



The Quarterly  
Bulletin of the

# CEAS

COUNCIL OF EUROPEAN AEROSPACE SOCIETIES

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



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June



• THE FOURTH CEAS EUROPEAN AIR & SPACE

CONFERENCE WILL BE HELD FROM 16 TO 20 SEPTEMBER 2013

IN LINKÖPING (SWEDEN), HOSTED BY FTF (FLYGTEKNISKA FÖRENINGEN),

THE SWEDISH SOCIETY FOR AERONAUTICS AND ASTRONAUTICS

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 1<sup>st</sup>, 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:

c/o DLR – Rue du Trône 98 – 1050 Brussels.

[www.ceas.org](http://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

### 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

## SWEDEN: AN EXCELLENT FRAMEWORK FOR CONDUCTING CEAS 2013



Jean-Pierre Sanfourche  
Editor-in-Chief

Linköping has been chosen to hold the fourth CEAS European Air & Space Conference “CEAS 2013” on 16 to 20 September 2013 and I am convinced that this town, a major European aeronautical capital, will allow us to achieve a successful event.

Sweden has a long national tradition in Aeronautics, an activity sector which today employs more than 10,000 persons excluding sub-contractors, realizes an annual turnover superior to € 2 billion, invests about 15% of its revenues in Research & Development, and continuously increases its export share. Its performances have been made possible notably because it has built-up strong networks between end users, contracting agencies and R&D suppliers, developed close R&D co-operations between industry, research establishments and academia, is permanently strongly involved in the European Framework Programmes and last but not least has experience of military-civil dual use.

Its National Aeronautical Programme covers research performed in the field of aviation engineering that is of interest for civil and military purposes. It is being conducted in close co-operation between industry (Saab AB, Volvo aero Corporation), Vinnova (the Sweden’s Innovation Agency), the Swedish Armed Forces and FMV, the Defence Materiel Administration, with the aim to strengthen competitiveness in aeronautics, strengthen the capability to participate in and learn from international RTD co-operation and support Swedish Air Power.

The quality and high performance of the Swedish aeronautical products are well known: the *Gripen* fighter, the new unmanned aircraft “*nEUROn*” (*Saab is a major partner in the “nEUROn” project led by Dassault Aviation*), sophisticated electronic systems including onboard computers, etc.

Sweden is also present in Space activities with the SSC (Swedish Space Corporation) which has now thirty

years’ experience in space vehicles and missions, without forgetting the prestigious *Esrangle* Space Centre located near Kiruna in the North, a base for scientific research with high altitude balloons, sounding rockets launches, satellite tracking, etc.

Besides Sweden counts many top level institutions delivering aeronautical diplomas: in particular Linköping University which is placed in the world’s top 100 in new ranking under the age of 50 according to the British Times Higher Education, THE.

In brief, CEAS 2013 will take place in quite an ideal environment and it comes in the scope of the Programme and Organisation Committees’ duties to take maximum advantage of these favourable conditions.

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## THE 19<sup>TH</sup> BOARD OF TRUSTEES MEETING

The 19<sup>th</sup> Board of Trustees Meeting was held in Brussels, at the ESA's Office located Avenue de Cortenbergh 52.

### WELCOME

President Pierre Bescond welcomed the attendees and thanked Constantinos Stavrindis and ESA for their hosting of this meeting. He announced the presence of Mr Jack Metthey, European Commission Director General for Research and Innovation.

On the day before the meeting, an event to mark the formal end of the project named **RESTARTS** was held at the *Ecole Royale Militaire*. Mr Bescond, who with some of the CEAS trustees had attended it, briefly described this action.

The objective of RESTARTS (Raising European Students Awareness in Aeronautical Research through School-Labs) is to contribute in reversing the current trend of disinterest of young people towards aeronautics. RESTARTS project has been partly funded by the EC with a view to exploring ways for improving science education around real aerospace activities in Germany, Romania, Belgium and Italy.

### AMONG THE MAIN ITEMS DEALT WITH

- Mr Louis Gallois is the personality chosen to receive the CEAS Award 2012 (see article page 6).
- The 4<sup>th</sup> CEAS European Air & Space Conference is already under active preparation. It will take place from 16 to 20 September 2013 in Linköping (Sweden): see page 8-9.
- The Finnish Society of Aeronautical Engineers (IIK) having opted out of CEAS activities, Ms Mercedes Oliver Herrero will contact them to look after other Finnish Societies capable of joining us.
- Partnerships: as a result of ESA interest to become a CEAS Corporate Partner, a draft of agreement was prepared by Paul Bailey and distributed to the board. It was unanimously approved and it will be the basis for other Corporate Partners agreements in the future.

- Co-operation with the AIAA

The agreement with AIAA for the next Aero Acoustics Conference in Berlin in 2013 was signed. It is hoped that similar agreements for other Conferences conducted in co-operation with the AIAA can be signed in a near future.

- Strategy Plan

The elaboration of the CEAS Strategy Plan conducted by Dr David Marshall is progressing well: the 4<sup>th</sup> (and last) chapter "Organised International co-operation" still open at the time of the Board of Trustees Meeting of 1st of March is being worked out.

- E-CAERO

Pierre Bescond presented a summary of the "E-CAERO" project (see insert in page 5). In December 2011 the six partners met together and it was decided to strongly re-activate the process: it is now foreseen to meet every two months. An extension of the contract (which was foreseen to end in next August) is going to be proposed to the European Commission. Ms Oliver was appointed Project Manager and she will be in contact with Mr Pedro Diez, E-CAERO co-ordinator, with Mr Jacques Périaux.

- JACK METTHEY'S PRESENTATION

Dr Jack Metthey presented "Horizon 2020" – the EU Framework Programme for Research and Innovation 2014-2020 (see pages 12 to 14). "Horizon 2020" responds to a Commission proposal for a € 80 bn Research and Innovation funding programme (2014-2020). It is a core part of Europe 2020 Innovation & European Research Area. Novelty aspects of past programmes: (i) a single programme bringing together 3 separate programmes/initiatives (FP7 • Innovation aspects of Competitiveness and Innovation Framework Programmes (CIP) • EU contribution to the European Institute of Innovation and Technology (EIT); (ii) coupling research to innovation – from research to retail, all forms of innovation; (iii) focus on societal challenges

### OUR CEAS DIRECTOR GENERAL MERCEDES OLIVER HERRERO HAS BEEN ELECTED VICE-PRESIDENT OF THE SPANISH AERONAUTICS AND ASTRONAUTICS SOCIETY (AIAE)



**Mercedes Oliver**, Aeronautical Engineer from the Madrid Polytechnic University, joined CASA (today EADS/CASA) in 1988.

She has developed her professional career in the field of Aeroelasticity and Structural Dynamics, taking part in most of EADS/CASA civil and military programs since the late 80's: Eurofighter, Airbus A340, Airbus A380, medium size military transport C295, tankers MRTT and the Airbus military transport A400M.

Today she is the Airbus A400M Dynamic Loads Coordinator in Airbus Military, and responsible for Aeroelasticity area in Airbus Military Dynamics Department.

Mercedes was appointed CEAS Director General in 2009, when she was member of the Spanish Society AIAE Board of Directors. Last March she has been elected Vice-President of AIAE.

In parallel with her professional activities, Mercedes participates in the Airbus Womens' Network as coordinator of one of its working groups, devoted to promote the gender diversity within Airbus. She is also member of the University Carlos III of Madrid Choir, and has been recently elected Vice-President of its Board.

ges facing EU society, e.g. health, clean energy and transport; (iv) simplified access, for all companies, universities, institutes in all EU countries and beyond. Priorities: excellent science, industrial leadership, societal challenges. First Call in the 3<sup>rd</sup> quarter 2013 – Launch 1st January 2014 – Mid-Term review in 2017.

- **STUDENTS & YOUNG PROFESSIONALS**

Thomas Vermin presented “CEAS for Students”, a Website dedicated to Students and Recent Graduates and created by EUROAVIA. Some of its key targets are:

- Reconnecting with young people;
- Common areas of improvement;
- Survey on the needs and desires of young members;
- Website catering to the development of these members;
- Online network of young people;
- Captivate the young mind;
- A better education experience;
- Stimulate activity through events;

– Personal development through presenting opportunities. Their conclusions are:

- The necessity to anticipate the needs and desires of the younger audience;
- The necessity to captivate the mind of the young aerospace engineer by providing a place for inspiration and opportunity research;
- The necessity to build a close personal relation between the CEAS and the young members through the exchange of thoughts.

- **FINANCE**

Mrs Mercedes Oliver presented the Accounting Report, which shows that the management of the CEAS financial resources is under control.

- **NEXT BOARD MEETINGS:**

- Friday 15 June 2012 in Athens (Greece)
- Thursday 25 October 2012 in Bucharest (Romania)

## WHAT IS E-CAERO?

The European Commission observed that in the field of aeronautics and air transport, there are many initiatives at European level undertaking the dissemination of scientific knowledge in the different relevant disciplines. Several associations are active with different types of events such as large conferences, workshops, lectures, exhibitions, etc. Besides, the knowledge is disseminated under the form of proceedings, scientific journals, bulletins, etc. More and more publications are today electronic, which gives them a large potential for easy dissemination and allows the use of search facilities.

This is the reason why six organisations active in aeronautics have decided to unify forces within “E-CAERO” in order to improve their effectiveness: ECCOMAS (European Community on Computational Methods in Applied Sciences), CEAS, ERCOFTAC (European Research Community On Flow, Turbulence And Combustion), EUCASS (European Council of Aeronautic and Space Sciences), EUROMECH (EUROpean MECHANICS Society) and EUROTURBO (European Turbomachinery Conference – ETC ).

The objectives of E-CAERO

1. To reinforce the network of participating organisations by promoting inter-organisational co-operation;
2. Identify and promote best practices;
3. Improve the industrial end-users participation in the actions programmed by the member organisations;
4. Start a new collaborative work culture between the associations.

This should result in a much more efficient dissemination of the European research.

### THE WORK WHICH IS BEING CONDUCTED

The work has been broken down into five work packages:

- WP1: overall management, technical coordination

and specifications;

- WP2: identification of overlaps and complementarities, both thematic and organisational;
- WP3: new collaborative dissemination tools;
- WP4: new single and clustered events such as harmonized dissemination demonstrators: short courses, thematic conferences, workshops, etc.
- WP5: evaluation of harmonized collaborative dissemination, recommendations and guidelines.

An initial step is carrying out a systematic survey with the aim to build up a detailed picture of the different structures, methodologies, priorities and resources of the acting organisations. Then the works will aim to establish sustainable contacts and communication the member associations, the partners and the European Commission. Another important objective is to improve the interactions with industry: organizing high quality events will attract industrial participation.

### THE EXPECTED RESULTS

The clustering of the different associations in the dissemination of their activities and outcomes is expected to generate a transversal diffusion of the information and knowledge, leading to a better understanding of techniques, experimental knowledge and simulation tools.

Scientific and technical outputs:

- E-CAERO Web page to jointly disseminate the activities of the partners associations and provide an overview on the calendar of dissemination events in Europe;
- Web-based E-CAERO repository for publications;
- Conference management IT tool;
- Harmonization and increase of the visibility of the dissemination events jointly organised;
- New collaboration culture between the associations concerned.

