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## TOUCH DOWN!

12 NOVEMBER 2014 AT 15:34 UTC, 'PHILAE', THE ROSETTA MISSION'S LANDER TOUCHES DOWN ON THE NUCLEUS OF COMET 67P/CHURYMOV-GERASIMENKO: SPACE EUROPE MARKS QUITE AN IMPORTANT DATE IN THE HISTORY OF SPACE EXPLORATION .

- 1 THIS IMAGE CONFIRMS THAT 'PHILAE' IS ON THE SURFACE OF THE COMET
- 2 THE ROSETTA MISSION CREW MEMBERS AT THE EUROPEAN OPERATIONS SPACE CENTRE IN DARMSTADT, GERMANY, CELEBRATE 'PHILAE' SUCCESSFUL LANDING
- 3 IN THE PREMISES OF THE 'PHILAE' SCIENCE OPERATIONS AND NAVIGATION CENTRE IN CNES, TOULOUSE, FRANCE, THIS IS THE RELIEF AND THE EXPLOSION OF JOY

## 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), PSAA (Poland), AAAR (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
- Aerospace Events Calendar – [www.aerospace-events.eu](http://www.aerospace-events.eu)

### RELATIONSHIPS AT A EUROPEAN LEVEL:

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

### EUROPEAN PROFESSIONAL RECOGNITION:

- Directory of European Professionals

### HONOURS AND AWARDS:

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

### YOUNG PROFESSIONAL AEROSPACE FORUM

### SPONSORING

## THE CEAS MANAGEMENT BOARD

### IT IS STRUCTURED AS FOLLOWS:

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

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

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## EDITORIAL

**12 NOVEMBER 2014: QUITE AN IMPORTANT DATE IN THE HISTORY OF SPACE EXPLORATION!**

Jean-Pierre Sanfourche  
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CEAS Quarterly Bulletin

On 12 November afternoon, I have lived in real time from the auditorium of the City of Science and Industry in Paris the extraordinary moment of Rosetta mission when the probe 'Philae' dropped and landed on the surface of the nucleus of Comet 67P/Churyumov-Gerasimenko. As soon as it was confirmed by ESA/ESOC (European Space Operations Centre, Darmstadt, Germany) and the team of SONC (Science Operations and Navigation Centre, CNES, Toulouse, France), it was the explosion of joy, everybody spontaneously getting up to applaud the feat, having the feeling of attending a special episode of our Solar System exploration. Was not this 'landing' somehow recalling the descent of the American lunar module 'LEM' to the Moon in July 1969? As a matter of fact, this was the culmination of an incredible bet: to post on a comet located more than 510 million kilometres from Earth, a sophisticated space probe after 10 years in space and about 6.5 billion kilometres travel between planets: what a reward for the hundreds of scientists, engineers and technicians involved for so many years in Rosetta mission!

Astrophysicist André Brahic punctuated his congratulations by repeating the famous declaration he made some years ago: "*The 21<sup>st</sup> century will be space or will not be*" to reaffirm how space research is important for the future of mankind.

Personally when I was back at home, I said to my family: "*I have just lived this afternoon one among the most noteworthy moments in my life.*"

So, in the continuation of the article I published in the previous bulletin about the successful setting of Rosetta in orbit around the comet on 6 August, I am happy to dedicate in this present issue a short paper summarizing the sequence of 'Philae' landing on 12 November.

In addition to the pure science knowledge to which Rosetta mission is contributing, it is sure that many technology developed for space will lead to major advances

in technology, for instance in the field of solar cells, and in significant advances for European industry.

In the area of education and careers, lectures delivered by teachers and engineers on missions like Rosetta should also inspire, fascinate and help to get more young brilliant people interested in aerospace activities. Rosetta mission has made the undisputable demonstration that when they are organised in a perfectly integrated manner like within the framework of the European Space Agency, Europeans are able to take up the most difficult challenges.

Is it not the best possible example offered to the present actors of European Union's construction?

## CONTENTS

## LIFE OF THE CEAS

- PRESIDENT'S MESSAGE -----5
- LATEST BOARD OF TRUSTEES MEETING -----6
- CEAS2015 CONFERENCE AT A GLANCE -----7

## AERONAUTICS SCIENCES

- ICAS 2014 -----8

## CIVIL AVIATION

- CIVIL UAV/RPAS -----9-10
- EASA -----11-12
- SESAR -----12-13
- ACI EUROPE 'AIRPORT EXCHANGE' -----13-17

## AEROSPACE DEFENCE AND SECURITY

- FCAS -----18
- A400M RAF -----19

## SPACE

- ROSETTA/PHILAE -----20-23
- NEWS FROM ESA -----24-25

- EVENT CALENDAR -----26-27

## CEAS PRESIDENT'S MESSAGE

### “CHALLENGES IN EUROPEAN AEROSPACE”



This last quarter of 2014 there were two major European Aerospace events, which both show the high standard of Europe's scientific, technological and industrial capabilities.

Above all events, the landing of the Rosetta Lander 'Philae' on the surface of Comet 67P/Churyumov-Gerasimenko on 12 November is a scientific and technological feat which constitutes a memorable first in the exploration of our Solar System and quite a remarkable mark in the history of space research, confirming the very high ranking place of Space Europe in the world. Due to the importance of the event, the Editor-in-Chief Jean-Pierre Sanfourche publishes in this issue a short dossier dedicated to the 'Philae' landing, which comes in the continuation of his article in the previous Issue (3-2014), reporting on the life of Rosetta mission from its launch in 2004 until the post in orbit around the comet of the Rosetta's orbiter on 6 August 2014, so that I do not extend more myself on the subject.

On 30 September the latest Airbus airliner, the A350-900 XWB got its EASA (European Aviation Safety Agency) Type Certificate after the five test aircraft had accumulated over 2600 flight test hours. On 15 October EASA approved the A350-900 for ETOPS 370, allowing it to fly for more than 6 hours on one engine. On 14 November this was followed by the FAA (Federal Aviation Administration) Type Certificate. The Airbus A350 is made of 53% composites, 19% Aluminium/Lithium and 14% of Titanium. The avionics will be a further development of the Integrated Modular Avionics of the A380. The A350 will be a strong competitor of the Boeing 787 and 777: already 750 A350's are sold to 39 customers worldwide.

Regarding the life of CEAS, the Board of Trustees meeting which took place on last 17 October in Brussels was the occasion to give a new impulse to our Strategy for the

years 2015-2020. A questionnaire had been sent to the presidents of the CEAS Member Societies. A strong signal was the felt necessity to increase CEAS visibility and multiply the contacts in Brussels with, among others, the European Commission and ASD (AeroSpace and Defence Industries Association in Europe). Furthermore the imperative necessity to strengthen our financial situation was expressed. How? in particular by increasing the number of CEAS Corporate Members and by asking these Corporate Members for a financial contribution to CEAS. It was also felt necessary to reinforce the links with the European Research Establishments, notably by means of a Memorandum of Understanding (MOU) with the Association of European Research Establishments (EREA). On 10 December at the EREA Board Meeting in Brussels, I had the opportunity to present CEAS and discuss the possibilities of an EREA-CEAS MoU.

Besides, the preparation for the CEAS 2015 Conference in Delft is in full swing. On 15 November, over 200 abstracts had been received from 24 countries.

A great number of Keynote Speakers have already stated that they would give lectures. Among them are CTO of Airbus Jean Botti, the ACARE Chairman Peter Hartman, the Commander of the RNALF Sander Schnitger, the EDA Capabilities, Armament and Technology Director Peter Round, the ACARE Chairman Peter Hartman, the Chairman and CEO of Fokker Technologies Hans Buethker, the CEO of the Association of European Airlines Athar Husain Khan, the Director of ESTEC Franco Ongaro, the Director of Clean Sky Eric Dautriat, the Director of SESAR Florian Guillermet, the Chairman of ACARE WG 5 and DLR Board Member for Aeronautics Rolf Henke, the Dean of the Aerospace Faculty of TU-Delft Hester Bijl. They will deliver speeches and participate in the panel discussions on the Challenges of the European Aerospace Industry, Airlines and Air Traffic Management, Air Force Operations and Research Infrastructure and Education.

The Conference Programmes Committee and Organising Committee are on deck to prepare for the success of CEAS2015 Delft Conference.

Fred Abbink



## THE 28<sup>TH</sup> BOARD OF TRUSTEES MEETING

**The 28<sup>th</sup> Trustees Board Meeting was held on Friday 17 October at Meeting room Condorcet, ESA office in Brussels, Avenue Cortenbergh 52.**

### Welcome Address

CEAS President Fred Abbink welcomed the attendees, especially the RAeS representatives, Ms Emma Bossom and Mr David Chinn, and LAETA guest, Prof. Campos. He then briefed on his participation to the ICAS Congress (St Petersburg, Russia, 7-12 September) where he had the opportunity to present the CEAS to the delegates in the same manner as Ms Sandra Magnus, AIAA Technical Director, did for the AIAA.

### ELECTION OF TEMPORARY TRUSTEES

Ms Oliver-Herrero informed that the RAeS had nominated Emma Bossom and David Chinn to become new trustees, replacing David Marshall and Paul Bailey. Unanimous agreement was given to elect Emma Bossom and David Chinn as Temporary Trustees to complete the mandate of the trustees they replace.

### FINANCIAL REPORT

Ms Hillenherms presented the Finance Report dated 15 October 2014, which shows a sound situation. Full power and authority were given to Ms Hillenherms for freely administering and dispose of La Caixa CEAS bank account jointly with Ms Oliver-Herrero.

### CEAS Mission, Vision and Strategy 2015-2025

President Abbink presented the CEAS Strategic Plan progress report, in particular the answers from 3AF, DGLR, HAES, NVvL and RAes given to the list of questions which had been established during the Board of Trustees meeting held on 10 June at ESA/ESTEC.

After discussions, a number of immediate tangible actions were decided:

To inform the EU about CEAS plans as regards Open publication of CEAS Conference papers and to ask for possible EU financial support to realise this;

To investigate potential European Aerospace Societies willingness to become CEAS Members: AIRBUS Group, Rolls Royce, etc;

To investigate possible additional European Aerospace Organisations to become CEAS Corporate Members: ASD, EREA, EASA, EUROCONTROL;

To start writing MOUs with EREA and ASD;

To identify eminent European speakers in view of CEAS Member round trips;

To update the list of Aeronautics and Space Technical Committee Members for the CEAS biennial Conferences.

### ABOUT MEMBERSHIP

LAETA, the Portuguese national network for research in transport and energy, and aerospace, comprises 4

research institutions: one of them is the Centre of Aerospace Science and technology (CCTAE) – has shown interest to join CEAS. Prof. Luis Braga Campos introduced this Foundation, its mission and visions, and then presented the aeronautical activities in Portugal.

### Moscow Institute

Having shown interest in CEAS membership, the Moscow Aviation Institute – a Russian National Research University – could join the CEAS as Corporate Member.

## CEAS2015 CONFERENCE

A long time was devoted to the preparation of the Delft Conference, 7-11 September 2015. The upcoming key dates and deadlines are as follows:

- 01 February = Abstract selection ready, notification to authors;
- 01 March = Final Programme and registration opened;
- 01 May = Early bird registration deadline;
- 01 July = Full paper submission;
- 07-11 September = CEAS2015 Conference;
- 15 October = Proceedings published.

### TECHNICAL COMMITTEES

- Christophe Hermans and Constantinos Stavrinidis respectively presented the Aeronautics Branch and Space Branch status reports.
- E-CAero (European Collaborative Dissemination of Aeronautical Research and Applications).
- In the continuation of the first EC contract E-CAero 1 (2009-2012) a second contract – E-CAero2 – is under preparation and should be signed shortly.

