Session I: Overview, Key Results and Student Academy

Impact assessment of aviation
Björn Nagel (DLR)

Project overview and vision
Prajwal Shiva Prakasha (DLR)

Toolbox: Practical guidance for complete cycle of holistic impact assessments of European aviation R&I
Michel van Eenige (NLR)

Demonstration use cases and key results: Assessing the impact of aviation at multiple levels
Thierry Lefebvre et al. (ONERA)

Academy: An educational initiative to broaden the horizon of young talents
Prajwal Shiva Prakasha (DLR)

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Academy

An educational initiative to broaden the horizon of young talents

Patrick Ratei, Sara Vitale, Jannik Frank, Philip Westphal

DLR Deutsches Zentrum für Luft- und Raumfahrt
German Aerospace Center

University of Stuttgart
Germany

14th EASN International Conference | Thessaloniki | 9th October 2024

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Coordinated by the German Aerospace Center

Project Overview

A coherent, collaborative and multilevel framework and toolbox for impact assessment of European aviation R&I. Based on a holistic system of systems approach for aeronautics.

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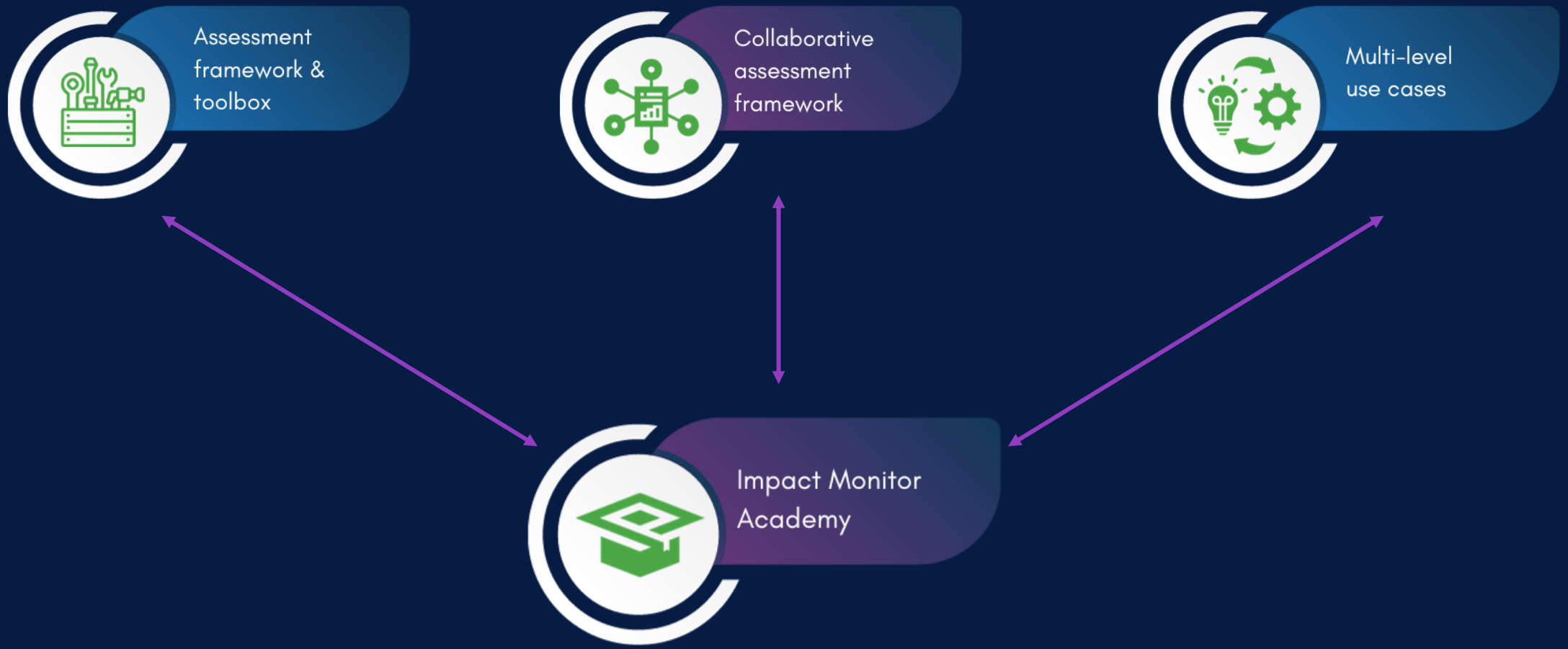
Project Overview



