

Everyone, welcome to FlightAware's Central to Aviation Conversations. Today I have the distinct honor and pleasure speaking with Eamonn Brennan, Director General of Eurocontrol, about sustainability, efficiency, and a longer-term view as well. It's survival versus thriving in a post-COVID era that we hope to be in soon. So even thanks so much for taking time to do this and offer us some suadela.

That's great Daniel, listen I'm delighted to be here, and good morning to everybody on your side of the pond. I hope everything is working out so hopefully we have a good chat. Daniel Yeah, absolutely. You know, your background there reminds me that I've missed the annual Eurocontrol User Forum. That's I think is January of every year in your office in Brussels.

I imagine that I'm not the only one there. How are things going at Eurocontrol? Yes. So everything is okay. I mean we're at the same as everybody else. But like just for introduction for Eurocontrol, you probably know we've got 41 member states, so we, we manage the network for basically all of Europe and we do the sustainability of the environment, but also, we collect all the fees for all the air traffic controller organizations.

o you can imagine with the traffic and 70% down in the last year, everybody's getting a little bit excited about financial matters. And, you know, these are problems we're facing at the moment. We're in the middle of a wave, so it's difficult. Yeah, No, I understand you touched on sustainability, which is one of the things I think would be interesting for us to talk about.

That's, you know, a major initiative for Eurocontrol. Many of us know that you recently appointed Marylin Bastin as a head of sustainability. I believe it's a new role and a testament to how important this is to you and Eurocontrol. And of course, it's reflective of the thinking throughout Europe. So But can you tell us a little bit what is the focus of this?

Is this around distribution, availability of things like sustainable alternative fuel, SAF? Is it about enabling airports for an airspace for hydrogen or electric aircraft? Is it efficiency focus? What are you working on there and what's Merlin really taking charge of? Okay. So that's a really good question, Daniel, and it's kind of a very wide question. So, I think it'd be better if I just looked at a startup that to kind of start, for example, if you're aware that there's a global initiative called CORSIA, which has been run by ICAO, which is effectively a carbon trading scheme, and in Europe we have a thing called The Emissions Trading Scheme, which is kind of a European

slightly more severe version of that, but effectively it's carbon trading, it's offsetting. So what we're working on in Eurocontrol is basically on two fronts. One, we're looking at trying to make the air traffic management network more efficient. And here we're looking at things like, you know, efficient routes have vertical flight profiles, trajectories. You know, a lot of the stuff actually some of your products actually offer to people.

But basically, we're looking at, you know, how we can make Europe better because, you know, you know, people have been flying the same routes for, you know, maybe 40, 50 years. The same happens in the United States. You So that's the first thing. And then the second thing is we're looking at what can we do to improve? And we're working very closely with Airbus and with the commission to improve aircraft design.

In terms of, you know, what I would call blended wind, but also hydrogen electrification. And of course, SAF. And there's a huge push on at the moment to promote SAF in Europe. But like it's just a big debate because people see SAF as a long-haul solution and maybe electrification and hydrogen is a short term. So that's what the whole remit.

And then of course we report on everything to everybody. A green deal in Europe is really important at the moment, you know, and Europe is an amazing place because they've concluded that the most efficient form of carbon neutral transportation for everybody is a bicycle. Yeah, I know I can believe that you touched on routes, which is interesting.

We worked on a project and continue to with an airline that's really recognizing that just because it was the way they did it before doesn't necessarily make sense. And I think one of the ironies is you can invest in a very sophisticated flight planning engine, for example, and find the most optimal route from a fuel and perspective. But it might surprise you that if you if you make a list of the ten most efficient routes and of course, you file the first one, you might find out that due to air traffic control restrictions or due to other factors, you end up if you file number one, flying number seven.

Right? And so we've worked with carriers to be able to identify, you know, what they filed versus what they flew, how frequently that deviation is. And they might ultimately realize if you filed the second most efficient route, you'll actually get to fly that, which is far more efficient than trying to over-optimize. And so the problem is a little more complex than people think because of all the, you know, "we're flying in the real world" right?

We're not flying in a flight planning engine. And I think that's even more the case in Europe, where the airspace is so much more complicated than the US with all of your member states. So, you know, you work on that much as it relates to the cross-border policies for handoffs and those sorts of things to help operators optimize even further?