## THE CEAS GOLD MEDAL AWARD 2013 TO LOUIS GALLOIS

**On 1<sup>st</sup> of March 2012, the CEAS Board of Trustees has unanimously decided to confer the CEAS Award 2013 to Mr Louis Gallois. The CEAS Gold Medal will be presented to him on the occasion of the fourth CEAS European Air & Space Conference which will take place in Linköping (Sweden) in September 2013.**

### THE EXCEPTIONAL CAREER OF LOUIS GALLOIS

**Louis René Fernand Gallois** was born in 1944 in Montauban (France) where it obtained the degree of Baccalauréat in 1961. He next attended the Business School 'HEC' (Hautes Etudes Commerciales), graduating in 1966. He then graduated from Administration School 'ENA' (Ecole Nationale d'Administration) in 1972.



At the beginning of his career, Louis Gallois worked in various government departments: within the Ministry of Economy and Finance, the Ministry of Research and Industry and the Defence Ministry where he was head of the civil and military cabinet in 1988-89.

From 1989 to 1992, he was Chairman and Chief Executive Officer of SNECMA (today integrated in the SAFRAN Group), and in 1992, he was nominated Chief Executive Officer of AEROSPATIALE, an EADS predecessor, a function he will keep until 1996. At this date, the French Government asked him to take the presidency of 'SNCF' (Société Nationale des Chemins de Fer Français), a proposal he accepted and successfully honoured until July 2006, when he joined again EADS following the resignation of Noël Forgeard.

In October of the same year, he replaced Christian Streiff as the Chief Executive Officer of Airbus S.A.S. On 16 January 2007, EADS's management structure was changed and Louis Gallois became single Chief Executive Officer of EADS.

On 31 May 2012, he is replaced by Mr Thomas Enders after the expiration of his 5-year contract.

*In order to briefly illustrate the remarkable performance of Louis Gallois, we have reproduced in page 7 the editorial of Aviation Week & Space Technology of 6 February 2012.*

*We also publish here after the letter he addressed to the EADS shareholders in last April (Cf. Aeronotes newsletter N° 32, April 2012):*

“Dear Shareholder,

Despite the difficult macro-economic context of 2011 and the pressures on our governmental businesses, EADS full-year results have shown the strong resilience of our Company. In all key indicators we over-achieved on our guidance.

Record deliveries at Airbus and the progressive recovery of the civil helicopter sector in particular contributed to revenues of € 49.1 billion, an increase of 7% for the Group. Despite a dollar headwind and higher R&D expenses, the EADS EBIT\* before one-off rose 34% to €1.8 billion. The increase was driven mainly by improved performance within Airbus and Eurocopter. Astrium and Cassidian meanwhile continued to make a solid contribution.

We are preparing the future. Our order book has grown to a huge € 541 billion, mainly thanks to the record order intake at Airbus Commercial. It is a formidable basis for future business. Our new acquisitions in the services field will help us to develop a more balanced portfolio in the years to come. Even accounting for these strategic acquisitions, we continued to generate significant levels of cash in 2011. Our net cash position at € 11.7 billion remains a key asset, supporting the company's manoeuvrability.

We will pursue discussions with our government customers, above all in Germany, on the future of defence procurement programmes. Clearly, our target is to reach an early outcome which is sustainable for all parties.

As ever, we are extremely vigilant on our major development programmes. The A400M is progressing towards first customer delivery. A380 deliveries rose in 2011 to 26 and we are currently addressing the issues relating to rib feet within the wings. The A350 schedule is tightening as we progress towards the next programme milestones, in particular the entry into final assembly. It remains our Company's biggest industrial challenge.

Production rate increases on our established single-aisle and long-range aircraft families are underway.

We will boost A330 production to 11 per month in 2014 provided disputes over the EU's emissions trading scheme do not harm our orders.

While risks remain, I feel the stage is set for us to move towards increased profitability. We expect that our EBIT\* before one-off will be above € 2.5 billion in 2012 and that our free cash flow will be positive before acquisitions. Judging by the progression of our stock price many of you share my optimism. We are pleased to share the good performance with our shareholders through a significantly improved gross dividend of € 0.45.

Over the past years I have enjoyed our exchanges and appreciated your feedback on many important topics. I am convinced that the in-coming management team, with its long experience within the EADS Group, will continue to value your commitment and loyalty.”

**Louis Gallois – EADS Chief Executive Officer– April 2012**



## EDITORIAL

# A Thankless Job Well Done

**E**ADS Chief Executive Louis Gallois recently was asked to reflect on his legacy as he prepares to step down, but the self-effacing aerospace chief took a pass. It is too early, he said, to render a verdict on his impact on the sprawling enterprise he has led since 2007.

When Gallois departs on May 31, Airbus CEO Tom Enders will take over the reins of the parent company. In time, he will put his own thumbprint on what amounts to Europe's aerospace champion. In the meantime, it is worth reflecting on Gallois—the only individual to have been on the board of directors since the formation of EADS in 2000—and his impact on the company.

One of his most notable accomplishments was bringing a sense of calm and stability to the company following a nasty battle for control in the executive ranks and near open warfare between French and German workers and other stakeholders. It is easy to forget how toxic the atmosphere was. But Gallois worked closely with Enders, who agreed to step down as co-CEO at EADS to end the awkward and divisive initial dual-CEO structure. Through his grandfatherly management style, Gallois was able to smooth ruffled feathers.

The second achievement was putting EADS on a more solid financial footing. For much of his time at the top, Gallois was forced to deal with costly program decisions made years earlier. The A400M military airlifter contract and the A380 mega-transport's production problems were just two.

Of course, Gallois cannot take full credit, as he himself would quickly point out. For example, he did not invent the Power 8 cost-savings plan that has been instrumental in improving shareholder returns; credit for that goes to Christian Streiff, who was Airbus CEO briefly. But it was Gallois's political acumen that allowed Enders and Airbus Chief Operating Officer Fabrice Bregier to see the measures through. Gallois also forced other EADS units to focus increasingly on profitability.

In other areas, though, the picture is not nearly as glowing. Gallois devised Vision 2020, a bold plan for what Europe's largest aerospace and defense company should look like by the end of this decade. But he was unable to deliver the key acquisitions needed to support the plan. Gallois says the deals under his watch represent a string of pearls, but conspicuously absent was the diamond that would have made Vision 2020 look more like a genuine growth platform than a pipe dream.

EADS fortunes also remain fundamentally tied to the performance of Airbus. Efforts to better balance the business have failed. In fairness, it is the strong performance of Airbus that helped make it difficult for EADS to achieve the long-range goal. And in that respect, it is a rich man's problem.

More disconcerting was Gallois's failure to tackle some of the key structural issues that have bedeviled EADS, with these areas of the report card highlighted in red ink. EADS remains saddled with two too many centers of power—headquarters in both Munich and Paris, and the home base of Toulouse for Airbus. Such an organizational structure cannot possibly be in EADS's interests



“ Gallois brought calm and stability to EADS, but the company remains saddled with too many centers of power and is burdened by meddling outsiders. ”

and its efforts to create a spirit of one team. One naturally wonders why such a Byzantine structure was allowed to remain in place as Gallois worked hard to make EADS competitive against U.S. companies, particularly Boeing.

Moreover, Gallois has had to witness governments' stakes in EADS grow rather than shrink. Germany is now a shareholder, and there is little indication the French government is ready to cut ties. Enders, who has long argued for governments to shed all ownership, appears ready to press the point.

Perhaps most disappointing was how unseemly the latest leadership transition became. The succession to Enders was supposed to be smooth. But contentious board members could not agree. Exacerbating the situation was the French government, which was concerned about its influence over the company; it lacked confidence in incoming Chairman Arnaud Lagardere. As a result, Paris sought alternative ways to bring pressure to bear, going so far as to try to oust the successful chief executive of Eurocopter, Lutz Bertling, and to supplant Enders's choice of chief financial officer. Even Gallois's continued membership on the board was thrown into question. In the end, the appointment of another Frenchman to the board, former European Central Bank President Jean-Claude Trichet, broke the logjam. Throughout the whole sordid process, the company's exposure to French politics once again was on garish display.

So what does Gallois actually hand off? No doubt, EADS is a company that is more financially robust and has a clearer sense of direction than before. But its new CEO, Enders, also faces a long to-do list that includes many of the most politically toxic and self-defeating issues. Enders's vulnerability may well be his refusal—or inability—to suffer fools well. That could be a real problem, because sadly there are plenty of outsiders in key positions still itching to meddle in EADS's affairs. ☐



# THE FOURTH CEAS EUROPEAN AIR & SPACE CONFERENCE: LINKÖPING, 16-20 SEPTEMBER 2013

By Prof. Petter Krus

The CEAS European Air & Space Conference 2013 will take place in Linköping (Sweden), from 16 to 20 September 2013 in the Concert and Congress Hall. Linköping is considered the aeronautics capital of Sweden, home of most important Swedish aviation industry and birthplace of Swedish aviation.

CEAS 2013 will be a joint event between the fourth CEAS Conference (after Berlin 2007, Manchester 2009 and Venice 2011) and the eight Congress on aeronautics and astronautics arranged each third year by Flygtekniska Föreningen (FTF), the Swedish Society of Aeronautics and Astronautics. Organised by the FTF in collaboration with Linköping University, it will address all disciplines of aeronautics and aeronautical systems, including design, development and operations.

This event will constitute a forum aimed at exchanging information in the wide field of aerospace, and also a unique forum and meeting place for socializing and networking among colleagues and friends from aerospace industry, institutions, academia and associations.

In addition to the working agenda, an attractive programme for accompanying persons will be arranged.

## SCOPE

Europe has a strong and proud tradition in aerospace, which indeed is a very important area for us. It represents a substantial business domain, but maybe equally important, it is also a driver for technology development and innovation that benefits the society as a whole.

One of Europe's greatest challenges is about independence, in order to keep and maintain capabilities within the complete set of technologies needed as a foundation for a sustainable aerospace industry in Europe. This is important when Europe has to look at the next generation of Air Power. It is also fundamental for Europe to be an attractive partner in international projects conducted with global collaboration.



A view of the famous Jas 39 Gripen. (Credit Saab AB)

To underline the importance of European development of technologies and capabilities, the central theme of the conference will be:

**'Innovative Europe'**

## THE MAJOR TOPICS

The major topics to be dealt with are:

- Innovative future Air and Space systems and technologies;
- Collaborative engineering and research;
- Air Traffic Management (ATM) and flight operations systems;
- Research and technology for Air Power;
- Education for Aeronautics and Space;
- Emergent industries and markets.

## PROGRAMME COMMITTEE

The Programme Committee will be composed by the FTF Programme Committee, the CEAS Specialist Committees and international experts.

## MAIN CONFERENCE PREPARATION'S MILESTONES

The keynote and presentation selection process will be conducted according to the following time schedule:

- June 2012: First Announcement
- September 2012: Call for Papers
- 15 February 2013: Abstract submission
- 15 April 2013: Abstract acceptance
- 1st June 2013: Registration opening and diffusion of the Preliminary Programme
- 1st August 2013: Full paper submission
- 16-20 September 2013: CEAS 2013 Conference

## PRELIMINARY PROGRAMME OVERVIEW

### – Monday 16 September:

Morning: registration, tutorials, workshops  
Afternoon: Plenary event, Technical sessions

### – Tuesday 17 September:

Morning: Plenary event, Technical sessions  
Afternoon: Technical sessions

### – Wednesday 18 September:

Morning: Plenary event, Technical sessions  
Afternoon: Plenary event

### – Thursday 19 September:

Morning: Plenary event, Technical sessions  
Afternoon: Plenary event, Conclusions and Closing speeches

### – Friday 20 September:

All Day tourist visits and industrial visits

Note: the CEAS Conference will be run in parallel with the national triennial conference held by the FTF (Swedish Society of Aeronautics and Astronautics), Flygteknik 2013.



