

BULLETIN
**AEROSPACE
EUROPE**

**13 OCTOBER 2024: SUCCESSFUL
FIFTH FLIGHT TEST OF SPACEX
STARSHIP (IFT-5)**

***UNPRECEDENTED « CATCH »
OF ITS SUPER HEAVY BOOSTER
BACK AT THE LAUNCH SITE***

T+00:06:48
STARSHIP FLIGHT TEST

CEAS

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

It was established as a legal entity conferred under Belgium Law on 1st of January 2007. The creation of this Council was the result of a slow evolution of the 'Confederation' of European Aerospace Societies which was born fifteen years earlier, in 1992, with three nations only at that time: France, Germany and the UK.

It currently comprises:

- 11 Full Member Societies: Czech Republic (CzAeS) – France (3AF) – Germany (DGLR) – Italy (AIDAA) – The Netherlands (NVvL) – Poland (PSAA) – Romania (AAAR) – Spain (AIAE) – Sweden (FTF) – Switzerland (SVFW) – United Kingdom (RAeS);
- 5 Corporate Members: ESA, EASA, EUROCONTROL, EUROAVIA, von Karman Institute;
- 9 Societies having signed a Memorandum of Understanding (MoU) with CEAS: AAE (Air and Space Academy), AIAA (American Institute of Aeronautics and Astronautics), CSA (Chinese Society of Astronautics), EASN (European Aeronautics Science Network), EREA (European association of Research Establishments in Aeronautics), ICAS (International Council of Aeronautical Sciences), KSAS (Korean Society for Aeronautical and Space Sciences), PEGASUS (Partnership of a European Group of Aeronautics and Space Universities) and Society of Flight Test Engineers (SFTE-EC).

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

AEROSPACE EUROPE

Since January 2018, the CEAS has closely been associated with six European Aerospace Science and Technology Research Associations: EASN (European Aeronautics Science Network), ECCOMAS (European Community on Computational Methods in Applied Sciences), EUCASS (European Conference for Aeronautics and Space Sciences), EUROMECH (European Mechanics Society), EUROTURBO (European Turbomachinery Society) and ERCOFTAC (European Research Community on Flow Turbulence Air Combustion).

Together those various entities form the platform 'AEROSPACE EUROPE', the aim of which is to coordinate the calendar of the various conferences and workshops as well as to rationalise the information dissemination.

This new concept is the successful conclusion of a work which was conducted under the aegis of the European Commission and under its initiative.

The activities of 'AEROSPACE EUROPE' will not be limited to the partners listed above but are indeed dedicated to the whole European Aerospace Community: industry, institutions and academia.

WHAT DOES CEAS OFFER YOU ?

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- A structure for Technical Committees

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- CEAS Aeronautical Journal
- CEAS Space Journal
- AEROSPACE EUROPE Bulletin

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- European Commission
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- Annual CEAS Gold Medal
- Medals in Technical Areas
- Distinguished Service Award
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YOUNG PROFESSIONAL AEROSPACE FORUM SPONSORING

AEROSPACE EUROPE Bulletin

AEROSPACE EUROPE Bulletin is a quarterly publication aiming to provide the European aerospace community with high-standard information concerning current activities and preparation for the future.

Elaborated in close cooperation with the European institutions and organisations, it is structured around five headlines: Civil Aviation operations, Aeronautics Technology, Aerospace Defence & Security, Space, Education & Training and Young Professionals. All those topics are dealt with from an overall European perspective.

Readership: decision makers, scientists and engineers of European industry and institutions, education and research actors.

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ABOUT THE FIFTH INTEGRATED FLIGHT TEST OF STARSHIP

The front page of this CEAS bulletin highlights the most important exploit recently achieved in space transportation: the incredible return of the Super Heavy booster (height 71 m, diameter 9 m, mass 200 t) to the launch site that it had left seven minutes before! It was during IFT-5, the fifth integrated flight test of SpaceX's mega rocket Starship on Sunday 13 October 2024.

IFT- 5 had two main objectives: on the one hand to demonstrate the possibility to recover a big rocket, and on the other hand to get the ship vehicle precisely on target when splashing down in the sea at the end of the flight. Both marks were hit, which marks quite a decisive step forward in Starship development programme, after the regular successive advances made since IFT-1 in April 2023, in line with Silicon Valley "Test and Learn Strategy" for development approach. "We develop, we fly, we break things and go back and fly again", Elon Musk says.

After such a demonstration of extremely high technology mastery by SpaceX, it seems obvious that now the road is opened for Starship to play the most eminent roles in NASA Artemis programme, the sustainable robotic and human exploration of the Moon with the organisation of regular missions and the installation of a permanent post of the Moon. Let's note that the reusability of Starship evidently constitutes a huge advantage.

Many new Starship integrated flight tests are going to take place in the coming months, they will be regularly reported in our CEAS bulletin. Among mid-term achievements, is notably the support mission to Artemis III mission – currently expected to take place in September 2026 – which will aim to place a Starship Human Landing System (HLS) in a near-rectilinear halo orbit (HALO) of the Moon prior to the launch of the Orion vehicle by NASA Space Launch System (SLS).

Definitely we are entering into a quite fascinating new era of space exploration, the Artemis generation is lucky!

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CEAS PRESIDENT'S MESSAGE



Franco Bernelli Zazzera
CEAS President 2021-2024

The aerospace community is definitely living a fascinating and stimulating period, showcasing a wealth of promising innovations in all sectors.

In the last month I had the opportunity to participate in three events that have had record-breaking participation, notably the European Rotorcraft Forum, the Congress of the International Council of the Aeronautical Sciences and the International Astronautical Congress. Three events dedicated to different communities but all showing a huge increase in active participation. As President of CEAS, I am proud of these successes since all the three events have been organized with a strong contribution of our member societies.

The European Rotorcraft Forum, one of the premier events in the rotorcraft community, has been organized by the 3AF in Marseille, France. The Congress of the International Council of the Aeronautical Sciences, the world's primary forum for aeronautical technology, has been organized in Firenze, Italy, and hosted by AIDAA, the Italian Association of Aeronautics and Astronautics. AIDAA has also been the hosting society for the International Astronautical Congress, held in Milano, Italy, and it has proven to be the largest gathering of professionals in the sector.

These events have put Europe, and in particular Italy, at the heart of aerospace innovation and technology, demonstrating the overall capacity of our continent and its attractiveness. It has been a real pleasure to notice that at all these events the participation of the younger generation of professionals is increasing. Similarly, the interest of younger students in aerospace technologies is constantly increasing, providing a solid foundation for the future of the sector.

Indeed, the most spectacular and fascinating achievements come from the space sector, where the last few weeks have seen the success of the controlled re-entry of the Starship launcher and also the successful launch of the Hera mission, the first planetary defence mission. The progress in aeronautics is in this moment less fasci-

nating, due to the lack of new flagship programmes, but nevertheless still constant and important. Sustainability of aviation is of primary concern, and it is the driver of research on electric flight, alternative fuels, alternative airframe configurations, AI-enabled automatic processes and procedures, just to mention a few.

Looking at this progress, I would like to mention that CEAS is committed to stimulating it and to recognize personalities that make this possible. I am happy to share that this year CEAS has identified Georges Bridel as recipient of the CEAS Gold Award. Georges Bridel has provided significant contributions to the development of European military fighter aircraft, including the development of stealth fighter geometries. He has provided great stimuli towards the development of a joint European future fighter aircraft. He was strongly engaged in the support of early career scientists and engineers in an international environment.

Scientific and technological progress is typically shared within the research community through publications in archival journals, such as the CEAS Aeronautical Journal and the CEAS Space Journal. But the information about progress in aerospace needs to reach a wider audience and should not be limited to the specialists in the specific sector. This is the motivation behind the publication of the CEAS Aerospace Europe Bulletin, where the reader can find the latest updates with no complex mathematical model included. I am extremely pleased to say that this year CEAS has decided to assign the CEAS Distinguished Service Award to Jean-Pierre Sanfourche, Editor-in-Chief of the CEAS Aerospace Europe Bulletin, for his long-term dedicated service to CEAS and the entire European Aerospace Community and in recognition of the excellence and quality of the Bulletin. I am pretty sure that, reading this issue of the Bulletin, you will agree with the decision of CEAS.



DR. CORNELIA HILLENHERMS PRESIDENT-ELECT OF CEAS



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Managing Editor of the CEAS Aeronautical Journal as a research associate at the German Aerospace Centre (DLR) in Cologne.

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Project Manager at the Cabin Design & Innovation Centre at Airbus Germany in Hamburg (2003 – 2006).

Academic background:

Doctorate (2003) in experimental transonic aerodynamics from the Institute of Aerodynamics at RWTH

Aachen University. Awarded the Borchers Medal for a doctorate with "summa cum laude" (distinction).

Diploma (1994) in Aerospace Engineering from the Technical University of Berlin.

Personal background:

Born 1970 in Berlin, married, two children.

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Active member of the German Aerospace Society DGLR:

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CEAS Vice President Finance (since 2014). Member of the EREA Best Paper Award jury.

Member of Zonta International, President of ZC Cologne 2008 (2018 – 2021), member of the International Amelia Earhart Fellowship Jury in 2024, Amelia Earhart Fellowship Award 2002/2003. Member of EUROAVIA, AIAA Senior Member.

SUMMARY ON IAC 2024

The International Astronautical Congress 2024, held in Milano on October 14-18, has been the most attended IAC in history, with 11.200 registered participants from 120 countries, plus over 3.000 registrations for the public day. The largest delegations have been from Italy (24,5%), USA (11,0%), France (6,8%), Germany (6,2%), UK (4,6%), China (4,4%) and Japan (4,0%). Students and Young professionals, less than 35 years of age, represented 51,1% of the delegates, while the older generation, 66+ in age, covered only 3,9% of the delegates. The scientific program has been impressive, counting 7.197 abstracts submitted, out of which 4.605 accepted. In the four and a half days of technical sessions, 2.374 oral presentations have been delivered, divided into 197 technical sessions in 22 parallel rooms. The scientific program included also 2.231 interactive presentations on 90 digital interactive screens. Top countries in the scientific program have been Italy (766 presentations), US (592 presentations), China (324 presentations), Germany (278 presentations), India (235 presentations), UK (225 presentations), France (215 presentations), Japan (211 presentations). The congress covers almost all subjects relevant to space sciences, and a broad division into categories shows 1.204 presentations in Science and Exploration, 1.009 in Applications and Operations, 977 in Space and Society, 838 in Technology and 577 in Infrastructure. On

top of that, 28 invited symposium keynotes 7 plenary events 3 highlight lectures have completed the program. It is worth mentioning that for the first time ever a summit with over 60 heads of space agencies has been organized.

The traditional Public Day of the IAC has also exceeded expectations, drawing more than 3,000 attendees from schools, universities, and various professional fields, all eager to explore astronautics and space engineering. Participants engaged in discussions on the topic of space sustainability, together with leading experts from academy, industry, and space agencies. Attendees met astronauts in person, capturing memorable moments with first-hand stories of life in space. In addition, an interactive area was set up to offer immersive experiences, featuring space-related activities, art exhibits and hands-on workshops, making the day both educational and inspiring.

The congress features also an exhibition, that this year has seen 222 exhibitors from 45 countries, with 311 co-exhibitors hosted in 33 national and regional pavilions. The exhibition space of nearly 20.000 square meters, with 8.624 square meters of exhibition booths, also represents a record for the event. ■

CLEAN AVIATION JU AT ICAS2024, FLORENCE, 9-12 SEPTEMBER

THE EUROPEAN AMBITION FOR GLOBAL SUSTAINABLE AVIATION

Tuesday 10/09/2024

"We need to move fast! And we need to move together on a global scale!" declared Axel Krein, Executive Director of Clean Aviation, at the International Council of the Aeronautical Sciences (ICAS) Congress in Florence, Italy. Axel Krein emphasized the need for speed and unity as Clean Aviation sharpens its focus on achieving 'Entry into Service by 2035'.



CLEAN AVIATION'S FOUR AIRCRAFT CONCEPTS

At the heart of this effort are four advanced aircraft concepts: Ultra-efficient Regional Aircraft, two Hydrogen-powered Aircraft, and Ultra-efficient Short and Medium-Range Aircraft. These concepts span innovations in hybrid-electric propulsion, advanced wing technologies, and cutting-edge fuselage designs, reflecting Clean Aviation's determination to transform air travel. The current projects are advancing toward Technology Readiness Level (TRL) 5, setting the stage for Phase 2, which will bring these technologies to TRL 6 in the near future.

GLOBAL COOPERATION AND NATIONAL INITIATIVES DRIVING GLOBAL SUSTAINABLE AVIATION

In his keynote, Krein also underscored the critical importance of global cooperation and national commitments in driving the sustainable aviation agenda. Together with representatives from NASA and Aviation Week, Krein launched the 'Global Sustainable Aviation' track at ICAS, a

platform designed to foster cross-continent collaboration. He stressed that the global challenge of decarbonizing aviation demands the binding commitments of countries and Member States, as well as the sharing of knowledge across industries and sectors. In Europe, this is the motor of the EU Green Deal aiming at becoming the first climate-neutral continent in the world by 2050.

Krein also highlighted the essential role that national and regional programmes play in supporting the competitiveness of their aviation industries. European countries, in particular, are actively working to mature disruptive aircraft technologies for the next generation of low-emission aircraft. These efforts are complementary to Clean Aviation's mission and serve to accelerate the broader transformation toward climate-neutral aviation. Within such diversified ecosystem, Clean Aviation acts as an enabler, fostering industrial collaborations across countries and spearheading flagship projects with a global impact.