The objective of the European Commission (EC) is to obtain an efficient coordination between various existing European aeronautics sciences associations as regards conferences, publications and research results dissemination. These associations are: CIMNE (representing European Community on Computational Methods in Applied Sciences ECCOMAS), ERCOFTAC (European Research Community for Flow Turbulence And Combustion), EUCASS (EUROPEAN CONFERENCE FOR AEROSPACE SCIENCES), EUROMECH (EUROPEAN MECHANICS SOCIETY), EUROTURBO (EUROPEAN TURBOMACHINERY COMMITTEE) and CEAS.

Mr Dietrich Knoerzer (EC) particularly insisted on the key objective: EVENTS HARMONIZATION. A lot of work has still to be done to reach improve the present situation and this is the reason why the E-CAero 2 contract is so necessary. The terms of this new contract should be presented in the next CEAS Quarterly Bulletin (issue 1-2015).



## CEAS2015: EVENT AT A GLANCE

Inspiring and influential speakers have chosen the CEAS 2015 Conference (Delft Tu, 7-11 September) to share perspectives that are relevant to you and your organisation. They will share their knowledge on various themes, give you a breadth of industry insight and provide real implementation stories during plenary sessions.

### Plenary sessions

#### Challenges for the European Aeronautical Industry

- Jean Botti (CTO Airbus)
- Hans Buethker (Chairman & CEO Fokker Technologies)

#### Challenges for European Access to Space

- Franco Ongaro (Director TEC & head ESA-ESTEC)
- Arnaud de Jong (CEO Airbus Defense and Space Netherlands)

#### Challenges to the European Airlines

- Athar Husain Khan (CEO Association of European Airlines AEA)
- Peter Hartman (Vice-chairman Board of AirFrance/KLM)

#### Challenges in realizing a Single European Sky

- Florian Guillermet (Director SESAR JU)

#### Challenges to the European Aerospace Research and Research Infrastructure

- Eric Dautriat (Executive Director CleanSky)
- Rolf Henke (Chairman ACARE WG 5)

#### Challenges to European Aerospace Education

- Hester Bijl (Dean TU-Delft Aerospace Faculty)

#### Challenges to the European Air Power in Asymmetric Conflicts

- CDRE Peter Round (Director Capability EDA)
- Lt-Gen Sander Schnitger (Commander Royal Netherlands Air Force)

### Technical sessions

200 Technical papers will be presented by aerospace scientists and engineers from around the world to share and disseminate the latest scientific knowledge and research in areas like Air Transport, Airworthiness, Clean Space, Collaborative engineering in system design, Future education and training needs, Virtual hybrid testing in aeronautics, Aircraft noise, Aerodynamics, Future of the Air Combat Systems in Europe, Aero elasticity and Structural Dynamics, Space Sustainability, Aircraft handling / flight mechanics, Greenhouse gas emissions, Guidance & navigation, Modelling and simulation, Propulsion integration, Structures & Materials and Unmanned aerial vehicles.

### Workshops

The 12<sup>th</sup> European Workshop on Aircraft Design Education EWADE will be held during the CEAS 2015 conference. The workshop aims at enhancing collaboration between European lecturers concerned with aircraft design and discuss Aircraft Design problems from a research and education perspective (<http://ewade.aircraftdesign.org/>).

On 10 September 2015, the EU-funded project AFLoNext 2nd generation active wing will organize a workshop as a partner in the CEAS 2015 conference. AFLoNext is a four-year integrated project (level 2) with the objective of proving and maturing highly promising flow control technologies for novel aircraft configurations. More details will come up soon! Meanwhile, feel free to visit our website at [www.aflonext.eu](http://www.aflonext.eu).

### Project

ESWIRP achievements will be presented at the CEAS Air & Space Conference 2015.

The ESWIRP project (<http://www.eswirp.eu/>) has been funded by the European Framework Programme 7 to support the integration of and access to research infrastructure of pan-European interest. It has significantly enhanced the interoperability of 3 key world-class aeronautical wind tunnels, and harmonized, improved and optimized the scientific access conditions thereto: DNW-LLF, ETW and ONERA S1MA.

A central element of the project, besides networking and joint research activities, has been the transnational access (TNA), which has been provided to 4 consortia with a total of more than 100 scientists from 17 different nations.

### Welcome Reception

Enjoy food and drinks and get to meet with your peers during the reception in the Delft Botanic Gardens. The Gardens are at walking distance from the conference venue.

### Conference diner

Romantic boating aboard the largest paddle steamer of Europe "De Majesteit" with its steam engines, giant paddles and cozy saloons. Once welcomed on board of De Majesteit you will enjoy the nostalgic atmosphere and the conference diner, while cruising the impressive Rotterdam harbors.





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## THE 29<sup>TH</sup> ICAS CONGRESS IN RUSSIA: A GREAT SUCCESS

The 29<sup>th</sup> Congress of the International Council of the Aeronautical Sciences (ICAS) took place in St Petersburg, Russia, from 7 to 12 September 2014.

“This was the first ICAS Congress to be held in Russia and it has successfully continued the traditions of the previous great Congresses dating back to 1958”, announced ICAS President, Prof. Murray Scott of Australia’s Central Research Centre for Advanced Composite Structures.

### SOME FIGURES

There were 867 participants from 43 countries, consisting of 573 professionals and 159 students, plus 135 accompanying persons, with a total of 559 papers published in the Congress proceedings. This event was the culmination of four years of planning by the Russian organising committee led by Mr Boris Alyoshin and Prof. Sergey Chernyshev, directors of TsAGI, the Central Aerohydrodynamic Institute, which is the leading aeronautical research organisation in Russia and formally represents Russia at ICAS and CEAS (Council of European Aerospace Societies).

### THE OPENING CEREMONY

The official opening ceremony on 8 September included speeches from Mr Vladimir Kargopoltsev, Director of the United Aircraft Corporation, and Dr Andrey Maximov, Chairman of the St Petersburg Government Committee for Science & Higher Education, as well as a special video message from the crew of the International Space Station (ISS).

This was followed by Daniel & Florence Guggenheim Lecture delivered by Prof. Sergey Chernyshev, Executive Director of TsAGI on new opportunities for international cooperation.

### TWO AWARD LECTURES

#### The Nikolai Zhukovsky Lecture

This lecture was delivered by Dr Michimasa Fujino, CEO of Honda Aircraft Company (USA), on innovation in aircraft design for the HondaJet, which features the unique over-the-wing engine mount configuration.

#### The von Karman Lecture

This lecture was delivered by a team from Dassault Aviation, Alenia Aermacchi, HAI, Airbus, Ruag and Saab, reporting on nEUROn UCAV: an international cooperation to enhance innovation in Future Combat Air Systems (FCAS).

### SEVERAL ADDITIONAL SIGNIFICANT AWARDS

Prof. Scott noted: “several additional significant awards were presented on 11 September:

Prof. Joachim Szodrich (Germany) was honoured with the Maurice Roy Award for his exceptional record in fostering international cooperation in the field of aeronautics.

Exceptional younger people were also recognised with Dr Adrian Orifici of Australia receiving the John J. Green Award, and two South African students, Mr Marius-Corne Meijer and Ms Elizna miles, respectively being placed in the John McCarthy student paper competition.

### FLY YOUR IDEAS SESSIONS WITH CHARLES CHAMPION AND AIRBUS AWARD TEAM

#### THE CONGRESS CLOSING CEREMONY

The Congress closing ceremony included a speech from Mr Andrey Bogynsky, Director of the Russian Federation Ministry of Industry & Trade Aviation Department, as well as announcements concerning future events.

Prof. Scott said:

*“I conclude my term as ICAS President at the end of this year, at which time Dr Christian Mari of France’s Safran Messier-Bugatti-Dowty will take over as President. Together with our 29 Member Societies and 36 Associates from 21 countries, I am confident that ICAS will go from strength to strength into the future.”*

Report ICAS 2014: <http://www.icas.org/Report2014.html>

For more information contact the ICAS executive Secretary: Mr Axel Probst ([icas@icas.org](mailto:icas@icas.org))

The ICAS 2014 Proceedings on CD Rom containing all full papers can be purchased (€120 including postage) from the ICAS Secretariat: [icas@icas.org](mailto:icas@icas.org)



# CONFERENCE "PRESENT AND FUTURE OF CIVILIAN RPAS": SUMMARY OF INITIAL CONCLUSIONS



The Air and Space Academy (AAE) organised together with the French Aerospace Society (3AF) a 2-day conference on the theme "Present and future of Civilian RPAS". This event, which took place on 13-14 Nov 2014, under the sponsorship of the French Civil Aviation Directorate (DGAC), gathered 280 people in Paris, with 90 people in Toulouse through video transmission. Among them were a large number of manufacturers, operators, end users, research organisations, public authorities and students. The European and American civil aviation authorities (EASA and FAA) were also represented. Full proceedings of the conference, including conclusions and recommendations, will be published.

## CIVILIAN RPAS MARKET

The current boom in the area of civilian drones, or RPAS (ICAO designation for Remotely Piloted Air Systems), is creating a new, dynamic industrial sector, with a high potential for generating growth and creating jobs, especially for medium, small and micro businesses.

The related market – 90% of which is made up of video for the moment – is nonetheless evolving towards the supply of sophisticated data and diagnostic means for a variety of areas such as:

- large network surveillance (technical and security monitoring of railways, oil and gas pipelines, power lines ...)
- agriculture and environment
- mapping and monitoring of construction sites, quarries, mines, ...
- diagnosis of the state of buildings, infrastructures and architectural sites.

Due to their lightness, flexibility and ease of operation, RPAS provide higher performance and quality than current means (helicopters, light aircraft, satellites), obtaining **more and better results**, often at **less expense**. They can thus effectively replace the latter or provide an alternative or a complementary solution.

Customers' expectations are centred on the final result of the whole data acquisition and processing chain. The goal is to produce data capable of generating automatic diagnoses. The market therefore essentially consists of **supplying data and services**. While most enthusiasts are primarily concerned with the characteristics of the flying vehicles, **the end customers are mainly interested in processed results that**

**can be exploited immediately and effectively**. The development and economic success of RPAS will depend on their capacity to meet this demand.

The price of services is not yet stable due to a lack of data for reliably calculating return on investment.

In France this sector employs about 3,000 people, mostly in medium, small and micro enterprises, with a turnover estimated at between 50 and 100 million euros (around €500 million in Europe?) and a strong growth of 25-30% per year. These figures are well below those quoted for the US despite the ongoing ban on commercial RPAS operations.

There is also an export market in South America, Africa and Asia, where flying regulations are less strict, even non-existent.

Nevertheless profit margins remain low, clients are reluctant to sign multi-year contracts and investors are cautious, with shares of at most a few million euros per company. So this is still a very young, fragile sector, exposed to international competition but lacking the necessary funding to achieve a solid industrial footing.

ting.

For the moment France would seem to have a slight edge, but this advantage remains tenuous in the face of **heavy investment** from certain countries (US ...).

## BARRIERS TO DEVELOPMENT

The main obstacles to development are already known. They were highlighted in two surveys, one conducted by the European Commission in October 2014 and the other prior to the conference in Sept/Oct. 201, which put forward the following solutions:

- In order to ensure safety, **regulations** must be developed and harmonised in Europe so that they cover all RPAS, from the smallest to the largest (including government surveillance drones). In France the only existing decrees date back to 2012 and cover four scenarios (S1 to S4). These apply to very light RPAS (<25 kg), only one of which may exceed a radius of 1 km. Nevertheless it is important that these initial regulations, which should be completed and enhanced, remain flexible, adaptable and proportionate to the risks arising from the weight + scenario combination. Regulations must be capable of evolving in order to accompany technological development without being too rigid.



