The Quarterly Bulletin of the

CEAS

COUNCIL OF EUROPEAN AEROSPACE SOCIETIES

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

Issue 4 - 2011
December

21 OCTOBER 2011:

- THE FIRST PAIR OF SATELLITES FOR EUROPE'S GALILEO GLOBAL NAVIGATION SATELLITE SYSTEM HAS BEEN LOFTED INTO ORBIT BY THE FIRST RUSSIAN SOYUZ VEHICLE FROM EUROPE'S SPACEPORT IN FRENCH GUIANA IN AN HISTORIC MISSION
- THIS LAUNCH WAS PERFORMED BY THE LEGENDARY RUSSIAN LAUNCHER THAT WAS USED FOR SPUTNIK AND YURI GAGARIN
- IT WAS ALSO THE FIRST SOYUZ TO BE LAUNCHED FROM A SITE OUTSIDE OF BAIKONUR IN KAZAKHSTAN OR PLESETSK IN RUSSIA.

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 14 Member Societies: 3AF (France), AIAE (Spain), AIDAA (Italy), CzAeS (Czech Republic), DGLR (Germany), FTF (Sweden), HAES (Greece), IIK (Finland), NVvL (Netherlands), PSAS (Poland), RAAA (Romanian Aeronautical & Astronautical Association), RAeS (United Kingdom), SVFW (Switzerland), TsAGI (Russia) and EUROAVIA, VKI ((Von Karman Institute, Belgium).
Following its establishment as a legal entity conferred under Belgium Law, this association began its operations on January 1st, 2007.
Its basic mission is to add value at a European level to the wide range of services provided by the constituent Member Societies, allowing for greater dialogue between the latter and the European institutions, governments, aerospace and defence industries and academia.
The CEAS is governed by a Board of Trustees, with representatives of each of the Member Societies.
Its Head Office is located in Belgium:
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www.ceas.org

WHAT DOES CEAS OFFER YOU ?

Knowledge transfer:
- A well-found structure for Technical Committees

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

Publications:
- Position/Discussion papers on key issues
- CEAS Aeronautical Journal
- CEAS Space Journal
- CEAS Quarterly Bulletin

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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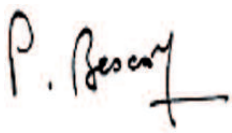
EDITORIAL

THE PRESIDENT'S NEW YEAR WISHES

Pierre BESCOND,
President of the CEAS

I am very honoured to have been re-elected as President of the CEAS for the year 2012 and I address my most cordial thanks to all members of the Board of Trustees (BoT). By unanimously putting their trust in me on the occasion of the management meeting on October 26 in Venice, beyond honouring me they also confirmed their will to continue the work conducted by my predecessors at the head of our Association until the end of 2010 and by myself in 2011.
I am very pleased with this positive support. Indeed we need it to consolidate our approach along the lines that we worked out together. Already a number of strong facts have paved the way of the CEAS this year: the arrival of three new member societies – Czech republic, Romania and Belgium -, the publication of volumes 1 & 2 of the CEAS Aeronautical Journal and of the Space Journal, the development of a computerized aerospace events management information system, the first technical GNC (Guidance, Navigation & Control) Conference held on 13-15 April in Munich, and recently, the third CEAS European Air & Space Conference which took place in Venice from 24 to 28 October. The latter was very successful, so I am pleased to warmly thank the organisers of this event, more notably Prof. Franco Persiani, President of the AIDAA, and Dr Sara Bagassi, of Bologna University.
Besides, we have taken the initiative this last September to undertake the building up of a strategic plan in order to more precisely define the actions necessary to support our members, including by increasing the visibility and image of CEAS. Starting at EU level, it will also contribute to attract the best young professionals into aerospace as well as to help students in study and professional placement.
As a first example of such a tangible development, I would like to stress the value of our involvement in the E-CAero programme. Being a partner in an E-CAero contract with 5 other partners (ECCOMAS, ERCOFTAC, EUROTURBO, EUROMECH, and EUCASS), we helped set up a one day forum at the Aerospace Conference in Venice with experts from three of them (ECCOMAS, ERCOFTAC, EUROTURBO). Entitled "CFD Multi physics Methods, Tools and Software", it specifically answered the will of the EC to bring all European efforts together in a better organised collaboration. And by addressing the "future needs of Industry in Aeronautics & Propulsion" it also was meant to bring the best possible synergies in dealing with some of the major challenges in the future of our industry.
In dealing with environmental and societal issues, in looking for technological breakthroughs, in facing competition in the current difficult economic situation or in coping with emerging countries which are bound to catch up with us in the coming ten or fifteen years, a truly European approach is the way to go.
No need to say, education and training also was central in our discussions and this is very consistent with our own CEAS objectives and active positioning: with pleasure I recently signed a letter on behalf of our BoT to endorse and participate in the REStARTS 2 project with our member VKI and we now are part of a consortium for this New FP7 EC Call.
So with all this in mind for a fascinating year of action in 2012, together with the CEAS Trustees and the officers of the Management Board, I am determined to generate a significant increase of the CEAS visibility, image and influence.
My dear readers, I'm glad to offer you these expectations as the basis of my best wishes for 2012!



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THE CEAS 2011 CONFERENCE "FLYING TO THE FUTURE" HELD IN VENICE ON 24-28 OCTOBER WAS A SUCCESS

By Sara Bagassi

CEAS 2011 CONFERENCE, HELD IN VENICE LAST OCTOBER IN THE WONDERFUL "FONDAZIONE GIORGIO CINI", WAS ONE OF THE MOST SUCCESSFUL CONFERENCES IN CEAS HISTORY. HOSTED BY AIDAA (ITALIAN ASSOCIATION OF AERONAUTICS AND ASTRONAUTICS), CEAS 2011 ATTRACTED MORE THAN 350 DELEGATES FROM ALL OVER THE WORLD, GATHERING THE MAJOR REPRESENTATIVES OF EUROPEAN R&D IN AEROSPACE, AND WAS SPONSORED BY FINMECCANICA, AIRBUS, ASI, CLEANSKY, DASSAULT SYSTÈMES, DLR, ESA, IBM AND PIAGGIO AEREO INDUSTRIES.

Figure 1. Conference Venue – Fondazione Giorgio Cini – San Giorgio Maggiore Island Venice

Figure 2. Conference Plenary Room – Sala degli Arazzi

A DENSE 4-DAY PROGRAMME

The conference theme "Flying to the Future" has inspired all four days programme consisting in 58 thematic sessions, 6 general lectures, meetings and round tables, all dealing with cutting edge topics of both aeronautics and space. Moreover, the final seminar "SESAR and the Military" attracted about 100 more delegates to the conference venue.

The Call for Papers attracted more than 340 submissions from 27 countries. About 190 papers were presented orally in 8 parallel tracks and about 30 papers were discussed in a poster session.

THE OPENING SESSION

The opening session - chaired by Franco Persiani (conference Chairman and AIDAA President) and introduced by Pierre Bescond (CEAS President) - was focused on the analysis of the European Aerospace Industry in the current and future economic framework and on the role of an ever closer cooperation at all levels in Europe. Giovanni Bertolone (Finmeccanica), Detlef Müller Wiesner (EADS), Franco Ongaro (ESA), Marcello Spagnulo (ASI), Eric

Figure 3. Opening Session: from right to left: Franco Persiani (speaking), Marcello Spagnulo, Franco Ongaro, Giovanni Bertolone, Biagio Ancarola, Pierre Bescond, Detlef Müller Wiesner, Eric Dautriat.

Figure 4. Opening Session: Giovanni Bertolone speech

Dautriat (CleanSky) and Biagio Ancarola (Counsellor of the Italian Ministry for Research and Education) contributed to the analysis with high level interventions.
The opening session was closed by two remarkable general lectures introduced by Constantinos Stavrinidis (ESA): the first one by Gerard De Groot about the key decisions in the Space Race and the second one by Tom Krimigis about Voyager 1 and the heliosphere flight. Tom Krimigis was then awarded with the prestigious acknowledgement

Figure 5. Constantinos Stavrinidis (left) and Tom Krimigis (right) after the opening session

Figure 6. Gerard De Groot giving his general lecture.

"CEAS Gold Medal Award" for the great contribution he provided to space exploration programmes of the Solar System and beyond.

OUTSTANDING PARTICIPATIONS

The conference programme was dense of outstanding participations: Jean Botti's (EADS) invited lecture about the merging of civil and military technologies, the "Flying to the Future" Round Table which gathered top level representatives of the aerospace industries, George Bridel's (Air and Space Academy) general lecture on the European Combat Aircraft Evolution and Dave Tyler (AgustaWestland) general lecture about All Electric Helicopter concept.

Figure 7. Tom Krimigis presenting his general lecture

Figure 8. Jean Botti giving his lecture about the merging of civil and military technologies.

THE 2-DAY E-CAERO FORUM

Furthermore, CEAS 2011 hosted the two-day E-CAERO Forum Day on Innovative CFD Multi-Physics Methods, Tools and Software introduced by Dietrich Knoerzer and Remy Denos (European Commission).

THE CLOSING SESSION

The closing session, organised in cooperation with the Centro Studi Militari Aeronautici (CESMA) of the Italian Air Force Association, connected CEAS 2011 conference with the seminar "SESAR and the Military", held on Friday 28 October as a concluding event of CEAS 2011 programme. This "embedded event", sponsored by ENAV and ENAC, was articulated in two panels: the first one entitled "SESAR and its implications on the Military Air Component" was chaired by Maj. Gen. Carlo Magrassi of the Italian Air Force; while the second one, focusing on the technological and financial challenges of SESAR was chaired by Professor Franco Persiani.

