# Science, Technology and Innovation at Aeronautics Institute of Technology (ITA)



# Science, Technology and Innovation @ Aeronautics Institute of Technology (ITA)

**Prof. Vilson R. Almeida**

**vilsonra@ita.br**

FAPESP Week CHINA 2024, June 28 - 29

# SUMMARY

- Aeronautics Institute of Technology (ITA)
- The Engineering Research Center for Aerial Mobility of the Future (ERC/CPE-MAF) – FLYMOV

# SUMMARY

- **Aeronautics Institute of Technology (ITA)**
- The Engineering Research Center for Aerial Mobility of the Future (ERC/CPE-MAF) – FLYMOV

# Aeronautics Institute of Technology (ITA)

- **ITA – Facts and History:**
  - Smith Plan, from 16th November 1945;
  - Decreet n. 27,695, from 16th January 1950;
  - Law n. 2,165, from 5th January 1954:

**The Aeronautics Institute of Technology from the Aeronautics Technical Centre, headquartered in the municipality of São José dos Campos, in the State of São Paulo, is a higher education institution, under the jurisdiction of the Ministry of Aeronautics.**

**The Aeronautics Institute of Technology aims to:**

a) **Provide the education and instruction necessary for training high-level professionals in specialization areas of interest to Aviation, and to the Brazilian Air Force in particular;**
b) **Maintain university extension, postgraduate and doctoral courses;**
c) **Promote, through education and research, the progress of science and techniques related to Aeronautics.**



MIT educational model (1947)



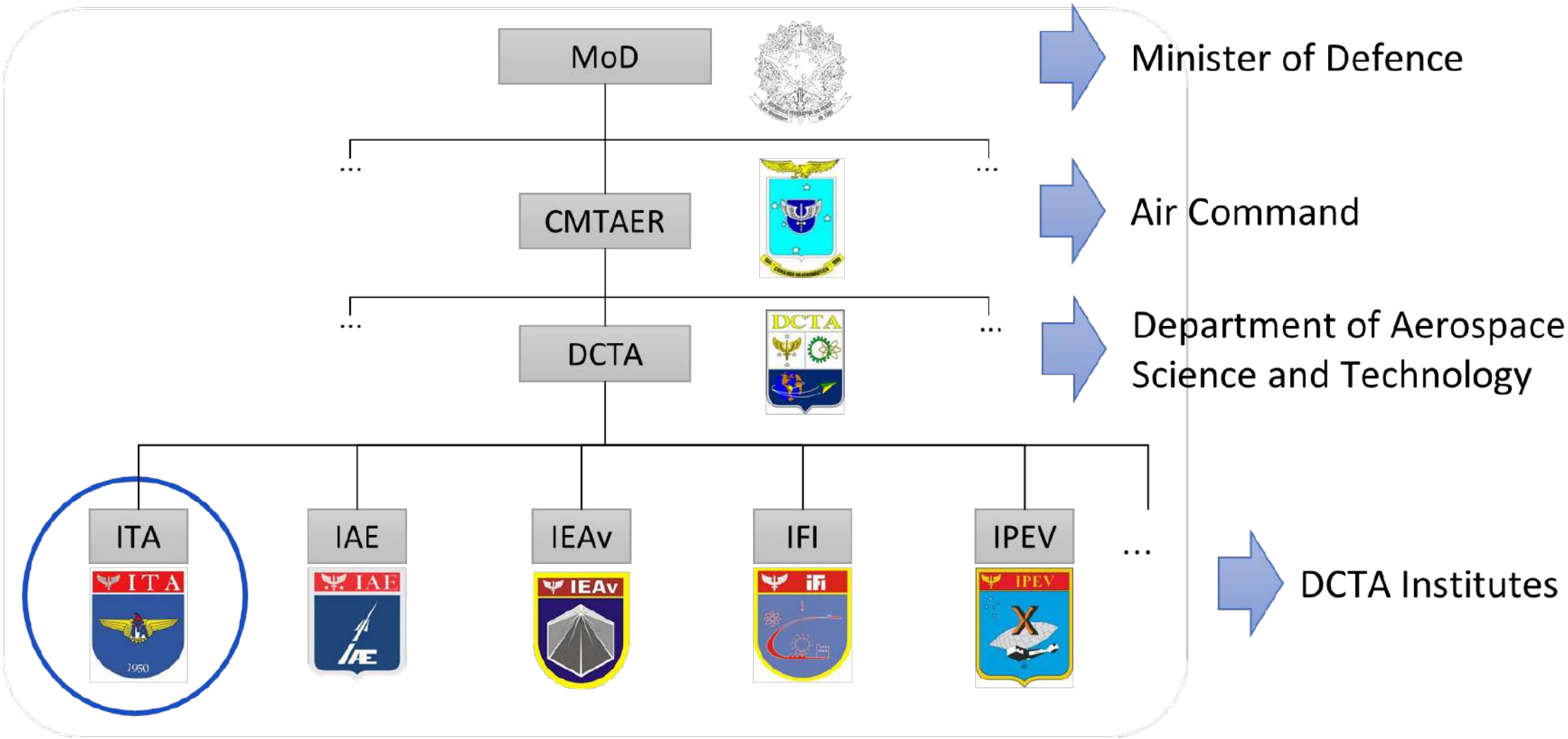
Arrival of the first students (1950)

# Aeronautics Institute of Technology (ITA)

- *Instituto Tecnológico de Aeronáutica* – **ITA**
- **Department of Aerospace Science and Technology** (*Departamento de Ciência e Tecnologia Aeroespacial* – **DCTA**)



# Aeronautics Institute of Technology (ITA)



# Aeronautics Institute of Technology (ITA)






São José dos Campos, SP, Brazil
Population: ~725,000; IDH: 0.807




DCTA Campus (red border)

EMBRAER

- INPE originated (1961) from DCTA research
- EMBRAER is a spin-off (1969) from DCTA

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# Aeronautics Institute of Technology (ITA)

- ITA is part of the **Brazilian Aerospace cluster**, which is mostly located in the city of São José dos Campos (State of São Paulo).

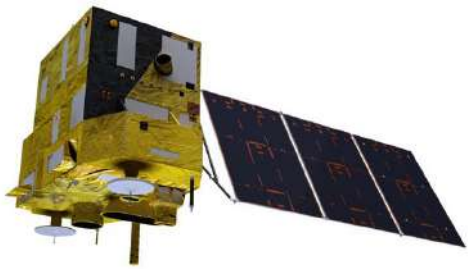


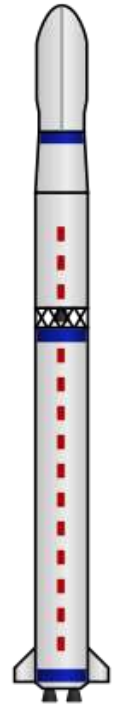
# National Institute for Space Research (INPE)

- *Instituto Nacional de Pesquisas Espaciais* (INPE)
- **INPE originated from DCTA research (1961)**
- **CBERS (China-Brazil Earth Resources Satellite)**
  - **1988: Agreement was signed between INPE and CAST (China Academy of Space Technology)**
  - **1999: CBERS-1 launched: *Longa Marcha* - 长征火箭**
  - **2003: CBERS-2 launched**
  - **2009: CBERS-2B launched: *Longa Marcha* 4B - 长征四号乙火箭**
  - **2013: CBERS-3 launched**
  - **2014: CBERS-4 launched: *Longa Marcha 4B* - 长征四号乙火箭**









https://www.gov.br/inpe/pt-br/acesso-a-informacao/institucional/historia

# EMBRAER

- *Empresa Brasileira de Aeronaves* (EMBRAER)
- The 3rd largest civil aircraft producer worldwide, after Boeing and Airbus
- EMBRAER is a spin-off (1969) from DCTA

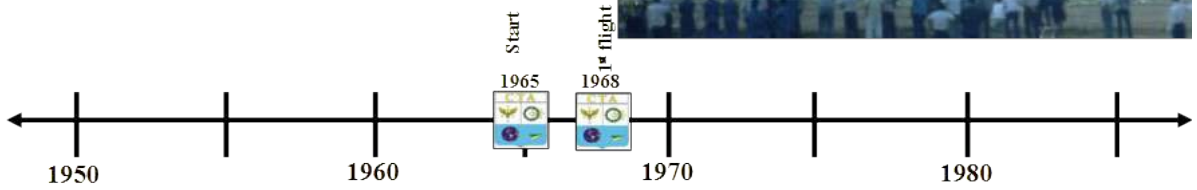



Twin-engine Bandeirante

Project Leader

Prof Max Holste

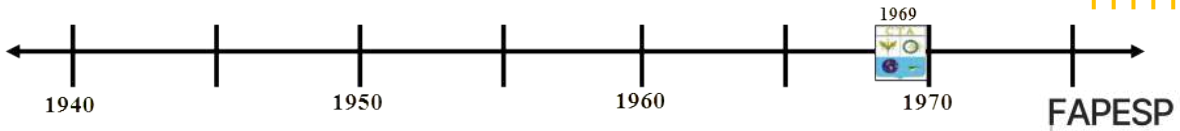






1969: EMBRAER



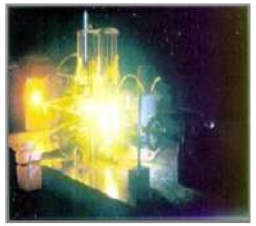

FAPESP Week CHINA 2024, June 28 - 29

# Aeronautics Institute of Technology (ITA)

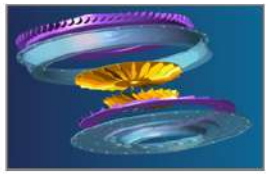
- **Undergraduate Courses**

**FUNDAMENTALS**
Mathematics - Physics - Chemistry - Humanities

| Electronics Engineering | Aerospace Engineering | Civil Engineering | Computer Engineering | Aeronautical Engineering | Mechanical Engineering |
|---|---|---|---|---|---|
| Applied Electronics | Navigation and Guidance | Structures and Buildings | Scientific Computation | Aerodynamics | Management |
| Microwave Circuitry | Propulsion and Aerodynamics | Geotechnics | Software Engineering | Structures | Design |
| Control Systems | Electronics for Space Applications | Water Resources and Environ. Sanitation | Computation Theory | Propulsion | Materials and Processes |
| Telecom. | | Air Transp. | | Flight Mechanics | Mechatronics |
| | | | | | Turbo-machines |
| | | | | | Energy |





Admission rate: ~80 candidates/position

~600 students (120 per year)