- **Feedback from experience:** this is essential in order to establish a climate of confidence (authority, customer, insurance companies, investors). A culture of feedback from experience and procedures must be developed within the RPAS community, by both operators and manufacturers.
- **The safety aspect** is crucial: major fatal accidents would put a long-lasting brake on the sector's expansion.
- **Security** must be ensured and any offenders punished.
- **Privacy** must be respected.
- **Responsibilities as regards privacy, security (terrorist attack) and safety (accident) must be clear**, which means defining rules and a legal framework defining offences and the penalties incurred. Insurance premiums must also be set proportionately to risks.

## FACTORS OF PROGRESS

### On a level of state and international bodies

*In France*, the 2012 decrees must be completed and should authorise wider flight envelopes ("further, higher, heavier") for certain scenarios. Prefectoral authorisations should be valid for a certain duration (year). Regional civil aviation safety directorates (DSAC in France) must allow operators to work rapidly with pre-approved standard protocols. The CNIL (French Commission on Informatics and Liberty) should define how best to keep the public informed and deal with claims. Temporary or permanent exports of French civilian RPAS must also be promoted.

*In Europe*, the European Commission has defined a strategy in the form of a roadmap aimed at addressing the different barriers to development. This roadmap includes:

- insertion into airspace, including the necessary R & D support to develop contributing technologies
- a study on civil liability and insurances
- a study into respect for privacy and data protection
- support to SMEs, by means of an information campaign to all players.

Work on regulations is progressing within the JARUS (Joint Authorities for Rulemaking on Unmanned Systems) international working groups, with US participation. JARUS will communicate its recommendations to EASA and Eurocontrol so that they can then establish regulations.

*The FAA* has received instructions from the US authorities to draw up a roadmap, with the priority goal of establishing a regulation by late 2014 enabling the flight of small RPAS (weighing less than 25 kg). Six testing sites, funded by universities and the private sector, were set up mid-2014 and will spend about 20 months testing new technologies for protecting and respecting privacy. Good practices will be published governing smaller models. NB: hundreds (or even thousands) of illegal operators are active in the US.

*ICAO* has created a RPAS panel to review and develop new standards and best practices for RPAS integration in terms of airworthiness, "command and control", the fre-

quency spectrum, "sense and avoid", the qualification of remote operators (licenses), operations and integration into air traffic. ICAO should also embark on the creation of a legal framework specific to RPAS.

### On a techno-economic level

- Progress expected in the miniaturisation of electronic equipment will be accompanied by a sharp drop in prices resulting from a massive use for mobile telephone networks (GPS, 4G, LiPo batteries,...).
- For end customers' needs to be met, speed of access must be improved to provide more accurate data, requiring progress in both hard- and software.
- R&D into more autonomous systems and optimisation of the human-machine interface will impact the design of RPAS systems.
- Effective "sense & avoid" sensors must be developed and integrated in order to meet safety requirements.
- Other new sensors tailored to needs must be integrated: for example to edit and correct images, superimpose different spectral bands, etc.
- Data processing, although specific to each type of aerial mission, should be brought in line with standard practices in the aeronautics, space and automobile sectors, particularly in terms of the integration of sensors, the image processing chain and data fusion.
- A complementarity of resources should be sought between RPAS, light aircraft, helicopters and satellites in order to obtain a broader information base and more accurate diagnoses enabling greater predictive or preventive services.

### On a level of training

Training of remote operators should be improved by developing:

- theoretical training including aspects specific to RPAS compared to other aircraft (ULM, planes, helicopters, ...);
- practical training for different scenarios, based on small RPAS in visual flight, but also by adding a maintenance training component suited to RPAS flown out of visual range.

### Some further avenues

- Implement "EC" labelling of all RPAS sold as toys and models.
- Set up wide-ranging information campaigns to keep the public informed of "best practices" for flying models.
- In order to identify planned (or past) RPAS flights, create an open database of flight plans on the Internet.
- Organise and formalise feedback from experience, by publishing accident and incident reports and related statistics on the Internet for instance.
- Register (?) or require some type of identification code in order to locate the remote operator in the event of an accident.
- Encourage low-cost solutions for incorporating a tracking transmitter.

## NEWS FROM THE EASA



## EASA IS READY TO PLAY ITS ROLE IN ATM



EASA, which initially received the mandate to develop all the regulatory material for airworthiness, gradually gained competence in all fields of aviation: Air Operations, Flight Crew, Maintenance, Training, Aerodromes, and Air Traffic management (ATM).

The field of ATM is probably the most complex one with two coexisting legislative frameworks, the Single European Sky (SES) regulation and the Safety regulation.

In its so called SES 2+ legislative package issued in 2013, the European Commission proposes to merge the technical regulatory dimension of the SES with the EASA framework in order to remove the duplications. SES2+ also introduces a clearer separation between service provision and regulatory activities concerning the various ATM and air navigation services.

We welcome the clarification proposed by the Commission which enables the Agency to become the technical authority on ATM and to play better its role in this domain. Yet, there is still a lot of work to be done by EASA in particular on the Pan-European dimension of ATM, the civil / military cooperation and integration of new technologies which will significantly improve the overall performance of the European air traffic management system.

One of the crucial points will also be to define the funding mechanism for EASA activities in the field of ATM. We need to define a mechanism which would enable EASA to get access to route charges, with the clear understanding that it would result in a net decrease of the cost of such activities to airspace users. I hope the Member States and European Parliament will find an agreement on this subject.

*Patrick Ky  
EASA Executive Director*

## AIRBUS A350-900 IS EASA CERTIFIED

The European Aviation Safety Agency (EASA) issued on 30 September 2014 the type certificate of the Airbus A350-900. Airbus demonstrated that the aircraft complies with the regulatory safety and environment requirements defined by EASA for the European Union.

Every new type of aircraft needs to obtain a type certificate before it can be delivered to an airline. This EASA certificate guarantees that the A350-900 is set for delivery from a safety and environment point of view.

The Airbus A350-900 is the first Airbus passenger aircraft with a new design to be entirely certified by EASA, from the

application by Airbus in 2007 until the type certification. When handing over EASA type certificate to Airbus, Patrick Ky, EASA Executive Director said: "We dealt with a very mature aircraft. Airbus and EASA have learnt from experience and have established pragmatic working methods which have proved to be the recipe for the successful type certification and the way forward for future certification programmes. I wish a long and safe journey to the A350 programme throughout its life in service".

During the certification programme, EASA has established 16 technical panels composed of 40 engineers and test pilots, covering the full range of the programme from structure to avionics and from cabin safety to flight tests. EASA flight test teams have actively participated in more than 250 hours of flight testing. Nearly 700 certification documents were reviewed and accepted by EASA. More than 60,000 hours were logged by EASA staff or experts from European National Aviation Authorities to enable the certification of the A350.

The Airbus A350-900 can carry 315 passengers over a distance of 7,750 nautical miles (14,500 km). Its in-service safety record will now be monitored by Airbus and EASA through continued airworthiness activities.

## ON BOARD THE AIRBUS A350



*Charles Champion, Executive Vice President Engineering of Airbus, has been interviewed by EASA*

**Mr Champion, as we have achieved a major step in the life of the Airbus A350 programme - the granting by EASA of its type certificate - what is your assessment of how the certification process went?**

I must acknowledge it went well given all new certification challenges linked with the extensive use of composites, or the development of electrical structural network for current return. This could only happen with the continual involvement of people from EASA and Airbus since the beginning of programme. I want to thank them all for their great engagement.

**To what extent have you benefited from the experience gained in the certification of previous airplane types, especially the A380 to talk about the most recent one?**

With our experience of the two last Airbus programmes (A380 and A400M), we knew that A350 XWB certification would need a more robust programme management. Hence, A350 XWB went through reinforced "Maturity Gate" milestones, and certification was part of it since the beginning of the development. This helped a lot in pacing both Airbus and EASA objectives, such as identification and closure of certification basis, definition of means of compliance, release of certification documents...



### How has the relationship been with EASA throughout the process?

We have had, as usual, a very fruitful relationship with EASA despite a quite dense and exceptional workload context: for the very first time, we have launched the application for the A350-1000 (stretched version) while completing A350-900 Type Certification.

We have been benefiting from strong Airbus internal procedures, validated by EASA as part of the Airbus Design Organisation approval. This allowed EASA to delegate a part of compliance activities to Airbus, and to monitor its proper application through regular audits. As a good example of this unique relationship between Airbus and EASA, the first flight of an A350 XWB prototype was cleared for the first time 100% within Airbus. EASA audit performed a few months later was considered very satisfactory.

We have also innovated in our ways of working with the creation of an "A350 XWB plateau" in EASA facilities in Cologne. We have optimized there both Airbus and EASA teams efforts until Type Certification, with on-site bi-monthly support and a strong project management. This strong collaboration between Airbus and EASA was really beneficial to the programme certification and should be pursued.

### Now that this milestone is achieved, what will be your priorities for this programme and more generally?

The story between Airbus and EASA will obviously continue after A350-900 Type Certification. The very next milestone for A350 XWB is the aircraft entry into service with

Qatar Airways. EASA is involved again in the approval of major modifications for the individual aircraft certification. Then we will have to carry on the A350-1000 certification as derivative aircraft. We have also other short terms objectives with all Airbus NEO (New Engine Option) projects on the A320 and A330 families. For all those exciting projects, EASA level of involvement will be of essence for both Airbus and the agency management of certification activities

### What is your vision of the relationship between Airbus and EASA in the future?

EASA has a deep knowledge of Airbus processes and we have to further develop and optimize the level of involvement of the agency in the certification activities.

We have clear ways of improvement to make the certification process be leaner. The scope is broad as it goes from certification document standardisation, involvement in testing down to use of IT validation tools. Continuous improvement of our processes with EASA is crucial to tackle our next industrial challenges.

Certification is an integral part of an aircraft development, and definitely not a parallel process. The more we develop our collaboration with EASA, the more we will succeed to make the world's best and safe aircraft.

It requires focus on what matters and relies on the trust we continue to build in the frame of our long term partnership.

*From information provided by EASA*



## LATEST NEWS FROM SESAR

### SESAR INNOVATION DAYS PUTS SCIENTIFIC RESEARCH ON ATM UNDER THE SPOTLIGHT



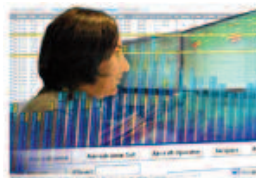
From the 25-27 of November 2014, the SESAR (Single European Sky Air Traffic Management Research) Joint Undertaking (SESAR JU), held its annual SESAR Innovation Days event at the Universidad Politécnica de Madrid (UPM), Spain. The three day event put scientific research under the spotlight through a series of workshops, presentations, research exhibitions and networking events. Nearly 300 participants attended the event, which was kindly hosted by the Department of Aeronautical Engineering at the UPM.

### CANDIDATE MEMEBERS PRESELECTED FOR SESAR 2020

The SESAR Joint Undertaking has completed the evaluation and analysis process of expressions of interest received in response to call for expressions of interest to become candidate member of the SESAR Joint Undertaking in order to participate in SESAR 2020 Research and Innovation Programme (SESAR 2020)\*. It

should be noted that pre-selection as candidate member does not guarantee the membership of the SESAR Joint Undertaking. The final list of the selected members will be determined on the basis of the subsequent stages of the SESAR 2020 membership process.

### SHORT-TERM MEASURES PROVIDE FLESIBILITY TO AIR TRAFFIC FLOW CONTROL MANAGEMENT, SESAR TRIAL CONFIRMS



From 1 to 15 October 2014, partners in the SESAR Research and Innovation Programme conducted a live trial across a large part of Europe's core airspace to validate the feasibility and benefits offered by a wider and more harmonised application of Short-Term Air Traffic Flow Control Management (ATFCM) Measures (STAMs). During the exercise, around 70 STAM measures were successfully initiated, coordinated and implemented, using a proposed workflow and a set of coordination tools. The results of this work clearly show the feasibility and benefits of applying STAMs more widely.

