European Network for the Accreditation of Engineering Education

The internationalisation of the accreditation systems: Trends in Europe

Prof. Bernard Remaud, ENAEE president

"Programme accreditation as a tool for internationalization"

ANECA/AQU, Santander September 2015

European Network for the Accreditation of Engineering Education

The European Network for the Accreditation of Engineering Education (ENAEE) awarding the EUR-ACE® label (www.enaee.eu)

14/09/2015

The **EUR-ACE® label**,
listed by the European Commission among the
"**European Quality Labels**",
guarantees the quality of an engineering degree programme and its suitability as an

entry route to the engineering profession

(pre-professional accreditation)

While at the same time assuring:

- scientific and academic quality
- relevance for the "engineering" job

“Why accreditation matters for internationalization of engineering Higher Education”

- Consensus on the need for a global training framework of engineers
- Global agreement on the accreditation procedures
- Convergences on the learning outcomes/graduate attributes
- Rules needed for transnational accreditation
- Debate on institutional vs. programme accreditation

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“European (global) trends”

- Consensus on the need for a global training framework of engineers
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“Engineer, engineering”

- A wide diversity of professional status and regulation – the process through which an engineer becomes authorized to practise engineering and/or provide engineering professional services to the public – applies in many different countries. Wikipedia
- A wide diversity of educational systems:
  the «engineering degree» may exist or not, and may be regulated or not…

BUT

“In OECD countries and throughout the world, there is a great degree of consensus concerning what an engineer is supposed to know and be able to do.” (Tuning-AHELO report)

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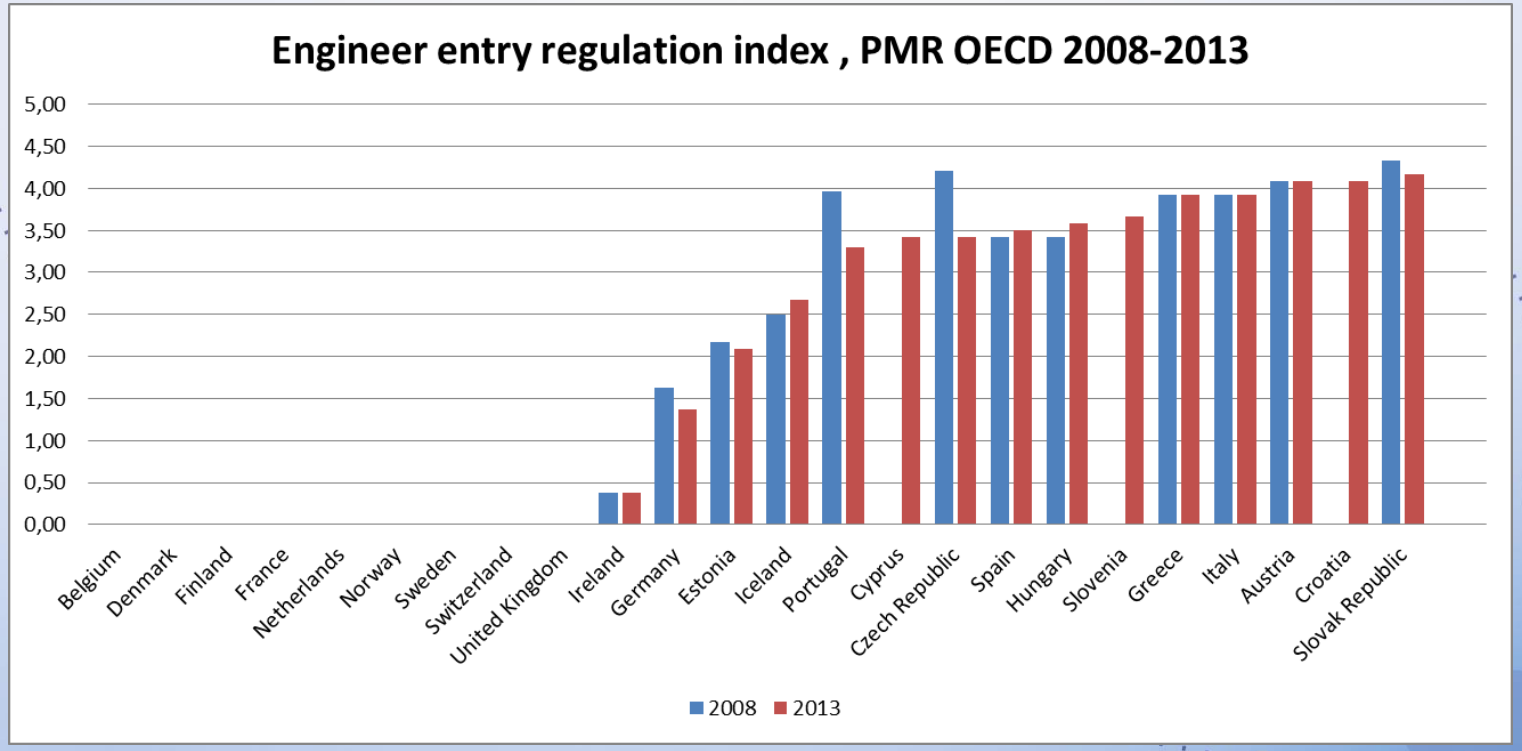
“Engineer, engineering”