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THE INNOVATIVE EVALUATION PLATFORM AND FUTURE SUBSCALE FLIGHT TESTING

By Peter Schmollgruber (ONERA)

WITHIN THE EUROPEAN PROJECT "NACRE" OF FP6, A TEAM OF RESEARCH CENTRES AND UNIVERSITIES WORKED ON THE CONCEPT OF A TEST FACILITY IN THE FORM OF A FLYING PLATFORM. THE OBJECTIVE OF THE LATTER WAS TO OFFER ENGINEERS A NEW TOOL TO INVESTIGATE AREAS OF INTEREST DURING THE EARLY DESIGN PHASES OF FUTURE AERONAUTICAL CONCEPTS.
BASED UPON THE OUTCOMES OF THIS ADVANCED STUDY, THE AUTHOR PRESENTS POSSIBLE NEXT STEPS TO INCREASE EUROPEAN KNOWLEDGE ON DYNAMICALLY SCALED DEMONSTRATORS.

FP6 PROJECT "NACRE" AND THE DEVELOPMENT OF THE INNOVATIVE EVALUATION PLATFORM

The New Aircraft Concept Research (NACRE) was an integrated project led by Airbus with a consortium of 36 partners from 13 countries and partly funded by the EU under the 6th Framework Programme (FP6). During this research action, technologies and design capabilities at the component level - lifting surfaces, power-plant installation, fuselage - were developed and integrated within future aircraft concepts to achieve air travel affordability, environmental performance and air transport efficiency. In order to assist engineers in the design of these components and associated future configurations, one of the tasks in NACRE focused on the development of a demonstrator for a new test facility dedicated to disciplinary investigations: the "Innovative Evaluation Platform" (IEP). The complete work has been divided into three phases: IEP assessment and feasibility, IEP design and manufacturing and IEP tests.

IEP ASSESSMENT AND FEASIBILITY

In the first phase of the project, partners assessed possible IEP concepts against conventional test facilities and techniques. Outcomes of this study indicated that an unmanned dynamically scaled aircraft would provide qualitative data to investigate flight dynamics and noise aspects of future full scale airplanes. In addition, the consortium added the modularity aspect to the flying vehicle in order to be able to test various configurations as it is usually done during wind tunnel tests campaigns [1]. The resulting IEP system consists then in two main components (figure 1): (i) the Modular Flying Platform (MFP), an unmanned platform which configuration can be easily changed though a modular structure; (ii) the Ground Control Station (GCS) from which an external pilot with direct view on the MFP will be remotely controlling the manoeuvres at takeoff and landing through a radio link.
Engineers working on the GCS support the pilot with real-time information coming from the MFP and displayed on several screens. For the in-flight investigations, an autonomous mode is turned on and the MFP can perform pre-programmed manoeuvres defined by disciplinary experts. Subsequently, the post processing of the recorded data during the manoeuvres enables the aircraft parameter identification and handling qualities assessment. For noise, the MFP flies over microphones with two different tail geometries and relative comparisons can be made.
A subsequent qualitative multicriteria assessment indicated that such IEP offers potential benefits in terms of new technical capabilities, higher flexibility and lower costs. This positive conclusion allowed the team to enter the next phase of the project knowing that the system shall meet stringent requirements in order to provide valuable data to be extrapolated to full scale aircraft.

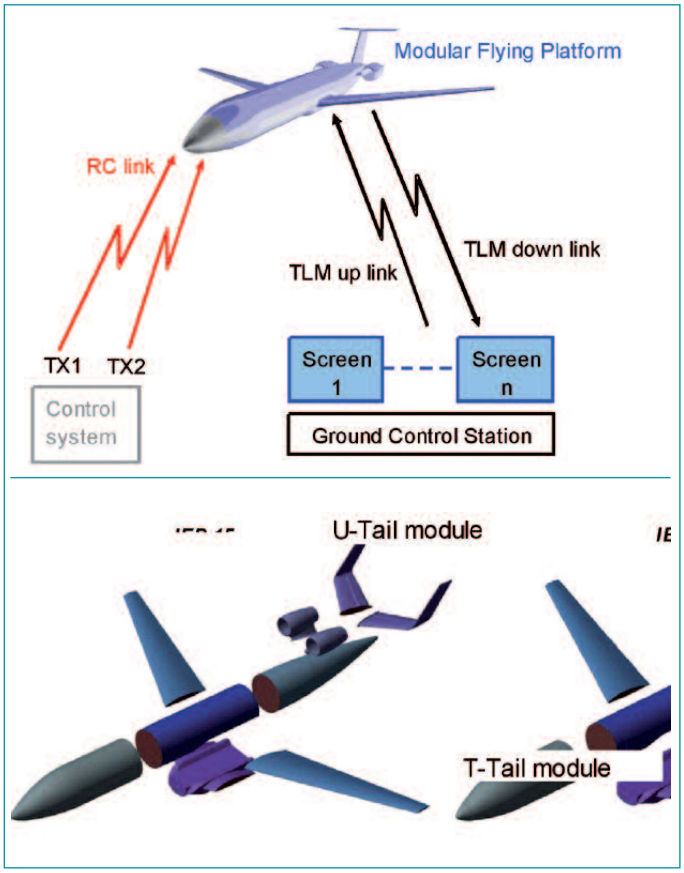

Figure 1 : IEP concept and focus on the modularity capabilities [2]

IEP DESIGN AND MANUFACTURING

The design of the IEP [3] started with a throughout requirement analysis to be sure to capture the key aspects enabling accurate measurements and safe flights. In a second step, the sizing of the vehicle has been made considering Froude similarity requirements, performances of COTS jet engines and maximum flight altitude. The resulting MFP is an unmanned vehicle weighting about 145 kg, with a span of 4.2 meters and two engines for a total

thrust of 420 N. Key features of the airframe are a retractable landing gear and a wing design enabling modifications of the inertial properties of the vehicle. As other Unmanned Aerial Systems, the IEP is equipped with a recovery system that deploys a parachute to terminate the flight at any time in case of critical situations. The main effort for the Ground Control Station design was the development of software capable of running on network of computers and enabling the addition of measurement modules according to the tests. Regarding avionics, a modular "Plug and Play" architecture was necessary to be able to have different sets of airframe components connected to the same on-board computer. The resulting Flight and Management Control System of the IEP is a open and 100% known software allowing 100 Hz data acquisition and seamless sensors modifications. In order to perform efficient and repeatable measurements, the IEP has also an advanced autopilot enabling stabilization and navigation, high precision flight path, automatic flight manoeuvres for flight dynamic investigations and pilot support during manual/semi manual flight modes. During the design and manufacturing phase, all subsystems (airframe parts and avionics) have been tested and the design team used an iron bird coupled with a simulator to validate the behaviour of the system in real conditions. In January 2010, the IEP has been delivered to the test team to perform outdoor tests.

Figure 2 : IEP in operational conditions (U-tail version and T-tail version)

IEP TESTS

In order to minimize risk during the test phase, the consortium defined three stages: (i) validation of airworthiness; (ii) validation of mission sustainability; (iii) IEP measurements missions. The first outdoors tests, performed at Hahnweide airport in Germany initiated the validation of airworthiness. After positive results on the range verification, operational procedures and taxi tests, the IEP has been sent to Poland on the flight test range. Unfortunately, the necessary tasks to complete test flights in safe conditions were not compatible with the project planning. The team decided therefore to stop the project and to prepare the IEP for future uses by European industries, Research centres and universities.

NEXT STEPS

The NACRE IEP has been an important first step in the development of a new test facility based on flights in free air in Europe. Discussions in 2011 between industry, research centres and universities led to the definition of a FP7 proposal called VALIEP that would use the scientific knowledge gained in NACRE as well as the existing IEP system with the objective of further increasing European competences in the use of scaled demonstrators. The envisioned work includes improvements of the test facility (aerial vehicle and ground control station), extensive research regarding the disciplinary investigations and several flight test campaigns.

ACKNOWLEDGEMENTS

The development of the IEP has been possible through the valuable contributions of Airbus, Politechnica Warsawa, University of Stuttgart, NLR, Onera and FOI (as well as CIRA, DLR and INTA for the first task of the project).
All partners involved in the development of the IEP would like to thank The European Commission for financial support of the NACRE Integrated Project (contract N°516068), the European Commission scientific project officer D. Knörzer for his encouragement, the European Commission reviewers H. Körner, G. Thomas, J. Troyes for their guidance, J. Frota from Airbus for his continuous support and contribution to the IEP development as coordinator of the NACRE project;

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EARLY ACHIEVEMENTS OF THE JOINT TECHNOLOGY INITIATIVES EURO 10 BILLION RESEARCH AND INNOVATION PROGRAMME HIGHLIGHTED AT THE EUROPEAN PARLIAMENT

Europe's five joint Technology Initiatives (JTIs) highlighted in the first week of October 2011 at the European Parliament the first achievements of their Research and Innovation programmes:

- ARTEMIS (Executive Director Eric Schutz), for embedded computing systems;
- CLEAN SKY (Executive Director Eric Dautriat), developing and maturing breakthrough 'clean tech' for air transport;
- ENIAC JU (Executive Director Andreas Wild), for nano-electronics;
- FCH JU (Executive Director Bert DE Colvenaer), for fuel cells and hydrogen;
- IMI (Executive Director Michel Goldman), for innovative medicines.

Between them, the JTIs have a total budget of ?10 billion, around a third of which comes from the European Commission, with the rest leveraged from industry, research and the EU Member States. They cover the full innovation chain.

The projects presented during the exhibition and thematic sessions are already generating tangible results enabled by improved cross-cutting computing technology and advanced nano-electronics.

Ms Maria Da Graça Carvalho, MEP and host of the Joint Exhibition, stated: "Innovation is crucial for growth and creation of jobs in Europe. JTIs are powerful instruments to bring knowledge into the market in Key Technologies."