Yeah, I mean that's what, that's actually one of our key functions, Daniel. I mean just to help, if you fly anywhere in Europe, you need a green light for what we call the network manager here

so that your route is, you know, secure from A to B, So if you want to fly from, say, London to Athens, you know, we take your all the steps through and we'll work out the routes.

And of course, we know the fuel and all that. But what you say is very true because every operator files for the best plan. I mean, that's normal. So, if you're not if you're fighting for what you think is the optimum route in terms of great circle, in terms of fuel, in terms of horizontal efficiency. But when it comes to us, we probably are not in a position to offer you that because you know, everybody wants this at the same time.

So, you know, everybody wants to leave London at 640 London time in the morning. That can't happen right? and then you've got the complication of North Atlantic arrivals coming in. So what we do basically is we report it, which is commonly known as a restriction, but the pilots call it slots. And consequently, we get our bad name in Europe, because when you hear from Eurocontrol early in the morning, it's generally not good news because we take the system.

So it is true, which you say that I think sometimes if you some of the airlines had a product and if they looked at, you know, maybe being a bit smart and gaming the system a bit better in looking for route number 4, number 5, that might actually get us. But they all take the view of cascade the whole way down and they leave it up to us.

And we do come under pressure in the morning, I'd say about 6 to 8 just to move 10, So we would just move people everywhere, you know. And the other thing I just want to mention here is we also level cap a lot, Daniel, which is a very, you know, not good for the environment. So we were often operating, say, A320s around the center of Europe, let's say flight level 180, 18,000 feet.

And that, of course, is no have a fuel burn. So I think you can invest in making sure that you fly more efficiently by looking actually at the performance and using big data to actually look at this. Because if you just randomize everything and always look for the best you record, should teach you that is actually not possible. No, that's right.

And I think you touched on, you know, you can get bad news that you're going to be delayed in the morning and the reference to slots people do. I agree completely. People need to recognize that in the U.S. we call that ground delay programs. No one wants a delay, right? Whether he's a regulator, the operator, or the passenger.

But we can all agree it's far more efficient to be sitting at the gate right on ground power, no engines running, than holding over an airport, right? Burning, fuel, putting wear and tear on airplanes, you know, putting stress on the crew. And so the reality is there's a limited amount of runway and space. And so, I think optimizing that is a key thing.

And, you know, we've actually worked on that a bit ourselves. Our information tools are a building block for some of this. You probably know a bit about our predictive technology Foresight. It's having an impact in Europe. One of our launch customers was actually Fraport

and so their airport operations in Frankfurt, which they have a large sustainability initiative, as you know, leverages our data to do a stand in gate allocation and predictions around aircraft movements, which aligns exactly with the thinking that you're talking about now.

It gets good. I mean, the stuff you are doing at Fraport is actually very innovative. Daniel, in terms of managing the arrivals and looking at what the real time situation is. I mean, the reality is that airports can actually help themselves a lot. You know, let's just go back to the basics. I mean, in the last ten years, we've reduced holding in your air, holding by 80%.

That's fantastic. Basic foundations is we keep you at the gate. We won't let you move back unless we can get you in. And we're trying to do things like continuous descent arrivals, even in small sectors in Europe to save CO2, but also the passenger experience. I mean, you know, it might be uncomfortable to be left at your gate, but it's a lot more uncomfortably to be circling round at 0500 over an airport, maybe in convective weather or something like this.

So the more prediction and the more information the airline has and also the airport and think the stuff you are doing with Fraport, integrating the data there is actually very useful to make sure that the actual airport operator for you know particularly for standard allocation and use of taxiways and this is really good. So we think that's looks pretty good.

Yeah, we're excited about it and you touched on weather I'm not sure if you've heard about this. We're really excited. So of course, we have a global network of ground-based Mode S and ADS-B receivers. And so, we have, we've been using that for flight tracking for years. We're using that to support surface movement and predictive.

But we have a new partnership with a company called Synoptic. And what we're doing with them is we're aggregating all of the weather data that we can receive and derive from aircraft. So aircraft, as they emit Mode S emitting more than just positional data so we can figure out things like winds, and temperature, and pressure. And as a result, we're able to aggregate all of that, provide that to them, and they're using it to do better forecasting.