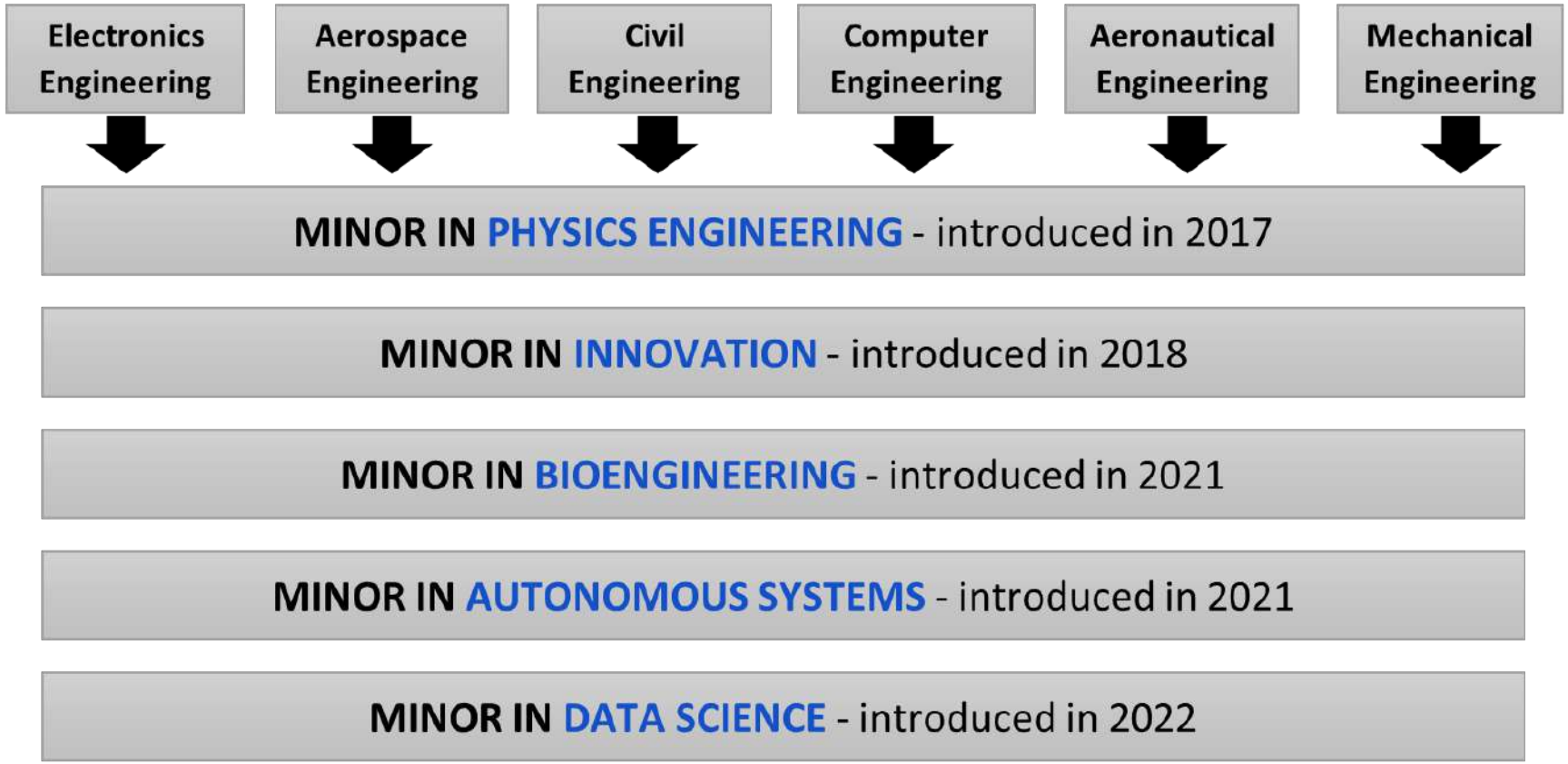
Full time scholarship (dorms and food)

Strict academic requirements

***ITA is considered one of the best Engineering Schools in Brazil***

# Aeronautics Institute of Technology (ITA)

- **Undergraduate Courses**
  - **MINORS for undergraduate students**




Optional transversal programs

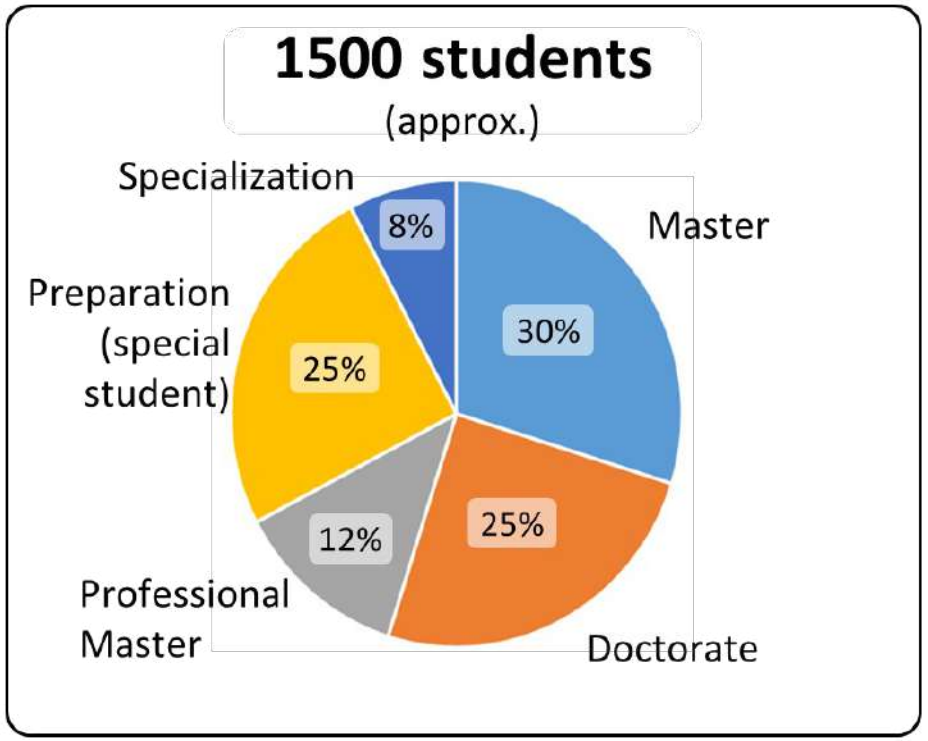
Based on elective disciplines

Flexibility for developing transversal skills

# Aeronautics Institute of Technology (ITA)

- **Graduate Courses**

**1st Graduate Course in Engineering in Brazil**




**~ 200 Professors** (approx.)

**Graduate Courses**

3 Professional Masters Programs

- Aeronautical and Mechanical Engineering
- Aviation Safety and Continuing Airworthiness
- Aeronautical Computing

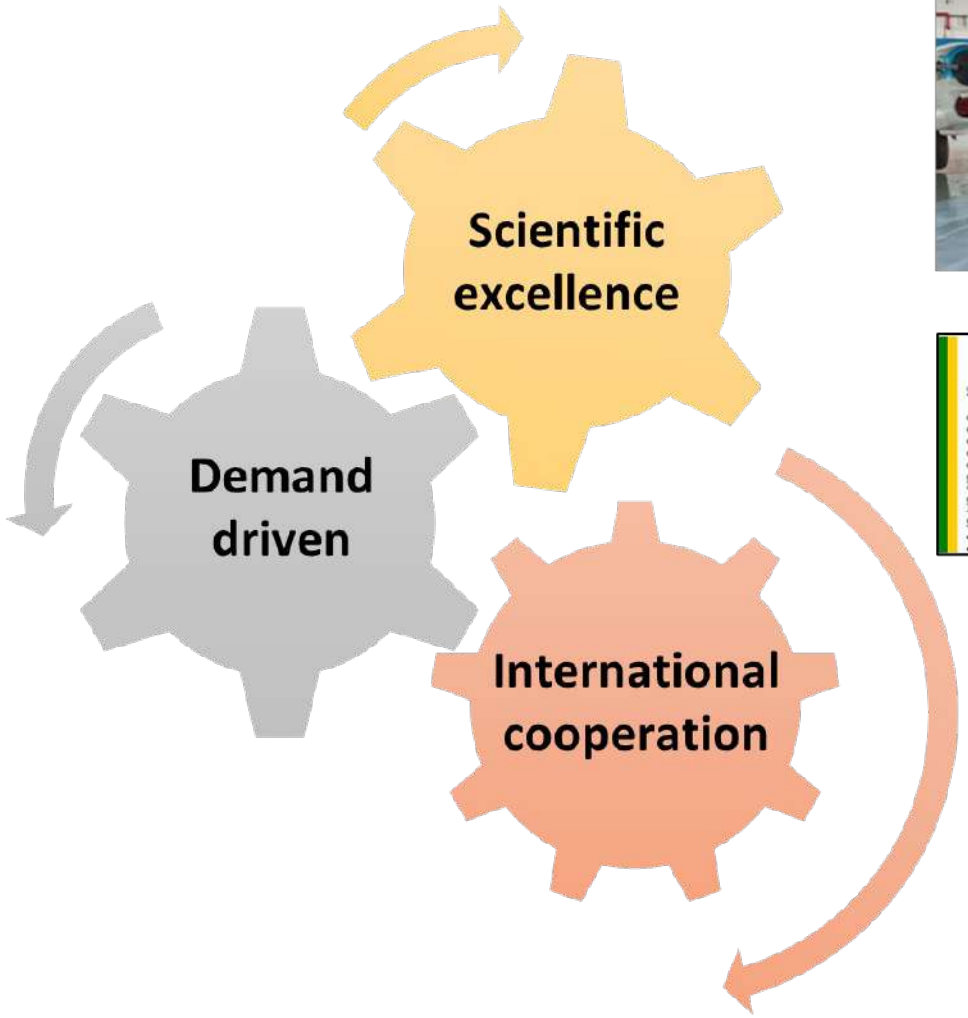
6 Doctorate and Master Programs

- Aeronautical and Mechanical Engineering
- Aeronautics Infrastructure and Air Transportation
- Electronics and Computer Engineering
- Physics
- Space Science and Technology
- Operational Research

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# Aeronautics Institute of Technology (ITA)

- **Graduate Courses**






*DCTA patent ceremony - 2020*





**PPGAO: Program in Operational Applications**

**Demands from Aerospace and Defence industry**

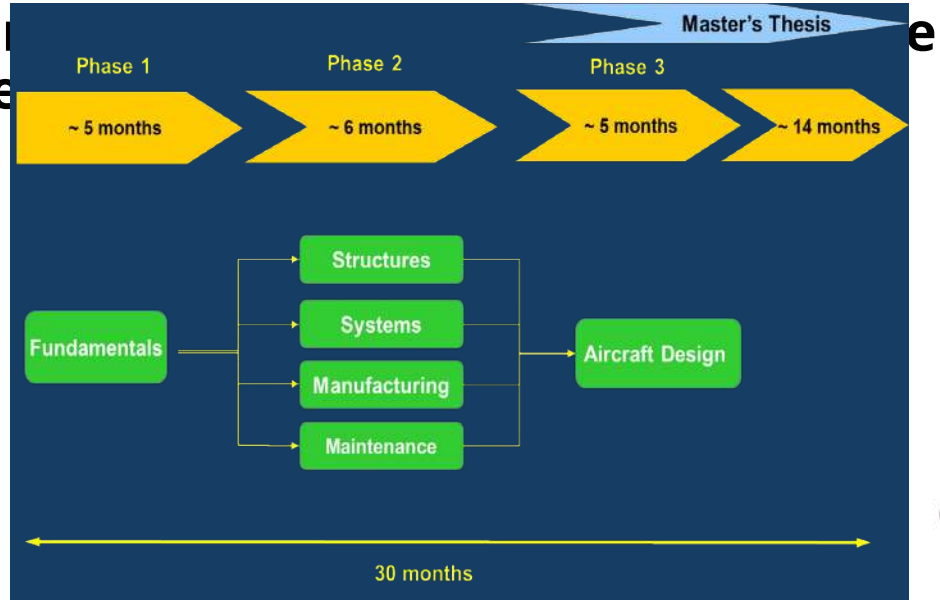
**Demands from Brazilian Air Force**

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# Aeronautics Institute of Technology (ITA)