## SESAR TIME-BASED OPERATIONS CONCEPT PRESENTED AT ICAO WORKING GROUP



The SJU recently published a number of research papers on trajectory based operations (TBO), a cornerstone concept of the SESAR Research and Innovation Programme. These papers were presented at recent meetings of the ICAO working group of the Air traffic Management Requirements and Performance Panel, feeding discussions at a global level, ultimately leading to a globally harmonised and interoperable TBO concept. While SESAR's results continue to increase the overall predictability of trajectories, on top of that the TBO concept defines how capacity or weather-constrained trajectories can continuously be "optimised" and coordinated in an iterative dynamic way, taking into account the remaining level of unpredictability. The papers build on SESAR's validation results and places these results in the wider TBO context.

## WORLD'S FIRST AIRPORT GRANTED LICENSE TO OPERATE SESAR REMOTE TOWER SERVICES



SJU member, LfV, has received an operating licence to operate Remote Tower Services from the Swedish Transport Agency. This will make Örnsköldsvik Airport the first airport in the world to have remote air traffic control services. Something that began as an idea and a vision of a paradigm shift in air traffic control almost ten years ago has now been realised through in Sweden through close cooperation between SESAR members, LfV, and Saab through NATMIG.

*J.-P.-S. From information provided by SESAR JU*

## 2014 AIRPORT EXCHANGE

FROM 3 TO 5 NOVEMBER 2014, TOOK PLACE IN PARIS, AT CNIT LA DEFENSE, HOSTED BY AEROPORTS DE PARIS, THE LARGE ACI EVENT IN EUROPE 2014 AIRPORT EXCHANGE HAS ATTRACTED OVER 1200 DELEGATES AND VISITORS FROM MORE THAN 60 COUNTRIES - ON MONDAY 3 NOVEMBER, PARIS CDG AIRPORT TOURS WERE ORGANISED, AND IN THE EVENING, TOOK PLACE AT MUSEE D'ORSAY THE WELCOME RECEPTION - ON TUESDAY 4 AND WEDNESDAY 5, THE PROGRAMME WAS ORGANISED AROUND WELCOME AND KEYNOTE ADDRESSES AT THE BEGINNING OF THE EVENT, FOLLOWED BY FOUR PARALLEL WORKING SESSIONS DEALING WITH THE FOLLOWING KEY AREAS: (1) SECURITY & BORDER CONTROL; (2)

FACILITATION, IT & CUSTOMER SERVICE; (3) AIRPORT DEVELOPMENT & ENVIRONMENT; (4) AIRPORT OPERATIONS - ON THE EXHIBITION FLOOR, LEADING SUPPLIERS GAVE THEIR INSIGHT INTO UNIQUE IDEAS AND SIMULATING NEW THOUGHTS ON HOW AIRPORTS CAN BE 'BEST IN CLASS'. THE GALA DINNER OFFERED BY AEROPORTS DE PARIS IN THE EVENING OF TUESDAY 4 AT GRUSS CIRCUS IN PARIS ALLOWED FRUITFUL EXCHANGES OF OPINIONS BETWEEN THE CONGRESSISTS AND NEW NETWORKS TO BE ESTABLISHED.

### WELCOME ADDRESSES

They were delivered by Olivier Jankovec, Director General of ACI EUROPE, Patti Chau, Regional Director ACI Asia-Pacific, and Augustin de Romanet, Chairman & CEO Aéroports de Paris.

### KEYNOTE ADDRESSES

Two keynote speeches were addressed: by Jean-Paul Huchon, President, Regional Council of Ile de France, and by Debra Santos, Managing Director, Marketing Europe, Boeing Commercial Airplanes.

### FOUR PARALLEL SESSIONS

**1. SESSION SECURITY & BORDER CONTROL – Best in class – Adapting to new threats, while changing the mindset to provide security as a service**

This session was opened by David Trembacowski-Rider, Head of Aviation Security, ACI Europe, who welcomed the participants, and then by two keynote addresses: 'Raising the bar for aviation security', by Marjeta Jager, Director of Policy Coordination & Security at the European Commission, DG MOVE; 'When will technology be ready to realise industry goals for security and border check-

points?', and by Cyril Dujardin, President & CEO, Morpho Detection International.

#### **First Working Session**

The basic question to be considered was: 'Threats, Funding Models and future thinking: What are the major airports like Paris doing to tackle the security challenges of a modern day hub?'

#### **Second Working Session**

The central subject was: Best in Class for the Passenger Experience: premises, processes, people.

#### **Third Working Session**

The central subject was: Best in class case studies and regulations.

#### **Fourth working Session**

The central subject was: cyber security – What are the latest treats to airports? What systems or processes can be potentially affected and what measures can be put in place to mitigate?

### **2. FACILITATION, IT & CUSTOMER SERVICES – Best in class – The processes, technologies and support required to create a better passenger experience**

This session was opened by the welcome address from Federico Bonaudi, ACI Europe, Manager, Facilitation, Parliamentary Affairs & Regional Airports, and the keynote address from Dominique Mary, Customer Experience and Transformation at Aéroports de Paris: "ADP's corporate strategy is to become the standard European airport for customer satisfaction. By what methods will it achieve this ambitious goal?"

#### **First Working Session**

The central subject was: Assessing the latest technologies and trends. The topics covered were:

- Interactive communications with passengers through smart phones;
- Available mobile devices for staff and the impact of new technologies coming;
- Impacts of mass adoption of automatic check-in airports?
- What will the predominant passenger taken be in a few years?
- Beacons – a great new opportunity for airports or not?
- Wearable technology in airports.

#### **Second Working Session**

Same as Working Session 2 of Security & Border Control (see above).

#### **Third Working Session**

The central subject was: Airports have a captive audience. What are the opportunities to engage with passengers from the moment their flight is booked?

#### **Fourth Working Session**

The central subject was: Case studies on some of the most dynamic digital engagement efforts.

### **3. AIRPORT DEVELOPMENT & ENVIRONMENT – Best in class – Expanding to meet demand without compromising on sustainability**

This session was opened by the welcome address from Morgan Foulkes, Deputy Director General of ACI Europe. After that Phil Wilbraham, Development Director, Heathrow Airport, delivered a keynote address: 'The Queens terminal (T2) is reported to be the Heathrow's most sustainable terminal yet. Is it also the most economical and passenger and airline friendly, and what can other airports learn from its development?'

#### **First Working Session**

The central subject was: Best in class case studies: Striking the balance between new development, sustainability and capacity demand within Europe.

#### **Second Working Session**

The central subject was: Best in class case studies: Striking the balance between new development, sustainability and capacity demand outside Europe.

#### **Third Working Session**

The central subject was: Adapting airports infrastructure to a changing climate-launch of the European guidelines.

#### **Fourth Working Session**

The central subject was: Launch of EUROCONTROL's collaborative environmental management (CEM) specifications.

### **4. AIRPORT OPERATIONS – Best in class – The quest for efficiency and additional capacity in an increasingly competitive market**

This session was opened by the welcome address from Anders Ledin, Chair of ACI Europe Technical and Operational Safety Committee, followed by the keynote speech delivered by Frank Brenner, Director General of Eurocontrol: "What will EUROCONTROL do to support and regulate the quest for efficiency and additional capacity in an increasingly competitive market?"

#### **First Working Session**

The central subject was: Case studies – managing special events, unique circumstances and unforeseen crises.

#### **Second Working Session**

The central subject was: SESAR deployment: what is coming up and what will be the impact for airports?

#### **Third Working Session**

Same as Airport Development & Environment

#### **Fourth Working Session**

The central subject was: Embracing next-generation



technology to optimise airport operations and staff performance.

**ROUND TABLE, WEDNESDAY 5 NOVEMBER**

This day started with a Round Table: **“Best in class – The French Business Leaders’ Round Table: What can airports learn from other comparable mass-people handling organisations? Are there great concepts or ideas which should be transplanted to airports, or from airports to different sectors?”** Participated in this Round Table: Chairman, Frédéric Pierret, CEO Alliance 46.2 – Panel Discussion members: Augustin de Romanet, Chairman and CEO, ADP – Christophe Cuvillier, CEO, Unibail-Rodamco – Julien Kauffmann, Disneyland Paris – Nicolas Petrovic, Disneyland Paris – Laurent Haynez, Lafayette Group.

**THE EXHIBITION SEMINAR THEATRE**

On the exhibition floor, leading suppliers gave their insight into unique ideas and stimulating new thoughts on how airports can be ‘BEST IN CLASS’. The presentations covered four main areas: Security solutions, IT & Systems, Airfield operations and Airport Development & Environment.

**OPEN-ALAQS: AN OPEN ARCHITECTURE FOR CONDUCTING LOCAL AIR QUALITY ASSESSMENTS**

(see Illustration 1)

**IMPACT: AN INTEGRATED AIRCRAFT NOISE AND EMISSIONS MODELLING PLATFORM**

(see Illustration 2)

**OPEN-ALAQS**  
An open architecture for conducting local air quality assessments

Open-ALAQS was developed in the context of the European SESAR programme.

Open-ALAQS is planned to be used for future assessments of ICAO environmental policy.

The EUROCONTROL Open-ALAQS tool is based on an open source GIS (Geographical Information System) that simplifies the process of defining the various airport elements (runways, taxiways, buildings, etc.) and allows the spatial distribution of emissions to be visualised. The tool provides a four-dimensional emissions inventory for an airport in which the emissions from the various fixed and mobile sources are aggregated and subsequently displayed for analysis. Once the emissions inventory has been established, dispersion modelling (not included in ALAQS) can be used to calculate pollutant concentrations on the airport and in the surrounding area throughout a day. The system is thus compatible with legislative requirements for 8-hour, 24-hour and annual mean values of pollutant concentrations.

Open-ALAQS is based on the same core functionalities that were in ALAQS-AV, one of the models approved for use by the ICAO Committee on Aviation Environmental Protection (CAEP). However, Open-ALAQS will undergo a new CAEP port model evaluation exercise.

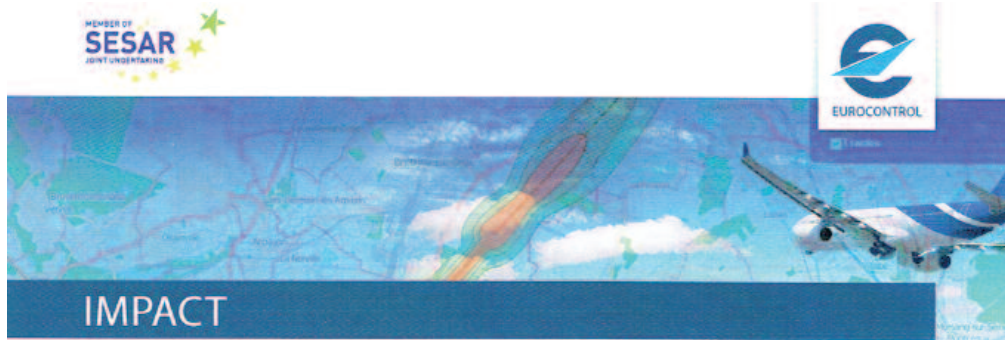
EUROCONTROL intends to continue the development of Open-ALAQS, in particular, the Particulate Matter (PM) modelling will be improved, the tool will be plugged-in with dispersion models and the Ground System Equipment (GSE) application will be updated.

**Open-ALAQS architecture**

\* The version of the EUROCONTROL ALAQS approved and referenced in CAEP is ALAQS V2.0 December 2009.

