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# Y CICTA 2025

Organized by Aerospace Engineering Program, University of Antioquia

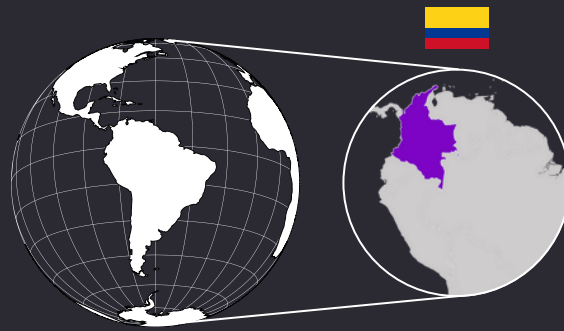
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## THE EVENT

The *International Congress of Aerospace Science & Technology (CICTA)* will take place for its **10th edition** during **March 6 and 7, 2025** at the city of **Medellin, Colombia**.

The city of Medellin has emerged as a leading industrial hub in Colombia during its history and has shown the resilience of its people through difficult times. Proud of its scars, revived by its culture, and sustained by its entrepreneurial spirit, Medellin is the city host of this event, impressing the spirit of a region that now goes forward aiming to new heights.



The event will cover the work of the network of science & technology development within the region and beyond, focusing on the progress towards the linkage with the international Aerospace Industry, looking for present and future synergies around the globe.

## WHY?

During the last decade, Colombia has been pushing forward towards the development of its Aerospace Sector looking for the establishment of a solid academic and industrial base beyond the traditional segments related to Air Transport Operations, Maintenance and Repair Operations, Air Traffic Management and post-life market.



Now, the focus is set on a Knowledge Based Economy, reaching segments linked to early stages in the supply chain and development cycle of Aerospace Products and services. Data processing, software development and exploitation of Artificial intelligence are not only considered but embedded into the Aerospace domain, leaving the clear connection to Cyber-security.

The energy migration is a key focus along with new aircraft operations concepts and architecture within the urban air mobility ecosystem and the related re-conception of critical systems, digital engineering and system development methodologies. Space access, space systems and missions developments, space sustainability and human factors are some of the main drivers of this edition of **CICTA**.

CICTA X

This edition will be under the responsibility of Universidad de Antioquia through its Aerospace Engineering Program. More than 400 participants, national and international, are expected, based on previous editions, combining members of academia, industry and government institutions.

**We will be glad to have you as our guest**



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# SUBJECTS

## Atmospheric propulsion systems

- Distributed propulsion systems
- Propulsion systems integration
- Propulsion system tests
- Propulsive systems acoustics

## Air transport systems

- Operations research
- Airport operations
- Rotary wing operations
- Air operations networks analysis
- Operational safety
- Air Traffic management
- Alternative air mobility
- Intermodal transport
- Airspace monitoring systems
- UAS's integration into air traffic systems

## Aerodynamics

- Aeroacoustics
- Aeroelasticity
- Aerodynamic simulation and numerical methods
- Experimental aerodynamics
- Applied aerodynamics

## Energy systems for aviation

- Energetic migration
- Hybrid power systems
- Electrical power systems
- Energy networks and energy chain supply
- Energy storage systems
- Biojet and Sustainable Aviation Fuels (SAF)

## Flight mechanics, control and simulation

- Flight tests
- Flight simulation
- Flight control systems
- Handling/Flying qualities
- Systems and parameter identification
- Performance optimization
- Autonomous systems and robotics

## Operational safety

- Cyber security into aerial operations
- Accident research
- Safety factors
- Security and airspace sovereignty



## **Aerospace systems engineering**

- Multidisciplinary Design Optimization (MDO)
- Knowledge Based Engineering (KBE)
- Systems of Systems (SoS)
- Model Based Systems Engineering (MBSE)
- Digital engineering
- Distributed development
- Aircraft design (fixed and rotary wing)
- Software development methodologies into hardware development

## **Cybernetic systems**

- Cyber-physical systems
- Cyber security for critical systems
- Failure chain and systems resilience
- Systems and networks for aerospace operations
- Remote perception
- Computing architectures for aerospace applications

## **Human factors and aerospace medicine**

- Human machine interfaces
- Work-load analysis
- Coupling human-AI functions
- Human behavior modeling and simulation
- Remote medicine
- Technologies and procedures for air rescue applications
- Human factors and space environment

## **Structures and materials**

- Development of new materials
- Structural analysis
- Computational simulation of aerospace structures
- Structural tests (DT/NDT)
- Structural pathology
- Life cycle and data analysis

## **Manufacturing processes**

- Additive manufacturing
- Manufacturing automatization
- Manufacturing systems
- Decentralized manufacturing
- Quality systems
- Chain supply

## **Value cycle and aerial assets sustainability**

- Value cycle perspectives
- Airworthiness
- Reliability
- Assets prognosis
- Big-data into aerial operations & MRO
- Aerial systems retirement
- Smart hangars
- IoT into aircraft maintenance



## Space access platforms

- Astronautical propulsion
- Space access systems
- Launch site analysis
- Mission digital engineering

## Space systems

- Satellite applications
- Space systems engineering
- Astrodynamics
- Sustainability and space environment
- Space structures
- Robotics and services in orbit
- Spacecraft control and autonomy
- Integration, verification validation and qualification of space systems
- Lunar mining

## Space law and space economy

- Models for space industry and economical sustainability
- Space vehicles as IoT's
- Space law
- Regulation and international agreements

## Space sciences

- Astrophysics
- Astrobiology
- Planetary geology
- Cosmology





# Contact us

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\* Photo by Ivana Cajina