## ABOUT THE PROCEEDINGS

Technical presentations will be accepted on a full paper basis requiring all presenters to submit a paper covering the topic concerned for inclusion in the Conference Proceedings. The latter will be distributed to the delegates in electronic format.

## SOCIAL EVENTS

Three Social Events are foreseen:

- Monday 16 September: Welcome Reception;
- Tuesday 17 September: Civic Reception, Visit to the Air Force Museum;
- Wednesday 18 September: Gala Dinner.

## ABOUT LINKÖPING

Linköping City Airport, is only 5 km from the centre of the town. From this airport, it is possible to travel to other parts of the world via Copenhagen Airport. There are two more international airports within a 100 km radius. One is situated in the neighbouring of Norrköping, 40 km only from Linköping, the other one is Skavsta near Nyköping. A railway station is located in the centre of Linköping with many regular departures to and from Stockholm/Arlanda and Malmö/Copenhagen.

## TOURISM



Linköping is an old city with a cathedral and a small town character, most places being within walking distance. It is located in an old cultural region and nearby is also the medieval town Vadstena. There will be an accompanying persons' visit programme allowing them to explore the neighbouring cities as well as the country side.

### Linköping Castle and Diocese Museum

A part of the castle has today turned into a museum showing the history of the city which is quite dramatic. The castle itself is not one of those romantic ones but it is the oldest non-religious buildings in Sweden, with the oldest parts dating back to the 12<sup>th</sup> century.



### Linköping Cathedral

Visible for miles on the surrounding plain with its 107 m tall spire, the cathedral is one of the most impressive church buildings in Sweden from the Medieval age. Work on it started already in 1230.



### Air Force Museum

Being the birthplace of Swedish aviation Linköping was chosen as the location for the Swedish Air Force Museum. Aircraft from the beginning of aviation in Sweden through to the latest development the Jas 39 Gripen can be seen there. Most of the aircraft are unique and cannot be seen at anywhere else. There is also a simulator where the Gripen can be flown. The museum recently went through a major expansion and was reopened in 2010.



A view of the Swedish Air Force Museum

## THE “CPMIS”: WHAT IS IT?

The Council of European Aerospace Societies (CEAS) and the Aerospace and Defence Industries Association of Europe (ASD) have created an innovative event planning tool: the Conference Programming Management Information System (CPMIS). This computerized tool aims at facilitating the search of the different types of **aerospace events in the world – Conferences, Workshops, Lectures and Air Shows** – which are programmed at short and mid-term time horizon, and so allowing to optimise the scheduling of future events by avoiding possible overlapping or redundancies, but on the contrary encouraging co-operations and synergies between the actors concerned. Its role is therefore double: information on the one hand, conference programming enabler on the other.

### A SINGLE AND USER-FRIENDLY WEB SITE

The CPMIS regroups into a single and user-friendly Website the main upcoming Aerospace Events organised by the various institutions, industrial companies, academia and associations.

The address is: <http://www.aerospace-events.eu>

An advanced search engine selects the events according to specific topics and key words: thanks to that the user is immediately able to delimit the field of investigation and to look for events with timelines, free and pre-determined keywords, locations and organisers. A graphic display (Day, week & months view) eases the access and the view.

### Four types, six main categories and sixty-four sub-categories

The events are registered along 4 types, 6 main categories and 64 sub-categories<sup>1</sup>.

- Four types: Conferences, Workshops, Lectures, Air Shows.

- Six main categories: Aeronautical Sciences, Aerospace (for events globally including all aspects of aviation and space), Civil Aviation, Air Power, Space, Students & Young Professionals.
- Sixty-four sub-categories<sup>1</sup> (alphabetic ranking): aero-acoustics – aero-elasticity – aerodynamics – aircraft, etc.), linked to the main categories, allowing to diversify and refine the results.

### HOW THE PORTAL LOOKS LIKE: TWO PRACTICAL EXAMPLES

**The upcoming International Air Shows:** see figure 1.

**Space (main category)/Earth Observation (sub-category):** see figure 2.

### HOW IS THE CPMIS WEB SITE MANAGED?

1. The computerized site is operated by the ASD:  
Marc de Champs: ASD - 270 Av. De Tervuren – B-1150 Brussels.
2. The CEAS is responsible for establishing and regularly updating the list of the upcoming aerospace events, comprising for each of them: start date – end date – type – main category – sub-category – organiser – country – town – venue – point of contact website – precise title. This work is performed from the information data available on Internet, on the one hand, and on the other hand from the information received from the different organisations, in particular the CEAS Member Societies. The list of new events is transmitted to the ASD after each updating, twice a month on average.

The screenshot shows the CPMIS search interface. On the left is a search filter panel with the following fields: Category (All), Subcategories (All), Location (All), Organizer (All), From (2012-05-07), To (2013-05-07), and a search string field containing 'Air Show'. A blue 'Search' button is at the bottom of the filter panel. On the right is the 'Search results' section, which lists three events:

Event Name	Dates	Year
EBACE 2012	May 14 - May 16	2012
The Living Planet Programme	June 25 - June 28	2012
International Air Show	July 09 - July 15	2012
International Air-Transport Forum & Air Show	August 23 - August 25	2012

Each result includes details such as Organizer, Location, Category, Sub-categories, and Type. For example, EBACE 2012 is organized by EBAA/NBAA in Switzerland, categorized as Civil Aviation, with sub-categories Business aviation and Type Air Show. The International Air Show is organized by Farnborough Org. in the United Kingdom, categorized as Aerospace, with sub-categories Exhibition and Type Air Show.

Figure 1. Some Air Shows



**Search**

**Search event**

Category: Space

Subcategories: Earth observation

Location: All

Organizer: All

From: 2012-05-07

To: 2013-05-07

Search string:

**Search**

**Search results**

1 Geoinformation and Earth Observation through Remote Sensing May 21 - May 24 2012  
 Organizer: EARSeL  
 Location: GREECE  
 Category: Space  
 Sub-categories: Earth observation  
 Type: CONFERENCE  
[www.esa.int/esaLP/Lpcalene.html](http://www.esa.int/esaLP/Lpcalene.html)

2 International Geoscience and Remote Sensing Symposium July 22 - July 27 2012  
 Organizer: ESA/DLR  
 Location: GERMANY  
 Category: Space  
 Sub-categories: Earth observation  
 Type: CONFERENCE  
[www.esa.int/esaLP/Lpcalene.html](http://www.esa.int/esaLP/Lpcalene.html)

3 20 Years of Progress in Radar Altimetry September 24 - September 29 2012  
 Organizer: ESA/CNES  
 Location: ITALY  
 Category: Space  
 Sub-categories: Earth observation  
 Type: CONFERENCE  
[www.esa.int/esaLP/Lpcalene.html](http://www.esa.int/esaLP/Lpcalene.html)

4 Earth Observation and Cryosphere Science November 13 - November 16 2012

Figure 2. SPACE/Earth Observation

**The conductor of this task is:**

Jean-Pierre Sanfourche  
 Executive Secretary of the CEAS Programme Coordination  
 Committee (PCC)  
 22, avenue des Etats-Unis  
 F-78000 Versailles

**3. POSSIBLE AUTOMATIC INSERTION OF NEW EVENTS BY THE ORGANISERS THEMSELVES**

It is possible for an organiser to directly insert himself a new event:

- (i) go to [www.aerospace-events.eu](http://www.aerospace-events.eu) ;
- (ii) click the form present on the "Introduction" text;
- (iii) you will be then redirected to the new Event Form ("*this form*");
- (iv) enter your new event information, validate and click on "Save";
- (v) send this form to CEAS/ASD (see contacts here below): your request will be inserted in the Events Calendar after it is checked and validated by CEAS/ASD.

**Contacts:**

- [postmaster@aerospace-events.eu](mailto:postmaster@aerospace-events.eu)  
 is the general contact address for any questions, comments, suggestions, assistance requests, etc.
- [Marc.deChamps@asd-europe.eu](mailto:Marc.deChamps@asd-europe.eu)  
 Marc de Champs, responsible for the CPMIS at ASD
- [jpsanfourche@dbmail.com](mailto:jpsanfourche@dbmail.com)  
 Jean-Pierre Sanfourche, CEAS, responsible for the Aerospace Events Calendar permanent updating and validation.

**4. AN IMPORTANT POINT TO BE NOTICED**

The CPMIS aiming at optimizing the conference programming, it is strongly recommended to the organisers to communicate not only the events definitely decided, but also the events which are seriously envisaged even though they are not approved yet: just write TBD in the corresponding items and add the mention "provisional" in brackets after the title.

<sup>1</sup> Sub-Categories: aeroacoustics – aeroelasticity – aerodynamics – aircraft – air force bases – airlines – airports – airworthiness/certification – astronauts – ATM/ATC – automation – avionics – business aviation – careers – clean sky – combat aircraft – commercial aviation – communication satellites – crew/pilots – Earth observation – economics/finance – education and training – electronics/software – engineering – environment – exhibition – flight mechanics – flight simulation – Galileo – general - general aviation – GMES – GNC – green aviation – ISS – human factors – launchers – launching centres – manned space flights – manufacturing/design – materials – mechanisms/structures – medicine – meteorology – military transport – missiles – modelling – MRO – propulsion – public policy – quality/reliability – research & TD – rotorcraft – safety – science – security – SESAR – space vehicles – strategy – system studies – technology – testing – UAV/UCAV/UVS – weapon systems.

## JACK METTHEY'S PRESENTATION

“HORIZON 2020”, THE EU FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION COVERS THE PERIOD 2014-2020. IT IS A CORE PART OF "EUROPE 2020, INNOVATION UNION & RESEARCH AREA". THE DESCRIPTION OF THIS PROGRAMME, GIVEN BY JACK METTHEY ON THE OCCASION OF THE CEAS BOARD OF TRUSTEES MEETING HELD IN BRUSSELS ON 1st OF MARCH, IS HERE BELOW PUBLISHED IN ITS INTEGRALITY.



### Active involvement of stakeholders

- **EU Presidencies:** **Sweden** (societal challenges-based approach), **Spain** (integration of research and innovation), **Hungary** (FP7 interim evaluation), **Poland** (widening participation), **European Council conclusions** from 4.2.2011 (Common Framework to bring together all EU research and innovation funding)
- **European Parliament** reports: Merkies (Innovation Union), Audy (FP7 evaluation), Matias (Horizon 2020) and Carvalho (simplification)
- Overwhelming response to the **public consultation** on Horizon 2020 (more than 2000 contributions)
- **Survey on administrative costs for participants in FP7**
- **25 workshops on the content** of Horizon 2020



### The Multiannual Financial Framework 2014-2020: Commission's proposals 29 June 2011

**Key challenge: stabilise the financial and economic system while taking measures to create economic opportunities**

#### 1. Smart & inclusive growth (€491bn)

Education, Youth Sport   Connecting Europe   Cohesion   Competitive Business SME

Horizon 2020

#### 2. Sustainable growth, natural resources (€383bn)

#### 3. Security and citizenship (€18.5bn)

#### 4. Global Europe (€70bn)

#### 5. Administration (€62.6bn)

**Total: €1,025bn**



### What is Horizon 2020

- Commission proposal for a **80 billion euro** research and innovation funding programme (2014-2020)
- A core part of Europe 2020, Innovation Union & European Research Area:
  - **Responding to the economic crisis** to invest in future jobs and growth
  - **Addressing people's concerns** about their livelihoods, safety and environment
  - **Strengthening the EU's global position** in research, innovation and technology



### What's new

- **A single programme** bringing together three separate programmes/initiatives\*
- **Coupling research to innovation** – from research to retail, all forms of innovation
- **Focus on societal challenges** facing EU society, e.g. health, clean energy and transport
- **Simplified access**, for all companies, universities, institutes in all EU countries and beyond.

