

# CALL FOR PAPERS

ICAS  
上海 SHANGHAI 2020

32<sup>nd</sup> Congress of the International  
Council of the Aeronautical Sciences  
Shanghai, China  
September 14<sup>th</sup>-18<sup>th</sup>, 2020



Organized by:



Hosted by:



Chinese Society of  
Aeronautics and Astronautics

Please submit your abstract online at [www.icas.org](http://www.icas.org) before July 15, 2019



# CALL FOR PAPERS

It is our great pleasure to invite you to the 32nd Congress of the International Council of the Aeronautical Sciences (ICAS), the only international forum that *covers the world of aeronautics*, bringing together a global array of topics and participants. ICAS was established some 60 years ago under the leadership of Professor Theodore von Kármán. Today ICAS continues to support the work of aerospace professional Member Societies around the world. Through Associate Memberships, ICAS brings together aerospace companies, national laboratories and educational institutions.

The 2020 ICAS Congress will be held in Shanghai, China from 14 to 18 September. In addition to the usual broad coverage of the Congress, there will be particular focus on the theme of “Urban and Regional Air Mobility”. The tremendous successes of previous ICAS Congresses in Belo Horizonte, Brazil, and Daejeon, Korea, provide an indication of the value to be gained from your participation in the ICAS Congress.

Presentations at the Congress, from oral paper reports to interactive discussions, cover all aspects of aeronautical science and technology including civil and military aviation applications. Leading engineers, scientists, technologists and managers in aeronautics from around the world will be there to:

- present their work to an informed and truly global audience
- hear the latest developments from internationally recognized experts
- exchange information and opinions with colleagues from around the world
- initiate and further develop collaborative relationships
- build long lasting networks with colleagues in other countries and cultures
- see and understand the implications of technical advances throughout aviation

The ICAS Program Committee ensures that presentations cover core aeronautical disciplines such as Aircraft Design, Materials and Structures, Systems and Subsystems. A full list of ICAS 2020 topic headings is attached. The Congress agenda also highlights topics that reflect new challenges and opportunities facing aviation today. They include, for example, novel approaches to solving aeronautical problems, emerging technologies that lead to improved performance, a cleaner or quieter environment, or more agile development processes. Additionally, areas showing rapidly growing impact have been strategically added to the ICAS agenda including: Additive Manufacturing (3D Printing), Industrial Internet of Things (for design, manufacturing, or support), Model Based Systems Engineering, and Electric Propulsion. There is sure to be increased focus on unmanned air vehicles, autonomous systems, zero-emission and eVTOL air transport, along with the operational challenges these technologies present for the global air transport system.

We invite you to more than attend ICAS 2020, and encourage you to submit an abstract to the congress to present your current work. The appended topic heading list is not exhaustive - papers from other relevant aeronautical areas are also welcome. We look forward to receiving your abstract and to welcoming you in Shanghai in 2020!

*Shinji Suzuki*  
President

*Joao Azevedo*  
Chair Programme Committee

***Authors are invited to provide an abstract for a potential paper before 15 July 2019***



## Timeline for Authors

- Upload your abstracts on [www.icas.org](http://www.icas.org) until 15 July 2019
- Authors receive an answer by 30 November 2019
- Upload your full paper prior to 01 June 2020
- Register to the Congress prior to 01 June 2020
- Please check out [www.icas.org/Call\\_for\\_papers.html](http://www.icas.org/Call_for_papers.html) frequently for updates concerning submission/paper handling till the congress.

## Congress Programme

The ICAS Programme Committee (PC) will assemble a Congress programme containing twelve parallel sessions and interactive presentation exhibitions. Student presentations (see page 4) will be embedded in the technical sessions. Based upon the experience of previous Congresses, the final programme is expected to contain more than 450 oral presentations. In addition, there will be a number of high quality, invited lectures on topics of particular importance and general interest in the technical sessions. A number of “General Lectures” on subjects of major importance, delivered by leading experts, will be included in the morning and afternoon plenary sessions.

## Congress Proceedings

All papers accepted for presentation (oral, standby and interactive presentations) will be included in the Congress Proceedings online and on a data medium which will be published in a national library. Please notice that a paper will not be included in the Proceedings when it is not presented at the Congress. The proceedings for the last six ICAS Congresses were indexed on Scopus.

