



The Quarterly
Bulletin of the

CEAS

COUNCIL OF EUROPEAN AEROSPACE SOCIETIES

3AF-AIAE-AIDAA-CzAeS -DGLR-FTF-HAES-NVvL-PSAA-RAAA-RAeS-SVFW-TsAGI-VKI

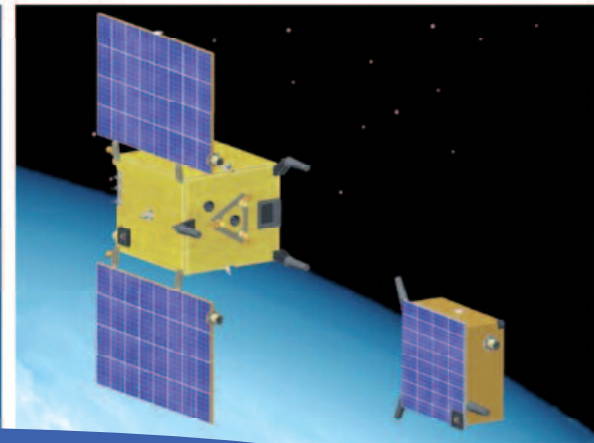


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SWEDISH SOCIETY OF AERONAUTICS AND ASTRONAUTICS
COUNCIL OF EUROPEAN AEROSPACE SOCIETIES

CEAS

WHAT IS THE CEAS ?

The Council of European Aerospace Societies (CEAS) is an International Non-Profit Association, with the aim to develop a framework within which the major Aerospace Societies in Europe can work together.

It presently comprises 15 Member Societies: 3AF (France), AIAE (Spain), AIDAA (Italy), CzAeS (Czech Republic), DGLR (Germany), FTF (Sweden), HAES (Greece), NVvL (Netherlands), PSAS (Poland), RAAA (Romania), RAeS (United Kingdom), SVFW (Switzerland), TsAGI (Russia), VKI (Von Karman Institute, Belgium) and EUROAVIA.

Following its establishment as a legal entity conferred under Belgium Law, this association began its operations on January 1st, 2007.

Its basic mission is to add value at a European level to the wide range of services provided by the constituent Member Societies, allowing for greater dialogue between the latter and the European institutions, governments, aerospace and defence industries and academia.

The CEAS is governed by a Board of Trustees, with representatives of each of the Member Societies.

Its Head Office is located in Belgium:

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www.ceas.org

WHAT DOES CEAS OFFER YOU ?

KNOWLEDGE TRANSFER:

- A well-found structure for Technical Committees

HIGH-LEVEL EUROPEAN CONFERENCES

- Technical pan-European events dealing with specific disciplines and the broader technical aspects
- The CEAS European Air and Space Conferences: every two years, a Technical oriented Conference, and alternating every two years also, a Public Policy & Strategy oriented Conference

PUBLICATIONS:

- Position/Discussion papers on key issues
- CEAS Aeronautical Journal
- CEAS Space Journal
- CEAS Quarterly Bulletin
- Aerospace Events Calendar – www.aerospace-events.eu

RELATIONSHIPS AT A EUROPEAN LEVEL:

- European Commission
- European Parliament
- ASD (AeroSpace and Defence Industries Association of Europe), EASA (European Aviation Safety Agency), EDA (European Defence Agency), ESA (European Space Agency), EUROCONTROL
- Other European organisations

EUROPEAN PROFESSIONAL RECOGNITION:

- Directory of European Professionals

HONOURS AND AWARDS:

- Annual CEAS Gold Medal to recognize outstanding achievement
- Medals in technical areas to recognize achievement

YOUNG PROFESSIONAL AEROSPACE FORUM

SPONSORING

THE CEAS MANAGEMENT BOARD

IT IS STRUCTURED AS FOLLOWS:

- General Functions: President, Director General, Finance, External Relations & Publications, Awards and Membership.
- Two Technical Branches:
 - Aeronautics Branch
 - Space Branch

Each of these two Branches, composed of specialized Technical Committees, is placed under the authority of a dedicated Chairman.

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EDITORIAL

ABOUT CEAS 2013 CONFERENCE



Editor-in-Chief
Jean-Pierre Sanfourche

From 16 to 19 September, the Council of European Aerospace Societies (CEAS) will hold its biennial Conference in Linköping, in its prestigious Konsert & Kongress, one of Sweden's largest conference and concert facilities.

Linköping, a town of roughly 100,000 inhabitants, is the centre of an old cultural region (the 700th anniversary was celebrated in 1987). But it is also in many aspects considered as the aviation capital of Sweden – it's here that the famous *Gripen* fighter is built - and home for important parts of the national aviation industry ranging from well established companies, such as SAAB, to new high-tech emerging societies.

The CEAS 2013 Conference is hosted by the Swedish Society of Aeronautics and Astronautics – the *Flygtekniska Föreningen* (FTF) – in close cooperation with Linköping University.

The spirit of this event is clearly indicated by the striking slogan 'INNOVATIVE EUROPE'. As a matter of fact, all topics of the programme will be dealt with in a future oriented approach: R & T for aerospace defence and security (air power notably), air and space systems and technologies, collaborative engineering and research, air traffic management (ATM) and flight operation systems, clean space, emergent industries and markets, and last but not least, education for aeronautics and space. This latter topic will be managed by CEAS President David Marshall himself, which makes clear the importance our organisation attaches to aerospace students and young professionals in Europe.

For the first time, E-CAERO will participate in our Conference, an important development given that 'E-CAERO' is a European Commission project grouping six aerospace scientific and technical organisations (including CEAS), whose objective is to promote and harmonize an efficient coordination between those

associations in terms of event programming and information dissemination.

At the end of June more than 200 high quality papers and presentations were already accepted indicating a very successful conference. All the more as it follows the remarkably successful A350 XWB first test flights which together with other major achievements, confirm the position of the current European aerospace industry as at the highest levels in the world.

Jean-Pierre Sanfourche

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ABOUT THE 22ND CEAS TRUSTEES BOARD MEETING

THE 22ND CEAS TRUSTEES BOARD MEETING WAS HELD ON 7 MARCH 2013 IN BRUSSELS AT THE ESA/OFFICE, AVENUE CORTENBERGH 52.

Among the different items which were dealt with: finance, CEAS2013 Conference's preparation (Linköping), creation of a new Technical Committee, E-CAERO, Potential for new Corporate Members, Aeronautics and Space Journals, Students and Young People, Awards.

Besides, Dr Rudolph Strohmeier, Deputy Director-General, Research Programmes, European Commission, who had been invited to attend our meeting, was present and delivered a speech just before the working lunch: see pp. 9-10.

FINANCE

Mr Paul Bailey presented the Finance Report dated 25 March 2013: the Annual Accounts 2012 were unanimously approved, which show a sound situation of our financial resources.

CEAS2013 LINKÖPING CONFERENCE PREPARATION

Prof. Petter Krus, president of the Programme Committee, reported the status of Linköping Conference.

TECHNICAL COMMITTEES

In addition to the present Aeronautics Branch Technical Committees, a proposal to create another group of experts had been received from Dr Joachim Szodrich. The topic is 'Aircraft Design' and it is foreseen to develop in two areas: research and education. Dr Christophe Hermans is working on this subject and a proposal will be presented at the Board Meeting which will be held in Linköping on 18 September.

E-CAERO

The E-CAERO contract has been extended until October 2013. It is clear that presently, there is an inadequate coordination between the six partners of this organisation, so that there are too many conferences and publications, often redundant. How to get the partners more together? How to coordinate better their activities? The ideal would be that a leader officially appointed assumes this task and is the official point of contact with the European Commission. President David Marshall and Mr Pierre Bescond are working on the subject and the situation will be again assessed at the Board Meeting in Linköping in September.

Potential for new Corporate Members

After ESA entry into CEAS, it is necessary to look for other Corporate Members, in particular:

- The European Defence Agency (EDA) ;
- The European Telecommunications Satellite Organisation (EUTELSAT) ;
- The European Aviation Safety Agency (EASA).

Before CEAS2013, contacts will be taken with the general directors of these three institutions.

Aeronautics and Space Journals

– Aeronautics Journal: Dr-Ing. Cornelia Hillenherms introduced herself. She is engineer at the Programme Directorate of DLR/Köln and member of DGLR Präsidiums. She is now in addition member of the CEAS Aeronautics Journal. Presenting her report, she pointed out the fact that there are not enough submissions and asked for a very active action from the CEAS Management.

– Space Journal: Dr Wilhelm Kordulla presented some statistics. A strong action has also to be led in order to increase the number of submissions.

STUDENTS AND YOUNG PEOPLE

Mr Thomas P. Vermin made a demonstration of the Students in Aerospace Web Site that was henceforth fully developed. He also presented the summary of achievements and growth forecast. The survey results will be shown in the CEAS Bulletin 3-2013.

AWARDS

• CEAS Award 2012

The CEAS Award 2012 was presented by CEAS President David Marshall to Prof. Dr Manfred Fuchs on the 6th of March in the evening, on the occasion of the second Brussels Space Night of BDLI (German Aerospace Industries Association) which took place at the Representation of the Free State of Bavaria to the European Union, Rue Wiertz 77, Brussels.



The CEAS Award ceremony took place at the end of Space related debates.

Before presenting the Award to Professor Manfred Fuchs, CEAS President David Marshall pronounced a speech here below reproduced:

“Ladies and Gentlemen, good evening.

Can I first thank the BDLI for letting us use this occasion to present our Gold Medal to Professor Fuchs. An evening discussing the future of European Space could hardly be a more appropriate event.

I think I should first make sure you know what CEAS represents and why we are to make this presentation.

CEAS means the Council of European Aerospace Societies, that is to say a deliberate grouping of the principal professional societies across all of Europe. While many of these societies have 100 year plus histories – a European grouping is relatively new but we believe critical to the future of this sector in Europe. We all know how important this sector is to European prosperity and can rightly claim that the success of European wide creations like Airbus and ESA show the wisdom of the national pooling of resources they represent.

However Institutions alone do not make world leading aircraft or satellites. The right persons to lead these endeavours is essential. For this reason CEAS decided at its inception that it would regularly identify individuals that should be honoured with its Gold Medal as having made a special contribution to aerospace at a European level.

Professor Fuchs very obviously meets these criteria. Having established a successful career path in the Space Industry he

made a crucial step in 1985 to become managing shareholder of a then relatively small company OHB-System. Its growth and reach across Europe is his achievement. He has played key roles in the DLR and DGLR as well as in politics in the Bremen state government. By awarding him the CEAS Gold Medal we are one of many Institutions that have recognised his special achievements.

Professor Fuchs I have great pleasure in presenting you with this medal.”



From left to right: Jean-Jacques Dordain, ESA Director General, Prof. Dr Manfred Fuchs and David Marshall, CEAS President.

ABOUT PROF. DR MANFRED FUCHS

Prof. **Dott. Ing. h.c. Manfred Fuchs**, Chairman of the Supervisory Board at OHB-System AG .

Manfred Fuchs was born in Latsch, Italy in 1938. After studying aircraft engineering in Munich and Hamburg, he was employed as a development engineer for aerodynamics/flight mechanics at Hamburger Flugzeugbau and later as a space technology engineer at ERNO, Bremen.