GKN AEROSPACE ENTERS NEXT PHASE AND GROWS INVOLVEMENT WITH CLEANSKY

THE NLF WING

GNK Aerospace[1] has increased its participation with the 'Clean Sky' Joint Technology Initiative (JTI), growing involvement with the development of a NATURAL LAMINAR FLOW (NLF) wing. It is taking NLF wing design and evaluation work, completed in 'phase one' of Clean Sky, into the 'phase two' development of a ground-based structural system demonstrator. It is also set to design and manufacture major components of the NLF wing flight demonstrator, providing the metallic leading edge and composite upper cover for this innovative structure. The flight demonstrator platform will be an A340 with the outer third of the wing replaced with the NLF wing development sections.

Flight tests are scheduled for 2014/2015.

A fully NLF wing is considered to be one of the key developments to reduce drag in the next generation of aircraft and has the potential to provide 3-4% fuel savings, making this a vital technology to meet ACARE emissions targets. But an NLF wing is very different from a conventional wing and requires changes to wing architecture aerofoil definition and detailed design and manufacturing concepts. The more slender sections and very high tolerance surface finishes and joints also present the industry with new challenges.

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CONSTELLIUM PARTNERS WITH DASSAULT AVIATION TO DEVELOP THE ECO-EFFICIENT ALUMINIUM FOR AIRCRAFT

In the end of October 2011, Clean Sky has officially launched the "Eco-Efficient Aluminium for Aircraft" (ECEFA) project resulting from a call for Proposal of the Eco-Design for Airframe Integrated Technology Demonstrator (ITD) coordinated by Dassault Aviation.

ECEFA will develop an advanced aluminium product primarily for civil aircraft fuselage skin applications. With a starting point of 10% density reduction compared to current solutions, it is expected to offer further weight savings through design re-optimization. It also offers both physical and mechanical performances allowing for significantly reduced fuselage wall thickness, durability of the aero-structure and use of eco-friendly surface treatments. Its ambition is to increase proposed technology readiness. A series of tolerance tests shall be conducted in order to better understand its potential and ability to meet airframers' requirements.

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1 GNC plc is a global engineering business serving the automotive, aerospace and land systems markets.

GKN Aerospace is the aerospace operation of GKN plc. With sales of GBP 1.5 billion, the business is focused around three major product areas: aero-structures, propulsion systems and transparencies, plus a number of specialist products. It is a major supplier of complex composite structures, it offers the most comprehensive capabilities in high performance metallic processing and it is the world leading supplier of cockpit transparencies and passenger cabin windows.

The project is conducted at Constellium's Research Centre in Voreppe (France).
"The ECEFA project represents a step change in terms of eco-efficient airframe. Aluminium can make the difference" said Christophe Villemin, President of Constellium Research Centre. As a matter of fact, weight performance is a critical area with a view to lowering CO_2 emissions.

"The ECEFA project is rightly seen as a benefit of OEMs, as it addresses increased eco-efficiency requirements while offering other significant advantages, such as the reduction of maintenance operations", added Christophe Villemin.

From Constellium Press Release
www.constellium.com

SESAR MASTER PLAN UPDATE CAMPAIGN

"SIMPLICITY, PRAGMATISM AND DELIVERY"

Less than a year to go before the next version of the SESAR MASTER PLAN (SESAR: Single European Sky ATM Research) is published. Some 120 aviation stakeholders meeting in Brussels on 5 October confirmed their commitment to work together to refine future air traffic management planning.
Given the complexity of air traffic, the stakeholders – including European regulators, air traffic service providers, airlines, airports, the military and the manufacturing industry – agreed that their efforts should focus on three core principles:

- Simplifying the Master Plan into a more readable and useable document;
- Applying a pragmatic stakeholder-specific approach;
- Delivering results in a timely and efficient manner.

The SESAR partnership will continue to link all the stakeholders with a formal institutional process. "The Master Plan is the living link between development activities and deployment decisions", said Patrick Ky, Executive Director of the SESAR Joint Undertaking.

GLOBAL INTEROPERABILITY IS A MUST

Matthew Baldwin, the European Commission's Director for Air Transport at DG MOVE emphasized the importance of global interoperability in the fast evolving international context: "Interoperability is a must", [...]. The update of the Master Plan should take into consideration the global context and contribute to it accordingly. It is a real opportunity for Europe to support the ICAO standardisation effort", he said.

TO KEEP UP WITH THE RAPID CHANGES IN ATM

Bo Redeborn, ATM's Director at EUROCONTROL, said: " As SESAR moves towards the deployment phase, it is vital that we have an up-to-date Master Plan reflecting the latest forecasts and the current developments in European and, indeed, global ATM."

THE NEXT VERSION OF THE SESAR MASTER PLAN

This new version, planned for summer 2012, will address the following issues:

- Preparing the deployment phase, including the connection between research and development, deployments scenarios and performance needs;
- Ensuring global interoperability;
- Updating the risk management plan.

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GLOBAL INTEROPERABILITY AT THE HEART OF EUROPEAN ATM MODERNISATION

THE 12th ICAO AIR NAVIGATION CONFERENCE OF 2012: "TOWARDS ONE SKY"
TOWARDS ONE SKY, ICAO's key event – GANIS: Global Air Navigation Symposium - will gather industry and stakeholders from all over the world. This global event will give the entire aviation community the unique opportunity to define next steps forward towards a seamless global navigation system, and to reinforce the importance of global interoperability in Air Traffic Management.

What is interoperability?
In aviation, interoperability is considered as the capability of two or more networks, systems, components or applications working together through exchanges of information between them, without any restriction, and with the ability to use the exchanged information for technical or operational purposes without any restriction. It relies on uniform principles and global standards, and is achieved through procedures, hardware and software interfaces – points of interaction between those systems that ensure the necessary common understanding. Interoperability is making aviation systems, procedures, equipment and

training compatible around the world, and facilitates the provision of seamless services to airspace users.

The Single European Sky is just the beginning. The eventual goal remains a single global sky. An interoperable aviation network is a key component of the Single European Sky (SES). For this reason, one of the four SES regulations developed by the European Commission is focused on the interoperability of ATM systems. Formal agreements are already in place between EU's SESAR programme and the US programme as well as the Japanese long term vision on air traffic management. "We in the EU are convinced that working towards cross-border and global solutions is beneficial for everybody", said Siim Kallas, Vice –President of the Commission responsible for Transport.

– EUROCONTROL's technical expertise has contributed to the development of numerous standards for greater ATM operability. In particular the information standard AIXM (Aeronautical Information eXchange Model).
– Interoperability goes hand in hand with safety, and this is the goal of the European Aviation Safety Agency (EASA). It is developing safety regulation and certification standards in view of interoperability. "EASA, in conjunction with its partners, has a key role to deliver increased performance and global interoperability, while ensuring high safety levels", said Patrick Goudou, Executive Director of EASA.
– ICAO's Performance Based Navigation (PBN) is a global set of navigation specifications that can be used by Regions and States It ensures global standardisation and will ultimately improve safety, efficiency, capacity and access, and help mitigate the environmental impact.
– SESAR 4D trajectory management will improve air traffic operations, increasing the overall predictability of traffic. SESAR will bring associated efficiencies in airspace design and planning, focusing on environmental benefits brought by PBN, continuous descent and climb profiles as well as increasing levels of automation and use of technology (remote towers for example).

From information provided by SESAR JU
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RECOMMENDED READING: 3 EU PUBLICATIONS

AERONAUTICS AND AIR TRANSPORT : BEYOND VISION 2020

This publication is a Background document from ACARE, the Advisory Council for Aeronautics Research in Europe.

A European Vision for Aeronautics and Air Transport in 2020 was launched by Commissioner Busquin in 2000. This led to the formation of ACARE to define a Strategic Research Agenda (SRA). The latter provides strategic goals and Research & Technology (R&T) roadmaps for proposed solutions to achieve the objectives outlined in Vision 2020. The SRA goals have had a clear influence on current aeronautical research: a vigorous research programme is already delivering important initiatives and benefits for the aviation industry, including EU collaborative research in aeronautics and air transport (EC's Framework Programme research), the Clean Sky Joint Technology Initiative, the SESAR Joint Undertaking, national programmes as well as private company programmes.

ACARE has shown the efficacy of working together across the whole community of industry, research establishments, universities, governments, regulatory authorities, and the European Commission.

Since 2000, society's perception of Air transport has changed and in the future, aviation is likely to face even more radical challenges.

The present publication explains why a new vision "Towards 2050" is essential to set a strategic direction for European Aeronautics and Air Transport on the revised horizon. Intended to act as a catalyst for high-level decision makers to stimulate further analysis, this booklet constitutes a reference document providing a multitude of precise information data within each of the aspects dealt with: Society, Economy, Environment, Technology and Operations.

• SOCIETY

Based on recent research on socio-economy and demand in future air transport, this chapter highlights a number of social factors determining mobility and air transport by 2050 with a deductive approach.

• ECONOMY

Here the document analyses the players and their markets of air transport industry, the current crisis – its impact and the way out –, general economy scenarios, the supply chain evolution, and various cooperation opportunities.

• ENVIRONMENT

Research into climate science, aircraft noise and air quality around airports over the last decade has provided a great deal of understanding about how aviation affects the local and global environment. The air transport sector is committed to achieve the greatest improvement in environmen-

tal performance, which needs that innovative solutions are made available at the right point in order to be built into the future generation of aircraft and air transport system.

• **TECHNOLOGY AND OPERATIONS**

This chapter looks at possible ways in which the whole Air Transport System (ATS) and its constitutive elements need to evolve and the technology that would be required to enable this evolution. So, new technology development approaches will be necessary.