## Congress venue

The 32nd ICAS Congress will be held in Shanghai, China. The host and local organizer is the Chinese Society of Aeronautics and Astronautics (CSAA) – the ICAS Member Society in China. More information about the venue and the logistic arrangements are given on page 6.

## What is the International Council of the Aeronautical Sciences?

- It was founded by Theodore von Kármán in 1957.
- It is a non-government, not-for-profit organization that facilitates and encourages the free exchange of information on aeronautical research and technology at a global level.
- It is the global organization supporting aeronautical engineering professional societies and associated organizations from around 30 countries.
- It organizes a major biennial Congress presenting timely, high quality work from the world-wide research community covering all aspects of aeronautical science and technology and their application to both military and aviation.
- More than 650 engineers and scientists from all over the world attended the last ICAS Congress in Belo Horizonte, Brazil and about 450 papers were presented.
- All papers presented at the congress are included in the electronic publication available at the Congress. In addition, the ICAS electronic archive, containing over five thousand documents, is freely available to the world-wide aeronautics community.
- The ICAS Congress provides a unique forum for engineers and scientists from all over the world to meet, to hear the results of the latest research and to exchange

## ICAS Contact information:

Axel Probst – ICAS Executive Secretary and Bodo Heinrichs, ICAS Coordinator

ICAS Secretariat, c/o DGLR, D-53175 Bonn, Germany, E-mail: [icas@icas.org](mailto:icas@icas.org), Web: [www.icas.org](http://www.icas.org)



**Please submit your abstract online at ICAS website [www.icas.org](http://www.icas.org) before 15 July 2019.**

Authors are invited to pay careful attention to the presentation and content of their abstract. Knowing that there are more candidates than possible presentations, paper selection for the ICAS Congress is done based on the quality of the abstract. Some important criteria for the abstract to be selected are scientific/technical content, importance to the field, style/clarity, and completeness.

Abstracts should be written concisely; include a preliminary title and the opening sentences should indicate the subjects dealt with and the objectives. The abstract should be intelligible and complete in itself. Abstracts should have a length of about two pages including figures and diagrams. When uploading your abstract you will be requested to upload also a short version (about 50 words) to be used in the Congress final programme. Please indicate for which ICAS topic area the paper is intended.

Your abstract should also include author(s) name, affiliation, complete mailing address, telephone and fax numbers, and email address. Due to limited space, only the first three authors will be shown in the printed programme. However, all authors should be included in the paper. Moreover, authors should adhere to the good practises in the writing of technical papers, such that only those directly involved with creation of the material should be listed as authors. Please use acknowledgements otherwise.

At the uploading of your abstract, you should indicate if your paper is intended as an oral or as an interactive presentation. Furthermore, it should be indicated if your paper is intended as a student paper.

### **Abstract review by Member Societies**

The abstracts will be made available to the national Member Societies by the ICAS Secretariat for screening and evaluation and the Member Societies will be asked to submit their recommendations (“not supported, supported, strongly supported”) to the ICAS Programme Committee for final evaluation and selection. **NOTE:** If there is no national ICAS Member Society in the country, the abstracts will be evaluated only by the ICAS Programme Committee.

**Authors will be informed about the acceptance/rejection of their paper not later than 30 November 2019. Full papers must be delivered at the latest by 01 June 2020 for inclusion in the Congress proceedings. Moreover authors will have to contact their session chair prior to the above deadline in order to align, ensure the paper is coming along adequately and that it also satisfies the ICAS standards in terms of quality and content.**

### **Interactive Presentations**

Interactive Presentation sessions will be organized for the cases where this mode of presentation is preferred by authors or considered more appropriate by the Programme Committee. There is, in principle, no limitation in number for interactive papers and they are selected on their merit only.

### **Student Presentations**

Undergraduate or postgraduate students, who will not have completed doctorate studies by the date of the Congress, may submit an abstract on any topic of the Congress. To participate in the McCarthy-Student-Award, students must check the participation request upon uploading their full paper. Students must ensure before accepting selection in November 2019 that they can cover their travel and hotel expenses. The two best student papers will be awarded with the ICAS McCarthy Award, which also includes a financial stipend. To be eligible to take part in the competition for the ICAS McCarthy Award, the abstract and subsequent paper is to be authored and presented by students only.