During this period, he was involved in such important projects as the Europa rocket (ARIANE 1), SPACELAB, COLUMBUS and various satellites. At ERNO, he was appointed head of the Astrodynamics/Preliminary Development department, granted general signing powers in 1981 and appointed department director in 1982. In 1985, he fulfilled a lifelong dream by going into business on his own and acquiring shares in OHB-System GmbH, Bremen, becoming managing shareholder of this company. Since the amalgamation of OHB Teledata and OHB-System under the roof of OHB Technology AG at the beginning of 2002, Mr. Fuchs has been CEO of OHB-System AG and a

member of the management board of OHB Technology AG responsible for Space Technology and Security. Prof. Fuchs is a member of the supervisory board of Carlo Gavazzi Space S.p.A., Milan, ATB GmbH, Bremen, and BEOS GmbH, Bremen. He has worked closely with Russia for over 15 years in the area of satellite launches in Plesetsk, Kapustinoyar and Baikonour (Kastan). The German MIR 02 and MIR 05 missions were additionally launched.

He has received several awards including “Bremen Entrepreneur of the Year for 1995” in 1996 and an honorary professorship at the Bremen University of Applied Sciences. He was a member of the CDU German Federal Committee of Research and Technology as well as chairman of the Research and Technology Taskforce of the CDU-Bremen and a former member of the CDU parliamentary party in the Bremen state government as deputy for economics and labor.

In 2005, the Milan Polytechnic awarded him an honorary doctorate (“Dott. Ing. h.c.”).

- **CEAS Award 2014**

The Board unanimously decided to confer the CEAS Award 2014 to Mr Fred Abbink.



Fred Abbink graduated in Electrical Control Engineering at the Faculty of Electrical Engineering of the Technical University Delft in January 1968.

After serving as an officer in the Royal Netherlands Navy, he joined NLR in October 1969 as a project engineer / project leader in a number

of avionics projects: NLR's moving base flight simulator, SpaceLab, navaid calibration / flight inspection system for the NL ANSP, airborne computer based flight testing system for the Fokker 50/100 evaluation and certification.

In 1981 he became head of NLR's flight testing and helicopters department, responsible for NLR's laboratory aircraft, helicopter research, avionics research, military operations research and accident investigation. In the same year, he was appointed as part-time professor in aircraft instrumentation and avionics at the Faculty of Aerospace Engineering of the Technical University Delft. In 1988 he became Technical Director of NLR, responsible for the government funded research programmes and the development of NLR's large test and evaluation facilities, international cooperation and quality management. From 1996 to 1998, he was detached from NLR to become Programme Director Aeronautics at the German Aerospace Center – DLR, in Cologne. There he was responsible for all of DLR's in-house aeronautics research programmes. In 2005 he became General Director of NLR.

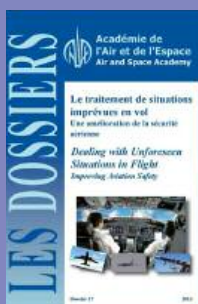
Mr Abbink has been a visiting professor at the Institut Teknologi Bandung in Indonesia in 1983 and 1989, the

National Aerospace Laboratory – NAL (now JAXA) in Japan in 1992, and the Technical University in Helsinki in 1999. From 2006-2008 he was President of the International Council for the Aeronautical Sciences (ICAS) and chair or member of a number of supervisory boards and committees, including DNW, ETW, AIAA, EU-TAG, EREA, ICAS, VKI, ANAE, ACARE.

After his retirement at the end of 2009, he remained very active in the field of Aerospace including a position as President Commissioner at the firm NEDAERO, Chairman of the Netherlands Foundation CompoWorld and chairman of the Netherlands Association for Aeronautical Engineers (NVvL). He is also member of various advisory boards for: the EU CleanSky Scientific and Technology Advisory Group (STAB), the EU SESAR Scientific Board, the Strategic Advisory Council of TNO Integral Safety and Security, the Programme Council of the Netherlands Space Office (NSO), the Royal Netherlands Association for Aviation (KNVvL), the Programme Committee van ICAS, the Board of the Council of European Aerospace Societies (CEAS) and the EU Transport Advisory Group (EU TAG). Furthermore he is a member of the Netherlands Academy of Technology and Innovation (AcTI).

Mr Abbink is an Officer in the Order of Oranje Nassau, Fellow of the American Institute of Aeronautics and Astronautics (AIAA), Honorary Fellow of the International Council for the Aeronautical Sciences (ICAS), Fellow of the Académie de l'Air et de l'Espace (Air and Space Academy), Member of the Netherlands Academy of Technology and Innovation, Honorary Member of the Polish Society of Aeronautics and Astronautics and Honorary Member of the TU-Delft Aerospace Students Association Leonardo Da Vinci.

DOSSIER 37



Dealing with unforeseen situations in flight; Improving air safety
2013, 160 pages, Fr/Eng, €15

The Air and Space Academy's conference in 2011 on "Air transport pilots facing the unexpected" revealed the importance of human operational behaviour in the handling of unforeseen

situations in flight. Unforeseen events are in now way

exceptional for pilots, they are in fact everyday occurrences, and yet nothing in current training courses prepares pilots to face up to them.

This report summarises the main points made during the conference and presents AAE's conclusions and recommendations. It concentrates on unforeseen, unexpected situations and endeavours to address the ensuing safety related issues. It aims to stimulate reflection in order to find ways of complementing and enhancing current practices.

www.air-space-academy.org

FOR THE FIRST TIME SINCE IT WAS FOUNDED IN 1886, THE PRESIDENT OF THE RAeS IS A WOMAN

by Paul Bailey

For the first time since it was founded in 1866, the world's oldest aeronautical organisation has a female President. Jenny Body, who was the highest-ranking female aerospace engineer at Airbus UK by the time of her retirement, took on the mantle of President of the Royal Aeronautical Society at its Annual General Meeting on May 15.

Jenny's long and successful career in the aerospace industry began in 1971, as a Mechanical Engineering undergraduate apprentice with British Aerospace, which eventually, in 2001, became Airbus, the world's leading commercial aircraft manufacturer. Always at the forefront of technological development, Jenny played a key role in her company's transformation into Airbus and in its continuing success.

In the last decade, increasingly strategic roles culminated in industrial responsibility for determining the future of UK civil aviation through its forthcoming technology programmes; when, working with Government and other industry leaders, Jenny established the multi-million pound UK Aerospace Research and Technology (R&T) programme, designated Next Generation Composite Wing.

In 2010, Jenny retired from Airbus as Head of R&T Business Development in the UK, and was later awarded the Order of the British Empire (OBE) in recognition of her services to engineering.

MESSAGE FROM JENNY BODY

Published in the first issue of the new magazine AEROSPACE



Jenny Body is the new President of the RAeS

"I am delighted to be writing this as the first President's message in the first issue of our new magazine AEROSPACE. After a long and rewarding career in aerospace, I am proud to be serving now as the first female President of the Royal Aeronautical Society.

For industry, this will be an exciting year as we see Boeing's 787 Dreamliner go back into service, the first flight of the A350 XWB and the A400M delivered to its first customer, the French Armée de l'Air. UK Government support for aerospace research

and technology is the highest it has ever been and we await the establishment of the UK Aerospace Technology Institute, announced recently as part of the government's industrial strategy for aerospace.

For the Society itself, we now have the new governance in place. The roles of Council and the Board of Trustees are clear. In Council we will debate the key issues affecting the Society and its members, while the Board of Trustees will be responsible for the administration of the Society, for example management of the finances. I wish Phil Boyle continuing success as Chairman of the Board of Trustees and thank him for his year as President, seeing us through the establishment of the Society's newly amended Royal Charter and its new By-Laws and Regulations.

I see the role of President as being an Ambassador for the Society promoting both its activities and its contribution to the world of aerospace and aviation. I plan to focus on three key themes for my time as President — Diversity, STEM (Science Technology, Engineering and Mathematics) skills and Technology & Learned Output.

I want the Society to become as diverse as aerospace and aviation aspires to be. We are already actively engaged with the Royal Academy of Engineering Concordat on Diversity. Removal of negative stereotypes, mentoring and provision of role models are important activities.

Development of STEM skills in schools is critical to future economic success. I strongly endorse the Society's activities such as Cool Aeronautics and the Boeing-backed Schools Build-a-Plane programme. We will continue to work with the Aerospace & Defence Sector Strategy Group, ADS and others to develop the projects and funding which will support STEM in schools and colleges.

Technology (and learned output) is close to my heart. The Society has an important role to facilitate debate on the 'technical' issues of the day. The conferences organised by the Specialist Groups are already world class.

I look forward to meeting many more of you during the year."

Jenny Body



AEROSPACE is the flagship monthly publication of the Royal Aeronautical Society and is free to all members as part of their membership. It is written for aerospace professionals by aerospace professionals. Inaugurated in June 2013 and replacing the two earlier members' monthly magazines, *Aerospace International* and *The Aerospace Professional*, AEROSPACE is features-led, agenda-setting, global in outlook, dynamic and forward looking. Each issue contains news and analysis as well as Society news and events, book reviews and news of members. Letters and feedback are positively encouraged.

THE SPEECH DELIVERED BY MR. RUDOLF STROHMEIER TO THE CEAS BOARD OF TRUSTEES ON 7 MARCH IN BRUSSELS



Deputy Director-General
Rudolf Strohmeier



- under the 'Societal Challenges' - Smart, green and integrated transport ;
- under the 'Industrial Leadership' - there are definitely opportunities for you in nanotechnologies, advanced materials, advanced manufacturing and processing, space and ICT.

In addition, I am sure that the other areas of 'Horizon 2020' like 'European Research Council' funding for blue sky research, 'Future and Emerging Technology' scheme or 'Risk Sharing Financing' facility may also be of interest for some of you.

We already started internally to draft the first work programme that we intend to discuss with Member States and Programme Committee in autumn allowing to launch calls shortly after 'Horizon 2020' adoption.

We aim for a 2-year work programme which will cover the first two years of 'Horizon 2020' (2014-2015), although will be still implemented by annual calls. That will give you a possibility for better planning as you will know the funding focus at least two years in advance.

The new 'Strategic Research and Innovation Agenda' (SRIA) of the 'Advisory Committee for Aviation Research and Innovation in Europe' (ACARE) will certainly be a reference to draft the coming Work Programmes for Aviation Research. We are very grateful of the proactive and dynamic contribution of EU aviation stakeholders in 'ACARE' helping to develop the new 'SRIA'.

Working together with stakeholders is important for us, in particular when it comes to Public-Private-Partnerships. Under FP7, we are working in partnership with aviation stakeholders in 'Clean Sky' and 'SESAR'; the experience is positive, they are delivering results as planned and we are preparing for their extension. We intend to put forward the proposals for their continuation before summer this year.

Finally, I would also like to take this opportunity today to discuss with you the current landscape of scientific societies and conferences in the field of aviation in Europe, where CEAS plays an active role. We have many societies, many conferences, and many journals today resulting in a fragmented landscape. At the same time, for our European researchers, communicating in conferences and publishing in scientific journals through American associations, such as the 'American Institute of Aeronautics and Astronautics' (AIAA) and the 'American Society of Mechanical Engineers' (ASME), still remain a must. Unfortunately, we do not have

“ Ladies and gentlemen,

If I am well aware, a year ago, my colleague Mr. Jack Metthey presented to you the main features of the Commission's proposal for "Horizon 2020", the next framework programme for Research and Innovation.

What has happened with this proposal during the past year?

During 2012 'Horizon 2020' has been thoroughly discussed in the Council and by the Industry Research and Energy Committee in the European Parliament separately.

Now the negotiations continue in "Trilogues" between the Commission, the Parliament and the Council. It is gradually moving forward but it is not an easy ride, in the light of quite diverging views.

We still hope that by the end of this year, the 'Horizon 2020' package could be adopted and that the programme can start as planned on 1st January 2014.