And the bottom line is, once you have really sound truthful data, this can be used by companies in a myriad of applications. It can improve lives not only for flight planning, not only for ground operations, but more broadly, you know, across both aviation, outside of aviation for forecasting. And so, it seems like we're really able to exploit this to have a really, really big impact, which is exciting.

Yeah, that's good. I mean, whether, you know, I was a former pilot, so weather is really important. You know, I mean, we all know this. And if you look at, for instance, with getting real time weather information, I think it particularly if you're using satellite-based weather systems and, you know, the more desktop is pretty standard at this stage, but it really is a good if you can put it together in a package.

I mean, you know what my experience with weather is, is that in the Europe, you know, it comes on it's pretty quick. Mean, you know, we have situations where weather would develop in the core area of Europe and then you've got a problem straight away because your options for diversions are actually quite limited because we don't have a lot of airspace in the United States.

You're actually better weather than we are in Europe because you've got more space. Here. you know, if I've got a storm over Paris, then I've got to either move aircraft out to the Atlantic, I've got to move them over Switzerland. And, you know, both of those are pretty tricky options because they're both very dense. So, you know, predictive weather data is very useful, particularly if a guy decides to himself to kind of move away from it before he realizes that he's in trouble, because real time action is much more difficult for air traffic control.

Yeah, no, that's absolutely right. And I agree with your point about just the complexity of Europe and density as a talk, as we're talking about efficiency and kind of scarcity of airspace, you do touch on one really big issue that is key to sustainability is efficiency. And efficiency has really been the core technical focus of FlightAware. I think in an irony we've seen over the last year is that despite a reduction in demand for travel and, you know, more airspace availability and more airplane availability, we've actually seen a greater demand for this sort of efficient technology during COVID.

I think because there is a scarcity of resources, there's more concern about the economics of operating aircraft, and we've been able to make a big difference. So there's a there's a number of players in ATFM, right? There's some really there's a small number of big players. Eurocontrol being one of them. When we talk about the small regional players, there's companies like Metron, right?

They focus on regional ATFM markets. And this is, you know, regional sort of to the same point you're making about complexities in Europe around weather, it requires a lot of cooperation, cross-border cooperation. So we actually announced the partnership with Metron a few months ago, and they're using our Global data set for use in these regional and cross-border ATFM applications.

You know, what do you see the impact of that sort of initiative, you know, these sorts of applications being for regional and integrating with some of the larger ATFM operators like Eurocontrol? Okay. So Daniel, so I mean, I know Metron very well when I was in the Irish Aviation Authority, I worked closely there with Monty Belcher and all these guys from the FAA that used to be there in Metron.

So their products are pretty good. I mean, what I would say generally about ATFM is the fact that, you know, we've started to move to satellite based. And here in Eurocontrol, we've integrated, for instance, and I know you have the same product, we've integrated Aireon flight data. I formerly was a director of Arrium. We've integrated that into our our ATFM system.

So we now have kind of got global reach that just we look at an aircraft shortly after it leaves Singapore, we look at when it hits European airspace. You know, when you do centers like we advise all the centers along the way to make sure that they handle this flight in this way. So what we're trying to do is maximize airspace capacity by using these predictive tools for planning better.

Because, I mean, if I could give you an example, Daniel, like we've seen examples where, for instance, you know, aircraft leaves, say, Gatwick and they're flying to Milan, and we want them to go a certain way. And then actually what happens is when they take off, the pilot contacts the control center and he gets his body, the controller, to send them and send them a different way because it's actually a little bit faster.

But the reality is by him doing that, he actually has stopped and caused slot delays for others along the way. Right. So, you know, this is why we've got to, you know, enforce what I would call standard ATFM in Europe so that we maximize the overall system. So my my reaction to now we work very closely with the FAA is command center they're just outside Washington and Teri Bristol's team, but there is scope definitely what I would call for product in Southeast Asia and smaller areas, you know, because some of them are developing things called time based separation and other kind of tools like this.

But what I would say is that there's always a good system to plug into the big system, because in reality Daniel, you're probably not going to change the relationship with the FAA that we have because, you know, we have real time with the FAA. You have real time with us. So, you know, we stop aircraft coming across the Atlantic.