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Academy

Motivation and objectives

- Educate next generation of engineers and researchers
- Empower students with practical skills in collaborative impact assessment
- Facilitate exchange and mentoring between students and project team
- Enable professional experience and exposure for students

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Approach

Timeline

February 2024

Announcement and applications

August 2024

Onboarding and kick-off

October 2024

Overview at EASN conference

January 2024

Completion of technical work

February 2025

Results at Impact Monitor public event

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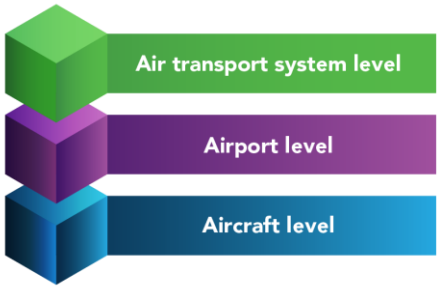
Learning Experience

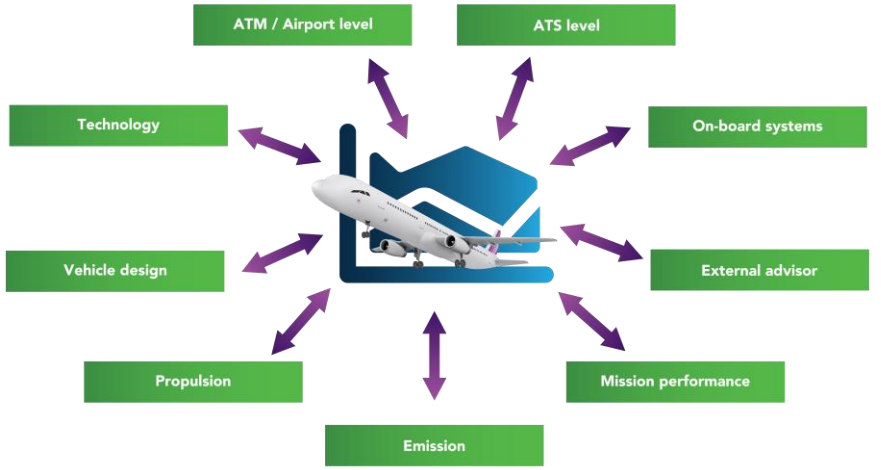
Learning objectives:

- Learn about collaborative impact assessment
- Learn about digital enablers behind the Impact Monitor project
- Apply them on their own topics



Supported through:

- Weekly on-site exchange
- Monthly exchange with all participants
- Video workshops and tutorials
- Presentations and demo sessions



cpacs
A Common Language for Aircraft Design

MDAx
MDO Workflow Design Accelerator

RCE

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Benefits

Student Perspective

- Practical experience
- Workshops and trainings
- Improving programming skills
- Mentorship and networking
- Presentation and exposure
- Work certificate and credit points

Project Perspective

- Demonstration support
- Fresh ideas and feedback
- Workshop material test users
- Extend project scope
- Exchange with academia
- Enable knowledge transfer

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Participants

Overview

Sara Vitale

- Master student at University of Naples
- Aerospace Engineering
- Student assistant and Academy participant at:

DLR Deutsches Zentrum für Luft- und Raumfahrt
German Aerospace Center

Jannik Frank

- Master student at University of Stuttgart
- Aerospace Engineering
- Student assistant and Academy participant at:

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Philip Westphal

- Master student at University of Stuttgart
- Aerospace Engineering
- Student assistant and Academy participant at:

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Profile: Sara Vitale

Overview

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Profile: Jannik Frank

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- Aerospace Engineering
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Profile: Philip Westphal

Activities

Activities: Jannik Frank & Philip Westphal

University of Stuttgart
Germany

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- Make SUAVE projects more interchangeable and remote code executable by importing and exporting them as CPACS files
- Get visual feedback from SUAVE projects by viewing the CPACS files and 3D models in the TiGL Viewer
- Implement the geometry data transfer and parameterization
- Test the robustness through design studies

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Activities: Jannik Frank & Philip Westphal