- **Industry-University Programs**
  - **Professional Master Degree in Aeronautics and Mechanics (MP-EAM)**
    - **Objective: specialize newly graduated non-aeronautics engineers to work at EMBRAER engineering departments, using an accelerated learning strategy in accordance with the company needs.**
    - **A successful ITA-EMBRAER partnership**
    - **https://mpaer.ita.br/**
    - **Part of PEE (Engineering Specializatio… e few entry to EMBRAER engineering de…**
      - **https://embraer.com/br/pt/pee**



# Aeronautics Institute of Technology (ITA)

- **Industry-University Programs**
  - **Professional Master Degree in Aviation Safety and Continued Airworthiness (MP-Safety)**
    - **http://www.ita.br/mprof/mpsafety**




  - **ITA Academic Program for Innovation in Industry (PAI³):**
    - Industry grant for undergraduate students to do research aiming to solve industry challenges.
    - https://paic.ita.br/modalidade/pai3/

# Aeronautics Institute of Technology (ITA)

- **Industry-University – ITA *alumni***



**Defense Aviation Program**

**34% Graduated Engineers from ITA**




**Commercial Aviation Program**

**33% Graduated Engineers from ITA**



**Executive Aviation Program**

**25% Graduated Engineers from ITA**



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# Aeronautics Institute of Technology (ITA)

- **Industry-University – Recent Initiatives**

***Thesis and Dissertations***



FT SISTEMAS

KONATUS

MA.IA

lume
Soluções Tecnológicas e Monitoramento

tecsus

NCB
sistemas embarcados

Subiter

EIGENDAUER

RWTH AACHEN UNIVERSITY

***International Collaboration***

***Collaboration with incubators***

incubaero

NeXus
Hub do Parque Tecnológico São José dos Campos

FCMF
Fundação Casimiro Montenegro Filho

PARQUE TECNOLÓGICO
São José dos Campos



**Best Master Dissertation of RWTH 2017**

# Aeronautics Institute of Technology (ITA)

- **Industry-University – Recent Initiatives**







AUTAZA



# Aeronautics Institute of Technology (ITA)

- **Main Research Lines**

| | |
|---|---|
| 1 | New aeronautical concepts |
| 2 | Air transportation engineering |
| 3 | Manufacturing, automation, production and innovation management |
| 4 | Autonomous systems and embedded systems |
| 5 | Aerospace propulsion and sustainable energy |
| 6 | Advanced materials, multifunctional materials and aerospace structures |
| 7 | Nanotechnology and surface engineering |
| 8 | Command and control, electronic warfare and cyber-security |
| 9 | Systems engineering and logistics |
| 10 | Space science and engineering |
| 11 | Aeronautical infrastructure |
| 12 | Basic research in physics, chemistry and mathematics |
| 13 | Bioengineering and human factors |
| 14 | Data science and artificial intelligence |

# Aeronautics Institute of Technology (ITA)

- **International Collaboration**

**Double degree / joint course under negotiation**

**Double degree / joint course active**

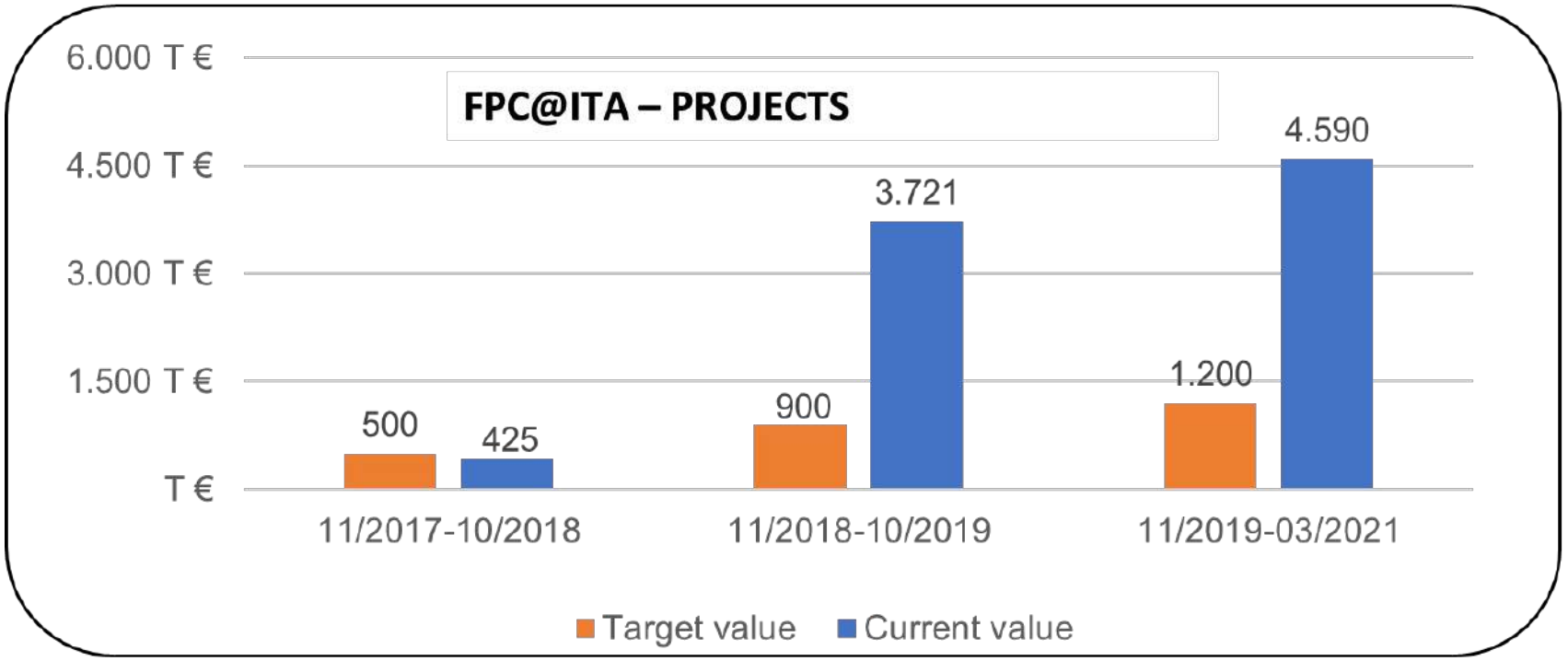


# Aeronautics Institute of Technology (ITA)

- **Fraunhofer Project Center for Advanced Manufacturing at ITA**

Fraunhofer IPK

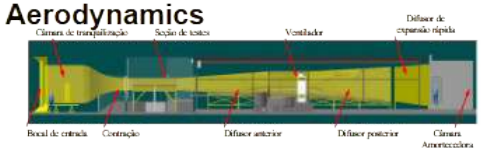


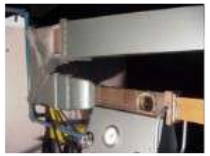
# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research**:
  - **Laboratory of Aeronautical Engineering – Prof. K. L. FENG**
    - Experimental facilities in the fields of aerodynamics, propulsion and aeronautical systems.
    - Teaching and research activities, in addition to technological development work associated with companies in the industrial sector.

- **Aerodynamics**




Wind tunnel testing facilities










# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research**:
  - **Laboratory of Aerospace Structures**:
    - The laboratory supports the development of teaching activities in undergraduate and graduate courses; research and development activities; scientific initiation works, graduation works, master's and doctoral theses as well as extension projects with industry.
    - Provide trained personnel and adequate infrastructure to plan and execute structural and characterization tests of composite and metallic materials.



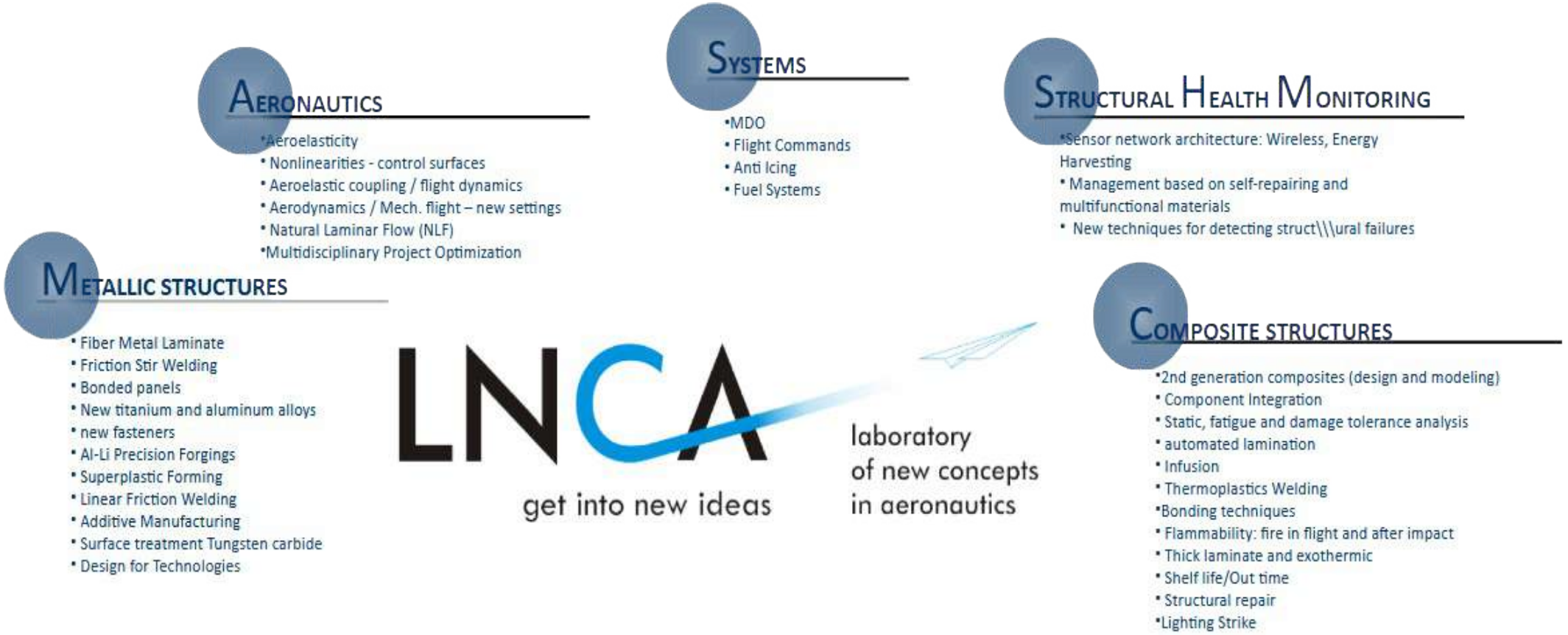
# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research**:
  - **Laboratory of New Concepts in Aeronautics – LNCA**
    - New concepts in aeronautics: New geometries and technologies oriented towards greater energy efficiency and less environmental impact.
    - Guide research, development and innovation towards a vision of the future (ecological, economic, social and political demands).
    - Academia as a substrate is fertile: Plurality of knowledge, multidisciplinarity, training and contact with people, training in sciences associated with the physics of flight.
    - https://sites.google.com/view/labnewconcepts