Clean Aviation's aircraft concepts





A HOLISTIC APPROACH TO TRANSFORMING AVIATION



Adopting a holistic approach is central to reach Global Sustainable Aviation, Krein explained. While aircraft technology is a critical component, the transformation of the sector requires an integrated ecosystem. This includes

advancements in air traffic management (ATM), airport operations, sustainable aviation fuel (SAF) production, renewable electricity, faster certification processes, and accelerated fleet replacements. These elements form the comprehensive vision necessary for the sustainable transformation of the aviation industry.

ICAS, a staple event gathering leading researchers, industry figures, and innovators from the aerospace sector worldwide, provided the ideal stage for such global dialogue. Krein's call for unity and action resonated with the audience, reinforcing the need for international cooperation and a broad-based, systemic approach to achieving sustainable aviation. Together.

<https://www.clean-aviation.eu/news>



REVIEW OF THE 50TH EUROPEAN ROTORCRAFT FORUM IN MARSEILLE

Louis Fabre (President of the 3AF Provence Regional Group, Airbus Helicopters, member of the Helicopter & VTOL Technical Committee).

Arnaud Le Pape (Conference Chair, ONERA, Vice President of the Helicopter & VTOL Technical Committee).



Arnaud Le Pape

Louis Fabre

THE 50TH EDITION OF THE EUROPEAN ROTORCRAFT FORUM (ERF) TOOK PLACE FROM 10 TO 12 SEPTEMBER 2024 IN MARSEILLE, AT PALAIS DU PHARO.

The European Rotorcraft Forum is the first event in the European rotorcraft community's fall calendar, bringing together industry professionals, research institutes, academics, operators, and regulatory bodies to discuss advances in research, development, design, manufacturing, testing, and aircraft operations. It is held annually across Europe, rotating among countries where the helicopter industry is present: the United Kingdom, Germany, France, Italy, the Netherlands, Poland, and Switzerland. It is organized by the various national aerospace societies and the country representatives on the forum's international committee.

France was responsible for organizing this anniversary edition, and the 3AF conference team, led by Aude Lurbe, with active support from the 3AF Provence Regional Group and the Helicopter and VTOL Technical Committee, rose to the challenge (the previous French edition was held in Lille in 2016). This edition was organized in partnership with the French representatives on the international steering committee, Arnaud Le Pape, Director of Helicopter Programmes at ONERA and Conference Chair of ERF2024, and Tomasz Krynski, Director of Research at Airbus Helicopters. Airbus Helicopters, ONERA, Safran Helicopter Engines, as well as several companies (Capgemini Engineering, CT Engineering, Hutchinson, and Nexteam Group) supported the event.

This edition saw a significant increase in registrations, with 368 participants from 20 countries, representing a

35% rise compared to previous ERF events. The technical content of the European Rotorcraft Forum 2024 covered a wide range of topics, reflecting significant advancements in the field of rotary-wing aircraft.

The opening ceremony and plenary sessions featured prominent speakers representing learned societies (Franco Bernelli, president of CEAS), helicopter operators (European Helicopter Association), industry leaders (Airbus Helicopters and Safran Helicopter Engines), research centers (ONERA), as well as new players (Ascendance Flight Technologies). A conference was also held on the second day by Colonel Pierre Madej from the French Air and Space Force, focusing on future operational needs for military operations.

The 159 papers (30% more than previous editions) - selected by the scientific committee - were presented during 30 thematic sessions spread across 6 rooms. A variety of topics were covered, spanning all areas of helicopters and rotary wings: aerodynamics, acoustics, dynamics, flight mechanics, UAVs, emerging technologies such as hybrid and electric propulsion systems for vertical take-off and landing (VTOL) vehicles, manufacturing, simulation, testing, systems, human factors, as well as safety.

The central theme of decarbonising the aviation industry was addressed from the perspective of improving energy efficiency and reducing helicopter emissions. In-depth discussions on new propulsion systems - particularly electric and hybrid engines - were highlighted, with notable contributions from major players such as Airbus Helicopters and Safran Helicopter Engines.



Pascal Dauriac, Director R&T at Safran Helicopter Engines, during his presentation in the plenary session



Conference room filled to capacity during plenary session

Another key theme of the conference was flight safety, with presentations focused on innovations in system reliability, risk management, and operational safety in challenging environments.

Beyond these themes, many papers highlighted the growing use of Artificial Intelligence, particularly neural network-based learning techniques, in design, manufacturing, and even flight control and management.

For future editions, the committee plans to promote topics related to embedded functions and systems, particularly avionics and certification, in its calls for papers. More space will also be given to operational insights with feedback from operators.

PRIZES

The ERF awards three prizes, with the recipients to be announced soon.

- The **Ian Cheeseman Award** for the best conference paper will be invited to the next Vertical Flight Society Forum, organized in May 2025 in Virginia Beach.
- The **Padfield Award** for the best paper by a young researcher will receive Gareth Padfield's book on helicopter flight dynamics and €500 from CEAS.
- Finally, the **Chairman Award** for the best international cooperation paper will be invited to the next Asian-Australian Rotorcraft Forum conference.
- At each ERF edition, the **best paper from the annual Vertical Flight Society Forum** is honoured and presented. This year, Ms. Sotiropoulos-Georgiopoulos presented her plenary paper titled "Scenario-Based Helicopter Flight Simulation of Accident-Prone Vortex Ring State (VRS) Encounters," co-authored with the FAA.

The presence of representatives from British (RAeS), German (DGLR), and Italian (AIDAA) aerospace societies at the forum allowed for fruitful exchanges with members of the



Ms. Sotiropoulos-georgiopoulos receives the prize of best paper from the annual Vertical Flight Society Forum

3AF Helicopter and VTOL technical committee. Each society presented its structure and work in the rotary-wing field. Although these societies have different organizations and goals, it was agreed that meetings will be held alongside each annual forum to discuss the work each society will present.

The forum also provided an opportunity for a meeting between the drone and helicopter and VTOL technical committees, setting the groundwork for future technical cooperation, with an initial focus on societal acceptance.



Meeting between rotorcraft/VTOL technical commissions from 3AF, DGLR, RAeS and AIDAA

VISIT TO AIRBUS HELICOPTERS IN MARIGNANE

The forum concluded with a visit to Airbus Helicopters' industrial facilities in Marignane. A group of 110 people discovered the final assembly line of the H125 (Airbus Helicopters' best-seller, currently celebrating 40 million flight hours), the automated H160 line based on a car assembly chain principle, the Helicopter 0 dynamic test bench (used

for dynamic system and engine testing), and the rotor and transmission production centre. The highlight of the visit was access to the high-speed demonstrator RACER, presented by its chief engineer.

The satisfaction survey conducted at the end of the forum, as well as social media messages, underscored the scientific and technical relevance of the forum, the interest in meeting experts, and the excellent organization by 3AF.



The whole ERF2024 presence in front of Palais du Pharo

**THE 51ST EDITION WILL TAKE PLACE
IN VENICE, ITALY, ORGANIZED
BY AIDAA AND LEONARDO HELICOPTERS
FROM 9 TO 12 SEPTEMBER 2025.**



The Italian team will succeed to 3AF for ERF2025's organization

SURVEY FROM THE 3RD HISST CONFERENCE IN BUSAN, KOREA, 2024

Commented by Dr. Adam Siebenhaar, HiSST Technical Committee Chair

The 3rd High-Speed Vehicle Systems and Technologies (HiSST) Conference was held in Busan, Korea, in April 2024, drawing a total of 363 participants. The event featured 257 Technical Papers presented, eight Global Reports, and six keynote speeches, building on the momentum established during the 2nd HiSST Conference in Bruges, Belgium, in September 2022. Additionally, the number of Workshops increased from one to four. Following the conference, a survey was conducted with 106 participants. The survey results are summarized below, alongside a comparison with the feedback from the 2nd HiSST Conference.

Figure 1 illustrates the Technical Aspects comparison between the 2022 event in Bruges and the 2024 event in Busan indicating a general trend of improvement in participant satisfaction. Significant gains were seen in Abstract/Manuscript Submission (Process) and the Technical Program Experience, with the facility visit in Busan standing out as the best result, achieving a perfect score of 5. While some areas, such as keynote variety, saw a decline, the overall reception in Busan was positive, particularly with the introduction of new categories like Global Reviews & Keynote Speeches Usefulness and Workshops.

As shown in Figure 2, the Event Performance comparison between the 2022 event in Bruges and the 2024 event in

Busan presents a clear trend of improvement across nearly all categories, with participants appreciating the efforts taken rendering the HiSST event attractive from different perspectives. Venue selection, lodging, social programs, and the gala dinner all received higher ratings in Busan, with the most notable scores of close to 5.00 achieved by the newly added categories of Coffee Breaks and Lunches. Additionally, the likelihood of attending future events increased, reflecting a successful and well-received 2024 event.

As portrayed in Figure 3, in 2024 and in 2022 100% of participants would recommend the conference to a friend. 57% of attendees in Busan felt the 9.5-hour/day conference day was too long, and 59% supported the idea of offering sightseeing tours.

One-Line Takeaways from a Variety of Suggestions and General Comments:

- 1. Payment Process Security:** While convenient, the registration payment process lacked visible security features, causing some discomfort.
- 2. Global Reviews:** Valuable for highlighting contributions, but the session felt too long and rushed; a more concise, impact-focused approach is recommended.
- 3. Keynote Sessions:** The quality varied; future keynotes should focus on broader topics for greater relevance and engagement.

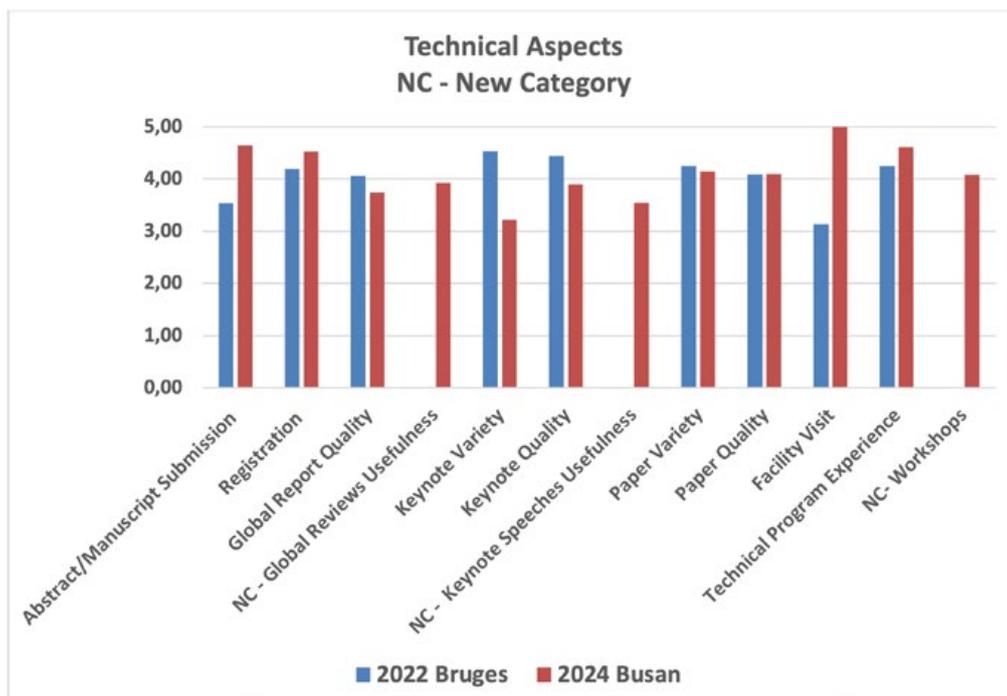


figure 1

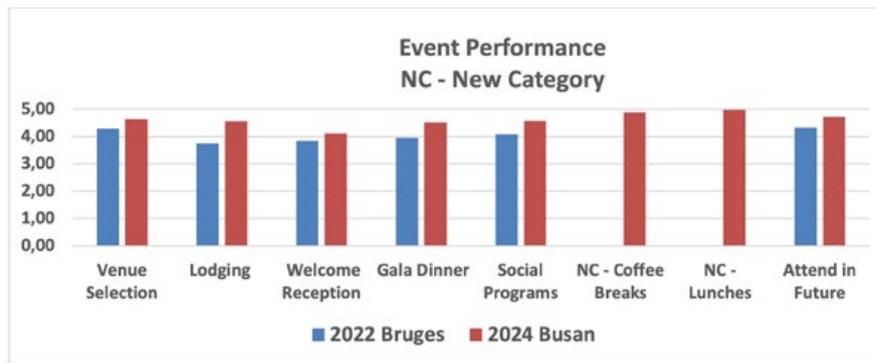


figure 2

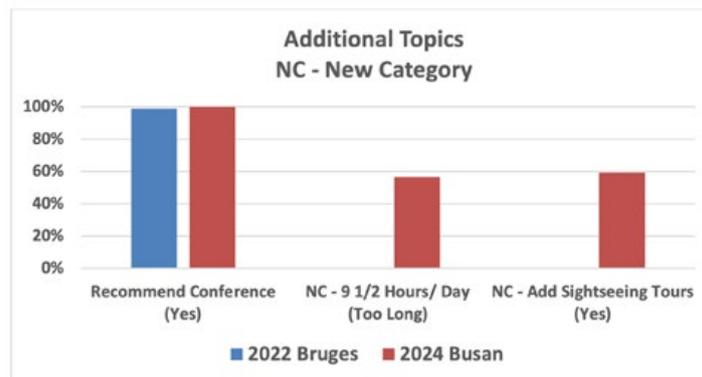


figure 3

4. Presentation Quality: Establishing slide preparation guidelines, like a minimum font size of 20, would improve visibility in large rooms.
5. Survey Format: Moving the feedback process from Excel to a website would enhance accessibility, security, and privacy.
6. Paper Submission Process: Frustration with repeated deadline extensions; a structured review process could improve paper quality.
7. Program and Local Information: Including social programs and local information in the program book was appreciated; more local opportunity information would be beneficial.
8. Social Activities: There's strong interest in organized social activities that tie into local history or culture, especially for the next venue.
9. Networking Opportunities: More effective networking opportunities are needed, with suggestions including structured activities and an adjusted Gala Dinner.
10. Diversity and Inclusion: The inclusion of more female keynote speakers is essential for enhancing conference quality and inclusivity.
11. Conference Experience: The event was well organized, but a more open-minded approach to feedback, especially on diversity, is needed.
12. Conclusion: Despite areas for improvement, the conference was widely regarded as a remarkable success.