A wide diversity of professional status and regulation.

Engineers regulated very differently among European States



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A worldwide convergence

- What an engineering graduate is supposed to know and be able to do,
  - ✓ Programme outcomes/graduate attributes

- Requirements and goals for the educational system to provide engineering graduates with the expected outcomes,
  - ✓ Quality Assurance for the programme providers and for the accreditation agencies

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Two global overarching frameworks

International Engineering Alliance

- The Washington accord (1989-Engineers)
- The Sydney accord (2001-Engineering Technologists)
- The Dublin Accord (2002-Engineering Technicians)

The European Network for Accreditation of Engineering Education (2006-ENAEE) with the EUR-ACE Accord (2014):

- EUR-ACE label for the Bachelor degree
- EUR-ACE label for the Master degree

Wahington Accord

Signatories (from IEA website)

Australia - Represented by Engineers Australia (*1989*)
Canada - Represented by Engineers Canada (*1989*)
Chinese Taipei - Represented by Institute of Engineering Education Taiwan (*2007*)
Hong Kong China - Represented by The Hong Kong Institution of Engineers (*1995*)
India - Represented by National Board of Accreditation (*2014*)
(Applies only to programmes accredited by NBA offered by education providers accepted by NBA as Tier 1 institutions.)
Ireland - Represented by Engineers Ireland (*1989*)
Japan - Represented by Japan Accreditation Board for Engineering Education (*2005*)
Korea - Represented by Accreditation Board for Engineering Education of Korea (*2007*)
Malaysia - Represented by Board of Engineers Malaysia (*2009*)
New Zealand - Represented by Institution of Professional Engineers NZ (*1989*)
Russia - Represented by Association for Engineering Education of Russia (*2012*)
Singapore - Represented by Institution of Engineers Singapore (*2006*)
South Africa - Represented by Engineering Council of South Africa (*1999*)
Sri Lanka - Represented by Institution of Engineers Sri Lanka (*2014*)
Turkey - Represented by MUDEK (*2011*)
United Kingdom - Represented by Engineering Council UK (*1989*)
United States - Represented by Accreditation Board for Engineering and Technology (*1989*)

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List of Authorized Agencies (June 2015)

13+2 applicants

FRANCE	CTI – Commission des Titres d'Ingénieur - www.cti-commission.fr.
GERMANY	ASIIN – Fachakkreditierungsagentur für Studiengänge der Ingenieurwissenschaften, der Informatik, der Naturwissenschaften, und der Mathematik e.V. - www.asiin.de
IRELAND	Engineers Ireland– www.engineersireland.ie
ITALY	QUACING – Agenzia per la Certificazione di Qualità e l' Accreditamento EUR-ACE dei Corsi di Studio in Ingegneria – www.quacing.it
POLAND	KAUT - Komisja Akredytacyjna Uczelni Technicznych [Accreditation Commission of universities of Technology] – www.kaut.agh.edu.pl
PORTUGAL	Ordem dos Engenheiros – www.ordemengenheiros.pt
RUSSIA	AEER – Association for Engineering Education in Russia - www.aeer.ru.
ROMANIA	ARACIS – The Romanian Agency for Quality Assurance in Higher Education - www.aracis.ro
TURKEY	MÜDEK – Association for Evaluation and Accreditation of Engineering Programmes - www.mudek.tr
UK	Engineering Council – www.engc.org.uk
SWITZERLAND	AAQ - Swiss Agency for Accreditation and Quality Assurance in Higher Education- www.aaq.ch
FINLAND	FINHEEC - Finnish Higher Education Evaluation Council – www.finheec.fi
SPAIN	ANECA – Agencia Nacional de Evaluation de la Calidad y Acreditation, www.aneca.es jointly with IIE – Instituto de la Ingeniería de España, www.iies.es