LNCA
get into new ideas
laboratory
of new concepts
in aeronautics

# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Laboratory of New Concepts in Aeronautics – LNCA**



# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Laboratory of New Concepts in Aeronautics – LNCA**

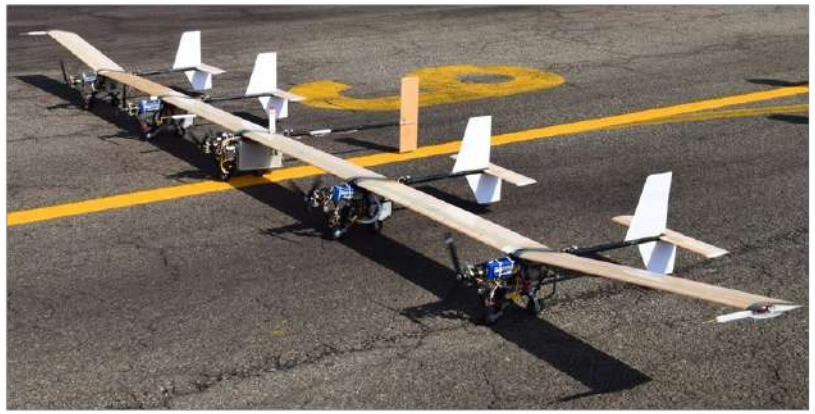
LNCA
get into new ideas
laboratory of new concepts in aeronautics

PRÊMIO CAPES DE TESE 2020

KTH VETENSKAP OCH KONST

**New concepts** in Aeronautics → High **energy efficiency** Low **environmental impact**

**DYNAMICS AND CONTROL OF FLEXIBLE STRUCTURES**

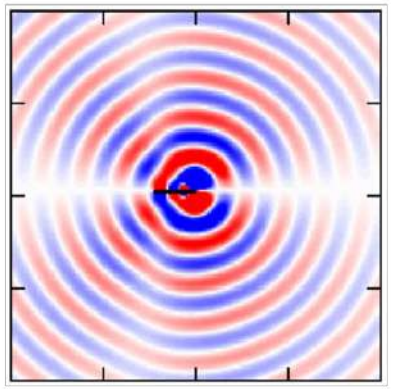


X-HALE-BR Aircraft

**AEROSPACE STRUCTURE**



**AEROACUSTICS**



# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Laboratory of New Concepts in Aeronautics – LNC**

LNCA laboratory of new concepts in aeronautics
get into new ideas

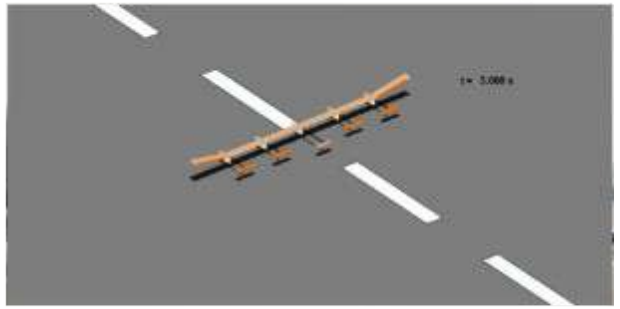
**X-HALE prototype**



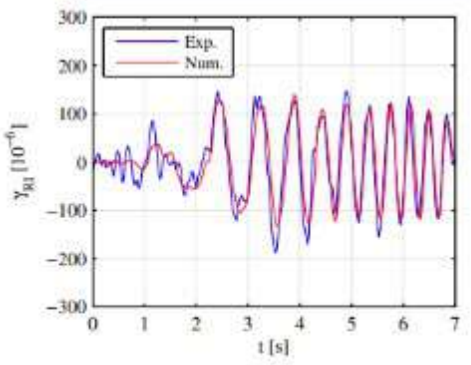


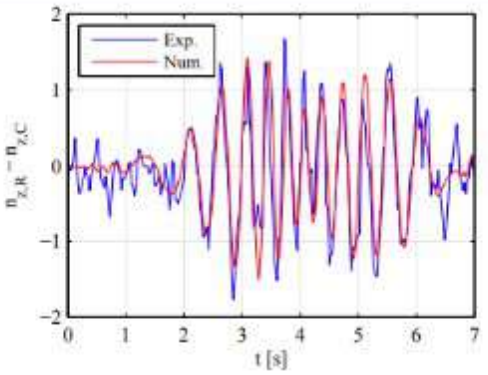
**Numerical models**





**Validation with wind tunnel and flight test data**



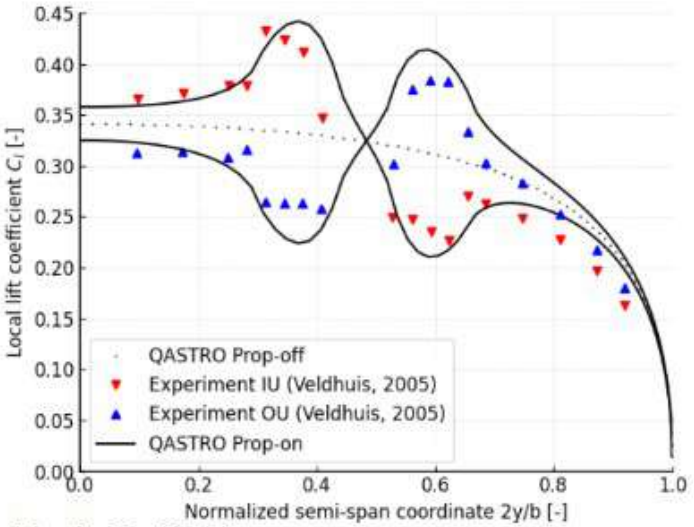
# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Laboratory of New Concepts in Aeronautics – LNC**
    - **Aircraft Design**

LNCA laboratory of new concepts in aeronautics
get into new ideas

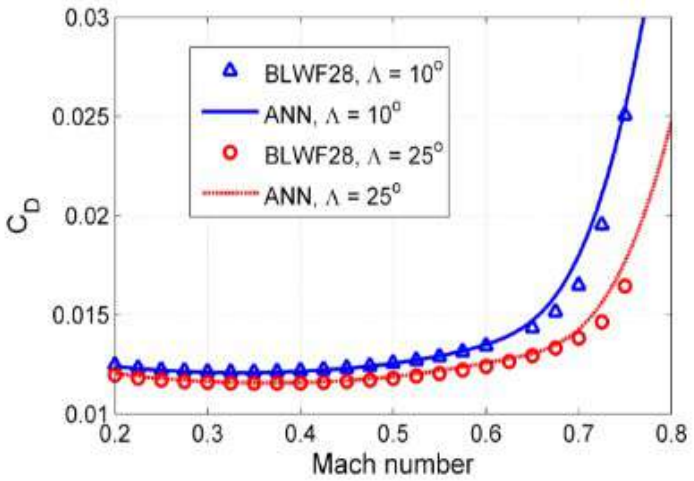
**Conceptual design of electrical aircraft for general aviation**

- Propeller-wing interaction models for conceptual design and optimization




Almeida, L. S., PEE Student

**Machine Learning in Aircraft Design**



# Aeronautics Institute of Technology (ITA)

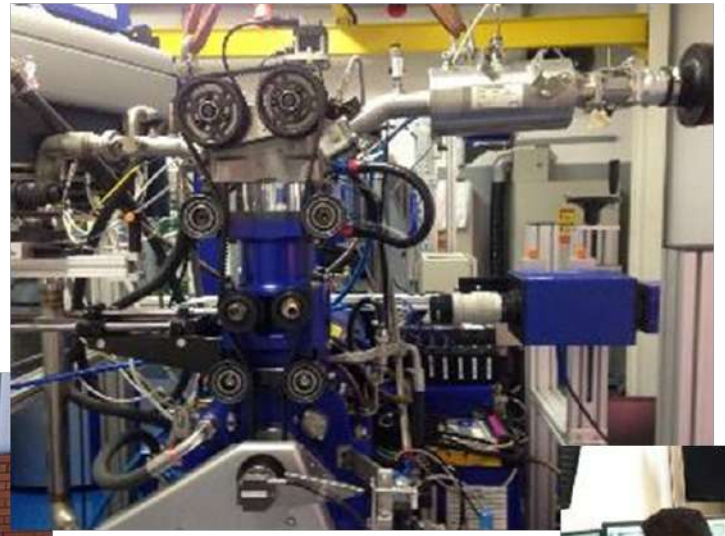
- **ITA Laboratory Facilities & Research:**
  - **Laboratory of Combustion, Propulsion and Energy**

LCPE
LABORATÓRIO DE COMBUSTÃO, PROPULSÃO E ENERGIA

**Partnership with companies to promote and support graduate students and post-docs**



Ethanol-powered "range extended" electric vehicle – bioelectrification







Development of new technologies for increasing engine efficiency, emission control and use of biofuels

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FAPESP Week CHINA 2024, June 28 - 29

# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Laboratory of Combustion, Propulsion and Energy**
    - **Hybrid Bio-electric propulsion systems**

Exemplo de projeto Fase 4 em desenvolvimento no ITA para o setor automotivo (2021-2024)

**"Desenvolvimento de veiculo de passeio elétrico a bateria com modulo para extensão de autonomia a partir do uso de etanol com um pequeno motor flex"**

Projeto P&D ANEEL em Andamento

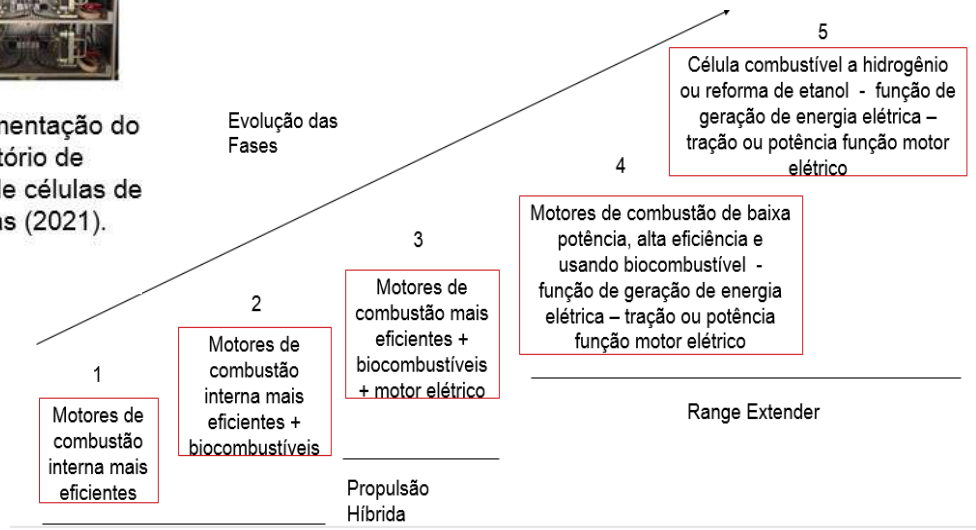
FURNAS · Sefac · BMW · AVL · ITA

LCPE Laboratório de Combustão, Propulsão e Energia






Implementação do laboratório de teste de células de baterias (2021).

