

# FARNBOROUGH INTERNATIONAL AIRSHOW 2016

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Official opening of the Farnborough International Airshow 2014. [ESA-S/Corvaja]

## UK aviation industry declares 'business as usual' despite Brexit

British aviation businesses, large and small, are split over the consequences of Brexit run. But they do agree that divorce negotiations between the UK and the EU need to be quick in order to avoid further uncertainty.

Despite turbulence triggered by the UK's vote to break with the EU, aviation representatives at the Farnborough Airshow were unanimously reassuring about the industry's perspectives.

Damage to the aviation sector, if it ever materialises, will not come before two or three years, they claimed.

"This is 'business as usual'," a representative of BAE Systems told EurActiv.com in an informal conversation.

"As a public institution, our line is the government's position: this is 'business as usual,'" echoed an official from the UK space agency.

The ringing endorsement for Britain's future in the aviation industry may come as a surprise, given the importance of the sector for the British economy. At 3.4%, the UK has the highest percentage of GDP derived from

aviation-based businesses in Europe.

In fact, even the official line is not that reassuring.

In his opening speech at the Farnborough Airshow, Prime Minister David Cameron admitted that Brexit represents "the biggest challenge for the British political system" in the last four decades.

In spite of those risks, Cameron said he was confident that "the UK will continue to lead the world in both civil and defence aerospace". But given his previous declarations about the economic threat posed by Brexit, this is a promise that rings hollow.

Across Europe, policymakers avoided the air show, probably to evade unpleasant questions about Brexit.

The EU's Commissioner for Transport, Violeta Bulc, who was invited to attend the air show, declined. Members of her team explained this had nothing to do with the outcome of the Brexit referendum, saying she announced her decision before 23 June.

EU institutions were represented by a handful of officials, including Clara de la Torre, Director for research and innovation at the European Commission's DG Research, and Romanian Partidul Național MEP Marian-Jean Marinescu (EPP).

### Should I stay or should I go?

In the end, the strongest commitment to Britain's aviation industry probably came from Boeing.

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The American plane manufacturer pledged to increase investment and create new jobs “in recognition of the capabilities and opportunities presented by the UK aerospace and defence industry”, the company said in a statement.

Boeing will make the UK its European base for training, maintenance, repair and overhaul for its defence arm, and increase staffing across commercial aviation services by 50%.

“This long-term commitment shows the UK is open for business, and attractive for investment,” Cameron said.

Over the last five years, the US company already doubled its UK workforce to 2,000 people, and more than doubled its annual spending on British suppliers to \$2.65 billion (€2.39bn).

But not all big players in the aviation industry were so positive.

Airbus’ Chief Operating Officer, Tom Williams, warned that the company could make “big decisions” if the bureaucracy implied by dealings with British suppliers became a problem after Brexit.

“We haven’t pulled back on investment in the months running up to Brexit. We have no major decisions on the horizon, which gives us two-three years for the whole thing to settle down. But then there will be big decisions,” he warned.

“With Brexit, nothing has changed in the short term, but of course future investment does come under review,” he said.

Most companies, however, preferred staying away from drawing conclusions for the long-term.

“At Rolls Royce we are thinking a way through the implications at the moment,” said Ric Parker, director of Research and Technology at the company until April this year.

Parker, who is now a senior advisor at the company, recalled that Rolls Royce is not only a British aviation firm but also a European group.

“We employ nearly as many people in Germany, Sweden, Finland or Spain as in the UK,” he said. In this context, he

added, “certainly Europe is an important market for us, but equally we are an important market for Europe, since a lot of our components come from EU manufacturers”.

This is why Rolls Royce expects policymakers to show some “sensitivity” and avoid erecting barriers to trade between the UK and the EU, Parker said.

Similarly, BAE Systems, one of the largest defence contractors in Britain, said nothing would change in the short term. “While we await the outcome of the UK’s negotiations with the EU, we do not anticipate any immediate or material direct impact on our business,” the company announced in a prepared statement.

### SMEs divided

While BAE Systems and Rolls Royce might be able to navigate around Brexit pitfalls, smaller players of the aviation sector were mired in uncertainty.

