



POLITECNICO
DI TORINO



VON KÁRMÁN INSTITUTE
FOR FLUID DYNAMICS



TUHH

STRAT FLY

Stratospheric Flying Opportunities
for High-Speed Propulsion Concepts



STRATOFly

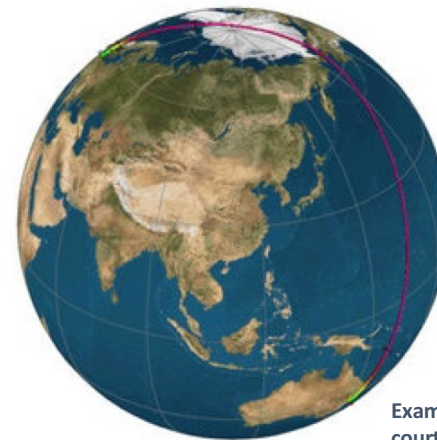
EC-H2020 Grant Agreement - 769246

STRATOFLY: project main objectives

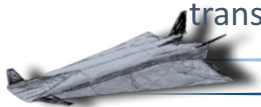


STRATOFLY, Stratospheric Flying Opportunities for High-Speed Propulsion Concepts

- Call: H2020-MG-2017-Two-Stages
- Type of Action: RIA
- Duration: 30 months
- Start Date: 01 Jun 2018
- Estimated Project Cost: €4,000,000.00
- **STRATOFLY main objectives**
 - To refine the design and the concept of operations of the LAPCAT-II MR2.4, that has been selected as reference vehicle.
 - To build up on the heritage of the past EU projects to reach the ambitious goal of TRL 6 by 2035 for the vehicle concept.
 - STRATOFLY hypersonic vehicle will fly at M8 above 30 km of altitude, performing an antipodal civil passenger transport mission.
 - The crucial technologies of STRATOFLY vehicle may represent a step forward to reach the goal of future reusable space transportation systems.



Example of trajectory,
courtesy of ESA



STRATOFly CONSORTIUM



Expertise: Noise Emission



STRATOFly Deputy Coordinator
Expertise: High-speed Propulsion
Systems and Noise Emission



Expertise: Structural
Analysis and Optimization



Expertise: Climate Impact



Expertise: Plasma assisted
combustion experiments and
Pollutant Emissions



**POLITECNICO
DI TORINO**

STRATOFly Coordinator

Expertise: Aircraft and Systems Design, Life
Cycle Cost Estimation, Safety Assessment



Expertise: Plasma assisted combustion



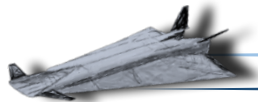
Expertise: High-speed flow analysis



Expertise: High-speed Propulsion
Systems and Climate Impact



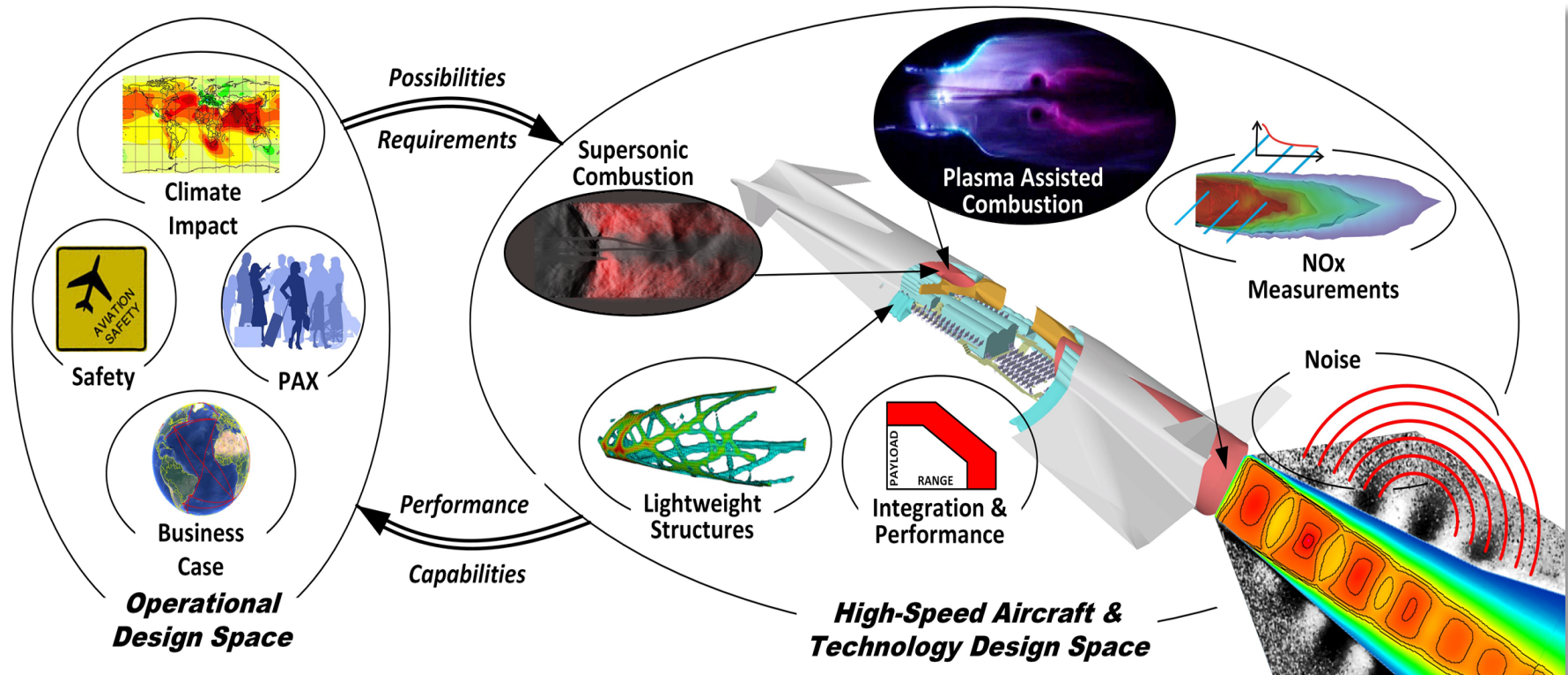
Expertise: Human Factors, Business
Plan and Traffic Management