Kazakhstan and **Slovakia** are applicants

Convergences

Four topics for discussions between IEA and ENAEE

- Comparison between programme outcomes/graduate attributes
- Comparison between accreditation processes
- Rules for transborder accreditations
- Privileges granted to graduates in different systems in relation with the engineer profession

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"European (global) trends"

- Consensus on the need for a global training framework of engineers
- Agreement on the accreditation procedures
- Convergences on the learning outcomes/graduate attributes
- Rules needed for transnational accreditation
- Concerns about the "cost/burden" of accreditations
- Debate on institutional vs. programme accreditation

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Agreement on the accreditation procedures

« Best practice for accreditation of Engineering programs »

A joint document, approved by ENAEE and IEA (Istanbul 2015)

"a significant achievement as it represents the agreement and common understanding of best practice in engineering accreditation by the 30 countries/accreditation agencies involved in the two organisations worldwide. "

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Rationale for a best practice document

Capturing best practice in accreditation of engineering programmes is of interest for:

- Supporting IEA and ENAEE's commitment to standards and processes at best practice level
- Assisting accreditation bodies wishing to upgrade their systems to international standards
- Serving as a guide to newly developing accreditation systems with long term goal of joining ENAEE or IEA

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Structure of the « Best practice » document

1. Constitution, scope and governance of the accreditation agency
   - Key characteristics consistent with attaining best practice
2. Criteria for accreditation
   - Key components of publicly available accreditation criteria considered to be best practice
3. The accreditation process: the *methods and means* of delivery
   - Generally accepted principles for the accreditation process: preparation, evaluation, reporting, decision making, follow-up
4. The agency's *capacity to conduct accreditation* activities
   - Indicators of agency's capacity to develop, execute and sustain an accreditation process over a long period

Key ideas of the « Best practice » document

Preprofessional orientation

"The agency has a clear responsibility within its mission to accredit engineering education programmes whose primary purpose is to provide the educational base for independent practice in a defined engineering occupation".

Openness of the accreditation system

"The agency develops and reviews standards, criteria and policies by a process with engineering peer input and public comment, including that from relevant engineering stakeholders."

Peer review

"The agency makes accreditation decisions on a peer judgment basis. (evaluation of engineering programmes is not "box-ticking" and requires knowledgeable judgement) "

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Key ideas of the « Best practice » document

Autonomy of the accreditation system

"The agency is independent and acts autonomously in respect of accreditation. It has full responsibility for its operations and accreditation decisions should be taken without third party influence. "

"Providers of education programmes, while key stakeholders in the accreditation agency, do not have a controlling power over standards, policies and accreditation decisions of the accreditation agency"

Involvement of all the stakeholders

"Ongoing reviews and continuous improvement of the program and its delivery are undertaken by the provider with input from students, employers, graduates and other stakeholders. "

Innovation and university autonomy

"The accreditation criteria are defined in a way that gives the programme provider freedom to design and execute programmes to meet an outcomes-oriented graduate attributes standard. "

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Learning outcomes/graduate attributes

International Engineering Alliance: related with the engineering practices:

- Washington Accord: Engineers (American bachelor)
- Sydney Accord: Engineering Technologists (3 years)
- Dublin Accord: Technicians (<3 years)

EUR-ACE accord (ENAEE): related to the European HE system

- Master
- Bachelor

A difficult matching ?

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Learning outcomes/graduate attributes
A difficult matching ?

- Unwanted background: equivalence of diplomas (American Bachelor vs European Bachelor/master)
- 2 visions for the engineering graduate:
  - A « junior » professional who needs experience before being registered
  - A professional with competence ready to be used by companies
- The way out: discuss the attributes/competences expected after a few year after graduation.

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European Common Training Framework (ECTF)

One of the goals of the European revised directive (2005/36/EC) is to introduce new possibilities for « free movement of professionals » (different from academic recognition).