To obtain this publication:
Via EU Bookshop http://bookshop.europa.eu

FLIGHTPATH 2050 : EUROPE'S VISION FOR AVIATION

Following the above document, this publication is the report of the High-Level Group on Aviation Research comprising representatives of key stakeholders in European aviation from the aeronautics industry, air traffic management, airports, airlines, energy providers and the research community. This high-Level Group produced this basic document which, after having recalled why Aviation is an invaluable asset for Europe, presents a vision for 2050 and the ways for achieving it.

"Vision 2050" fixes highly ambitious goals: (i) European citizens are able to make informed mobility choices; (ii) 90% of travellers within Europe are able to complete their journey, door to door, within 4 hours; (iii) flights arrive within one minute of the planned arrival time; (iv) an air traffic management system is in place that provides a range of services to handle at least 25 million flights a year of all types of vehicles; (v) a coherent ground infrastructure has been developed.

The European aviation vision 2050 is analysed in detail, successively taking into consideration the main characteristics of European air transport in 2050 and a number of imperatives: meeting societal and market needs, maintaining and extending industrial leadership, protecting the environment and the energy supply, ensuring safety and security. Imperatives which make mandatory to prioritise research, testing capabilities and education.

The last chapter "Achieving the Vision" proposes a research – and innovation – friendly environment for Europe. The High-Level Group proposes to establish a strategic advisory body for research and innovation that encompasses both aeronautics and air transport, and associates regulatory and institutional enablers. This "Strategic Advisory Body" should in particular urgently develop a New Strategic Roadmap to actively drive research and innovation in Europe.

To obtain this document:
Via EU Bookshop: http://bookshop.europa.eu

TRANSPORT AND THE ENVIRONMENT

This Policy Brochure is relating to transport and its effects on the environment. Produced by the TRKC (Transport Research Knowledge Centre) consortium on behalf of the Directorate-General for Energy and Transport (DG TREN), it aims to inform transport policy makers and to assist them in designing transport policies that take better account of the environmental impacts of transport on land, air, water and resources.

It is interesting to be known because the Aviation Sector is replaced within the whole problematic of Transport. It is structured around seven topics: transport and the environment – policy background – research context – research programmes – research results – what to do now? – what next? Regarding the last question, it is stated: "It is clear that neither a technological, nor a behaviour management approach alone will be sufficient to achieve many environmental targets. There is a requirement for a flexible package of alternatives that combines different approaches to achieve environmental goals. Research is needed on the design of such holistic solutions, and into the move to a lower carbon society."

A very rich bibliography complements the booklet.

To obtain this document:
Via EU Bookshop http://bookshop.europa.eu
www.transport-research.info

Dear readers,

Please, find below the links for the direct access to Volumes 1 and 2 of the CEAS Aeronautical and Space Journals:

- CEAS Space Journal Volume 1 (9 articles): **CEAS-Space-Vol1**
- CEAS Space Journal Volume 2 (10 articles) : **CEAS-Space-Vol2**
- CEAS Aeronautical Journal Volume 1 (6 articles): **CEAS-Aeronautical-Vol1**
- CEAS Aeronautical Journal Volume 2 (29 articles): **CEAS-Aeronautical-Vol2**

Note that until the end of this year the articles can be accessed freely.

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A RENAISSANCE IN SYSTEMS THINKING

By Paul Collopy

THE 1960s: A DECADE OF OPTIMISM

The 1960s were a decade of optimism and seemingly unbounded achievement in aerospace and throughout much of world culture. History will recognize the first moon landing as the iconic achievement, but we in aerospace remember that the Concorde, Mach 3 SR-71, and 747 were all being developed at the same time, and each in its own way was a stunning accomplishment. The sense that there was no limit to the reach of human accomplishment was also felt in the world of ideas. In this heady atmosphere, much attention and much credit was paid to systems thinking: a notion that technology, economy, social organizations, the human mind, and life itself could be understood and engineered if we would only pay as much empirical care to relationships between things as we paid to things themselves, and particularly if we deeply considered the relation between systems and their environment.

In technology development, systems thinking was implemented as the processes of systems engineering, which not only enabled our entry into space and the jet revolution in commercial aviation, but was also directly responsible for elegant implementations of computer systems and communication systems in the latter part of the twentieth century. In part because computers and communications are vital to aerospace systems (and because space systems have become a vital part of world communication systems), aerospace engineering has always participated in the leading edge of systems engineering.

Fig-1: NASA new Space Launch System, shown in this artist's image, can introduce a new era in complex system development, perhaps leading to human exploration of Mars. (Picture credit: NASA)

THROUGH THE LAST THREE DECADES

Through the last three decades, advances in systems engineering focused on refining processes, developing more powerful and user-friendly tools, and collecting disparate methods into a canon of accepted practice, often drawing in new technologies and ideas from software engineering.

TODAY: A RENAISSANCE

Today we are experiencing a renaissance in systems thinking, largely enabled by exponential growth in available computing power, leading to quantum improvements in modeling and simulation tools. Herbert Simon observed in the 1960's that optimal design choices were unreachable due to bounded rationality. However, 21st century rationality is not nearly as bounded as Simon's.

Model-Based Systems Engineering is moving

Most obviously, Model-Based Systems Engineering is moving away from specifications and written documentation toward a system development process founded on the interaction of an evolving model of the product with models of users and the environment.

But Model-Based Systems Engineering is only part of a larger revolt against the prevailing standard of collecting requirements from stakeholders and allocating them to system components. Instead, authors as diverse as Michael Griffin and Matthew May have pressed for elegance in system design, where the lead designer understands the customer but does not pander to every whim. Instead, a system is designed to do a limited number of functions very well. Rather than ignoring customers, elegant design depends on engineers understanding users better than the users understand themselves. Steve Jobs' designs of Apple products are among the best examples of this approach.

Value –driven design

Value-driven design is another movement away from enumerated requirements toward an expression of preference that is shared throughout the design team. Where systems engineering in the past would assign mass, reliability, and other requirements to an aircraft design and allocate these down to each component, value-driven design develops system trade factors between mass, reliability, and the rest, and passes these trade factors down to components as objective functions. In five short years, value-driven design progressed from a small community of interest in a Program Committee of the American Institute of

Aeronautics and Astronautics to broad support by prestigious design engineering and systems engineering professors and industry experts in a National Science Foundation-sponsored workshop last fall. The intellectual center of this movement is now in Europe, where several doctoral students are writing dissertations on aspects of value-driven design.

Probabilistic design

Significant change is also underway in all aspects of probabilistic design. Government customers and consumers are asking for products that are designed to be flexible and robust. When the goals of flexibility and robustness are married to design processes based on predictive modeling, the models necessarily become probabilistic. Moving beyond deterministic models is broadly beneficial – on close examination, all the phenomena modeled by systems engineers have some degree of uncertainty. Probabilistic design will allow new products and systems to exploit uncertainty rather than avoid or ignore it.

Finally, clear and rigorous probabilistic thinking is beginning to impact risk management processes in systems engineering. When an event has a probability of 20% rather than a red or yellow square, the expected impact can be quantified, so that the benefit of mitigation can be measured in monetary units. The result is more rational risk management plans, which will lead to higher quality and more efficient system verification and validation plans. Large aerospace systems development has endured a rough decade or two, with difficult programs, high costs and delays, and numerous cancellations. The future looks much brighter, and a reborn systems engineering discipline may be leading the way.

Bio note: Dr. Paul Collopy is Michael Griffin's deputy at the Center for System Studies at the University of Alabama in Huntsville, USA.

Captions:

Callout Box:

AIAA's Complex Aerospace Systems Exchange
11-13 September 2012
Pasadena, CA

With a focus on the development, integration, test, verification, and program management of robust and resilient aerospace systems, AIAA's first Complex Aerospace Systems Exchange (CASE) event will address system-level execution issues head on. This dynamic, engaging event will tackle some of the most important system development subjects facing aerospace chief engineers, program managers, and system engineering professionals today, such as minimizing cost overruns and delays, and mitigating late test failures. Participants will have the opportunity to hear lessons learned from recognized practitioners in each of these areas.