### **Feedback on the abstracts**

The ICAS Programme Committee may provide individual feedback when screening the abstracts. This should enable the submitters of the abstracts to provide a better presentation at the Congress and a paper with a higher quality for the ICAS archive. Furthermore, as stated above, the session chairs may request feedback, or preliminary versions of the paper, from the authors prior to the final paper submission deadline. Authors are expected to reply promptly and accurately to such requests.



# ICAS 2020 TOPIC AREAS

## 1. Aircraft Design and Integrated Systems

- Commercial Transport Aircraft
- Military Aircraft and Missiles
- Non-conventional Aviation Systems and Concepts
- Unmanned Air Vehicles
- Supersonic and Hypersonic Aircraft
- Rotorcraft
- Sailplanes and Ultralight Aircraft
- Multi-Disciplinary Optimization
- Design for Survivability
- Design Education
- Life Cycle Value
- Hybrid/Electric and Unconventional Fuel Aircraft
- Personal / Urban Air Mobility

## 2. Systems Engineering and Integration

- Systems Engineering
- Systems Integration
- System of Systems
- Engineering Management
- Distributed Development
- Model Based Development
- Integrated Product and Process Development
- Design Methodology
- Industrial Internet of Things

## 3. Aerodynamics

- Subsonic
- Transonic and Supersonic
- Hypersonic Aerothermodynamics
- High Angle of Attack, High Lift
- Computational Fluid Dynamics
- Aerodynamics of Unconventional Aircraft
- Flow Stability, Transition and Turbulence
- Wind Tunnel and Flight Testing
- Experimental Facilities and Techniques
- Aeroacoustics and Reduction of Noise
- Flow Control
- Biologically-inspired Flight

## 4. Materials and Structures

- Composite Materials and Structures
- Applications and Issues
- Metallic Alloys
- High Temperature Materials and Structures
- Structural Mechanics
- Fatigue and Damage Tolerance
- Structural Dynamics and Aeroelasticity
- Dynamic Loading, Acoustic Loading and Impact
- Structural Testing
- Nanotechnology

## 5. Propulsion and Energy

- Propellers and Fans
- Hypersonic Propulsion
- Inlets and Nozzles
- Propulsion / Airframe Integration
- Noise and Emissions
- Experimental Facilities and Techniques
- Electric Propulsion
- Alternative Fuels

## 6. Flight Dynamics and Control

- Flight Dynamics
- Control Techniques and Systems
- Aircraft Handling Qualities
- Flight Testing and Simulation
- Performance and Trajectory Optimization

- Missile Guidance
- Autonomous Operations
- Neural Networks
- System and Parameter Identification

## 7. Systems, Subsystems and Equipment

- Integration of Equipment Systems
- Power Optimised Aircraft Systems
- Electrical, Hydraulic and Pneumatic Systems
- Avionic Systems
- Landing Gear and Braking Systems
- Auxiliary and Emergency Power Generation
- Aircraft Fuel Systems
- Lightning, Cabin and Water/Waste
- Ice and Rain Protection
- Advanced Sensor Systems
- Emergency Systems
- Aircraft Systems Testing

## 8. Manufacturing and Supply Chain Management

- Supply Chain Management
- CAD/CAM and Computer Integrated Manufacturing
- Information System Technology / 3D Printing
- Robotics
- Automated and Assistive Technologies
- Cognitive Manufacturing
- Total Quality Management

## 9. Air Transport System Efficiency

- Aircraft Operation
- Flight Management
- ATM and Airspace Capacity
- Weather Effects
- Airport Capacity
- Intermodality Issues

## 10. Safety and Security

- Accident Prevention
- Accident Survivability, Crashworthiness
- Human Factors
- Airworthiness and Certification
- Ageing Aircraft
- Aviation Medicine
- Airborne Aircraft Security
- Airport Security
- Cyber Security

## 11. Operations and Sustainment

- Maintenance, Repair and Overhaul
- Reliability and Maintainability
- Condition Based Maintenance
- Logistics and Through-life Support
- Extreme Environmental Conditions
- Continuing Airworthiness
- Ageing Systems and Upgrade
- Total Lifecycle Analysis
- Customer and Product Support
- Prognostics and Big Data

## 12. Education and Training

- Student Design, Build and Fly Activities
- Aeronautical Student Projects
- Student Hands-on Activities
- Continuing Professional Development



## ICAS 2020 – Shanghai, China

### General Information

The 32nd Congress of the International Council of the Aeronautical Sciences will be hosted by the Chinese Society of Aeronautics and Astronautics (CSAA) and will be held from 14 to 18 September in Shanghai, China.

