



Swedish – Brazilian Partnership in Aeronautics

ICAS VON KARMAN Lecture





- 
1. Government Perspective
 2. University Perspective
 3. Industry Perspective



Petter Krus
Linköping University



Emilia Villani
ITA



Structuring the Bilateral Collaboration in Aeronautics

2011

2013



SAAB



**BR-SE Gripen
Agreement**



Structuring the Bilateral Collaboration in Aeronautics

2011

2013

How can BRAZIL and SWEDEN benefit the most from this long-term agreement?



SAAB



**BR-SE Gripen
Agreement**



Bottom-up Approach: Faculty-to-faculty

Matchmaking opportunities



Mobility opportunities



Industry

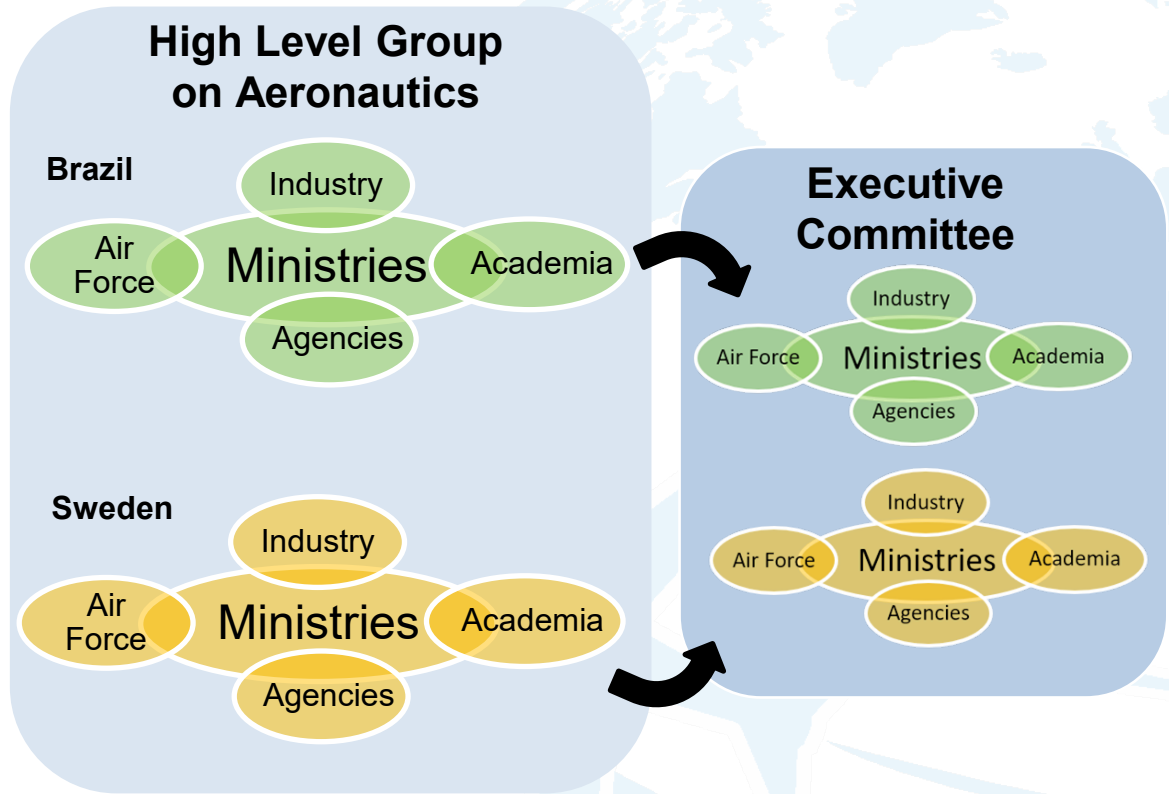
Universities

Air Force

Government



Top-down: Government Guidance



HLG Meeting – Oct 2017, Stockholm

MAX EFFECT

BOTTOM-UP TOP-DOWN



Case of Success: The Endowed Professor Chair in Aeronautics



*CISB Swedish Professor of Aeronautics
Endowed Chair at ITA in honor of Peter Wallenberg Sr*