Of course, these discussions depend a lot on the negotiations of the European budget for the period 2014-2020, the so-called Multi-Annual Financial Framework, which includes the overall budget for 'Horizon 2020'. The Commission proposed an ambitious 'Horizon 2020' budget increase of approximately 50% compared to FP7, with an important share for transport (9%). As you all may know, at the European Summit of 8th February, the EU Heads of State and Government came to an agreement. While stressing the importance of research and innovation, the overall budget was decreased. The discussion now continues with the European Parliament and we will know the final numbers hopefully by summer.

As part of the scientific community, I think that you are equally interested in the content. What will be the 'Horizon 2020' focus? What will the work programmes look like? What will be the content of our first calls?

The relevant sections of 'Horizon 2020' for the aerospace are:

1. On 1st March 2012, Jack Metthey made a presentation to the CEAS Board on the Horizon 2020 package.

many associations that are capable of competing with them. For the Commission, it is essential to achieve the maximum impact with the thousands of publications and communications delivered by research projects funded from the EC framework programmes. This is why we cannot be satisfied with this situation.

We have excellent researchers and scientific societies of high quality. Therefore we should be able to make the best use of these assets and enhance the impact of our publications and communications. I call you to redouble your efforts to raise the impact and to demonstrate that Europe has a common co-ordinated scientific landscape.

I see that the joint action of CEAS with other scientific

societies through the E-CAERO project funded by the Commission is going in the right direction, in particular thanks to the engagement of your vice-president Pierre Bescond.

We are looking forward to the results of this project to achieve more coherence and more impact with our conferences and publications. It is our responsibility and our duty to provide the best scientific environment for our researchers.

I sincerely hope that the 4th CEAS conference in Linköping in September 2013 will clearly demonstrate progress in this direction.

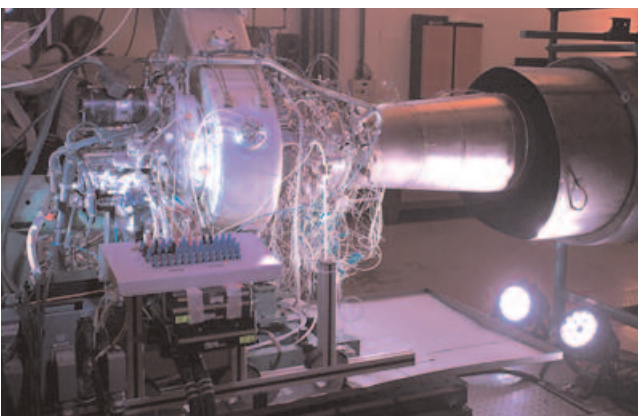
Thank you very much for your attention!"

ABOUT CLEAN SKY

26 APRIL 2013: TECH800 DEMONSTRATION FOR FUTURE HELICOPTER TURBOSHAFT ENGINE



The official celebration of the first rotation of TECH800 turbo shaft demonstrator took place on Friday 26 April in Pau (France), in the presence of Slim Kallas, Commissioner for Transport and Vice-President of the European Commission, Eric Dautriat, Executive Director of Clean Sky, Jean-Paul Herteman, Chairman and CEO of SAFRAN and Olivier Andries, Chairman and CEO of Turbomeca.



TECH800 is one of the of the 6 engine demonstrators dedicated to propulsion in Clean Sky. It has been developed in with 34 partners from 10 European countries including 18 SMEs and 12 universities and research centres.

FIVE MAIN POINTS :

- Technologies to be demonstrated will deliver reduced emissions in-line with the objectives of Clean Sky.
- An innovative core engine demonstrator has been designed, manufactured and tested by Turbomeca for future applications in the 800 kW power class.
- Key technologies are related to the compressor architecture and performance, the combustion chamber enabling lower emissions, the turbine operating at a very elevated temperature and a high efficiency power turbine.
- A double digit benefit is offered in terms of fuel consumption and CO₂ emissions compared to the 2000 state of the art.
- There is also a breakthrough in noise reduction, weight (composite, Ti-Al components), and control system (fuel pumps, electric actuators, etc.)

CLEAN SKY 2

PROGRAMME SET UP

The Clean Sky Programme has been developed over the past months and is being worked out in a detailed Joint technical Proposal under the auspices of and mutual cooperation of 16 Clean Sky 2 Candidate Leaders and co-



ordination from the CSJU (Clean Sky Joint Undertaking). In the continuation of the Clean Sky Joint Technology Initiative (CSJTI), Clean Sky 2 will enable Europe to:

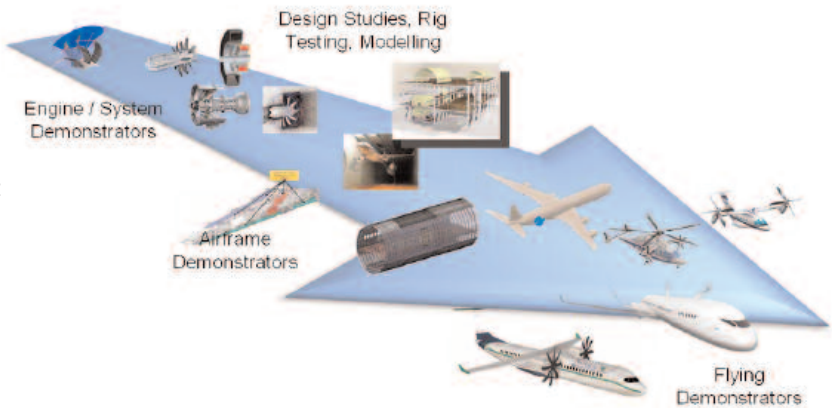
- Accelerate the development of smart, environmentally friendly and energy efficient aircraft ;
- Achieve its strategic social priorities with sustainable growth, creation of wealth and stable employment in

fields of high technology;

- Win global leadership for European Aeronautics with a competitive supply chain including academia, research and SMEs.

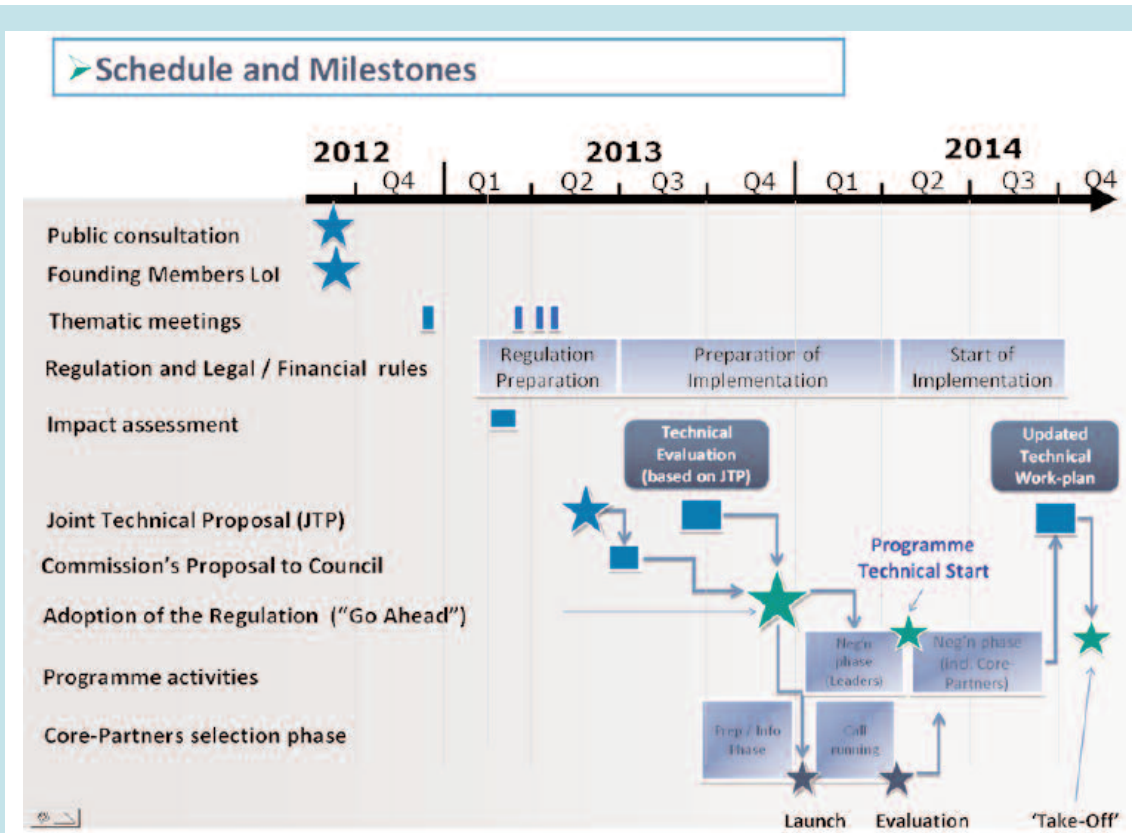
TWO CORE BUILDING BLOCKS

- Innovative Aircraft Demonstrator Platforms (IADPs) for large passenger, regional and fast rotorcraft aircraft segments;
- Integrated Technology Demonstrators (ITDs) for airframe, engines and systems.



TWO TRANSVERSE ACTIVITIES

- ECO-Design;
- Small Air Transport.



J.-P. S – From information provided by Clean Sky JU.

ABOUT SESAR



WHAT IS SWIM?

SWIM = SYSTEM WIDE INFORMATION MANAGEMENT.

Building on the best practices from different information communities, the aim of SWIM is to provide information users with relevant and commonly understandable information. The latter should be of the right quality, provided at the right time and delivered to the right place, so enabling the concept of net-centric ATM operators.

In order to achieve this objective in an efficient way the following SWIM principles are as follows:

- *Separation of information provision/consumption.* In the ATM network, almost every participant is a producer as well as a consumer of information. It is not ideal to decide in advance who will need what information, obtained from whom and when. The key issue is to decouple producers of information from the possible consumers in such a way that the number and nature of the consumers can evolve through time.
- *Loose system coupling.* Where each of its components has, or makes use of, little or no knowledge of the definitions of other separate components. By doing this the barriers between systems and applications are removed, and interfaces are compatible.
- *Using open standards.* An open standard is one that is publically available and has various rights to use associated with it. It may also have various properties of how it was designed (e.g. open process). The terms “open” and “standard” have a wide range of meanings associated with their usage.
- *Using Service Oriented Architecture.* Driven by analysis of business processes and needs functionally is developed, packaged and implemented as a suite of interoperable services that can be used in a flexible way within multiple separate systems from several business domains.

MADRID, 12-13 FEBRUARY 2013 – LIVE SUCCESS OF SWIM AT WORLD ATM CONGRESS

Throughout 3 sessions gathering over 200 participants, the live demonstrations of SWIM, the intranet of the future, presented the collaborative decision making capabilities of the SWIM technical infrastructure. They tested its capacities of information sharing, service orientation, federation, open standards and information & service lifecycle management.