“My boss is really concerned but I don’t think that it will be that bad,” an employee of a medium-sized company said on condition of anonymity.

Brexit “will not be much of a change, because most of our business is in the UK,” said Marc Graham, business development manager at PGT Ceewrite.

But other small firms said the break-up was already having “terrible” effects on business. Maurice Morsia from Peli, a technical packaging company, said the fall of the pound has cut the firm’s profit margins by 20%.

“We have to put our prices up,” he said.

“For many people, Brexit was a protest vote against the government, but what they have done is to shoot themselves in the foot,” said Morsia, who also holds an Italian passport.

The geographical differences seen in the referendum vote were also visible among the businesses present at Farnborough.

A boss from a medium-sized company with 28 employees in the Midlands, who

did not want to be named, said that leaving the EU “could be good because some decisions, such as trade agreements with the US and Australia, could be adopted more quickly”.

Even though Europe represents 20% of the company’s market, he believes that sales will not suffer after Brexit, saying the divorce from Europe will allow Britain to “escape from the “Brussels’ dictate.”

The feeling was different at Springco, a Northern Irish firm with 45 employees.

“We were shocked by the results,” said a senior manager there who was attending the Farnborough Airshow. “We expect uncertainty for the next two or three years”, he said, adding that “investment in the industry is going to be curtailed slightly”.

The bright future depicted by Cameron is “slight wishful thinking,” he claimed.

### Bad for the UK, good for Europe?

One area clearly at risk from Britain’s break-up with Europe is public-funded research programmes.

Brexit will bring an end to the country’s successful involvement in Clean Sky, the EU’s public-private aviation research programme.

British SMEs, research centres and universities were leading participants in the first edition of Clean Sky. They are also playing a big role in Clean Sky II, the €4 billion programme aimed at keeping Europe at the forefront of the technological race in the aviation sector.

“The UK is a major participant,” confirmed Ric Parker, who is also the Chairman of the Clean Sky Governing Board.

After Brexit, the UK could continue its association in the initiative like China and Israel, which bring their own money to the programme.

Meanwhile, the UK’s exit could finally pave the way to reach an agreement on Single Sky, the EU’s initiative to harmonise the European airspace and create more efficient routes.

# Aviation industry preparing for 'eleventh hour' deal on emission trading

An agreement on curbing emissions from international flights will be reached at the ICAO general assembly this autumn, according to industry sources, while biofuels continue to struggle to emerge as a long-term solution for greening the sector.

More fuel efficient planes, with a smaller carbon footprint and less noisy engines, have become the holy grail for the aircraft manufacturers.

Building on the COP21 agreement reached in Paris last December and new standards for aircraft, the industry believes it is in a good position to progress on its sustainability goals.

The aviation sector committed to achieving carbon-neutral growth by 2020.

The big test will come at the end of September when 190 countries will try to reach an agreement on the creation of a global market-based mechanism to offset CO<sub>2</sub> emissions from international flights.

"I am very optimistic. As long as you do not have to watch the sausage being made, it will be a great meal," said Alan Epstein, Vice-President of Technology and Environment at Pratt & Whitney, a US engine maker.

But despite the political willingness, talks could drag on until the very last hour given the technical complexity of the deal, according to European negotiators and industry representatives.

"I expect an agreement at 3 AM the day before the vote," Epstein told EurActiv.com at the Farnborough Airshow.

ICAO members already reached an important agreement in February when



*The Airbus A320neo consumes 15% less fuel, cuts noise, and reduces NOx emissions by 10%. [ASDS Media]*

new standards were set to integrate fuel efficient technologies into aircraft design and development.

The agreement aimed at "slowing the growth of our environmental footprint in the near term but also in the long term", said Randy Tinseth, Vice-President of Marketing for Boeing Commercial Airplanes, who was speaking in Farnborough.

NGOs criticised the new standards for not going far enough, arguing that Airbus and Boeing are together responsible for 90% of CO<sub>2</sub> emissions from planes worldwide.

As the aviation market is expected to double in the next two decades, governments and the private sector are aware that more efficient engines and emission trading would be only part of the solution.

