

What engineers for a competitive Europe ?

**International Round Table Conference
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**SOCRATES-ERASMUS Thematic Networks and the
expectations of European Industry in
Engineering Education**

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from a document of the DG EAC of some years ago:

Thematic Networks (TN) *"aim to define and develop a European dimension within a given academic discipline ... through cooperation between universities, and academic or professional associations ... A successful TN project... should: work towards quality ... and curriculum innovation; promote ... discussions on improvements of teaching methods ...; foster ... joint European programmes ... and improve the dialogue between academic and socio-economic partners"*

It is then natural to consider as the *global goal* of TNs in engineering that of contributing to the development of a *European dimension* of engineering education (EE)

some TNs have addressed particular branches of engineering, e.g. civil (EUCEET), agricultural (USAEE). Addressing instead only issues of transversal interest for all branches of EE we have:

H3E (1998-2000)

E4 (2000-2004)

TREE (2004-2008)

going from a study phase towards one producing true instruments for the enhancement of EE in Europe

E4 (for *Enhancing Engineering Education in Europe*) saw the participation of more than 100 engineering faculties and produced a set of 6 volumes (plus a CD Rom) covering key topics such as two-tier curricula according to Bologna Process, quality assurance and accreditation across Europe, use of ICTs, internationalisation, continuing education.

E4 set the roots for **TREE** (*Teaching and Research in Engineering in Europe*) to develop further with the aim to arrive at true instruments to be offered to the community to make progress easier. The results of this effort of some 110 universities/associations participating in 30 Special Interest Groups (SIG) are about to become available (mid December 2007) in the form of a CD Rom and its search engine, presented in an introductory Volume.

Some of the topics considered are presented in the following.

Some topics studied in the TUNING Line (A):

- new curricula for the 3+2 structure (bachelor/master)
- evolution of the European Credit Transfer System (ECTS)
- needs of industries in international formation
- guidelines for Quality Assurance and Assessment in EE
- accreditation of EE across Europe (in synergy with the EUR-ACE project)

Some topics studied in the RESEARCH & EDUCATION Line (B):

- synergies between research and education activities
- status of doctoral (PhD) studies in engineering in Europe
- facilitating multidisciplinary projects by international teams
- problem based and project organised learning
- stimulating undergraduate research

Some topics studied in the ATTRACTIVENESS Line (C):

- how to promote EE to attract best minds from secondary school
- promotion of pedagogical abilities of teachers in EE
- status of multiple and joint degrees in EE in Europe
- widening participation in EE for underrepresented groups

Some topics studied in the SUSTAINABILITY Line (D):

- managing continuing eng. education (CEE) effectively
- new ICT based forms of continuing professional development (CPD)
- Virtual University collaboration
- ethical issues in EE
- work-based learning
- active learning

Other instruments/studies of TREE are contained in full in the CD Rom and presented in the Volume, titled

“Re-engineering Engineering Education in Europe”

Those listed in the previous slides appear more relevant to the question of this round table:

“what engineers for a competitive Europe?”

Let me try to point out why to you going back to the previous slides, at the same time using the status of Italian engineering faculties as source of examples.

SEFI

European Society for Engineering Education

SEFI has played a key role in all Thematic Networks concerned with subjects of transversal interest for EE in Europe: H3E, E4, TREE and now TREE-diss

founded in 1973

largest network of higher EE institutions in Europe

first example of an association directly linking institutions, hence independent of national and/or community filters

its policy: an international forum for discussing problems and identifying solutions relating to EE

SEFI Working Groups

ICTs	Ivan Gibson (Natl U. Ireland) & Ellen Sioer (Delft UT)
Ethics in EE	Henk Zandvoort (Delft UT)
Women in Eng.	Joanna Daudt (Delft UT)
Curriculum Dev.	Erik de Graaff (Delft UT)
Mathematics	Marie Demlova (Czech TU)
CEE	Markku Markkula (Helsinki UT)
Physics	Hans U. Fuchs (Zurich UAS)

SEFI immediate priorities:

- stronger cooperation with students
- cooperation with other major EE associations at global level (SEFI is a founding member of IFEES)
- accreditation of EE programmes (SEFI is a founding member of ENAEE)
- Participation to EC supported projects like TN TREE and TREE-diss, and TechnoTN (the archipelago of engineering and science TNs)
- the SEFI Annual Conference in Aalborg, 2-5 July 2008 on “Quality Assessment, Employability and Innovation”, celebrating also the 35^o anniversary of the association
- The Second Deans of Engineering Conference in Berlin, 24-26 February 2008

SOME CONSIDERATIONS ON THE FUTURE OF TREE

- The *rapid evolution* of the European scenario, in EE and more generally, requires to continue our efforts of identifying valid instruments for improvement
- To be successful we have to *involve Industry* much more than in the past, overcoming the widely spread reluctance of enterprises to devote even small human resources to education
- A successor to TREE is presently being considered in order to tackle these challenges and also to finalise some of the instruments already identified and to consider new aspects (just one example: entrepreneurship)

TREE - diss

TREE has just entered its **dissemination year**, in which it intends to take advantage of occasions like this Round Table and of the events it has planned in order to make the results obtained as visible as possible to all EE stakeholders

Four Regional Conferences are foreseen: in Helsinki, Birmingham, Thessaloniki, and Delft. In each one of these a Round Table of representatives from Industry of the region is foreseen

One central event targeted to get feedback from experts representing industrial/professional associations is also under study (Summer 2008 in Brussels)

A Conference marking the end of TREE life (and possibly the beginning of that of its successor TN) is foreseen in Florence early September

Some suggestions from Confindustria

In March 2006 the Italian Industrial association Confindustria approved a plan of action for University with 7 points:

1. complete the process of autonomy for universities
2. favour a student centred formation
3. increase the financial supply and collaboration with productive system
4. adopt fiscal incentives for enterprises investing in universities
5. promote internationalisation
6. substitute the legal value of the title with a serious accreditation system
7. utilise the first level formation to produce graduates suitable for the labour market

Even if targeted to the Italian scenario, most of the above aspects are valid at European level.

*Looking forward to future more strict
collaborations*

many thanks for your attention

Some links:

TREE	<u>www.unifi.it/tree</u>
TechnoTN	<u>www.upv.es/TechnoTN</u>
ENAAEE	<u>www.enaee.eu</u>
SEFI	<u>www.sefi.be</u>