For more information, please contact [Open-ALAQS@eurocontrol.int](mailto:Open-ALAQS@eurocontrol.int)

illustration 1



## IMPACT

### An Integrated Aircraft Noise and Emissions Modelling Platform

#### IMPACT = STAPES + AEM in the Cloud

IMPACT enables both the EUROCONTROL emissions (AEM\*) and noise (STAPES\*) models to be run from the same modelling platform via a secure web portal. This modelling platform incorporates the notion of common input data in terms of aircraft operations and trajectories, jointly used by the integrated noise and emissions models.

IMPACT was developed in the context of the European SESAR programme.

IMPACT is planned to be used for future assessments of ICAO environmental policy options.

This modelling platform addresses the following SESAR-specific requirements:

- Provide an appropriate level of granularity (sensitivity) to correctly respond to the SESAR operational changes (in a relative way, versus a baseline);
- Cover all phases of flights (gate-to-gate) for fuel burn and emissions;
- Support studies on different scales, from the local level (e.g. specific airport or TMA) up to the global level (e.g. European network or beyond);
- Enable consistent trade-off analyses between fuel burn/emissions and noise;
- Handle input data from different sources including FDR data, fast-time or real-time simulated data and, in the case of missing input data such as trajectories, enable the theoretical definition of operational concepts (e.g. through procedural steps definition);
- Make the system accessible to different users involved in operational projects to perform environmental impact assessments of their operational concepts.



IMPACT includes a data warehouse which hosts all the reference and default data needed by the Common Input Data pre-processor, STAPES and AEM. The reference data include in particular the BADA and ANP databases.

\* AEM (Advanced Emission Model) and STAPES (System for Airport noise Exposure Studies) are both EUROCONTROL models approved by ICAO-CAEP

Illustration 2

For more information about IMPACT, please contact [impact@eurocontrol.int](mailto:impact@eurocontrol.int)

### EUROCONTROL AND ACI EUROPE COLLABORATING TO MINIMISE AVIATION'S ENVIRONMENTAL IMPACT AT AIRPORTS



On 5 November, EUROCONTROL officially launched the **Collaborative Environmental Management (CEM) Specification**.

(see Illustration 3)

**EUROCONTROL** This specification sets out a unique collaborative approach to managing environmental impacts at and around airports, supporting all operational stakeholders in their quest to reduce their gaseous and noise emissions as well as improve local air quality. CEM is based on the formalisation of local working arrangements between the airport, its airlines and ANSP (Air Navigation Service Providers) so as to jointly monitor key environmental objec-

tives, helping to resolve environmental and operational challenges based on informed decisions.

On this occasion, EUROCONTROL and ACI EUROPE signed a mutual recognition of their organisations' support and commitment to aviation's sustainable development. This involves the endorsement by ACI EUROPE of the CEM Specification as one of its Recommended Practice, making it an industry standard. This new chapter in the cooperation between the two organisations builds on their joint efforts to promote airports' license to grow – which has seen EUROCONTROL formally endorsing Airport Carbon Accreditation upon the launch of the programme by ACI EUROPE in 2009.





illustration 3

The CEM specification by EUROCONTROL is available at: <http://www.eurocontrol.int/publications/eurocontrol-specification-collaborative-environmental-management-cem>

The ACI EUROPE Recommended Practice is available at: <https://www.aci-europe.org/component/downloads/downloads/4059.html>

## AIRPORTS AND AIR TRAFFIC MANAGEMENT WORKING WITH OTHER AVIATION PARTNERS TO IMPROVE EUROPEAN AIR TRANSPORT



### THE A-CDM PROCESS

EUROCONTROL and ACI EUROPE have been working together since 2008 to increase operational efficiency at airports through implementation of a process called Airport – Collaborative Decision Making (A-CDM). This collaboration was complemented by similar agreements with airline trade body IATA and CANSO, the global trade body for Air Traffic Management.

At the 2014 ACI EXCHANGE congress, an update of A-CDM was released on what has been achieved to date.

A-CDM allows for **real time sharing** of operational data and information between the stakeholders using an airport, thus creating 'common situational awareness'. This in turn improves interaction between airport operators, air traffic control and airlines on the ground, allowing for a more opti-

mised use of scarce airport capacity, better punctuality and reduced gaseous emissions. Information is also exchanged between the airport community and the EUROCONTROL's Network Manager, allowing increased predictability for the network. As such, A-CDM is an important baseline for the development of SESAR.

Presently A-CDM has been fully implemented at 15 European airports welcoming 27.8% European passenger traffic – equivalent to 480 million passengers a year. While airports such as Munich, Brussels, Paris CDG, and Frankfurt airports were early adopters of the process, Oslo Airport, Roma-Fiumicino, Berlin-Schoenefeld, Madrid-Barajas, Stuttgart, Milan-Malpensa and Gatwick Airport will have all fully implemented A-CDM this year. A further 12 airports across Europe are currently in the process of implementing A-CDM either locally or fully.

Frank Brenner, director general of EUROCONTROL said: *"Linking the airports to the network through A-CDM has appositive effect both in terms of capacity and predictability – with benefits for each player involved. This linkage can be done by the Network manager and is one of the major benefits that this function will bring to European ATM as a whole."*

Olivier Jankovec, Director General ACI EUROPE commented: *"15 Europe's airports are leading A-CDM implementation globally. This is part of their very strong focus on performance and quality – which forms part of their strategy to boost their own competitive positions. By doing so, these 15 airports are delivering tangible benefits – including lowering their airline partners' operating cost base by over €56 million a year. These increased efficiencies make the passenger experience more punctual and reduce their airlines' environmental impact. It also allows us to swat our assets and make the most of existing airport capacity. This is a win-win-win."*

For more information:

[www.aci-europe.org](http://www.aci-europe.org) – [www.eurocontrol.int](http://www.eurocontrol.int)

### ACI EUROPE

- ACI EUROPE is the European Region of Airports Council International (ACI).
- ACI is the only worldwide professional association of airport operations.
- ACI EUROPE represents over 450 airports in 44 countries. Member airports handle 90% of commercial air traffic in Europe, welcoming over 1.5 million passengers each year.



## PREPARING FOR THE FUTURE COMBAT AIR SYSTEM

Dassault Aviation, BAE Systems and their industrial partners have been awarded a €150 million contract by the French and UK governments for a two-year co-operative Future combat Air System (FCAS) Feasibility Phase study, formally signalling the start of work. This is the first step towards what could become a full demonstration programme that shapes the future of combat aerospace in Europe. A ceremony was held on 5 November at Dassault Aviation's Headquarters, Saint-Cloud (France), to celebrate this event.



The ceremony held on 5 November at Dassault Aviation's HQ  
Credit Dassault Aviation – P. Sagnes



nEUROn, the UCAV developed by Dassault Aviation  
Credit Dassault Aviation

The contract was officially awarded to Eric Trappier, Chairman and CEO of Dassault Aviation, and Ian King, CEO of BAE Systems, by the heads of the French and British defence procurement agencies: Laurent Collet-Billon, Chief of the Direction Générale de l'Armement (DGA), France, and Bernard Gray, Chief of Defence Materiel for the UK MoD.

Eric Trappier said: "We welcome this new step, which prepares the future of both manned and unmanned combat air systems. It ensures French and British companies to maintain their technological excellence which is vital to their competitiveness in a globalized environment. It mainly



Taranis, the unmanned combat demonstration aircraft built by BAE SYSTEMS: the prototype in flight. Credit BAE Systems

shows the commitment of France and Britain in their ambition to remain leading aviation powers."

Ian King declared: "This contract award is a key step in the partnership between our two nations, governments, and industries. The Feasibility Phase will allow UK and French industry to work closely together and provide a strong foundation for a potential follow-on Future Combat Air System Demonstration Programme as well as a number of highly skilled jobs."

Cooperation between France and the UK is seen as the optimum way to progress a UCAS (Unmanned Combat Air System) solution while supporting both governments' intentions for closer defence ties. The joint study contract of €150 million is to be supplemented with additional French and UK national funding to the combined value of €100 million for the same period.

### The foundations to be built

The study will build the foundations on which a long-term programme will be based by focusing two key points:

The development of concepts for an operational system;  
The maturation of key technologies that will be required for a future operational unmanned combat air system.

Following the completion of the study in the end of 2016, work could commence on a demonstration development programme addressing both nations' future military requirements.

### Skilled jobs

The present contract will sustain hundreds of highly skilled jobs at Dassault Aviation and BAE Systems with more jobs sustained by Rolls-Royce, Selex ES, SAFRAN, Thales and SMEs. In addition, it supports the military aerospace industries in both nations.

J.-P. S. From information provided by Dassault-Aviation

## AIRBUS DEFENCE AND SPACE DELIVERS FIRST A400M TO ROYAL AIR FORCE

### Prime Minister Cameron attends acceptance ceremony at RAF Brize Norton

Airbus Defence and Space has delivered the first Airbus A400M new generation airlifter to the Royal Air Force, beginning the next stage of the transformation of the United Kingdom's air mobility fleet.

The aircraft is the first of 22 ordered by the UK and will be known in service as the A400M Atlas.

Prime Minister David Cameron was today guest of honour at a ceremony to celebrate the acceptance of the aircraft at RAF Brize Norton, which is in his parliamentary constituency, where the entire Atlas fleet will be based. He was accompanied by Minister for Defence Equipment Support & Technology Philip Dunne.

Executive Vice President Military Aircraft, Domingo Ureña Raso, said: *"It is an enormous pleasure to see the A400M entering service with the RAF which is one of the leading exponents of military air mobility worldwide. I would like to express my sincere thanks to all our employees, especially those in the UK, as well as OCCAR and our UK customer for making this day possible"*.

*"Airbus Defence and Space is today privileged to be the biggest provider of large aircraft to the RAF and we are absolutely committed to executing that responsibility to the very best of our abilities for many years to come."*

The A400M will replace the C-130 in RAF service but, because it can carry approximately twice as much load, or the same load twice as far, fewer aircraft will be required.

Uniquely it is able both to cruise at jet-like speeds and altitudes over intercontinental ranges due to its extremely powerful engines and advanced aerodynamic design, as well as to operate repeatedly from short and unprepared airstrips close to the scene of military action or humanitarian crisis.

At Brize Norton the A400M will operate alongside the RAF's Airbus Voyager multi-role tanker transport fleet. The wings of both aircraft are built in the UK at Filton and Broughton respectively. Additionally the Voyager's engines are produced in the UK by Rolls-Royce, which is also a member of the Europrop International consortium that produces the A400M's TP400 engines.

Altogether the A400M supports some 8,000 jobs in the UK including around 900 Airbus Group employees working directly on the aircraft at Filton. To date eight nations have ordered 174 aircraft of which the first seven have now been delivered.

*J.P. S. From AIRBUS Defence & Space information*



The Royal Air Force takes delivery of the first A 400M Atlas. © Airbus Defence & Space

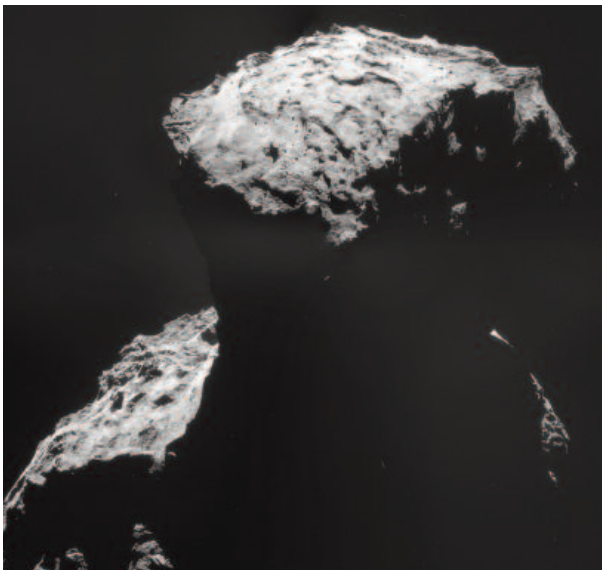
## THE TOUCHDOWN OF ROSETTA'S PHILAE LANDER ON COMET 67P ON 12 NOVEMBER 2014: AN EXCEPTIONAL EVENT!