\*The 7th Research Framework Programme (FP7), Innovation aspects of Competitiveness and Innovation Framework Programme (CIP), EU contribution to the European Institute of Innovation and Technology (EIT)



### Three priorities:

1. Excellent science
2. Industrial leadership
3. Societal challenges







### Priority 1. Excellent science

Why:

- World class science is the foundation of tomorrow's technologies, jobs and wellbeing
- Europe needs to develop, attract and retain research talent
- Researchers need access to the best infrastructures

Research  
and  
Innovation



Proposed funding (million euro, 2014-2020)

<b>European Research Council</b> Frontier research by the best individual teams	13 268
<b>Future and Emerging Technologies</b> Collaborative research to open new fields of innovation	3 100
<b>Marie Curie actions</b> Opportunities for training and career development	5 572
<b>Research infrastructures (including e-infrastructure)</b> Ensuring access to world-class facilities	2 478

Research  
and  
Innovation



### Priority 2. Industrial leadership

Why:

- Strategic investments in key technologies (e.g. advanced manufacturing, micro-electronics) underpin innovation across existing and emerging sectors
- Europe needs to attract more private investment in research and innovation
- Europe needs more innovative SMEs to create growth and jobs

Research  
and  
Innovation



Proposed funding (million euro, 2014-20)

<b>Leadership in enabling and industrial technologies (ICT, nanotechnologies, materials, biotechnology, manufacturing, space 1536 M euro)</b>	13 781
<b>Access to risk finance</b> Leveraging private finance and venture capital for research and innovation	3 538
<b>Innovation in SMEs</b> Fostering all forms of innovation in all types of SMEs	619 complemented by 6 829 (expected 15% of societal challenges + LEIT) and 'Access to risk finance' with strong SME focus

Research  
and  
Innovation



### Space in Horizon 2020

Overall objective:

To prepare for the increasing role of space in the future and reap the benefits of space now.

This via four specific objectives:

- Enhance the competitiveness of EU space sector
- Enable advances in space technologies
- Increase exploitation of space data
- Enable participation in global space partnerships

Research  
and  
Innovation



### Priority 3. Societal challenges

Why:

- Concerns of citizens and society/EU policy objectives (climate, environment, energy, transport etc) cannot be achieved without innovation
- Breakthrough solutions come from multi-disciplinary collaborations, including social sciences & humanities
- Promising solutions need to be tested, demonstrated and scaled up

Research  
and  
Innovation



Proposed funding (million euro, 2014-2020)

Health, demographic change and wellbeing	8 033
Food security, sustainable agriculture, marine and maritime research & the bioeconomy	4 152
Secure, clean and efficient energy*	5 782
<b>Smart, green and integrated transport</b>	<b>6 802</b>
Climate action, resource efficiency and raw materials	3 160
Inclusive, innovative and secure societies	3 819

\*Additional €1 788m for nuclear safety and security from the Euratom Treaty activities (2014-2018). Does not include ITER.

Research  
and  
Innovation



### « Smart, Green and Integrated Transport » in Horizon 2020

The challenge is to achieve a transport system, including aviation and air traffic management, that is:

- Resource efficient
  - Environmentally friendly
  - Safe and seamless
- for the benefit of citizens, economy and society

The logic:

- A holistic approach ...
- ...that recognises modal specificities;
- that is focused on the societal challenges ...
- ... and takes into account the imperatives of competitiveness.



## Horizon 2020 and partnering

### Public private partnerships:

- Through Joint Technology Initiatives or other formal structures (Art. 187)
- Through contractual agreements, which provide inputs for work programmes
- Only when criteria met, e.g. clear commitments from private partners

### Public public partnerships:

- Trough « ERA-Nets » for topping up individual calls/actions (replacing current ERA-Net, ERA-Net Plus, Inco-Net, Inno-net)
- Trough participation in joint programmes between Member States (Art. 185)
- Supporting agendas of Joint Programming Initiatives when in line with Horizon 2020
- Only when criteria met, e.g. financial commitments of participating countries

### European Innovation Partnerships:

- Not funding instruments, but for coordination with broader policies and programmes



## Role of the EIT and JRC in Horizon 2020

<b>European Institute Technology (EIT)</b> Combining research, innovation & training in knowledge and Innovation Communities	<b>1 360+</b> <b>1 440*</b>
<b>Joint Research Centre (JRC)**</b> Providing a robust, evidence base for EU policies	<b>1 962</b>

\*Second tranche pro rata from LEIT and Societal challenges (subject to review)

\*\*Additional €656 m for the JRC to be funded from the Euratom Treaty activities



## Euratom Programme 2014-2018

**Budget:** TOTAL: € 1665 million, including Fission €336m; Fusion € 673m; JRC € 656m.

**Programme for 5 years, in line with the Euratom Treaty (art.7)**

### What is new?

- Stronger focus on nuclear safety and nuclear training
- A single Euratom programme bringing together three separate decisions
- The same rules for participation as in the Horizon 2020 - simplified access
- Programme contributes to the implementation of priorities of the 'Horizon 2020'
- Fusion research programme will be restructured

**Funding for ITER outside MFF in a separate supplementary programme:** € 2573 million for 2014-2018



## Simplification: Rules for Participation

### 1. A single set of rules

- Adapted for the whole research and innovation cycle
- Covering all research programmes and funding bodies
- Aligned to the Financial Regulation, coherent with other new EU Programmes

### 2. One project – one funding rate

- Maximum of 100% of the total eligible costs (except for actions close to market, where a 70% maximum will apply)
- Indirect eligible costs: a flat rate of 20% of direct eligible costs

### 3. Simple evaluation criteria

- Excellence – Impact – Implementation (Excellence only, for the ERC)

### 4. New forms of funding aimed at innovation: pre-commercial

procurement, inducement prizes, dedicated loan and equity instruments

### 5. International participation: facilitated but better protecting EU interests



## Simplification: Rules for Participation

**6. Simpler rules for grants:** broader acceptance of participants accounting practices for direct costs, flat rate for indirect costs, no time-sheets for personnel working full time on a project, possibility of output-based grants

### 7. Fewer, better targeted controls and audits

- Lowest possible level of requirements for submission of audit certificates without undermining sound financial management
- Audit strategy focused on risk and fraud prevention

### 8. Improved rules on intellectual property

- Balance between legal security and flexibility
- Tailor-made IPR provisions for new forms of funding
- A new emphasis on open access to research publications

**Beyond the Rules: further simplified provisions in the Grant Agreement and implementing procedures to facilitate access to Horizon 2020 (e.g. common IT platform).**



## Strong participation by SMEs

- **Integrated approach** - around 15% of the total budget for societal challenges and LEITs to go to SMEs.
- **Simplification** of particular benefit to SMEs (e.g. single entry point).
- A **new SME instrument**, building on the SBIR model, will be used across all societal challenges as well as for the LEITs
- A dedicated activity for research-intensive SMEs in 'Innovation in SMEs'.
- 'Access to risk finance' will have a strong SME focus (debt and equity facility)



## Links to COSME

**Horizon 2020 and COSME are complementary programmes to generate growth and jobs**

### Different focus:

- Horizon 2020 = innovation driven growth
- COSME = support to create favourable business environment and competitiveness

### Closely coordinated, for instance:

- Integrated financial instruments (debt and equity), with facilities in both programmes serving complementary objectives
- Enterprise Europe Network set up under COSME, but support to SMEs for EU funding



## Aeronautics towards Horizon 2020

• **March 2011: Launch of a new Vision for Aviation 'Flightpath 2050'.**

- Prepared by a High Level Group composed of 14 CEOs
- Under the leadership of VP Kallas and Commissioner Geoghegan-Quinn

• **June 2011: kick-off of a new ACARE – Advisory Council for Aviation Research and Innovation in Europe**

- Developing a new Strategic Research and Innovation Agenda to implement Flightpath 2050
- Providing input for Horizon 2020 work programmes.



# IFAR: AN INTERNATIONAL FORUM FOR AVIATION RESEARCH

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## ABSTRACT

The future challenges of air transport motivated in 2010 the leading worldwide aviation research institutions to found IFAR - the International Forum for Aviation Research - which is working on a voluntary, non-binding basis. The primary purpose of IFAR is to connect research organisations worldwide, to enable the information exchange on aviation research activities between members, to facilitate opportunities for networking and creating partnerships and to coordinate views and make recommendations for use by its members. Climate change is currently one of the most relevant topic and was the initial motivation to set up IFAR. However, the focus of IFAR is on all non-competitive research and development topics related to global technical challenges such as those pertaining to emission, noise, security, safety and efficient operations, and steps to reduce the impact of aviation on climate and the environment. Against this background, IFAR aims at developing a regularly updated IFAR Framework Document outlining global research objectives and technological opportunities for use by its members. The results will be updated regularly at the website [www.ifar.aero](http://www.ifar.aero).

From the beginning, the IFAR activities were supported by the IFAR secretariat which was established and financed by DLR. From mid 2011 the IFAR administration and the IFAR activities are also supported by the 3-year Support-Action-Project IFARs funded by the European Commission. After mid 2014 IFAR is expected and will be self organised without any further external support.

## STATE OF THE ART / BACKGROUND

The increasing need for international mobility in a globalised, work-sharing based economy leads to a worldwide growth in air traffic by about 5% per year. This is the basis for economical growth but has an influence also on the climate change which is currently discussed worldwide by scientists, decision-makers and the public. The 4<sup>th</sup> Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) has stirred an intensive public debate also on future aeronautical research challenges and policies. This report identifies aviation to contribute 2–3% of today's total global anthropogenic CO<sub>2</sub> emissions. This

prompted the International Air Transport Association (IATA) to set the long-term challenge of Zero Emission Aviation by 2050 and emphasised the importance of addressing these challenges on a global level. The answers and solutions to these demands are expected to be given by research, eventually industry and operators. Except Member States or regional networks (e.g. EASN or EREA in Europe), specifically non-profit aviation research organisations were up to 2010 not organised on a worldwide level and did not have a representation which can react to global questions and demands. The new International Forum for Aviation Research (IFAR) fills this gap.

## OBJECTIVES AND RESULTS

IFAR aims to realise the following activities (cf. Figure 1):

- connecting the global aviation research community worldwide;
  - Serving as a venue for information exchange and communication, e.g. by its Summits, by conducting specialist meetings, holding workshops, supporting actively conferences, hosting internet forums, etc.;
  - Developing among its members a shared understanding on a common set of key challenges faced by the global aviation research community;
  - Developing views and recommendations, e.g. the IFAR Framework Document, to inform on future research strategies and – where appropriate – to develop a combined research strategy for the future;
  - Publishing and disseminating information (e.g. via webpage, flyers, publications, participation to conferences);
  - Issuing IFAR views and recommendations and give advice on aviation topics; the purpose of issuing such views and recommendations is to define trends in aeronautics research and/or inform legislators concerning emerging regulations; however, views and recommendations are not meant as binding guidance to individual IFAR members and their home country.
- Within IFAR, the members aim also to identify and evaluate options for new opportunities for cooperation and applying the results of aviation research.