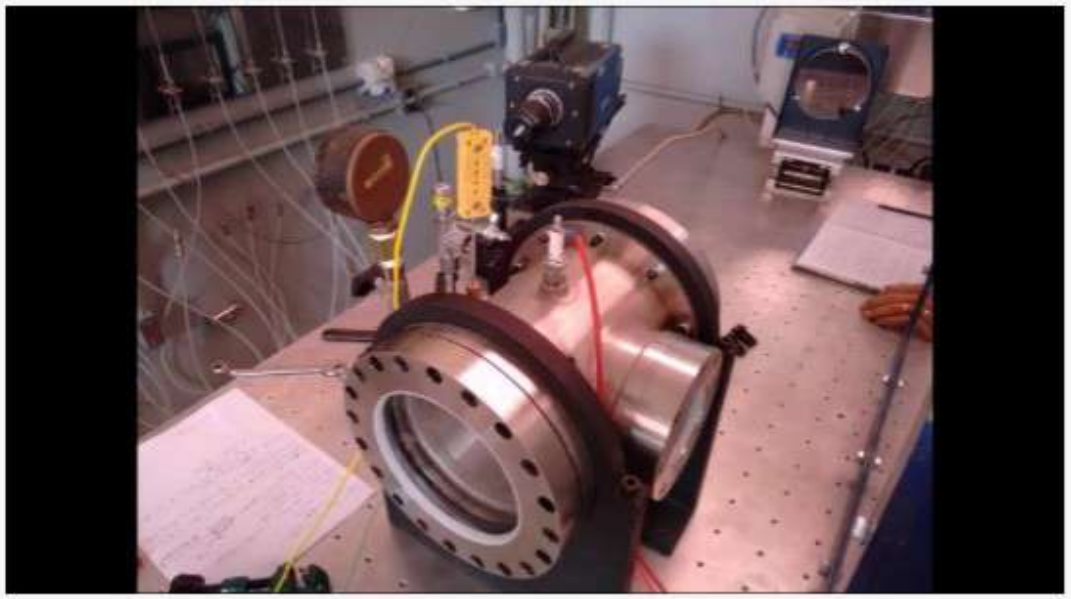


# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Laboratory of Combustion, Propulsion and Energy**
    - **Biofuels in aviation**

LCPE
LABORATÓRIO DE COMBUSTÃO, PROPULSÃO E ENERGIA





ITA ENSMA UFABC

# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Laboratory of Plasmas and Processes**

LPP Plasmas and Processes Lab



**NON THERMAL PLASMAS**

**Thin film production and surface treatments**



**THERMAL PLASMAS**

**Deposition of thermal protection layers by spraying materials**



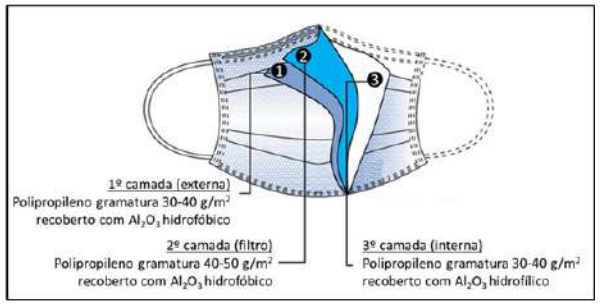
**OPTICS AND SPECTROSCOPY**

**+**

**NANOTECHNOLOGY**

**+**

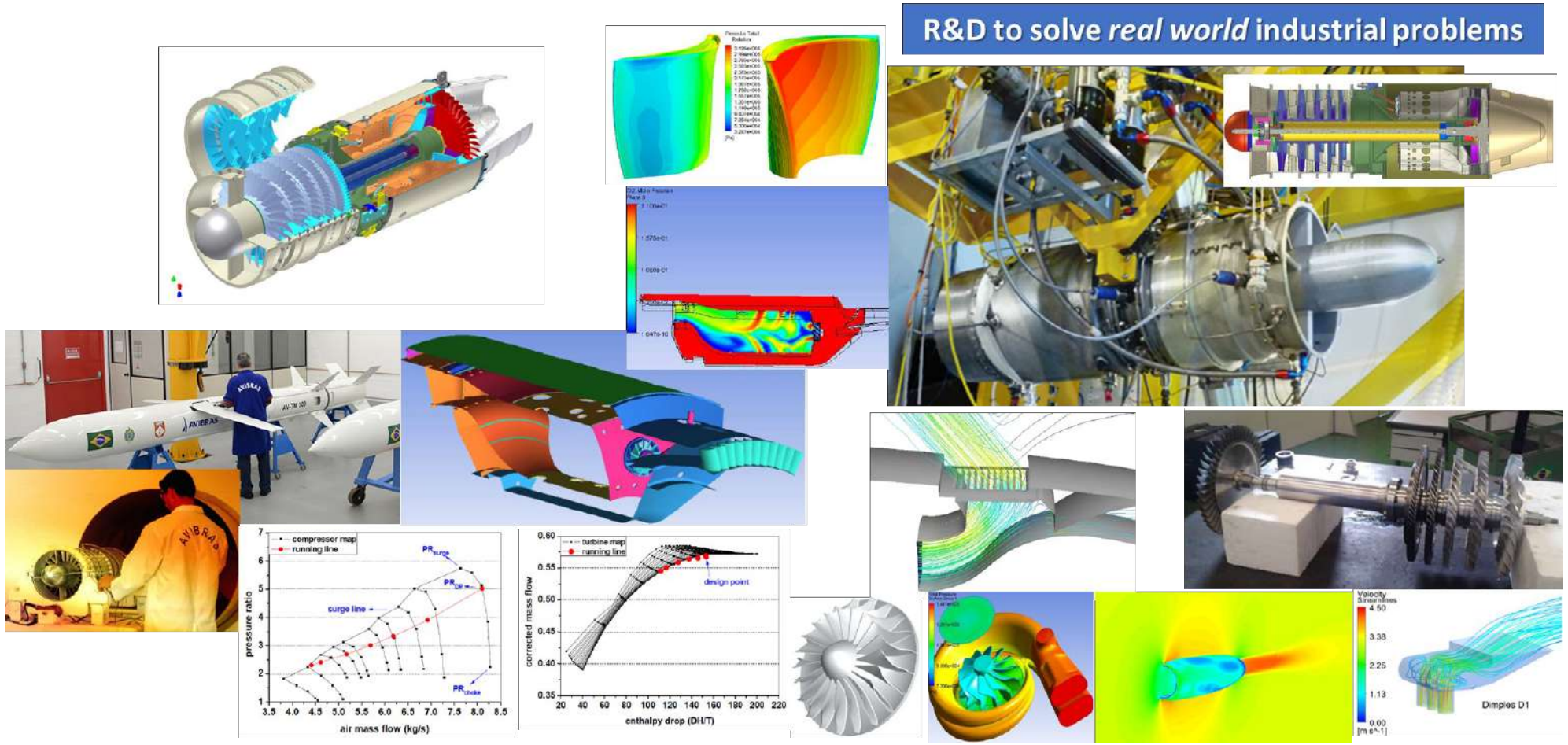
**CHARACTERIZATION OF MATERIALS**




**Mask covering treatment**

# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Laboratory of Turbomachines**




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# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Competence Center in Manufacturing (CCM)**
    - www.ccm.ita.br
    - https://www.youtube.com/watch?v=uXu4gznoULo



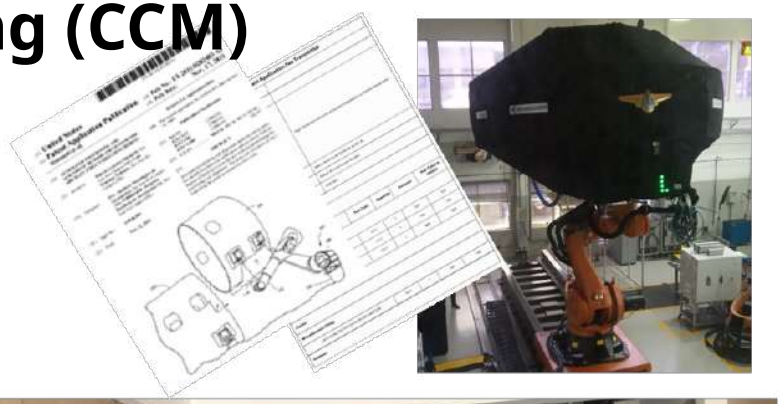

Source: Prof. Ronnie Rego (CCM - ITA)

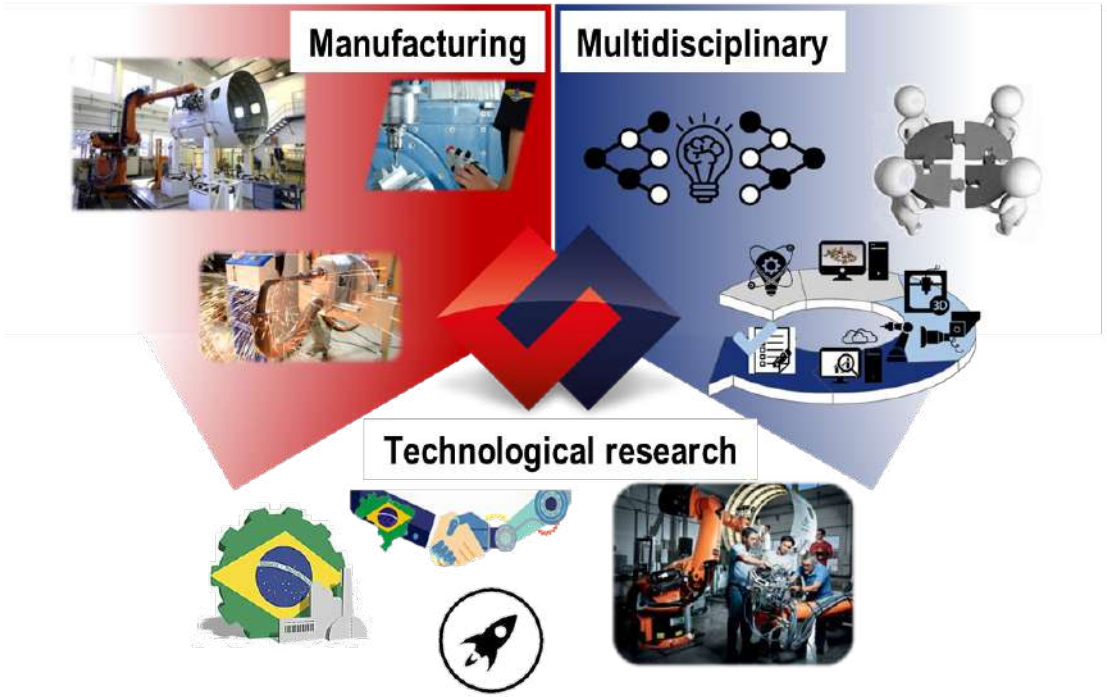
# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Competence Center in Manufacturing (CCM)**

CENTRO DE COMPETÊNCIA EM MANUFATURA

**Multidisciplinary projects** in partnership with **industry**








*Project teams composed of graduate and undergraduate students*

# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Competence Center in Manufacturing (CCM)**
    - **CCM-ITA in numbers (2006 – 2023)**

**76**
Collaborators



**2,400 m²**
Laboratory Area



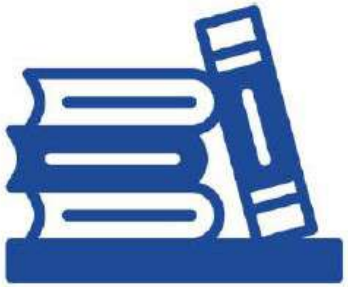
**126**
Industrial Projects




**499**
Concluded Theses



**493**
Scientific Publications



**R$ 91,0 mi**
Projects Revenue



Prof. Vilson R. Almeida: vilsonra@ita.br

FAPESP Week CHINA 2024, June 28 - 29

# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Competence Center in Manufacturing (CCM)**
    - Projects
      - Examples

***SIVOR***
**Robotic Flight Simulator**



- A flight simulator on a moving robotic platform;
- Faster with higher accelerations;
- Reconfigurable;
- Test bench for HMI and Human Factors.