In summary, the momentum built for the 2nd HiSST conference in Bruges, which was originally planned for 2020, was significantly affected by frequently fluctuating global COVID restrictions. This led to a reduction in both the

number of attendees and the scale of the program. Despite this, the increased number of attendees for the 2024 Busan indicated that the HiSST community is founded on a solid and healthy basis resulting in significant gains in areas like Abstract/Manuscript Submission, Technical Program Experience, and the facility visit. Despite some declines, such as in keynote variety, the overall reception was positive, with the introduction of new categories and higher ratings in key areas, marking the event as a significant success.

In conclusion, key highlights include a strong interest in improving the conference experience through better security in the payment process, more concise and impact-focused global reviews, and enhanced networking opportunities. Additionally, there is a clear call for increased diversity among keynote speakers and the need to move the feedback process online for better accessibility and security.

We look forward to welcoming you to the 4th HiSST Conference, scheduled for 21st to 26th of September 2025 in the charming city of Tours, France. This event will provide an excellent opportunity for the HiSST leadership to address all areas of improvement and further enhance your conference experience. Join us next year for a blend of cutting-edge technical discussions, valuable networking opportunities, and the chance to explore the beautiful Loire Valley. Au Revoir!

www.3af-hisst2025.com

SESAR 3 JU CONSOLIDATED ANNUAL REPORT 2023



FOREWORD



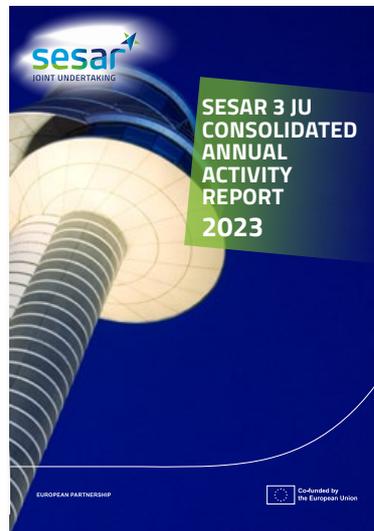
Andreas Boschen, Executive Director of the SESAR 3 JU

“As we reflect on the achievements of the SESAR 3 JU throughout 2023, it is with great pride and enthusiasm that I present this annual report.

This pivotal year marked the conclusion of the SESAR 2020 research and innovation programme, with the closure of the remaining Horizon 2020 projects. The SESAR projects have now delivered 136 solutions ready for deployment, which are testimony to the success of the SESAR innovation pipeline in bringing technological innovations to maturity. Once implemented on a large scale, these solutions will bring about tangible benefits in terms of performance, notably on safety, capacity, efficiency and the environment.

At the same time, we intensified and accelerated the implementation of the Digital European Sky programme, evidenced by the launch of 50 new research projects complemented by three new Digital Sky Demonstrators. These initiatives, backed by substantial public and private investments and the involvement of over 300 players from across the aviation sector, are instrumental in pioneering the technological solutions that are the digital backbone of the Single European Sky. They will be complemented in 2024 by 18 projects awarded through the second call for exploratory research, which was launched in 2023 and resulted in 100 submitted proposals, demonstrating the appetite of the sector to advance research and innovation. Collaboration remains at the heart of our partnership. This is exemplified by our transition to the new premises at EUROCONTROL

Headquarters, poised to enhance collaboration and increase synergies. The updating of the European ATM Master Plan, which we began in 2023 reflects our commitment to steer the collective efforts towards the delivery of the Digital European Sky. Moreover, through our partnerships with institutional and industry stakeholders at the EU level and our active engagement with the in-



ternational aviation community, we are accelerating the development and market uptake of solutions that make the European aviation sector more competitive, resilient and sustainable, while contributing to a harmonised global ATM framework.

However, while we have made substantial progress towards our goals, significant challenges remain on our path. Despite the enthusiasm accompanying the elaboration of our updated Master Plan, the actual deployment and operational integration of SESAR Solutions across Europe continues to face substantial challenges. As we look ahead, engagement in the update of the Master Plan and in the upcoming calls for proposals is crucial. It is essential that all our members and partners align their efforts with the strategic objectives of the SESAR project, through sustained investment and active participation. A full commitment from all our stakeholders is crucial for the successful mobilization of the entire ATM sector towards our common goal. By harnessing our collective strengths and commitments, we can effectively address these challenges and drive forward our vision of a Digital European Sky.

I extend my sincere gratitude to all our members, partners, stakeholders and staff members for their unwavering support and dedication.

Together, we will continue to shape the future of ATM, making Europe the most efficient and environmentally friendly sky to fly in the world”.

*Andreas Boschen
Executive Director of the SESAR 3 JU*

EXECUTIVE SUMMARY

In 2023, the SESAR 3 JU delivered on its strategic objectives and implemented the activities planned for the second year of its 2022–2023 biannual work programme. The activities outlined in this report demonstrate the progress of the JU in positioning itself as the global leader in the digital transformation of the air traffic management (ATM) sector, its contribution to the European Union's strategic priorities, and its commitment to make Europe the most efficient and environmentally friendly sky to fly in the world.

Accelerating the Digital European Sky programme

In 2023, the exploratory and industrial research calls (ER1/IR1) resulted in 50 projects that were selected and put into execution, covering exploratory research and industrial research and validation under the nine SESAR flagship areas.

In addition, three new Digital Sky Demonstrator projects funded under the Connecting Europe Facility joined the five already managed by the SESAR 3 JU. These 58 DES projects currently in the innovation pipeline represent a total investment of more than EUR 600 million and the involvement of over 300 different beneficiaries. They are vital for pioneering new ATM technologies, enhancing operational efficiency and reducing environmental impact. The exploratory research 2 call, launched in June 2023, which resulted in 100 project proposals, and the synergy call with the Europe's Rail JU, will lead to 19 new projects entering the innovation pipeline in 2024.

Towards an update of the European ATM Master Plan

In 2023, the SESAR 3 JU initiated an update of the European ATM Master Plan, which will set out the vision and prioritise the digital solutions necessary to deliver the DES. The update campaign, set for completion in December 2024, includes extensive consultations with stakeholders to ensure a collaborative and aligned approach towards achieving the strategic objectives leading to ATM modernisation.

Collaborating for success

In 2023, the SESAR 3 JU intensified its engagement with the European and global aviation community through various activities and events.

In March, the JU showcased its results at Airspace World in Geneva, where the winners of the Digital European Sky Awards were announced. In October, it hosted its annual conference in Brussels, centred around the launch of the new European ATM Master Plan, which attracted 400 industry leaders, EU policymakers and technology experts.

Finally, the SESAR Innovation Days, which took place in November in Seville, showcased groundbreaking ATM and aviation research, and celebrated emerging talents with the SESAR Young Scientist Awards.

Throughout the year, the SESAR 3 JU strengthened its collaboration with key institutional and industry stakeholders, including EU agencies, air navigation service providers, airports and standardisation bodies, essential for ensuring the rapid uptake of SESAR Solutions. Moreover, the SESAR 3 JU actively participated in international activities, notably in the context of the International Civil Aviation Organization, further extending its visibility and influence, thus paving the way for a more interconnected and harmonised global ATM framework.

Relocation and future partnership expansion

In 2023, the SESAR 3 JU transitioned smoothly to new premises at EUROCONTROL Headquarters, maintaining uninterrupted operations throughout the move. New information and communications technology service agreements with EUROCONTROL and the European Commission enhanced its operational capabilities. The JU also signed back-office arrangements with EUROCONTROL and other JUs, boosting further operational efficiency. At the end of the year, the JU launched a call for new associated members to expand the partnership to deliver the Digital European Sky (DES).

Closure of SESAR 2020 programme

Marking a major milestone, the SESAR 3 JU successfully closed the remaining 24 projects funded under the SESAR 2020 programme, integrating their outcomes into the ongoing DES programme. The SESAR Solutions catalogue now includes 136 delivered solutions, which are ready for deployment, with many already implemented and producing tangible benefits.

NEW DIGITAL SKYS DEMONSTRATORS TO FOCUS ON AUTOMATION AND VIRTUALISATION IN AIR TRAFFIC MANAGEMENT

Nov. 30, 2023

Three SESAR JU Digital Sky Demonstrators representing a total investment of EUR 138 million officially got underway in the areas of automation and virtualisation. The [announcement is part of a larger package of transport infrastructure funding under the Connecting Europe Facility adopted by the Commission](#).

The projects were selected following a call issued in September 2022 by the [European Climate, Infrastructure and Environment Executive Agency \(CINEA\) under the Connecting Europe Facility](#). The demonstrators are a key tool to support the SESAR JU's vision of delivering the Digital European Sky, matching the ambitions of "sustainable and smart mobility" and "Europe fit for the digital age" initiatives. The demonstrators are expected to get started later this year and will run until 2026.

The selected demonstrators cover "gradual transition towards higher levels of automation" and "virtual centres and ATM data service providers (ADSPs)", two thematic areas from among nine flagships outlined in [SESAR Joint undertaking's multiannual work programme](#).

The Digital Sky Demonstrators will take place in live operational environments and will put to the test (on a very large scale) the technological solutions necessary to deliver the Digital European Sky. The demonstrators are part of an innovation pipeline designed to bridge the gap between applied/industrial research and industrialisation, and to accelerate market uptake. Critical to their success will be the involvement of early movers, as well as a strong close connection with relevant standardisation and regulatory activities and bodies.

ACRONYM	NAME	COORDINATOR	COUNTRIES	CEF FUNDING	DESCRIPTION
ESMA	European Sky Multilink ATN	EUROPEAN SATELLITE SERVICES PROVIDER SAS	AT, BE, CH, ES, FR, IE, LU, NL, SK, UK	11,511,000	The demonstrator will show how a multilink communications infrastructure, with a focus on datalink using satellite communication (SATCOM Datalink) alongside VHF Data Link (VDL) Mode 2, can support greater levels of automation in ATM. Specifically, the project will demonstrate benefits such as optimised trajectories for flights, greater coverage, capacity and resilience.
DEVICE	DElegation through Virtual CEntres	ENAIRES	BE, ES, LT, PL	22,949,337	The project will showcase the delegation of airspace using a virtual centre setup between air traffic service units operating in the same flight information region. It will also demonstrate data exchange and interoperability between vendors.
EXODUS	COOPANS Exodus Project	CROATIA CONTROL	AT, BE, DK, HR, IE, PT, SE	34,299,380	The project will showcase the delegation of airspace the new air traffic service (ATS) operating model based on the geographic decoupling of the air navigation service provision and the air traffic data service provision concept. The main benefits of the project will be enhanced interoperability and resilience of air traffic management.



OCCAR-EA DIRECTOR ATTENDS EUROPEAN INTEGRATED AIR AND MISSILE DEFENCE CONFERENCE



September 17, 2024

Rome, 17 September, 2024 -The OCCAR-EA Director, Mr. Joachim Sucker, was honoured to be invited by Italy to participate and contribute to the second European Integrated Air and Missile Defence Conference held in Rome. The symposium provided the perfect stage to discuss strategic, operational and industrial topics related to Air and Missile Defence capabilities in Europe with the objective of fostering European initiatives for more efficient and interoperable European integrated Air Defence capabilities.

Accompanied by the OCCAR FSAF-PAAMS Programme Manager, Mr. Francis Celeste, the OCCAR-EA Director presented the extensive involvement and contributions made by OCCAR in this field for over 20 years through the management of several programmes with the successful deliveries to several Nations (France, Italy and UK) of combat proven ground and naval systems built around the Aster missiles.

Faced with the current global context and the continuous improvement of those capabilities to face emerging threats, Mr. Sucker presented the new developments, such as the Medium-Range Air-Defence ground systems SAMPT¹ New Generation (SAMPT NG) and the Aster 30 B1 New Technology (Aster 30 B1NT) which OCCAR manages for France and Italy, as well as the OCCAR managed technological studies HYDIS and HYDEF for future missiles co-funded by the European Union (EU) through the European Defence Fund (EDF).