If we can't handle them in Europe, in bad weather they can do the same role. So it's important that, you know, two big players do like this, but in the world, they're the two biggest, but they're actually really isn't anybody else doing the same kind of product. So I think there's great opportunity there and it would be very beneficial, particularly I think, in areas like South America but also in North Asia as well.

You know, I think there's good scope there, but really it's got to be on an integrated. Your product, it's got to be a plug in to our product tier. you know, you know, it doesn't really do the operator much good if you can't do that and also with the FAA. So I think there's great opportunity definitely to do that.

You know, I think one of the coolest things that I see in aviation addressing this problem is collaborative decision making, right? CDM Which basically acknowledges that there's a lot of stakeholders here, right? You have the, the ANSP, you have the airports, you have the operators and many other stakeholders. And so CDM, which has a ton of different implementations across, you know, different stakeholders in different states and countries, really enables people to prioritize what's best for them.

And then everyone kind of is collaboratively trying to prioritize what ultimately is best for everybody. When you talk about the U.S. and Europe as it relates to basically taking taking delays or enforcing limitations on capacity, you know, how do you see these systems coming together in in five or ten years? Right. So that there can really be what I would call soup to nuts

CDM Right. So that an operator in Europe going to the U.S., for example, can have a say in that, particularly the larger operators that have a lot of flights and are really a big factor in this capacity. So it's more than a blunt instrument and it ends up, you know, making it be a better travel experience so that operators can focus on, for example, perhaps prioritizing the delayed flight, for example, and ultimately getting people where they want to go.

Yeah, I mean, Daniel, I mean, that's the that's a really important issue. So what we're doing in Europe about it is we do use a blunt instrument at the moment, you know, and the instrument we use is basically restriction slots, flight capping all of these kind of things. So what we're what we're moving to in the future is the is collaboration decision making.

And we work very closely. I mean, just at the moment to give you an idea of the complexity, the problem we've got, we're connected directly live to about 60 air traffic centers in Europe and in Asia, but we're also connected to about 800 towers, UK airports, all of it. So first of all, straightaway, you've got a big data management problem to keep everybody on the same track.

That's problem number one. So action your solution for the future. What we've decided to do is invest about 300 to 350 million in a whole new system for Europe. It'll be really one of the most advanced in the world that's using cloud based technology And the way we're going to get the collaboration of decision making to work is not going to be, you know, the old fashioned way of phoning a guy and talking them around.

Yeah, yeah. But we're actually going to use the cloud so that every air traffic provider and every tower will see the data that we have and will see the basis on which we make the decision. So they'll have an opinion in this. And so to give you a good example, we've had, for instance, some of the larger airlines, and I'll give you a good example would be a flight from, say, London Heathrow.

You know, with Iberia going to Barcelona or going to Madrid. Now, if they're 10 minutes apart, you know, often what happens is Iberia will want the flight to Madrid to take priority over to Barcelona. Why? Because they've got connections. They've going to go to South America. So the revenue loss from a slip up on that plane is much higher.

So this is what we are going to try and get was implement collaborative decision making much more by giving everybody visibility, transparency. And this comes about by using cloud-based technology and interactive dashboards in this kind of thing. And that's what we're going to roll out as part of our INM program. I think that's awesome. I think that having a broader cloud and more consistent approach is helpful because something that I've seen in the past is that there

are so many CDM platforms that, for example, U.S. airlines will implement a broad FAA CDM, but then they won't really have the resources to implement.

For example, example, one of the key programs in Paris, right? Even though they may fly there several times per day, they can't operate 100 different programs. Right? And so you end up saying, okay, only the largest airlines in their home country or airport are actually participating in CDM until it's and until it's, you know, adopted more broadly. There's not really that impact there.

And so what's the time frame for this you know when do you think you'll be rolling this out and operators will start implementing it. So at the moment, Daniel, I mean, one of the big advantages we've got in Eurocontrol is we've got a lot of buy in from the stakeholders. So at the moment we've got about 50, 60 airports networked to us for CDM, all the big ones.

Okay, So straightaway we see what they're doing, They see what we're doing and we react to that. We're going to expand out that program to everybody. So by about 2025, we'll roll out the first version of INM and that will be provided free to basically everybody all over Europe. And the idea is that they will have the common platform.

Now, the reason we think this will work is because it's such a large scale. You know, it's going to be the only platform you actually should use because it'll have all the actual real time information and it'll have the ANSPs, linked together with the TARs, together with the airport operators, and also the carriers as well, the larger network carriers.

