HL INFLUENCERS: DIGITAL TRANSFORMATION

TRANSCRIPT

ALISTAIR BLUNDY
ATA

Karishma Paroha	Hello everybody and welcome to another edition of *The Influencers*. I'm Karishma Paroha, a senior lawyer working in the Product and Insurance Sector at Hogan Lovells and the Acting Chair of the IUA's Developing Technology Monitoring Group, founded by my co-host Tom Hughes.
Tom Hughes	Thank you, Karishma. So, the Developing Technology Monitoring Group is one of many groups exploring innovation and risk that we run as IUA [International Underwriting Association]. As an association, we represent many of the largest international insurance and reinsurance companies based in the historic London market. That means day-to-day, I get to work with risk specialists, with innovators and regulators on everything from marine and aviation to environmental and casualty insurance.
Karishma Paroha	Tom and I are hosting a special three-part series where we delve into exciting technology from an insurance perspective and consider risks and benefits of this cutting edge world.
Tom Hughes	And as the insurance voice here, I can't miss the opportunity to say that insurance has a vital role to play in supporting innovation and helping drive positive change. Hopefully we get the chance to talk a little bit about that during the series.
Karishma Paroha	I'm especially excited about today's episode because we're about to take off, literally and figuratively, into the skies of tomorrow. Our guest today is the formidable Alistair Blundy. Alistair is a chief executive officer and lead underwriter at ATA, one of the world's foremost underwriters of advanced technologies. ATA pioneered insurance for advanced air mobility, including electric vertical take-off and landing aircraft, unmanned aircraft systems and other emerging aviation risks.
Tom Hughes	Alistair has led the development of technical underwriting centres of excellence in autonomous systems, battery technologies, electric infrastructure and hydrogen and alternative fuels, overseeing an underwriting team that is leading the development of new insurance products for autonomous vehicles, lithium batteries, battery energy storage

	systems, robotics, and other advanced technologies that define tomorrow's world.
Karishma Paroha	So, to kick off: Alistair, what is it about this technology that makes you so passionate?
Alistair Blundy	Well, thank you very much. Aerospace has always been at the forefront of human technological progress. And I don't think it's just because, as human beings, we have this innate desire to leave the ground, we want to beat gravity, we want to fly. I think it's because it moves so quickly. So, the Christmas of 1903, Orville and Wilbur get their Wright Flyer off the ground and it takes just 30 years to get to lots and lots of piston-powered passenger aircraft in service across the world. And then it takes just another 30 years, so 60 years in total, to get to what we now know as the jet age where regular people could buy a ticket and get on a commercial airliner. And now we're in a world where, I just went on Skyscanner 15 minutes ago, £29 return if you wanna get to Poland on Ryanair, that would be unthinkable till the world of 1903, that's just over 100 years. So aerospace moves so quickly, and right now, in the 2020s, we're moving into a new period of aviation history. It's known as Advanced Air Mobility, or AAM for short. It's been all over the press for the last few years, and here's basically what's driving it. Engineers have figured out that if you put very efficient electrified power trains in aircraft which conventionally have had internal combustion engines, you can rip up the rule book of aircraft design, so you don't have to have a tube and two engines anymore. You can have what's called distributed electric propulsion. So you get as many motors as you want around the airframe. You can have battery modules distributed around. And what that means is that you can optimize your aircraft design for the mission. So you start with the mission, you say, what do we want this aircraft to do? And then we build the fantastic, perfect aircraft to perform that mission. A lot of them are called e-VTOLs. It stands for electric vertical take-off and landing. And the reason they are so compelling, and really the cornerstone of advanced standability, e-VTOLs are compelling because they're able to take off vertically like a helicopter and then transition into forward flight, what's called wing born flight, cruise like an airplane and benefit from the aerodynamic efficiencies of cruising like an airplane with wings. So, of course, all of this can take place at this critical moment in the industry worldwide, where everybody's very concerned with reducing climate impact. And as we know from history, the way to make the world cleaner is not to put a pause on all human progress technologically, but it's to empower the world's smartest people to build the best technology, and then we get cleaner as a world, and that's exactly what's happening in aerospace in the 21st century.

