

# Ensuring an adequacy between curricula and sector needs

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**PEGASUS**  
**(*<https://www.pegasus-europe.org>*)**

- The PEGASUS network of universities
- The PERSEUS project




# PEGASUS

**P**artnership of a **E**uropean **G**roup  
of **A**eronautics and **S**pace **U**niversitie**S**


**THE ROADMAP FOR EXCELLENCE IN  
THE EDUCATION OF AEROSPACE ENGINEERS**

- PEGASUS partners are public and/or non-profit **institutions** of higher education in aeronautical / aerospace engineering located in the EU.
- 20 Founding Members in 1998
- Presently 28 member institutions
- 11 European countries represented
- Yearly output: about 4000 BAC+5 graduates (masters) in aerospace engineering from the whole network
- Website: [www.pegasus-europe.org](http://www.pegasus-europe.org)
- PEGASUS is **open** to all EU institutions providing a sufficiently qualified education in aerospace engineering and are sufficiently large.

# WHO is partner in PEGASUS

Country	Institution	Country	Institution
	Politecnico di Milano Politecnico di Torino Università degli Studi di Napoli Università degli Studi di Pisa Università degli Studi di Roma Università degli Studi di Bologna		RWTH Aachen TU Berlin TU Braunschweig Universität Stuttgart TU Dresden
	Ecole-air de Salon de Provence ENAC Toulouse ENSMA Poitiers ISAE Toulouse ESTACA		Cranfield University University of Bristol University of Glasgow
	TU Delft		KTH Stockholm
	UPM/ETSIAE Madrid US/ESI Sevilla UPV/ETSID Valencia		CVUT Prague
	IST Lisboa		Politechnika Warszawska
			University of Zilina

## PEGASUS Associate Partners

Country	Institution
	Kazan State Technical University Ufa State Aviation Technical University Moscow Aviation Institute
	ELISA Aerospace Bordeaux

Country	Institution
	Kharkiv Aviation Institute
	Technical University of Košice
	Vilnius Gediminas Technical University

The **network's goals** are the following:

- Contribute to the development of a **quality system** for the European higher education in Aerospace Engineering.
- Improve educational process and curricula to specifically **serve the needs of the aerospace industry**.
- Show similarities and differences of European curricula to the aerospace world.
- Co-operate with other groups and networks to fulfil the **EU policy lines in higher education**.
- Increase **co-operation between partners and industry as well as national and European research agencies**.
- Contribute to attract non-European students and engineers through competitive curricula and continuing educational services.

PEGASUS aims to offer itself as the European portal for higher education and university based research in aerospace, being recognised as the most efficient channel to get university inputs at the integrated EU level.



- Reciprocal recognition of common quality: the **PEGASUS Labels Certificate and Award** in recognition of an individual student's multi-national experience.
- All partners have agreed on a **specific curriculum description format**, enabling an immediate understanding of the level of education provided by the partners. **PEGASUS Course Catalogue**, 2009.
- **Students conference**: a forum for PEGASUS students to present technical papers in public competition in the graduate (masters candidates only) category.

## Other achievements:

- Increased **mobility** among PEGASUS Partners.
- **Cross breeding of curricula** and new “crossed” engineering profiles generated by the EU student mobility.
- Strong connection with laboratories to support the **internship** availability on top of industrial placements (PEGASUS Research Alliance).
- Thanks to PEGASUS the members can strengthen **collaborations** between them and with industry (PEGASUS Industry Alliance)

# The PERSEUS process for quality in aerospace education



## Background

- ACARE WG5 activity, Strategic Research and Innovation Agenda (SRIA) Vol.1, “Realizing Europe’s vision for aviation” Challenge 5: “5.6 Education and Workforce”.
  - Need to establish a fully integrated European aviation education system capable to **deliver the required high-quality workforce** (for example curricula harmonization in terms of structure, quality and accreditation, as well as curricula adaptation to the sector’s evolving needs).
  - Ensure excellent relations and cooperation of academia, industry and research establishments.