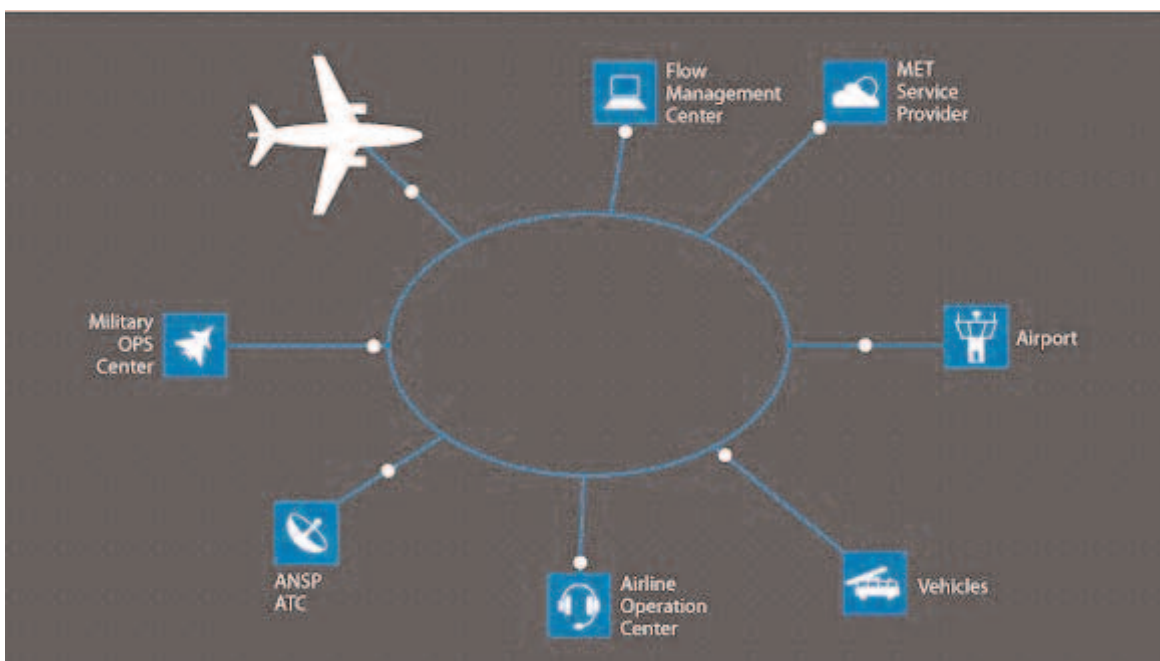
The demonstrations involved 10 different ATM organisations interconnecting 31 instances and successfully exchanging information on airspace, flights, airports, and weather. They proved the benefits of SWIM and how its maturing prototypes are closer to deployment in the near future.

SESAR Members and associate members directly involved in the SWIM Demonstration include DSNA/Meteo France, ENAV/IDS, EUROCONTROL, Frequentis, Honeywell, Indra, NATMIG, NATS, NORACON, SELEX ES and Thales.

12 JUNE 2013: SESAR SWIM MASTER CLASS 2013 GOES GLOBAL

With over 100 participants and 21 data providers from all over the world, taking part in the Initiation Day on 12 June, the SESAR SWIM Master Class 2013 has become a world-wide ATM event.

Participants were first briefed on the SWIM concept – the ATM intranet – and on SESAR’s progress so far in the areas of standards, governance, information and service models, compliance criteria. This was followed by briefings on the practicalities of the SESAR SWIM Master Class as well as the obligatory legal aspects. In parallel, data providers showcased their services and applications and explained how those could be used in a SWIM-enabled application.



Net-centric information viewpoint.

SESAR AND THE NETHERLANDS: CONTRIBUTIONS AND BENEFITS

By Fred Abbink, President of the NVvL

On Thursday March 14 the Netherlands Association of Aeronautical Engineers (NVvL) had held its yearly symposium on "SESAR and The Netherlands: Contribution and Benefits".



From left to right: CDRE Chris Lorraine, Peter Hartman, Florian Guillermet, Paul Riemens, Jacqueline Prins and Fred Abbink (chairman of the symposium).

The location was the beautiful auditorium of the Schiphol Group at the airport of Schiphol. In this one-day symposium the main Netherlands players explained their involvement in SESAR and the Single European Sky. The targets of Single European Sky and SESAR are a threefold capacity increase, a tenfold increase in safety, 10% reduction in fuel burn and a fifty per cent reduction in ATM charges.



Over 100 attendees from the Netherlands organisations as the NVvL, Ministry of Infrastructure and Environment, KLM, Schiphol, ANSP LVNL, EUROCONTRO MUAC, Military Aviation Authority, NLR, Hogeschool Amsterdam and TU-Delft listened to the following presentations:

- 1) Keynote on the SESAR programme Status, by Florian Guillermet, (Deputy Executive Director Operations and Programme);
- 2) Ministry of Transport on SESAR, by Jacqueline Prins, (Deputy Director Civil Aviation, Ministry of Infrastructure and Environment);
- 3) Airport CDM, Collaborative Decision Making, by Ad Rutten, (COO of Schiphol and Chairman ACI Europe);
- 4) SESAR and the Netherlands, the Airline Perspective, by Peter Hartman, (President/CEO of KLM and Chairman of IATA);

- 5) SES/SESAR and the Netherlands. The Military Perspective, by Commodore Chris Lorraine, Director of the Military Aviation Authority;
- 6) SESAR Joint Undertaking, by Paul Riemens, (CEO LVNL and Chairman CANSO);
- 7) From SESAR development to deployment, by Jack Jansen, Director EUROCONTROL Maastricht Upper Air Control);
- 8) Meteorological Services, now and in the SESAR era, by Floortje Hanneman, (Director Weather KNMI);
- 9) SESAR NL(R) status, by Michel Peters, (General Director of the National Aerospace Laboratory NLR);
- 10) University Research, by Prof Ricky Curran, (Professor TU-Delft Aerospace Faculty and Member SESAR Scientific Board).

After the presentations a 1, 5 hour questions and answers and panel discussion was held.

The necessity for the Single European Sky (SES) from the point of view from the airlines and airports was made perfectly clear, as well as the many challenges to obtain the stated targets of The fragmented European Airspace has to be transformed into a Single European Sky with Functional Airspace Blocks (FABs). This involves restructuring of the present national airspaces with civil and military Air Navigation Service Provision (ANSP) into consolidated SES/FABs. And this is no trivial exercise. The proof of the pudding lies in the willingness and possibility of the European Member States to transform.

SESAR AND MILITARY ISSUES

SESAR takes a look at its work around military issues and outlines why civil-military interoperability is so important to the fundamental success of the programme. The article also focuses on existing barriers and what you can and should expect from SESAR in the future.

1. Why military aircraft in SESAR?

The European States' aircraft fleet has steadily decreased since 2003 and are expected to account for less than 8,500 assets in 2013, as opposed to 13,344 in 2003. Military general air traffic (GAT) flights also continue to decrease and in 2011 only 1.87% of all aircraft flying GAT were State aircraft.

In Europe, military aviation represents hundreds of military areas, dozens of military airfields and it is estimated that around 30% of military flights fly GAT, while the rest belong to Operational Air Traffic (OAT).

However, despite decreasing numbers, there is a strong need for sovereign military use of airspace to include a large variety of missions for training purposes, homeland security missions as well as cross border crisis management operations, such as those conducted since the 90's in the Balkans and, more recently, in Libya and Mali. For such missions, access to airspace is vital, however, given

that these missions are often launched at short notice, military use of airspace becomes more complex and varied than civilian airspace users.

2. Civil-military interoperability is a must!

In this context, a wide military involvement is paramount in order to collect comprehensive information on the various ways in which militaries use airspace across Europe and so that the SESAR concept, as it develops, takes these needs into account.

Although the military pursue different objectives, they commonly operate in a mixed civil-military environment and thereby often contribute to the civilian ATM system through mixed civil-military airports, radar surveillance or indirectly by realising missions, such as air policing or search and rescue operations.

But still military operations are supported by different infrastructures designed to sustain crisis time activities and respond to secure C2 requirements (command and control), which often vary from one state to another.

SESAR's operational concept based on 4D trajectories or the setting up of collaborative decision making processes across the entire ATM community will imply a high level of interoperability of systems and procedures.

To preserve and even ease the military requirement of access to all airspace, there will be a need to progressively bring the procedures and the performance of ground and airborne military systems used for ATM purposes up to standard. The harmonisation of Operational Air Traffic rules, the promotion of common and dual purpose technologies and the development of performance based specifications will all support this paradigm shift in civil-military co-operation.

3. There are some barriers to be overcome...

It is currently very difficult to fly across Europe with a harmonized and efficient military ATM system. Furthermore, the implementation of military performance ATM system and binding regulations is lacking in political will and a shared vision for the future cohabitation of a streamlined civil aviation system and the different national military aviation systems.

Today there is a need to promote a single military position able to take into account and assess SESAR development and its subsequent implementation. This becomes all the more relevant when considering that SESAR could be a unique opportunity to defragment, reinforce safety and performance of military aviation in Europe.

The implementation of a common model and standard through a "Joint and Integrated approach" will have a positive impact on performance, which will be of benefit to all users including military. Thereby SESAR will ensure that civil and military airspace users, together with the Air Navigation Service Providers (ANSP) will work together in true partnership.

4. Future outlook at a glance

The SESAR programme already commits to military activities in cooperation with the Defence industry to shape the future of military aviation towards a civil-military performance driven European sky. It should also be noted that military organisations, like the European Defence Agency and NATO, as well as from some Member States (through the Military Engagement Plan for SESAR – MEPS), could also provide valuable support.

SESAR Joint Undertaking has been able to produce a number of tangible and validated results intended to provide military decision-makers with sufficient information and get them on Board with the SESAR programme. In addition, research, such as the outcomes of the SESAR Military Avionics Study (2012), have been widely distributed throughout the military community. For the SESAR programme to be a success we need to ensure tighter efforts between both Civil and Military players, interoperability will be fundamental to the deployment of a new generation ATM system in Europe.



Source URL

<http://www.sesarju.eu/programme/highlights/focus-sesar-and-military-issues>

ABOUT THE EASA

PATRICK KY APPOINTED AS NEW EASA EXECUTIVE DIRECTOR



The Management Board of the European Aviation Safety Agency (EASA) today announced the appointment of Mr. Patrick Ky as Executive Director of EASA with effect from 1 September 2013.

Mr. Patrick Ky is currently Executive Director of the Single European Sky Air Traffic Management Research (SESAR) Joint Undertaking and has driven the set-up and execution of Europe's ambitious air traffic management modernisation programme since October 2007.

Mr Ky will succeed Mr Patrick Goudou, who has been Executive Director of EASA since its creation in September 2003 and whose term ends on 31 August 2013.



"I am delighted that the EASA Management Board have nominated Patrick Ky as my successor. Patrick is a leading figure in European aviation and his experience and skills will be a tremendous asset to the Agency. I look forward to working closely with him over the coming months as we prepare the transition," said Patrick Goudou.

Prior to leading SESAR, Mr Ky held different managerial positions in the French Civil Aviation Authority, a consulting company, and Eurocontrol. In 2004, he joined the European Commission to work on SESAR.

In total, Mr Ky has more than 23 years of work experience in Civil Aviation. A graduate from Ecole Polytechnique and the Civil Aviation Engineering School in France, Mr Ky also holds degrees in economics from the University of Toulouse and the Massachusetts Institute of Technology.

EASA AND EDA STRENGTHEN CIVIL-MILITARY COOPERATION IN AVIATION SAFETY

On 18 June 2013 at the International Paris Air Show "Le Bourget", Patrick Goudou, Executive Director of the European Aviation Safety Agency (EASA) and Claude-France Arnould, Chief Executive of the European Defence Agency (EDA) signed an Arrangement for enhanced cooperation between the two Agencies. The text specifically covers the harmonisation of military safety requirements with a primary focus on airworthiness.