Patent

*In cooperation with:* EMBRAER

*Start: 2015 End: 2019*

***EXOBOT***
**Robotic Mobile Amplification System**



- Robotic system for cargo movement;
- Integrated into a track loader;



- Robots on building sites;
- Ergonomics and safety of workers.

Patent

*In cooperation with:* PETROBRAS

*Start: 2017 End: 2020*

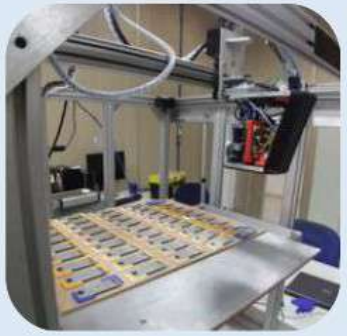
# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Competence Center in Manufacturing (CCM)**
    - Projects
      - Examples

## Artificial Intelligence for Inspection of Resistance Spot Welding



- Advanced spot-welding inspection;
- Machine learning based solution;



- Non-destructive;
- Critical RSW and Physical / Visual Inspection.

Startup

*In cooperation with:* GM

***Start: 2014 End: 2020***

## *AM Gears* - Additive Mfg. of Metal-Polymer Gears for Automotive Transmissions





- Electromobility solution;
- Body topologic optimization for AM freedom of design;
- Damping (NVH) increased in 23x;
- Lightweight design (45% mass reduction).

*In cooperation with:* GERDAU Braskem Alkimat

***Start: 2019 End: 2021***

FAPESP Week CHINA 2024, June 28 - 29

# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research**:
  - **Competence Center in Manufacturing (CCM)**
    - International Cooperation: **Fraunhofer IPK Project Office at ITA**

**Fraunhofer IPK Project Office @ ITA**

IN COOPERATION WITH

Fraunhofer IPK

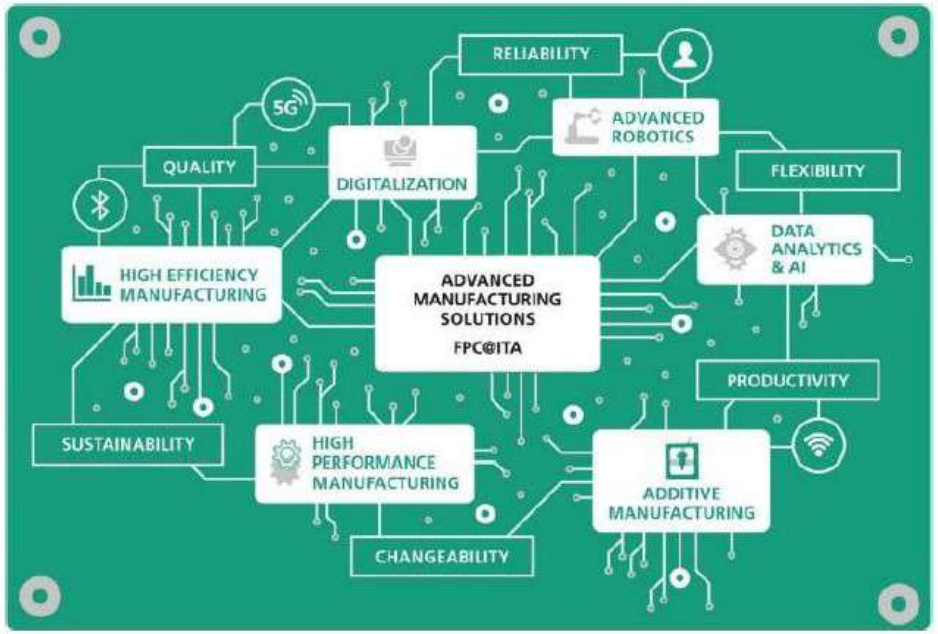
INSTITUTE PRODUCTION SYSTEMS AND DESIGN TECHNOLOGY

- Multidisciplinary team of researchers from CCM-ITA and Fraunhofer IPK with focus on **Advanced Manufacturing;**
- Complementary products and services, **prospecting and developing industrial R&D projects** in Brazil;
- Implemented in November, 2017.



*Fraunhofer IPK, Berlin (GER)*





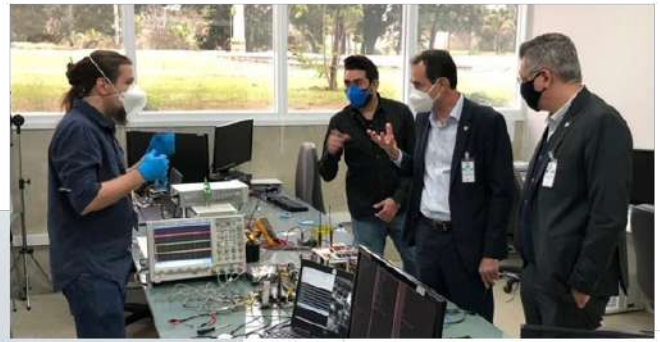
# Aeronautics Institute of Technology (ITA)

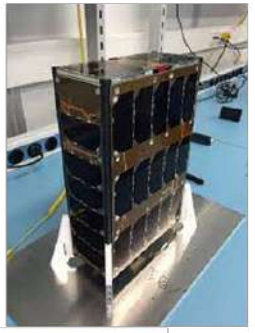
- **ITA Laboratory Facilities & Research:**
  - **ITA Space Center (CEI): Academic Space Research**

ITA SPACE CENTER



ITASAT and ITASAT II Projects







Designed and built by undergraduate and graduate students

SPORT PROJECT

SPORT
Scintillation Prediction Observations Research Task

International collaboration

THE UNIVERSITY OF UTAH

NASA

FAPESP

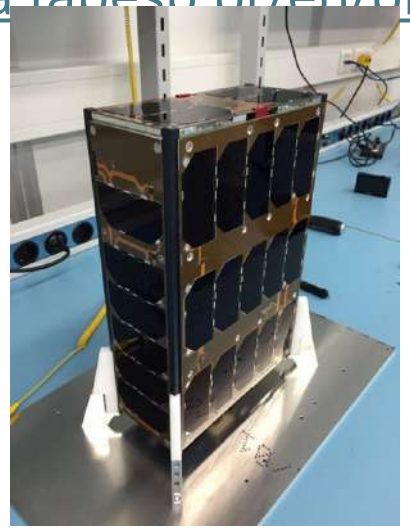
FAPESP Week CHINA 2024, June 28 - 29

# Aeronautics Institute of Technology (ITA)

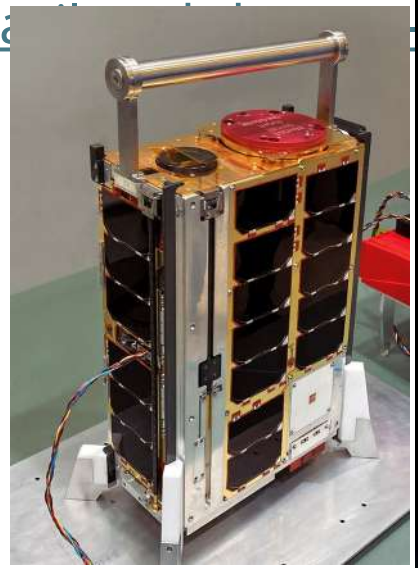
- **ITA Laboratory Facilities & Research**:
  - **ITA Space Center (CEI)**
    - https://fcmf.org.br/sitenovo/centro-espacial-ita/
    - **2018: ITASAT (CubeSat 6U)** was launched from USA Base in Van den Bergh from Space X Falcon 9 **- it is still in orbit**.
    - **2022: Scintillation Prediction Observation Research Task – SPORT (CubeSat 6U); NASA partnership** and **FAPESP funding.** Launched from Kennedy Space Centre in 2022 (Space X CRS-26; ISS): https://revistapesquisa.fapesp.br/en/bra... te



**ITASAT-2 Conceptual Design (Artistic Representation)**



**ITASAT (2018)**






**SPORT (in red circle) Jettison from ISS (2022)**

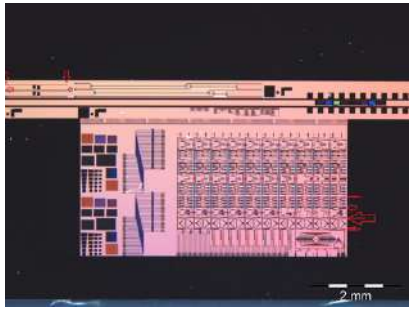
# Aeronautics Institute of Technology (ITA)

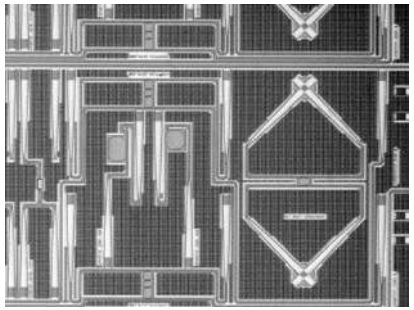
- **ITA Laboratory Facilities & Research**:
  - **Electronic Warfare Laboratory (LabGE)**
    - https://www.ele.ita.br/~labge/
    - **Main Areas of Research:**




- **RF in Photonics (Microwave Photoni**
- **Free Space Optical Communication**
- **Integrated Photonics**
- **Infrared Emitters and Sensors**
- **Secure Communications**
- **Radar and Electronic Warfare**
- **Radar and SAR Signal Processing**
- **Absorbent Materials**
- **Avionics Systems Integration**
- **Navigation Systems and Drones**





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# Aeronautics Institute of Technology (ITA)

- **ITA Laboratory Facilities & Research:**
  - **Other Laboratories at ITA**
  - **ITA researchers also make use of laboratory facilities available at other DCTA institutes (wind tunnels; environmental tests; flight tests; etc.)**

AeroLogLab ITA
Logistics Engineering

LABTAR
Air Transport Lab

Computing in Transport Phenomena

labSCa
Autonomous Computer Systems

Big Dat@Science

LRA Aerial Roboti

# SUMMARY

- Aeronautics Institute of Technology (ITA)
- **The Engineering Research Center for Aerial Mobility of the Future (ERC/CPE-MAF) – FLYMOV**

# The Engineering Research Center for Aerial Mobility of the Future (ERC/CPE-MAF) - **FLYMOV**

- A **joint ITA/EMBRAER** structuring initiative **supported by FAPESP**
  - **Prof**. Domingos A. **Rade** (**ITA**) – Director of FLYMOV
  - **Eng. Luciano Pedrote** dos Santos (**EMBRAER**) – Deputy Diretor of FLYMOV
- Start: **01/01/2023**