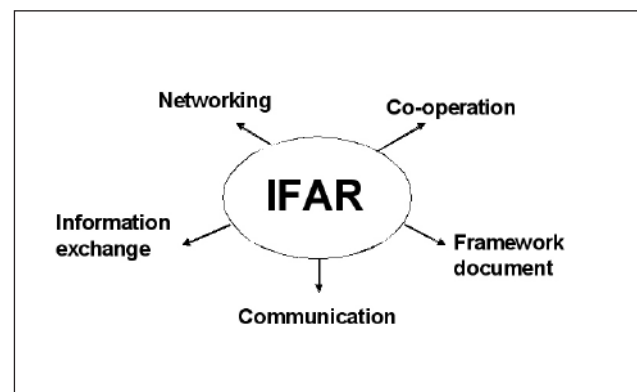


Figure 1. IFAR objectives.

## IFAR ORGANISATION / MEMBERS

IFAR operates on the basis of consensus among its members. Annually, principals from IFAR members convene at an IFAR Summit meeting. This event sets the IFAR goals and activities for the coming year and may establish special temporary committees or technical expert groups for IFAR activities of high interest.

Membership in IFAR is open to national aviation research organisations, including universities active in aviation research, which are non-profit and which are owned or mainly publicly funded by governments and which are charged by the country or countries in which they are located to conduct such research activities on their behalf. One organisation per country is accepted for membership.

Current IFAR members are listed in Table 1 and are visualised in Figure 2. These members represent more than 34,000 researchers working in mostly civil aviation. Not counted yet are researchers of IFAR member countries belonging to different research organisations or universities. However, the ultimate aim is that IFAR members represent their countries entire research workforce.



Figure 2. IFAR Member countries.

## IFAR HISTORY

The Forth Assessment Report of the International Panel on Climate Change (IPCC) has stirred an intensive public debate on future aeronautical research challenges and policies. As a response, in 2008 key leaders of 12 international aeronautical research organisations met in Berlin to address challenges to future Air Transport in the context of climate change. The second time, in 2010, 16 international aeronautical research organisations met and founded the International Forum for Aviation Research (IFAR) in order to take up work on possible research contributions to the climate and environmental challenges faced by the air transport community and with a view to also address further global aeronautical challenges such as noise, security, safety and efficient operations. In 2011, the 2<sup>nd</sup> IFAR Summit was held in Paris. The number of IFAR members increased to 21. The participants agreed to a common IFAR Charter. They exchanged their views on the global challenges and agreed to develop the Framework document on the technological solutions related to climate impact and noise. Furthermore they started activities on education by promoting and the exchange of graduate stu-

dents, young scientists and engineers. The next IFAR Summit 2012 will take place in Japan. The IFAR Summits are planned to be regularly every year.

## IFAR FRAMEWORK

IFAR aims at developing and maintaining a regularly updated IFAR Framework Document outlining global research objectives and technological opportunities for use by its members. The Framework follows a 3-Step-Approach illustrated in Figure 3. Step 1 builds the vision and goals which are for instance influenced by political demands. Step 2 considers new and visionary break - through technologies which are expected to fulfil the IFAR vision in Step 1 and which eventually improve the entire Air Transport System (ATS) in Step 3. Technologies in this regard are not only software or hardware but can also be improved operations or measures. IFAR - as research representation - concentrates on the development of the technologies until Technology Readiness Level (TRL) 6. Further qualification and development is expected to be performed by industry. The new technologies do not need necessarily to be developed only within the aviation sector. They can also be transferred from other industrial sectors as automotive, space, energy, etc.. Alternative fuels, which might be needed for the future ATS to fulfil the long-term vision can be complementary developed in the energy research sector. Co-operation and research activities across branches and disciplines seem beneficial and mandatory.

The Framework Document may be based on:

- a comparison of existing goals/objectives (cf. [2] to [7]);
- an inventory of possible concepts or technologies which could be developed to accomplish certain objectives.

IFAR can also develop other views and recommendations, findings and reports as may be appropriate. Such documents may include the findings of IFAR Ad Hoc Committees or IFAR Technical Expert Groups.

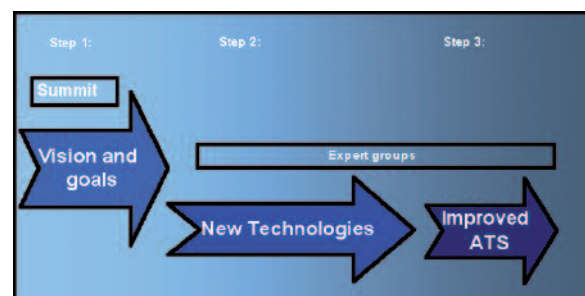


Figure 3. IFAR 3-Step Approach.

## SUMMARY

IFAR is a new International Forum for Aviation Research and was founded in 2010. It connects leading aerospace research organisations worldwide, enables information exchange between them, facilitates opportunities for networking and creating partnerships, coordinates views, makes recommendations and supports students and young scientist/engineers. IFAR focuses on non-competitive topics related to global technical challenges such as

those pertaining to emission, noise, security, safety and efficient operations, and steps to reduce the impact of aviation on climate and the environment. IFAR develops a regularly updated Framework Document outlining global research objectives and technological opportunities. The

IFAR activities are supported by the IFAR secretariat which was established and financed by DLR. From mid 2011 the IFAR secretariat is also supported by the 3-year EU-project IFARs. After mid 2014 IFAR is expected to be self organised without any external support.

**Table 1 IFAR Members**

Organisation name	Country
Commonwealth Scientific and Industrial Research Organisation	Australia
Budapest University of Technology and Economics	Hungary
Central Aerohydrodynamics Institute of Russia (TsAGI)	Russia
Centro Italiano Ricerche Aerospaziali (CIRA)	Italy
Chinese Aeronautical Establishment (CAE)	China
Czech VZLU-Aeronautical Research and Test Institute	Czech Republic
French Aerospace Lab (ONERA)	France
German Aerospace Center (DLR)	Germany
CSIR-National Aerospace Laboratories (CSIR-NAL)	India
Institute for Aerospace Research (NRC)	Canada
Japan Aerospace Exploration Agency (JAXA)	Japan
Korea Aerospace Research Institute (KARI)	Korea
Middle East Technical University (METU) Ankara	Turkey
National Aerospace Laboratory of the Netherlands (NLR)	Netherlands
National Institute of Aerospace Research "Elie Carafoli" of Romania (INCAS)	Romania
National Institute of Aerospace Technology of Spain (INTA)	Spain
Polish Institute of Aviation (ILOT)	Poland
Technical Research Centre of Finland (VTT)	Finland
The Swedish Defence Research Agency (FOI)	Sweden
U.S. National Aeronautics and Space Administration (NASA)	USA
von Karman Institute for Fluid Dynamics (VKI)	Belgium

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# EUROPE AND THE UNMANNED AERIAL VEHICLES



Jean-Pierre Sanfourche, Editor-in-chief of the CEAS bulletin, has interviewed Mr Jérôme Garcia, the EDA (European Defence Agency) technical expert in this area.

## 1. How is EDA organised to deal with Unmanned (Combat) Aerial Vehicles (UAV and UCAV) and Unmanned Aircraft Systems (UAS) related studies and programmes?

Quite a few staff members from the different departments in EDA deal with UAS, each with their own expertise. The Armament Directorate (ARM) manages cooperative programmes that have potential to lead to multinational development and procurement programmes. So far, it managed a number of studies related to UAS and UAS ATI (ATI: Air Traffic Insertion), and manages the Project Team (PT) on UAS ATI. The R&T Directorate is designed to launch and manage Research projects that have the potential to increase future capabilities.

## 2. Precisely, what is the distinction between the U(C)AV and the UAS?

There are many definitions for unmanned vehicles, like the ancient name “drone” or the more recent one “RPA”, for remotely piloted aircraft. Nevertheless more common names are nowadays UAVs and UAS. Distinction between the two is simple: while Unmanned Air Vehicles (UAV) focuses on the platform only, Unmanned Aerial Systems (UAS) also include the ground stations, communication links and related services. And the “C” for UCAV stands for “Combat”, which means that the system is used to deliver a military payload.

## 3. What are the relationships between the EDA and the organisation “UVS International”?

The relationship probably dates from the start of EDA! Many of UVS members are also active participants in EDA forums; let us mention the project teams dedicated to UAS, or the aeronautical R&T specialists working within the experts’ networks called CapTechs. UVS president, Peter van Blyenburgh, is well known in EDA, and a couple of EDA experts received the awards distributed by UVS. EDA contributed to many articles in the annual journal of UVS.

## 4. What are the relationships between the EDA and the ASD?

Staff of both organisations meets frequently. As ASD is based in Brussels, it is easy to interact with EDA. ASD represents the industrial position in many meetings and forums; for instance ASD attends parts of the bi-annual

R&T directors meetings. ASD provides input in many domains, ranging from research priorities, Technological Dependencies issues, or intellectual property rights.

## 5. What are the agreements of cooperation with the European Space Agency (ESA) in the UAVs’ domain?

The Administrative Arrangement formalizing the relations between EDA and ESA was signed on 20 June 2011 during the Paris Air Show. The cooperation between both Agencies will aim at exploring the added value and contribution of space assets to the development of European capabilities in the area of crisis management and CSDP and will seek to improve synergies between space and defence activities. Under the wider Administrative Arrangement, EAD and ESA signed on 15 December 2011 a dedicated Implementing Arrangement on a jointly funded demonstration project for an Unmanned Aircraft System (UAS)-based mission. The project with a value of 1.2 M€ aims at demonstrating the benefits of space for UAS-based services and for the safe insertion of UAS in non-segregated airspace.

The main objectives of the project are to:

- Demonstrate the safe insertion of UAS in non-segregated airspace using satellites, identify issues and required procedures, and provide early inputs to regulatory bodies.
- Demonstrate to the user community that UAS supported by satellites and flying in non-segregated airspace can fulfil their needs.

## 6. Could you briefly recall the UAV related studies which have been conducted by the EDA over the past years: sense & avoid technologies for long duration UAVs, UAVs’ integration in non-segregated airspace, UAV integration, digital line-of-sight (LOS) and Beyond-Line-of-Sight (BLOS) for Long-Endurance UAVs, UAV data-links, UAV test beds in Europe, development of a new long endurance UAV to meet both civil and military requirements of the EU member states, integration of UAVs in the military C4ISTAR system or system of systems approach, etc.?

EDA has a long experience in the field of UAS. As early as 2005 a study was awarded on “Digital LOS and BLOS datalinks for LE-UAVs”. This one was followed by many others: “Sense and Avoid technologies for Long Endurance UAV”, “UAV testbed”, “architecture for embarked middleware”, “reference scenarios for multiple UV operations”, “UAS gap analysis”, just to mention the studies managed within the R&T directorate. From the other directorates, a study is worth mentioning: “Air4all”, because this was the

first study focused on the insertion of UAS in airspace, and its results shaped the successive other studies. Another one was dealing with the requirements of UAS propulsion and power systems. Bigger cooperative projects were launched, like MIDCAS in 2009, for the demonstration of the "Sense and Avoid" capacity of a UAV. The demonstration is to take place in 2013.

**7. Regarding UAV integration demonstration, the EDA's roadmap foresees to realize UAV integration into non-segregated airspace by 2015: do you think that this objective will be reached?**

Defining a UAS ATI roadmap with a timeline is not an easy task. EDA has discussed a roadmap in order to define a realistic schedule with its stakeholder and with the European Commission. Additional pressure comes from the US that recently committed to UAS in common airspace by 2015. EDA is confident that, by 2015, many developments will have occurred but we also believe that more time will be needed to allow the regulation to change safely taking into account the latest developments. Therefore, in coordination with the European Commission, we set 2015 as an intermediate target and 2018 as final target date.

