



**« Ingénieur - Engineer »**  
**two words leading to many misunderstandings**

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# Field experiences (1/3)

**“The medium is the message”**

**Marshall McLuhan**

## **ECP role in double degree, dates and figures**

- first experience: September 1986**
- creation of T.I.M.E. in 1988**
- now, 30% of foreign students, 2/3 in double degree**
- 40% of double degree graduates in a class (half French, half foreigners)**
- all over the world: America (Canada, USA, Brazil, Chile), Asia (Japan, China + EC, Singapore, Indonesia, Vietnam), Australia**
- approx. 2,000 double degree graduates**

## Field experiences (2/3)

### T.I.M.E. network

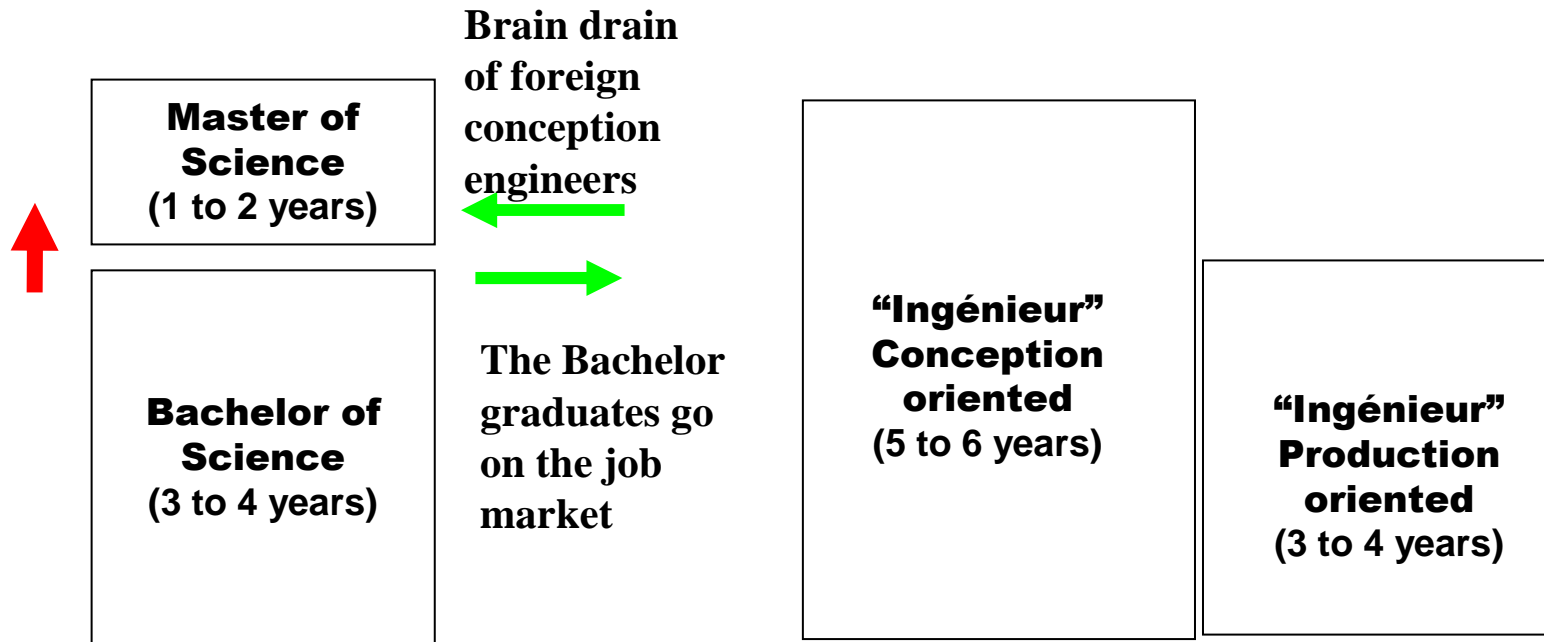
- 16 founders in 1988 of an informal club
- creation of a non profit association in 1997
- now, 51 institutions, 20 countries
- ca. 3,000 double degree graduates
- opening to institutions outside Europe
  - Sao Paulo (Brazil)
  - Tohoku and Keio (Japan)
  - many expressions of interest ...