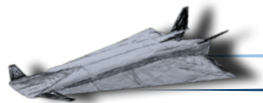
STRATOFLY: project overview



STRATOFLY project has a **rational** and **comprehensive** structure, consisting of two design spaces, **Technology** and **Operational**, mutually interacting one with the other.



Positive example of how to deal with **complexity** and **multidisciplinary** domains



STRATOFLY: ideas for dissemination



inspire young generations
and get inspired by new ideas

Primary and Intermediate School



High-speed future in your mind

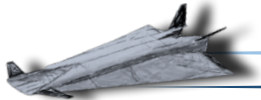
(Drawings or short Essays)

High School



Your Future at High Speed

(Drawings or short Essays)



October 2018 – October 2019:

Design your Future High-speed transportation

Two Challenges

October 2019 – October 2020:

Future Operational Scenario for high-speed transportation

Universities

Higher and faster!
(Team Project)



Challenge involving teams consisting of:

- PhD, graduate and under-graduate students under the coordination of researchers and professors
- Different nationalities
- Different backgrounds (engineering, social sciences, legal sciences, economics, medicine, psychology, etc...)

Practically,
Each student can
contribute to the team
with **BSc., MSc or PhD**
Theses

First Challenge



Design the future hypersonic transportation system!

GOAL of the first challenge

Design your Future High-speed transportation

To shorten the flight time of one order of magnitude (with respect to the state of the art of civil aviation) of at least 300 civil passengers along long haul and antipodal routes, through the preliminary design of a Mach 8 vehicle, flying at stratospheric altitudes within a future CNS/ATM scenario, enhancing existing on-ground infrastructures, in compliance with environmental compatibility and safety issues, assessing the overall economic feasibility of the solution

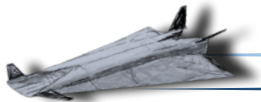
Each Student can contribute through the design of a hypersonic vehicle concept, or through an in-depth investigation of one of its most critical subsystems (propulsion, structure, thermal and energy management subsystem, etc...).

The students can both take inspiration from the STRATOFLY reference vehicle (LAPCAT MR2.4) or suggest new concept either at vehicle or at subsystem level.