Common training frameworks (art.49a)

"a common set of minimum knowledge, skills and competences necessary for the pursuit of a specific profession"

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Accreditation(s)

Accreditation

- "A formal and independent decision indicating that a programme and/or an institution meets certain predefined quality standards."(ECA)
- "Both recognition given to a programme as meeting applicable criteria as a result of an evaluation process and the process itself." (CHEA)

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Accreditation(s)

Institutional accreditation

- “The revised system of quality assurance is based on trust and autonomy and places the responsibility for ensuring and enhancing the quality of education more fully in the hands of the institutions. (… The institutional) assessment includes a review of the way institutions ensure quality at programme level » (NVAO).

Programme accreditation establishes

- the academic standing of the programme or
- the ability of the programme to produce graduates with professional competence to practice (QRE).

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A European Debate
Institutional vs. programme accreditation

"Institutions that request to undergo the extensive institutional review, will be exempted from programme accreditation".

(Flemish Parliament, 2015,
about the revision to the system of quality assurance by NVAO).

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Rationales for the shift towards pure institutional accreditation

Programme accreditation also brought about a substantial administrative and financial burden and these no longer outweighed the potential benefits.

The revised system of quality assurance is based on trust and autonomy and places the responsibility for ensuring and enhancing the quality of education more fully in the hands of the institutions.

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Towards the programmed death of programme accreditation?

ANECA/AQU September 2015

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Towards the programmed death of programme accreditation?

- The deans of Flemish engineering faculties ask the CTI to undergo the (EUR-ACE) accreditation of their engineers programmes (2015-2016).
- Increasing membership of IEA/ENAEE
- “General” QA agencies (as ANECA, OAQ,…) combine institutional and programme (EUR-ACE) accreditations.
- Global European and global trends for transnational recognition and mobility → Common training frameworks

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Thank you for your attention

www.enaee.eu

bernard.remaud@univ-nantes.fr

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Presentation of ENAEE

ANECA/AQU September 2015

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ENAEE mission

Build a pan-European framework for the engineering education in order

- to enhance the quality of the graduate engineers,
- to facilitate the professional mobility of professional engineers,
- to promote quality and innovation in engineering education.

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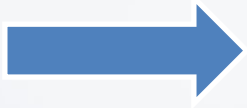
In order to be granted the authority to award the EUR-ACE Label, an accreditation agency must satisfy ENAEE that it carries out programme accreditation in accordance with the EUR-ACE Framework Standards and Guidelines (EAFSG) of ENAEE.

Accreditation Agency



Compliance with EUR-ACE Framework Standards and Guidelines

Authority to award the EUR-ACE Label

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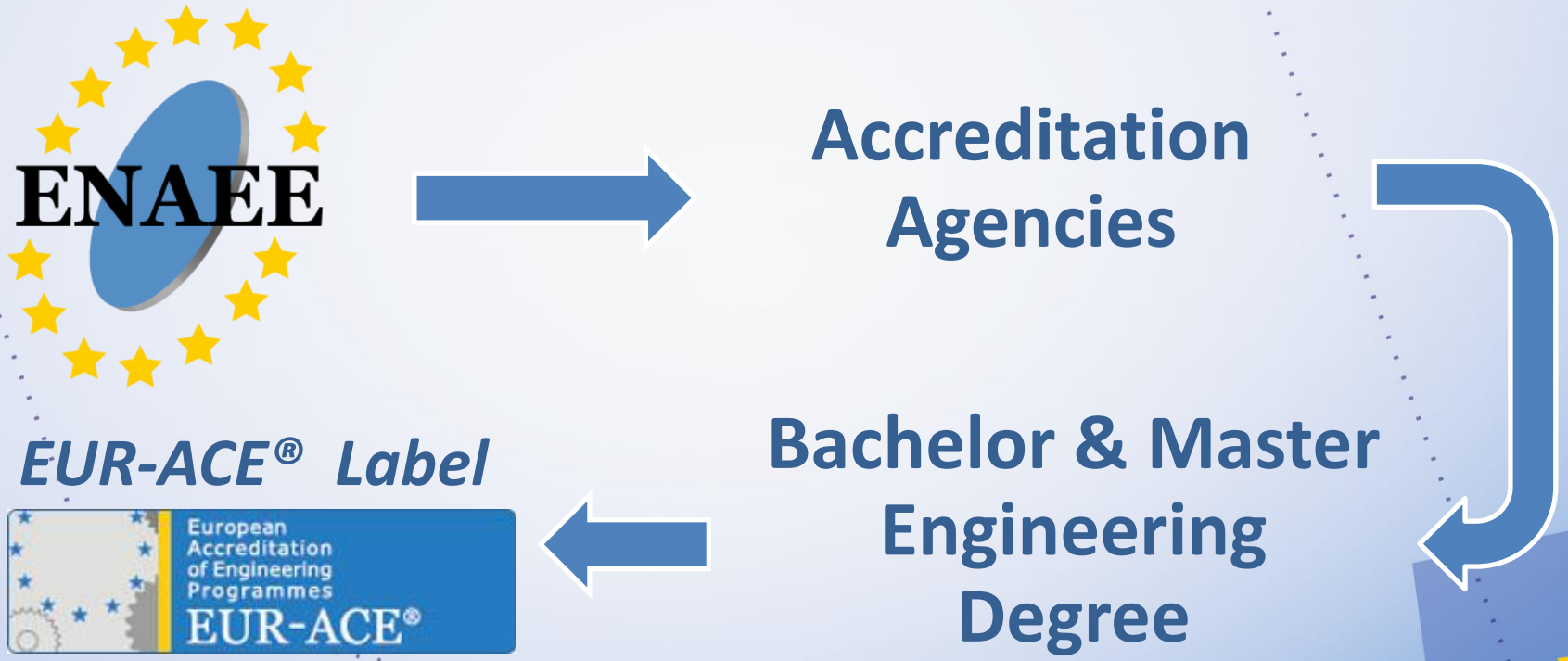
ENAEE authorizes accreditation agencies to award the EUR-ACE® Label to engineering degree programmes they accredit, at Bachelor and Master degree level.