**8. How is SESAR JU including the UAV questions in the Single European Sky programme?**

SESAR JU was set up several years ago with the objective to increase dramatically the air traffic management capability, while also increasing the level of safety and reducing fuel consumption. The UAV fits into this picture but only at a later stage; they still need to be certified to fly in general airspace. However, the question of UAV constantly pops up within the SESAR fora.

**9. Is the EDA involved in the EC-UAS initiative aiming at developing a strategy for the future of UAS in the EU?**

EDA is a key partner of the European Commission in the EC UAs initiative. It started with the Conference on UAS in July 2010, which the European Commission and EDA co-organised and that laid the basis of the EC initiative on UAS. EDA remained a key player in the following steps, and is a member of the UAS panel. 5 Conferences were organized to explore the various aspects and challenges of UAS (industrial, technical, communications, societal and R&T), with EDA organizing the last one on R&D for UAS on 09Feb2012. These conferences resulted in the drafting of a Commission policy paper describing the European strategy for UAS. This document is planned to be released in the summer and will define the UAS roadmap for Europe.

**10. Considering the Civil/Military aspects of air Traffic Insertion, what the conditions to be respected to be able to deliver cost-efficient, sustainable and fully exploitable UAS capabilities to European Armed Forces?**

As said before, the stakes of the military users must be taken into account in the future landscape deriving from

SESAR. However, this new environment will bring a certain price for the military. This is why a "SESAR implementation forum" was set up to keep a permanent dialog between the military users from pMS and SESAR. This dialogue and a future European wide cooperation are keys for an efficient development of UAS military capabilities in Europe. This is a domain where EDA excels; therefore we are optimistic in the implementation of the roadmap set up in coordination with the Commission. EDA is the best tool to exploit the benefits of civil/military synergies of UAS

**11. Two demonstrators of UCAV are being developed in Europe: "TaraniS" by BAE Systems, and "nEUROn" by Dassault Aviation: are these two projects supervised by the EDA?**

These two demonstrators have been awarded by the two respective procurement agencies in UK and France, and therefore their management is done within their organisations. The two projects aim at realizing a demonstration, with TaraniS aiming more directly a marketable application. TaraniS is a UK only project, while Neuron, with Dassault as Prime contractor, embarks several European partners (Greece, Italy, Spain, Sweden and Switzerland).

**12. What are the wishes you would like to express concerning the development of the UAVs, UCAVs and UASs related study programmes within the framework of the EDA?**

We see the development of UAS as a window of opportunity, particularly important in these times of financial crisis. This represents an opportunity, obviously because this domain can lead to job creation in the aeronautics sector, since the business market is considerably large. This is also an adventure, where people can be proud to work on, because we are working on moving the frontiers of what is currently conceivable. And this opportunity could be best seized by a wide cooperation involving all competencies and talents from Europe. Avoiding duplication of efforts, making the best out of European industrial capabilities, this is where EDA can generate its best added value.

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## BRAVE NEW WORLD OF SPACE-BASED PNT



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These are exciting and challenging times for the global Positioning, Navigation, and Timing (PNT) community. The U.S. Global Positioning System (GPS) continues to set the international standard for accuracy and reliability, delivering user range errors of less than one meter. Russia has prioritized the modernization and restoration of its GLONASS system to a 24-satellite constellation in 2011, after letting the system dramatically deteriorate in the 1990s. China is in the midst of upgrading its Beidou/Compass system, and India contemplates deploying its own regional IRNSS (Indian Regional Navigational Satellite System) system. The European Union (EU) is moving ahead with its plans to deploy the Galileo system over the next few years. We could easily have a global constellation of over 100 PNT satellites within 10 years.

**PNT Cooperation?** With the growth in global navigation satellite systems (GNSS), there is a strong and powerful case to be made to conduct cooperative space-based PNT activities. Cooperation promises to increase overall satellite availability (particularly in urban environments) and improved resistance to signal interference. Increasing the number of civil navigation signals available from space-based PNT systems will enhance not just service robustness and availability, but should improve the service accuracy for mass-market users. Further, in a struggling worldwide economy, cooperation also offers the potential of savings to individual nations by spreading the resource investments, reducing expenditures and risks among cooperating nations, and increasing capabilities and reliability while providing more resilient and redundant programmatic options for users. To make these advantages a reality, however, interoperability is essential.

Cooperation also presents an opportunity to develop important dependencies among nations that may obviate conflict. Additionally, sharing nations gain insights into what a competitor or adversary partner knows about space technologies. This understanding can help reduce the need to prepare for doomsday scenarios. Thus, multi-lateral and bilateral sharing and cooperation among PNT programs reflects the best spirit and intentions of the Outer Space Treaty, in which the preamble calls out for space to be used for “peaceful purposes”. This has been the hope since the beginnings of the Space Era.

International cooperation on space missions is not new and already is an important part of the planned future of space-based PNT. Although it provides the foundation for a global PNT community through its GPS, the United

States (U.S.) has reached out to engage prospective partners, in the hope such engagement will shape global efforts in positive directions, e.g., preventing human-caused radio frequency interference, and promoting greater transparency. For example, the U.S. and EU have been working together since 2004 when they signed the GPS-Galileo Cooperation Agreement framework. Under the framework, they are engaged in significant technical collaboration to ensure that GPS and Galileo are compatible in terms of radio frequency, noninterference and national security perspectives. Building on these efforts, the U.S. and EU overcame significant technical challenges to design interoperable optimized civil signals. These efforts will ensure that future users reap the benefits of the two satellite constellations, but also protect common security interests. The resulting GPS L1C signal and Galileo L1F signals have been optimized and future receivers should be able to track them with higher accuracy in challenging environments that include multipath, noise, and interference. The U.S. and EU are also cooperating to ensure that manufacturers can build dual system civil receivers, capable of using signals from both systems. Incorporating the standards into both systems will enhance commercial opportunities for the development of new GNSS products and services. This should leverage market-based competition to serve as key to future GNSS technology successes.

The U.S. and EU members are members of the International Committee on GNSS (ICG), and in this forum they have stressed the importance of compatibility and civil interoperability, not only between GPS and Galileo, but also with other global satellite navigation systems. Consistent with these objectives, the U.S. is cooperating with Russia towards GPS-GLONASS interoperability to ensure, to the maximum extent practicable, radio frequency compatibility in spectrum use between each other's satellite-based navigation and timing signals and improve combined search and rescue capacities. To this end, the U.S. and Russia signed a statement in September 2011 reaffirming a mutual intent to achieve compatibility, interoperability, and transparency.

**If international collaboration makes sense, why is it so difficult to achieve?** Regardless of the potential for success, the realist knows that a nation's decision to engage in space cooperation is very much a political decision. Nations pick and choose if, when, where, and how they expend their national treasure. They choose the manner and extent of their technology investments for reasons both known and unknown to other nations. Hopes for cooperation can soon be overwhelmed by competing political and national prestige interests and priorities, including hopes to maintain a strong indigenous industrial base of high technology jobs. These political priorities can drive anti-collaborative behavior. The only constant is that a decision to “cooperate” is, in every case, a calculated decision by each participant.



Decisions related to space activities are also often clouded by exceptionalism – the perspective that a country, or society, is unusual or extraordinary in some way. Many nations throughout history have made claims of or exhibited the hubris of exceptionality: the U.S., China, India, Britain, Japan, Iran (Persia), Korea (both South and North), Israel, the USSR, France and Germany. The term “exceptionalism” can also be used to describe a nation’s desire to remain separate from others. There is oftentimes a strong and intense political and cultural pressure to go it alone, to demonstrate a nation’s prowess and strength, to show a nation has joined the leaders of the world.

Exceptionalism can explain the desire by China to pursue national manned spaceflight, space station, and moon programs, and the desire by a wide variety of nations to develop spacelift, on-orbit capabilities, and their own missions to the moon. Unfortunately, exceptionalism pressures can cause inefficiency, has resulted tremendous duplication and overlap in global space science and other missions, and can generate mistrust.

#### **Selecting framework for international PNT cooperation.**

In attempting to achieve success with cooperative efforts, participants must first have a driving function to change what they are doing and how they are doing it, especially if what they are doing is perceived as critical to the identity of that nation. Thus, with regard to PNT cooperation, it is important to consider the four types of cooperation frameworks:

- **Augmentation** – Cooperating countries provide important elements of the project of the prime country but are not on the prime’s program critical path.
- **Interdependence** – Cooperation occurs on the critical path as well as on functional systems with each participant still controlling their component part of the project.
- **Integration** – Full cooperation with a pooling of resources on shared and joint research and development.
- **Coordination** – Each country operates a separate program independent of others but coordinates on technical and scientific matters<sup>1</sup>.

The U.S. has employed the augmentation framework in fielding many of its aerospace systems, and the GPS system was deployed under this framework. For example, the European Geostationary Navigation Overlay Service (EGNOS) augments GPS and is used to support safe transit of aircraft or ships navigating through narrow channels. With three geostationary satellites and a network of ground stations, EGNOS achieves its mission objectives by supplementing GPS’ signal by transmitting (and improving) on the reliability and accuracy of the positioning signals sent out by GPS. A similar service, Multi-functional Satellite Augmentation System (MSAS), has been deployed in Japan and India also plans to deploy the GPS Aided Geo

Augmented Navigation or GPS and Geo Augmented Navigation system (GAGAN).

Selecting an augmentation framework is often believed by the U.S. to be consistent with its space leadership imperatives and, more importantly, reflects the country’s tremendous investments in space activities. The framework allows the U.S. to exercise control over the mission critical resource, schedule, technology development, and operational paths. The disadvantage of the augmentation framework is that the bulk of the costs fall upon the prime country. In the past, the U.S. usually accepted these because it undertook the prime technical, schedule, and resources risks of each mission and wanted to control them. With expected tight budgetary constraints, this may not be an optimal path for the future.

The U.S. and Russia employ the interdependence framework to cooperate on the International Space Station (ISS). Since each served as its prime resource contributors, this satisfied each nation’s desire to exercise leadership over the enterprise and protects their respective equities. Unfortunately, the framework has proven to be extremely costly. With the ISS, neither was able to keep the other from slipping their contributions and causing significant delays and cost increases.

The integration framework can be employed to spread the financial costs, and utilize the industries of multiple nations while maintaining a single entity to control the critical path.” But the framework has been shown to have failings. For example, while moving to field Galileo, the EU has suffered as partner nations have, from time-to-time, unilaterally withheld contributions causing the overall program to slip. Another negative with the integration framework is that it requires acceptance of maximum levels of technology transfers. This is often difficult and complex to achieve as national policymakers may disagree with sharing of unique technologies that offer a security or economic edge. The EU has been able to internally mitigate some of these technology transfer concerns by applying its own unique free market laws and regulations. Further, although the European Space Agency (ESA) has had some failings, its dramatic successes have attracted partners in and outside of Europe, including NASA.

The coordination framework is inviting in that it is easy for nations to agree to its terms. This framework allows the U.S., Europe, Russia, China, and others to cooperate, yet maintain independence and manage their individual contributions to global needs. Of course, the disadvantage of this approach is that many aspects of space-base PNT overlap, causing much duplication of efforts and an inefficient use of worldwide resources.

