

A research project under European Commission's Framework Program "Horizon 2020", through the Marie Skłodowska-Curie Innovative Training Networks (ITN) grant agreement No. 722401.

## Industrial exploitation potential of new materials and technologies for the reduction of flow-induced

9:00 - 9:15 Welcome

9:15 - 9:30 Overview of the SmartAnswer project

C. Schram & J. Christophe, von Karman Institute for Fluid Dynamics, Belgium

9:30 – 10:45 Aerodynamic noise reduction with flow control devices and their industrial perspectives *R. Zamponi , T. Suresh, C. Teruna , L. T. Lima Pereira, G. Bampanis, I. Zurbano Fernández* 

10:45 - 11:00 Coffee break

11:00 – 12:15 Acoustic control with new material technologies and their industrial perspectives *N. S. Khodashenas , M. D'Elia, F. A. Pires, E. De Bono* 

12:15 - 13:30 Lunch

13:30 – 14:45 Modeling techniques for noise reduction technologies and their industrial maturity *M. Monfaredi, S. Palleja, C. Sanghavi, A. Zarri* 

14:45 – 15:15 Feedback from the advisory board

AB

15:15 – 15:45 Wrap-up and Recommendations for the future research and development *All*  Smart Mitigation of flow-induced Acoustic Radiation and Transmission for reduced Aircraft, surface traNSport, Workplaces and wind enERgy noise





VON KARMAN INSTITUTE FOR FLUID DYNAMICS

# **SmartAnswer Project Overview**

C. Schram & J. Christophe

SmartAnswer workshop, VKI (online), 26th November 2020



H2020 MARIE SKŁODOWSKA-CURIE ACTIONS



## Welcome to SmartAnswer workshop!





Smart Mitigation of flow-induced Acoustic Radiation and Transmission for reduced Aircraft, surface traNSport, Workplaces and wind enERgy noise



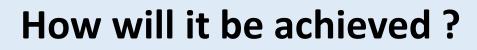


- Noise = serious issue in air / ground transportation, building ventilation systems and wind energy production
- New technologies now available: MEMs, meta-materials, porous materials, LE / TE serrations, ... often developed through trial-and-error campaigns
- But development hindered by:
  - lack of understanding of physical mechanisms
  - lack of integration of multi-disciplinary constraints
  - lack of knowledge about novel manufacturing technologies
- ... but no worry: here we are!



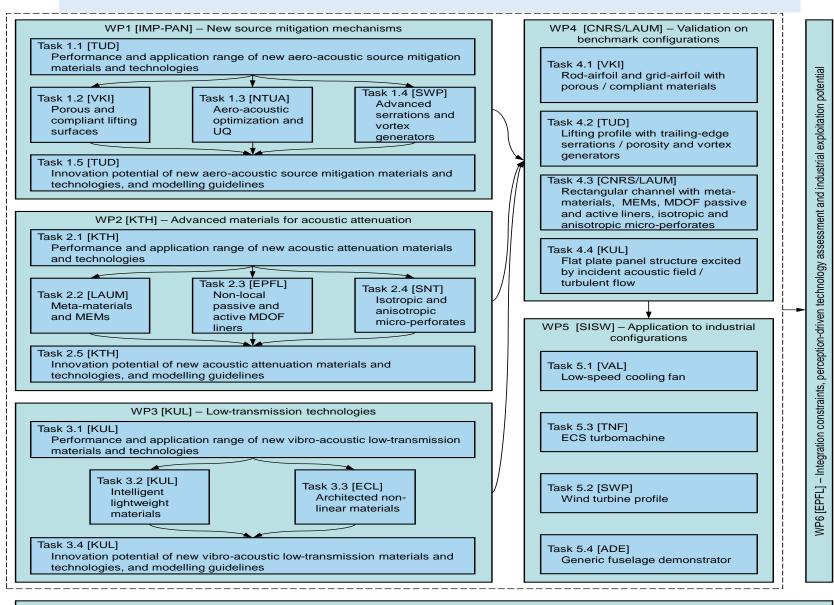


- Research and training platform focused on innovative flow / noise control and optimization approaches
  - where ESRs will investigate theoretically, experimentally and numerically promising emerging technologies
  - gathering key industrial stakeholders selected from the aeronautical, automotive, wind turbine and cooling/ventilation sectors
  - where the ESRs will be confronted with intricacies of a realistic innovation process