ON 12 NOVEMBER 2014 EUROPEAN SPACE AGENCY'S ROSETTA MISSION HAS SOFT-LANDED ITS 'PHILAE' PROBE ON A COMET, THE FIRST TIME IN HISTORY THAT SUCH AN EXTRAORDINARY FEAT HAS BEEN ACHIEVED. THANKS TO ROSETTA A NEW ERA IN COMETARY SCIENCE AND SPACE EXPLORATION IS BEGINNING, OPENING A DOOR TO THE UNDERSTANDING OF THE ORIGIN OF PLANET EARTH. THIS SUCCESS IS BESIDES A WONDERFUL DEMONSTRATION OF THE UNIQUE KNOW-HOW ACQUIRED BY EUROPE OVER THE PAST DECADES IN THE CONTROL OF SPACE VEHICLES.

### AGILKIA IS THE SELECTED LANDING SITE

The landing site which was selected on 4 November is named 'AGILKIA'. Agilkia Island is an island on the Nile River in the South of Egypt. A complex of Ancient Egyptian buildings, including the famous Temple of Isis, was moved to Agilkia from the island of Philae when the latter was flooded during the building of the Aswan dams last century.

### ROSETTA AND PHILAE GO FOR SEPARATION



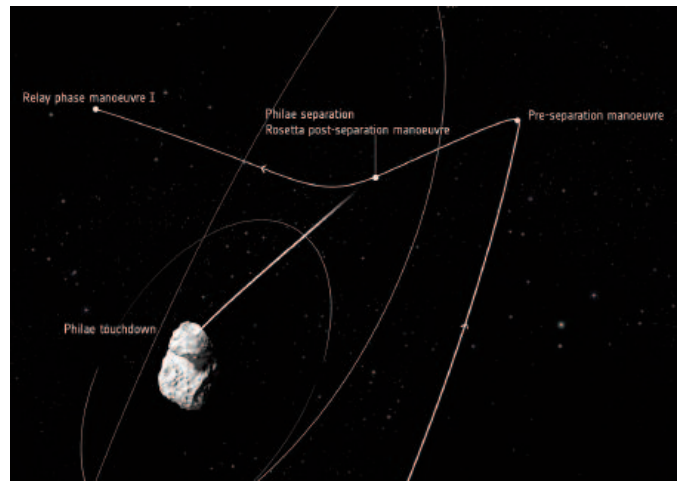
**Philae's landing site which had been selected on 30 October 2014.**

**Released 4 November 2014**

This 4-image NAV/CAM mosaic shows Philae's landing site as Rosetta departed its 10 km orbit in order to prepare for the deployment of Philae on 12 November. The images comprising this montage were taken on 30 October, when the spacecraft was 26.8 km from the centre of the comet. The image resolution at this distance is 2.27 m/pixel, and the mosaic covers 4.0 x 3.7 km.

Copyright ESA/Rosetta/NAVCAM -CC\_BY\_SA\_100\_3.0

12 November early morning: following a night of critical Go/No Go decisions, Rosetta and Philae were cleared for separation, despite a problem onboard the Lander. In effect, during checks on the Philae's health, it was discovered that the active descent system, which provides a thrust to avoid rebound at the moment of touchdown, could not be activated, due to the fact that the cold gas thrusters on top of Philae did not work. The decision to go was finally taken, considering that we could rely on harpoons at touchdown: a courageous decision. Separation proceeded on the planned timeline.



**Rosetta's trajectory foreseen for 12 November 2014**

**Released 7 November 2014**

Labelled trajectory of Rosetta's orbit, focusing on the manoeuvres on 12 November: the diagram is based on the animation Rosetta: close orbits to Lander deployment. Copyright ESA

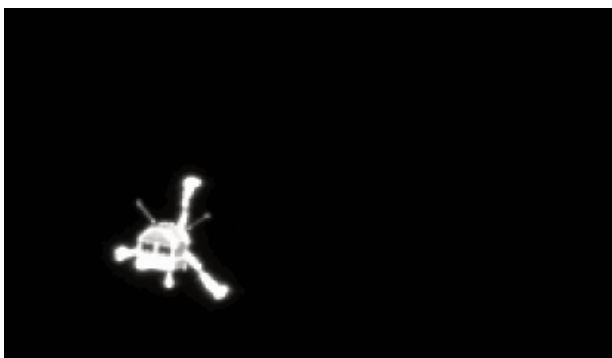
### ROSETTA AND PHILAE SEPARATION CONFIRMED



Philae separation: an artist impression showing Philae separating from Rosetta and descending to the surface of the comet. Copyright ESA/ATG medialab



Separation was confirmed from the Rosetta orbiter at ESA's Space Operations Centre (Darmstadt, Germany) at 09:03 GMT on 12 November. The radio signals from Rosetta necessitating 28 minutes 20 seconds to reach Earth, separation effectively occurred in space at 08:35 GMT.



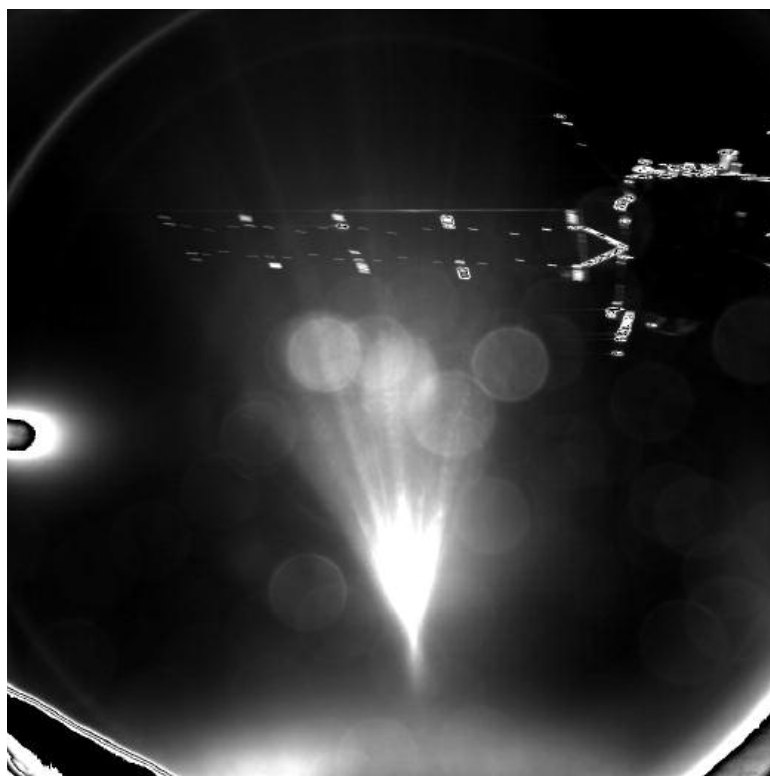
#### Farewell Philae: narrow-angle view

Released 12 November 2014

Rosetta's OSIRIS narrow-angle camera captured this parting shot of the Philae Lander after separation.

The Lander separated from the orbiter at 09:03 GMT on 12 November at a time when it was expected to touchdown on comet 7 hours later.

Copyright ESA/Rosetta/MPS



#### Farewell Rosetta

Released 12 November 2014

Lander Philae took this parting shot of its mother ship shortly after separation. This image was taken with the Philae's CIVA-P imaging system and captured one of Rosetta's 14 metre-long solar arrays. It was stored onboard the Lander until the radio link was established with Rosetta around 2 hours after separation, and then relayed to Earth. The Lander separated from the orbiter at 09:03 GMT on 12 November. Copyright ESA/Rosetta/Philae/CIVA

## TOUCHDOWN: ROSETTA'S PHILAE LANDER LANDS ON COMET!

After a long wait of 7 hours duration of descent of Philae to Comet, the soft landing occurred: an extraordinary feat being a first in space exploration.

Touchdown was confirmed at ESA's Space Operations Centre in Darmstadt (Germany) at 16:03 GMT on 12 November 2014. It was inside the predicted landing ellipse, confirmed using the Philae's down-looking ROLIS descent camera in combination with the orbiter's OSIRIS images to match features. The signal generated on first touchdown induced the instruments to 'think' that Philae had landed, triggering the next sequence of experiments.

The landing site, named Agilkia and located on the head of the double-lobed object, had been chosen just 6 weeks after arrival based on images and data collected at distances of 30 to 100 km from the comet. Those first images revealed the comet as a world of littered with boulders, towering cliffs and daunting precipices and pits, with jets of gas and dust streaming from the surface.

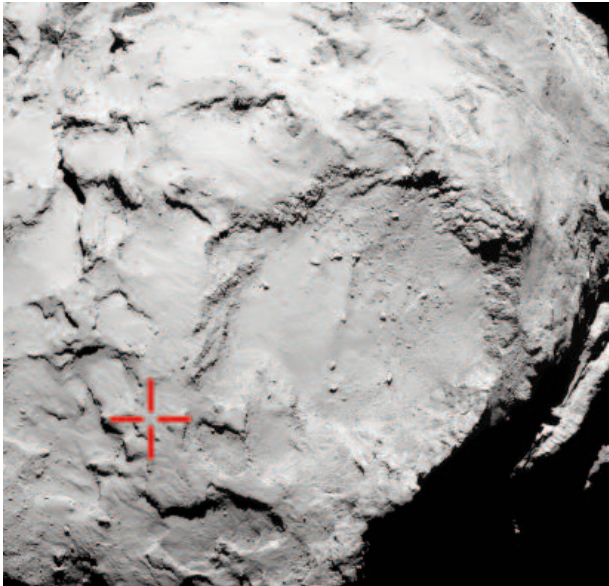
## THREE TOUCHDOWNS FOR ROSETTA'S LANDER

Immediately after the first touchdown, scientists, flight dynamics specialists and engineers from ESA – Lander Control Centre in Cologne (Germany) – and the Philae

Science, Operations and Navigation Centre in Toulouse (France) studied the first data returned from the Lander: these revealed the unfortunate conclusion that Philae had not just touched down the comet once, but three times.

As a matter of fact, with no downward thrusters and the automated harpoon system not having worked, Philae appeared to be rotating after the first touchdown, it had lifted off from the surface again for 1 hour 50 minutes: during that time, it travelled about 1 km at a speed of 38 cm/s and it then made a second hop, travelling at about 3 cm/s and finally landing in its final resting place 7 minutes later. The science instruments could run and deliver images and data, helping the team to learn about the final land site.