So we're trying to get a good platform to make sure that this works. But we're actually going to be also very open in that we give access to this technology to developers or people who want to do front end systems. So to make sure that overall, you know, it's not a monopoly situation, but when you look at it, at the end of the day, you know, somebody has got to smithen the whole thing together.

the U.S. that's the FAA agencies. Yeah, yeah. So you attach a network manager and I've actually participated in the Network Manager Conferences in Advance for about a decade. And one thing that really when people ask me, you know, what's it about? Right. And what's the impact, I talk about the efficiency minded strategy and in particular around the accountability.

AN what I mean is Eurocontrol not only holds itself and the stakeholders to their ANSPs to increasing standards for delays that impact their aircraft, but actually publishes these publicly. And I think that's one of the things that you just touched on a moment ago, which is the 80% reduction in airborne delays. That's something that Eurocontrol publishes, I believe, monthly right.

And has goals to continually improve and ultimately reduce the amount of delays. What do you think the future is of that strategy? Because at some point you're going to see a little bit of

diminishing returns, right? You're already at 80%. And you know, what's next as far as a standard or metric that you want to be held accountable for, for improving flight operations?

Okay. So for me, Daniel, I think we've got a long way to go, too. You painted a very nice I would like to end the interview there because you showed it much better than it actually is. So I talk about 80%. I'm talking about 80% of holding delays at an airport. We have a limit. We got rid of those by the network management.

But what we do not have is en route delays. So to give you an example, in 2019, you know, and in 2018, during the summer, we're averaging about 37,000 flights a day. You know, contrast that with the US, which is 4546, but in a huge land area. So we concentrated 37,000 and a big mix of traffic.

We were running up average. You know, one third of all flights were delayed in 2019. Let's just think that. And the average delay was 49 minutes. Okay? So when you're faced with that scenario, you're doing something wrong. Are you thinking about ground delays or these are airborne delays or delays? I'm talking about en route delays. Okay. So we can't give you we can't let you off the ground because it disguised your FOD.

So it's so it's both really. Yeah. So the problem you've got us in the core area of Europe, okay, you've got a couple of bottlenecks that we're trying to sort out. So we're working very closely with our colleagues in Germany and in the south of France in particular to deal with these hotspots. And the reality is, is as well, is that, you know, also there's great opportunity, you know, in the years ahead to kind of improve this.

But it does need a little bit of, you know, smarter flight planning and maybe just outlined to you in 2019. We were diverting large amounts of flights away from, say, the Karlsruhe area of Germany. We were moving flights away from Barcelona, Marseilles, changing the route. And obviously in Europe when you do this, there's a knock-on effect. And to give you just a simple example, we redesigned the airspace recently for the third runway in Istanbul, and when we finished that, we realized that it had a knock-on effect, a normal approach.

Now you got to think that through. So it's like moving kind of like things up along the way. So all of this is a problem. So for us, I think that we've got about four or five years of a challenge in the iron in the program. We think we're actually sorting a lot of this out because we have to produce more routes.

We will actually be able to produce better trajectories and we'll actually try and put the flights where the capacity are on on one front or and we may even be looking at offering different flight levels at different prices. This is what the European program is, you know, the variability of prices. So there's a lot of options there. But we're about three or four years away.

So just to finish this speech, the key thing at the moment is everybody's taking a pause. And actually what's happened at the moment is in 2020 and at the moment we have collective

amnesia has struck Europe because of COVID. Okay. But I guarantee you that once you go back to 2023 and the summer heats up again, you will find very quickly we'll be back to these delays in the hotspots and then knock-ons again.

And that's where we got our rollout designed. No, that's right. I think that that touches on an interesting point, which is that the likes of FlightAware in Eurocontrol are in a weird position right now because demand for flights is at a you know is a low for many, many years. Yet we're still working on creating the efficiency because we know it's going to come back.

Right. And because we know we have to address these problems. If worldwide flight traffic went down 80% in April 2020, we saw some recovery in the middle and it's kind of second half of last year that went downward again in the US. We've seen a huge recovery in the last, I'd say, month in Europe, not so much.