## Background

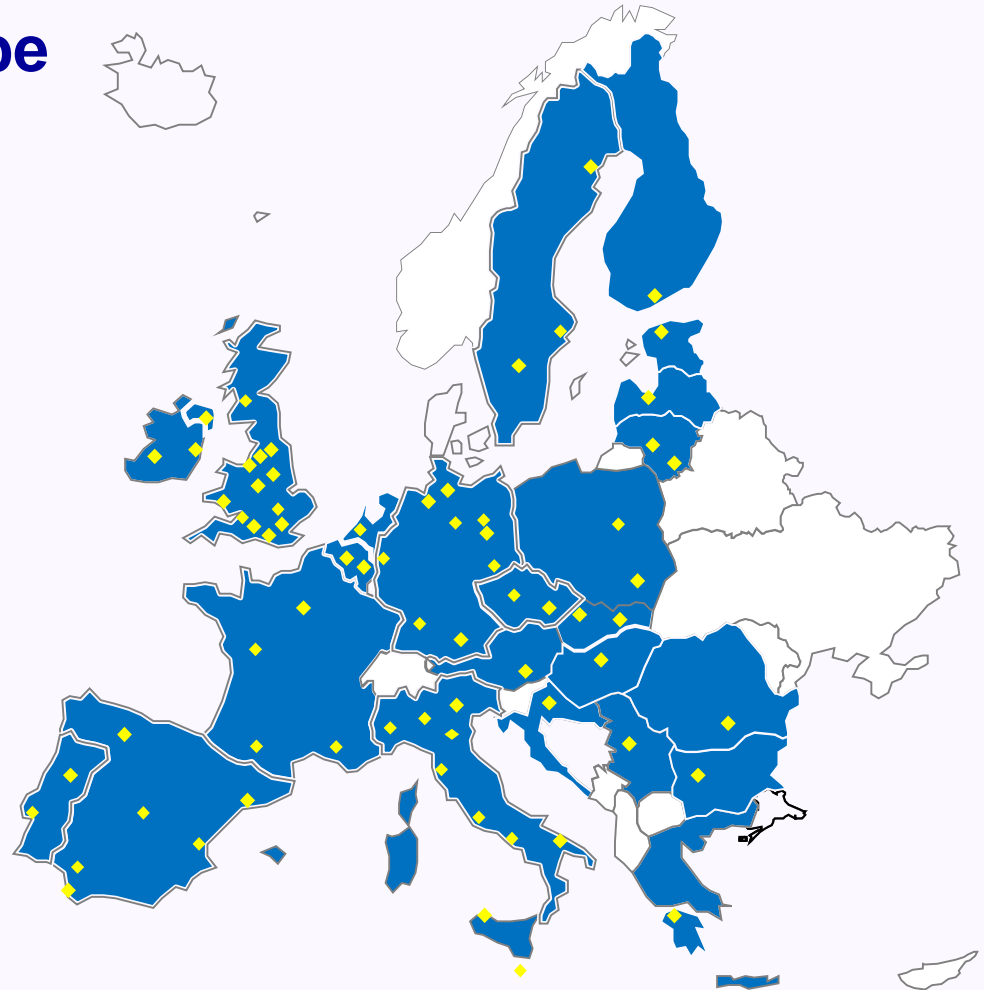
- PEGASUS activity:
  - Dedicated Working Group on education and quality, since 2001.
  - Dedicated working group on accreditation, since 2014.
  - With selected industrial partners (PEGASUS-Industry Alliance) preliminary discussions and initial ideas, starting in 2012.

## Objectives of PERSEUS

- Conduct a detailed survey providing a **complete map of the quality and accreditation systems** of all EU aerospace related higher education courses, identifying common points and main features of each.
- Define a clear **methodology for the evaluation** of aviation related higher education programmes.
- Deliver a set of minimum requirements for aerospace engineering curricula articulated in **Learning Outcomes** (in terms of knowledge, skills and competences) and based on the Qualification Frameworks of the sector and the requested (by the European Aerospace Industry) aerospace engineering profiles.

## Current situation in Europe

Over 200 EU University degrees related to Aerospace / Aeronautics / Air Transport, offered by over 100 Universities



## Current situation in Europe

- The vast majority of **accreditation agencies** do not stipulate any subject-specific criteria for degree programmes.
- Where such criteria exist, they do on the level of broad fields of a subject, e.g. engineering, but do not go beyond this into specific branches within the subject area.
- An **outcome-oriented approach**, forms the underpinning principle of all but a few national agencies.
- In Europe, **a common understanding of what a graduate of an aerospace-related degree programme should know and be able to do, is currently lacking.**