EUR-ACE Accord

On 19th November 2014, the 13 authorised agencies signed a Mutual Recognition Agreement whereby they accept each other's accreditation decisions in respect of Bachelor and Master of Engineering degree programmes which they accredit.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European Network for Accreditation of Engineering Education

MUTUAL RECOGNITION OF EUR-ACE® LABELLED ENGINEERING DEGREE PROGRAMMES

Definition

EUR-ACE®

- First EUR-ACE labels awarded in 2007; today more than **1800**, listed on the ENAEE website

  www.enaee.eu or www.eur-ace.eu

- Up to 2012/13, the label distinguished between "**First Cycle**" and "**Second Cycle**" Degrees in Engineering.
- Replaced in 2013/14 with "**EUR-ACE Bachelor**" and "**EUR-ACE Master**" (i.e. "**EUR**opean **AC**credited **E**ngineering Bachelor/Master).
- "**EUR-ACE Master**" includes the so-called "Integrated Master" programmes, which do not include the award of a Bachelor degree.

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Members of ENAEE

ENAEE has currently 17 full members and 3 associate members, including **Engineering Organizations , Accreditation Agencies and others**

Full members

FEANI- Belgium - http://www.feani.org
ENGINEERING COUNCIL - United Kingdom - http://www.engc.org.uk
CTI – Commission des Titres d'Ingénieur –France - http://www.cti-commission.fr
ASIIN – Germany - http://www.asiin-ev.de/pages/de/asiin-e.-v.php
ORDEM DOS ENGENHEIROS -Portugal - http://www.ordemdosengenheiros.pt
CoPI – Conferenza dei Presidi delle Facolta' di Ingegneria Italiane – Italy - http://www.confpresing.it
ENGINEERS IRELAND - Ireland -http://www.engineersireland.ie
AEER – Association for Engineering Education in Russia - Russia - http://aeer.ru/en
EUROCADRES – Conseil des Cadres Européens - Belgium - http://www.eurocadres.eu
UNIFI – Scuola di Ingegneria dell'Universita degli Studi di Firenze - Italy - http://www.unifi.it
IDA – The Danish Society of Engineers - Denmark -http://www.ida.dk
BBT – Switzerland - http://www.bbt.admin.ch
MÜDEK – Association for Evaluation and Accreditation of Engineering Programs - Turkey - http://www.mudek.org.tr
IIE – Instituto de la Ingenieria de Espana - Spain - http://www.iies.es
ARACIS – The Romanian Agency for Quality Assurance in Higher Education - Romania - http://www.aracis.ro
TEK – Finnish Association of Graduate Engineers - Finland - http://www.tek.fi
QUACING – Italy - http://www.quacing.it

Associate Members

CLAIU- Belgium - http://www.claiu.org
SEFI – Société Européenne pour la Formation d'Ingénieur - Belgium - http://www.sefi.be
IGIP – International Society for Engineering Education - Austri - http://www.igip.org

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