Swedish Government through VINNOVA, Swedish Industry and Swedish Universities wish to extend the exchange of innovation and technology with Brasil in high technology areas. Aeronautics is a key technology area of bilateral interest, where all relevant Swedish parties are working together in the Strategic Research Program INNOVAIR to strengthen the ties with Brazilian Universities, Government and Companies.

As part of this initiative, an endowed professorship will be established at Instituto Tecnológico de Aeronáutica (ITA) within Comando da Aeronáutica (COMAER) as a catalyst to deepen bilateral research, education and innovation cooperation in aerospace technology.

Saab and CISB supported by Chalmers University of Technology, the Royal Institute of Technology and Linköping University, hereby present an endowed chair for professors from Sweden at ITA. The endowment also includes extended bilateral cooperation with Post Docs as well as PhD and Master Students. The chair will be a platform for the most prominent and entrepreneurial Swedish professors in the aeronautical field, and their research teams, to cooperate with Brazilian counterparts.

Brasília, Brasil March, 2015



Marcus Wallenberg
Chairman
Saab AB



Håkan Braskhe
CEO
Saab AB



Alessandra Holmo
Managing Director
Centro de Pesquisa e Inovação Suco-Brasileiro



Peter Gudmundson
President
Royal Institute of Technology



Karin Markides
President
Chalmers University of Technology



Helen Dannetun
President
Linköping University



Petter Krus

li.u LINKÖPINGS
UNIVERSITET

Subscale
flight testing



Dan Henningson



Aeroelasticity



Thomas Grönstedt

CHALMERS
UNIVERSITY OF TECHNOLOGY

Propulsion



Ragnar Larsson

CHALMERS
UNIVERSITY OF TECHNOLOGY

Composites



Fredrik Heintz

li.u LINKÖPINGS
UNIVERSITET

AI



Spillovers from the Bilateral Collaboration



**Swedish
Aerospace
Research
Centre**



**Swedish
Team at
Aerodesign
in Brazil**



**Brazilian Aerospace Research
and Innovation Network**



BARINet Profs in 2019



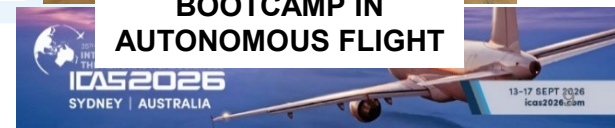
**ANNUAL
SARC-BARINET
WORKSHOP**

A detailed agenda for the SARC-BARINET Aerospace Workshop, SBAN2020. The table lists various sessions, speakers, and topics over a period of several days. The header includes the BARINet logo and the workshop title.

1ST Competition Winners



**BOOTCAMP IN
AUTONOMOUS FLIGHT**



13-17 SEPT 2026
icas2026.com

Expansion and Strengthening of the Collaboration



Long-term Strategic Plan
for the bilateral
Brazilian-Swedish
cooperation in Aeronautics

Priority areas for collaborative
research projects

Coordination with funding agencies

Key Lessons Learned...

- Understanding and dealing with different rules from each country.
- Flexibility in the implementation of research projects: joint calls *versus* independent funding from each country.
- Effort to overcome bureaucracy and keep it simple.

