

**CEAS European Air & Space Conference**  
**New beginnings: challenges for aerospace innovation**

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Ladies and Gentlemen, Good Morning.

As the President of the ASD, I am grateful for the opportunity to make some opening remarks at this very important conference.

Aerospace is, by definition, a favourable framework for innovation: a significant majority of the hi-tech developments, that we take for granted today, came from research in the field of aeronautics and space.

However, during the last century, technological improvements were mainly driven only by the nature of the performance improvements that we were seeking to achieve, such as higher aircraft speed or better take-off performance. These were seen as an end in themselves.

Today there are other very significant external factors to be taken into account, most of all environmental impact, while cost is an ever-present driver. These facts increases the envelope of the technologies that need to be brought to bear.

### **Green technologies**

In terms of environmental impact and the associated green technologies, the need to reduce carbon and NOX emissions has induced developed countries,

and the European Union in particular, to focus on R&D activities aimed at minimizing the impact of air traffic on the environment.

In this regard, let me highlight the Clean Sky Joint Technology Initiative and the SESAR Joint Undertaking, two major research programmes launched by the European Union.

There are in fact a number of different issues, including:

- Composite materials for aero-structures, which enable significant reductions in weight, and therefore in emissions, plus the tentative to retain lamina flow across the entire aerofoil in all phases of flight;
- New engine designs with open-rotor and geared turbofan, with lower fuel consumption and reduced noise levels;
- Innovative Air Traffic Management systems, embracing highly complex data handling and algorithms aimed at managing, by 2020, an air traffic volume of three times the present level and all with negligible delays and enhanced safety.

Of course, these aspects do not apply only to fixed-wing aircraft. There are similar challenges in the helicopter world; active rotor blades and enhanced vibration control represent significant potential advances.

It is also worth mentioning the tilt-rotor, one of the most significant technological innovations in which European industry has a prominent position, offering an extraordinary combination of helicopter flexibility together with airplane performance.

In military aircraft, while the US community is dreaming of a sixth generation fighter, at least as a design challenge, here is Europe, the reality of budgetary pressure gives us more modest aspiration.

Rather, capability improvements of the future will come from the incremental insertion of enhancements in sensors, systems and software. Thus research in electro-optics, solid-state radars, data handling and high-speed open architectures will be the new paradigm.

Here, the pooling of knowledge and the need to reduce non-recurring costs will see the need for industrial alliances both to improve access in domestic European markets and to allow penetration in a broader range of potential export countries. In both respects, it is to be hoped that the new European Defence Directive will add impetus.

## **UAVs**

Overall, Europe is currently in a strong position in military aircraft technology and we are also increasingly applying that expertise to Unmanned Air Systems in a way that is beginning to challenge US supremacy.

The innovative application of engine, airframe and systems technology is increasing the range of systems available from European manufacturers.

While this is a positive development in itself, we shall have to guard against flooding the market with a variety of products such that we never develop critical mass in an industrial sense.

That said, civil applications will add to the size of the potential market but not until we can see these unmanned systems flying in normal airspace. To this end, the European Defence Agency has awarded a €500,000 contract to a consortium of defence and aerospace companies known as Air4All to develop a detailed roadmap for the integration of UASs into European airspace so that they can fly routinely with other air traffic by the end of 2015 at the latest.

Again, a common thread through this sector is the increasing need for industrial alliances.

## **Space**

Space too is yielding increasing opportunities. The growing pressure for continuous monitoring of terrain and the environment, for both security and civil protection reasons, as well as the need for more precise and reliable positioning and navigation services, has inspired the development of new satellite based systems, such as Galileo and GMES.

Both of them offer appealing opportunities for new technology developments and applications: the atomic clock for the Galileo system or the Synthetic Aperture Radar of Cosmo-SkyMed for GMES represent just two of them.

## **Resources for R&D and EU industry**

It is clear from this brief overview, that Europe has some of the highest technological capabilities in the aeronautics and space sectors.

However, the future is challenging.

Europe, in common with other areas of the world, is emerging from recession. Government funding is under real pressure. Defence budgets and government funding for aerospace R&D will increasingly compete with social programmes for scarce cash. Governments must invest wisely, avoiding duplication and sustaining those technologies that have the ability really to make a difference.

Nevertheless, industry must give substance to these technological capabilities and turn them into effective products and systems that are competitive in the global market-place in terms of both cost and performance.

With governments now less able to determine industrial strategies, there is a greater burden on industry itself to drive things forward. The European industrial base will thus need to organise its own alliances, sometimes even embracing US companies, rather than expect to participate in European driven consortia of the type that we have grown used to in Eurofighter and Typhoon.

### **Dual use and common needs**

Finally, let me point out that, historically, aerospace technological innovation frequently has dual application.

Technological improvements have already crossed – and will clearly cross again – the borders between civil and military domain, in both directions. This is true not only in design and development but also in support solutions.

As I already said before, it will be the case in environmental aspects: sustainability has become a basic concept not only in commercial activities, but also for the defence industry.

The UK MoD signed in 2008 the “Sustainable Procurement Charter” in which it is stated that “industry will aim to improve the fuel economy of vehicles and aircraft, while the materials used for defence equipment will have to be more eco-friendly”.

As the then Secretary of Defence, John Hutton, said “the aim is that our procurement processes become greener, more sustainable and provide even better value for money”.

So, appropriate solutions have to be found that can be applied to both civil and military products and systems, increasing the opportunities for synergies amongst different companies operating in an alliance.

## **Conclusions**

In conclusion, I congratulate the UK’s Royal Aeronautical Society as the host for this CEAS conference in bring together such an impressive array of talent. I think that this gathering will provide an effective forum in which to understand future technologies and how they can be matched to requirements.

The output will also help to define future strategies which will lead to a more competitive European industrial and technological base.

This will enable our individual nations – and Europe as a whole – to continue to be a major protagonist in the global aerospace scenario.

Thank you.