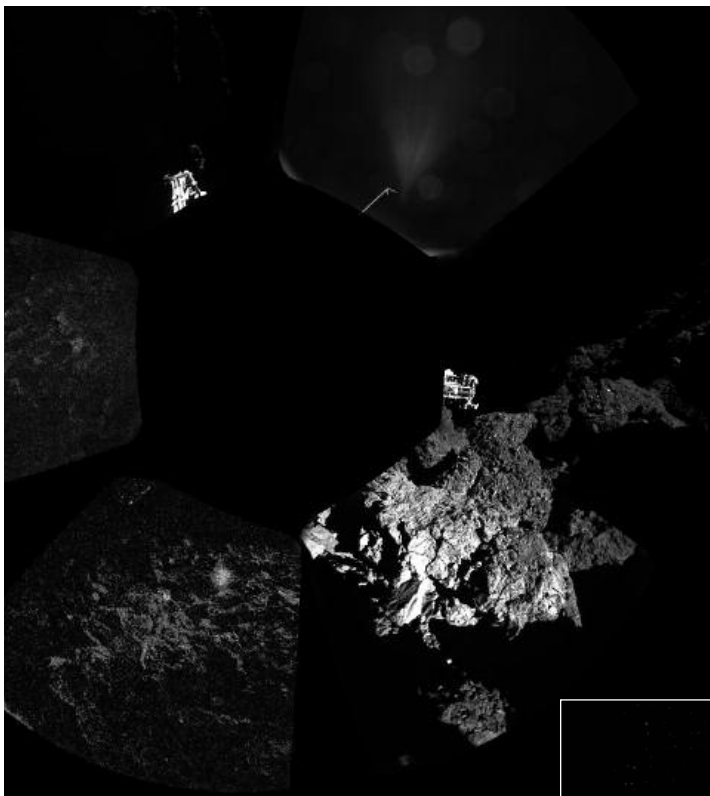
The descent camera revealed that the surface is covered by dust and debris ranging from millimetre to metre sizes. Meanwhile, Philae's CIVA camera returned a panoramic image that on first impressions suggests the Lander is close to a rocky wall, and perhaps has one of its three feet in open space. Anyway, it is clear that Philae remains unanchored to the surface, the harpoons having not entered the ground.



Location of the first touchdown, Philae bounced twice before setting on the surface.  
Copyright ESA/Rosetta/MPS

### PHILAE COMPLETES MAIN MISSION BEFORE HIBERNATION

On 15 November, Philae had been able to complete its primary science mission after nearly 57 hours on comet, thanks to the primary battery. After being out of communication visibility with the Lander since 09:58 GMT on Friday 14 November, Rosetta regained contact with Philae at 22:19 GMT in the evening of the same day. Initially intermittent, the signal quickly stabilised and became very good at 00:36 on Saturday morning 15 November. Philae returned at that time all of its housekeeping data and also science data from the instruments ROLIS, COSAC, Ptolemy, SD2 and CONSERT. This completed the measurements planned for the final block of experiments on the surface. Besides the Philae's body was lifted by about 4 cm and rotated approximately 35° in order to receive more solar energy; but as the last science data fed back to Earth, the stock of energy rapidly depleted. So, it is absolutely extraordinary that the experiments on the surface could deliver science data just in time despite the unplanned series of three touchdowns.



### First Comet panoramic

First comet panoramic released on 13 November: this view, unprocessed, such as captured by the CIVA-P imaging system, shows a 360° view around the point of final touchdown. It confirms the landing of Philae on 12 November at 16:03 GMT. Copyright ESA/Rosetta/Philae/CIVA

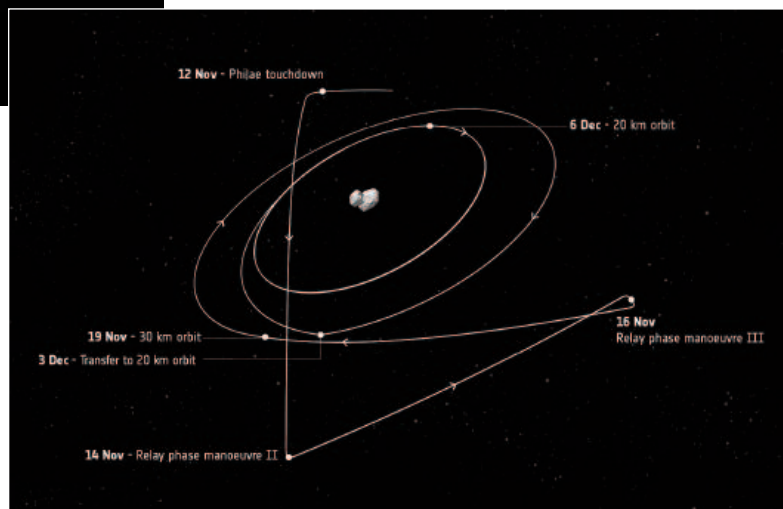
### WHAT WILL HAPPEN NEXT?

#### PHILAE

From now on, no contact will be possible with Philae unless sufficient sunlight falls on the solar panels to generate enough power to wake it up. It is unlikely that contact can be re-established in the near future. However it is still hoped that at a later stage of the mission, perhaps when we are nearer to the Sun, it might be possible to have enough solar illumination to wake up the Philae Lander and re-establish communication. Philae is presently in hibernation phase but the operators and scientists look forward to a return from hibernation at some point in time.

#### ROSETTA

Meanwhile the Rosetta orbiter has been moving back into a 30 km orbit around the comet. On 6 December, it will have returned to a 20 km orbit,



Rosetta path after 12 November 2014. Credit ESA

continuing its mission to study the comet, as the latter becomes more active, en route to its closest encounter with the Sun on 13 August 2015.

Rosetta's own mission is far from over and the spacecraft remains in excellent condition, with all of its systems and instruments performing as expected.

Over the coming months, Rosetta will start to fly in more distant 'unbound' orbits, while performing a series of daring fly-bys past the comet, some within just 8 km of its centre. Data collected by the orbiter will allow scientists to watch the short- and long- term changes that take place on the comet, helping to answer some of the biggest and most important questions regarding the history of our Solar System: How did it form and evolve? How do comets work? What role did comets play in the evolution of the planets, of water on the Earth, and perhaps even of life on our home world?

#### Some basic figures concerning 67P/Churyumov-Gerasimenko

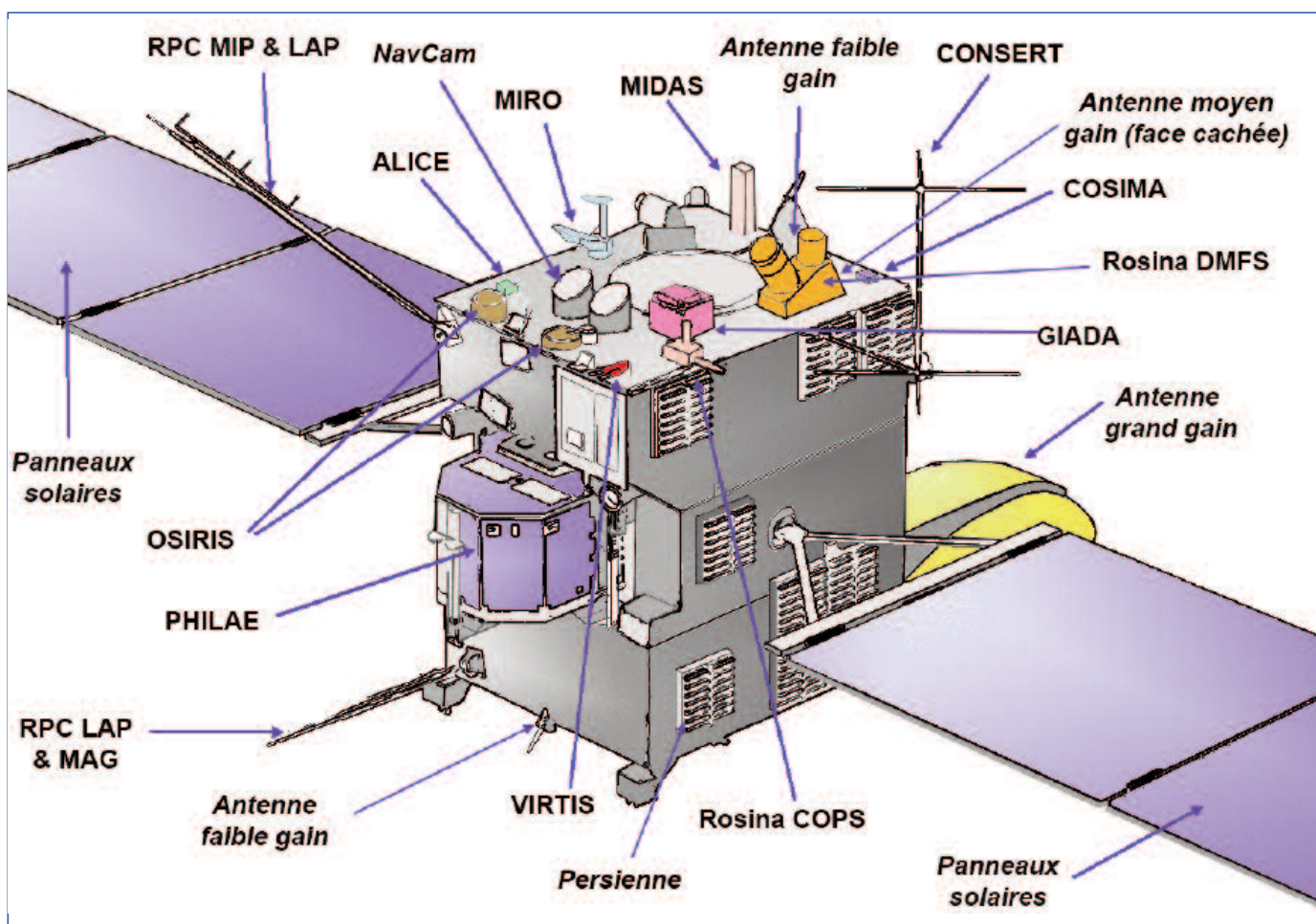
- Dimensions: large lobe 4.1 x 3.2 x 1.3 km – small lobe 2.5 x 2.5 x 2 km
- Mass = ( 1.0 +/- 0.1 ) x 10<sup>13</sup> kg
- Mean density = 0.4 g/cm<sup>3</sup>
- Escape velocity = 1 m/s
- Rotation period ~12.4043 h
- Surface temperature : min = -68 Celsius / max = - 43 Celsius

#### Some details about Philae

Schematic structure of Philae Lander

The instruments:

- APXS: X-ray spectrometer and Alpha protons
- CIVA: visible and IR analyser
- CONSERT: Radar sounder
- PTOLEMY: analyzer of the isotopic composition of the light elements
- MUPUS: sensors measuring the density, the thermal and mechanical properties of the surface
- ROLIS: high definition CCD camera located under the lander
- ROMAP: magnetometer to measure the intensity of the magnetic field and interactions with the Solar wind
- SD2: driller and sampler
- SESAME: tools to study the structure of Philae - propagation of sound waves through the surface - the electrical properties – dusts falling to the surface, etc. ▼





## NEWS FROM ESA



ESA Council at Ministerial Level, Luxembourg, on 2 December 2014

## SUCCESSFUL CONCLUSION OF ESA COUNCIL AT MINISTERIAL LEVEL

**On 2 December 2014, Ministers of ESA Members agreed the further development of a family of new launchers, and approved funding for the International Space Station and space exploration.**

### Ministers adopted three resolutions:

- 'Resolution on Europe's access to space', covering the development of Ariane 6 and Vega;
- 'Resolution on Europe's space exploration strategy', covering ESA's three destinations for exploration (LEO Low-Earth Orbit, Moon and Mars);
- 'Resolution on ESA evolution', covering the vision for ESA until 2030.

The three Resolutions are available on :

[http://www.esa.int/About\\_Us/Ministerial\\_Council\\_2014/Successful\\_conclusion\\_of\\_ESA\\_Council\\_at\\_Ministerial\\_Level](http://www.esa.int/About_Us/Ministerial_Council_2014/Successful_conclusion_of_ESA_Council_at_Ministerial_Level)

## 10 NOVEMBER 2014 ESA Astronaut Alexander Gerst Returns to Earth

ESA astronaut Alexander Gerst, Russian commander Maxim Suraev and NASA astronaut Reid Wiseman returned to Earth on 10 November 2014, landing in the Kazakh steppe. Their return, landing at 03:58 GMT was in the same Soyuz TMA-13M spacecraft that flew them to the International Space Station (ISS) on 28 May 2014.