### Shanghai, “More Discovery, More Experience”.

As one of the earliest Chinese ports to open to the outside world, Shanghai is one of the most charming cities with the most modern atmosphere in China and an international metropolis where the Eastern and Western cultures mingle and the classic and the modern merge. Its sound tourism facilities, convenient traffic system, abundant tourist attractions and resources and engrossing Shanghai culture give domestic and foreign tourists visiting Shanghai a beautiful impression. The city sightseeing, business and shopping tourism circle with the People’s Square and both banks of the Bund as the centre, the urban cultural tourism circle around the city mainly including public activity centres and communities together with the suburban leisure and holiday tourism circle with the She Mountain, Dianshan Lake and Chongming Island and world-class park circle featuring Shanghai International Resort and Shanghai Haichang Ocean Park have been formed as the key tourist spots of the city.

The good business environment, high-quality urban public services, airports full of vitality and developed intercity traffic networks are making Shanghai a destination for business and tourism, attracting worldwide attention. Shanghai is heading towards the goal of building a world-famous tourism city and a destination of business travel for international conferences and awards.

### Congress Venue

The ICAS 2020 Congress will be held in the Pudong Shangri-La, East Shanghai. It is located on the famous Huangpu River in Shanghai’s vibrant Lujiazui financial district, directly opposite the historical Bund. Travelling to and from the hotel is very convenient with the Hongqiao Airport only 35 minutes away, the Pudong Airport only 45 minutes away, and the tunnels and subways connecting Pudong (East Shanghai) to Puxi (West Shanghai) also close by.

The hotel comprises a luxurious collection of stylishly appointed guestrooms and suites in two distinct wings: the 577-room classic River Wing and the 375-room contemporary and exclusive Grand Tower. All rooms showcase panoramic views of the Bund, the Huangpu River or Pudong’s spectacular skyline. The Grand Tower epitomizes the very best in luxury living, providing some of Shanghai’s most luxurious and spacious accommodation. The hotel is also home to the Horizon Club, which offers the most discerning traveller a higher level of comfort, attention and personalised service.

### Social Programme

There are numerous planned activities in Shanghai and adjacent cities. Full day or half day activities and excursions will be prepared for the participants and their accompanying persons. Moreover, pre- and post-congress tours can also be arranged upon request.

### Technical Visits

ICAS participants are invited to visit a number of research centres and enterprises of the aeronautical engineering industry, such as the AVIC China Aeronautical Radio Electronics Research Institute, COMAC Shanghai Aircraft Manufacturing Co., Ltd., Ampaire Aviation Technology in Hangzhou and AECC Commercial Aircraft Engine Co. Ltd. Technical visits to facilities in Xi’an, Chengdu and Shenyang cities may also be arranged.

### Registration Fee

The Congress registration fee is expected to be approximately 880 Euros (early bird registration) for representatives of ICAS member societies and associates, and 1.050 Euros for non-members. Accompanying person registration fee is planned to be about 200 Euros. The registration fee for students is expected to be approximately 200 Euros.

**For further information please check the websites below or contact:**

#### ICAS Secretariat

c/o DGLR  
Godesberger Allee 70  
D 53175 Bonn, Germany  
+49 228 308 0519  
icas@icas.org  
[www.icas.org](http://www.icas.org)



#### Congress Secretariat

Chinese Society of Aeronautics and Astronautics  
Beijing, No. 2, Andingmenwai, Beiyuan,  
Chaoyang District, Beijing  
(P.O. Box: 761-2, Beijing-100012), China  
+86 10 84924385/84934114  
icas2020@csaa.org.cn  
[www.icas2020.com](http://www.icas2020.com)