We haven't seen that type of recovery yet. And as we think about the pandemic and the impact that it has and, you know, you publish a lot of numbers both around efficiency as well as as funding numbers, as, you know, route charges that you have in Europe. It's not a not a factor in the U.S. Funding comes more from ticket sales.

So what are your thoughts about how ANSPs will be funded in the future? And is that going to change as a result of what we've seen in the last year? And how do you see Eurocontrol getting back to a thriving organization, post-COVID? Okay. So so normally in an normal year, Daniel, we collect about 10 billion in recharges. You know, if you think about that, last year

We collected about 3.5, so we're about 70% down. So in funding and of course, obviously this is putting a lot of the squeeze, but it's putting a squeeze on things like capital programs, investments, you know, and it's slowing everything down because it's important. I've always said to all the ANSPs, keep investing in CapEx, you know, now when traffic is low, you don't gain anything by stopping CapEx.

That's right. And you can you can invest. And I think some of the points you're making there, you know, why are people buying stuff off you and why are we doing stuff at the moment? Because actually it's a good time to assess your efficiency and replace labor with technology and, you know, change some things like this. So my my idea is very simple.

I believe that the European system of recharges is actually fundamentally more stable than the American system. I mean, I remember talking to Russ Chu, who was the head of the I think he was Terry's predecessor in the FAA Ops. You know, and I remember they had to take a tax on the on the to pay for ATC. It was added on to the price of ticket.

And the assumption when that was added on was that ticket prices would always keep rising because they did up to then suddenly you look in the United States Southwest come in you know JetBlue arriving, and fares tumbled by 40-45%. Then you find you've got a problem. So I

think European system of having a known funding mechanism, it's not built for this kind of a dip that we've gone through, which is kind of stroke of true.

I think it provides more financial stability for the platform. I'm not a big fan of the American system of where Terry and the team and the FAA have to go every year up to the Hill like bankers and, you know, see what they can get and, you know, argue with the senators. And, you know, one guy said he'd like a rate are here and a guy likes ADS-B and another guy likes, you know Mode S and you're... I feel it takes from long term planning from the FAA.

So I really always favor and have always favored the United States going through a route chart system. And I've been over there on many occasions, discussed this on panels. But, you know, business aviation don't want it. But I think you get a better service from the FAA because it's a great organization. If you've got state budgets. And this is why I think some of the FAA projects can go up and go down.

And, you know, I mean, a good example would be the rollout of ADS-B and particularly the rollout of satellite ADS-B, because they don't have visibility over the horizon on funding, which we do now. We didn't think this was going to happen as put like, you know, let's assume we get back to normal by the middle of next year.

We still have a reasonable amount of visibility. You know, it's interesting, you touched on business aviation, which has a different way of funding the air traffic control system, the business aviation operators, particularly the part 91 pay for these services through a federal excise tax on fuel, which going back to one of the first conversations we had, actually has an incentive for more efficient aircraft because a reduction of fuel consumption actually results in a reduction in the federal excise tax.

Yeah. No, no, that that is, that is true. But, but what I think that the totality of your system needs to be at least to be addressed from an FAA point of view. I mean, if you're looking at sustainability, again, you know, what's really important Daniel is, what fuel you're using. So let's get to the point. in Europe, we're talking about SAF, sustainable aviation fuel.

We don't have any production capability at the moment. Nobody's producing it, virtually none. And where you can get it, it's three times the price of Ja-1. So nobody's going to use it. So we've got to produce incentives for this and both sides of the Atlantic. And this is where I think that we've got to try and align what we actually do.

So for the environment, for me, you know, SAF is a very important thing, but also the new technologies around hydrogen. And here's an interesting thing. We've seen the return of supersonic. You know, transport coming back. You know, there's a number of operators even looking at 'Green' supersonic. Now, I can't get my head around how that works, all that we need, but it is a discussion.

So there's a lot of new exciting initiatives that I think are going to be needed to protect the environment. I think guys like you who offer services to airlines, you know, because airlines are going to be under pressure to have to fly a better route, to use more sustainable fuel, to have a lower CO2 footprint and to also, from a commercial point of view, to lower their their carbon offsetting trades as well.

So there's a lot of product there I think is very useful. And people need to be aware that airlines can save themselves a lot of money if they do this thing correctly. Yeah, that's absolutely right. And I think that there's a lot of technology that's come into play, right? You touched on flight planning, route optimization, touched on, you know, reduction in emission rates.

