizons Council. It has been provided as a Connected Places Catapult viewpoint on the next 20 years for future air mobility. We have taken inputs from projects which are currently ongoing and plan projects not just in the UK but globally to inform that. We welcome feedback once this has been released.

Q8. **Reflecting on the point made about "no silver bullet to DAA", what are the sector Pathfinder conclusions from? For example, the Energy Pathfinders, on a common way how BVLOS can be solved?**

Konstantinos Malandrakis, Connected Places Catapult: In order to standardize some of these operations, the key is to identify and overcome some of the technical operation and commercial biases. By identifying these we can maximize the understanding of what is needed in order to standardize these operations. There could be some overlapping or common areas where we can pass across different operations, but we must solidify some specific areas. For example, in the Energy Pathfinder there is some specific challenges you would need to capture and overcome in order to standardize them. The conclusion is that,

first there is a need for assessment of each service and then try to transfer the knowledge to other Pathfinders or other BVLOS projects.

Q9. **One of the major challenges we are facing is understanding how to overcome the Detect & Avoid (DAA) challenge. When can we expect to get regulatory standards / minimum operating performance information for DAA? The current ones are great for larger systems but not feasible to meet for smaller UAVs.**

James Bell, Civil Aviation Authority: Great question and clearly having mentioned the target performance as part of the evidence framework we have introduced in the latest CAP. I think I described how we are asking innovators that come forward into the Sandbox to show us what they think they can achieve. The work that we are doing through the Sandbox is there to explore what is achievable and to prove the safety of their systems in terms of industries capability, etc. And as always, it is very collaborative through the Sandbox. On the CAA side, we are doing some research on what the target level of safety should be for the detect & void. Hopefully, the two will come together at some point in the future. With our participants in the Sandbox, we are finding the detect & avoid is a difficult challenge and trying to get to the point where we have DAA solutions that are safe enough. I see that there are lots of really good work going on. We are moving on to testing phase and hopefully that will generate lots of evidence that we can use to learn and build on. I think it will also be very much dependent on the operating environment; the aircraft that you're using; the system that you're using; and what's around you, etc. So, this kind of builds on the question about the silver bullet for DAA. We will hopefully see that there will be solutions that are recognized and even approved for specific pockets of types of operation first and then, in my mind, as described in the original CAP 1861 back in November last year. Internally, our regular activity in that research stream is to pull all of those together in terms of what has worked, what has not worked, and even down to test plans that have been signed off so we can gather all the evidence together into a matrix across different operational types to build that evidence base. I think that is the key – the evidence we need there. We are also in discussion and liaise with countries to share experiences and see what they are doing. Lot's of good efforts going on, but I do not think anybody including myself can put a date on it. However, we can be optimistic and progressive and see where we get to.

Q10. **Given the Open UTM Framework partners have been announced, how would other stakeholders engage in a similar manner to those within the CPC already to avoid incumbents having an advantage in the future in a level playing field once an official system is declared by the Department of Transport (DfT)? Is there a chance the DfT/CAA framework could differ wildly from the CPC version?**

Konstantinos Malandrakis, Connected Places Catapult: CPC, on behalf of the Department for Transport (DfT), designed a CR&D programme that aims a future framework that brings together Government and industry to develop a UTM system. CAA gets updates regularly on the Open-Access UTM development and provides recommendations on key topics and

research areas. CPC is open to engagement with other stakeholders and discuss any initiative that could be supported by/contribute to the Open Access UTM.

Q11. **Is noise currently considered in the Future Flight program / funded projects in phase 2? Noise could be argued to be a significant issue for public acceptance and therefore wide adoption of these technologies.**

Simon Masters, Future Flight: Yes, there are a couple of these projects that consider noise as part of their objectives. I think one of the things we're going to look at is if there is special coverage in the projects we've funded, then that's great to look at noise. If there is not, then we might choose to sort of make a specific piece of work ourselves or to fund something directly to look at noise recognizing, as the question states, it is important. It might be that we fund specifically to look into that but we're not at that stage yet.

Q12. **Will the presentation slides and video be distributed at a later stage?**

Amanda Hyslop, Connected Places Catapult: Yes, we will issue a link to our Pathfinder webpage as soon as the recording and the slides are uploaded.

Q13. **The National Health Service (NHS) is proving hard to get in touch with the right people. We have engaged with Knowledge Transfer Network (KTN) but no luck thus far, can Simon from Future Flight directly help with those people concerned from the NHS who may have been spoken to and want that solution?**

Simon Masters, Future Flight: Yes, we can certainly try. We've spoken to a number of different people in the NHS and it's probably just a question of passing on the right name, but I'll certainly look at that and respond directly.