Learn more: http://www.aiaa.org/events/case

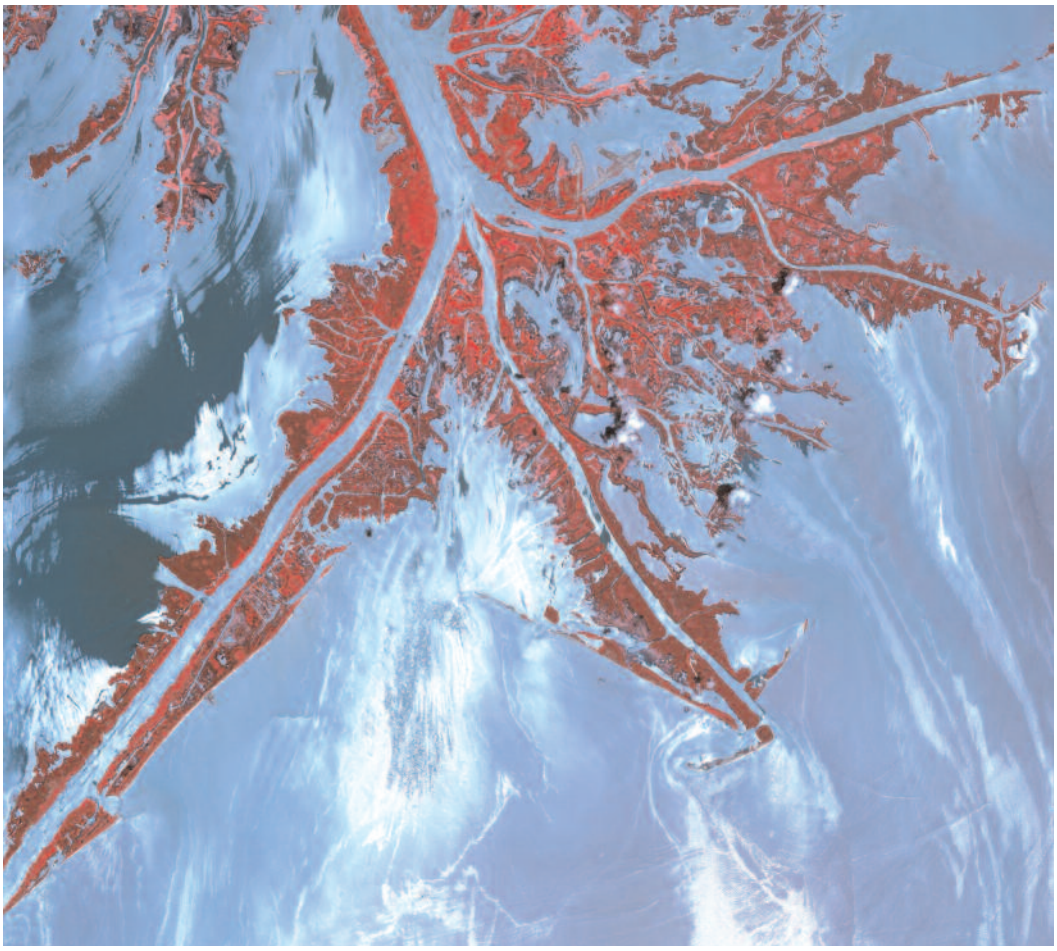

Fig-2: Terra Satellite false-color image of the Deepwater Horizon oil spill in the Mississippi River delta, emblematic of the challenges that confront systems engineering. An engineering risk management process without a rigorous mathematical foundation in probability was a major contributor to the Deepwater Horizon disaster. (Picture credit: NASA)

ABOUT "TARANIS", THE BRITISH DEMONSTRATOR OF UCAV

"TARANIS" IS A BRITISH DEMONSTRATOR OF UNMANNED COMBAT AIR VEHICLE (UCAV). IT IS BEING DEVELOPED BY BAE SYSTEMS WITHIN THE FRAMEWORK OF A TECHNOLOGY PROGRAMME. THE LATTER ALSO INVOLVES ROLLS-ROYCE, GE AVIATION SYSTEMS, QINETIC AND THE BRITISH MINISTRY OF DEFENCE. NAMED AFTER THE CELTIC GOD OF THUNDER TARANIS IT WILL EXPLORE AND DEMONSTRATE HOW EMERGING TECHNOLOGIES AND SYSTEMS CAN DELIVER BATTLE-WINNING CAPABILITIES FOR THE UK ARMED FORCES.

MISSION OBJECTIVES OF TARANIS

TARANIS is an unmanned warplane which is designed to fly between continents. It will carry a variety of weapons which will enable it to attack planes and also targets on the ground. It will utilise stealth technology making it difficult to detect and it can be controlled from anywhere in the world via satellite communications.

Note: the Strategic Unmanned Air Vehicles (Experiment) Integrated Project Team (SUAV (E) IPT) is responsible for directing the work required to establish the potential of Unmanned Air Vehicles.

DESIGN AND DEVELOPMENT

Responsibilities are distributed as follows:

- BAE Systems: prime contractor, responsible for the overall programme as well as for many of the technologies such as stealth and detection possibility, systems integration and system control infrastructure;
- BAE Systems and QinetiQ are working closely on all aspects relating to the autonomy of the system;
- GE Aviation Systems: fuel gauging systems and complete electrical power for the air vehicle;
- Rolls-Royce: propulsion system and installation in the vehicle (the aircraft is expected to use a Rolls-Royce Adour Mk. 951 turbofan);
- BAE Systems Australia is tasked with developing and supplying the flight control computing;
- Insyte (Integrated Systems Technologies), a subsidiary of BAE Systems, is providing C4ISTAR (Computers, Command, Control, Communications, Intelligence, Surveillance, Target Acquisition and Reconnaissance) support.

Specifications:

- Height = 4m
- Dimensions: 11.35m x 9.94m
- Weight = 8t
- Range: intercontinental
- Wingspan = 9.1m
- Engine thrust = 2,939 daN
- Maximum takeoff weight (MTOW): 8,000 kg

Development

The first steel was cut in September 2007 - the assembly began in February 2008 - on ground testing started in early 2009. The prototype was unveiled by BAE Systems at Warton Aerodrome, Lancashire, on 12 July 2010 (see picture). Flight trials will begin in 2012.

J.-P. S.

Article written from information provided by BAE Systems and the British Army Website.

A prototype unmanned combat aircraft of the future, "Taranis", has been unveiled by the British MOD for the first time on 12 July 2012. Credit: BAE Systems

DASSAULT NEURON UCAV UNMANNED AIR VEHICLE DEMONSTRATOR AT INTERNATIONAL PARIS AIR SHOW (IPAS) 2011

AT INTERNATIONAL PARIS AIR SHOW 2011, DASSAULT AVIATION PRESENTED ITS NEW PROJECT OF UCAV UNMANNED COMBAT AIR VEHICLE, the "nEUROn". THE AIM OF THIS DEMONSTRATOR IS TO PROVIDE THE EUROPEAN DESIGN OFFICES WITH A PROJECT ALLOWING THEM TO DEVELOP KNOW-HOW AND TO MAINTAIN THEIR TECHNOLOGICAL CAPABILITIES IN THE COMING YEARS.

THE AIM

This project goes far beyond the theoretical studies that have been conducted until now, as it plans the building and the flight demonstration of an unmanned aircraft.
It is also a way to implement an innovative process in terms of management and organisation of a European cooperative programme.
The main aim of the nEUROn programme is to demonstrate the maturity and the effectiveness of technical solutions, but not to perform military missions.
The essential technological challenges during the design phase are:

- The shapes of the air vehicle (aerodynamics, innovative composite structure, internal weapon bay);
- The technologies related to low observability issues;
- The insertion of the type of aircraft within the test area;
- The high-level algorithms necessary to the development of the automated processes;
- The place of the human factor within the mission loop.

The important technology to be demonstrated is the capability to carry and deliver weapons from an internal bay. Presently, European aircraft are designed with external loading capabilities for bombs and missiles.

THE PARTICIPANTS

To be fully effective, there is a single point of decision, the French Direction Générale de l'Armement (DGA), the French Defence Procurement Agency, and a single point of implementation, Dassault Aviation Company as prime contractor.
The Italian, Swedish, Spanish, Greek and Swiss governments acting together with their related industrial teams – Alenia, SAAB, EADS-CASA, Hellenic Aerospace Industry and RUAG – have joined the French initiative.

Dassault nEUROn UCAV Unmanned Combat air Vehicle at International Paris Air Show 2011.

EDA MILITARY AIRWORTHINESS AUTHORITIES CONFERENCE 2011

THE THIRD MILITARY AIRWORTHINESS CONFERENCE TOOK PLACE ON 6 AND 7 JULY 2011 IN WARSAW, TO COINCIDE WITH THE POLISH PRESIDENCY OF THE EU. THE CONFERENCE WAS JOINTLY ARRANGED BY THE POLISH MINISTRY OF DEFENCE AND THE EDA.
The objective is to create an EU-wide forum for Military Airworthiness Authorities (MAWA), the intention being to harmonize national military airworthiness regulations.
The conference received presentations from key military stakeholders, including EDA, MAWA, EU National Military Airworthiness Authorities (EU NMAAs), the Aerospace and Defence Industries Association of Europe (ASD), international NMAAs and the European Aviation Safety Agency (EASA) on how they achieve and ensure airworthiness in challenging and innovative programmes. This was set against the wider background of the EDA MAWA efforts to achieve greater harmonization of military airworthiness among EDA participating Member States.

A common theme was that of implementation of European Military Airworthiness Requirements (EMARs) and how this can be achieved building upon existing adaptation of EASA regulations into national military airworthiness regulations and also previous and on-going transformation of national airworthiness organisations.

From European Defence Agency information, 14 July 2011.

MAWA Conference 2011. Credit EDA

ONE SOYUZ LAUNCHER, TWO GALILEO SATELLITES

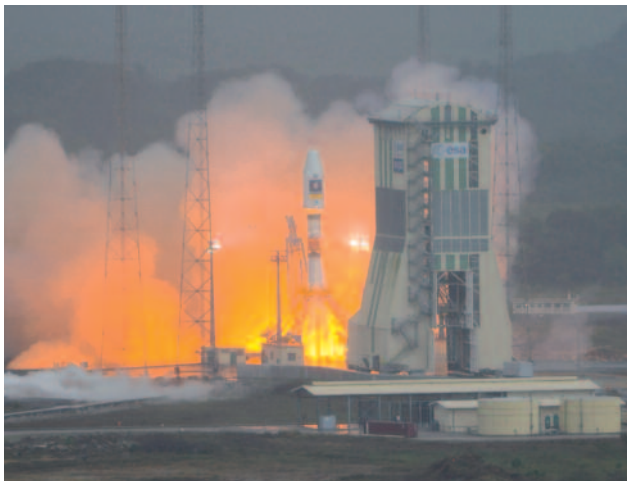

Figure 1: 21 October 2011, 10:30 GMT: liftoff of Soyuz flight VS01, the launch of the first two Galileo IOV satellites. Credit ESA/CNES/ARIANESPACE/Optique Vidéo du CSG.

ON 21 OCTOBER 2011, THE PAIR OF SATELLITES FOR EUROPE'S GLOAL NAVIGATION SATELLITE SYSTEM HAS BEEN LOFTED INTO ORBIT BY THE FIRST RUSSIAN SOYUZ VEHICLE EVER LAUNCHED FROM EUROPE'S SPACEPORT IN FRENCH GUIANA (CSG: CENTRE SPATIAL GUYANAIS) IN A MILESTONE MISSION.