**Concluding thoughts.** The case for cooperation is strong and powerful. Each nation engages in cooperative activi-

1. The four frameworks are more fully discussed by James D. Rendleman & J. Walter Faulconer, “Improving international space cooperation: Considerations for the USA,” *Space Policy* 26 (2010) 143-151, 150, citing Ryan Zelnio, “A model for the international development of the Moon,” *The Space Review*, December 5, 2005.

ties because they are in their best national interests to do so. Cooperation enables states to leverage resources and reduce risk; improve global engagement; and enhance prestige. Given these benefits, space leaders must organize their programs to allow for cooperation.

Given the importance of international cooperation to successful capabilities, the American Institute of Aeronautics and Astronautics (AIAA) works to foster professionalism

and improve the capacities of the global PNT communities. It does this through sponsored and co-sponsored conferences, workshops, symposiums, training and education programs, and networking events hosted in the U.S. and throughout the globe.

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## SOME RECENT AEROSPACE NEWS

### AERONAUTICS

#### • AIRBUS MILITARY A400M RECEIVES INITIAL TYPE CERTIFICATE FROM EASA

Airbus Military has received the initial type certification for the A400M airlifter, marking a key milestone on the road to first delivery end-2012/early 2013. This first approval named 'Restricted Type Certificate' (RTC) was presented by Patrick Goudou, Executive Director of the EASA (European Aviation Safety Agency), at an internal ceremony in Toulouse on the 3<sup>rd</sup> of May.

The RTC is a critical step towards the award of full civil type certification which is expected in mid-2012 after completion of 300 hours of Function and Reliability (F&R) flight tests and towards military Initial Operating Clearance (IOC) in the end of this year.

As part of the flight-test activity the A400M has recently visited countries in Latin America and South East Asia, and in the upcoming period will travel to the home nations that ordered the aircraft and the Middle East in the frame of the F&R tests.

The fleet of five A400M development aircraft continues to make good progress in the intense flight-test campaign: at the beginning of May it has completed more than 3,000 hours of flight.

**From EADS Press Release  
Madrid 03 May 2012 –**

#### • ATR: 1,000 AIRCRAFT DELIVERED

The delivery of this aircraft, configured for 72 passengers and powered by two PW127M turboprop engines, took place in Toulouse and was attended by many of the world leaders in aerospace, including Louis Gallois, CEO of EADS, and Giuseppe Orsi, CEO of Finmeccanica.

This delivery symbolizes the success and sustainability of the ATR 42 and ATR 72 aircraft family. ATR, which delivered its very first ATR 42 on 03 December 1985 to the French airline Air Littoral, now joins the exclusive ranks of aircraft manufacturers having delivered 1,000 planes.

Filippe Bagnato, CEO of ATR, said: "Over the years, ATR aircraft have established themselves as the benchmark in regional aviation on all continents. We are very proud of the



On 03 May 2012, ATR marked an important stage in its history with the delivery of its 1,000th aircraft, an ATR 72-600 decked out in the colours of the Spanish airline Air Nostrum, which has a commercial agreement with Iberia (c) ATR.

resilience that ATR has demonstrated since the launch of the programme. The perseverance, the unfailing commitment to our turboprop aircraft and their many benefits for regional airlines are what allow us to celebrate the 1,000<sup>th</sup> delivery today, and these same qualities will continue to provide us with opportunities in the years to come."

*Some words about ATR:*

*ATR was founded in 1981. It is an equal partnership between two major European aeronautics players, Alenia Aermacchi – a Finmeccanica Group company – and EADS. Its head office is in Toulouse. ATR is ISO 14001 certified, the international reference standard in the field for environmental friendliness.*

**For additional information, please contact David Vargas, ATR Media relations Manager  
[www.atraircraft.com](http://www.atraircraft.com)**

#### • CLEAN SKY: ECO-DESIGN ANNUAL REVIEW

Eco-Design (ED) members and external experts coming from the aeronautical and railway sectors met on 28 and 29 March at Dassault Aviation in Paris for the 2012 Eco-Design review. The objective was to present the 2011 activity progress report and to assess the mid-term progress of ED-ITD (Integrated Technology Demonstrator) which is

now entering into the effective demonstration phase. Among the main achievements:

- On-going maturation of more than 100 technologies related to materials, manufacturing process, long life structure and end-of-life management that will be demonstrated through 19 demonstrators related to Equipped Airframe and Equipment;
- First release of the Life Cycle Assessment Data Base specifically developed for aeronautics;
- Deployment of the Modelling Computer Platform (MPC) in support of electrical and thermal test benches;
- Successful Preliminary Design Review of the Electrical Test Bench (COPPER Bird(R)).

**From CleanSky Press Release dated 30 April 2012.**  
[www.cleansky.eu](http://www.cleansky.eu)

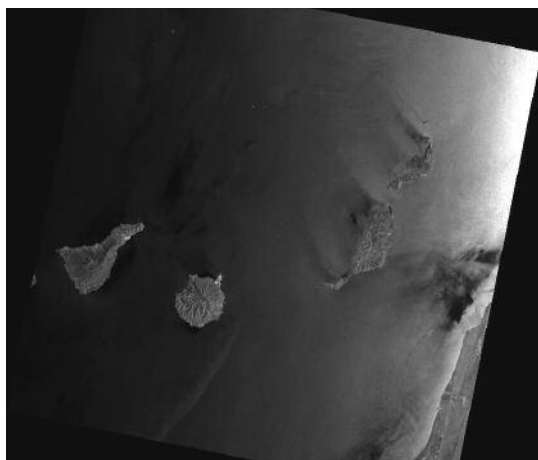
## SPACE

### • GALILEO

Galileo's second launch of two satellites is confirmed for 28 September 2012. The resulting 4-satellite mini-constellation will enable testing of the vast Galileo infrastructure functioning and this also means that European enterprises can start to develop and test innovative products based on the Galileo satellite navigation signals.

### • ENVISAT

On 9 May 2012: the very probable end of mission for ENVISAT. Just weeks after celebrating its tenth year in orbit, communication with the ENVISAT satellite was suddenly lost on 8 April 2012. An investigation team is continuing rigorous attempts to re-establish contact while considering failure scenarios but the chances of success are extremely low. So, the end of the mission for ENVISAT is being declared by ESA.



Envisat's Advanced Synthetic Aperture Radar (ASAR) captured this image on 8 April 2012 at 11:09 GMT. The image was transmitted in X-band to the Santa Maria station in the Azores, Portugal, operated by Edisoft. It shows Spain's Canary Islands. It is the last Envisat data transmitted via X-band before the communication anomaly.

Credits: ESA/Edisoft

The outstanding performance of this satellite over the last decade led many to believe that it would be active at least until the launch of the follow-on GMES Sentinel missions. However ENVISAT has already operated for double its planned lifetime!

With ten sophisticated sensors, it has observed and monitored Earth's land, atmosphere, oceans and ice caps during ten-year lifetime. An estimated 2,500 scientific publications so far have based on this the thousand terabytes of data it delivered, furthering our knowledge of the Earth. Now with the end of the mission, the launch of the GMES Sentinel satellites<sup>1</sup> has become even more urgent to ensure the continuity of data to users, improve the management of the environment, understand and mitigate the effects of climate change and ensure civil security.

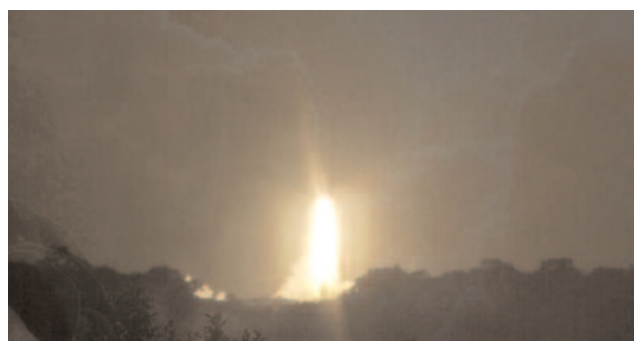
*GMES: Sentinel-1, -2, -3 satellites are planned for launch in 2013. Sentinel-4 is scheduled to be launched in 2019 and Sentinel-5 2020. Sentinel-5 Precursor satellite mission, dedicated to atmospheric monitoring, is planned to be launched in 2015.*

**From ESA Press Release dated 9 May 2012.**  
[www.esa.in](http://www.esa.in)

### • ARIANE 5's SECOND LAUNCH OF 2012

On 16 May at 22:13 GMT, took place at Guiana Space Centre the successful liftoff of an Ariane 5, the second of this year. This was the flight VA206 whose mission was to place into orbit two telecommunication satellites: (i) JCSAT-13 which will deliver direct TV broadcast links to Japan and will meet satellite demands in Southeast Asia; (ii) Vinasat-E which will provide radio, television and telephone links to Vietnam.

**From ESA Press Release dated 16 May 2012.**



An Ariane 5 launcher lifted off from Europe's Spaceport in French Guiana on 16 May 2012 on its mission to place two telecommunications satellites, JCSAT-13 and Vinasat-2, into their planned transfer orbits.

Liftoff of flight VA206, the 62<sup>nd</sup> Ariane 5 mission, came at 22:13 GMT (00:13 CEST; 19:13 French Guiana).

Credits: Arianespace

[www.esa.in](http://www.esa.in)