Call for Application deadline: 15th of September 2018

1st Challenge Kick-Off: 1st of October 2018

1st Challenge Closure: 31st of August 2018



How to get involved



STEP 1

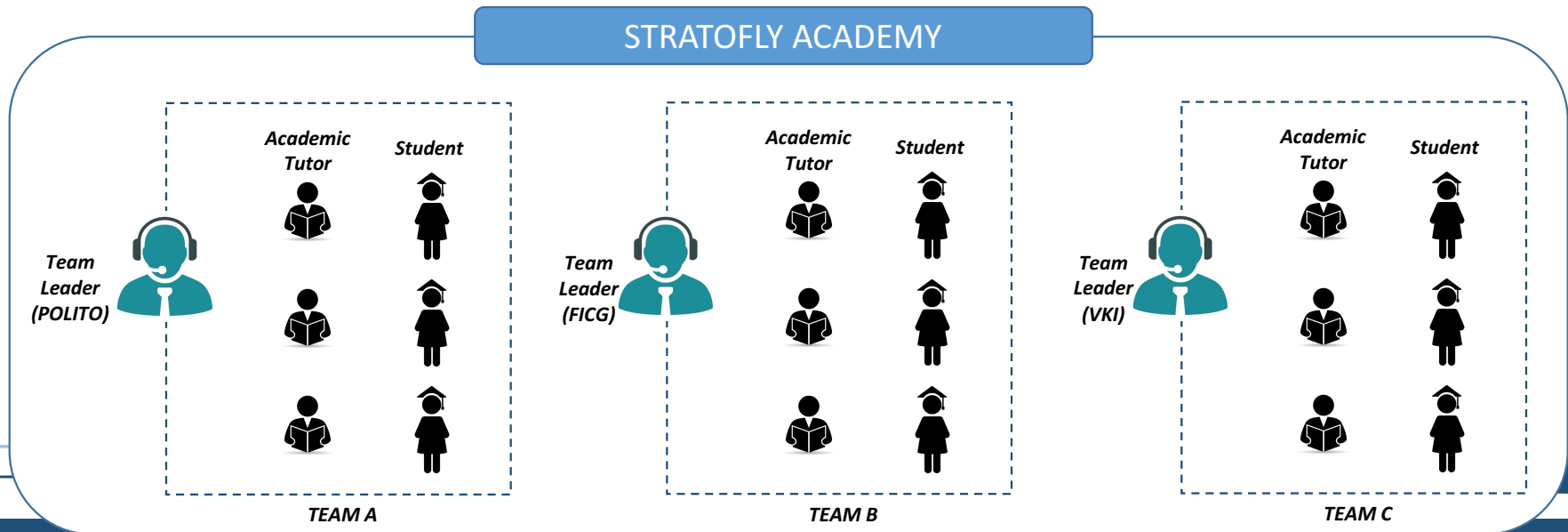
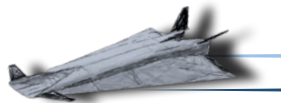
If you are interested in the topic of the challenge and you have one or more students to be involved, please, send an email to NICOLE VIOLA nicole.viola@polito.it.

Please, indicate:

- The **specific topic** and the **type** of student contribution (BSc., MSc. Or PhD Thesis, etc...)
- The **institution** in which the student is enrolled and his/her **nationality**
- **Availability** (from ... to...). The challenge lasts one year, however the contribution of the student through the thesis may last about six months. The team will be arranged consequently.

STEP 2

POLITO will collect all requests and will distribute the students into different TEAMS. TEAMS will be led by members of the STRATOFly consortium (POLITO, FICG and VKI). Each Team Leader will then be responsible for the activities carried out by the students of each team. Each student will be supervised by his/her own professor.



How to get involved

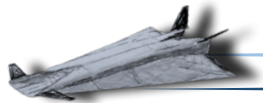
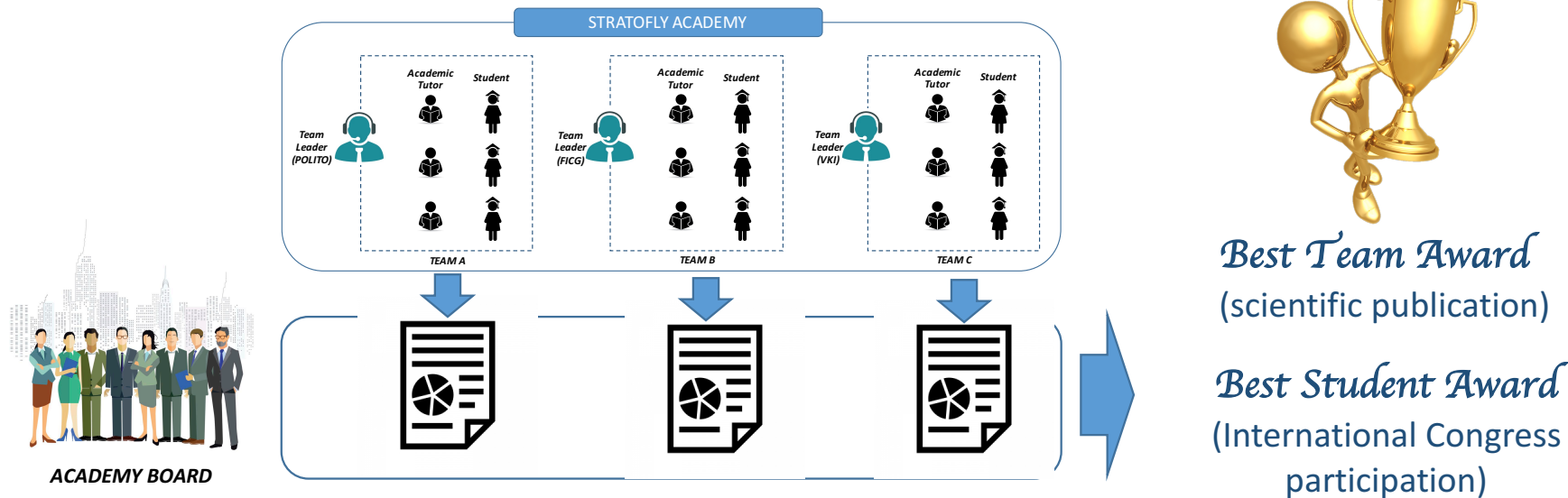