So more efficient aircraft are certainly a factor that we've talked a lot about, air traffic control delays as it relates to SAF. We have more production in the U.S. Certainly distribution's a big issue. I think a factor that we're seeing is the continental United States is huge. Right. And we not only have distribution issues getting SAF from one place to another, but a tremendous number of airports, not only in the commercial sector, but particularly in business aviation.

Conversations that I've seen take place between FBOs and large business aviation operators is they're saying, well, you're only offering SAF at a very small number of airports. Maybe it's fewer than a dozen in many cases. And they're flying to the two thousand-something airports around the United States. And so an opportunity that's come to fruition that has technology elements as well is a program that allows operators to essentially purchase SAF, even if they're at an airport that doesn't have it. Not have any of the distribution overhead, that just doesn't have the economies of scale right now.

And then an operator that isn't purchasing SAF at an airport that does have it can actually receive that in their aircraft. And so that's a stopgap that allows operators to have that environmental focus that are willing to pay the premium. They can purchase it essentially anywhere they go. For example, at a signature flight support. They're a big proponent of that.

And then they don't really have to have any of the inefficiencies. You know, you don't want a truck to drive across the United States with a thousand gallons of, SAF, burning diesel along the way. So it has to be done efficiently. And I think that's an interesting approach, perhaps something that something we'll see across the Atlantic as well as it rolls out there.

Yeah, no, I agree with you. It's a big problem, Daniel. I mean, the rollout itself is a major issue in Europe where, you know, British Airways, for instance, are partnering with two firms in London and that KLM have a very, very good project. So I think we'll see a little bit of take off. But realistically, you know, if you look at, for instance, say, common engines like, say, the CFM56 or those type of engines and a mixed ratio there, you know, to get to a 30% mix ratio is going to take, is going to take a lot.

It's going to take and you know the question about engine certification, and propulsion, and maintenance contract. So some of the actual, you know, maintenance contracts of engine, engines at the moment, you know, I find, preclude you from using SAF, you know, so we've got to straighten out the whole what I would call regulatory chain as well as the supply chain.

And to me, you know, the more quickly you get a marketplace going in SAF here, I would think like SAF futures in secondary trading and in SAF. The more you start making a financially good product, the more people start producing it and we drop the price because honestly, I don't see SAF taking off when it's three times the rate at the price.

You know, I know that it's never going to be the same price as Ja-1. But you know, the current factor of 3 to 3.5, you know, the ultra low-cost airliner is better off just pay they pay the carbon credits. Yes. Gives you a lot of messing and it's a lot of that you know so difficult situation. It's early days there's no question about it.

And only the most environmentally minded operators probably are willing to pay that premium. The good news that we're seeing in business aviation is that the engine manufacturers have come out and this has been a huge initiative, for example, again, by the General Aviation Manufacturers Association and NBAA to ensure that SAF is certified and approved for use in those engines.

And so we've actually seen virtually across all of business aviation approval for whether it be engine service contracts or power by the hour or warranty to support as they have. So it's an interesting time and I think that there's going to be a lot more change to come, right, Whether it be across SAF, how flight planning is done, how CDM is done.

And so we're seeing widespread change in the industry. And for us, the last year, just like it Eurocontrol has been, has been about adapting. And so we've prioritized projects, we've been supporting customers, whether it be financially or technically in ways that we didn't anticipate. But we're looking for the long game just like you, right? We're not we're not focused on right now as much as we're focused on.

Let's take this time to think bigger picture. How can we have a bigger impact next year? It has worked. You know, we've continued to thrive during this last year and with no layoffs. And we've actually launched a new program at FlightAware called FlightAware Worldwide Teamwork, which is basically embracing this remote work program. We have been remote since March of 2020.

It's been a huge success. People are happy, better work life balance, flexibility, you know, spending more time with family, not commuting. So this is our work from anywhere work from home, hire, from anywhere policy. We're seeing great recruiting around the world and we're going to double the company over the next two years. We're planning to hire about 50 people this year and not just in the places where we previously have hired in our offices Houston, Austin, New York, London, and Singapore.