Both Agencies expect to achieve considerable benefits from this increased cooperation, more particularly in areas of 'dual use' aircraft: as an example the A400M which has recently been certified by EASA in its civil aircraft configuration. This civil certification can serve as a baseline for the subsequent military certification by the respective national Military Airworthiness Authorities. Some Member States have already agreed to use harmonised European Military Airworthiness Requirements (EMARs) for the in-service support phase of this aircraft programme.

In the field of Remotely Piloted Aircraft Systems (RPAS) close cooperation and harmonisation of civil and military rules and regulations to enable safe operations in Europe will be essential. EDA projects on air traffic insertion (DeSIRE) and mid-air collision avoidance systems (MID-CAS) can be preliminary enablers towards joint civil and military certification.

In brief:

- The worldwide rate of fatal accidents for scheduled passenger and cargo flights has continued to decrease, providing a steady improvement in aviation safety. The rate of fatal accidents in EASA Member States (MS) is comparable with and slightly lower than North America.
- There were 105 million IFR flights in the EASA-MS flight information regions in 10 years.
- The number of Commercial Air Transport fatal accidents in 2012 was less than the 10-year average.
- The number of accidents involving General Aviation light aircraft has decreased by 10% compared with the previous 5-year period.

EASA CERTIFIED THE AIRBUS A400M

On 13 March 2013, the EASA has handed over to Airbus Military a type certificate for the A400M, following the satisfactory completion of a functioning and reliability flight testing campaign of more than 300 hours, demonstrating the aircraft's compliance with civil airworthiness and environmental requirements.

This A400M civil aircraft configuration and EASA certification is the baseline for a subsequent recommendation for the military version of the A400M aircraft to be certified by the respective Military Airworthiness National Authorities, in accordance with their particular military certification and qualification requirements.

J.-P. S.

Article written on the basis of information provided by EASA.



ANNUAL SAFETY REVIEW 2012

THE EASA has recently published the Annual Safety review 2012:

As usual, this document presents statistics on European and worldwide aviation safety.

A FORUM ABOUT AIR POWER WAS HELD IN PARIS ON 16 MAY 2013

The Air and Space Academy, in cooperation with the CAES organised on 16 May 2013 at Ecole Militaire in Paris a forum to deal with the theme:

“Safeguarding the European combat aircraft industry future: what must be done now?”



After the welcome addresses pronounced by Philippe Couillard, AAE President, the Forum began with an introductory speech delivered by Général Denis Mercier, French Air Force Chief of Staff.

Then, four Round Tables successively took place:

• **1. Operational and capabilities needs – Chair Général Jean-Georges Brévot – Four presentations:**

- Strategy for Europe, by Olivier Jajec, Compagnie Européenne d’Intelligence Stratégique – FR,
- Future threats-capability needs, by General Manfred Lange, former SHAPE Chief of Staff – GE,
- Needs-use of combat aircraft, by Air Marshal Greg Bagwell (Royal Air Force, Deputy Commander for

Operations – UK,

- European Needs, operational integration, by Ioan Mircea Pascu, European Parliament, Subcommittee on Security and Defence SEDE.

• **2. Technology and industrial capability needs - Chair, Dr Georges Bridel, ALR – Five presentations:**

- European Defence Agency (EDA) viewpoint, by Christian Bréant, EDA Research and Technology Director,
- Plane manufacturer viewpoint, by Lennart Sindahl, SAAB Aircraft CEO – SW,
- Equipment manufacturer viewpoint, by Paul Stein, Rolls-Royce Scientific Director UK,
- System engineering viewpoint, by Marko Erman, Thales CTO – FR,
- Plane manufacturer viewpoint, by Alessandro Franzoni, Alenia Aermacchi COO - IT.

• **3. Possible cooperation schemes – Chair, Antonio Viñolo, former EADS Senior VP Strategic Coordination – Four presentations: Industry viewpoint by:**

- Bernhard Gerwert, EADS Cassidian CEO –GE,
- Eric Trappier, Dassault Aviation CEO - FR,
- Chris Boardman, BAE Systems military Air Managing Director – UK,
- Domingo Ureña-Raso, Airbus Military CEO, SP.

• **4. Preparing the future, recommendations – Chair, David Marshall, President of the CEAS – Four presentations:**

- Industry viewpoint, by Prof. Holger Mey, Cassidian Head of Advanced Concepts –GE,
- Political viewpoint, by Keith Mans, Chairman Air League – UK,
- Air Force Viewpoint, by General Carlo Magrassi, Italian Air Force, deputy commander Operational Forces Command, former EDA Chief Executive for Strategy – IT,
- Prospective Views, by Général Guy Girier, Deputy Chief of Air Staff for Planning and Programmes – FR.

Concluded remarks were delivered by Dr Karl von Wogau, former Chairman of Subcommittee on security and Defence, European Parliament, Secretary of General of Kangaroo Group – GE –, and His Excellency Tomasz Orłowski, Ambassador of Poland to France – PL.

Dr Claude Roche, Member of the AAE and organizer of the event thanked the authorities and personalities who eminently contributed to the high level of the presentations and to richness of the debates which took place at the end of each Round Table.

The Proceedings of the Forum are being prepared and will be available in the near future.

Here after is reproduced in its integrality of the presentation made by Général de Division Aérienne Guy Girier.

PROSPECTIVE VIEWS

By Général de division aérienne Guy Girier



Général de division aérienne Guy Girier is Deputy Chief of Air Staff for Planning and Programmes, French Air Force

France has recently presented in the the co-called “White Book” about Defence the works performed by high-level experts regarding the evolution’s perspectives of its armed forces for the next ten years. This book lays down the defence and security’s stakes for France as European Power with global influence. But if the major concerns are related to the national territory, the analysis conducted by the authors also lights the evolution factors of Europe’s strategic frame at a fifteen years time-horizon. The trends, risks and threats are numerous and varied, necessitating to be taken into account though a collective approach.

OTAN plays a triple role to the benefit of European nations. It ensures the collective defence of the Member States. It is an important instrument of the strategic partnership between both rives of the Atlantic. It constitutes a common frame of military action when the allied nations will to intervene together to respond to shared risks and threats, but its operational weapon systems are those of the concerned Member States. So, the latter have to provide totally interoperable means at the level of security ambitions supported by OTAN: this is here a stake of credibility.

The existence of a common destiny in Europe is not sufficient for the edification of a common policy. A ‘European White Book’ remains a praiseworthy ambition which strikes against the diversity of the security problems. Within the European Union the perception of threats remains diverse as well as the one of the influence of external threats on the internal security of each nation.

In parallel:

The reinforcement of the USA strategy towards Asia must incite the European nations to more and more take their responsibilities for their security and defence capabilities. The growing economic of China and its temptation to express its power in the military domain modify the stability conditions in the Pacific Area and could influence its position regarding zones of economical stake closer to Europe, as in Africa.

These trends confirm that:

The strategic uncertainties at Europe’s doors remain with, on the one hand, the Arab revolutions whose evolutions are doubtful, and on the other, the present dramatic events in Syria.

The proliferation of more and more sophisticated armaments, notably though the increase in power of Russian and

Chinese armaments industries is likely to modify the strategic, tactical and operational balances: for example the new stealth fighter J20 of China, the T50 and the S300 surface-to-air system of Russia modify the context of threats and responses to be brought for keeping advantage.

This is in this context that the European nations have to face the necessary adaptation of their defence tools. The anticipation of threat and geostrategic environment evolvments can only be conducted on the capacity of innovation and the capability to adapt the forces and the armament systems they serve. In this respect, there are four stakes, for the European Forces: an economical stake, a stake of opportunity, a stake of organisation, a stake of convergence.

ECONOMICAL STAKE

The economical and financial crises we are crossing encourage short-term decisions to the detriment of the strategic anticipation, so leading to the impoverishment of the prospective thought. In effect most of the European nations concentrate their efforts on immediate equipment and do not work enough on the preparation for the future.

STAKE OF OPPORTUNITY

Concerning air power, the choice of JSF by most of the EU States could ice in the coming years the convergent capacity of the air forces and pick up - and even “pump out” - the financial resources available at nation level beyond those necessary for building up a common future. This programme, which was supposed to re-give activity to the partner-nations, in fact fixes in the dependence towards the USA tool and emphasizes the dispersal of the European armament industry and therefore its fragility. This initiative disconnects the calendars of the European air forces’ renewal, moving away the points of convergence the ends of the Tornado and Mirage 2000 aircraft were representing.

The coming milestones are now related to the renewal of the *Eurofighter*, *Gripen*, *last F16* and *Rafale* fleets.

It is crucial to seize this opportunity. The need is immediate and the first studies should be conducted without delay.

About *Rafale* :

There are two axes of effort: to increase the performances of *Rafale* in order to consolidate its operational capabilities, to undertake studies with view to preparing for its replacement in the future.

Rafale has demonstrated the extent of its operational capabilities on all recent operation theatres; Afghanistan, Libya and Mali. Its polyvalence is a real trump which allows the adaptation to all situations of protection, deterrence, entry in first position, situation assessment and stabilization.

Its immediate evolutions consist in the enlargement of its operational capacities:

- In the air-to-air area, by the integration of the air superiority missile Meteor;
- In the air-to-surface area by the improvement of targeting performances thanks to the integration of the New Generation Laser designation pod;

- The permanent actions necessary to ensure the perfect interoperability of the aircraft with interoperability specifications of OTAN (communications, geodesic references, data links), as well as with civil circulation rules – reduced vertical separation minima (RVSM), precision area navigation (PRNAV) – . France assumes these evolutions through the F3R programme, a priority highlighted in the White Book. In parallel, studies are being undertaken to prepare its modernisation and maintain this platform at first rank aside the JSF fighter. The works are focused on its counter-measure equipment and the research of new concepts henceforth accessible through the aerial platforms networking.

In a second axis of effort, as early as now, its replacement has to be considered as a stake. The first *Rafale* entered into service in the French Navy in 1999 and in 2005 in the French Air Force. Taking into consideration their life duration – about 30 years –, and the time required to specify, study, develop and manufacture a new air combat system – about 25 years –, we see that this federative project necessitates to deepen the preliminary studies aiming at answering several basic questions, in particular the place of automation in the future air combat system, the combination of fighters with pilot on-board and of uninhabited air combat vehicles (UCAV), the new operational concepts which should be envisaged considering the future technology breakthroughs ...

First studies were initiated in Franco – British co-operation within the framework of the so-called ‘Future Air combat System Development Programme’ (FCAS-DP). In the coming years studies will cover a broad spectrum: new materials, energy, propulsion, military efficacy, etc. The question of the enlargement of this bi-national initiative to other EU partners will of course be put.

STAKE OF ORGANISATION

The European Defence Agency (EDA) is playing a role with a view to encouraging and facilitating the convergence of European Forces’ needs. Nevertheless, due to the insufficiency of financial resources, its achievements remain limited, having not enough space to pass beyond the state of sponsor and to really reach the level of a contracting agency. Failing a budget really adapted and an ambition concentrated on a structuring programme such as the Future European Combat Aviation, it can only with difficulty go out the ‘mille-feuilles’ study register, putting the nations in the obligation to initiate and finance themselves programmes in co-operation, with in fine the impossibility to find in the good political tempo, the equilibrium between calendar, finance, industrial return and common operational needs. Too many initiatives have come up against the difficulty of convergence. The AEJPT (Advanced European Jet pilot Training) programme is unfortunately characteristic of this matter of fact. Under the authority of the EDA, this programme failed because of divergences of the States as regards a number of points such as contracting process, setting up sites and industrial return. The EDA’s progresses are conditioned by the means, the ambitions,

but also a better coordination of its actions with those of LOI (Letter of Intent) and OCCAR (Office pour la Coordination et la Coopération en matière d’Armements en Europe – Agency for Armament Procurement Coordination and Cooperation in Europe).