Biofuels may be the linchpin of the strategy.

"Gradual improvements won't be enough to resolve this conflict," warned Ralf Fücks, President of the Heinrich Böll Foundation, a think tank linked to Germany's Green Party. "Up to now, improvements to efficiency in fuel consumption have been offset by the rise in flight traffic," he told a recent event in Brussels.

The airline business currently flies around 3.3 billion passengers each year, a number that is expected to double by 2035.

By 2050, the objective is to reduce nitrogen oxide (NOx) emissions in flight traffic by 90%, CO<sub>2</sub> emissions by 75% and

perceived aircraft noise by 65%.

## Biofuels: 'Probably the most important'

Epstein believes that biofuels could form "probably the most important" part of the package to achieve a greener aviation sector.

Biofuels derived from biomass can reduce the carbon footprint of aviation fuel by up to 80%, according to its promoters.

But in the context of cheap oil, these fuels made of algae or industrial waste cost on average more than twice the price of standard kerosene. In the long run, the industry is aware of the need to continue pushing for fuel efficiency improvements.

"Despite the current moderate price of oil, fuel continues to be the number one cost factor in air travel," said Tom Enders, CEO of the Airbus Group.

"Airbus will only survive against global competition if its aircraft can fly as efficiently as possible," Enders told the Brussels event where a report on the future of aviation was presented by the Heinrich Böll Foundation.

In order to push for biofuels development and market introduction, the European Commission set up the Biofuel Flightpath Initiative in 2011.

Through different policy decisions, public funding and private sector cooperation, the goal was to achieve an annual production of 2 million tonnes of fuel coming from renewable sources by 2020.

# Hackers bombard aviation sector with over 1,000 attacks per month

As airlines and airports increasingly become targets of cyber attacks, the EU's aviation safety agency has urged taking cyber threats "seriously" by launching a common strategy.

In the US, Turkey, Spain, Sweden and recently in Poland, aircraft infected with malware or security breaches have provoked delays, loss of information and a wave of growing concern among public authorities, regulators and the industry.

The fear is that one day terrorists, clicking on a laptop, will be able to crash planes or make them disappear from radar screens.

"We have to be prepared always for the worst," said Luc Tytgat, Director of Strategy and Safety Management at the European Aviation Safety Agency (EASA), an EU agency.

In one of the clearest indications to date of the magnitude of the challenge, Tytgat said aviation systems were subject to an average of 1,000 attacks each month.

"We have to take it seriously," he told a recent event in Brussels, urging all EASA partners and cyber experts in member states to develop a "common understanding" of the risk management procedures and the information sharing mechanisms required to minimise risks.

"We do not have much time," he insisted.

In an industry that knows no borders, devising a common strategy to tackle cyber threats has become a top priority over the last years, particularly in Europe and the United States which are home to the world's two biggest plane makers.



*According to experts, on-the-ground management systems offer more vulnerabilities than the plane systems. [ROMAN BOED/Flickr]*

Brian Moran, Boeing's Vice-President of Government Affairs for Europe, highlighted the "importance" of transatlantic cooperation on the matter.

"It is absolutely essential," he stressed during the same debate, saying "there is a great willingness to cooperate".

## EU's new cyber centre

At European level, the response will take shape in EASA's new cybersecurity centre, Tytgat indicated.

The Aviation Computer Emergency Response Team (AV-CERT) will help understand the nature of the threats, collect evidence of previous cyber attacks, identify security flaws and vulnerabilities, analyse and develop responses to cyber incidents or vulnerabilities – whether workarounds, recommendations, or technical solutions.

Those European efforts mirror recommendations by the high-level advisory committee set up in June 2015 by the Federal Aviation Administration (FAA) in the US. The aim of this committee is to identify risk areas and reach a consensus on international design and testing standards to counter cyber attacks.

## ICAO priority

Reflecting growing international concern for the topic, cyber security will be on the agenda of the International Civil Aviation Organisation's general assembly in September 2016. The UN body had already flagged cyber security as a "major concern" in 2012 but the issue has gained in emergency since then.