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YEAR 2012

- 18-20 June • **AIAA** – 3<sup>rd</sup> International ATOS (Air Transport and Operations Symposium) and 6<sup>th</sup> IMAPP (Aviation Product Support Process) – delft (NL) – [www.aiaa.org/events](http://www.aiaa.org/events)
- 18-20 June • **AIAA/IAC** – 3<sup>rd</sup> International Air Transport and Operations Symposium (ATOS)/6<sup>th</sup> International Meeting for Aviation Product Support Process (IMAPP) – Delft University of Technology – Delft (NL) – [www.aiaa.org](http://www.aiaa.org)
- 18-22 June • **ESA** – Atmospheric Science Conference – Bruges (Belgium) – [www.esa.int/esaLP/LPcalende.html](http://www.esa.int/esaLP/LPcalende.html)
- 19 June • **RAeS** – 3<sup>rd</sup> European Space Tourism Conference: Open for Business – RAeS/HQ London (UK) [www.aerosociety.com/Events](http://www.aerosociety.com/Events)
- 20-22 June • **ACI Europe** – 22<sup>nd</sup> ACI Europe annual General Assembly – Madrid (Spain) Palacio de Congresos – [www.aci-europe-events.com/](http://www.aci-europe-events.com/)
- 24-26 June • **AIAA** – AIAA Missile Sciences Conference – Monterey, CA (USA) - [www.aiaa.org/events](http://www.aiaa.org/events)
- 24-27 June • **RAeS/CEAS/AIAA** – IFASD International Forum on Aeroelasticity and Structural Design – Bristol (UK) – [www.aerosociety.com/Events](http://www.aerosociety.com/Events)
- 25-28 June • **ESA** – Toulouse Space Show – Toulouse (France) – [www.esa.int](http://www.esa.int)
- 25-28 June • **AIAA** – AIAA Conferences: 42<sup>th</sup> Fluid Dynamics /28<sup>th</sup> Aerodynamic Measurement Technology and flight Testing /30<sup>th</sup> Applied Aerodynamics /43<sup>rd</sup> Plasmadynamics and Lasers/43<sup>rd</sup> AIAA Thermophysics / 4<sup>th</sup> Atmospheric and Space Environments/6<sup>th</sup> Flow Control – Sheraton – New Orleans, Louisiana (USA) – [www.aiaa.org/events/neworleans](http://www.aiaa.org/events/neworleans)
- 26-28 June • **GAMA/AAAE/IAAE/IATA** – 3<sup>rd</sup> Conference on Transatlantic Aviation Issues - Brussels (Belgium) – [www.events.aaae.org/sites/120708](http://www.events.aaae.org/sites/120708)
- 03-06 July • **3AF, Astrium, Thales** – Symposium “7<sup>th</sup> Missile Defence 2012” – Paris (France) [sophie.videment@aaaf.asso.fr](mailto:sophie.videment@aaaf.asso.fr) – [www.missile-defence.com](http://www.missile-defence.com)
- 09-15 July • **Farnborough Org** – International Farnborough Air Show – Farnborough (England) [www.farnborough.airshow](http://www.farnborough.airshow)
- 11-14 July • **AIAA** – 9<sup>th</sup> International Conference on Mathematical Problems in Aeronautical Sciences – Vienna (Austria) – [www.icnpaa.com](http://www.icnpaa.com)
- 14-22 July • **COSPAR** – 39<sup>th</sup> COSPAR Scientific Assembly – Mysore (India) – N Murthy Centre of Excellence – [www.cospars2012india.org/](http://www.cospars2012india.org/)
- 17-19 July • – **RAeS** – RAeS Annual Applied Aerodynamics Conference – Bristol (UK) – [www.aerosociety.com/Events](http://www.aerosociety.com/Events)
- 22-27 July • – **ESA/DLR** – International Geoscience and Remote Sensing Symposium – Munich (Germany) - [www.esa.int/esaLP/LPcalende.html](http://www.esa.int/esaLP/LPcalende.html)
- 30 July-1<sup>st</sup> august • – **AIAA, ASME, SAE, ASEE** – 48<sup>th</sup> Joint Propulsion Conference and Exhibit (JPC) – Atlanta, GA (USA) – [www.aiaa.org/events/jpc](http://www.aiaa.org/events/jpc)
- 30 July-10 august • – **Summer School Living Planet Programme** – ESA/ESRIN Frascati (Italy) – [www.esa.int/esaLP/LPcalende.html](http://www.esa.int/esaLP/LPcalende.html)
- 13-16 August • **AIAA** – AIAA Conferences: GNC - Aerospace Modeling and Simulation Technologies – Atmospheric Flight Mechanics – Astrodynamics Specialist – Minneapolis (Min, USA) – Hyatt Regency – [www.aiaa.org/](http://www.aiaa.org/)

- 31 August- 02 September • **Canadian International Air Show** – CIAS 2012 – Toronto (Ontario, Canada) – National Exhibition Toronto – [www.milavia.net/airshows/calendar/](http://www.milavia.net/airshows/calendar/)
- 03-07 September • **EUMETSAT** – 2012 EUMETSAT Meteorological Satellite Conference – Sopot (Poland) – [www.conferences.eumetsat.int](http://www.conferences.eumetsat.int)
- 04-07 September • **NVvL/CEAS** – European Rotorcraft Forum – ERF 2012 (38<sup>th</sup> ERF) – Amsterdam (NL) – Amsterdam Marriott Hotel - [hermans@nlr.nl](mailto:hermans@nlr.nl) [ERF2012@nlr.nl](mailto:ERF2012@nlr.nl) - ERF 2012 Chairman: Kees Baker [k.bakker@concepts.nl](mailto:k.bakker@concepts.nl)
- 06-09 September • **UVS International** – The World of the Systems Comes Together – Las Vegas (USA) [www.auvshow.org](http://www.auvshow.org)
- 09-14 September • **Japan International Aerospace Exhibition 2012** – Nagoya (Japan) – Aerospace Exhibition Center [www.milavia.net/airshows/calendar](http://www.milavia.net/airshows/calendar)
- 11-13 September • **AIAA** – AIAA Space 2012 Conference and Exposition – Pasadena (Cal, USA) – Hilton Convention Center – [www.aiaa.org/](http://www.aiaa.org/)
- 11-16 September • **BDLI Messe Berlin** – ILA Berlin 2012 – Brandenburg Airport – Berlin (Germany) [www.ila-berlin.de/ila2012/home/index.cfm](http://www.ila-berlin.de/ila2012/home/index.cfm)
- 12-13 September • **SAE International** – SAE 2012 Safety Management Systems Symposium for Aerospace design and Manufacturing – Madrid (Spain) – [www.sae.org/events/aerospace/](http://www.sae.org/events/aerospace/)
- 12-14 September • **ICAO** – High-Level Aviation Security Conference – ICAO – Montréal (Canada) – [www.icao.int](http://www.icao.int)
- 17-19 September • **AIAA** – 12<sup>th</sup> AIAA Aviation Technology, Integration and Operations (ATIO) – Indianapolis, Indiana (USA) Hyatt Regency– [www.aiaa.org/](http://www.aiaa.org/)
- 19-20 September • **RAeS** – UAS Operations: Dependable, effective and efficient? – RAeS/HQ London (UK) – [www.aerosociety.com/Events](http://www.aerosociety.com/Events)
- 23-28 September • **ICAS** – ICAS2012 Congress – Hosted by the Royal Aeronautical Society, Australian Division - Brisbane, Australia - [secrexec@icas.org](mailto:secrexec@icas.org) [www.icas.org](http://www.icas.org)  
Call for Papers is now downloadable. ICAS Secretary: Mr Axel Probst – ICAS Secretariat: c/o DGLR – Godesberger Allee 70 – 53175 Bonn, Germany. Tel.: +49 228 3080519
- 24-27 September • **3AF, AIAA** – 8<sup>th</sup> AIAA International Space Planes and Hypersonic Systems and Technology Conference – Tours (France) – [sophie.videment@aaaf.asso.fr](mailto:sophie.videment@aaaf.asso.fr) – [www.aiaa.org/Hypersonice2012](http://www.aiaa.org/Hypersonice2012)
- 24-28 September • **EAAP** – Aviation Psychology and Applied Human Factors – Working towards zero accident – with a special session on aviation economics – Villasimius (Sardinia, Italy) – ATA Hotel Tanka Village – [www.conference.eaap.net/register.html](http://www.conference.eaap.net/register.html)
- 24-29 September • **ESA, CNES** – 20 years of Progress in Radar Altimetry – Venice (Italy) [www.esa.int/esaLP/LP\\_calende.html](http://www.esa.int/esaLP/LP_calende.html)
- 26-27 September • **RaeS** – 7<sup>th</sup> Annual International Flight Crew Training Conference – RaeS/HQ – London (England) [www.aerosociety.com/Events](http://www.aerosociety.com/Events)
- 27-29 September • **DLRK** – German Aerospace Association Home Event 2012 – Bremen (Germany) [www.dlrh2011.dgldr.de/](http://www.dlrh2011.dgldr.de/)
- 1-5 October • **IAF** – 63<sup>rd</sup> International Astronautical Congress- IAC2012  
Nostra D'oltremare Convention Center- Naples, Italy – [www.iac2012.org](http://www.iac2012.org)



- 09-11 October • **RAeS** – 3<sup>rd</sup> Aircraft Structural design Conference – Delft University (NL) – [www.aerosociety.com/Events](http://www.aerosociety.com/Events)
- 10-11 October • **EASA** – Safety Oversight: Managing Safety in a Performance-based Regulatory Environment – EASA Cologne (Germany) – [www.easa.europa/events/events.php](http://www.easa.europa/events/events.php)
- 10-12 October • **3AF** – 11<sup>th</sup> European Forum Strategic and Economic Intelligence – From urgency to anticipation: the challenges of Economic Intelligence – Lille (France) - [secr.exec@aaaf.asso.fr](mailto:secr.exec@aaaf.asso.fr) - [sophie.videment@aaaf.asso.fr](mailto:sophie.videment@aaaf.asso.fr) – [www.ies2012.com](http://www.ies2012.com)
- 11-12 October • **ASD** – Annual ASD Convention and Technology Forum – Lisbon (Portugal) – [www.asd-europe.org](http://www.asd-europe.org)
- 11-12 October • **INCAS, ISMMA** – Conference “Aerospatial 2012” – INCAS, n° 220, Luliu Maniu Blvd, District 6, Bucharest (Romania) – [www.incas.ro](http://www.incas.ro) – [www.aerospatial-2012.incas.ro](http://www.aerospatial-2012.incas.ro)
- 14-18 October • **AIAA** – 2012 AIAA/IEEE Digital Avionics System Conference – Williamsburg, VA (USA) [www.dasconline.com/](http://www.dasconline.com/)
- 16 October • **RAeS** – Greener by Design Annual Conference – RAeS/HQ – London (England) – [www.aerosociety.com/Events](http://www.aerosociety.com/Events)
- 23-25 October • **FSF** – International Air Safety Seminar 2012 – Santiago (Chile) – [www.flightsafety.org/](http://www.flightsafety.org/)
- 30 October • **RAeS** – Conference on Airworthiness, Innovation, Regulation and the Aircraft Engineer – RAeS/HQ London (UK) – [www.aerosociety.com/Events](http://www.aerosociety.com/Events)
- 30 October-1<sup>st</sup> November • **SAE International** – SAE 2012 Aerospace Electronics and Avionics Systems Conference – Phoenix, Arizona (USA) – [www.sae.org/events/aerospace/](http://www.sae.org/events/aerospace/)
- 6-8 November • **Heli Show Dubai 2012** – Dubai (UAE) – Dubai Airport – [www.milavia.net/airshows/calendar](http://www.milavia.net/airshows/calendar)
- 7 November • Europe’s Securities Priorities –**CEIS – SECDEF’11** – Brussels (Belgium) – Crowne Plaza Europa – [www.securitydefenceagenda.org](http://www.securitydefenceagenda.org)
- 8-9 November • **CSDP** – 10<sup>th</sup> Congress on European Security and Defence – The Future of European Security and Defence – Time for Change -Berlin (Germany) – Convention Center Berlin – Landsberger Allee 106 [www.euro-defence.eu](http://www.euro-defence.eu)
- 09-10 November • **RAeS** – Autumn Flight Simulation Conference: contribution of flight simulation to aviation safety – RaeS/HQ - N° 4 Hamilton Place London W1J 7BQ, UK – [www.aerosociety.com/conference](http://www.aerosociety.com/conference)
- 13-16 November • **ESA** – Earth Observation and Cryosphere Science Symposium – ESA/ESRIN – Frascati (Italy) – [www.esa.int/esaCP/index\\_Calendar.html](http://www.esa.int/esaCP/index_Calendar.html)
- 13-18 November • **Air Show China 2012** – Zhihai, Guangdong (China) – [www.milavia.net/airshows/calendar/](http://www.milavia.net/airshows/calendar/)
- 19-30 November • **ICAO** – 12<sup>th</sup> Air Navigation Conference – ICAO – Montréal (Canada) – [www.icao.int](http://www.icao.int)
- 20-21 November • **3AF-SEE** – Conference “More electrical Aircraft (MEA 2012) – Bordeaux (France) [sophie.videment@aaaf.asso.fr](mailto:sophie.videment@aaaf.asso.fr) – [www.mea2012.eu/](http://www.mea2012.eu/)
- 26-27 November • **SEE, Aerospace Valley** – Towards Even More Electrical Aircraft – Bordeaux (France) – [www.aerospace-valley.com](http://www.aerospace-valley.com)
- 28-29 November • **RAeS** – Flight Simulation Research Conference – RAeS/HQ – London (England) – [www.aerosociety.com/Events](http://www.aerosociety.com/Events)

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