FLYMOV
FLIGHT AND MOBILITY INNOVATION CENTER

FAPESP
FUNDAÇÃO DE AMPARO À PESQUISA DO ESTADO DE SÃO PAULO

ITA

EMBRAER

# FLYMOV

- **FAPESP: Engineering Research Centers (ERC/CPE) Program**
  - ***Centro de Pesquisa em Engenharia* – CPE**
  - Focus on Complex engineering problems of industrial interest requiring interdisciplinary investigation approaches.
  - Long-term funding (5 to 10 years).
  - Investments equally shared by FAPESP and companies.
  - Multiple missions:
    - Basic and applied research
    - Education and dissemination of knowledge.
    - Technology transfer.
  - ERC/CPE must become independent from FAPESP funding, after 10 years.
  - https://fapesp.br/cpe/about_the_program/18

# FLYMOV

- **FLYMOV General Objective:**
  - Development of **high-quality research** work devoted to innovative topics, having the potential to contribute, in the medium and long term, to **increase the competitiveness of the Brazilian aeronautical industry** and provide scientific, technological, educational, economic, and social benefits.
- **https://www.flymov.com.br/about/?lang=en**

FLYMOV
FLIGHT AND MOBILITY INNOVATION CENTER

A PARTNERSHIP OF
EMBRAER
ITA
FAPESP
FUNDAÇÃO DE AMPARO À PESQUISA DO ESTADO DE SÃO PAULO

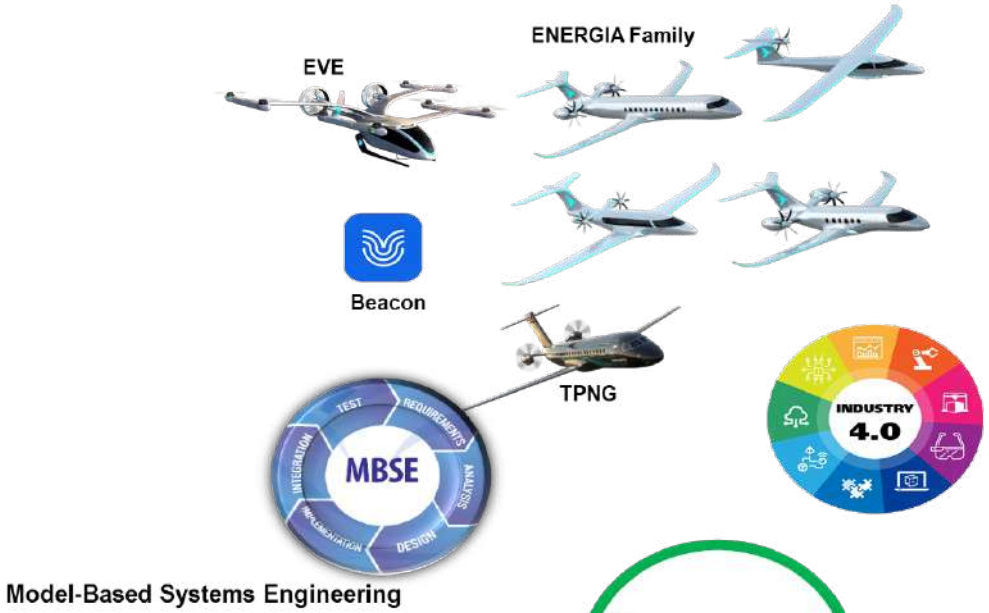


# FLYMOV

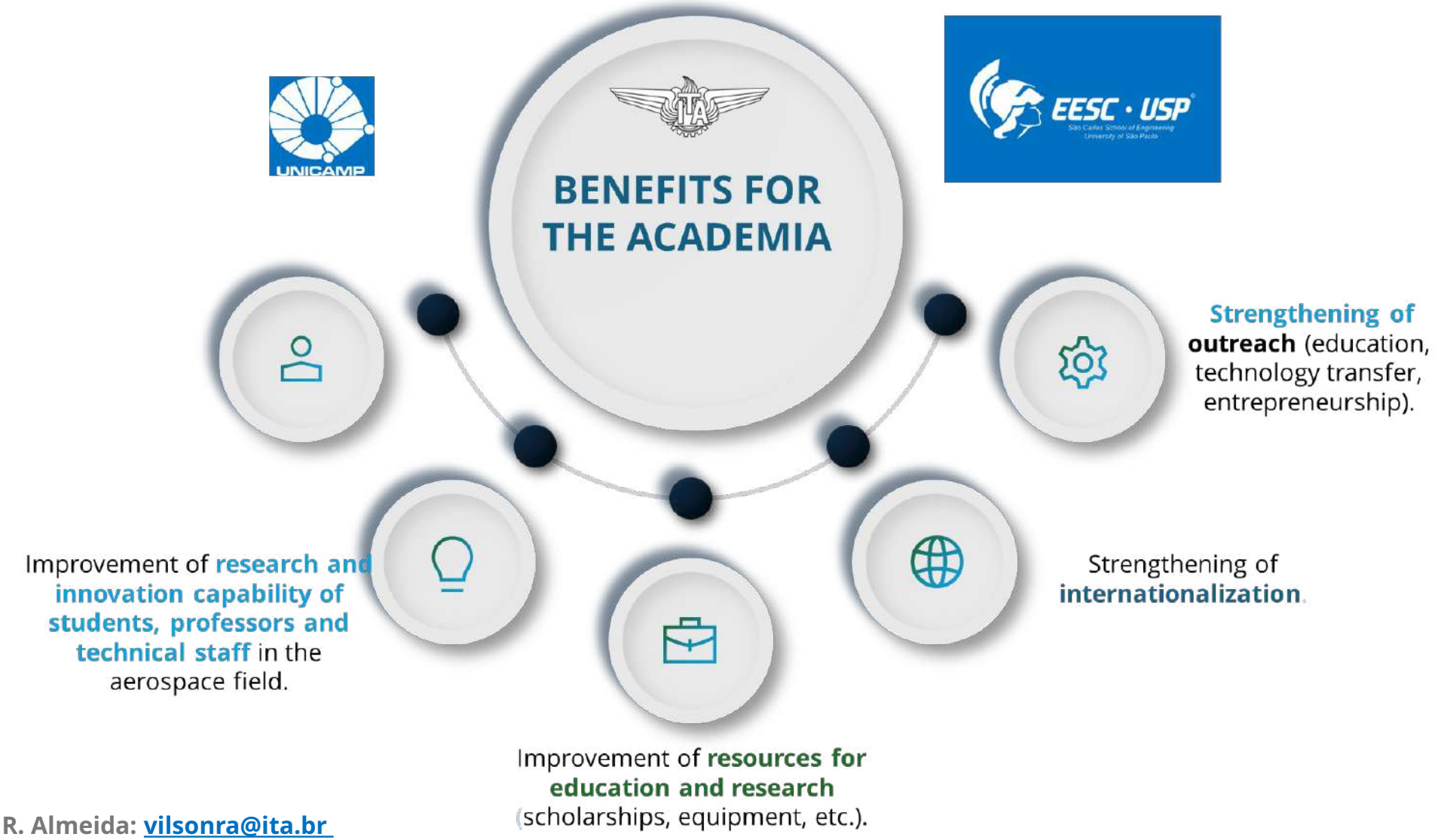
- **FLYMOV Specific Objectives:**
  - **Generation of high-impact scientific knowledge and technological advances.**
  - **Promotion of technology transfer to Embraer and other existing and new companies.**
  - Promotion of training, at undergraduate and graduate levels, of human resources highly qualified for basic and applied research combined with technological development and innovation.
  - Promotion of the technical and scientific qualification of Embraer's body of engineers.
  - Promotion of the interaction between the ERC partners with players of the Brazilian primary, secondary, and higher educational system, aiming at the popularization of science and motivation of students to engage in STEM careers.
  - Promotion of entrepreneurship.

# FLYMOV

- **Mission**:
  - **Be an early adopter of key emerging technologies to allow Embraer to develop differentiated products, services, new businesses, and be first to market.**
  - Develop innovative efficient design and production systems.

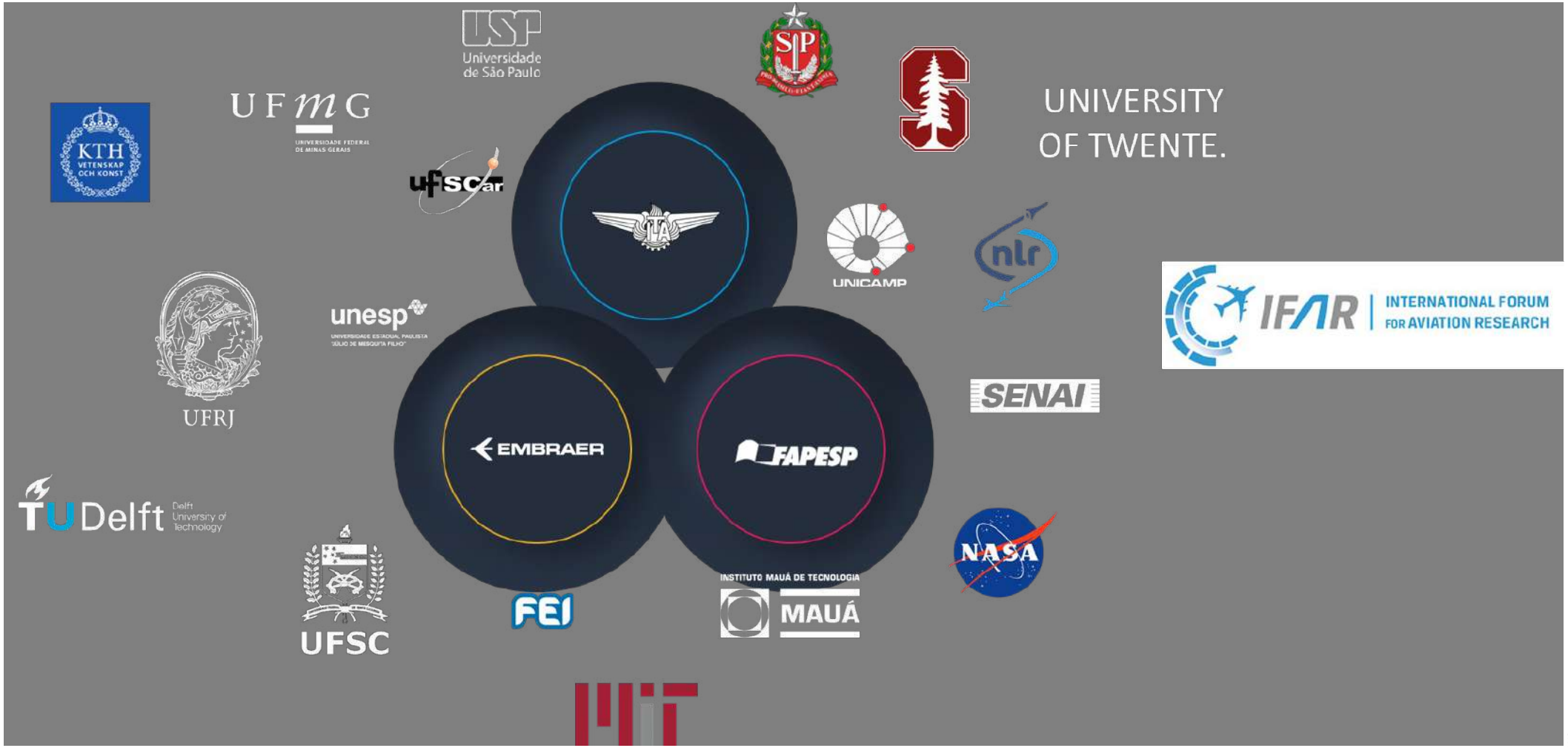


# FLYMOV


BENEFITS FOR THE ACADEMIA
Improvement of research and innovation capability of students, professors and technical staff in the aerospace field.
Strengthening of outreach (education, technology transfer, entrepreneurship).
Improvement of resources for education and research (scholarships, equipment, etc.).
Strengthening of internationalization.