ICAO is expected to adopt a resolution urging member countries to align cyber security responsibilities within respective governments and adopt a flexible, outcome-focused approach to deal with this new kind of risks.

According to Tytgat, the EASA and the FAA are drafting a common position "very urgently" as a contribution to ICAO's proposal.

Hackers turned into cybersecurity advisors have played a major role in bringing the issue under the spotlight.

Chris Roberts, an IT expert, shocked the aviation sector and security agencies when he claimed that he hacked repeatedly a passenger jet through the entertainment console of his seat. He said he was capable of manipulating the

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plane's engines during a flight.

His comments triggered an FBI investigation and US warning to all its airlines' personnel to watch out for passengers attempting to connect their laptops to devices on board.

But according to Hugo Teso, a Spanish hacker and pilot, it is not necessary to get a computer on board.

Teso, now a reputed advisor for aviation companies, stunned participants in a closed-door meeting back in 2013 when he suggested he could take over an aircraft's steering system with a mobile phone.

"In modern planes, there are a whole series of backdoors, through which hackers can gain access to a variety of aircraft systems," he warned.

But Boeing's Moran was less alarmist, arguing that today's aircraft are "secured" against such intrusions. Instead, he stressed the importance of better protecting the ecosystem in which aircraft operate – from the maintenance systems to on-the-ground management systems and the cockpit.

## Risks on the ground

Experts tend to agree with him. Currently, the main vulnerabilities are identified with on-the-ground networks connected to planes that upload or download flight-related information.

EASA points out that these systems are less secure than those installed on the aircraft.

Nowadays, hardware used by passengers during the flights, such as the Wi-Fi connection or entertainment consoles, are physically separated from critical onboard safety systems. That is the reason why experts questioned Roberts' claim about the manipulation of the jet's engines.

But the effects of cyber attacks against on-the-ground systems have already shown their effects.

In June 2015, an attack grounded around 1,400 passengers when the flight plan system of 10 planes went down for around five hours at Warsaw's Chopin airport.

Hackers used a Distributed Denial of Service (DDoS) attack, a malicious

technique commonly used on the Internet to overload an organisation's system with multitude of simultaneous communication requests.

The attack took by surprise many actors, including the affected companies.

"This is an industry problem on a much wider scale, and for sure we have to give it more attention," LOT chief executive Sebastian Mikosz told a news conference after the incident.

"I expect it can happen to anyone anytime," he said.

While many airlines and airports have robust systems in place to tackle cyber attacks, "they haven't always taken a holistic approach to the IT environment or considered the broader threat to the aviation system," warns the International Air Transport Association (IATA).

"The next 9/11 will be caused by computer hackers infiltrating aircraft controls, not suicide bombers", Dr. Gabi Siboni, director of the Cyber Security Program at Israel's Institute for National Security Studies, said in a conference this year.

## Member states to impose 'no-fly zones' for drones

For some, drones represent a promising technology to expand our capabilities in the field of parcel delivery, humanitarian assistance or infrastructure maintenance. But critics point out that these aircraft also raise some concerns in terms of safety and privacy.

After an intense preparatory work of more than a year to address the patchy legislative approach across Europe, the EU will come up in the next few weeks with a proposal to centralise the powers to regulate all types of drones.



*The new EU proposal will remove member states' authority to regulate small drones.*  
[ANDREW TURNER/Flickr]

The proposal could be announced even before the summer break, EU sources told EurActiv.com.

## Not only the big ones

To date, the European Aviation Safety Agency (EASA), the EU's regulatory body

in this field, only regulates unmanned aircraft above 150 kg.

In parallel, the executive together with EASA, is preparing a new set of measures to address some of the flaws observed in the growing penetration of these objects.

Officials explained that these measures will require the identification of the vehicles and the register of users as a way to ensure compliance with the new rules and to enable their enforcement.

The new implementing measures will also call for limitation zones (or geo-fencing) to avoid the crash of drones against passenger jets or city goers

The criteria to determine the level of identification and geo-fencing will be based on EASA's risk-based approach

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set up last December by EASA in the technical preparatory work.

Member states would be responsible to define the “no fly zones” to be protected.