Tom Hughes	Yeah, and it's exactly what this podcast is has been about, Alistair, speaking to people who are right at the cutting edge of new tech. So really appreciate the opportunity to speak to you today. No doubt insurance will have a role in supporting the rollout of this new tech. Now, as an underwriter, you're in the business of risk. I'm sure you've been thinking about potential sources to future claims. Which risks are on your radar at present?
Alistair Blundy	That's a great question. It's a huge part of my job. I think there are five key things, five emerging risks. I think four of them are very interesting, and the last one is not so interesting, but I think it's the most important so quickly, the first one is lithium battery exposure. High Voltage lithium battery architecture can be 800 volt systems, and as we know, lithium batteries can have exothermic events or fires where the cells go into thermal runaway. They're very difficult to put out. So how do we model for that? How many are going to go on fire? If at all? Maybe it's a very, very low risk, but we have to be able to model that. We have to be able to ensure that aircraft are not going to fall out the sky, and that there's lots of redundancy in the battery system, so we're never going to have a situation where we have a battery failure in flight that leads to a critical or catastrophic failure. So that's challenging. Second thing is hydrogen. Hydrogen powered aircraft, you can either have a fuel cell --and the way to think about a fuel cell is about like a battery. So you're converting chemical energy from the hydrogen into electrical energy, which is then driving electric motors, and your only exhaust is water, is H_2O, so very clean. Or you can burn the hydrogen like a conventional engine. You burn the hydrogen, you get thrust out the back. Hydrogen is challenging because it takes up so much volume, and in an aircraft, you don't have much space, so do you take out passenger seats to fit the hydrogen in? But from a risk perspective, if you want to store it as a gas, you need a very heavy tank on board that can't be punctured and therefore lead to a combustion event, or you can store it as a liquid. Now some very, very, very clever people are working on this at the moment. It's just so challenging. You've got to store it at ridiculously cold temperatures, at hugely high pressure, and you have a risk called hydrogen boil off, which people are trying to figure out, which is very hard to control. So that's hydrogen risk. Number three: so we're moving to having fully digital aircraft with fly by wire control. And so we don't really have hydraulics anymore. We don't have cables in the flight controls. It's all digital. So does this open us up to software failure or malicious cyber-attack taking control of aircraft for the first time in aviation insurance history? We might be thinking about aggregation of cyber risk. So what if we have multiple aircraft controlled by the same ground control system? Fourthly, autonomous systems, that's a huge pillar of Advanced Air Mobility, is getting aircraft to make decisions themselves very reliably. And of course,

	the regulations are a patchwork of rules across all of the world's jurisdictions. And so from an underwriting point of view, we see the global book of risks, and we have to try and figure out what the autonomous system is if it's going to be safe, what questions do we have to ask about, protect and avoid, and what does that mean for the pilot? Are hours important anymore? Or if I'm in control of a remotely piloted aircraft, do I need to show my competency in a pilot in a completely new way? So we're thinking about that. We don't just ask for pilot hours anymore. We do. We're asked for that, of course, but we ask for lots more besides. And then the fifth one, 70% of aviation claims are ground incidents. Whoops, I put my pickup truck in reverse by accident, and I punctured a hole with my tow bar in the side of my composite aircraft. It's going to be 5 million quid to repair. The problem with Advanced Air Mobility, one of the problems, possibly, is that a lot of these aircraft are composite, very, very light carbon composite aircraft, and the manufacturers are focused on producing these aircraft and selling them to customers, and are not particularly incentivized to invest heavily in repair capability. So for the insurance market, does that mean that we're effectively in a total loss class, where a small bit of damage in an aircraft means the underwriters are going to have to pay out for a whole new one.
Karishma Paroha	Thank you so much for that amazing explanation and breakdown of those five risks. So I can go a little bit deeper now, as aviation technology becomes more advanced, especially with increased connectivity and automation, how are risks like terrorism and cyber attacks evolving, and what kind of safeguards are being developed to protect both aircraft systems and, most importantly, passenger safety in this new landscape?
Alistair Blundy	Well, the first and most important thing to say about passenger safety is that if these aircraft are going to be certified commercially, they've got to prove to the regulators that they will have a maximum of one catastrophic failure of a critical system every billion flight hours, if they're certifying to ER for standards, which is the European aviation regulator, that's what you have to prove, so you can't really have any risk above that. It's not like there is a break from the regulators for these new aircraft. They've got to comply to the existing safety standards, which are the safest in the world. Aviation still is today one of the safest ways to travel, much more safe than getting in a car. We ask the manufacturers this question all the time. We say, if I want to have a malicious attack on the aircraft system, is it possible to what are the redundancies in place? What are the protections? Of course, everybody says the same thing, our aircraft is the safest in the world. There's no way you're getting into our system. But we said, can you tell us how it works? Can you tell us the details? Around it?