The Soyuz VS01 flight, operated by Arianespace, started with liftoff from the new launch complex in the CSG, at 10:30 GMT on 21 October 2011.

All the Soyuz stages performed perfectly and the Fregat-MT upper stage released the Galileo satellites into their target orbit at 23 222 km altitude, 3 hours 49 minutes after lift-off. This was a real historic launch because a genuine European system such as Galileo was performed by the legendary Russian launcher that was used for Sputnik and Yuri Gagarine, a launcher that will, from now on, lift off from the CSG. This was the first Soyuz to be launched from a site outside of Baikanur (Kazakhstan) or Plesetsk (Russia).

The two satellites are now being controlled by a joint ESA and CNES (Centre National d'Etudes Spatiales) in Toulouse. After these initial operations, they will be handed over to SpaceOpal, a joint company of the German Aerospace Centre (DLR) and Italy's Telespazio, to undergo 90 days of testing before being commissioned for the IOV phase.

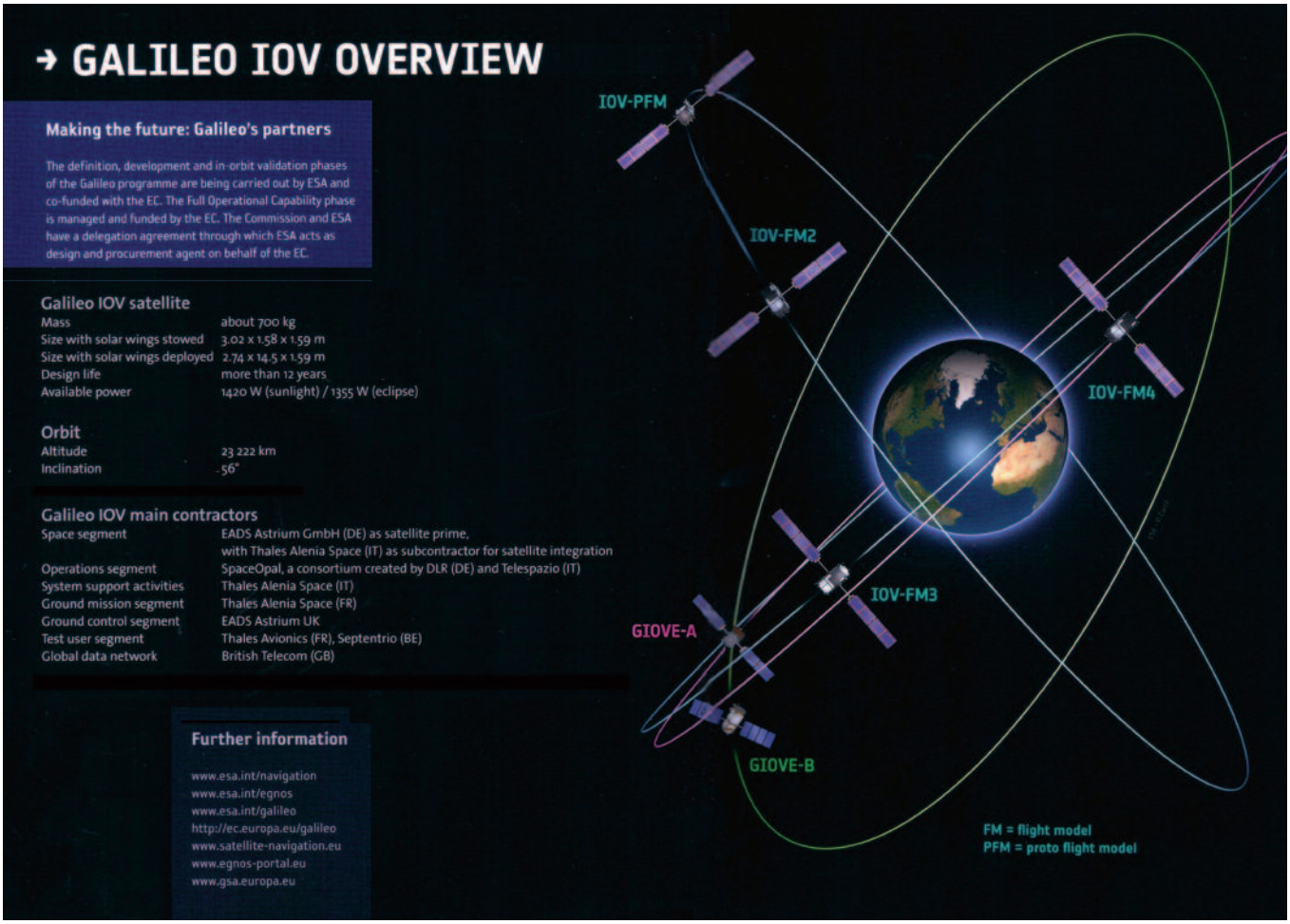

Figure 2 : Galileo IOV overview- - Credit ESA

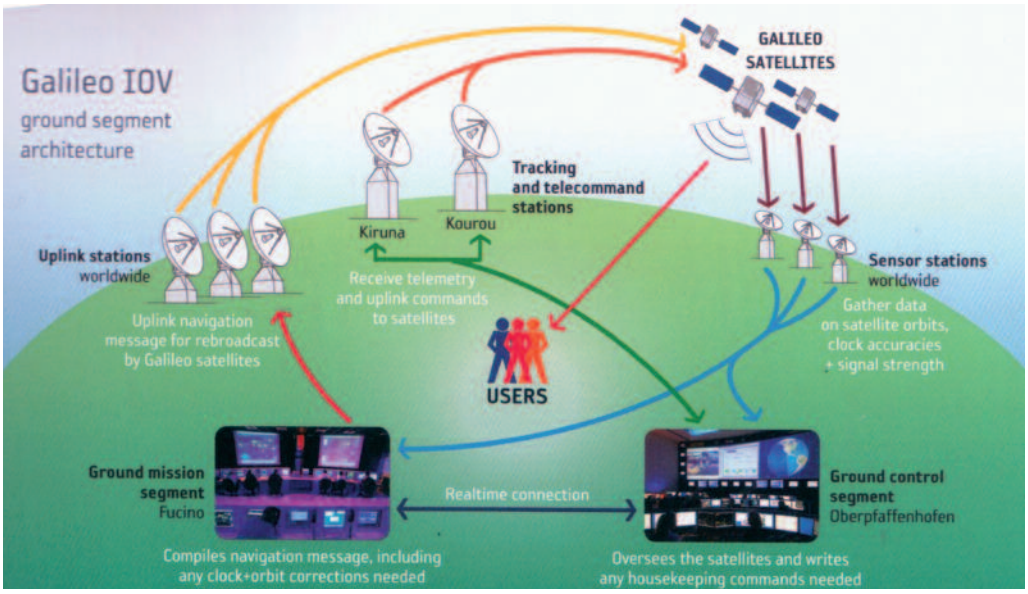

Figure 3: **Galileo IOV ground segment architecture.** Credit ESA

- GMS, the Ground Mission segment, in the Fucino Control Centre in Italy, provides cutting-edge navigation performance at high speed around the clock, processing data collected from worldwide network at stations. It has 2 million lines of software code, 500 internal functions, 400 messages and 600 signal circulating through 14 different channels.
- CGS, the Ground Control Segment, in the Oberpfaffenhofen Control Centre in Germany, monitors and controls the constellation with a high degree of automation.
- Two Tracking and Telecommand Stations: at Kiruna (Sweden) and Kourou (CSG French Guiana).
- Uplink stations, a network of stations to uplink the navigation and integrity data.
- Sensor stations, a global network providing coverage for synchronization and orbit measurements.
- Data dissemination network interconnecting all Galileo ground facilities.

Jean-Jacques Dordain, Director General of ESA, said:
"*This launch represents a lot for Europe: we have placed into orbit the first two satellites of Galileo, a system that will position our continent as a world-class player in the strategic domain of satellite navigation, a domain with huge economic perspectives." […] These two historical events are also symbols of cooperation: cooperation between ESA and Russia, with a strong contribution of France; and cooperation between ESA and the European Union, in a joint initiative with the EU.*"

WHAT WILL HAPPEN NEXT

The Galileo In-Orbit Validation (IOV) quartet

These two satellites are the first ones which will form the 'IOV quartet'. The next two Galileo satellites are scheduled for launch in summer 2012.

This quartet will form the operational nucleus of the full Galileo constellation. The four satellites will prove that the space and ground segments meet many of Galileo's requirements and will validate the system's design in advance of completing and launching the rest of the constellation.

The Galileo Initial Operational Capability (IOC)

The four satellites of the IOV quartet are fully representative of the operational satellites which will follow them into orbit. Fourteen more will combine with the four IOVs to provide, by mid-decade, the 'Initial Operational Capability': 18 satellites and ground segment – Open Service, Search and Rescue, Public Regulated Service.

The Galileo Full Operational Capability (FOC)

This then will lead into the next phase, the final 'Full Operational Capability', in the second half of the decade: 18+12= 30 satellites, in fact 27 operational satellites plus 3 spares, and ground segment – All Services. The satellite family will circle Earth in three medium orbits, at the altitude of 23 222 km with an inclination of 56° to the equator, in planes separated by 120° longitude.