Mr. Sucker highlighted OCCAR's demonstrated overall ability on behalf of Nations to successfully contribute to further increase the development of crucial synergies within the European Industrial defence base through its various complex cooperative defence programmes currently managed by OCCAR on a Through Life Management basis. The Director invited other European Nations to trust OCCAR to cooperate on the development of their capabilities.

During this conference, the French Minister of the Armed Forces, Mr. Sébastien Lecornu, officially announced the contract placed by OCCAR in July 2024 to order to EURO-SAM (MBDA and Thales), 7 ground SAMPT NG sections for the French Air Force. With this order, EUROSAM will have to deliver through OCCAR 18 SAMPT NG sections in total for France (French Air Force) and Italy (Italian Army & Air Force), in the coming years.

The conference was closed by Mr. Lecornu and the Italian Minister of Defence, Mr. Guido Crosetto, who underlined the importance of continued dialogue at this conference and the efforts to further develop and increasing the ability to produce such air defence capabilities, particularly given the current geopolitical context.

1. SAMPT : Sol Air Moyenne Portée Terrestre (in French).



THE MALE-RPAS PROGRAMME HAS SUCCESSFULLY PASSED ITS PRELIMINARY DESIGN REVIEW

Hallberg (Germany) - 15 May 2024



The MALE RPAS Programme, aka Eurodrone, has successfully performed the Preliminary Design Review (PDR). Led by Airbus Defence and Space as prime contractor, this major programme milestone has been completed with OCCAR and representatives of the four customer nations (France, Germany, Italy and Spain) in the presence of the three Major Sub-Contractors (MSC), Airbus Defence and Space Spain, Dassault Aviation and Leonardo. The PDR proves that the initial design of the aircraft has consistently matured, paving the way to proceed with the detailed design. It is the outcome of different technical assessments and evaluations conducted, such as Wind Tunnel Testing to confirm the aerodynamic configuration of Eurodrone, the overall design to ensure demonstration of operational capability, and the validation of a fully representative Digital Twin. From the very beginning, the Eurodrone programme benefits from both design philosophies – physical and digital.

Supported by and based on the knowledge already gathered, the Eurodrone programme enters into a new phase to reach the Critical Design Review (CDR), which will represent the final step and closure of architecture and system design.

Provided with innovative cutting-edge technology and designed to become one of the main pillars of any future combat air system, the Eurodrone will be an indispensable capability to facilitate international conflict prevention and crisis management, ensuring operational superiority to the nations, especially in the context of Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) missions.

Read more: [OCCAR - MALE RPAS - MEDIUM ALTITUDE LONG ENDURANCE REMOTELY PILOTED AIRCRAFT SYSTEM](#)

"Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Commission. Neither the European Union nor the European Commission can be held responsible for them."



**Co-funded by
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Story by OCCAR - Image Copyright AIRBUS



MALE RPAS – MEDIUM ALTITUDE LONG ENDURANCE REMOTELY PILOTED AIRCRAFT SYSTEM

REQUIREMENTS AND CAPABILITIES

Nowadays, most Intelligence, Surveillance and Reconnaissance (ISR) capabilities in the European Defence arena rely on non-European Union manufacturers, weakening Europe's strategic autonomy.

With the aim to ensure European strategic sovereignty the Participating States (PS) Germany, France, Spain and Italy, under the management of OCCAR MALE RPAS PD, gathered their requirements to develop the European MALE RPAS (aka Eurodrone).

The MALE RPAS is an indispensable capability to facilitate international conflict prevention and crisis management during all phases of operation – especially in the field of Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR).

The MALE RPAS is the very first opportunity for the European industries to participate in a large Unmanned Aerial Vehicle (UAV) programme designed to be integrated into civil air traffic and to operate in non-segregated airspace.

The development of MALE RPAS will secure European technological capabilities and sustainment in this ISTAR area and will foster the European Defence Technological and Industrial Base (EDTIB).



FROM HISTORY TO THE FUTURE

Since its launch in 2016, the MALE RPAS Programme has successfully passed a number of significant milestones. A Definition Study was initiated to define common requirements between Germany, France, Italy and Spain and was successfully concluded in 2018 with a System Requirement Review (SRR) and a System Preliminary Design Review (SPDR). The subsequent two years were fully devoted to the offer elaboration and successful negotiation of a global contract covering development, production and initial in-service support for 20 systems (60 aircraft and 40 Ground Control Stations) with Airbus Defence and

Space GmbH as Prime Contractor and Airbus Defence and Space S.A.U, Leonardo and Dassault as Major Sub-Contractors. This contract was signed on 24 February 2022.

Additionally in 2021, after the MALE RPAS programme was awarded financial support from the European Commission in the frame of the European Defence Industrial Development Programme (EDIDP), OCCAR negotiated and signed with industrial partners a Grant Agreement.



Co-funded by
the European Union

After completion of the first development design reviews, the Preliminary Design Review (PDR) and the Critical Design Review (CDR), the manufacture of the first Prototype is expected to commence in 2024 and the delivery of serial items to PPS is targeted by end of the decade.



European MALE RPAS will be a key enabler for future operations ensuring to European nations state of the art capabilities. It will be a key pillar in any FCAS to improve the collaborative combat capabilities.

Image: AIRBUS

MALE RPAS Participating States



Observer: Japan



ARIANE 6 JOINT UPDATE REPORT, 16 SEPTEMBER 2024

16/09/2024



The Ariane 6 Launcher Task Force consists of top management of ESA, as the overall Ariane 6 procuring entity and launch system architect, of the French space agency CNES as the launch base prime contractor, of ArianeGroup as the launcher system prime contractor and of Arianespace as the launch service provider. This group reports regularly on the new Ariane 6 launcher.

KEY MILESTONES SINCE INAUGURAL FLIGHT

These milestones have been conducted since the last joint update:

9 July: launch of Ariane 6, Europe's Spaceport, French Guiana

The first launch of Ariane 6 occurred on 9 July 2024 from Europe's Spaceport in French Guiana, completing its mission of releasing several satellites into a circular Earth orbit and restoring Europe's independent access to space while demonstrating the versatility of the Ariane 6 upper stage, with two successful ignitions of the Vinci engine.

August: finished first investigations into inaugural flight profile

Analysis of the flight data confirms the excellent behaviour and performances of the launch vehicle with a very limited number of deviations compared to predictions. A few unexpected behaviours of the whole launch system were recorded during the technology demonstration phase of the mission. Their initial analysis is now complete.

After the successful first flight there are no showstoppers for the second Ariane 6 mission.

The investigations included analysing why re-ignition of the upper stage Auxiliary Propulsion Unit (APU) did not occur as planned at the beginning of the long coasting phase of Ariane 6's inaugural mission. Analysis shows that one temperature measurement exceeded a pre-defined limit and that the flight software correctly triggered a shut down, entering the long coasting phase without the APU thrust and so degrading the proceeding of the demo phase. As a consequence, the third ignition sequence of the Vinci engine was not ordered by the flight software. The upper stage was passivated as expected.

Based on the observed behaviour of the APU in flight, the ignition preparation sequence (APU chill-down sequence) will be changed in the flight software to improve ignition conditions and solve the identified anomaly. The updated software is already being tested to be applied on the coming flights.

Ariane 6 is an all-new design, created to succeed Ariane 5 as Europe's heavy-lift launch system. With Ariane 6's upper stage restart capability, Europe's launch capability will be tailored to the needs of multiple payload missions, for example to orbit satellite constellations. This autonomous capability to reach Earth orbit and deep space supports Europe's navigation, Earth observation, scientific and security programmes. Ongoing development of Europe's space transportation capabilities is made possible by the sustained dedication of thousands of talented people working in ESA's 22 Member States.



https://www.esa.int/Enabling_Support/Space_Transportation/Ariane/Ariane_6_joint_update_report_16_September_2024

Credit: ESA/S. Corvaja

THE SUCCESS OF STARSHIP INTEGRATED FLIGHT TEST 5: A REAL FEAT!



STARSHIP FLIGHT TEST 5



Booster 12 on final approach to the launch tower

STARSHIP FLIGHT TEST 5

Mission Type	Suborbital flight test
Operator	SpaceX
Mission Duration	1 hour, 5 minutes, 40 seconds
Apogee	212 km (132 mi)

SPACECRAFT PROPERTIES

Spacecraft	Starship Ship 30
Spacecraft Type	Starship
Manufacturer	SpaceX

START OF MISSION

Launch date	13 October 2024, 12:25:00 UTC (7:25 am CDT)
Rocket	Super Heavy (B12)
Launch site	Starbase, OLP-A

END OF MISSION

Landing date	Super Heavy: 13 October 2024, 12:31:56 UTC (7:31:56 am CDT) Ship: 13 October 2024, 13:30:40 UTC
Landing site	Super Heavy: Starbase, OLP-A Ship: Indian Ocean

HOW THE FLIGHT WENT OFF

Starship lifted off from SpaceX launch pad one, Boca Chica Beach, Texas on 13 October at 12:25 UTC. All 33 booster engines ignited. After hot staging, the ship (Ship 30) continued towards space and the Super Heavy booster B12 started its boost-back burn to get back to the launch site, where it could be cradled by two mechanisms arms called "chopsticks" attached to the launch tower it lifted off. Super Heavy booster had to perform precise boostback and landing burns in order to guide the stage back to the launch pad. SpaceX flight test director checked both the booster and the tower infrastructure and then manually commanded GO for the catch attempt. The Super Heavy booster 12 descended over the pad and the two arms closed around the top of the booster, just below the grin fins. The tower chopsticks successfully caught the Super Heavy booster 12 at 12:32 UTC, seven minutes after liftoff.

The first objective of IFT-5 flight – to test the possibility to recover the Super Heavy booster – was achieved.

Considering the size of the booster (Height 71 m, diameter 9 m, weight 200 t), this performance is a real feat!

At 12:48 UTC, the Starship vehicle Ship 30 engines were shutdown. It flew on a suborbital trajectory similar to IFT-4 previous flight test (6 June), reaching a peak altitude of 212 km. Ship 30 appeared to survive re-entry in better conditions than in IFT-4. It made a powered ocean landing in the Indian Ocean approximately 66 minutes after liftoff. It had landed precisely on target.

The second objective of IFT-5 was also achieved.

Not intended to be recovered, it blew up several seconds after splashing down. If it had not exploded, SpaceX would have planned to get some images from the heat shield tiles to assess their condition after re-entry.

Comment - Immediately after IFT-4, many corrective actions had been performed, in particular the changes to Starship's heat shield the tiles being twice as strong along with a new ablative protection layer underneath. In addition, multiple tests occurred with the hydraulic arms on the launch tower in preparation for the Super Heavy booster "catch". A static fire of Booster 12 was completed on July 15 and a static fire of Ship 30 was conducted on July 26. In fact IFT-5 would have been ready to be performed in early August but it was postponed to October to wait for the receipt of the official license from FAA (the "catch" sequence had required a most in-depth review).

STARSHIP

Starship is the fully reusable spacecraft and second stage of the Starship system. The vehicle comes in several different configurations, offers an integrated payload section and is capable of carrying crew and cargo to Earth orbit, the Moon, Mars and beyond. Starship is also capable of point-to-point transport on Earth, enabling travel to anywhere in the world in one hour or less.

HEIGHT	50 m / 165 ft
DIAMETER	9 m / 29.5 ft
PROPELLANT CAPACITY	1,200 t / 2.6 Mlb
THRUST	1,500 tf / 3.3Mlbf
PAYLOAD CAPACITY	100 - 150 t



STARSHIP OVERVIEW

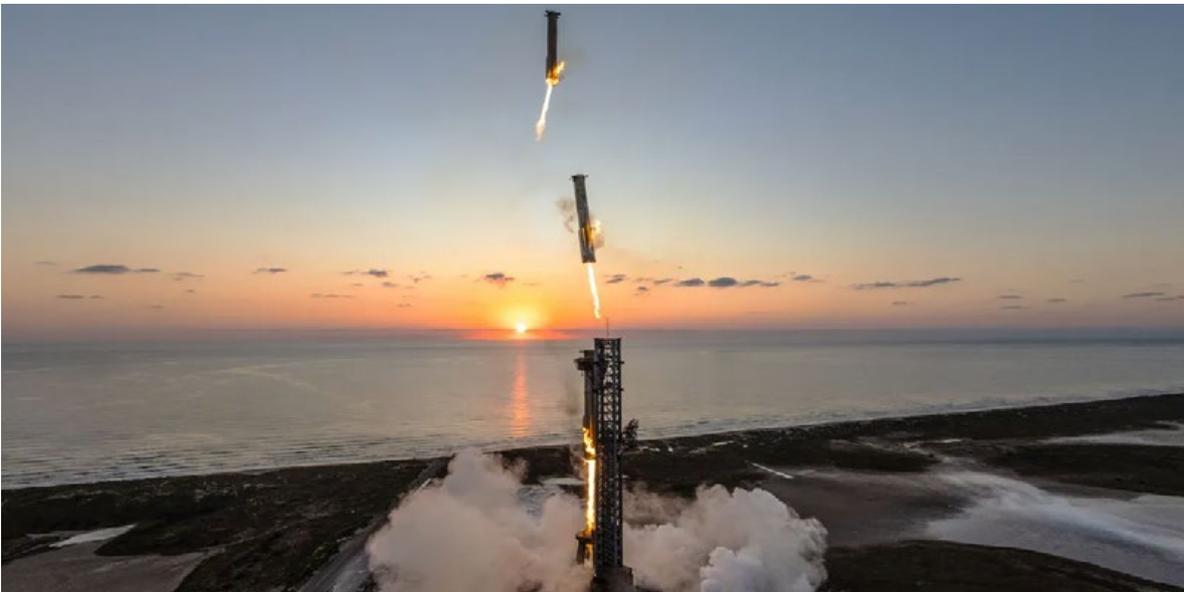
SpaceX's Starship spacecraft and Super Heavy rocket – collectively referred to as Starship – represent a fully reusable transportation system designed to carry both crew and cargo to Earth orbit, the Moon, Mars and beyond. Starship is the world's most powerful launch vehicle ever developed, capable of carrying up to 150 metric tonnes fully reusable and 250 metric tonnes expendable.

