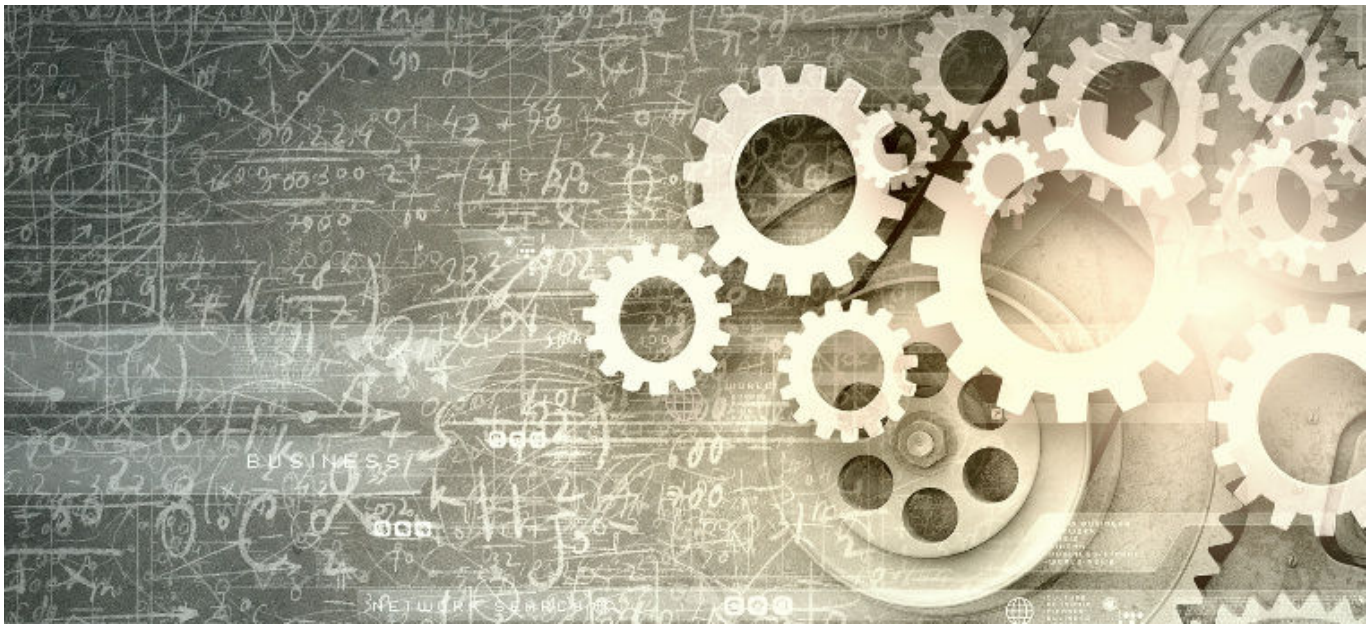
ENAC Research

Ecole Nationale de l'Aviation Civile

ENAC Research

Integrating drones into air traffic, creating a training aircraft or an all-electric operational helicopter, improving flight safety through a better understanding of human factors, designing flight routes which are optimised for efficiency, environmental impact, and safety, imagining the airport of the future, making transport system geo-localisation more robust and precise... These are some examples of our research laboratory projects. Every day, ENAC researchers are designing and creating the air transport systems of tomorrow. Systems which, because of their growing complexity, must always be safer, more intelligent, and more sustainable.



The ENAC Research Lab

The air transport system is one which is spread over a global scale, with the task of accomplishing critical missions users' integrity, as well as having to manage performance constraints (delays, capacity, safety, costs...). It involves a great diversity of operators (pilots, air traffic controllers, schedulers, supervisors, maintenance personnel...) and stakeholders (airlines, air navigation service providers, airports, manufacturers...). As such, it constitutes one of the most complex systems of systems ever conceived by humans.

Master the safety of this system while improving its performance and service quality, in a context of rapidly increasing international air traffic, raises numerous scientific challenges which affect the evolution of air transport, and to which the ENAC lab bring solutions. The ENAC is characterised by a

unique combination of scientific excellence, technical and operational expertise, as well as experimental means covering the Air Transport System as a whole.This unique advantage is what makes the ENAC one major player in European and international research in the domain of Air Transport Systems.

The issues of research involving air transport systems often play a pioneering role in the emerging needs of deployed complex systems for the public space (autonomous transport systems, surveillance systems, security control systems, robust and precise geo-localisation systems, visualisation of complex systems...). This characteristic leads to a large range of applicability for the research carried out by the ENAC.

Missions and objectives

To meet the important challenges of air transport, the ENAC conducts research and development according to the following objectives:

To develop a world-class research center that works hand in hand with the DGAC - the French Civil Aviation Authority - to face the scientific and technical challenges at the heart of the new generation of Air Transport Systems

- To develop a research policy that aims at contributing to the national and European priorities
- To develop strong interactions between ENAC training courses and research in order to offer cutting edge training and research projects to our students and post-graduates
- To be a major figure in European and international research in the field of air transport systems
- To cover a broad range of innovations, from fundamental research to the design and deployment of new services in the operational environment
- To develop a global network of partners made up of major figures in academic and industrial research
- To contribute to the development and excellence of the research carried out at the aerospace campus of Toulouse

ENAC, a world leader in research and innovation

To innovate in the domain of air transport is to address complex, multidisciplinary, multifaceted themes. This requires leading expertise and a wide-ranging and varied skill set. The ENAC is the only entity in the world which can mobilise such a diverse range of academic excellence, technical and operational expertise in the aeronautical and space domains, and know-how in instructional design, all for the benefit of research and education.

Our strength is our ability to develop scientific expertise which is always in line with the major dilemmas and challenges of the aeronautical and space domains thanks to our many first-rate international partners in academia and our solid involvement in the industrial world as well as in the implementation of the Single European Sky.

Top-notch research for top-level instruction

Research activity allows the ENAC to maintain excellence and a pioneering vision throughout the whole range of its training programme , while drawing on the latest scientific and technical advances. This position of leader in aeronautical research and education offers an exceptional access to rich and varied subjects for all of its students, instructors, and researchers. It also provides numerous opportunities for dialogue with the most important international figures in aeronautical innovation.

Organisation

Four research teams who strive for scientific excellence

- the « Data, Economics, and Visualisation » team
- the « Interactive informatics » team
- the « Optimisation » team
- the « Telecommunications » team

Four transverse research programs deal with problems operational issues for which the solutions demand a multidisciplinary approach

- Sustainable Development
- Air transport safety and security
- Drone systems
- General Aviation and Helicopters

Two technical platforms of international scale which are open to the research community and which constitute research and training tools both for and through research :

- The Toulouse Occitanie Drone Flight Area
- TheToulouse Occitanie Aeronautical Computer Human Interaction Lab (ACHIL)

Figures

- 90 lecturer-researchers and research engineers
- More than 450 experts in all of the fields of operational expertise which are at the heart of air transport systems
- More than 60 PhD students and about 20 doctoral theses defended per year
- More than 80 partnered research projects with the most important academic and industrial figures in the world of aeronautical research
- Research partners from more than 20 countries throughout Europe, Asia, North America, South America, and Australia
- A combination of experimental, simulation, and training platforms which is unique in the world:
- An operational fleet of 116 planes 2 flying experimental laboratories 8 aerodromes of which 2 are equipped for research 2 3D, 360° control tower simulators 40 approach simulation positions 80 en-route simulation positions 20 tower and airport control simulation positions, A320 flight simulator

ENAC research teams ///

ENAC research programs ///

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Documents

See as well

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