VINNOVA
Sweden's Innovation Agency

CNPq
Conselho Nacional de Desenvolvimento
Científico e Tecnológico

Finep
INOVAÇÃO E PESQUISA

FAPESP

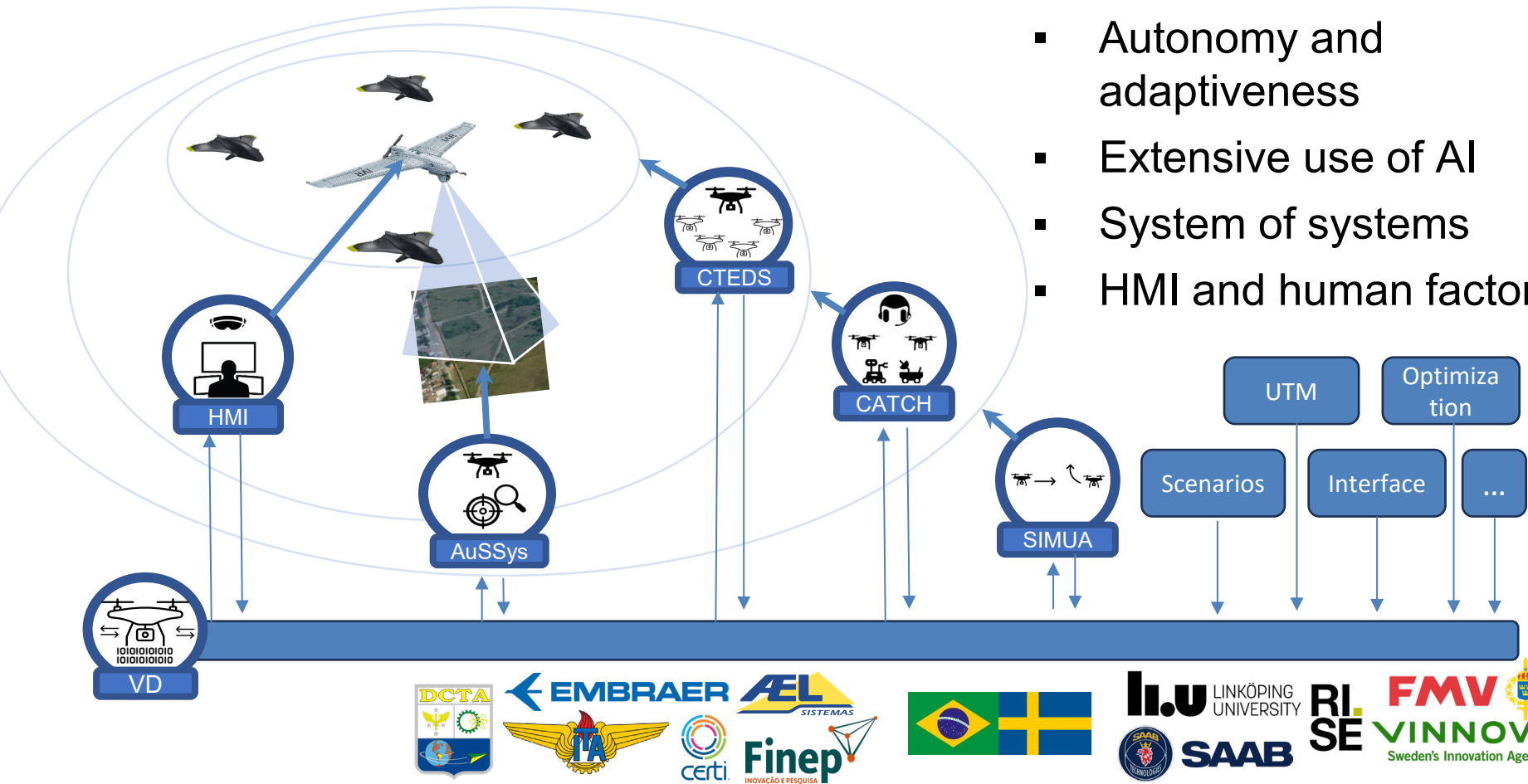
SENAI

FMV

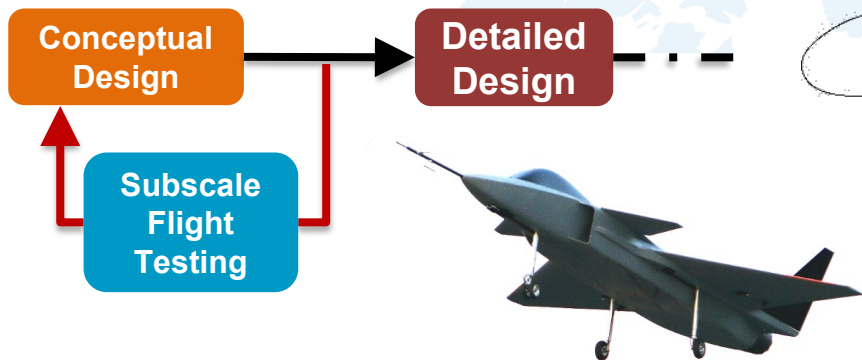
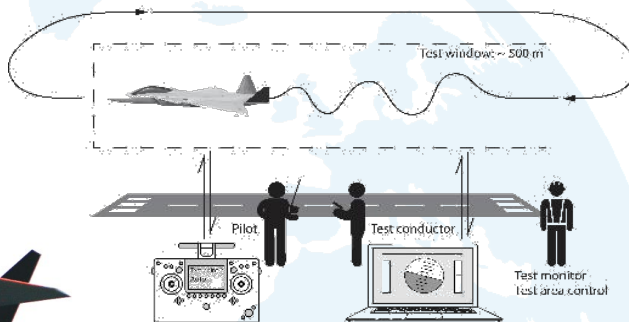


RESULTS: Future Air Domains Study Group (ADS)