HEIGHT	121 m / 397 ft
DIAMETER	9 m / 29.5 ft
PAYLOAD CAPACITY	100 - 150 t (fully reusable)





13 October 2024 at 12 :25 UTC, liftoff of Starship for IFT-5 from SpaceX starbase, Boca Chica Beach, Texas (Image credit SpaceX via X)



Composite photo showing Super Heavy Booster of Starship IFT-5 coming in for a landing on the Launch Mount (Image credit SpaceX via X)



A view of SpaceX's Flight 5 Starship upper stage as it teeters Earth's atmosphere, with red glowing plasma around it (Image credit SpaceX)

ARTEMIS II MISSION UPDATE

July 23, 2024

Artemis II is a scheduled mission of the NASA-led Artemis program. It will use the second launch of the Space Launch System (SLS) and include the first crewed mission of the Orion spacecraft. The mission is scheduled for no earlier than September 2025. Four astronauts will perform a flyby of the Moon and return to Earth, becoming the first crew to travel beyond low Earth orbit since Apollo 17 in 1972.

HARDWARE DEVELOPMENT, TESTING AND INTEGRATION (2021–PRESENT)

On February 11, 2023, NASA flipped the engine section for the Artemis II core to horizontal, the final major milestone before mating the section to the rest of the vehicle. On March 20, the engine section was mated with the Artemis II core stage in Building 103 at the Michoud Assembly Facility in New Orleans. NASA expected the core stage, complete with engines, to be delivered to the Kennedy Space Center in summer 2023. In May, the delivery date was moved to late fall 2023. The RS-25 engines with serial numbers E2047, E2059, E2062, and E2063 were installed on the core stage in New Orleans by September 25, 2023. Finally in June 2024, NASA announced the planned delivery of the fully outfitted core stage to KSC in July 2024, which was successfully carried out from the 16th to the 25th.

The adapters needed for integration of the full vehicle also reached substantial completion in June 2024, and arrived at Kennedy Space Center in September 2024.



Artist's rendition of the Orion spacecraft in lunar orbit.
© NASA



The Artemis 2 Space Launch System core stage being loaded into the Pegasus barge at Michoud Assembly Facility, July 16, 2024. © NASA Michoud Assembly Facility / NASA/Steven Seipel

LAUNCH DATE

During preliminary reviews in 2011, the launch date was placed somewhere between 2019 and 2021, but afterwards the launch date was delayed to 2023. As of September 2024, the mission is expected to launch no earlier than September 2025.

CREW

PRIME CREW

Position	Astronaut
Commander	United States Reid Wiseman, NASA Second spaceflight
Pilot	United States Victor Glover, NASA Second spaceflight
Mission Specialist	United States Christina Koch, NASA Second spaceflight
Mission Specialist	Canada Jeremy Hansen, CSA First spaceflight

BACKUP CREW

Position	Astronaut
Commander / Pilot / Mission Specialist	United States Andre Douglas, NASA First spaceflight
Mission Specialist	Canada Jenni Gibbons, CSA First spaceflight



Official Crew Portrait (Clockwise from left) Koch, Glover, Hansen, Wiseman © Josh Valcarcel,

MISSION

The Artemis II mission plan is to send four astronauts in the first crewed Orion MPCV spacecraft into a lunar flyby for a maximum of 21 days using the Block 1 variant of the Space Launch System. The mission profile is a multi-trans-lunar injection (MTLI), or multiple departure burns, and includes a free-return trajectory from the Moon. The Orion spacecraft will be sent to a high Earth orbit with

a period of roughly 24 hours. During this time the crew will perform various checkouts of the spacecraft's life support systems as well as an in-space rendezvous and proximity operations demonstration using the spent Interim Cryogenic Propulsion Stage (ICPS) as a target. When Orion reaches perigee once again, it will fire its main engine to complete the TLI maneuver, which will send it to a lunar free-return trajectory, before returning to Earth.

Optical communications

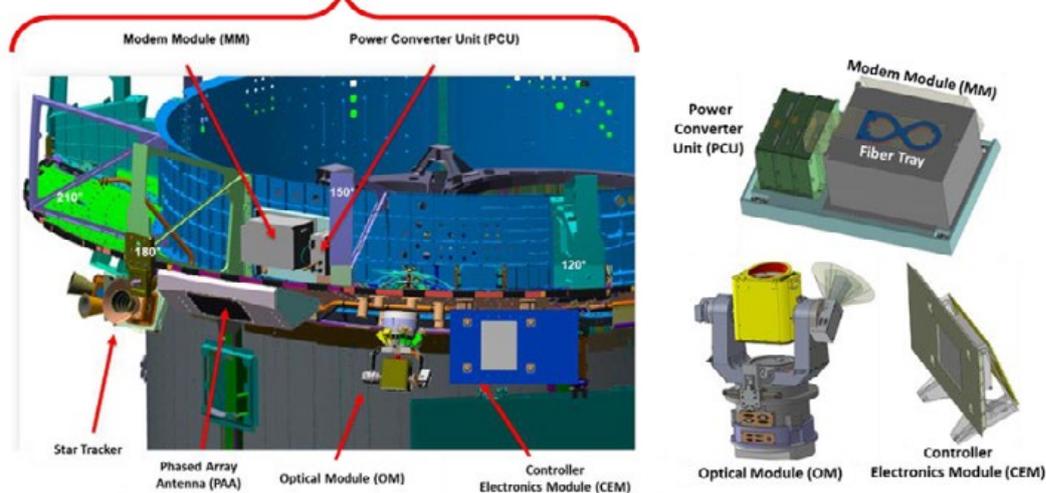
Artemis II will test and demonstrate optical communications to and from Earth using the Orion Artemis II Optical Communications System (O2O). The O2O hardware will be integrated into the Orion spacecraft and includes an optical module a 4 inch (100 mm) - telescope and two gimballs, modem and control electronics. O2O will communicate with ground stations in California and New Mexico. The test device will send data to Earth with a downlink rate of up to 260 megabits per second.

TRAJECTORY OVERVIEW

Artemis II's trajectory can be divided into several key phases:

Launch

- Vehicle: Space Launch System (SLS) Block 1
- Launch Site: Kennedy Space Center, Launch Complex 39B



O2O optical communications modules on the Orion spacecraft © NASA

- Duration: Approximately 8 minutes to reach initial orbit
- Trajectory: The SLS will launch Orion into a low Earth orbit (LEO) for a very short period of time, then fire again to place Orion in a highly-eccentric orbit with a period of about 24 hours.

Earth orbit and systems checkout

- Orbit: Highly-eccentric orbit with an apogee above that of typical communications satellites
- Duration: About 24 hours
- Activities: The crew will perform checks on the Orion spacecraft's systems, ensuring all are functioning correctly before proceeding with the mission. They will also demonstrate proximity operations with the upper stage of their launch vehicle.

Translunar injection

- Maneuver: After the systems checkout, the Orion spacecraft will perform a TLI burn using its Service Module, propelling it out of Earth orbit towards the Moon.
- Trajectory: A precise burn to place Orion on a trajectory that will take it around the Moon.

Lunar flyby

- Altitude: Closest approach approximately 7,400 km (4,600 mi) from the lunar surface.
- Duration: Several days to travel to the Moon, fly around it, and begin the return trip.
- Activities: The crew will continue to monitor and test Orion's systems and gather data on deep space travel effects.

Return trajectory

- Maneuver: After the lunar flyby, Orion will use the Moon's gravity to assist in its return to Earth, a maneuver known as a free-return trajectory.
- Trajectory: A path that will naturally bring Orion back to Earth without the need for additional propulsion if systems fail.

Re-entry and splashdown

- Re-entry Phase: Orion will re-enter Earth's atmosphere.
- Splashdown: In the Pacific Ocean, recovery teams will retrieve the spacecraft and crew.
- Duration: The entire mission is expected to last about 10 days.



POLARIS DAWN MISSION 10-15 SEPTEMBER 2024: A NEW ERA IN SPACEFLIGHT

Polaris Dawn mission is a market space mission that is part of the Polaris Programme¹. It took place from 10 to 15 September 2024.

It was made of a SpaceX Crew Dragon Resilience. The crew comprised entirely non professional civilian astronauts:

- Commander Jared Isaacman (USA), 2nd spaceflight
- Pilot Scott Poteet (USA), 1st spaceflight
- Senior of mission: Sarah Gillis (USA), 1st spaceflight
- Missionary Specialist and Medical Officer: Anna Menon (USA), 1st spaceflight



From left: Isaacman, Menon, Gillis and Poteet

POLARIS DAWN

Mission type	Private spaceflight
Operator	SpaceX
COSPAR ID	2024-161A Edit this at Wikidata
SATCAT no.	61042 Edit this on Wikidata
Website	polarisprogram.com/dawn/ Edit this at Wikidata
Mission duration	4 days, 22 hours and 13 minutes
Orbits completed	75

SPACECRAFT PROPERTIES

Spacecraft	Crew Dragon Resilience
Spacecraft type	Crew Dragon

CREW

Crew size	4
Members	Jared Isaacman Scott Poteet Sarah Gillis Anna Menon

EVAs	2 (EV ₁ ad EV ₂)
EVA duration	26 minutes

START OF MISSION

Launch date	10 September 2024, 09:23:49 UTC (5:23:49 am EDT)
Rocket	Falcon 9 Block 5 (B1083.4), Flight 372
Launch site	Kennedy, LC-39A

END OF MISSION

Recovered by	MV Shannon
Landing date	15 September 2024, 07:36:54 UTC (3:36:54 am EDT)
Landing site	Gulf of Mexico near Dry Tortugas (25.1°N 83.0°W)

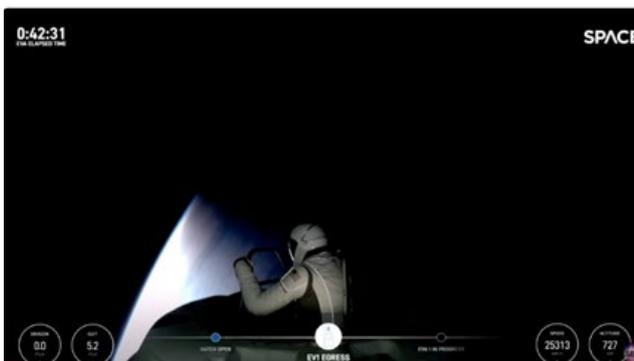
ORBITAL PARAMETERS

Perigee altitude	190–192 km (118–119 mi)
Apogee altitude	Launch: 1,200 km (750 mi) Day 1: 1,400 km (870 mi) Day 2–5: 730 km (450 mi)
Inclination	51.7°
Period	106 minutes



This mission that lasted 5 days flew higher than any Dragon mission to date, describing an elliptic orbit whose peak reached **1,408 km, the highest earthly manned orbit ever covered without Apollo lunar missions**, and the perigee **196 km**. In a historic moment, on 12 September, two crew members performed an Extra Vehicular Activity (EVA): Jared Isaacman (EV1) - who finances the Polaris Programme - and Sarah Gillis (EV2) - employee of SpaceX - in an orbit with a peak of 700 km. It was **the first outing in the space of private astronauts!** The total duration of the EVAs was less than two hours. They enabled 36 scientific and technical experiments to be carried out, to test Starlink laser communications in space, and also to test the ability of Diving Suits and the mobility supports of the Dragon. SPACEX's HISTORIC

POLARIS DAWN SPACE WALK



SPACEX POLARIS DAWN CREW RETURNS TO HOME AFTER HISTORY-MAKING MISSION



Dragon and the Polaris Dawn crew splashed down off the coast of Florida on 15 September at 07:36:54 UTC



[To see the video](#)

¹ The Polaris programme is a first SpaceX effort to further humanity's exploration of space.

ABOUT SESAR DIGITAL ACADEMY



OVERVIEW

With its exploratory research programme, the SESAR Joint Undertaking (SESAR JU) has progressively embedded activities aimed at developing the skills of the future air traffic management (ATM) workforce. These have provided opportunities for students to participate and contribute to ATM research in Europe, including support for PhD research projects.

In 2017, Violeta Bulc, Commissioner for Transport, addressed the SESAR Innovation Days, noting the role of SESAR in nurturing the aviation talent of tomorrow and in developing new ideas to ensure greater mobility and connectivity through air travel in Europe.

In her address, she encouraged the SESAR JU to consider creating a "SESAR Academy", in order to skill and inspire the next generation aviation workforce in anticipation of the digital economy. Her words underscore the SESAR JU's recognised role of stimulating, funding and coordinating all research related to ATM across Europe. The creation of the SESAR Digital Academy has the ambition to ensure the sustainability of the knowledge gained beyond the duration of individual research projects.

VISION AND MISSION

The vision of the SESAR Digital Academy is to become a recognised learning initiative supporting Europe's future aviation and ATM workforce. The mission is to nurture Europe's brightest minds and advance learning, scientific excellence and innovation in aviation and ATM.