STEP 3

At the end of each period, each TEAM shall deliver an executive summary that summarizes the contribution of each student to the challenge and as annexes, the complete work of each student (if available).

STEP 4

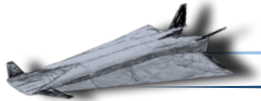
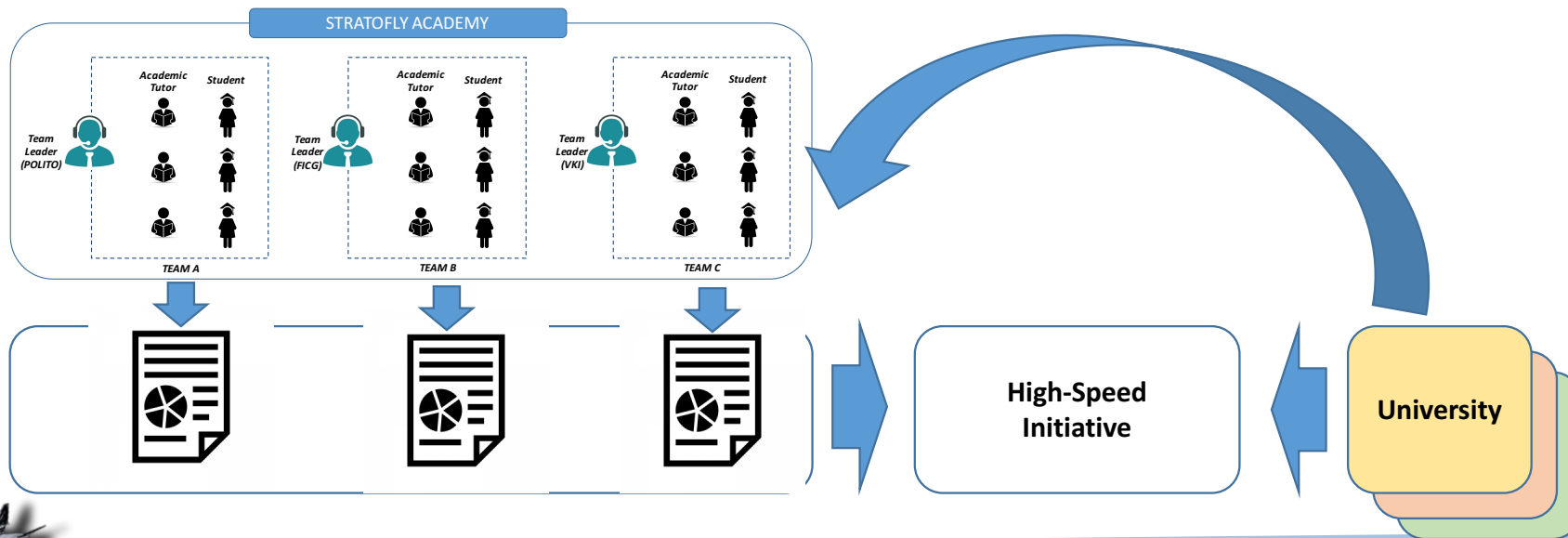
The Academy Board (whose members will be selected among the STRATOFLY consortium and External Expert Advisory Board), will review the deliverables and select the Best Team of the competition. In addition, each Team Leader can make nomination for the Best Student. These nominations will be considered by the Academy Board for the Best Student Award.



Interactions between STRATOFLY Academy and High-Speed Initiative



- Theses, executive summaries and public papers of the STRATOFLY Academy can be uploaded and shared with the High-Speed Initiative
- Students of the STRATOFLY Academy can thus become also students involved in the High-Speed Initiative
- Students of the STRATOFLY Academy can have access to the information stored in the High-Speed Initiative platform and exchanges ideas with other students involved in the High-Speed initiative
- Viceversa, students involved in the High-Speed Initiative can become students of the STRATOFLY Academy





This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 769246