Ariane 6 four-booster configuration (A64)



Alexander Gerst during his spacewalk. © ESA

A large selection of photographs from Blue Dot, most taken by Alexander Gerst himself can be seen on:

[http://www.flickr.com/photos/astro\\_alex](http://www.flickr.com/photos/astro_alex)



ESA astronaut Alexander Gerst when he returned to Earth  
Alexander Gerst performed over 50 experiments during his flight in the micro-gravity laboratory when it circled the Earth 400 km up. Highlights of Alexander's 'blue Dot' mission included installing ESA's furnace that can suspend and cool molten metal in mid-air, a spacewalk to maintain and improve the ISS, and the docking of Europe's last Automated Transfer Vehicle (ATV). © ESA

## 24 NOVEMBER 2014: ESA Astronaut Samantha Cristoforetti arrives at International Space Station (ISS)



ESA astronaut Samantha Cristoforetti arrives at the International Space Station ISS. Credit ESA

On this mission, Samantha Cristoforetti is flying as an ESA astronaut for Italy's Space Agency (ASI) under a special agreement between ASI and NASA. With Samantha are Russian Soyuz commander Anton Shkaplerov and NASA astronaut Terry Virts. Samantha's mission is named 'Futura' to highlight the science and technology research she will run in microgravity. The Soyuz TMA-15M spacecraft launched from Baikonour on 23 November at 21:01



Waving goodbye. Credit ESA

GMT reached orbit nine minutes later. The astronauts reached their destination 5 hours 48 minutes after lift-off and 4 orbits around the Earth. Their spacecraft docked as planned at 02:49 GMT, and the hatch to their living room in space was opened at 05:00 GMT.

Samantha and her crewmates were welcomed aboard by NASA Station commander Barry Wilmore and Roscosmos cosmonauts Yelena Serova and Alexander Samokutyaev. The three residents said goodbye to the Expedition of ESA astronaut Alexander Gerst two weeks ago.

### THE 'FUTURA' MISSION

Visit [www.esa.int/Futura](http://www.esa.int/Futura)

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



## YEAR 2015

05-09 January • **AIAA – SCITECH 2015** – AIAA Science and Technology Forum and Exposition 2015 – Featuring: 23<sup>rd</sup> AIAA/ASME/AHS Adaptive Structures Conference – 53<sup>rd</sup> AIAA Aerospace Sciences Meeting – Atmospheric Flight Mechanics – Infotech@Aerospace – Spacecraft Structures – GNC – Modeling and Simulation – 17<sup>th</sup> AIAA Non-Deterministic Approaches – 56<sup>th</sup> AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference – 8<sup>th</sup> Symposium on Space Resource Utilization – 33<sup>rd</sup> ASME Wind Energy Symposium – Location: Kissimmee, FL – [www.aiaa.org/](http://www.aiaa.org/)

11-15 January • **25<sup>th</sup> AAS/AIAA Space Flight Mechanics Meeting** – Williamsburg, VA – <http://space-flight.org/www.aiaa.org/>

26-29 January • **AIAA** – 61<sup>st</sup> Annual reliability & Maintainability Conference – RAMS 2015 – Palm Harbor, FL – [www.rams.org](http://www.rams.org) [www.aiaa.org/](http://www.aiaa.org/)

02-05 February • **ICAO** – 2<sup>nd</sup> High-Level Safety Conference – Montréal, ICAO/HQ (Canada) – [www.icao.int/meetings/hlsc2015](http://www.icao.int/meetings/hlsc2015)

04-05 February • **3AF/SEE** – MEA2015 – More Electrical Aircraft - Toulouse (France) – [www.mea2015.eu](http://www.mea2015.eu)

24 February-1 March • **AVALON** – AVALON 2015 – Geelong, Victoria (Australia) – International Airport – [www.airshow.com.au/airshow2015](http://www.airshow.com.au/airshow2015)

25 February • **RAeS** – Airport Security – London – RAeS/HQ – [www.aerosociety.com/Events](http://www.aerosociety.com/Events)

02-06 March • **ESA** – 8<sup>th</sup> ESASV – Symposium on Aerothermodynamics for Space Vehicles – Lisbon (Portugal) – [www.congrexprojects.com/15a01](http://www.congrexprojects.com/15a01)

07-14 March • **IEEE** – IEEE Aerospace Conference – BiD Sky, MT – [www.aeroconf.org](http://www.aeroconf.org)

10-12 March • **CANSO** – World ATM Congress 2015 – Madrid (Spain) – [www.canso.org/worldatmcongress](http://www.canso.org/worldatmcongress)

10-12 March • **AIAA** – Defense 2015 - Laurel, Maryland (USA) – [www.aiaa.defense.org](http://www.aiaa.defense.org)

10-12 March • **IATA** – World Cargo Symposium – Shanghai (RPC) – Pudong Shangri - la – [www.iata.org/events/wcs](http://www.iata.org/events/wcs)

16-19 March • **SATELLITE 2015** – Satellite Communications – Washington D.C. (USA) – [www.SATSHOW.com](http://www.SATSHOW.com)

17-18 March • **RAeS** – The Flight Operations Manager in the 21<sup>st</sup> Century – London (UK) – [www.aerosociety.com/Events](http://www.aerosociety.com/Events)

18-20 March • **ICAO** – Making Civil Space a REALITY – Montréal (Canada) – ICAO/HQ – [www.icao.int/meetings/space2015/](http://www.icao.int/meetings/space2015/)

23-25 March • **ICAO** – Remotely piloted aircraft Systems (RPAS) Symposium – Montréal (Canada) – ICAO/HQ [www.icao.int/meetings/rpas/](http://www.icao.int/meetings/rpas/)

23-26 March • **Euroturbo** – 11<sup>th</sup> European Turbomachinery Conference – Madrid (Spain) – [www.euroturbo.eu/](http://www.euroturbo.eu/)

23-27 March • **ESA** – FRINGE 2015 – Scientific Exploitation of Operational Missions – Workshop – Frascati, ESA/ESRIN (Italy) – [www.seom.esa.int/fringe2015/](http://www.seom.esa.int/fringe2015/)

29 March-01 April • **ICAO** – HLSC Developing Proactive Global Safety Strategy – Montréal, ICAO/HQ (Canada) – [www.icao.int/Newsroom/Pages/](http://www.icao.int/Newsroom/Pages/)



30 March – 02 April • **AIAA** – 23<sup>rd</sup> AIAA Aerodynamic decelerator Systems Technology Conference and Seminar – Daytona Beach, FL – [www.aiaa.org/](http://www.aiaa.org/)

13-15 April • **CEAS** – EuroGNC 2015 – 3<sup>rd</sup> CEAS Specialist Conference on Guidance, Navigation and Control (GNC) – Toulouse (France) – [www.onera.fr/eurognc2015](http://www.onera.fr/eurognc2015) -

13-17 April • **IAA** – 2015 IAA Planetary Defense Conference – Frascati (Italy) – ESA/ESRIN – [www.pdc2015.org](http://www.pdc2015.org) -

15-18 April • **IAA** – AERO Friedrichshafen 2015 – General aviation – Friedrichshafen (Germany) – [www.aero-expo.com/](http://www.aero-expo.com/) -

21-23 April • **ACI Europe** – 24<sup>th</sup> Airport Commercial & Retail Conference and Exhibition – Prague (Czech Republic) – Nhow Milano Hotel – [www.aci-europe-events.com](http://www.aci-europe-events.com)

5-7 May • **IATA** – 2015 Cabin Operations Safety Conference – Paris (France) – Le Méridien Etoile – [www.iata.org/events/](http://www.iata.org/events/)

12 May • **RAeS** – Human Factors: Engineering Innovation Day 2015 – Cranfield (UK) – Cranfield University – [www.aerosociety.com/Events/](http://www.aerosociety.com/Events/)

18-20 May • **ESA** – TRISMAC 2015 – Frascati (Italy) – ESA/ESRIN – [www.congrexprojects.com/2015-events/trismac2015/general](http://www.congrexprojects.com/2015-events/trismac2015/general)

19-21 May • **EBAA/NBAA – EBACE 2015** – Geneva (Switzerland) – Palexpo Geneva International Airport – [www.ebace.aero/](http://www.ebace.aero/)

25-29 May • **ESA/CNES – 2<sup>nd</sup> SMOS Science Conference** – Soil Moisture Ocean Salinity (SMOS) satellite data applications - Madrid, ESA/ESAC (Spain) – [www.smos2015.info/](http://www.smos2015.info/)

07-12 June • **ESA/ANDOYA SPACE CENTRE – 22<sup>nd</sup> ESA Symposium on Rocket and Balloon Programme** – Tromso (Norway) – [www.pac.spaceflight.esa.int](http://www.pac.spaceflight.esa.int)

8-10 June • **ESA** – XMM-Newton 2015 Science Workshop – Madrid (Spain) – ESA/ESAC – [www.xmm.esac.esa.int/](http://www.xmm.esac.esa.int/)

09-10 June • **RAeS** – Future Challenges in Flight Simulation – London (UK) – RAeS/HQ – [www.aerosociety.com/Events](http://www.aerosociety.com/Events)

09-12 June • **3AF/CEAS** – 11<sup>th</sup> International Conference on Missile Defence – Barcelona (Spain) – Palay de Congressos de Catalunya – [www.missile-defence.com](http://www.missile-defence.com)

15-21 June • **SIAE/GIFAS** – International Paris Air Show 2015 – Le Bourget (France) – [www.siae.fr/](http://www.siae.fr/)

22-25 June • **SAE International** – International Conference on Icing of Aircraft, Engines and Structures – Prague (Czech Republic) – Hotel International Prague – [www.sae.org/events/icing/](http://www.sae.org/events/icing/)

22-26 June • **AIAA** – AIAA AVIATION 2015 – Dallas, TX (USA) – [www.aiaa.org/Event/](http://www.aiaa.org/Event/)

22-26 June • **ACI Europe** – 25<sup>th</sup> ACI Europe General Assembly – Prague (Czech Republic) – Hilton Prague – [www.aci-europe-events.com](http://www.aci-europe-events.com)

28 June-03 July • **TsAGI – IFASD 2015** – 16<sup>th</sup> International Forum on Aeroelasticity and Structural Dynamics – Saint Petersburg (Russia) – Sokos Hotel Place Bridge – [www.ifsasd2015.com/](http://www.ifsasd2015.com/)

29-30 June • **ERCOFTAC** – 11<sup>th</sup> Conference on Synthetic Turbulence Models – Lyon (France) – ECL Ecully – [www.ercoftac.org/](http://www.ercoftac.org/)

## THE CEAS/ASD AEROSPACE EVENTS CALENDAR

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

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

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

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

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

### AUTOMATIC INSERTION OF NEW EVENTS BY THE ORGANISERS THEMSELVES:

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

### CONTACTS:

[postmaster@aerospace-events.eu](mailto:postmaster@aerospace-events.eu) is the general address for any question and requests;

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



Home

**ONERA, ISAE, and ENAC  
ANNOUNCE THE 3rd CEAS EUROGNC CONFERENCE**

13 - 15 April 2015 - Toulouse - France

hosted by ISAE - Institut Supérieur de l'Aéronautique et de l'Espace -



Supported by



The CEAS EuroGNC Conferences aim the promotion of scientific and technical excellence in the fields of Guidance, Navigation and Control (GNC) in Aerospace. The European Aerospace GNC Conference 2015, co-organized by ONERA, ISAE and ENAC, will serve as a forum for communication and information exchange between specialists in the fields of GNC systems design and operation, including Air Traffic Management. Scientists and engineers from industry, research institutes and universities involved in the development of novel GNC methods, applications or technologies are invited to attend this third EuroGNC Conference. Presentations should primarily be focused on technical and scientific aspects of GNC.