The Academy aims to promote student mobility and a whole spectrum of learning opportunities, from fundamental research to industry-focussed applied research, and to enhance the knowledge, skills and employability of aviation professionals.

The SESAR Digital Academy seeks to bring together under one umbrella access to SESAR exploratory research activities and outreach relating to education and training, as well as professional learning opportunities offered by research centres, universities, industry partners and other entities within the ATM/aviation domain.

VALUE

The Academy's mission is guided by the following set of values:

- Promoting the sharing of knowledge, ideas skills and expertise on air traffic management and aviation research across academia and industry, both within Europe and beyond;
- Nurturing the professional development of the future aviation workforce by creating learning and knowledge exchange opportunities;
- Advancing scientific excellence and know-how in ATM and aviation research, encouraging research across disciplines on the most promising ideas and concepts;
- Promoting equal opportunities in ATM and aviation research and more broadly the industry, recognising diversity and inclusivity as key to the competitiveness of the industry.

BENEFICIARIES

The digital academy is an open initiative with a wide range of participants and beneficiaries:

- Students and Academia
- Research institutes
- Industry
- Standardisation, regulatory and safety authorities

The mission and vision of the SESAR Digital Academy are complementary to those of existing aviation/aeronautics interest groups, associations and networks

at European level. The academy will seek to identify synergies and potential for collaboration as part of its plan of activities.

ACTIVITIES

Digital Academy e-news

Regular e-News providing the latest on activities and opportunities provided by the academy.

[Read here our first enews](#) targetted towards the academic community. To be added to this specific mailing list, complete the form below.

SESAR Digital Academy Webinars

As air travel tentatively resumes, the move to digitalised ATM infrastructure is seen as critical for making aviation more scalable, economically sustainable, environmentally efficient, predictable and resilient.

Find out about upcoming webinars or watch playbacks of previous recordings here:

<https://www.sesarju.eu/webinars>

CONTACT

info@sesaracademy.eu

LATEST NEWS AND UPCOMING EVENTS



ABOUT THE 59TH CEAS BOARD OF TRUSTEES

By Andrea Alaimo , Director General of CEAS

The 59th CEAS Board of Trustees was held in Florence the 11th of September 2024, during the 34th Conference of the International Council of the Aeronautical Sciences, hosted by the AIDAA – Associazione Italiana di Aeronautica ed Astronautica, one of the founder member of our Council. As usual, the meeting was characterized by the discussion of very important topics.

ICAS-CEAS AGREEMENT

Firstly, it is worth to underline the renew of a Memorandum of Understanding between ICAS and CEAS, signed by their respective presidents, Prof. Dimitri Mavris for ICAS and Prof. Franco Bernelli Zazzera for CEAS. It represents a very important cooperation agreement that intends to serve for the development of a mutually beneficial scientific, technological, and organizational cooperation between the Parties in aviation and space activities, promotion of developments in aerospace and popularizing the achievements and research in all areas of aeronautics and space. ICAS and CEAS also express mutual interest to support exchanges among their members to broaden both organizations' networks and provide opportunities for the exchange of information on relevant topics in the field of aeronautics and aviation research.



Left Franco Bernelli - Right Dimitri Mavris

ELECTION OF THE PRESIDENT - ELECT

Another important result of the meeting was the election of the President – Elect, identified in the person of Ms. Cornelia Hillenherms, who currently serve as Vice President Finance for the CEAS. She will replace the current President, prof. Franco Bernelli Zazzera, starting from the 1st of January 2025, who has been in office for 4 years.

CEAS AWARDS 2024

The 59th Board of Trustees was also the meeting of the CEAS Awards 2024. Mr Anders Blom, Vice-President for Awards & Membership, presented to the Board the nominations received for the Awards and the results of the Award Sub-Committee's evaluation.

Accordingly, the Board of Trustees unanimously awarded the CEAS Gold Medal Award to Mr Georges Bridel and the CEAS Distinguished Service Award 2024 to Mr Jean-Pierre Sanfourche.

Mr Georges Bridel has provided significant contributions to the development of European military fighter aircraft, including the development of stealth fighter geometries. He has provided great stimuli towards the development of a joint European future fighter aircraft. He was strongly engaged in the support of early career scientists and engineers in an international environment. Furthermore, he has provided great contributions to the development of CEAS. In 2008 he was CEAS President. In the CEAS conferences of 2011 and 2015 he provided presentations and organized workshops to support the joint European fighter aircraft and the supporting technologies. At present he heads the CEAS Past Presidents Committee and he was involved in the organization of the joint CEAS-EUCASS aerospace conference in Lausanne Switzerland*.

Mr Jean-Pierre Sanfourche was awarded for his long-term dedicated service to CEAS and the entire European Aerospace Community as Editor-in-Chief of the CEAS Bulletin AEROSPACE EUROPE.

MOST CITED PAPER AWARDS

Last but not least, the Board also granted the CEAS Journal most cited paper Awards to the following publications:

CEAS Aeronautical Journal

1. Eißfeldt, H., Vogelpohl, V., Stolz, M., Papenfuß, A., Biella, M., Belz, J. & Kügler, D. The acceptance of civil drones in Germany. CEAS Aeronautical Journal, 11(3), pp.665-676 (2020).
2. Tam, C.K., Bake, F., Hultgren, L.S. & Poinso, T. Combustion noise: modeling and prediction. CEAS Aeronautical Journal, 10, pp.101-122 (2019).
3. Seitz, A., Hübner, A. & Risse, K. The DLR TuLam project: design of a short and medium range transport aircraft with forward swept NLF wing. CEAS Aeronautical Journal, 11(2), pp.449-459 (2020).

CEAS Space Journal

1. Bruhn F. C., Nandinbaatar T., Kunkel F., Flordal, O & Roxel I. Enabling radiation tolerant heterogeneous GPU-based onboard data processing in space. CEAS Space Journal, 2020, Volume 12(4), Page 551-564.
2. Freeman, A. Exploring our solar system with CubeSats and SmallSats: the dawn of a new era. CEAS Space Journal, 2020, Volume 12(4), pp.491-502.
3. Bellomo N., Magarotto M., Manente M., Trezzolani F., Mantellato R., Cappellini L., Paulon D., Selmo A., Scalzi D., Minute M., Duzzi M. & Barbato A. Design and In-orbit Demonstration of REGULUS, an Iodine electric propulsion system. CEAS Space Journal, 2022, Volume 14(1), Page 79-90.

The next Board of Trustees meeting will be held in Munich on 22 November 2024.



A view of the 59th CEAS Board of Trustees meeting



OUTLINE OF THE LATEST ISSUES OF THE CEAS SPACE JOURNAL AND THE CEAS AERONAUTICAL JOURNAL

The journals were created under the umbrella of the Council of European Aerospace Societies (CEAS) to provide an appropriate platform for excellent scientific publications submitted by scientists and engineers. The German Aerospace Centre (DLR) and the European Space Agency (ESA) support the Journals, which are published by Springer Nature.

The **CEAS Space Journal** is devoted to excellent new developments and results in all areas of space-related science and technology, including important spin-off capabilities and applications as well as ground-based support systems and manufacturing advancements.

The **CEAS Aeronautical Journal** is devoted to publishing new developments and outstanding results in all areas of aeronautics-related science and technology, including design and manufacturing of aircraft, rotorcraft, and unmanned aerial vehicles.

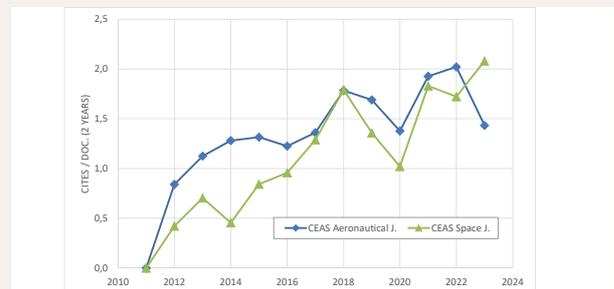
Both journals play an increasingly important role in representing European knowledge in aerospace research. Nevertheless, the biggest challenge is still to attract an acceptable number of high caliber scientists and engineers to submit articles for publication. Therefore, we invite you and your colleagues to contribute to the development

of these journals by publishing your hard-earned results. Papers which are considered suitable will be subjected to a comprehensive blind peer-review process for potential publication in the CEAS Journals.

A list of articles published in the latest issues of both CEAS Journals is attached.

The Managing Editors:

- Andrea Dieball
- Cornelia Hillenherms
- Wilhelm Kordulla
- Stefan Leuko
- Johan Steelant



"Cites / Doc (2 years)" counts the number of citations received by documents from a journal and divides them by the total number of documents published in that journal in the past two years – similar to the Impact Factor™.

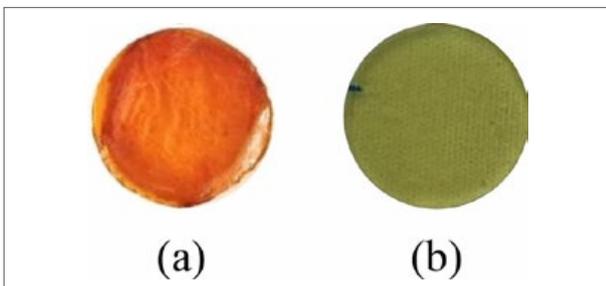
CEAS SPACE JOURNAL



Volume 16, Issue 5,
September 2024

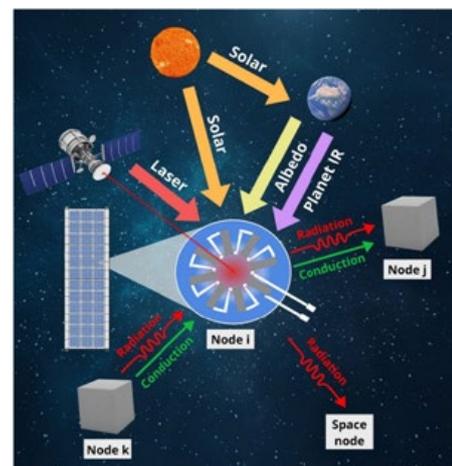
ASSESSMENT OF RADIATION SHIELDING PROPERTIES OF SELF-HEALING POLYMERS AND NANOCOMPOSITES FOR A SPACE HABITAT CASE STUDY UNDER GCR AND LEO RADIATION

Laura Pernigoni, Ugo Lafont & Antonio Mattia /
Published online: 14 October 2023 (Open Access)



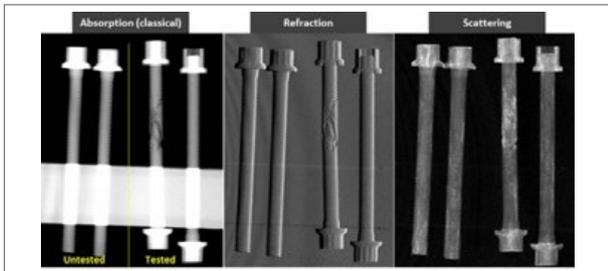
MODELLING AND PRELIMINARY THERMAL STUDY OF A FED-BY-LASER THERMOELECTRIC GENERATOR SYSTEM ON BOARD OF A 3U CUBESAT

Uxia Garcia-Luis, Fermin Navarro-Medina, Carlos Ulloa-Sande, Alejandro Gomez-San Juan, Guillermo Rey-Gonzalez, Ana Pires, Margarida Maia, Mariana Rocha & Fernando Aguado-Agelet / Published online: 18 November 2023



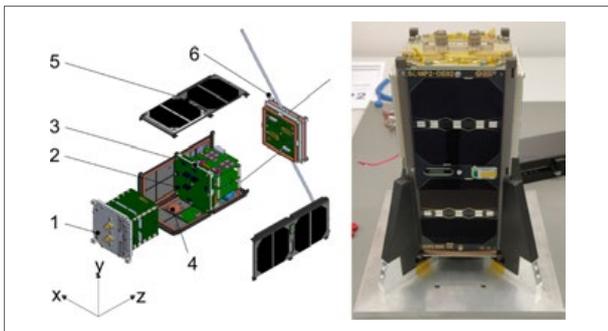
ADVANCING SPACECRAFT DEMISABILITY THROUGH A NOVEL COMPOSITE BOLT JOINT SYSTEM: A STEP TOWARD SUSTAINABLE AND SAFE SPACE ENVIRONMENTS

Alexandre A. Looten, Albert Vodermayr, Antonio Caiazzo, Ralf Usinger, Muriel Richard & Véronique Michaud / Published online: 14 December 2023 (Open Access)