## Field experiences (3/3)

### What does “double degree” mean?

- a bicultural achievement for a student, leading to the capacity to adapt anywhere
- the addition of the qualities of two different ways of educating “ingénieur or engineers”?
- the recognition in both countries, and farther
- a reciprocal trust between the institutions
- the guarantee that the exchange students are of high academic potential: the first selection is made by the sending institution without difficulty. As the student remains registered there, there is no competition to attract brilliant students *against* the home institution
- the necessity to acquire a thorough knowledge of the programmes of the partner institution to set up the equivalences

# 2 types of organisation 3 ways of working



**Anglo-Saxon organisation**

**Continental European organisation**

**non US**

**US**

*The difference between “3 then 5” et “3 or 5”*

# Needs and solutions

- **Companies need both profiles**
  - Conception engineers
  - Production engineers
- **Importance of the nature of the student audience for conception engineers**
  - Students at ease with abstraction
  - Different disciplines are used from one country to another
    - Law in United States
    - History in UK
    - Engineering in continental Europe, and in some other countries

# Needs and solutions

- **The conceptual level cannot be reached after a professional first degree**
  - The Swedish example
  - A Spanish testimony
- **A Master is a must as a *first* professional degree**
- **Without high level conceptual “ingénieur” European companies would lose the human resources they need so badly**

# Globalisation

- **It's a fact, criticism is pointless**
- **Rankings are available for students**
  - Shanghai
  - The “h” factor
- **Extension of the population in higher education**
  - Induces an increase and a diversification of the offer
  - Induces a need for evaluation
- **Credibility has to be supported**
  - Accreditation
  - Networks
  - ...



# Accreditation

- **Lots of initiatives these last years: Eur-ACE, Queste, ENQHEEI, ENQA, ...**
- **Lots of approaches: programmes, learning output, competencies, institutions, ...**
- **Lots of structures, public and/or private all over Europe**
- **Europe as a profitable place for outside organisations**

# Necessity for accreditation

- **More students in higher education means more institutions**
- **More institutions means more diversity in the level of each, but also a more continuous variation of level between them**
- **Thus, criteria have to be defined and applied**

# Threats

- **Uniformity has to be avoided, “biodiversity” is a necessity for the job market**
- **Procedures have to be flexible enough to allow constant adaptation of the programmes**
- **Accreditation of programmes could be too broad a task versus accreditation of institutions (EQUIS example)**

## Three examples

- **EQUIS, European QUality Improvement System, run by EFMD, European Foundation for Management Development, based on accreditation of institutions**
- **“3TU”, a criteria description proposed by the 3 Dutch technical universities, based on competencies**
- **ABET, Accreditation Board for Engineering and Technology, US, based on programme content**



# **EQUIS 1/2**

**European Quality Improvement System  
developed by EFMD**

- **General Quality Criteria**
  - **National standing**
  - **Mission**
  - **Governance**
  - **Scope**
  - **Strategy**
  - **Resources**
  - **Faculty**
  - **Students**
  - **Student services**
  - **Personal development**
  - **Programmes**
  - **Research**



# **EQUIS 2/2**

**European Quality Improvement System  
developed by EFMD**

- **Internationalisation of the institution**
  - **Internationalisation of the student body**
  - **Internationalisation of the faculty**
  - **Internationalisation of programmes**
- **Connections with the Corporate World**

**EQUIS documents can be downloaded from the  
EFMD website: [www.efmd.org](http://www.efmd.org)**

- **Areas of competence**
  - **Domain**
    - **Competent in one or more scientific disciplines**
    - **Competent in doing research**
    - **Competent in designing**
  - **Method**
    - **A scientific approach**
    - **Basic intellectual skills**
    - **Competent in co-operating and communicating**
  - **Context**
    - **Takes account of the temporal and social context**

- **Characterisation of the competences**

- Knowledge
- Skills
- Attitude

- **Profiles**

**A quantitative profile can be drawn from this approach**

**The document “Criteria for academic bachelor’s and master’s curricula” can be downloaded at  
[w3.tm.tue.nl/uploads/media/AC\\_ENG\\_web.pdf](http://w3.tm.tue.nl/uploads/media/AC_ENG_web.pdf)**



# ABET

- **Mainly for Bachelor's degree**
- **Orientation toward competences**
- **But content of programmes still taken into account**
- **Very fine classification, difference between “engineering programs” and “applied science programs”**

# Quality assurance

## **There is a general need for QA**

- **Institutions for their outside credibility by students, professors and employers**
- **Students need to know which institution to attend**
- **Public administration needs elements to define the orientation of the funding**

## **There is a specific need for QA**

- **Institutions for their continuous improvement process**
- **Individuals for their evolution**

# Challenge for institutions

**QA means conformity of the output to the specifications, but**

- **The approach was more by a teaching programme to be defined and taught**
- **The competencies approach is under experience by the “3TU”**
- **ENQA is at its very beginning**
- **Institutions networks such as CESAER are working on this question, but are not involved enough, as networks, in the on-going working groups**

# Conclusion

**A trial and error period with lots of initiatives and local decisions is still under way.**

**All stakeholders have to come up with a positive synthesis and proposals viable for the ones who will have to apply them!**



**Thank you for your attention**