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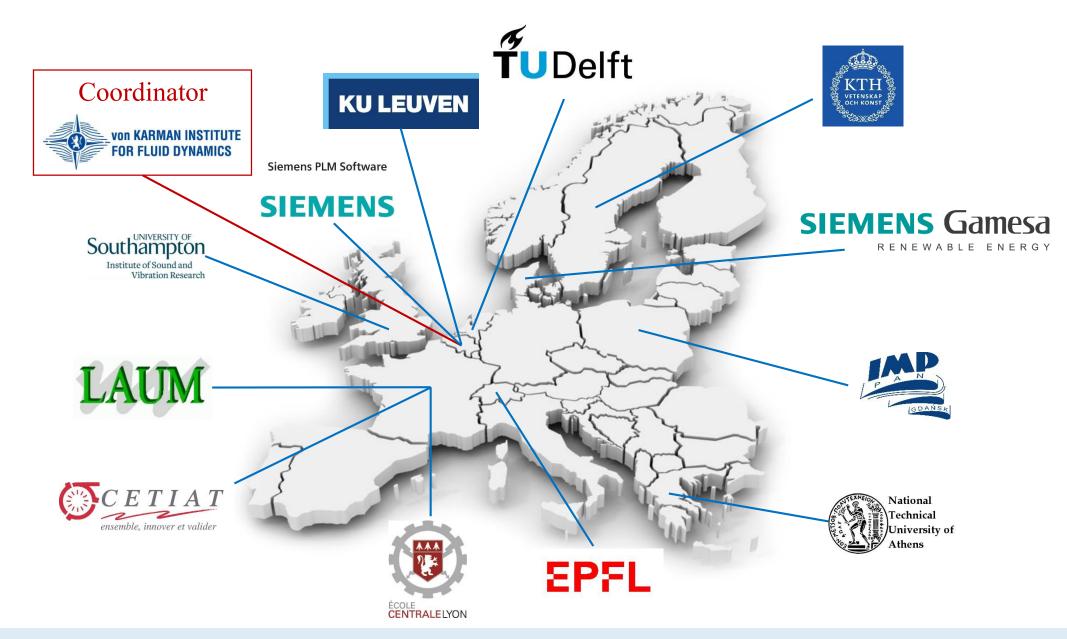
WP7 [VKI] - Coordination of research and training activities

WP8 [KTH] - Dissemination and outreach activities

ANSWER

## **SmartAnswer Beneficiaries**





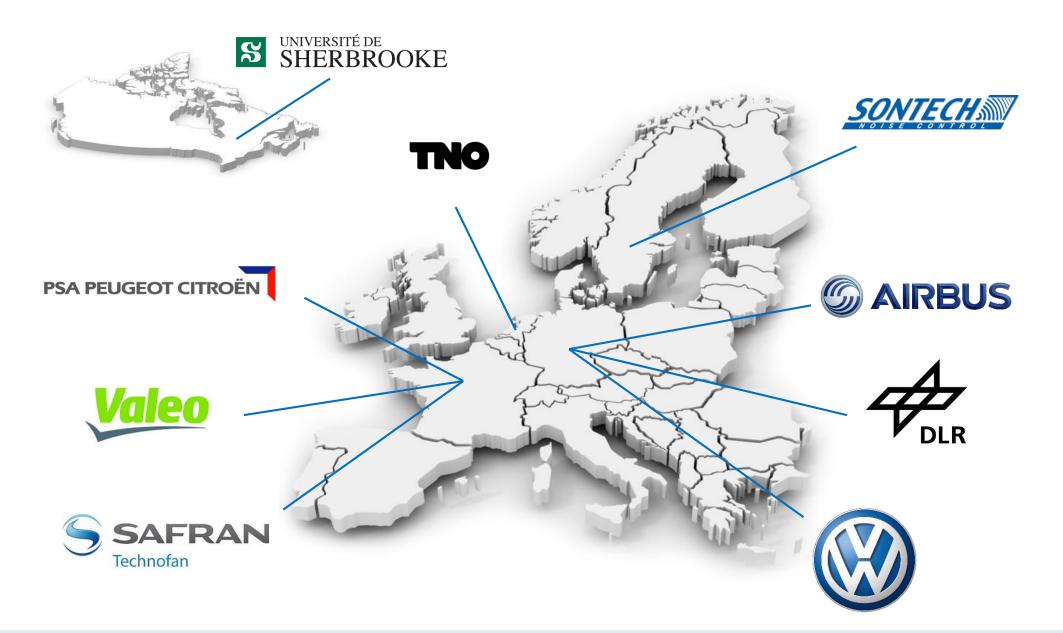
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**Smart** ANSWER