A BRIEF HISTORIC RECALL: GIOVE-A AND GIOVE-B

- GIOVE-A, flown on a Soyuz launcher from Baikonur Cosmodrome in Kazakhstan on 28 December 2005, was constructed by Surrey Satellite Technology Ltd (UK). Carrying the first Galileo signal generator ever flown into orbit, it was equipped with phased-array antenna of individual L-band (1200-1600 MHz frequency range) elements to illuminate the entire visible Earth beneath it, as well as two very stable rubidium atomic clocks. Two types of radiation detectors monitor its orbital environment.
- GIOVE-B, flown on a Soyuz launcher from Baikonur Cosmodrome in Kazakhstan on 27 April 2008, was built by a consortium headed by Astrium and Thales. It features an improved phased-array antenna of individual L-band elements illuminating the visible Earth, a signal-generation unit able to produce new types of signals, an exceptional stable passive hydrogen maser clock along with a rubidium clock, and a new radiation sensor to monitor its surroundings.

SOME WORDS ON ATOMIC CLOCK TECHNOLOGY

Atomic clocks placed in orbit are the underlying technology behind satellite navigation. Highly accurate atomic clocks rely on switches between energy states of an atom's electron shell, included by light, laser or maser energy. Thanks to long-term ESA research and technology development, two separate atomic clock technology have been developed and qualified in Europe, then proved suitable for the harsh environment of space by the GIOVE missions.
Galileo carries both types of atomic clocks: (i) a smaller rubidium atomic clock, accumulating 3 seconds' error ever million years; (ii) a bulker hydrogen maser clock, accumulating 1 second's error every 3 million years.

GLOBAL MONITORING FOR ENVIRONMENT AND SECURITY (GMES)

FASTER SATELLITE DATA FOR MORE GMES USERS

The aim of GMES is to provide accurate, timely and easily accessible information with a view to improving the management of the environment, understanding and mitigating the effects of climate change and supporting decision-making in emergency and crisis situations. To achieve these goals, GMES relies on a wide range of satellite data from over 40 European and international space missions, along with other environmental datasets, provided through the Data Access System, its space component, and thanks to which Earth observation data are made available in a unified manner to European service providers on Earth's land, oceans and atmosphere, climate, security and emergency response management.

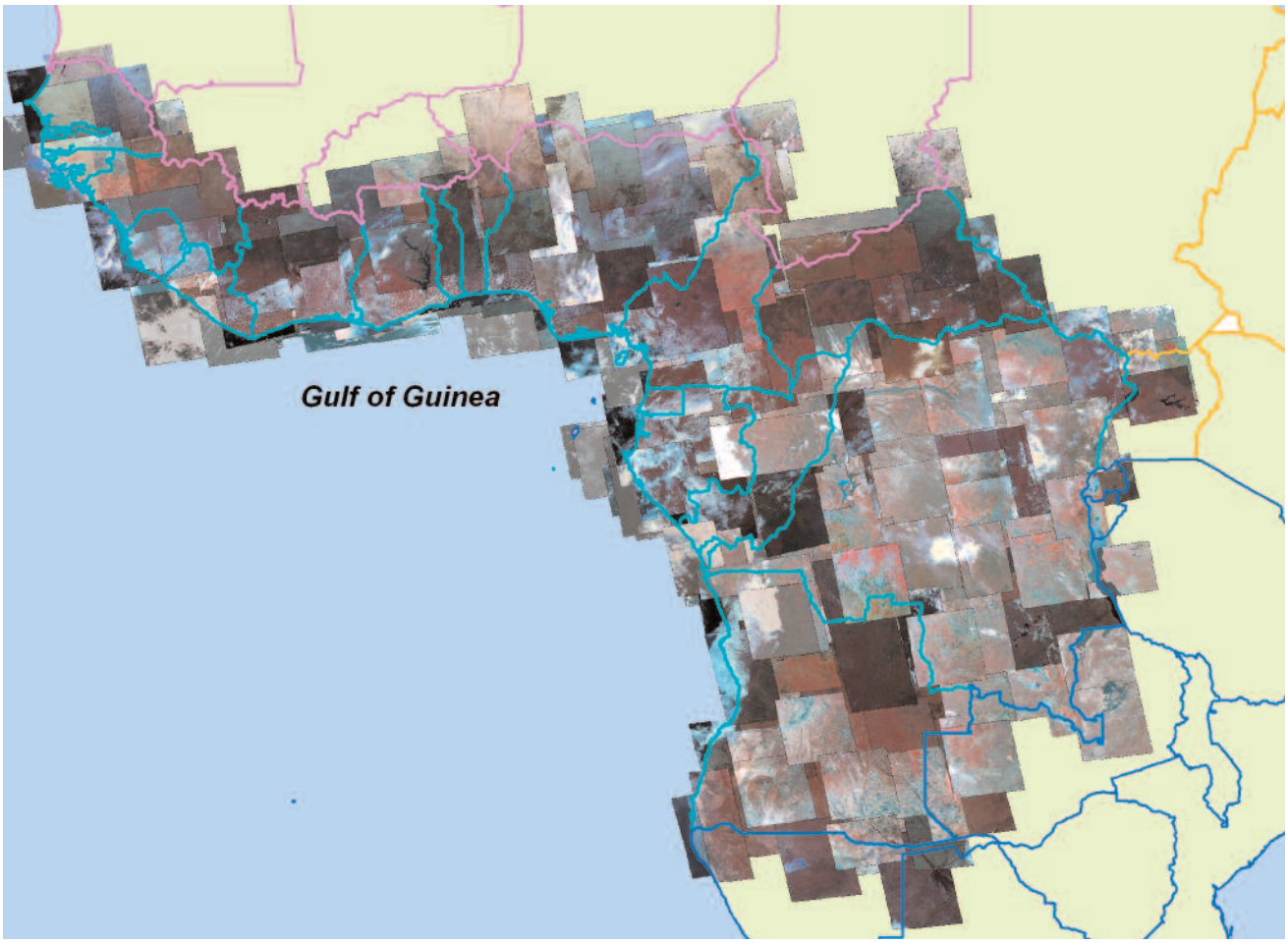

Figure 1: Disaster monitoring of Africa. Credit ESA

Figure 2: GMES Masters Competition winners in Munich, 19 October 2011. Credit ESA

Since 2007, it has provided a wide range of Earth observation data to GMES Services: high-resolution images for the European Urban Atlas, images and data for monitoring land use at European level and delivering validated biophysical products across Europe, radar and optical images for emergency mapping during crisis and made many other on-demand products based on available satellite imagery. **Now**, the Data Access System is entering a new phase that will last **until 2014**. Data will be available faster and easier to a larger community of users through a **dedicated web-based portal**. The latter will integrate all elements into a comprehensive online catalogue; it will be used for all data requests and transactions. The objective of this new system is to reduce the response time to data requests, especially when dealing with urgency situations such as natural and man-made disasters.

WINNING IDEAS OF THE FIRST GMES MASTERS COMPETITION

On 19 October 2011, the winners of the first European Earth-monitoring competition - the GMES Masters – have been awarded in Munich.

The competition was created by ESA, the Bavarian Ministry of economic Affairs, the German aerospace Centre (DLR) and T-Systems. It is supported by the EU. It aimed to encourage students, researchers and entrepreneurs, new companies and small to medium enterprises (SMEs) to develop new applications for data from the GMES initiative.

The winning projects exploit social media to advance Earth observation applications:

– DeforestACTION Earth Watchers, an innovative approach to rainforest conservation, submitted by the Dutch company Geodan;
– AquaMap, a user-friendly application providing near-real time water quality information to private users, submitted by the German company EOMAP GmbH;
– A service that uses GMES and related data resources to monitor and assess the environmental impacts associated with the discharge of cooling water from thermal power plants, submitted by EOPPAD;
– The T-Systems Cloud Computing Challenge was won by Canada's UrtheCast company (which is building the world's first continuous, high-definition video feed of planet Earth from space to be streamed online and fully integrated with social media);
– The SSRS (Satellite Rapid Response System), submitted by the Italian company Chelys was the winner of the Best Service Challenge. This SSRS makes data available only two minutes after acquisition to facilitate quick responses in emergency situations.

For a complete description of all winning ideas, please consult: www.gmes-masters.com

J.-P.-S. From Information provided by ESA www.esa.int

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President and CEAS Trustee: Dott.Triantafillos Tsitinidis
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Markku Roschier – markku.roschier@almt.fi
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Secretary General and CEAS Trustee:
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Polish Society of Aeronautics and Astronautics (PSAA)

Nowowiejska 24 – 00665 Warsaw – Poland
CEAS Trustees: Prof. Zdobyslaw Goraj
goraj@meil.pw.edu.pl
Prof. Jacek Rokicki – jack@meil.pw.edu.pl

Romanian Aeronautical & Astronautical Association (RAAA)

220D Iuliu Maniu Ave - 061126 Bucharest 6 - Romania, P.O. 76, P.O.B. 174 www.comoti.ro
CEAS Trustees: Dr Valentin Silivestru
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Prof. Ion Fuiorea – ifuiorea@yahoo.com

Royal Aeronautical Society(RAeS)

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Schweizerische Vereinigung für Flugwissenschaften/Swiss Association of Aeronautical Sciences (SVFW)

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Central Aerohydrodynamic Institute Russian Aerospace Society (TsAGI)

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ved@tsagi.ru – www.tsagi.com
CEAS Trustee: Andrey Shustov – shustov@tsagi.ru

Associate Members

Associate Member: Czech Aeronautical Society (CzAeS)

Faculty of Mechanical Engineering/
Dept Aerospace
Karlovo namésti 13 - 121 35 Praha 2 - Czech Republic - Daniel.Hanus@fs.cvut.cz
www.czaes.org

EUROAVIA

Kluyverweg 4 - 2611 TS, Delft, NL
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Von Karman Institute for Fluid Dynamics (VKI, Belgium)

Chaussée de Waterloo, 72 - B- 1640 Rhode-St-Genèse - www.vki.ac.be arts@vki.ac.be

Societies which have signed a Memorandum of Understanding with the CEAS:

American Institute of Aeronautics and Astronautics (AIAA)