STAKE OF CONVERGENCE

In default of a voluntary European Defence Policy, new modes of co-operation have to be put in place in continuity with initiatives already taken in the past, such as the successful European Air Transport Command (EATC) the Headquarters of which is at Eindhoven. Within the framework of the White Book, the French Air Force is proposing to create Air Groups in order to facilitate convergences about standards, concepts and doctrines while respected the sovereignty principle of the States. This line of action may benefit to the entry into service process of new armaments bought in common like A400M, MRTT, UAVs, but also to training programmes. This initiative, which aims at deepening the ‘Pooling and Sharing’ programme of the EDA, will serve as a relay to reach the objective of convergence on the EMAR (European Military Airworthiness Requirements) standards, a fundamental condition to allow common supports to be put in place in a satisfactory manner.

STAKE OF CAPACITY TO FEDERATE EUROPEAN PROSPECTIVE

It is indispensable to coordinate the studies necessary to the European Air Forces take up the challenges to be taken up.

At short-term time horizon:

The first question is to take into account the automated systems in the frame of the air combat and at the same time their integration into the general air circulation. The second question concerns the cost control which is essential for export sale but also for not encumbering the investment budget by functioning expenses always increasing despite formats in permanent reduction.

At mid-term time horizon:

Developing tactical data links is an important evolution’s factor. These data links have permitted to network actors increasing the unitary efficacy of each mean engaged thanks to a better visibility of the tactical environment. And now, they open the field of the reality augmented thanks to an integration more developed within a Web sphere (example of ‘blue force tracking’) and later on, they open the field of interactivity of arm systems between them thanks to new technologies not yet known, creating so new concepts (SEAD-DEAD). This endless networks’ power increase will have to be controlled as regards the imperatives of protection.

At longer-term time horizon:

The threat evolution management control imposes to continue the exploratory works concerning range, hypervelocity, manoeuvrability and accuracy. Besides the development of space tourism and of stratospheric transport systems will modify the problematics of security and protection, which will require adapted responses.

CONCLUSIONS

Stakes are major for Europe to preserve in the future credible military capacities by basing itself on a strong industrial tissue which at once permits technology and concept choices' autonomy. The initiatives have to be launched as soon as possible. France wishes to base the convergence upon a pragmatic organisation allowing harmonise the standards, the procedures and the organisations through Air Groups. It has undertaken the works aiming at the renewal of its air combat fleet in a Franco-British bi-lateral context supported by a strategic industry for both nations. These works will deliver on time the definition of the Air Combat System the UK and France will need at 2035 time horizon. This is also in a wider cooperation framework that France wants to pursue its reflections about the challenges which engage its operational capacities in the mid-term though prospective studies performed in co-operation. The European Defence Agency should play a fundamental role in this perspective.

Its success will depend upon the means which will be allocated to it.



PERSONALITY INTERVIEW

Jean-Pierre Sanfourche, Editor-in-Chief of the CEAS Bulletin, has interviewed Tim Rowntree, new OCCAR-EA's director.



Tim Rowntree

• **JPS: You have been nominated at the head of OCCAR-EA on 28 February, what are your very first impressions about the present status of this Institution?**

I was already aware of OCCAR's modern and efficient programme management approach, mainly through one of my previous roles as the Chairman of the A400M Programme Committee. I can now see that this approach is providing huge value across all OCCAR programmes. On A400M, for example, I would single out the following aspects as providing particular value to the participating states:

- a. The application of 'Global' balance rather than fixed national work-share (Juste Retour) which has enabled true competition throughout the supply chain to provide the very best capability and value for money. Incidentally, the OCCAR programme management posts are also competed between candidates from all of the participating states, and a similar process is applied in

the Central Office, and this provides us also with the highest calibre of OCCAR staff across the business.

- b. Making best use of the 'Commercial Approach', where industry bids for, and is accountable to deliver, the complete programme rather than individual elements. This also encourages full application of commercial best practices, including 'dual use' technologies and methods, and in the case of A400M it also includes the provision of a civil EASA Certification as the firm baseline from which we are building the Military release.
- c. The lean OCCAR Management Model. By delegating programme management to empowered programme divisions, and retaining only a lean core HQ organisation to provide corporate support, continuous improvement and governance, we hold our management costs to the absolute minimum. Today, the OCCAR internal costs amount to only 1.5% of the programme cost.

Like any organisation, however, OCCAR does of course need to further develop its capabilities for the future, particularly in the area of 'Through-Life Management', where we will provide the necessary support to our customer nations throughout the in-Service life of the systems we provide.

• **JPS: Today six nations only are members of OCCAR: Belgium, France, Germany, UK, Italy and Spain. Do you plan an increase of this number in the near future? In particular can it be expected that the present partner nations – Finland, Sweden, Poland, Luxemburg, NL and Turkey – will soon become full members?**

The acceptance of new Members States is the prerogative of the current OCCAR Member States and not of the OCCAR-EA Director. In accordance with the Convention, other European countries may be invited by the highest OCCAR body, the Board of Supervisors, to join OCCAR. The natural way for a Nation to be involved with OCCAR is by participating in a Programme (by joining it from the outset or at any stage of the life cycle). This will allow the Nation to fully benefit from the OCCAR set-up and to be treated inside the programme as an equal to the other Programme Participating States without necessarily being a Member State.

OCCAR is open to European Countries membership only when they are participating significantly to at least one programme managed by OCCAR. At a later stage and after careful consideration, the Nation may express its wish to be invited to become a Member State.

Currently Finland and Sweden state clearly that they are satisfied with the services OCCAR provides to them without feeling the need to become OCCAR Member States. On the other hand, some other Nations show interest in joining OCCAR as Member States.

• **JPS: The ideal in my opinion would be that the members of the EDA (European Defence Agency) and of the OCCAR are the same: is it unrealistic?**

With the way things stand at present, I would say that this is unrealistic and that it would not be helpful towards the

objectives of either organisation. The EDA and OCCAR are of course natural partners and we operate very closely together, within the context of the Administrative Arrangement signed between the 2 organisations in July 2012. Under this arrangement, the EDA works across all of its 26 Member States to identify present and future capability needs and to align common requirements, which, if and when validated and funded, would be established as collaborative programmes and delivered through OCCAR. To date, OCCAR programmes involve only a relatively small sub-set of the EDA nations in its major programmes, and as these programmes demand high levels of technical, commercial and programme management complexity and innovation, and high financial commitments, I think it is right for OCCAR to focus primarily on delivery within its customer base, whilst the EDA, quite correctly, operates on a much broader front. Of course, the European Defence and Security environment is constantly evolving so, who knows, within 15 to 20 years we might be looking at a different landscape.

• JPS: On 27 July 2012, an Administrative Arrangement was signed between OCCAR-EA and EDA: is this Agreement changing the OCCAR-EA's basic missions and ways of working?

As I explained in answer to your previous question, the Administrative Arrangement formalises the excellent cooperation between the 2 organisations with OCCAR situated downstream of the EDA as the programme delivery engine. This cooperation is already operating through two EDA category B ad hoc programmes for which the management has been entrusted to OCCAR, namely the European Secure Software defined Radio programme (ESSOR) and the "Multinational Space-based Imaging System" programme (MUSIS). Also the FR/UK Maritime Mine Counter Measures programme (FR/UK MMCM), on its way to be integrated into OCCAR, is in a way a spin-off of a similar EDA Ad Hoc Cat B project. Future opportunities for cooperation have been identified with programmes such as BIO EDEP (BIOlogical Equipment Development and Enhancement Plan for protective equipment against biological hazards) and the Pooling & Sharing initiative on Air-to-Air Refuelling.

With EDA and OCCAR all instruments are in place within Europe to provide Nations with the best possible cooperative solutions for their common defence acquisition needs, and we trust that Nations will use these instruments in the most effective way.

• JPS: I assume that it will contribute to the achievement of many steps forward, what are your personal expectations?

This Arrangement is absolutely in line with and supporting of the prime objectives of both organisations. In these days of economic hardship and uncertainty across Europe, I would like all EDA nations to become fully aware of OCCAR capabilities and to consider how collaborative solutions, delivered through the OCCAR/EDA partnership have the potential to meet their capability needs with the best solutions at minimum cost. I was pleased to be able

to deliver this message to the EDA Steering Board in March 13. Today, across many of the significant capability areas, the question for nations is not so much 'collaborative or national' but 'collaborative or not at all'. A collaborative approach, conceived through the EDA and delivered through OCCAR is of course also necessary to maintain Europe on the global map in terms of industrial capabilities to provide the European Forces with the defence equipment they need now and in the future. I would like to see further OCCAR involvement in high complexity programmes, such as in the area of unmanned aerial vehicles, soon.

• JPS: Do you perceive any difficulties in the working relationships between OCCAR-EA and the Industry National Logistic Organisations?

No. OCCAR works mainly with European System Integrators who act as prime contractors for OCCAR managed programmes. To facilitate this cooperation, industries from the OCCAR Member States are invited to provide their best proposals and to contribute to the work performed within OCCAR to develop modern and effective support solutions to meet the needs of our customer nations. The OCCAR Defence Industry Group (ODIG) and the OCCAR Integrated Logistic Support Panel (OILSP) are composed of representatives of the National Defence Industry Associations of the OCCAR Member States. The working relations with ODIG and OILSP provide excellent value, although, as you would expect, we do engage in healthy challenge and debate.

• JPS: Could you tell us in a few words your perception of the OCCAR-EA Aerospace Projects status:

– A400M?

2013 will be a key year for A400M. This summer we will see the entry into Service of the first aircraft for France, followed shortly by Turkey and the UK. This will constitute a major airlift capability upgrade for our Partner Nations and Europe generally. Through the application of world leading civil and military technologies and system design, it will be the world's first airlifter to provide both Tactical flying and rough-strip capabilities, and Strategic range and payload, in one aircraft type. I am convinced that A400M will have a very successful future, especially if we can maintain a fundamentally common aircraft configuration which will be the key to providing the most efficient multinational through-life support.

– TIGER?

The Tiger platform is behaving in a splendid way, and is already 'combat proven'. In March this year, the programme reached a new step of maturity, as it was deployed simultaneously by all 3 European user Nations in Afghanistan and Mali.

The next challenge will of course be the finalisation of HAD Block 1 qualification this year, which introduces, amongst other capabilities, an additional dual air-to-ground capability (Hellfire and Spike) to the weapon system.

In the area of in-service support, OCCAR has a full mandate to manage the sustainment of the weapon system, and we are working with the Partner Nations to develop smart mechanisms to increase support cost-effectiveness, for example, by developing a mutual spares supply service. The three variants have more than 80% commonality by design, which provides a significant opportunity to achieve highly efficient support services.

– FSAF?

The perception is positive as the Aster missile is the first anti-ballistic and tactical missile system in Europe and promotes excellent European co-operation amongst 3 Nations and 5 customers.

The FSAF-PAAMS Programme is currently in 3 phases of the procurement cycle: the development phase which is due to complete in 2014, the production phase that is continuing for Aster ammunitions and Land based firing sections and the in service support phase.

Delivery of ammunition for France, Italy and United Kingdom for operational Maritime and Land based platforms requires comprehensive support that is managed through the In-Service Support Contract. The current challenge is to manage the short term obsolescence within the FSAF systems and its ammunition, and the medium to long term challenge is to launch with industry a programme to address the emerging threats as defined by the Nations.

– MUSIS?