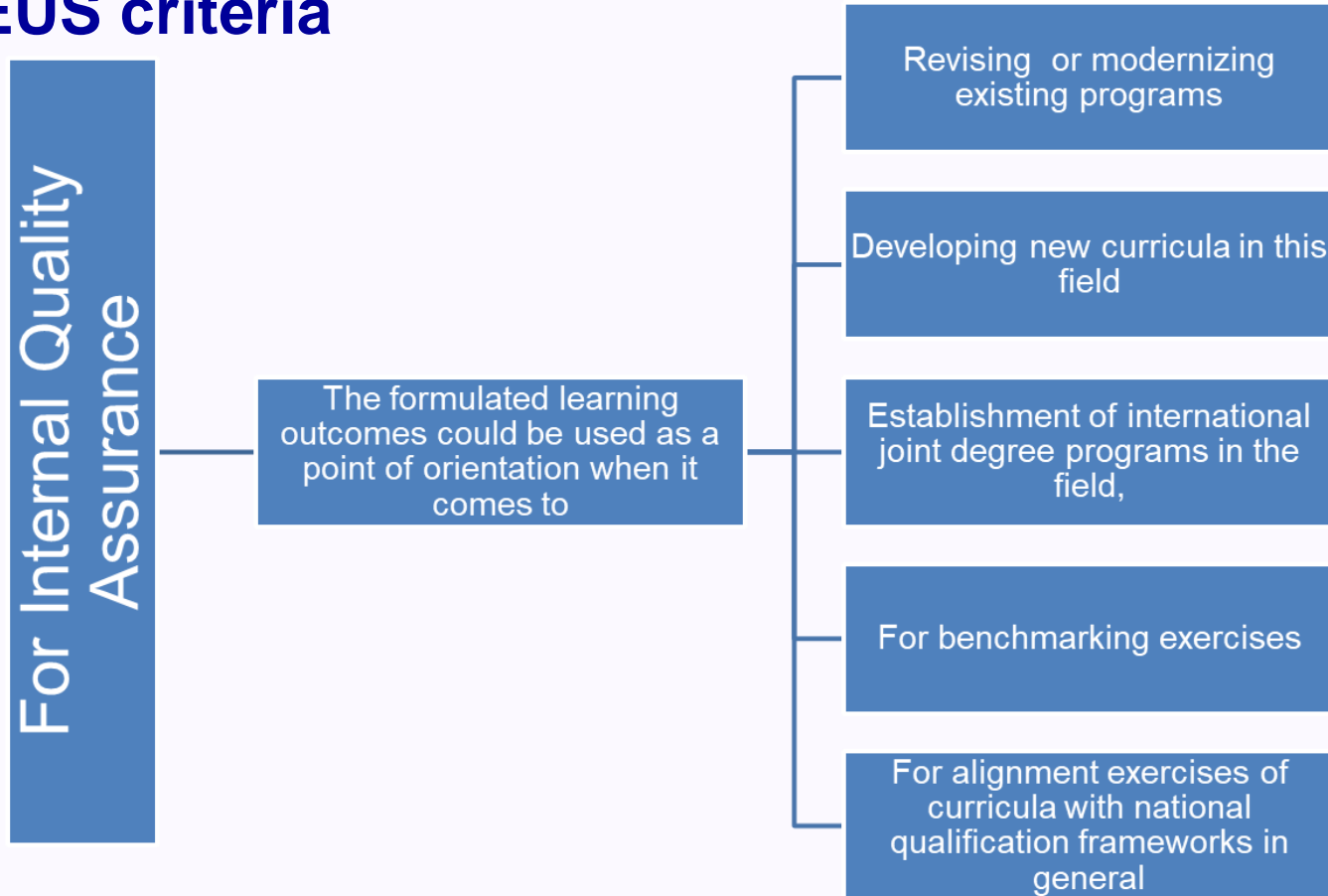
## Specific aerospace learning outcomes

- The aerospace specific quality criteria to be developed should be limited to **learning outcome** statements
- The main curriculum in aeronautical / aerospace engineering should include a mix of fundamental sciences, general engineering sciences, specific aero-engineering sciences and general courses.
- Learning Outcomes (**knowledge, skills and competences**), the **PERSEUS curriculum description table** (CDT):
  - 15 major “Core knowledge” areas
  - Each knowledge area is expanded into two broad learning outcomes
  - Each University can include other specialized fields, which might be of interest for evaluation

## Procedure

- The **profiles needed by the employers** are collected by asking an appropriate set of relevant employers of aerospace engineering graduates to identify the skills needed by filling the PERSEUS curriculum description table, indicating the relative importance of the learning outcomes as seen from the employer side.
- The programme learning outcomes will be then compared to the information provided by the employers, to **understand how the programme fits the employers' needs**.

## Ideas for the future: potential applications of the PERSEUS criteria



## Ideas for the future

### Continuation and update of PERSEUS with:

- The involvement of Universities, the Industry and European Institutions
- EU-funded
- Adapted to the new trends in the sector:
  - New competences
  - New technologies
  - New people

*Thank you for your attention  
Questions?*

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