	They say, of course not. We can't tell anyone that. That's the whole point. We've got to keep our cars very close to the chest. So we understand that as an insurance market, we lean on the regulators for these sorts of questions. They have cyber security experts that are working on this themselves. I'm not particularly worried about the malicious cyber-attack elements of this exposure. It's something we've dealt with in other industries before, and we can view it from the insurance desk in a similar way to the way we've always viewed malicious control of an aircraft, or hijack as we know it in the insurance market, taking control of an aircraft maliciously. So it's a similar set of risks to what we've seen in aviation insurance history. It's just slightly different in that we could have the malicious actor, the bad actor outside of the aircraft.
Tom Hughes	Thanks Alistair, and I know some of your early comments, there will be music to the ears of anxious flyers. So appreciate that as well. Now, before we get to a world where we have full automation, there is going to be this challenging hybrid environment where you've got advanced systems and then people, essentially pilots, that are in control and overseeing the tech, and they will need to coexist. I think we can draw some comparisons there to the commercial aviation fleet in operation, but also connected and automated vehicles, which are being trialed on our roads at present. So do you foresee any challenges in establishing liability during that hybrid phase if there is an accident, and how can insurers actually make sure that they've got the access to the important data to handle those claims?
Alistair Blundy	It's key. I think the last phrase of your question was the answer to the question, insurers have to make sure that they've got access to that data that's going to tell us what the machine was thinking. We have black boxes in commercial aircraft today, conventional aircraft, you have a cockpit voice recorder. You can learn a lot from that, but what was going on in the cockpit immediately prior to an occurrence? We're not necessarily going to have that. We're not going to have a computer speaking audible words in a cockpit. So what are we going to have? We're certainly going to have lots of data, lots and lots and lots of data from these aircraft. Is it going to be available to insurers? It will have to be available to the investigative bodies like the AIB or the NTSB, which are the relative crash investigation bodies for the UK and the United States of America. But what about the insurers? So it has to be established, potentially in the policy wording, maybe a condition precedent coverage or an express warranty, that the minimum data required for the liability insurers to assess the loss are going to have to be available to them. But you're right. There's precedent in the autonomous taxi, the robo-taxi space Waymo reports have already driven over 40 million miles with no

	drivers and taking passengers around, we have had experience already in the insurance market of dealing with these sorts of losses, so aviation isn't the first source out of the gate.
Tom Hughes	Yeah, and the express warranty sounds to me like a neat drafting solution. Now, if we just change tax slightly, and let's look at some of the opportunities, it's fair to say that you as an organization have really seen the opportunity that this tech might bring. What do you think the opportunities are for other insurers out there in the market?
Alistair Blundy	The opportunity that's hot is really, I hope this doesn't sound corny. It's for the specialty aviation insurance market to do what it does best, and the whole specialty market, we're here to take on the world's most technical, challenging risks and figure out a way to put insurance capital behind them with enough confidence that it pays claims, so that these innovative companies can do what they need to do, and they can take measured risks, but at the same time protecting the insurance capital, and then everybody's happy. So that's the biggest opportunity. We can do what we do best in the specialty insurance market that we have sort of a mantra at ATA, we never say no to something just because we don't understand it. If we want to say no to something, there'll be good reasons behind it. So an example of the opportunities, actually, when it comes to Advanced Aircraft Mobility insurance, you think about the battery system, the conventional policy wording. Think of an aircraft with an engine burning kerosene. The definition of a unit is in the context of an engine. What is a unit if you have 12 different electric motors and eight modules of battery system distributed around your aircraft and three different flight controllers, and they've all got redundant cabling to all the different motors that needs to be rethought traditionally, an aircraft on the assembly line will move from the property policy onto the aviation policy the first time it's fueled. That's the trigger for when it moves from one policy to another. What if you don't have fuel? What if you've got a battery, and what if it is charged up a little bit when it's manufactured? When does it actually move from the property policy to the aviation policy? That needs to be thought about. And then another opportunity is a lot of the companies that we're providing insurance for are not experienced insurance buyers. They're innovative companies. They've raised a lot of venture capital, and they're very excited about what they're doing. They've hired very, very good engineers, but they haven't bought insurance for the last three decades. And so it's an opportunity, particularly for the broker community, to get alongside companies at a very early stage and get them ready with their insurance solutions, and introduce them to underwriters, get them on site visits, get everybody on board at an early stage. And then the last big opportunity, which a lot of people are thinking about is, well, if we have real