MUSIS is, at the moment, the youngest programme managed by OCCAR. It is also the first OCCAR programme in the space field. MUSIS aims at interoperating complementary Earth Observation satellite systems which are under development in the Participating Nations such as the Italian radar system CSG and the French optical system called CSO. OCCAR activities consist of establishing a “Common Interoperability Layer” to federate the space systems on the ground. Promising results have been achieved last year after a first study contract which enabled us to identify an architecture for the system to interconnect Participating States’ ground systems. The results will be consolidated through a second contract which is planned to be placed in 2014 and will conclude the definition phase. The subsequent development phase is expected to be launched in 2015, bearing in mind that the OCCAR activities need to be phased with each space programme managed in the Nations.

OCCAR-EA continues to work hand in hand with the European Defence Agency which liaises with other European Nations involved or potentially involved in MUSIS.

• JPS: What are the main lines of your strategy to conduct the development of the OCCAR-EA, to contribute to the mandatory evolution towards a more and more integrated European Defence, and your first priorities?

As I said earlier, OCCAR must continuously develop its capabilities and demonstrate its potential to enable more

efficient and coherent Defence programmes within Europe, including the consolidation and strengthening of European industry. In particular, it must now develop its capabilities in the area of ‘Through-Life Management’, where we will provide the necessary support to our customer nations throughout the in-Service life of the systems we provide. Also, with the general merger of the overall Defence and Security domains as a result of Globalisation, OCCAR must be ready to assist further in the wider Defence and Security domain. With these points in mind, my outline strategy and my immediate priorities for OCCAR can be summarised as follows:

- a. To deliver its programmes successfully and on time, to meet the vital needs of our customer nations and to demonstrate by evidence the success of the OCCAR model and the professional capability of the OCCAR team.
- b. To be a learning organisation, continuously improving its programme and risk management capabilities. In particular, we are developing our capability as a “through life management” organisation. This means that beyond our initial role of buying equipment, we consider the through life support strategy from the very beginning. This would include the services needed to support and develop the equipment through its Service life, including supporting systems such as synthetic training and maintenance support systems.
- c. To constantly seek opportunities to help customer nations to meet their future Defence and Security needs through collaborative OCCAR programmes. This is especially important in the context of the current financial pressures in Europe, where an efficiently run collaborative programme may be the only way for nations to afford the new capabilities they need.
- d. To work closely with our customer nations and industry to minimise as far as possible the number of national variants of the systems we provide, and to maximise the utilisation of common support systems and infrastructure. Such system commonality and sharing allows significant cost reduction, faster time to delivery, better interoperability between nations and lower obsolescence and support costs. These benefits also assist in the ability of our industrial suppliers to remain competitive in the world market and so achieve higher sales volumes.
- e. By continuing to adopt the OCCAR principles, including Global Balance to stimulate real competition, to enable and support the rationalisation and strengthening of the European Defence industry.
- f. To continue to develop our relationship with the European Defence Agency (EDA) so that we can respond quickly and effectively to emerging Defence and security needs within Europe.

BIOGRAPHY OF MR TIM ROWNTREE

Tim began his career as a Craft Apprentice in the UK Ministry of Defence before joining the Student Engineer training programme and graduating in 1980. He completed a range of technical and project management tours before joining the UK Tornado Integrated Project Team in 1996 where he became the Deputy Team Leader. In May 2001, he became the UK's Lynx Integrated Project Team Leader with responsibility for the airworthiness, in-service support and capability upgrade of 160 Army and Navy Lynx helicopters, and 2 major new helicopter projects.

He was then appointed as the UK's Deputy Director Air Systems in April 2005, where he was responsible for providing assurance to the UK's Defence Procurement Agency Executive Board that air systems projects met time, cost and performance targets.

Tim became the first Director General Air Support upon the creation of UK's new Defence Equipment and Support

organisation (DE&S) in April 2007. He then completed the 2008 Royal College of Defence Studies course and returned to the appointment of Director General Air Support (later re-named Director Air Support) in October 2008. Air Support is responsible for the procurement and through-life support of the UK's MoD's Air Transport, Air to Air Refuelling and ISTAR aircraft fleets, and additional systems such as synthetic training and simulation, aircraft defensive aids and commodity items which provide cross-platform support to the Air domain aircraft.

On 1 March 2013 Tim became the OCCAR-EA Director, responsible for the leadership and development of OCCAR EA to deliver collaborative European defence equipment programmes on a through-life basis on behalf of the OCCAR Member States and nations participating in specific programmes. ■

AIRBUS MILITARY A400M SUCCESSFULLY DEMONSTRATED FLARE RELEASES

On 18 June, Airbus Military has demonstrated the release of decoy flares from the A400M as part of the development of the aircraft's self-protection systems. The flares are designed to mislead heat-seeking anti-aircraft missiles, particularly surface-to-air missiles (SAM). They are crucial part of the self-protection system because of the A400M ability to operate from short and unpaved airstrips close to the scene of military action where SAMs may be fielded by an enemy.

From Airbus Military press release dated 18 June 2013.



FIRST A350 XWB SUCCESSFULLY COMPLETED FIRST FLIGHT



The A350 XWB crew members are greeting the multitude of visitors who were present at Toulouse-Blagnac airport during the flight.



First A350 XWB takes to the skies on its maiden flight, Toulouse-Blagnac Airport, 14 June at 10:00 local time. Credit Airbus

The first A350 XWB to fly has landed back at Toulouse-Blagnac Airport, France, at 14:05 hour local time after having successfully completed its first flight that lasted 245 minutes.

The aircraft was flown by Peter Chandler, Airbus' Chief Test Pilot, and Guy Magrin, Project Pilot for the A350 XWB. Accompanying them in the cockpit was Pascal Verneau, the Project Test Flight Engineer. Monitoring the progress of the flight profile were the three test engineers; Fernando Alonso, Head of Airbus Flight & Integration Test Centre, Patrick du Ché, Head of Development Flight Tests and Emanuele Costanzo, Lead Flight Engineer for the Trent XWB engine.

For this first flight, the A350 XWB took off at around 221 tonnes. During the flight, above south western France, the crew explored the aircraft's flight envelope. The aircraft was accompanied by a chase plane to observe and film the various manoeuvres. Its progress was monitored by experts on the ground in real time via a direct telemetry data link. This maiden flight marks the beginning of a rigorous test flight campaign involving five A350s and around 2,500 flight hours. It will culminate in the aircraft's certification followed by its entry into airline service in the second half of 2014 with first operator Qatar Airways.

Replay can be seen on: www.a350XWBFirstFlight.com



The Airbus A350 XWB in flight on 14 June 2013. Credit Airbus

TECHNOLOGY REPORT

EADS RESEARCHERS BATTLE AGAINST IRKSOME WINDS

Munich, February 2013 – At EADS Innovation Works, the company's research centre, scientists are working on a system that can identify turbulences and gusts already before the aircraft flies into it. It is based on the LIDAR sensor principle. LIDAR stands for Light Detection And Ranging – using light to discover obstacles and measure how far away they are. To this end, the LIDAR sensor designed by EADS Innovation Works radiates ultra-violet (UV) light pulses, typically at a rate of 60 per second, which are scattered by the nitrogen and oxygen molecules present in the air. In this way, a total of four rays measure the motion vector of the air 50 to 200 metres in front of the aircraft's nose.

Any turbulence that may be present alters the motion profile of the molecules and thus the signature received by the system. In future, the LIDAR could send data to the flight control system, which would then actuate the wing control surfaces to counteract the effect. "We will send the signals to the flight control computer so the aircraft can automatically react." says Dr. Nikolaus Schmitt of EADS Innovation Works. "What our LIDAR sees is at most a second ahead. That's long enough for a machine, but not for the human brain. But our measurement of the airflow at that distance in front of the aircraft is extremely accurate, so the aircraft really will be able to automatically react to a vertical or horizontal draft on the basis of our advance information".

This not only makes it possible to avoid sudden loss of height (clear air turbulences, so called "air pockets"). Equipped with such an early warning system, the aircraft would also be exposed to less stress, as air turbulence causes strong forces to act on the fuselage and the wings.

The system is currently still in the test phase, and Nikolaus Schmitt estimates that it might be ready for series production in about ten years' time. The LIDAR was successfully tested in flight on an Airbus A340. The researchers are now looking into the possibility of miniaturising the sensors and integrating them in the flight control system. Aircraft builders from Europe as well as the United States are interested in such technology. However, it is open to conjecture who will be the first to deploy the system.

In future the system might not only be used to measure air pockets, but also wake vortices (turbulences caused by aircraft). Thus, LIDAR could help to gauge the position and distance of planes from the wake vortices of aircraft taking off ahead of them. Aircraft typically maintain a prescribed distance from one another in order to avoid encountering the wake vortex produced by the aircraft in front. However, these distances are not based on real-time measurements and presently can vary from one airworthiness authority's

jurisdiction to another. Like air pockets, vortices are invisible. LIDAR technology would make it possible to discern how far the vortices actually extend. This could enable the required safety spacing between take-offs and landings to be accurately determined in real time based on a common global standard.

Furthermore, at some airports this could allow the distances to be safely reduced, thus enabling an increase in air traffic frequency. The researchers at EADS Innovation Works are currently examining how the light pulses must be aligned in order to yield a full picture of the position of a wake vortex.

LIDAR technology could also be used to measure key data such as speed, temperature or air pressure and density during flight. Today these parameters are determined by various mechanical methods. Optical data acquisition would provide an additional measuring technique, providing greater safety through additional systems redundancy. Moreover, particles in the air, such as volcanic ash, could be identified and their concentration determined, enabling safe operation in low ash concentration areas in case of volcanic explosions.

About EADS

EADS is a global leader in aerospace, defence and related services. In 2011, the Group – comprising Airbus, Astrium, Cassidian and Eurocopter – generated revenues of € 49.1 billion and employed a workforce of over 133,000.

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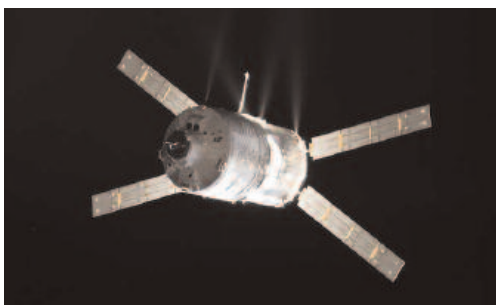
ESA'S FOURTH AUTOMATED TRANSFER VEHICLE 'ALBERT EINSTEIN': LAUNCH AND DOCKING PERFECTLY ACCOMPLISHED

6 JUNE 2013: SUCCESSFUL LAUNCH OF ATV-4

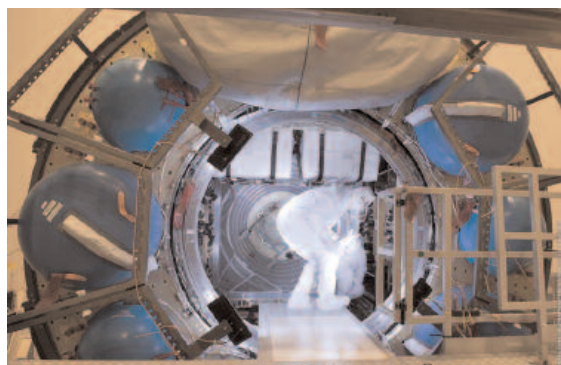
The Ariane 5 rocket, operated by Arianespace, lifted off at 21:52 UT from Guyana Space Centre and delivered ATV-4, the 4th ESA's Automated Transfer Vehicle – Albert Einstein - into the planned circular parking orbit at 250 km altitude about 64 minutes later. ATV-4 then deployed its four power-generated solar wings and antenna boom. The ship is being monitored by the ATV Control Centre in Toulouse (France), jointly operated by ESA and CNES (the French National Agency). Some six hours after lift-off, the Launch and Early Orbit Phase was completed and was due to Rendezvous and dock automatically with the International Space Station (ISS) on 15 June.



