



Speech

by Airbus CEO Tom Enders at
SAE Aerotech Conference, Toulouse
18 October 2011

In English language



Introduction

“Good morning Ladies and Gentlemen. Eight thirty on a Tuesday morning is a tough slot to get anyone to pay attention. The coffee hasn’t kicked in yet and I’m going to ask you nothing less than to change the aerospace industry.

First, let me welcome you all to Toulouse. I know some of you travelled a long way to get here. On behalf of the team at Airbus I’d like to thank SAE for choosing Toulouse to host this conference on ‘Eco-Efficient Innovation leading the future of aviation’.

It gives us the chance to show you some of our facilities and why this city has such a unique place in aerospace history and certainly also in aerospace’s future!

And, if you have time, it also lets you take in some of the beautiful architecture downtown, while you make the most of some very good bars and restaurants!

Some of you may have seen the rather controversial article on singularity in Time magazine earlier this year.

It defined singularity as *‘the moment when technological change becomes so rapid and profound, it represents a rupture in the fabric of human history’*.

The article was about Raymond Kurzweil’s theory, that in the next 30 years, we will see the creation of artificial intelligence that outperforms humans.

But, no matter what your view is on the theory itself, it’s hard not to notice that the IT industry didn’t get going until a couple of decades after us. It was even famously dismissed - so the story goes - by IBM’s chairman (Watson) in the 1940s as having a potential market demand of just five computers.

Yet here it is, debating not just its own future, but its impact on the future of the human race!

It made me think about what the same point would be for aerospace.

Since the Wright’s first got our industry off the ground, we’ve made great progress.



We came up with the jet 60 years ago engine, 2-man cockpit and fly-by-wire. In the last 40 years we cut fuel burn & emissions by 70%, noise by 75%.

Today, the world fleet of 15,000 aircraft carries 2.5 billion passengers and 50 million tonnes of freight every year.

Our industry supports over 33 million jobs and generates more GDP than some countries in the G20. What's more, every \$100 million invested in our R&D eventually generates an additional \$70 million GDP year after year.

Not bad at all! However, with shrinking resources, increasing constraints, tougher competition and growing demand.

What does the future look like for our industry?

Where is *our own* point of singularity?

Today the operating life of most planes is about 40 years. Air traffic is expected to keep doubling every 15 to 20 years. And, through IATA, many of us have signed up to halving emissions by 2050.

But how exactly will we achieve that? I've seen roadmaps and ppts but where is the detail? And surely we should already be looking even further ahead if we want to really create a step change.

The Wright brothers, Blériot and all the other pioneers that followed were able to invent and advance flight with very basic knowledge and tools.

So can we achieve a similar quantum leap with the experience and technology available today?

What are the real transformational technologies we want to see?

Where will we find the resources to develop R&T that will only materialize in revenues several decades from now?



And how will we convince governments, working to short-term electoral cycles, to develop long-term agendas that let industry deliver sustainable progress rather than putting additional financial burdens on them to gain more tax revenue and call it 'greener aviation'?

So where do we start?

Our problem is not the market or lack of growth. On the contrary: hardly any other industry has as impressive a growth trajectory for the next 20 or 30 years as we do.

Our problem is delivery.

While the world is fighting off an economic downturn, this industry the OEMs is leaking money left, right and centre on new programmes. Our inability to master innovation is undermining the confidence of investors, shareholders and customers.

Sure I like re-engined aircraft. Investors and customers like re-engined aircraft and the "minimum change" approach too. But this cannot be our response forever.

If we are too risk-averse, new competitors will overtake us sooner rather than later. And if we take too many risks, well we will end up with pretty much the same result!

So, if we want to find the step change these industry needs, if we want to successfully bring it to market, then:

We need a real overhaul of the way we work.

Not as individual companies, but as an industry.

While we have targets like the EU vision 2050, we still lack a truly global vision for the future of aerospace.