It's all over the world. So I feel like when we get out of this pandemic together, we're going to be stronger than when we've entered and having an even bigger impact on the industry. And I've enjoyed speaking with you because it's clear that you're thinking the same way and Eurocontrol is thinking the same way. You're going to exit this on the same mindset, stronger than ever before. Hopefully.

So. I mean, you know, it's a big challenge. I mean, the you know, the European network is it's going to take a bit of time to recover. I mean, the the area that I'm worried most about at the moment is the long haul. You know, we're not going to see long haul travel return on the North Atlantic, but equally so to Middle East and Asia for probably October, November.

And, you know, and so a lot of the bigger airports in Europe, the hub and spoke airports depend on this long haul. So a lot of operations are feeder operations. But in parallel to this them, Daniel, there's a lot of areas in Europe that where connectivity is very important. I hear you've clashed with the environment. People, you know, so you look at the Western Isles and Scotland to the west of Ireland, to the Greek Islands or Italy.

There's a lot for small commuter aircraft and small airports there that I worry about, whether they'll be able to recover economically, you know, after this case, because they don't get the level of state support and they operate with low-cost operators, particularly, You know, we have airports in Armenia and Georgia and places that are at the edge of the network.

So there's a huge challenge for me. The important thing about using the current time is to kind of like, you know, we use the phrase build back better. But that's true to an extent. I mean, we don't have the flexibility that you have in terms of letting everybody off to work at home. We've have nearly a third of our staff working at home

But unfortunately, you know, we're mainstream operators and we've managed to work like that. And I think that work life balance will change. I mean, just to give you an interesting fact, you know, we do a lot of work with the big operators and the big operators, the CEOs of the airlines tell me that, they estimate that one in four journeys business class will probably be substituted.

You know, so it could be a Zoom call like we're having now. That's kind of a 20% reduction. So that's going to change the way the aircraft is going to be configured. You know, probably less business class, a little bit more leisure. But I'm quite confident that airlines will return very strongly. And I actually don't subscribe to the general view that people want to travel as much.

I think they'll travel more. I think there'll be pent up demand. And I believe in people flying. I believe in freedom. And I don't like being locked down and all these kinds of things. So there you go. Eamonn, I agree completely. It's about travel. I think that Zoom is great, and I think that it's here to stay and it will replace phone calls and it's more personal.

Over the last year, I've had the opportunity to do a few small numbers compared to my normal weekly trips. But if a few trips and had some, you know, safe outdoor meetings with folks and when I'm flying home, I'm thinking, this is incredible. You know, the amount accomplished in that 90 minutes, You know, having a coffee outside was ten times, you know, an entire day of zooms.

And I think this is better than a phone call. I think that I would have preferred to do this with you in person. I think the impact would have been so much greater. I think that I think you're right. People not only want to travel for leisure, but for business. I think there'll be a shift in business travel.

But at FlightAware, you know, I mentioned our worldwide program for hiring. But we anticipate ultimately having, you know, a reduction in our large office expense, but massively increased travel expense. Right. We're going to be bringing the entire team together globally multiple times per year. We're talking about teams getting together for team building. When we go visit a customer, we're going to bring more people because it's an opportunity for bonding and for teamwork before and after the event.

And so as as a, you know, small, you know, representation of what that's going to look like, we're seeing more travel and increased travel expense. And I think you're right, it's going to be different. There will be reconfigurations, but you don't talk to anybody that's saying, well, I haven't really traveled in the last year and I'm glad., right?

Or I'm not looking forward to it. Everyone is chomping at the bit and I think we're seeing that a bit in the recovery in the U.S. and I think we're going to see that more broadly. And I'm optimistic that the next time I see you will be over a meal rather than over Zoom. And so there's a trans-Atlantic trip either in Houston or Brussels maybe a pint to give maybe a pint of Guinness. Now might be more myself Daniel. How about that?

There you go. I'm game. I'm just looking for the invitation and the opportunity to do it. And you're always welcome. You're always welcome. Well, it's been a pleasure speaking with you. I'm looking forward to that, that invitation. And you can know that I'll take you up on it and we'll speak again then. Okay? Thanks, Daniel. And listen, I wish FlightAware and all our colleagues in the United States the very best and your worldwide customers hope it goes one for you and I keep in touch.

Likewise. Same to you, your family, and our colleagues. The Eurocontrol. Thanks again Eamonn and have a good evening. Altitude, Ciao!