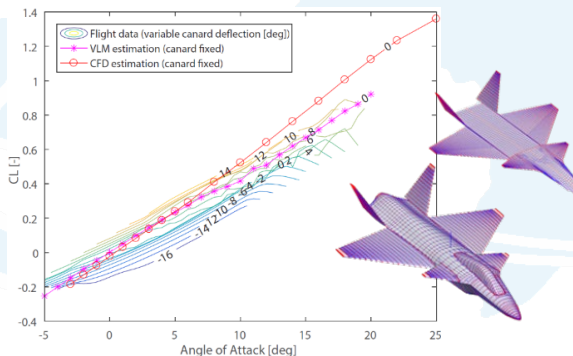
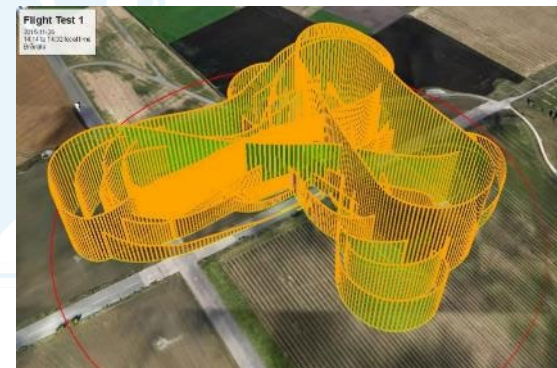
- Autonomy and adaptiveness
- Extensive use of AI
- System of systems
- HMI and human factors



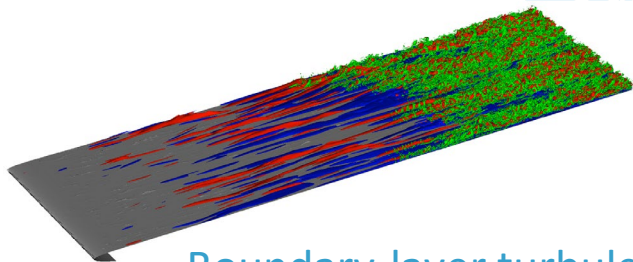
RESULTS: Subscale Demonstration, Flight Testing and Analytics