Q15. **For Skyports, what are the specs (mass and size) of what the NHS want you to carry? And are there various "sweet spots" of different masses of equipment / medicines etc. that they want carrying?**

Ricky Bhargava, Skyports: It is currently limited to 6 kg using the Wingcopter drone. Pathology samples are the main cargo carried.

Q16. **How do you plan to overcome the resistance to a TMZ from G Class airspace user who do not have cooperative equipment or want to?**

Ricky Bhargava, Skyports: By creating a TMZ it would mandate that traffic would need to be equipped with EC. However, in the interim we would work closely to demonstrate our system capability and work with OEMs to identify non-cooperative traffic.

Q17. **Is there a timeline for allocation of spectrum to drones?**

Steve Limb, Ofcom: Thanks for the question. The European work that is ongoing both in looking at mobile networks and also at the other spectrum, it's not likely to complete for about another year or so. If we get to the point where it looks okay on the mobile network side, we hope it will do but we don't know yet, then something like the latter half of next year or maybe in one year's time we will be able to do that. Similarly, for the non-mobile spectrum, this is probably best handled at the European level and there is work actively ongoing on that in Europe as I said in the CEPT. Unfortunately, that does have a fairly long timescale as well because it's difficult to do things on a European basis very quickly. So that would probably be more or less the same time I'm afraid. So probably about another year away.

Q18. **Is it possible to get a license for a permanent service, like the one Skyports described?**

Ricky Bhargava, Skyports: The trial we are about to embark on is 3 months long. If we wanted to make this a more permanent service, we would need to work with Ofcom to get this. Currently nothing beyond a trial and demonstration licence for commercial operations.

Q19. **Has Ofcom developed a special process or any guidance for counter-drone technology?**

Paul Chapman, Ofcom: I head up the Authorization Policy at Ofcom. When we talk about counter drone technology, there are two aspects of this. There is the detection - radar systems to detect drones. And there's countermeasures, which normally involves jamming. In terms of jamming, Ofcom does not and will not authorize any use of jamming equipment. Regarding the Wireless Telegraphy Act, the use of our equipment is illegal. The Crown and Security Services do have different rules, so they may be able to engage in roles for certain types of jammers. For example, in prisons the Government has brought in legislation that allows prisons to jam mobile phone signals. But in terms of jamming, full stop, that will not be permitted by Ofcom. And if we do find organizations that are not licensed to do so carrying out that activity, then we could enforce against them. Regarding drone detection systems, we have not published anything on our website because there are a number of systems being trialed at the moment and we've been working with the Centre for the Protection of National Infrastructure (CPNI) regarding some of this. Because a lot these devices are offshoots of military equipment, therefore we need to speak to MoD regarding allowing use in the UK. A number of systems have been deployed at airports due to the issue that happened at the other Christmas, so we are able to authorize devices. But because of the ad hoc nature of the various different technologies available, we haven't put anything specific out in terms of guidance in regards to detection of using certain radar systems. When it comes to countermeasures such as jamming, Ofcom cannot authorize that use.

Q20. https://www.ukri.org/news/new-trustworthy-autonomous-systems-projects-launched/

The Government announcement for UKRI Trustworthy Autonomous Systems (TAS) programme above is very interesting, but all seems lockdowns is affecting those institutions. How do external people participate and are there any funds available to participate?

Gordon Baker, Department for Business, Energy & Industrial Strategy: It's not a direct funding scheme that I know of. I think the key is to contact the individuals who have got that support and they're named on the new individuals leading the different institutions or leading the different programs within the institutions that are all on the website. I would say just try to get in contact with them directly as their contact details are all on their university websites. The principal piece that is up and running is the central hub and I think it may be a good starting point. It has just got announced yesterday. I would say go to the Southampton website and contact their lead from the information that's on their website.

Q21. **Could Ofcom's team advise if it might be possible for a company to get commercial permission to use 4G for aerial C2 in 2021 for very restricted use-cases? Or do they think not? An example of a very restricted use-case could be: flight restricted to pre-defined locations; flight restricted to less than 30m in height; and using standard user equipment.**

Steve Limb, Ofcom: I think the answer is probably not unfortunately, because licenses that we issue have to be open and fair. Introducing a very limited set of users such as this would kind of go against that. It's almost like once the door is open, we have to let anybody walk through it who wants to walk through it. So allowing one by one, it's difficult to do that in a licensed product that we would have to develop. And we'd have to go out to consultation if we were to allow use on mobile networks anyway, so this kind of consideration could be stirred into that. But it'd be very difficult for us to introduce this kind of restricted use I think, might not be impossible but it's something we'll have to look at very closely, but I suspect it will be very difficult to do.

Q22. **When can we expect to hear back from the RHC per submitted comments after the DIAG event? What are your timelines for engagement?**

Lisa Day, Regulatory Horizon Council: Thanks for your question. Having chosen our exam question, we will be formulating our approach and follow-up over the next couple of weeks.