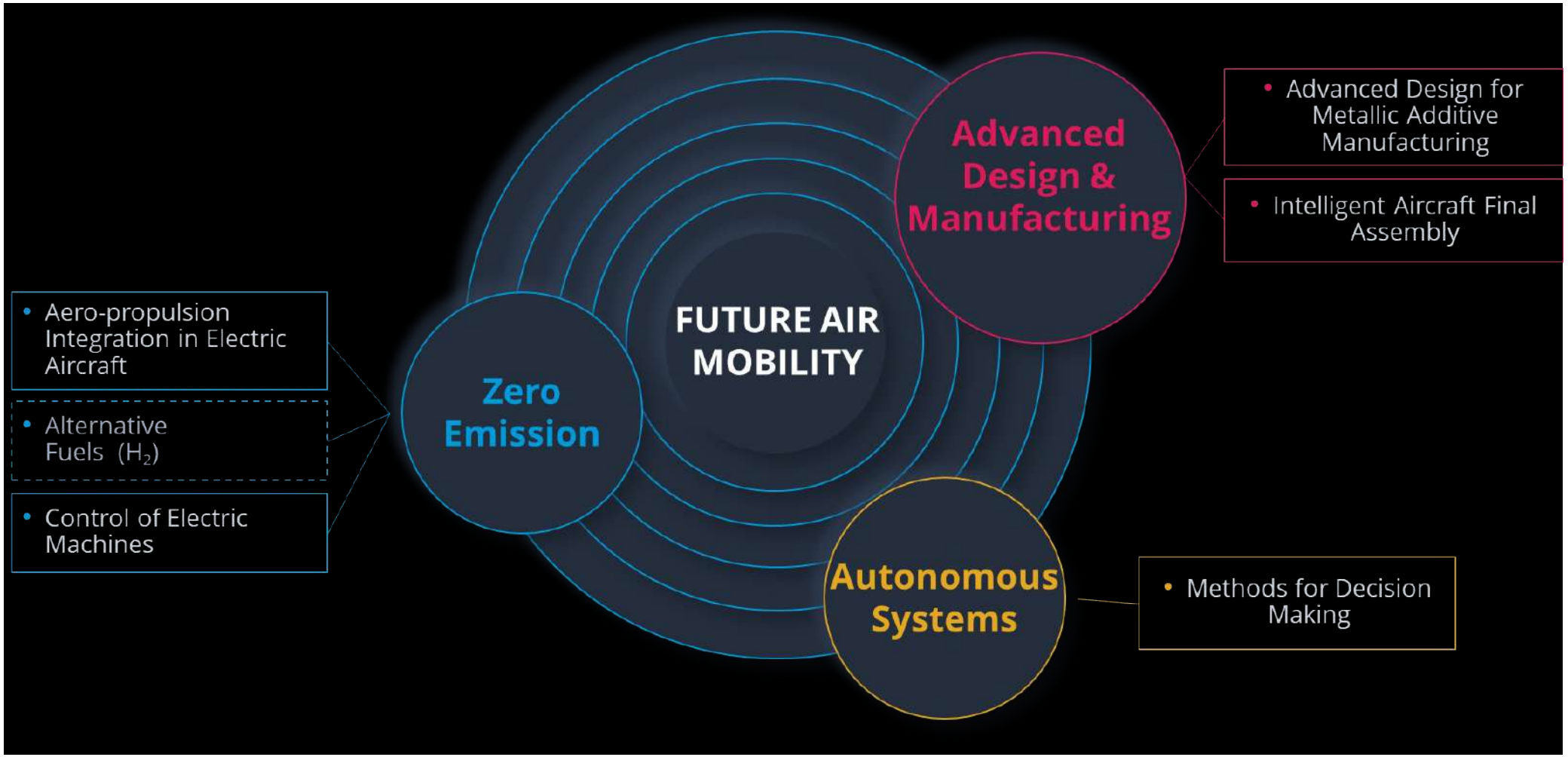
# FLYMOV

- Research Network:



# FLYMOV

- **Areas/Lines of Research:**



# FLYMOV

| RESEARCH LINES | RESEARCHERS FROM ACADEMIA | ENGINEERS FROM EMBRAER | TOTAL |
|---|---|---|---|
| • Aero-propulsion Integration in Electric Aircraft | 27 | 7 | 34 |
| • Control of Electric Machines | 17 | 7 | 24 |
| • Methods for Decision Making | 16 | 6 | 22 |
| • Advanced Design for Metallic Additive Manufacturing | 13 | 5 | 18 |
| • Intelligent Aircraft Final Assembly | 17 | 6 | 23 |

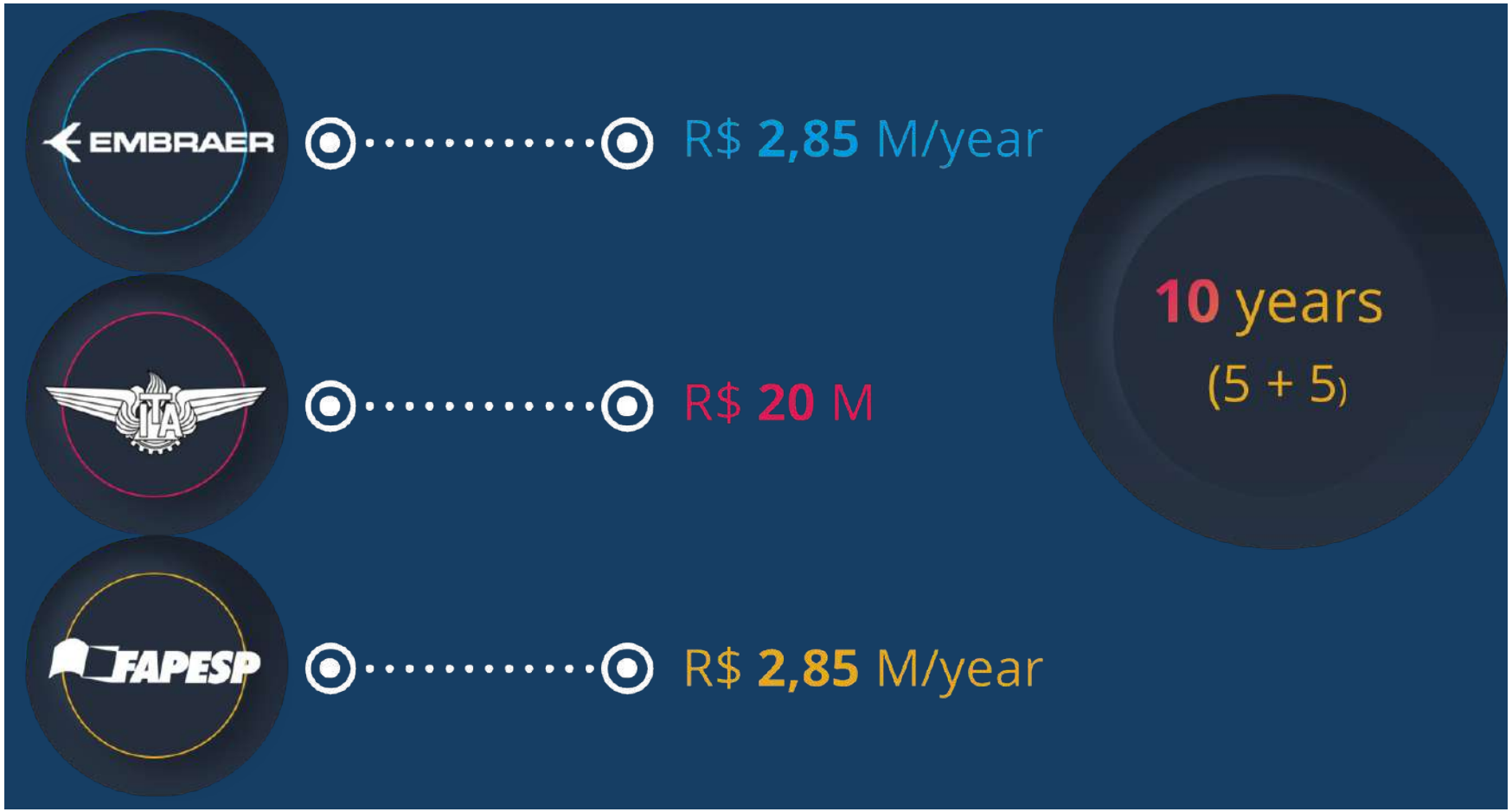
**DIRECTIVES**:

- Grants provided by Embraer enabling young professors to advise graduate students;
- Requirements and benefits of grants from FAPESP and Embraer are strictly the same.



# FLYMOV

- Funding (R$ 1,00 ≅ ¥ 1.3):



# SUMMARY

- Aeronautics Institute of Technology (ITA)
- The Engineering Research Center for Aerial Mobility of the Future (ERC/CPE-MAF) – FLYMOV




# Thank You

***Obrigado***

# 谢 谢

# Aeronautics Institute of Technology (ITA)

- título da palestra: Science, Technology and Innovation at Aeronautics Institute of Technology (ITA)
- tópicos: Aeronautics; Aerospace; Industry-University interaction.
- reduzir o resumo abaixo: segue abaixo
- cargo e organização principal para site e crachá: Research Associate (since 2005) -  Aeronautics Institute of Technology (ITA)

# Short Bio

- FAPESP Area Manager - Engineering and Computing (since 2024). Director of Institutional Cooperation (DCOI) at CNPq (06/2019 to 07/2020). Director of the Institute for Advanced Studies (IEAv) at DCTA-COMAer-MD-Brazil (02/2012 to 02/2014). Technical expertise in the areas of Photonics and Electronics Engineering, for Aerospace and Biomedical Engineering applications, with emphasis on: Silicon Photonics, Integrated Optics, Fiber Optic Sensors, Micro/nanodevices and Micro/nanosensors, Microwave (RF) and Optoelectronics. Graduated fromthe Air Force Academy (AFA) in Aeronautical Sciences and Administration, with specialization in Military Aviation (1987), and graduated from the Aeronautics Institute of Technology (ITA) in Electronic Engineering with Magna Cum Laude distinction (1997). Master of Science degree from ITA in Microwave and Electro-Optics (1998). Ph.D. from Cornell University in Electrical and Computer Engineering (2004). Member of the Deliberative Council of the Brazilian Society of Optics and Photonics (SBFoton) (06/2017 to 06/2021, and since 06/2023). Coordinator of the Area Committee "Physics in Industry" (FEM), from Brazilian Physics Society (SBF) (06/2017 to 06/2021, and since 03/2024). Grant for Productivity in Technological Development and Innovative Extension (DT) from National Council for Scientific and Technological Development (CNPq). International recognition for relevant scientific contributions: https://www.osapublishing.org/ol40/most-cited-OL-papers.cfm; https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3; and https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/6