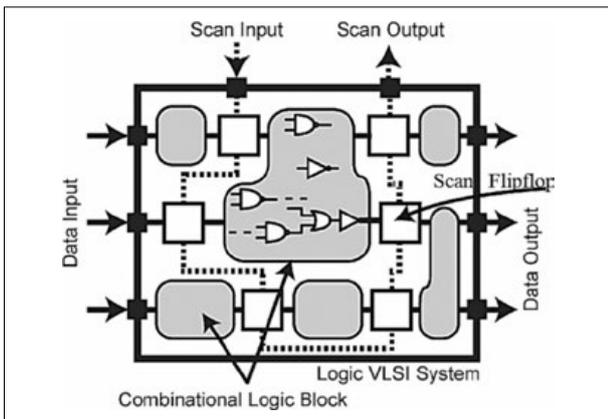
SOMP2B SCIENTIFIC NANOSATELLITE OF TU DRESDEN: OPERATION AND FIRST RESULTS

G. Langer, Y. Bärtling & T. Schmiel / Published online: 18 December 2023 (Open Access)



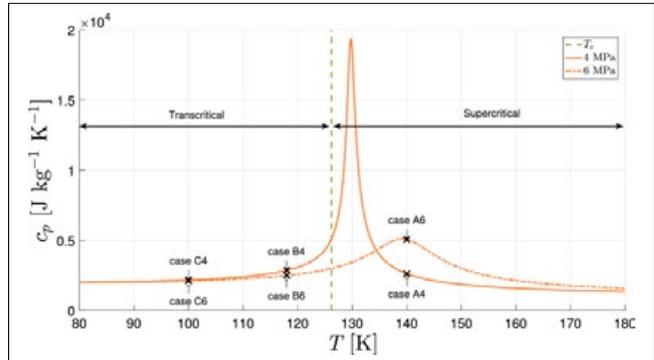
SEE FAILURE ANALYSIS OF HI-REL ASIC FOR SPACECRAFT APPLICATIONS

K. Padmapriya, B. K. S. V. L. Varaprasad & Debjyoti Mallick / Published online: 21 December 2023 (Open Access)



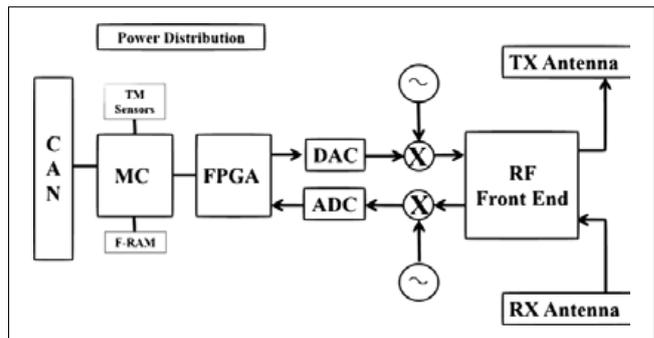
HEAT TRANSFER EFFECT ON THE MODELING OF JETS UNDER SUPERCRITICAL AND TRANSCRITICAL CONDITIONS

Leandro B. Magalhães, André R. Silva & Jorge M. Barata / Published online: 03 February 2024 (Open Access)



DUAL-BAND CIRCULARLY POLARIZED SLOTTED PATCH ANTENNA FOR S-BAND CUBESAT COMMUNICATION SYSTEM

Nabil El hassinate, Ahmed Oulad Said & Zouhair Guennoun / Published online: 25 February 2024



AN ORBIT DETERMINATION SOFTWARE SUITE FOR SPACE SURVEILLANCE AND TRACKING APPLICATIONS

Marco Felice Montaruli, Giovanni Purpura, Riccardo Cipollone, Andrea De Vittori, Luca Facchini, Pierluigi Di Lizia, Mauro Massari, Moreno Peroni, Alessandro Pannico, Andrea Cecchini & Marco Rigamonti / Published online: 02 March 2024 (Open Access)



CEAS AERONAUTICAL JOURNAL



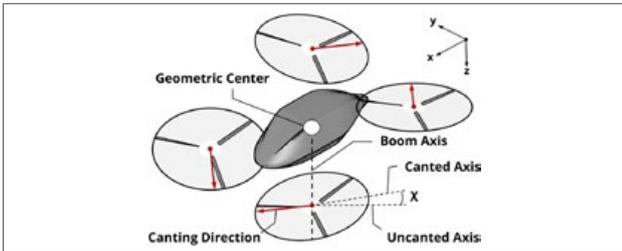
Volume 15, Issue 3,
July 2024

EDITORIAL: SPECIAL ISSUE ON ADVANCES IN ROTOR-CRAFT RESEARCH AND TECHNOLOGY

Pierangelo Masarati, Anthony Gardner, Mike Jones & Marilena Pavel / Published: 08 August 2024

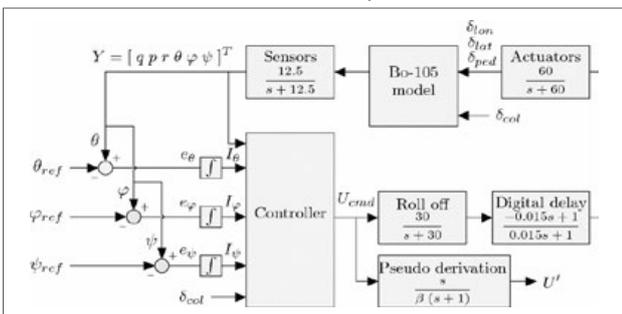
IMPACT OF DIFFERENTIAL TORSIONAL ROTOR CANT ON THE FLIGHT CHARACTERISTICS OF A PASSENGER-GRADE QUADROTOR

Kagan Atci, Tim Jusko, Alexander Štrbac & Feyyaz Guner / Published: 04 January 2024 (Open Access)



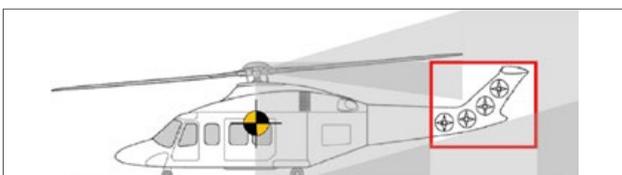
A MULTI-MODEL AND MULTI-OBJECTIVE APPROACH TO THE DESIGN OF HELICOPTER FLIGHT CONTROL LAWS

Patrick Authié / Published: 06 July 2023



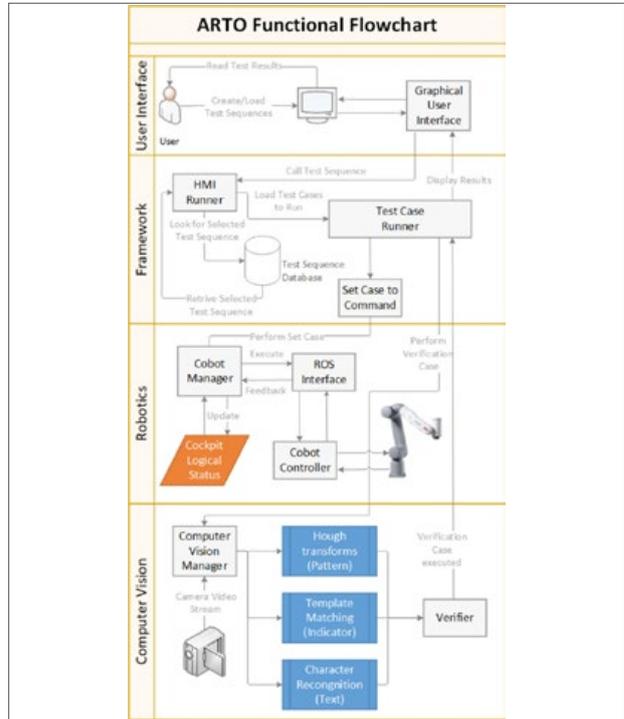
CONCEPTUAL DESIGN OF A DISTRIBUTED ELECTRIC ANTI-TORQUE SYSTEM FOR ENHANCED HELICOPTER SAFETY AND PERFORMANCE

Massimo Brunetti, Andrea Nesci & Nicola Bianchi / Published: 14 September 2023



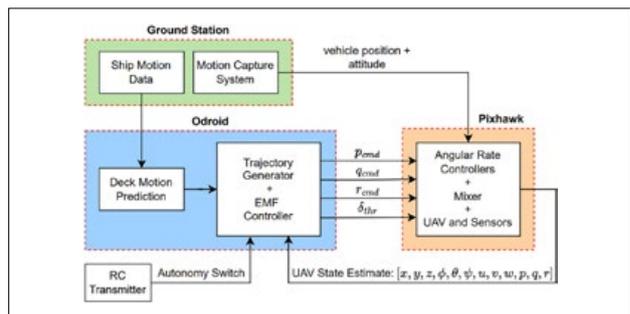
TECHNOLOGY CONCEPT OF AN AUTOMATED SYSTEM FOR INTEGRATION TESTING

David Frisini, Vincenzo Taumaturgo, Giorgia Giulianini, Claudia Lucini Paioni, Giovanni Morlacchi & Francesco Poltronieri / Published: 09 February 2024



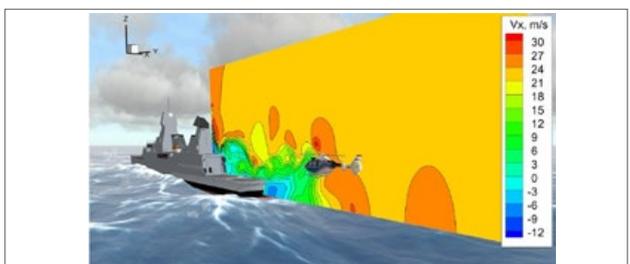
SCALABLE GUIDANCE AND CONTROL LAWS FOR MODEL-SCALE ANALYSIS OF AUTONOMOUS SHIP LANDING SYSTEMS

Christopher M. Hendrick & Joseph F. Horn / Published: 02 January 2024



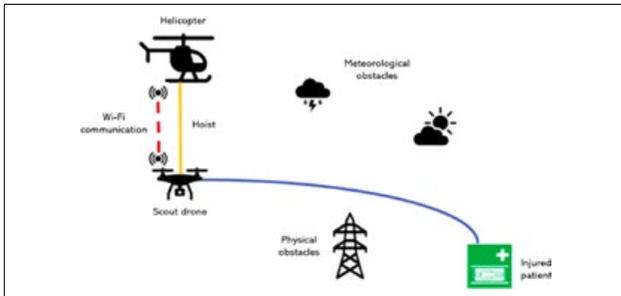
HELICOPTER AUGMENTED CONTROL LAWS FOR SHIP DECK LANDING: HACLAS ONERA/DLR JOINT TEAM

Arti Kalra & Laurent Binet / Published 25 June 2024 (Open Access)



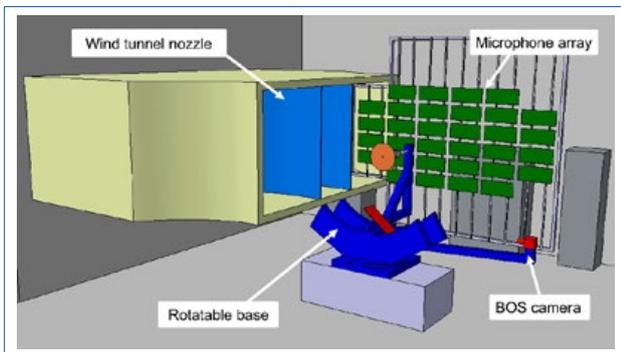
CONSTRAINED PATH PLANNING FOR MANNED-UNMANNED ROTORCRAFT TEAMING IN EMERGENCY MEDICAL SERVICE MISSIONS

Francesca Roncolini, Giovanni Galante, Giuseppe Quaranta & Pierangelo Masarati / Published: 02 July 2024 (Open Access)



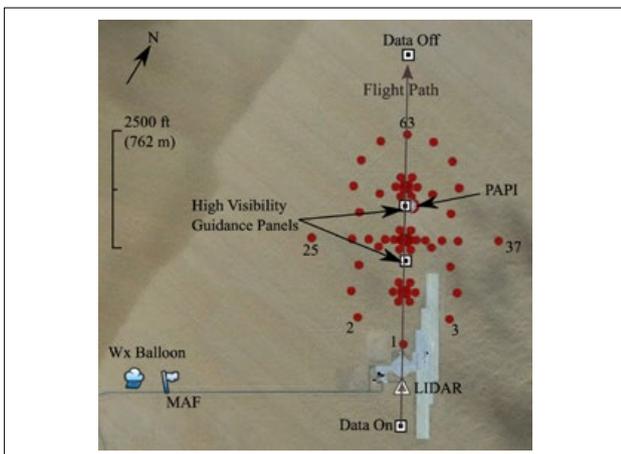
EXPERIMENTAL INVESTIGATION OF UAV ROTOR AEROACOUSTICS AND AERODYNAMICS WITH COMPUTATIONAL CROSS-VALIDATION

Anna A. Kostek, Felix Löble, Robin Wickersheim, Manuel Keßler, Ronan Boisard, Gabriel Reboul, Antonio Visingardi, Mattia Barbarino & Anthony D. Gardner / Published: 19 September 2023 (Open Access)



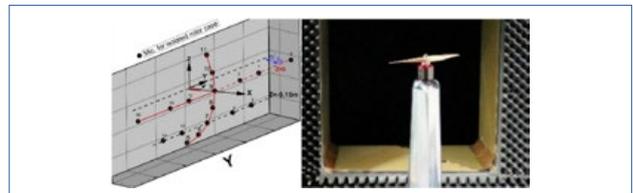
ROTORCRAFT SOURCE NOISE CHARACTERIZATION VIA ACOUSTIC SNAPSHOT ARRAY: DEVELOPMENT AND EVALUATION