In order to avoid medium and large drones access these areas, which would include airports and cities, satellite geo-location will allow for automatic limitation of the airspace.

Larger drones should also count with “detect and avoid” system to avoid collision with other aircraft or objects.

Smaller drones, mostly used by consumers, must include operational restrictions to limit safety hazards, for example, to limit flying above 150 metres.

Authorities are becoming increasingly concerned about the access of drones to the airspace of airports. Numerous cases have been reported of small unmanned aircraft crashing against commercial flights.

Last April, a British Airways plane was hit by a drone when it was landing at Heathrow Airport. Although the object struck the front of the plane, it left no damage.

In regards to the identification requirements, a drone with a high-risk profile, would need to fulfil aviation identification rules (including markings). Meanwhile, only an electronic chip would be required for smaller vehicles.

The Commission already set the parameters of the new regulation last December, when it proposed the revision of EASA regulation to reinforce the agency’s competences.

In this proposal, the Commission noted that the current division of competence on drones between EU and the Member states based on the 150 Kg threshold “is generally deemed obsolete”.

“The rules for unmanned aircraft should evolve towards an operation centric approach, where the risk of a

particular operation is made dependent on a range of factors,” the text said.

Based on a public consultation, the executive also pointed out that in order to improve privacy related aspects to the use of unmanned aircraft, there is no need for new rules, but a better application of the existing ones, “with a closer collaboration between national aviation authorities and national data protection authorities”.

The Commission expects the national governments could reach a political agreement on its call for an EU-wide framework for drones by the end of this year.

The vote in the European Parliament’s Transport Committee could take place in September.

Once the regulation with the new EASA competences is approved, the Commission will announce with no delay the implementing rules to regulate aspects such as the registration and the geo-fencing.

## INTERVIEW

# Boeing: ‘UK’s aviation policy is in question after Brexit’

US aircraft maker Boeing confirmed its commitment to the UK’s aviation sector during the Farnborough Airshow. But in the long run, the uncertainty generated by the country’s exit from the European Union will be hard for business, says its Vice-President, Randy Tinseth.

*Randy Tinseth is vice-president of Marketing for Boeing Commercial Airplanes.*

*He spoke to EurActiv.com’s Jorge*



Randy Tinseth speaks to EurActiv.com at the 2016 Farnborough Airshow. [Evan Lamos]

*Valero and Evan Lamos at the Farnborough Airshow.*

**What is the state of play in the aviation sector?**

Over the last five or six years, we have seen a market that has been very resilient and has been growing, a market

that has been very global in nature. When we look at why it has been so successful, it is because we were able to bring new airplanes on the market that are more fuel efficient, more capable with lower operating costs.

We are in the process now of making

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the biggest round of investments we ever made as a company. All our new airplanes are more fuel efficient, they are quieter and more capable than the airplanes that they replace.

**Given the importance of the aviation sector for Britain's economy, what will be the implications of Brexit?**

With the Brexit potentially happening, the aviation policy in the UK is in question. What does it mean? What will be the rules for us? We just don't know that.

While the ICAO perspective [new standards for aircrafts] brought certainty to the market, allowing our growing market to become more efficient and more global in nature, we are concerned about anything that gets in the way of that.

**Do you think that this uncertainty will be a deterrent for future investments in the UK?**

We have just made a significant commitment to the UK economy. We will continue to support the UK economy because it brings value to us.

In the long term, when you look at the Brexit situation, we are asking ourselves what it is going to do to the EU and the UK economic growth, what it will mean to trade both at the local and global level, what it is going to do to aviation policy. We don't know the answers to these questions.

The uncertainty that we have in the market today could have an impact downwards in terms of economic growth, which would impact travel on these markets. But frankly, on a global basis, those type of changes will be small compared to what else is going on in the market.

**Do you agree with Cameron that the UK aviation sector will continue playing a leading role at the global level?**

There is uncertainty. Changes in aviation go in two ways: they could create more limited opportunities or greater ones. It depends on the governments' directions they choose to take.