	time flight data, like a fire hose coming out of these aircraft every second, should we be using that to model risk in real time so that we can provide insurance that is much more tailored to the actual risk profile of a particular aircraft and pilot and operator.
Karishma Paroha	Thank you. That's again, extremely helpful for our listeners. If we can now fast forward, let's say five or even 10 years into the future. What do you think the aviation world will look like? Are we talking electric planes as the new normal, autonomous air taxis zipping through the city skies, or maybe even our own flying cars, like in Back to the Future. What's realistic and what's your sci-fi? So a big question.
Alistair Blundy	Yeah, like the Jetsons, I'd quite like a flying car. I've got three predictions, I think. Firstly, every single one of the listeners will have seen an electric aircraft in flight by 2030 if you've been to Farnborough Airshow for the last few years, you'll have seen one there. They're already flying. The picture of Ellis electro is often seen at air shows. Now it's astonishing how quiet it is. The second prediction, we will all see drones performing middle mile cargo delivery missions and possibly improving supply chains. So we will have a network of drones in the UK. They're already in other countries, but we'll see them in the UK and in Europe. And third prediction, four to six seater electric vertical takeoff and landing air taxis will be performing passenger flights around the world, maybe not in dense urban environments, but they certainly will be performing passenger missions. So here's, I think the point about aviation, as we think about predicting the future, we live in three dimensions. So a lot of us live in tower blocks and big cities. We live in three dimensions, but most of us only travel in two dimensions, so you have to get in a car and go on the road or get in public transport, which is in two dimensions, which obviously means that there's a bottleneck when we try and travel. So the only options to travel in three dimensions is to go above the ground or under the ground. Going under the ground and tunnels is great, but you can only go on a defined route, unless you have your own tunneling machine, which is never going to happen. So in order to have the flexibility of your route planning, which we all need, you've got to go above the ground in an aircraft. So there is always going to be a need, especially as cities get bigger and we live in densely populated areas as human beings, we're going to need more ways to travel in three dimensions. So as these innovative companies figure out ways to use the latest technology to maximize speed, range and payload, we're only going to see more of this technology as time goes on.
Tom Hughes	And you've given me that idea now, Alistair to invest in my own tunnelling machine as early as possible, which I appreciate. And is there a final question, perhaps one more prediction from you, so we're confident that the tech will make it possible in due course. But do you think that the population

	is ready to actually step onto one of these fully autonomous, crewless aircraft?
Alistair Blundy	Well, 95% of the functions on that Ryanair flight from Stansted to Poland back are already performed by the computers the pilots only having input for 5% so in that sense, we already are comfortable getting on autonomous aircraft. We still have got pilots in the in the cockpit. We're already comfortable getting in autonomous taxis, Waymo and cruise and other companies doing that haven't had any problems with consumer adoption, as far as I can tell, having been to these places and sat in those taxis and as a consumer, I have no problems trusting it. But time will tell. If you grow up in a world, I guess Gen alpha are now, if you grow up in a world where drone delivery is more and more common, and the street sweepers in London are going round autonomously, and you've got autonomous food delivery in places like Milton Keynes, is it really that much of a stretch to get on board and trust it when the aircraft that you fly on holiday in or for shorter missions is autonomous and doesn't have a pilot on board? I'm not sure it's that much of a stretch.
Tom Hughes	So to wrap up, I think we've learned that right now, electrified aircraft are ready to propel us into a new period of aviation history. The practicalities of that propulsion will need to remain a focus for us, whether it's lithium ion batteries or hydrogen as Alistair says, there are limitations and also risks now there is an opportunity for insurers to provide unique solutions to address those unique risks that the aircraft will bring even if that's as simple as those aircraft bumping into each other on the ground, whether we're ready or not, it sounds as though AAM is going to be the future of flight. Thank you so much, Alistair, for joining us.
Karishma Paroha	It is clear that the skies are changing fast, and it's visionary experts like you, Alistair, who are helping us navigate where we are headed. Thank you all for tuning in. Stay curious and keep looking up. We hope you'll join us again soon. For now, take care and goodbye.