This would let us align our efforts, with real emphasis on creating value, and ensure that the huge investments we make actually bring significant improvements for airlines, for passengers and for our societies.

Central to that would be a clear focus on finding the right mix of sound innovation, proven technologies and efficient processes. This would require three core elements.

One. Strong innovation management and technical knowledge. From the start of research and development -- to architecture and integration -- throughout the supply chain and assembly -- to entry into service and daily operations.

Two. R&T programmes should be treated in the same way as aircraft programmes, with a single minded focus on value and maturity. Airbus ... started few years ago to align their two goals.

And three. A solid front loading of skills. The right number of people with the right skills and the right experience, right from the start. This is essential to secure the relentless drive and perseverance we need to reach our goals.

But this approach doesn't just apply to the aircraft itself.

There's no point in having a great new plane if it has to fly huge detours because of poor airspace management or clogged up airports. Projects like SESAR and NextGen have made great progress. Unfortunately, every step forward involves a sea of standardization and decision making by committee. So, they risk implementing technology that is already obsolete.

Our customers do business in a world where decisions and events can change their operation in days and weeks.

Yet we need almost a decade to design, build and certify aircraft and more than decades to modernize infrastructures like ATM. We are a barrier to progress for the very people we are meant to be helping. This has to change.



So what's stopping us?

First of all, there is still a tendency to think of aerospace as being a transatlantic affair.

Unfortunately that means ignoring a whole lot of risks and an even bigger bunch of opportunities.

This industry is looking for investment and talent. So why do so many people still see outsourcing as some sort of dirty trick for cheap labour? We need to stop seeing emerging markets purely as a threat or a way to do things on the cheap. Sure we need to get the rules of the game straight if we are going to have any kind of level playing field. But we need to start bringing the intellectual, engineering resource of these countries into our fold.

Firstly, I for one can't imagine an Airbus of the future without our enthusiastic very dynamic young engineers in Bangalore and Beijing. Innovation cell in Bangalore!

We have a real shortage of talent coming from traditional sources. Baby-boomers are going into retirement at a frightening pace.

And it's not just me that thinks so.

Speaking in Istanbul the other week, my colleague, Boeing's Jim Albaugh pointed out that our intellectual disarmament has reached the point where he is worried that he'll wake up to find this industry no longer has the skills we need. That we risk losing the experience and intellectual capital it has taken us half a century to build.

And he's right on the money!

If we want creative solutions, we need to start getting creative about finding the right people. And we need to do it now.



Just last weekend; I read a frightening article by Fareed Zakaria from TIME about our societies' false priorities: According to his article, California is spending more on prisons than on higher education. California has as many people working in the prison business as in automotive manufacturing. In 2008-2009, there were more psychology majors than engineering majors and more fitness-studies majors than physical – science majors.

I'm sure you could find similar trends in Europe!

But it's not only about getting the investment and direction that is so badly needed. It's also about getting smarter with the resources and talent already out there.

Somebody coming on board with a different cultural, educational or industrial background might be just what's needed to create a real breakthrough. We could explore more secondments between civil and military. Public and private. Commercial and academic.

As we're at the SAE Congress, it's hard not to use the example of flowline assembly. Bringing in expertise from the car industry transformed aircraft production just when we really needed to ramp up production.

Or look at what Apple did. They found the best combination of technologies and integrated them in a way that added incredible value. Their competitors had access to the same technology. But it was Apple's decision to hire Tony Fadell that created the iPod.

It's like that old student experiment. A bottle of coke is just a bottle of coke. But chuck some Mentos in there and you get a whole different thing!

The right partnerships and talent are not automatically going to come to us.

We need to get out there and find them. If not, we might only discover how much they had to offer when a rival company – or even one that doesn't feature on our radar today – goes sailing right past us.



Again, just look at the world of I.T.