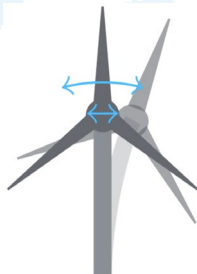
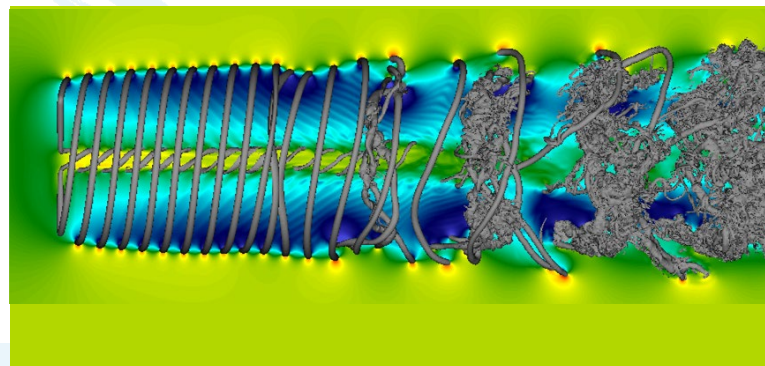
Scale	13 %
Length	2,4 m
Wingspan	1,5 m
TOW	18,5 kg
Propulsion	Jet 160 N



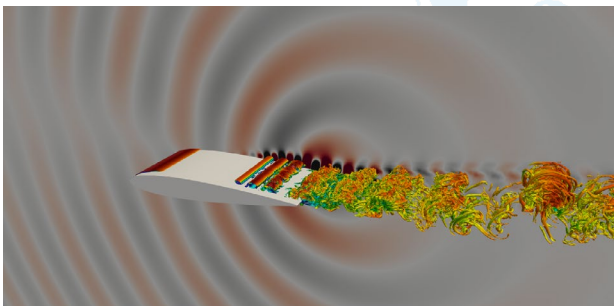
RESULTS: Sustainable Aviation - Advances in Aeroacoustics



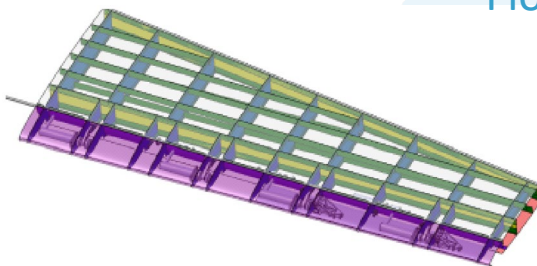
Boundary-layer turbulence simulations and analysis