University of Stuttgart
Germany

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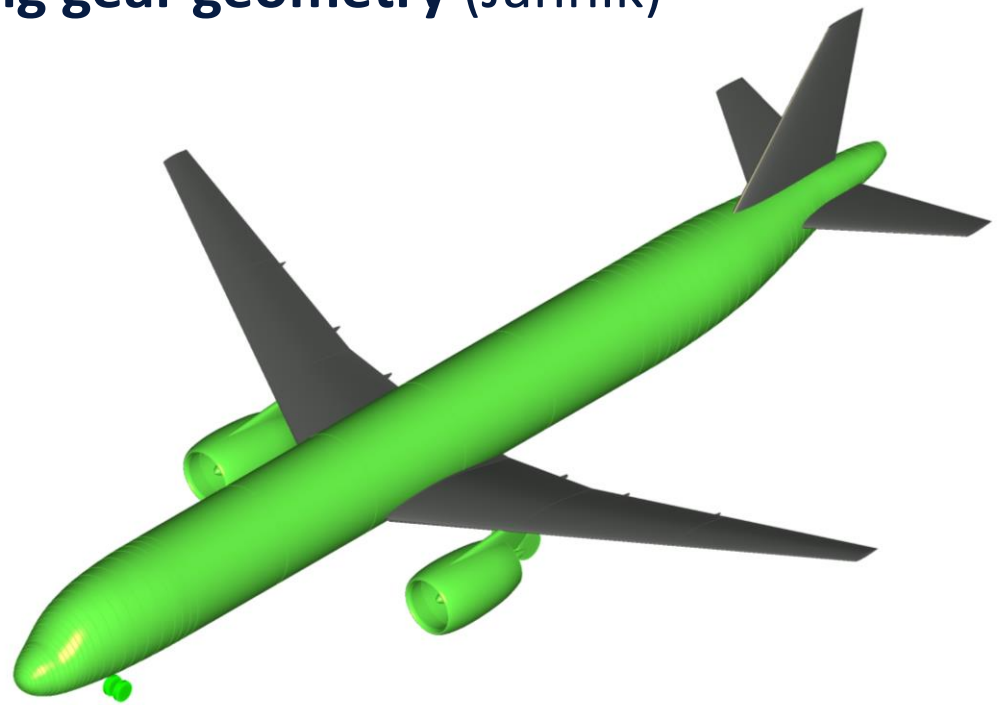
Implementation of fuselage, engine and landing gear geometry (Jannik)

SUAVE

IFB



cpacs
A Common Language
for Aircraft Design

TiGL

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Activities: Jannik Frank & Philip Westphal

University of Stuttgart
Germany

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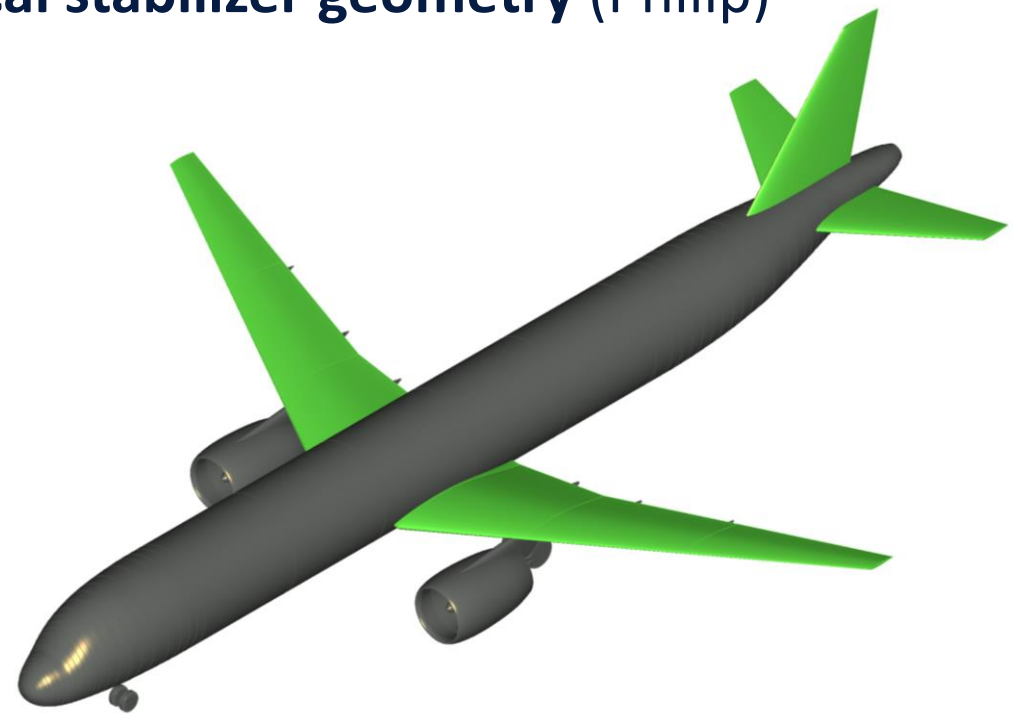
Implementation of wing, horizontal and vertical stabilizer geometry (Philip)