#### **SmartAnswer Partners**

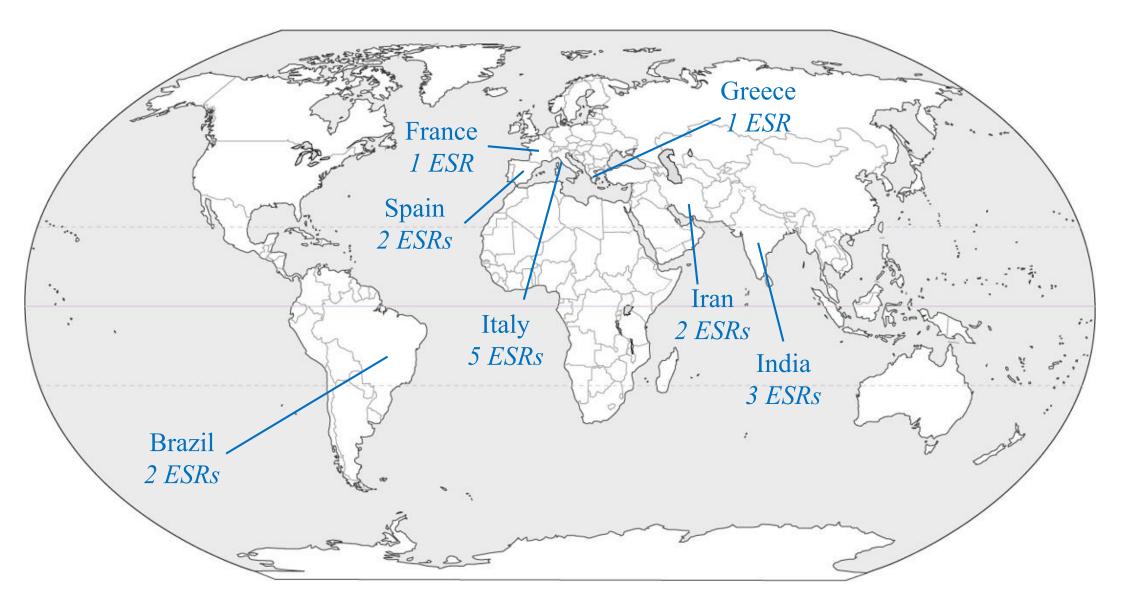






**SmartAnswer ESRs** 









## SmartAnswer is:

- 48 months, finishing end of December 2020
- 17 ESRs
- 30 courses/workshops
- 1 new Lecture Series
- 40+ scientific publications
- ESR movies and posters
- 1 demonstator including most of the research outcome



# **Scientific Program: Highlights**



FOR FLUID DYNAMICS

Advanced numerical models Leading / Trailing Edge serrations Rotor / Stator and porous treatment interaction noise Anechoic room Active noise control Domain measurements Over-the-tip decomposition liner Aeronautics Automotive Semi-analytical noise prediction models TE Wind Turbines LE CFD Advanced modelling ROD metafor aeraulics **Cooling &** materials and acoustic Ventilation Acoustic beamforming performance **Systems** for source localization sharp trailing edae RVGs artifitial Rod Vortex Flow Traced Lagrangian ith Helium rounded High-Speed Cameras Shake The Box Particle Generators led Soap Tracks **Bubbles** (HFSB) noise VIC-Advanced Velocity Pressure flow and acoustic Pressure Field Multi-disciplinary Reconstruction diagnostics optimization lift

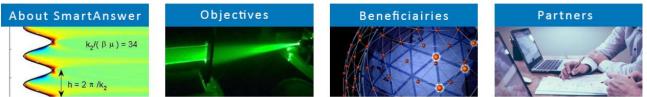
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# **SmartAnswer info and contact**







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