French engineering education

- One integrated cycle of 5 years of higher education
  - 300 ECTS credits
  - Master degree
- Engineer's profession is not regulated
  - No order or board of engineers
  - Entry in the engineering profession directly
  - "Ingénieur diplômé" title recognized by "conventions collectives" (collective branch agreements)
- "Ingénieur diplômé" title is regulated
  - Awarding by a HEI needs CTI habilitation

French engineering education

- Large number of programmes
  - 227 higher engineering education institutions
  - 728 programmes
  - 30000 degrees “ingénieur diplômé” awarded by year
- Variety of programmes
  - Classical student education
  - Apprenticeship (half time in company)
  - Continuing education (professional experience)
- Variety of institutions
  - Universities and higher education ministry schools (50%)
  - Other ministries schools (25%)
  - Private institutions (25%)

Main CTI features

- Created by law in 1934
- 32 members, joint composition
  - 16 “academic” members
    - Universities and HEI representatives
    - All kinds of engineers schools representatives
  - 16 “socio-economic” members
    - 8 Employers representatives
    - 8 Engineers representatives (trade unions and engineers association)

Habilitation process

- Application by HEI
  - New programmes
  - Periodical renewal (6 years maxi)
  - Foreign programmes (“admission par l’Etat”)
- Self-assessment report by the school
  - Self assessment guide
- Appointment of assessment team
  - Mainly members of CTI themselves (Academic and professional)
  - External experts if necessary
  - team
- Audit mission
  - Managerial staff
  - Teachers, students, alumni, professional partners

Habilitation process

- Drafting of the report
  - Sent to the HEI (without conclusions) for checking
- Presentation to the plenary session (13 full days by year)
  - Debate
  - Vote (habilitation, recommendations)
- Habilitation
  - Decisions for the private institutions
  - Opinions for the public institutions, decision by Ministry (~ always consistent with CTI opinion)
  - Habilitation for maximum 6 years (France divided into 6 areas)
  - Ca 60 habilitation statements by year

Requirements

- "Références et orientations"
- "Self-assessment guide"

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A. Organization, strategy, teachers, resources
B. External relationship, partnership,research
C. Recruitment, admission of students
D. Education, curricula, professional periods, …
E. Employment, professions, alumni
F. Continuous improvement, quality approach

Requirements

- Organisation
  - Identity, autonomy, strong government
  - Strategic objectives, planned actions
  - Full-time teaching staff
  - Visiting teachers from companies (20% of teaching time)
  - Budget and facilities
  - Students' life

Requirements

- External relations and partnership
  - Companies and professions
  - Research
  - Europe and international
  - Thematic and regional networks
- Admission
  - Level of selectivity
  - Social and geographical diversity

Requirements

- Education
  - In-depth scientific knowledge
  - Technical knowledge and skills of the branch
  - Engineering analysis and design
  - Economic, social and juridical sciences
  - Communication, security and risks, ethics
  - English, foreign languages
  - Professional periods (26 weeks minimum)
  - Abroad mobility

Requirements

- Employment of graduates
  - First job, level of wages, careers evolution
  - Professional observation
- Continuous improvement
  - Internal quality approach
  - Evaluation of educative process
  - External assessment
  - Stakeholders satisfaction

Results

- Duration of habilitation:
  - 70% 6 years
  - 20% 3 years
  - 10% 2 years or 1 year
- More frequently given recommendations:
  - Links with profession or with research
  - International relationship and mobility
  - Consistency with strategy, quality approach

International policy of CTI

- Graduates and engineers
  - Work in an international context
  - International professional mobility
  - Need of understanding foreign cultures
- Institutions
  - Need of mutual confidence
  - Students and staff mobility
  - Development of double or joint degrees

Worldwide relationship

- "Admission par l'État" process
  - Since 1934
  - Institutions of Canada, Switzerland, Germany, Viet-Nam, Bulgaria
- Many cross assessment visits
- Bilateral relationship outside Europe
  - Mutual agreement with Canadian BCAPI
  - Relationship with ABET (Annual meeting)
  - Exchanges with Board of engineers of Malaysia

European context

- Different engineers templates
  - Different duration of studies (3, 4, 5 or 6 years)
  - Profession regulated or not regulated
  - Accreditation/ habilitation compulsory or voluntary
  - More complex reality than in the Washington Accord
- Different accreditation bodies
  - Academic bodies
  - Professional bodies
  - Governmental bodies
  - Different kind of joint bodies
  - General or engineers dedicated bodies

European context

- European Union policy
  - Free movement of workers (art 39.1)
  - Mutual recognition of diplomas (art 47.1)
  - Quality of education (art 149.1)
  - Encouragement of mobility of students and teachers (art 149.2)
  - Incentive measures and recommendations “excluding harmonisation” (art 149.3)
  - Vocational and training policy (art 150)