IBM computers, Sony Walkmans, Philips MP3 players and Motorola mobile phones were all innovative market leaders. Right up until Steve Jobs gave a couple of presentations. Suddenly they were fighting for survival. But at least two of them had turned away Fadell and his idea for the iPod.

And secondly, if we are going to find that step change we are looking for, we need more robust aircraft. Aircraft that are simpler both to operate and to adapt to changing technology.

From the 40s to the 70s, aerospace was the biggest driver of new technology. The most powerful processors. The latest materials. They started with us.

But as we packed aircraft with more technology, the level of work to introduce those benefits has gone up, while the level of return has gone down. And a lot of that technology couldn't actually be used to its full potential because of financial restrictions on the airlines.

So today, we've reached a point where iPads are changing the way pilots want to interact with the aircraft. But we don't have them in the cockpit.

Today, so called "wonder materials" like graphene are moving out of the lab and into real life applications faster than ever before. But it takes us 20 years to achieve a major technology shift.

And today, we're producing state of the art civil and military aircraft. But, we lose time and money, planning for spare parts like processors, which will be out of production before the planes are even half way through their expected lifespan.

Yes, it's true that new products like iPads and smart phones don't have to last 40 years or meet stringent safety standards.

But it is also true that the impact of such products, from outside the world of aviation, are starting to dictate what people expect from us. And we can't ignore that.



So perhaps, as well as getting smarter about the way we find the talent we need, we can also get smarter about the way we identify and integrate the best combination technologies from both inside and outside our industry?

The Comm. IT sector is great at simplifying the way we use and interact with technology. So, maybe more partnerships and more opportunities to exchange ideas would benefit everybody?

And perhaps I could even try something a bit more controversial:

What about stopping the traditional approach of launching a series of completely new aircraft one after the other?

What about switching to an upgradable platform approach, an approach where we could rapidly and significantly evolve our products as new technology matures and comes on line?

This is already starting to happen, with certain military products.

The IT industry is moving to Cloud technology where computers can be swapped out of networks, while they are still running, and then replaced with newer, better models without a glitch.

Can we take such ideas even further? What about simple, robust solutions that would give us plug and play planes that could evolve much more quickly in line with customer demands?

If we were able to just accelerate bringing in new cabin features that would already be quite some progress for our customers.



Conclusion

So, if we're really going to take that giant step forward - to find our own point of singularity - we need to get back our edge.

1. We need to shorten development & certification cycles and optimise industrialisation.

Customers will not keep accepting lead times of 8 to 10 years. They face pressures now. They want savings and solutions now. According to United Airlines, iPad can save them 16 million sheets of paper and over 300,000 gallons of fuel a year. So why would airlines wait a decade for us to integrate them?

And new entrants will find any opportunities that we mess-up. Whether that competition comes from within the aerospace industry, or from alternatives like high speed rail or the IT industry, it is there. Waiting.

2. We need to stay ahead of the rapidly accelerating pace of global innovation.

The entire supply chain, from research to delivery, has to ride the crest of the wave, not get buried beneath it in a spectacular wipe-out!

3. And to do all of those things, we need the best and the brightest working with us. Wherever they are.

Talented people will always be in demand. If we don't find them, somebody else will.

Yes, we have to discuss future technology and infrastructure.

But somewhere in the last 40 years we learned to save fuel and forgot how to take risks and manage them properly. We forgot how to turn our ideas into reality before they were out of date.



Our point of singularity will come when we rediscover our ability to effectively fuse innovation with maturity, and to do it fast.

So what I really hope will come out of this congress is a renewed focus on:

1. The development and integration of mature technology.
2. Robust solutions and operational efficiency, with customer value as clear guiding principle.
3. And, of course, a renewed focus on talent and resources. Our intellectual infrastructure in West is rapidly eroding. This is not just an HR challenge. We all need to get involved. Each of us can make a difference: in schools, universities, in our communities!

Ladies and Gentlemen: I wish you fruitful Congress!

Thank you.”