SUAVE

IFB



cpacs
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TiGL

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Activities: Sara Vitale

Deutsches Zentrum für Luft- und Raumfahrt
German Aerospace Center

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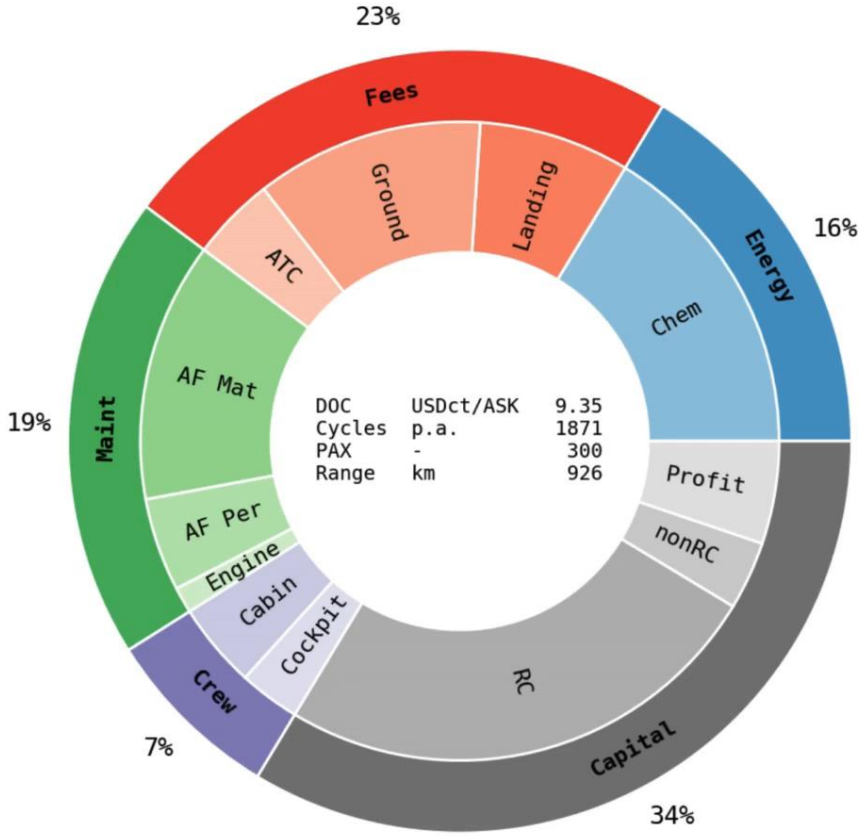
Assessment of direct operating costs

- Consider improvements trough engine retrofit and fuel transition from Jet A to SAF
- Specify and model the SAF type to be calculated
- Determine the aircraft's fuel consumption in link with use case on aircraft level
- Perform design of experiments for different technology and fuel combinations



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Summary

Academy

Accomplishments

- Kick-off and onboarding completed
- Academy tasks defined and started

Next steps

- Complete technical development and run studies
- Present results at the Impact Monitor public event in February 2025

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Thank you!

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Institute of System Architectures in Aeronautics, Hamburg

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Session II: Technical Details and Demonstration Results

Technical development: Overview and approach
Prajwal Shiva Prakasha (DLR) and Thierry Lefebvre (ONERA)

Framework: Development & implementation of a collaborative framework for aviation impact assessment
Marko Alder et al. (DLR)

Use Case 1: Assessing advanced propulsion systems using the Impact Monitor Framework
Atif Riaz et al. (CU)

Use Case 2: Assessing continuous descent operations using the Impact Monitor Framework
Jordi Pons-Prats et al. (UPC)

Use Case 3: Assessing policies for the uptake of sustainable aviation fuels using the Impact Monitor Framework
Inge Mayeres et al. (TML)

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