6 June 2013: Lift-off of Ariane 5 with the ATV-4 on board. Credit ESA/NASA



ATV-4 has deployed its four power-generating solar wings and antenna boom. Credit ESA/NASA



Loading cargo before launch. Credit ESA/NASA

HEAVIEST SPACECRAFT EVER LAUNCHED BY ARIANE

At 20,190 kg, ATV-4 Albert Einstein beats its predecessor ATV-3 Eduardo Amaldi by ~150 kg.

Delivering record payload

ATV-4 is carrying a record payload of 2480 kg dry cargo.



Europe's largest spaceship reaches its orbital port: the International Space Station (ISS). Credit ESA/NASA

15 JUNE 2013 UT: SUCCESSFUL ATV-4 DOCKING

On 15 June 2013, ATV-4 Albert Einstein completed its flawless rendezvous with the ISS when it docked smoothly with orbital outpost at 14:07 UT.

The 20-tonne ferry flew autonomously and docked with the 420-tonne complex with a precision of A FEW CENTIMETERS as both circled Earth at 28,000 km/h. The operations were performed by ATV's own computers, closely monitored by flight controllers from ESA and CNES at the ATV Control Centre in Toulouse (France), and by Luca Parmitano and his crewmates on the ISS.

Like its predecessors, ATV-4 is a supply vessel but also a space tug, a tanker, a freighter and a temporary habitation



The ATV Control Centre, Toulouse (France). Credit ESA/NASA



Luca Parmitano monitored docking from the ISS. Credit ESA/NASA

module. To compensate for the natural decay in altitude of the ISS (atmospheric drag), it is loaded with 2580 kg of propellant to perform regular re-boosts. It can move the entire space complex out of the path of hazardous space debris. It also provides attitude control when other spacecraft are approaching the ISS. In its tanks, it carries 860 kg of propellant, 100 kg of drinking water, all to be pumped into the ISS's tanks. In its pressurized module, it carries more than 1400 items packed into 141 bags, including 2480 Kg of dry cargo such as scientific equipment, spare parts, food and clothes for the astronauts. Albert Einstein will spend over 4 months docked to the

ISS's Zvezda module, during which it will provide 45 cubic metres of extra crew quarters, a quiet rest area and also a good working area for the astronauts.

At the end of the mission, scheduled for 28 October 2013, ATV-4 will separate from the ISS, packed with waste bags. The following day, it will be directed to burn up safely in the atmosphere during re-entry over the South Pacific Ocean.

ATV-5

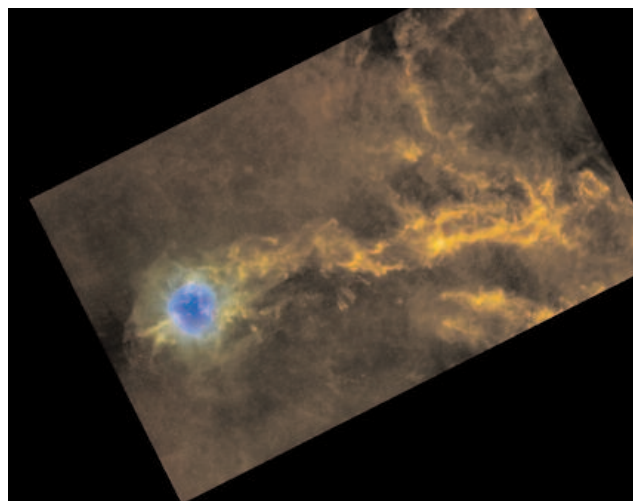
ATV-5 Georges Lemaître, is being prepared for launch in 2014.

29 APRIL 2013: HERSCHEL CLOSED ITS EYES ON THE UNIVERSE

On 29 April 2013, ESA's Herschel Space Observatory has exhausted its supply of liquid helium coolant, ending more than three years of pioneering observations of cool Universe. The mission began with over 2,300 litres of liquid helium, which has been slowly evaporating since the final top-up the day before the launch on 14 May 2009.

OVER 35,000 SCIENTIFIC OBSERVATIONS

Herschel has made over 35,000 scientific observations, massing more than 25,000 hours' worth of science data from about 600 observing programmes. A further 2,000 hours of calibration observation also contribute the rich dataset, based at ESA's European Space Astronomy Centre located near Madrid in Spain.



Dense filaments of gas in IC5146. Credit ESA

Star birth

“Herschel has offered us a new view of hitherto hidden Universe, pointing us to a previously unseen process of star birth and galaxy formation, and allowing us to trace water through the Universe from molecular clouds to newborn stars and their planet-forming discs and belts of comets,” said Göran Pilbratt, ESA’s Herschel Project Scientist.

Herschel’s far-infrared images of intricate networks of dust and gas filaments (see illustration) within our Milky Way Galaxy provide an illustrate history of star formation. They give astronomers a new insight into how turbulence stirs up gas in the interstellar medium, giving rise to a filamentary, web like structure within cold molecular clouds.

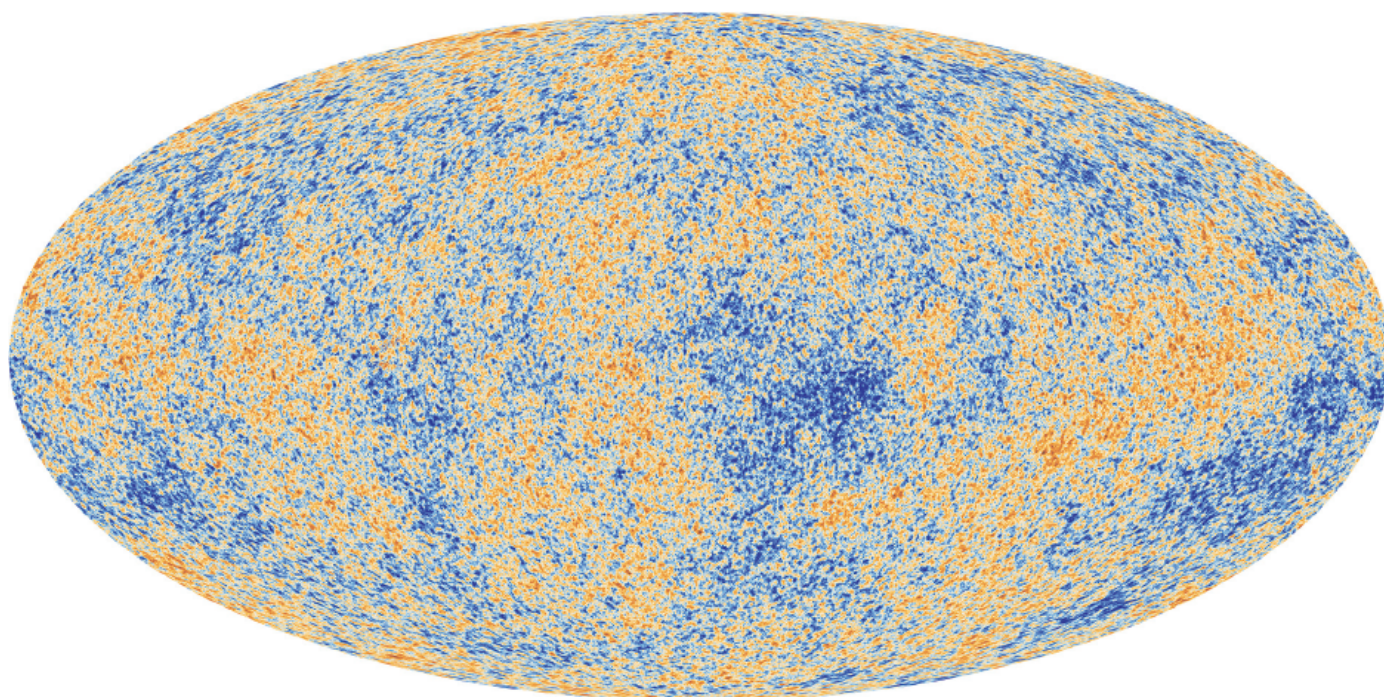
21 MARCH 2013: PLANCK REVEALS AN ALMOST PERFECT UNIVERSE

The here below image is based on the initial 15.5 months of data from Planck and is the mission’s first all-sky picture of the oldest light in the Universe, imprinted in the sky when it was just 380,000 years old.

At that time, the young Universe was filled with a hot dense soup of interacting protons, electrons and photons at $\sim 2700^{\circ}\text{C}$. When the protons and electrons joined to form hydrogen atoms, the light was set free. As the Universe has

expanded, this light today has been stretched out to microwave wavelengths, equivalent to a temperature of just 2.7 degrees absolute zero.

The here below CMB (Cosmic Microwave Background) shows tiny temperature fluctuations that correspond to regions of slightly different densities at very early times, representing the seed of all future structure: the stars and galaxies of today.



Cosmic microwave background seen by Planck. Credit ESA

J.-P. S. – From information provided by ESA

THE CEAS/ASD AEROSPACE EVENTS CALENDAR

The CEAS and ASD have created an innovative tool so-called "CPMIS" (Conference Programming Management Information System), the aim of which is to facilitate the search of the different aerospace events in the world that are programmed at short and mid-term time horizon, and so allowing to optimise the scheduling of future events by avoiding possible overlapping and redundancies, but on the contrary to encourage co-operations and synergies between the actors concerned. Its role is therefore double: information on the one hand, conference programming enabler on the other.

THE ADDRESS IS: <http://www.aerospace-events.eu>

A search engine selects the events according to specific topics and key words. A graphic display (day, week and months view) eases the access and the view.

- 4 TYPES: Conference, Workshop, Lecture, Air Show
- 6 MAIN CATEGORIES: Aeronautical sciences - Aerospace (for events including all aspects of aviation and space) – Civil Aviation – Air power – Space – Students and Young Professionals.

- 64 SUB – CATEGORIES: aeroacoustics – aeroelasticity – aerodynamics, etc.

AUTOMATIC INSERTION OF NEW EVENTS BY THE ORGANISERS THEMSELVES:

- Go to <http://www.aerospace-events.eu>
- Click on the "introduction" text
- Redirected on the New Event Form, you have to click on this form and to enter your event related information, validate, click on Save and send.

CONTACTS:

postmaster@aerospace-events.eu is the general address for any question and requests;

- Marc de Champs, responsible for the CPMIS computerized tool management at ASD (AeroSpace and Defence industry associations of Europe): marc.dechamps@asd.europe.org
- Jean-Pierre Sanfourche, CEAS, responsible for the Events Calendar permanent updating and validation: jpsanfourche@dbmail.com

WELCOME TO CEAS 2013 IN LINKÖPING, SWEDEN FROM 16 TO 19 SEPTEMBER, 2013



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- **Linköping:** 104,000 inhabitants – centre of an old cultural region – seat Linköping Municipality – Episcopal see of the Diocese of Linköping (Church of Sweden) – University and high-tech industry – the Open Air Museum.
- **Venue of the Conference:** Konsert & Kongress facility, a large conference and entertainment venue located in the centre of the town, close to shops, hotels, parks and the cathedral.

Meals are included in the fee, at the venue and at the prize winning Swedish Air Force museum

REGISTER NOW AT: www.ceas2013.org

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