James H. Stephenson & Mary L. Houston / Published: 16 June 2023



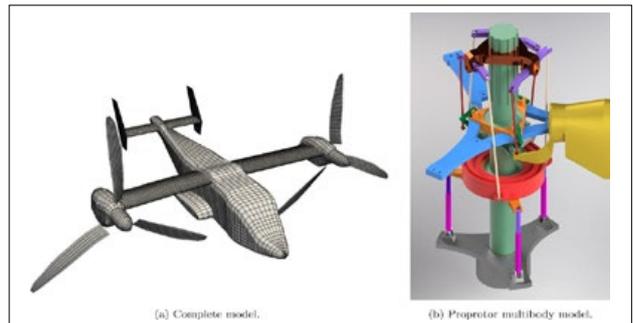
NUMERICAL STUDIES ON SMALL ROTOR CONFIGURATIONS WITH VALIDATION USING ACOUSTIC WIND TUNNEL DATA

Jianping Yin, Karl-Stephane Rossignol, Lukas Rottmann & Thorsten Schwarz / Published: 30 June 2023 (Open Access)



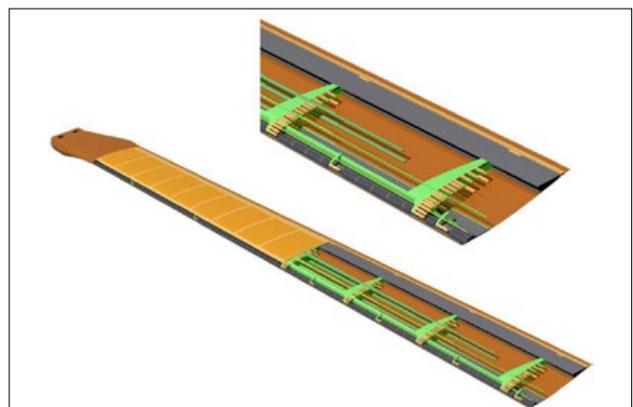
ROTORCRAFT STABILITY ANALYSIS USING LYAPUNOV CHARACTERISTIC EXPONENTS ESTIMATED FROM MULTIBODY DYNAMICS

Gianni Cassoni, Alessandro Cocco, Aykut Tamer, Andrea Zanoni & Pierangelo Masarati / Published: 12 March 2024 (Open Access)



NEW SMART TWISTING ACTIVE ROTOR (STAR): PRETEST PREDICTIONS

Berend G. van der Wall, Joon W. Lim, Johannes Riemenschneider, Steffen Kalow, Gunther A. Wilke, D. Douglas Boyd Jr., Joelle Bailly, Yves Delrieux, Italo Cafarelli, Yasutada Tanabe, Hideaki Sugawara, Sung N. Jung, Seong H. Hong, Do-Hyung Kim, Hee J. Kang, George Barakos & Rinaldo Steininger / Published: 01 April 2024 (Open Access)



2024

AMONG UPCOMING AEROSPACE EVENTS

OCTOBER

14-18 October – IAF/IAC – Hosted by AIDAA – **75th International Astronautical Congress** – Milan (Italy) – www.iac2024.org

15-16 October – ESA – **The Use of EO for Natural and Cultural Heritage** – 5th Workshop – Frascati (Italy) – ESA/ESRIN – <https://atpi.eventsair.com/>

15-18 October – ESA – **SPCD 2024 – 5th Space Passive Components Days** – Noordwijk (NL) – ESA/ESTEC – <https://atpi.eventsair.com/>

22-23 October – EASA – **EASA Innovative Air Mobility Implementation Forum** – Drones & Air Mobility Rotorcraft & VTOL – Hybrid Event – <https://www.easa.europa.eu/>

22-23 October – RAeS – **RAeS Flight Simulation Conference 2024** – London (UK) – RAeS/HQ – <https://www.aerosociety.com/events/>

23-25 October – ESA – **ACES workshop** – Atomic Clock Ensemble in Space – ACES launch expected to take place in mid-February 2025 – <https://atpi.eventsair.com/>

30-31 October – EASA – **EASA Annual Safety Conference 2024** – “Safety – Technology – and the Human Dimension” – In-Person event – Budapest (Hungary) – <https://www.esas.europa.eu/>

30-31 October – RAeS – **Advanced Engineering/RAeS – Advanced Engineering 2024** – Bridging the gap sectors for the entire engineering and manufacturing supply chain – London (UK) – Advanced Engineering 2023 Stand E 132 – <https://www.advancedengineeringuk.com/> – <https://www.aerosociety.com/events/>

NOVEMBER

02-06 November – ESA/CNES – **SMOS** – SMOS (Soil Moisture and Ocean Salinity) Science Conference 15-Year Anniversary – Calatabiano (Sicily) – Castello San Marco – <https://atpi.eventsair.com/>

04-06 November – ESA – **ARSI'24** – 8th workshop on Advanced RF Sensors and Remote Sensing Instruments – Noordwijk (NL) – ESTEC – <https://atpi.eventsair.com/>

05-07 November – RAES – **International Aviation Women Association (IAWA) 36th Annual Conference** – To cultivate and advance women leaders in the aviation and aerospace industries through a global network – Dublin (Ireland) – <https://www.aerosociety.com/events/>

05-07 November – FSF – **IASS 2024 – International Aviation Safety Summit** – Rio De Janeiro (Brazil) – Grand Hyatt Rio De Janeiro – <https://flightsafety.swoogo.com/BASS2024>

06-08 November – PSAA – **READ 2024** – Research and education – Warsaw (Poland) – <https://read2024.meil.pw.edu.pl/>

11-13 November – ESA – **NAVITEC 2024** – ESA's workshop on Satellite Navigation Technologies – Noordwijk (NL) – ESTEC – <https://atpi.eventsair.com/>

11-15 November – ERCOFTAC – **Mathematics of Fluids in Motion** – Marseille (France) – <https://www.ercoftac.org/events/>

12-14 November – ICAO – **AI in the Sky** – SAFE SKIES – A unified approach with ICAO – <https://www.icao.int/Meetings/>

12-15 November – SESAR JU – **SESAR Innovation Days 2024** – Rome (Italy) – Aeroporti di Roma ENAV and Leonardo – <https://www.sesarju.eu/>

12-17 November – China – **AirshowChina 2024** – China International Aviation & Aerospace Exhibition – Zhuhai Guangdong (China) – www.airshow.com.cn

13-14 November – AAE – **International Conference – AI Applications in Aeronautics, Defence and Space** – Paris (France) – DGAC/HQ – <https://academieairespace.com/ai-conference>

13-15 November – Royal Bahrain Air Force/Farnborough International – **BIAS2024** – Bahrain International Airshow 2024 – 10-Year Anniversary – A prestige, world-class aviation event – Developing ally relations, driving innovation, facilitating international trade – Kingdom of Bahrain – Sakhir Air Base – <https://www.bahraininternationalairshow.com> – <https://airshow.bh>

19-20 November – RAeS – **AI in Civil Aviation and Airports Summit** – London (UK) – RAeS/HQ – <https://www.aerosociety.com/events/>

19-21 November – Abu Dhabi – **AIR EXPO ABU DHABI** – Exhibition & Conference – Shaping the Future of Aviation – Join the leaders in aviation industry – Abu Dhabi (UAE) – ADNEC Center – <https://www.adairexpo.com>

25 November – RAeS – **Light Aircraft Design Conference** – London (UK) – RAeS/HQ – <https://www.aerosociety.com/events/>

AMONG UPCOMING AEROSPACE EVENTS

DECEMBER

03 December – EREA – **EREA Annual Event** – Brussels (Belgium) – Double Tree by Hilton Brussels City Hotel – <https://erea.org/event/erea-annual-event-2024/>

10-11 December – RAeS – **Global Change through ESSI** – Earth and Space Sustainability Initiative – “We must develop a sustainable way, a durable way of benefiting from space, just as we must here on the Earth.” King Charles III – <https://www.aerosociety.com/events/>

2025 JANUARY

06-10 January – AIAA – **AIAA SciTech Forum** – Orlando, FL (USA) – www.aiaa.org/events

28-29 January – EC – **17th Space Conference – Meet the leaders – Shape Europe's Future** – Brussels (Belgium) – SQUARE – Meeting Centre, Pont des Arts – <https://space-conference.eu>

28-30 January – CAJU/3AF – **TSAS2025 – Towards Sustainable Aviation Summit** – Toulouse (France) – <https://www.3af.fr/agenda>

MARCH

01-08 March – IEEE – **IEEE Aerospace Conference** – With AIAA and PHM Society cosponsors – To promote interdisciplinary understanding and aerospace systems – Big Sky, MT (USA) – Yellow Stone Conference Sponsors – www.ieee.org – <https://www.aeroconf.org>

02-05 March – ECCOMAS – **CMMT Conference** – Computer Methods in Material Technologies – Zakopane (Poland) – <https://eccomas.org/>

18-19 March – CAJU – **Clean Aviation Forum 2025** – Brussels (Belgium)

24-28 March – EUROTURBO – **ETC16** – 16th European Turbomachinery Conference – Fluid Dynamics and Thermodynamics – <https://www.etc16.eu>

APRIL

09-12 April – AEROFriedrichshafen – **AERO 2025** – The Leading Show for General Aviation – Meet at Lake Constance – Friedrichshafen (Germany) – Messe Friedrichshafen – <https://www.aero-expo.de>

15-17 April – AIAA – **AIAA DEFENSE Forum – Secret/NO-FORN** – Laurel, MD (USA) – www.aiaa.org/events www.aiaa.org/defense

MAY

13-15 May – CANSO – **AIRSPACE World 2025** – Bringing together the entire aviation community to define our future skies – <https://airspaceworld.com>

13-15 May – 3AF – **IAMD 2025** – Integrated Air and Missile Defence – Thessalonique (Greece) – <https://3af.fr/agenda/>

20-22 May – NBAA/EBAA – **EBACE 2025** – European Business Aviation Convention & Exhibition – Europe's premier business aviation event – Geneva (Switzerland) – Palexpo – <https://ebace.aero/2025/about/>

JUNE

16-22 June – SIAE – **Paris International Air Show** – Paris-Le Bourget (France) – <https://www.siae.fr>

30 June – **04** July – EUCASS – **20th anniversary -11th Conference on AeroSpace Sciences** – Rome (Italy) – <https://eucass2025.eu>

JULY

07-11 July – EUROMECH – **ESMC12** – 12th European Solid Mechanics Conference – Lyon (France) – <https://euromech.org/>

21-25 July – AIAA – **AIAA AVIATION Forum** – Las Vegas, NV (USA) – www.aiaa.org/events

22-24 July – **ASCEND/powerd by AIAA** – Las Vegas, NV (USA) – www.aiaa.org/events

SEPTEMBER

22-26 September – 3AF/ESA – **HiSST2025** – High-Speed vehicle Science and Technology – Tours (France) – <https://www.fraagenda/>

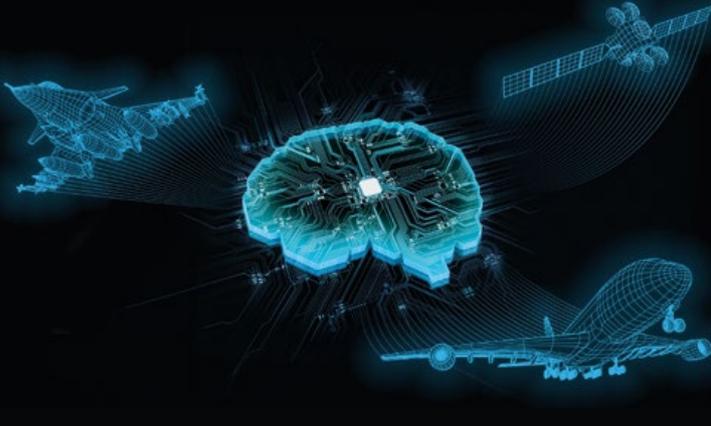
29 September – **03** October – IAF/IAC – **76th International Astronautical Congress** – Sydney (Australia) – www.iac2025.org

DECEMBER

01-04 December – CEAS – **AEC 2025** – AEC2025 – CEAS biennial Conference 2025 – Torino (Italy)

International conference organized by the Air and Space Academy

Artificial Intelligence Applications in aeronautics, defence and space



13-14 November 2024
Remotely or in person at the DGAC, Paris

Information, programme & registration on
academieairespace.com/ai-conference/

With the support of:



ARTIFICIAL INTELLIGENCE APPLICATIONS IN AERONAUTICS, DEFENCE AND SPACE

We are currently witnessing a real wave of Artificial Intelligence which, although invented in 1956, has intensified particularly since the 2000s, with peaks linked mainly to the various corresponding inventions.

The aim of this conference is to bring together the key players to take stock of current developments in civil aeronautics, defence and space and to identify the corresponding future critical systems capable of making the most of industrial and trustworthy AI, both on the development side and in operations. Advantages and disadvantages will be discussed, including risks and ways of managing them, particularly in sensitive applications.

The conference is directed at operators of civil and defence aerospace systems, their contractors and industrial developers, research bodies, as well as public services and regulators.

A concluding round table will analyse common developments and constraints to be considered in the three sectors of aeronautics, defence and space.

In short, this conference is not on artificial intelligence as such. AI has been around for more than 60 years, and has led to considerable progress and a certain stability in tools and methods. It is now time to change the nature of our research and look instead at real-life applications. This is why the conference is focusing on AI applications in specific areas, namely aeronautics, defence and space, particularly aimed at customers. Not only are these some of the areas where AI is most needed for key applications, but they also correspond to the thinking of the Air and Space Academy.

And if by chance this leads to the discovery of new methods and concepts for AI, this would of course be an interesting spin-off to exploit.

Claude Roche, Chairman of the organization committee, Member of the Air & Space Academy, former head of AI at DGA and former Director of Helios programme.