European context

- Bologna process 1999
  - European higher education area 2010
  - Easily readable and comparable diplomas system
  - Two main cycles
  - Development of quality assurance (Berlin 2003)
  - European standards and guidelines (Bergen 2005)
  - Bologna process is taken into account by EU in 2003 as fitting into the Lisbon strategy

European policy of CTI

- Bilateral cooperation
  - Agreement with German ASIIN (2003)
  - Cooperation with Flanders / Netherlands NVAO (2004)
  - Cooperation with Spanish ANECA (2005), Swiss OAQ (2006)
- Multilateral cooperation
  - ESOEPE group (2000), EUR-ACE project (2004), ENAEE (2006)
  - Member of ENQA (2005)
  - Member of ECA (2005)
  - ECA-ENG project

EUR-ACE project

- 14 partners
  - National bodies involved in engineering accreditation and former members of ESOEPE group (French CTI, British EC^{UK}, Irish IEI, Portuguese OE, Italian CoPI, Romanian UAICR, Russian RAEE, German ASIIN)
  - European partners dealing with engineers or engineering education (FEANI, E4 network, EUROCADRES, ENQHEII, CESAER, SEFI)
- Supported by the EC (Socrates and Tempus programmes)
- Objectives :
  - Ensure consistency between existing national systems
  - Add “European label” to the national accreditations
  - Promote accreditation approach in other coutries
  - Develop mutual confidence and mutual regognition

EUR-ACE project

- Very different bodies
  - Professional, academic, mixed bodies
  - But all of them dedicated to engineering field
- Very different status and effects of the accreditation
  - Professional effects (regulated, semi-regulated, not regulated)
  - Legal effects (compulsory, voluntary)
- But very similar processes
  - Self-assessment report
  - Audit team, visit, report
  - Final judgement yes/no
- And not so far standards
  - Criteria
  - Procedures

EUR-ACE project

- Work on common framework standards
  - Overview on the existing criteria and procedures around Europe
  - Iterative drafting process, including checking and testing stages
  - Finally adopted in November 2005
- Issues
  - Framework Standards for the accreditation of engineering prorammes
    - 1st cycle standards and 2nd cycle standards (according to Bologna process)
    - General (not branch or discipline oriented)
    - Programme outcomes
    - Guidelines for accreditation
    - Procedures for accreditation
  - Proposal for implementation

EUR-ACE framework standards

- Programme outcomes for accreditation
  - Knowledge and understanding
  - Engineering analysis
  - Engineering design
  - Investigations
  - Engineering practice
  - Transferable skills
- Guidelines for Programme assessment and accreditation
  - Needs, objectives, outcomes
  - Educational process
  - Resources and partnership
  - Assessment of the educational process
  - Management system

EUR-ACE framework standards

- Procedures for programme assessment and accreditation
  - Composition of accreditation team
  - Duration structure of the visits
  - Report, verification, validation
  - Decision and publication
  - Engineering design
- Proposals for implementation
  - No supranational accreditation board
  - Implementation by the national agencies
  - Setting-up of an association (ENAEE)
  - Checking of the consistency of standards with the common framework
  - EUR-ACE accreditation would be added to agreed agencies accrediations

After the EUR-ACE project

- Formation of a non-profit association ENAEE (February 2006)
- Answer to a new call for proposals from EC
  - "EUR-ACE IMPLEMENTATION" application (April 2006)
  - Enlargement of the previous EUR-ACE group
    - European wide members: EUA (European University Association)
    - National members(academic and professional): Danish IDA, Swiss BBT, Geek AUA, Flanders/Netherlands NVAO, Turkish MÜDEK, Swiss BBT
  - Objective: setting up of the permanent system by July 2008

ECA-ENG project

- ECA : European Consortium for accreditation
  - Mainly general accreditation agencies
  - Links with ENQA
  - Mandated by the Berlin conference of ministries of Bologna process
- ECA-ENG project
  - Launched in February 2006
  - Merge of bilateral common work of 4 members of ECA in the engineering field
  - Flanders/ Netherlands NVAO, Spanish ANECA, Swiss OAQ, French CTI
  - Common Work of comparison of standards
  - Cross assessment visits
  - Objective : Mutual recognition

Conclusions

- CTI has a seventy years old experience of accreditation of Higher engineering education
- CTI has a very large international partnership
- CTI use to deal with very different partners and systems and knows the consecutive difficulties
- CTI hopes to be part of initiatives aiming to enhance mutual confidence and recognition
- CTI hopes to be a link between all those different initiatives, and will help to their complementarily