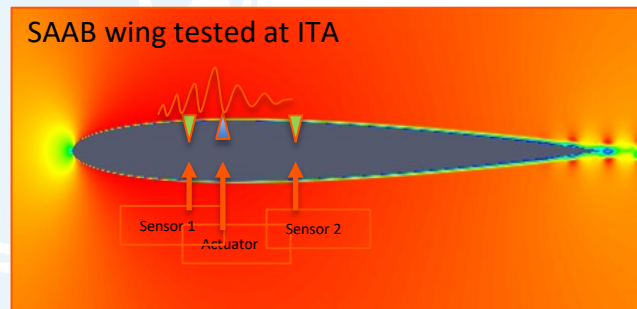
Floating wind turbines



Airfoil aeroacoustics



Wing surface waviness in laminar wing design



Laminar flow control over wings



SAAB

Technische Universität Berlin



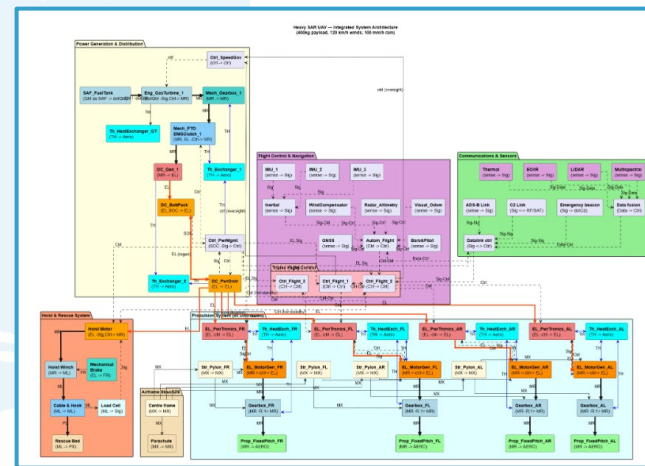
RESULTS: Systems Engineering and AI

- Architectural design using LLM AI:
 - Prompt Context Management, Prompt Orchestration, Tools with interactive use of LLM.
- Automated system modelling using LLM.



International On-line PhD Course Engineering System Design Analytics and AI

- Participation from Sweden, Brazil, Germany, Finland, India, USA, both University, and industry.
- Next edition: February 2027.



SAAB

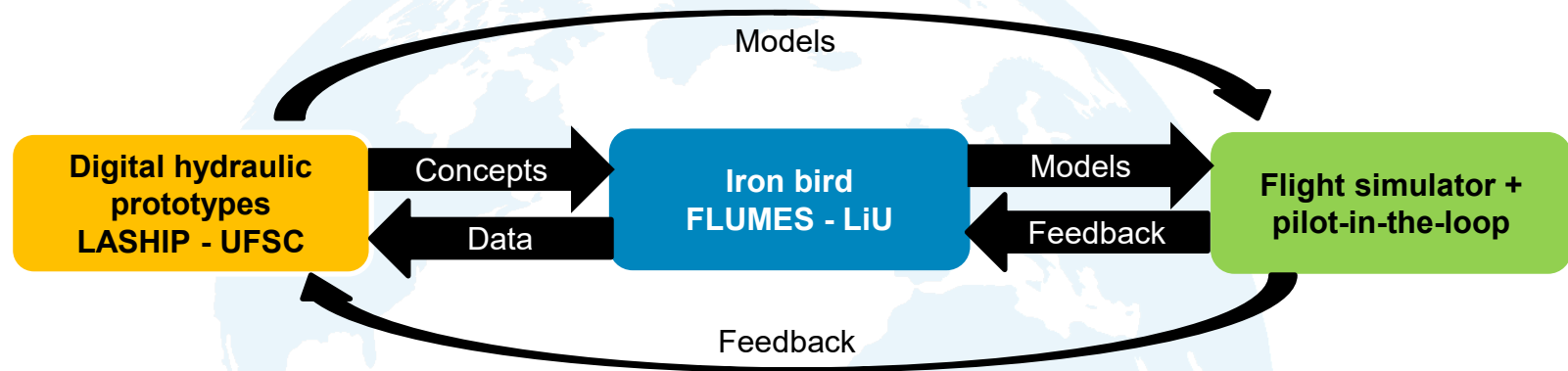
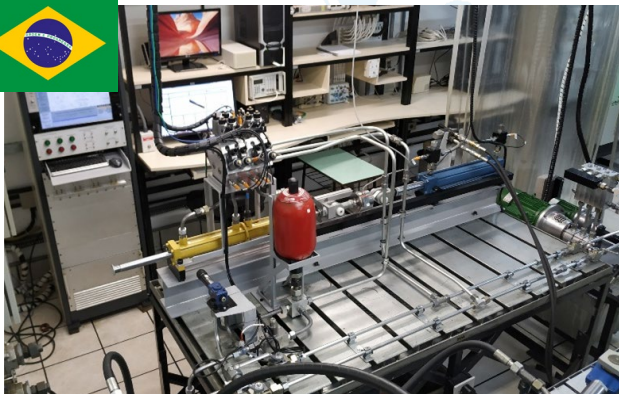
li.u
LINKÖPING UNIVERSITY