1801 Alexander Bell Drive, Reston, VA 20191
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carols@aiaa.org – www.aiaa.org

Chinese Society of Astronautics (CSA)

PO Box 838 – 10830 Beijing, China (PRC)
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International Council of the Aeronautical Sciences (ICAS)

President: Dr-Ing. Detlef Müller-Wiesner
Executive Secretary: Axel Probst
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Godesberger Allee 70 – D- 53175 Bonn
icas@icas.org – www.icas.org

Korean Society for Aeronautical and Space Sciences (KSAS)

Prof. Seung Jo Kim
Prof. In-Seuck Jeung
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YEAR 2012

9-12 January	• **AIAA** – 50th AIAA Aerospace Sciences Meeting – Nashville (Alabama) – Nasville Convention Center - www.aiaa.org/
10 January	• **SESAR JU** – Workshop – KPIs in Air Transport – London (UK) – University Westminster – www.sesarju.eu
19-21 January	• **Bahrain Airshow Org** – Bahrain International Airshow 2012 – Bahrain (Saoudi Arabia) – Sakhir Airbase www.bahraininternationalairshow.com
21 January	• **EDA** – EDA's Annual Conference 2012 – Defence Co-operation – Brussels (Belgium) – EDS/HQ - www.eda.europa.eu
24-26 January	• **AIAA** – AIAA Strategic and Tactical Missiles Conference – Missile Science Conference Montery (CA, USA) – www.aiaa.org/events
05 -07 February	• **IATA** – IATA Legal Symposium – Shanghai (China) – www.iata.org
11-14 February	• **Experia Events Pte Ltd** – Rotorcraft HAI Heli Expo 2012 – Dallas (TX, USA) www.milavia.net/airshows/calendar
14-19 February	• **Experia Events Pte Ltd** – Singapore Airshow 2012 – Singapore – New Changi Exhibition Center – www.singaporeairshow.com
15-16 February	• **IATA – RAeS** – IATA Training and Qualification Initiative (ITQI) – London – RAeS / HQ www.aerosociety.com/events or www.iata.org/itqi
15-16 February	• **FAA** – 15th Annual FAA Commercial Space Transportation System conference – Washington DC (USA) – Convention Center – www.faa/gov/news/conferences_events
28 Feb.-1 March	• Asian Business Aviation – ABACE 2012 – Shanghai –China) – Hongqiao Airport – www.milavia.net/airshows/calendar
29 Feb.-1 March	• **EUROCONTROL – FSF – ERA** – International Air Safety seminar 2012 – Dublin (Ireland) www.flightsafety.org
07-09 March	• **ACI Europe** – 4th ACI Europe & ACI World Airport Economy & Finance – London (UK) Grange Tower Bridge Hotel – www.avi-europe.org/events.html
08-09 March	• **FAA** – 37th Annual FAA Aviation Forecast Conference – Washington DC (USA) 801 Mount Vernon Place – www.faa/gov/news/conferences_events
13-15 March	• **IATA** – World Cargo Symposium – Kuala Lampur (Malaisia) – www.iata.org
20-23 March	• **ESA** – European Conference on Spacecraft Structures, Materials and Environmental Testing – ESTEC. Noordwijk (NL). www.conferences.esa.int/
04-07 April	• Aero Expo Marrakech 2012 – Marrakech (Morocco) – Menera Airport www.milavia.net/airshows/calendar
23-25 April	• **ACI Europe** – 21st ACI Europe Airport Trading Conference & Exhibition – Oslo Airport – Oslo (Norway) – www.aci.conferences
18-19 April	• **FSF** – Corporate Aviation safety Seminar – EASS – San Antonio (TX, USA) – Grand Yatt San Antonio www.flightsafety

23-25 April	• **ACI Europe** – 21st ACI Europe Airport Trading Conference & Exhibition – Oslo Airport – Oslo (Norway) – www.aci.conferences www.aci-europe.org/events.html
07-09 May	• **IATA** – 25th IATA Ground Handling Council – Prague (Czech Republic) – www.iata.org
14-16 May	• **EBAA/NBAA** – Business Aviation EBACE 2012 – Geneva (Switzerland) – International Airport – www.ebace.org
22-24 May	• **AIAA** – Global Space Exploration Conference – GLEX – Washington DC (USA) – www.aiaa.org
22-25 May	• **IAF/AIAA** – Global Space Exploration Conference – L'Enfant Plaza Hotel – Washington DC (USA) – www.iaf.com
04-06 June	• **AIAA/CEAS** – 18th AIAA/CEAS Aeroacoustics Conference – Colorado Springs (CO, USA) – www.aiaa.org
10-12 June	• **IATA** – IATA's Annual general Meeting – Beijing (China) – www.iata.org
11-14 June	• **NVvL/SFTE** – 23rd Society of Flight Test Engineers SFTE Symposium – Amsterdam (NL) – National Aerospace Laboratory NLR – Christophe.Hermans@nlr.nl
18-20 June	• **AIAA** – 3rd International ATOS and 6th IMAPP (Product support Process) – Delft (NL) – www.aiaa.org/events
18-20 June	• **AIAA/IAC** – 3rd International Air Transport and Operations Symposium (ATOS)/6th International Meeting for Aviation Product Support Process (IMAPP) – Delft University of Technology – Delft (NL) – www.aiaa.org
25-28 June	• **AIAA** – 42th AIAA Fluid Dynamics Conference – Sheraton – New-Orleans (USA) – www.aiaa.org/
09-15 July	• **Farnborough Org** – International Farnborough Air Show – Farnborough (England) www.farnborough.airshow
11-14 July	• **AIAA** – 9th International Conference on Mathematical Problems in Aeronautical Sciences – Vienna (Austria) – www.icnpaa.com
14-22 July	• **COSPAR** – 39th COSPAR Scientific Assembly – Mysore (India) – N Murthy Centre of Excellence – www.cospar2012india.org/
13-16 August	• **AIAA** – AIAA GNC Conference – Minneapolis (Min, USA) – Hyatt Regency – www.aiaa.org/
13-16 August	• **AIAA** – Aerospace Modeling and Simulation Technologies Conference – Minneapolis (Min, USA) – Hyatt Regency – www.aiaa.org/
13-16 August	• **AIAA** – Astrodynamics Specialist Conference – Minneapolis (Min, USA) – Hyatt Regency – www.aiaa.org/
31 August- 02 September	• Canadian International Air Show – CIAS 2012 – Toronto (Ontario, Canada) – National Exhibition Toronto – www.milavia.net/airshows/calendar/
03-07 September	• **EUMETSAT** – 2012 EUMETSAT Meteorological Satellite Conference – Sopot (Poland) – www.conferences.eumetsat.int

04-07 September • **NVvL/CEAS** – European Rotorcraft Forum – ERF 2012 (38th ERF) – Amsterdam (NL) – Amsterdam Marriott Hotel - hermans@nlr.nl ERF2012@nlr.nl> - ERF 2012 Chairman: Kees Baker k.bakker@concepts.nl

ERF 2012

The 38th European Rotorcraft Forum, organised by the Netherlands Association of Aeronautical Engineers (NVvL) in association with the CEAS will take place in Amsterdam from 4 to 7 September 2012.
Session subjects will include: Acoustics, Aerodynamics, Aircraft Design, Aircraft Systems & Avionics, Airworthiness, Cost Reduction, Crew Station & Human Factors, Dynamics, Engine & Propulsion, Flight Mechanics, Manufacturing, Operational Aspects & safety, Simulation & Training, Structures & Materials, Test & evaluation.
A special session will be dedicated to the **NH90 programme**.

Key Dates & Deadlines:

- Submission of abstract: 28 February 2012
- Notification to Authors: 15 April 2012
- Programme & Registration forms available: 31 May 2012
- Submission of final paper: 15 July 2012

Best Paper

The author presenting the best paper at ERF 2012 will receive the Ian Cheeseman Award, including also the possibility for presenting the paper also at the American Helicopter Society Annual Forum in 2013.

09-14 September • Japan International Aerospace Exhibition 2012 – Nagoya (Japan) – Aerospace Exhibition Center www.milavia.net/airshows/calendar

11-13 September • **AIAA** – AIAA Space 2012 Conference and Exposition – Pasadena (Cal, USA) – Hilton Convention Center – www.aiaa.org/

11-16 September • **BDLI Messe Berlin** – ILA Berlin 2012 – Brandenburg Airport – Berlin (Germany) www.ila-berlin.de/ila2012/home/index.cfm

23-28 September • **ICAS** – ICAS2012 Congress – Brisbane, Australia - secr.exec@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
www.icas.org

24-28 September • **EAAP** – Aviation Psychology and Applied Human Factors – Working towards zero accident – with a special session on aviation economics – Villiasimius (Sardinia, Italy) – ATA Hotel Tanka Village – www.conference.eaap.net/register.html

27-29 September • **DLRK** – German Aerospace Association Home Event 2012 – Bremen (Germany) - www.dlrh2011.dglr.de/

1-5 October • **IAC** – 63rd International Astronautical Congress- IAC2012
Nostra D'oltremare Convention Center- Naples, Italy – www.iac2012.org

6-8 November • Heli Show Dubai 2012 – Dubai (UAE) – Dubai Airport – www.milavia.net/airshows/calendar

7 November • Europe's Securities Priorities –CEIS – SECDEF'11 – Brussels (Belgium) – Crowne Plaza Europa – www.securitydefenceagenda.org

8-9 November • **CSDP** – 10th Congress on European Security and Defence – Berlin (Germany) www.euro-defence.eu

13-18 November • **CSDP** – Air Show China 2012 – Zhihai, Guangdong (China) – www.milavia.net/airshows/calendar/

ERF
European Rotorcraft Forum

38th
2012

European Rotorcraft Forum

September 4 - 7 Amsterdam

38th ERF

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