**Is the industry on track to meeting the goal of reaching carbon-neutral growth by 2020?**

I think we are taking the right steps. Whether we get there or not is yet to be determined. But frankly, good environmental policy is good business. The business aspects will drive us in the right direction.

**Is cheap oil good for consumers, but bad for the environment?**

When you look at the aviation industry, the fuel costs are still the number one expense. It is extraordinarily volatile, so it is hard for our customers to plan. We believe that, over time, supply and demand will come into balance.

That means that we will see ultimately higher prices while we will continue to drive efficiency in our industry.

**What is the impact of cheap oil? Are air carriers investing more in new planes?**

We haven't seen a change in investment. Airplane efficiency certainly has helped driving the demand for new aircraft. But I don't think that the cheaper oil has caused a situation where they back off the demand for new aircraft.

The message is 'there is volatility out there, higher prices in the future, so why not making the investments today on something more efficient?' It is a good hedge should things change over time.

**That is what I meant. Companies are investing more in new airplanes...**

Yes, and I think it will continue.

**The last two years have been very good**

**for Boeing. What is your forecast for the next couple of years in light of the current volatility?**

It is a highly volatile market. But we see the aviation market doubling in the next 20 years. So it is going to grow faster than 3.5% for example.

There are 20,000 jet aircraft flying today. That number will be more than 40,000 in the future. Today, 3.7 billion people travel by air. In 20 years that number will be in excess of 7.5 billion.

There is a great opportunity for us as we move forward, but we have to make sure that we grow in a sustainable way so we can capture that opportunity moving forward.

**Where are the biggest opportunities? Recently Boeing reached an important deal with Iran.**

It is still about opportunities in emerging and developing economies, like China, India, South East Asia. In the longer term, it is going to be the Middle East and Latin America.

That is where the great growth will be. If you look at markets like the US or Europe, most of the airplanes delivered will be for replacement.

**To what extent does the political context affect your dealings with Iran?**

I have to put the politics behind me. What we are doing at Boeing is taking the lead of our government. We are going to follow it in terms of what we can and cannot do.

From a market perspective, you have hundreds of airplanes flying in Iran every day. But they fly only a few hours per day. So there is an opportunity for that system to become much more efficient and to serve the market with fewer airplanes.

That is a good thing. Iran is also a large economy with a growing middle

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class. It is a young population eager to fly. So there is an opportunity for us and others in the future.

**What about Europe? Is it still attractive, despite the political turbulence and the low growth?**

Economic growth will not be what we are seeing in the US or in Asia, but it should be consistent. Besides, people in Europe do travel even if economic growth is still low. We continue to see 5% growth in traffic, which is good for our industry.

**You said that there should be improvements when it comes to air traffic management. Was that a veiled criticism against the EU's failed attempts with its Single Sky proposal?**

It is a criticism on how Europe manages its air traffic system, but it could be the US.

Tomorrow, if we have a new air management system, any airplane could fly being 10% more fuel efficient. That is important. The technology is there, the investment can be made, but unfortunately the investment has not been made.

**Is this also due to a lack of political will to progress on Single Sky?**

Yes. Well, I understand it. It is a challenge. But if we have a common EU, we would like to see a common air traffic management system over the European skies.

**How would Brexit affect this goal?**

Whether the UK is part of the EU or not, I don't think it changes the fundamental political situation.

**But the dispute over Gibraltar was the bone of contention...**

I am not an expert to that level, but I think that was one of many different discussions they have between the EU countries.

**What is the biggest challenge for Boeing in the next five years?**

It is going to be about delivering airplanes, and making sure development programs progress well.

Frankly, we are going to have challenges around costs, as we will have to become more competitive. When we look at the global market, we have to ask ourselves ultimately how we are going to grow in a sustainable way.

**Since aviation is such a global industry, are you concerned about a potential President Trump?**

Aviation is a global industry. What it means is that we need global solutions. That is why working through organisations like ICAO [a UN body] makes sense to us. That is the path we have to continue on.

**Would Donald Trump be the kind of leader that looks for global solutions?**

I am not going to make an answer on political candidates. But again, it is really about global solutions as we move forward, because the last time I saw aviation goes beyond borders, so we have to make sure that we recognise that.

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