UFSM



RESULTS: More Efficient Actuating Systems



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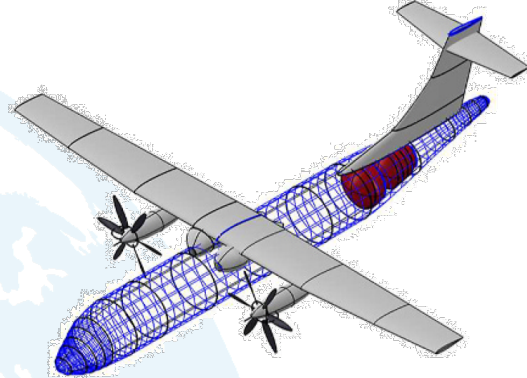


UFSC

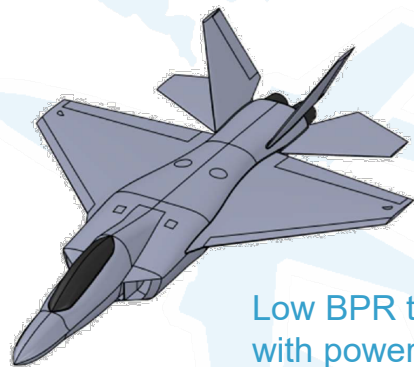


RESULTS: Propulsion

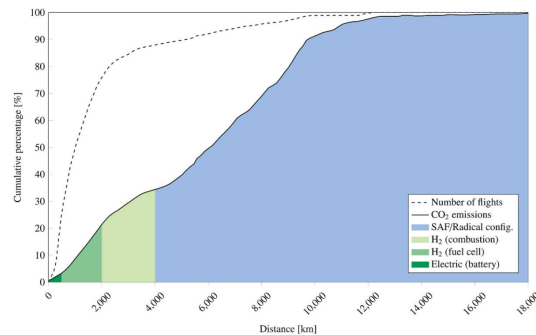
- Tail-mounted boundary layer ingesting propellers
- Studies in high-speed compressor design
- Collaboration on variable cycle engines
- Design of fuel cell propelled aircraft and reviewing hydrogen for aviation



Hydrogen fuel cell aircraft
for the Nordic market

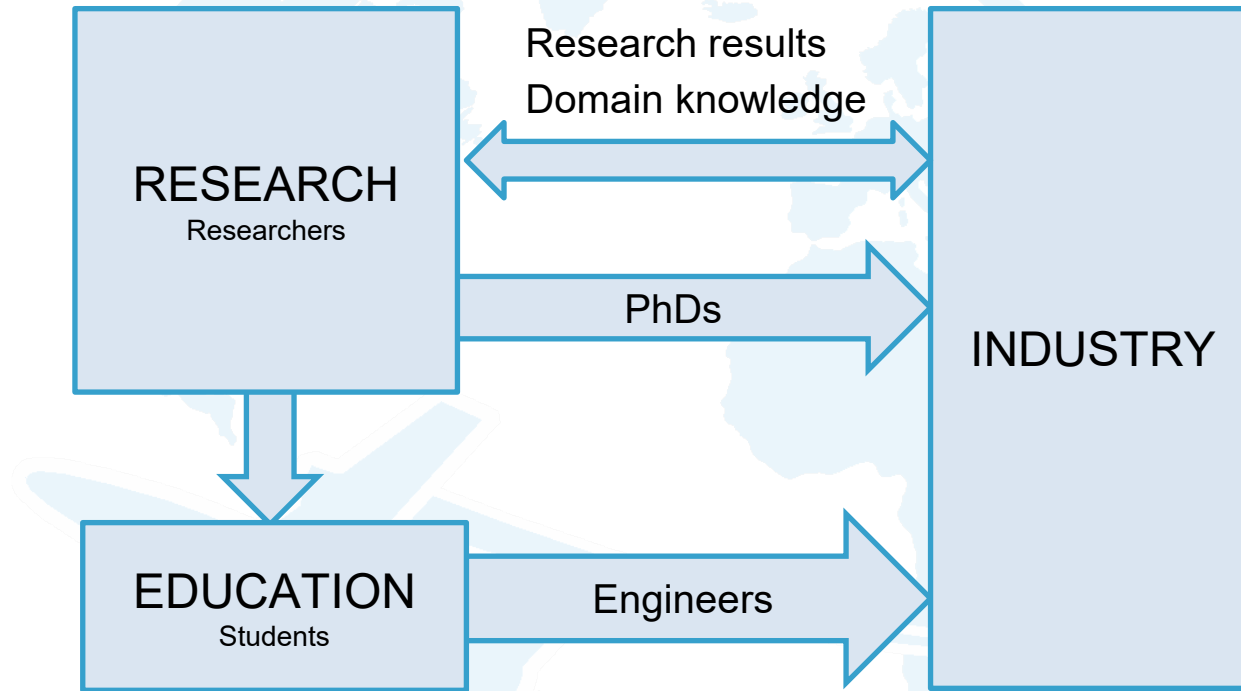


Low BPR turbofan performance
with power extraction



Review of hydrogen aircraft
propulsion systems

Applied University Research for the next Generation of Excellent Engineers



Benefits of the academic collaboration

BR–SE collaboration: sustainable, symmetric, based on 3-helix

- **Cost-effective** compared to other forms of partnership.
- **Builds trust** and fosters long-term cooperation (graduates often move into strategic leadership roles).
- **Cultural engagement:** exposure to diverse perspectives and networks.
- **Shared facilities & expertise:** combining resources, problem-solving approaches, and specialized knowledge.
- **Long-term stabilizer:** collaboration strengthens resilience across institutions.
- **Talent generator:** PhD students gain cross-disciplinary influences, experience multiple academic environments, and develop independence
- **Symmetry matters:** ensures mutual benefits for both countries.
- **Network expansion:** bilateral collaborations ease the integration of new participants.



- 
1. Government Perspective
2. University Perspective
3. Industry Perspective



FROM COOPERATION TO CAPABILITY

The role of industry in the Brazil–Sweden aerospace partnership

Vinicius Di Nucci
EMBRAER

Per-Olof Marklund
SAAB



THREE IDEAS TO REMEMBER

TRUST

Long-term commitment

Confidence to share responsibility

KNOWLEDGE

People + technology

Joint design, test and production

CAPABILITY

Operational outcomes

Gripen in Brazil
C-390 in Sweden

Industry turns cooperation into solutions that fly, operate and endure.

TRUST BECOMES AN INDUSTRIAL ASSET

What changed: from buyer–supplier to partners



Trust is the invisible infrastructure of complex aerospace programmes.

EMBRAER / SAAB- JOINT SUCCESS



- Strengthened Defense Capabilities: Gripen and C-390 programs enable Brazil and Sweden FOR A JOINT SUCCESS
- Enhance interoperability and build long-term partnerships
- Economic Growth and Strategic Autonomy ensures both nations to maintain strategic independence while contributing to global defense supply chains.

Keep the bridge active.

- 1 Bring meaningful challenges
- 2 Create pathways to application
- 3 Sustain cooperation across cycles

TRUST → KNOWLEDGE → CAPABILITY → NEW TRUST

What we can develop together matters more than what either country can develop alone.

Brazilian engineers to Saab

UPDATED OCTOBER 9, 2014 PUBLISHED OCTOBER 9, 2014

Over 100 Brazilian engineers will move to Linköping next year to work on Gripen at Saab, writes Corren.

The idea is for the engineers to gain knowledge about the development and manufacturing of Gripen.

Brazil decided last year to buy 36 Gripen planes, a deal estimated to cost the country around SEK 30 billion. Manufacturing will largely take place in Brazil, and Saab has plans to open a new factory outside Sao Paulo.

TT





ICAS VON KARMAN LECTURE

Swedish – Brazilian Partnership