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# SOCRATES THEMATIC NETWORKS: Bridging Engineering Education within European Borders (and beyond?)

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Claudio Borri, Università di Firenze – Facoltà di Ingegneria  
Elisa Guberti, Università di Firenze – Facoltà di Ingegneria  
Francesco Maffioli, Politecnico di Milano



TREE Thematic Network  
Teaching and Research in Eng. in Europe

Università di Firenze  
Facoltà di Ingegneria



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# 1. The Framework: the European Funded Projects

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ERASMUS is the higher education Action of SOCRATES II programme, as well as of the Lifelong Learning Programme, as it is denominated for the next period (2007-2013).

It seeks to enhance the quality and reinforce the European dimension of higher education by encouraging transnational cooperation between universities, boosting European mobility and improving the transparency and full academic recognition of studies and qualifications throughout the Union.

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## 2. Socrates-Erasmus Thematic Networks

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TN are one of the main innovations of the Socrates-Erasmus programme. They were created to promote forward-looking, strategic reflection on the scientific, educational and institutional issues in the main fields of higher education.

Generally speaking, a Thematic Network is a co-operation between departments of higher education institutions and other partners (e.g. academic organisations or professional bodies).

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## 2. Socrates-Erasmus Thematic Networks

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The main aim of a TN is to identify how to enhance quality and to define and develop a European dimension within a given academic discipline or study area.

Alternatively, it can take up a topic of an inter- or multidisciplinary nature, or other matters of common interest, such as university management or quality assurance.

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### 3. Some Examples of Successful Engineering TN and their Contribution Towards a European Accreditation System

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- ❑ H3E Thematic Network (Higher Engineering Education in Europe) 1998-2000
  - ❑ E4 Thematic Network (Enhancing Engineering Education in Europe) 2000-2004
  - ❑ TREE Thematic Network (Teaching and Research Engineering in Europe) 2004-2007
  - ❑ Techno TN Archipelago
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# 3.1 H3E Thematic Network (Higher Engineering Education in Europe) 1998-2000

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- a) Put forward the common elements that existed across European Higher EE Systems in the following six main areas:
    - Motivation for Higher Engineering Studies
    - Types & Forms of Higher Engineering Education and Core Curricula
    - Quality Assurance and Mutual Recognition
    - Internationalisation
    - Educational Methods to foster Life-long learning
    - Continuing Education
  - b) Act in favour of a co-ordinated approach in facing the above mentioned challenges.
  - c) Support the following specific case studies likely to bring added value and enrich the work carried out in connection with points above.
    - JEEP Teams - Joint European Engineering Project Teams
    - Pie - Plastics in Engineering
    - Protect - ProTecT Consortium: Technical Textiles.
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## 3.1 H3E Thematic Network (Higher Engineering Education in Europe) 1998-2000

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The Working Group of H3E on “Quality Assurance and Mutual Recognition” investigated how far it is possible to classify, into a relatively small number of basic types, the various curricula and schemes of postgraduate professional training. The aim was that of facilitating mutual recognition more than what was usual at that moment. In this the Group was fully mindful of the many bodies which already have interests in this area; the H3E project sought to catalyse their interaction, to the benefit of all.

The ultimate result of the work of this Group has been a proposals for a system of accreditation and suggestions on how it could be implemented in practice.

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## 3.2 E4 Thematic Network (Enhancing Engineering Education in Europe) 2000-2004

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E4 offered a wide perspective over many Engineering Technology education fields deliberately chosen to be not branch specific. Innovative contributions to international dimension and curriculum development, high standards, quality insurance and accreditation, use of ICT tools were the main subjects of the five Thematic Network activities, denominated as follows:

- A1) Employability through innovative curricula;
  - A2) Quality assessment and transparency for enhanced mobility and trans-European recognition;
  - A3) Engineering professional development for Europe;
  - A4) Enhancing the European dimension;
  - A5) Innovative learning and teaching methods.
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## 3.2 E4 Thematic Network (Enhancing Engineering Education in Europe) 2000-2004

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Activity 2 key issue (essential for the development of the European dimension of engineering education, from the point of view of all stakeholders): the way and means to enhance recognition throughout Europe, with the main aim to facilitate employability and (physical and virtual) mobility of engineers.

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# 3.3. TREE Thematic Network (Teaching and Research Engineering in Europe) 2004-2007

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The four main activities of TREE have been:

- Line A: *Tuning*. Fine-tuning new curricula for the two-tier structure of higher education; developing tools for quality assessment, assurance, and accreditation; extending ECTS;
  - Line B: *Education and Research*. Monitoring the status and promotion of doctoral studies; promoting the role of research activity in engineering education; endorsing the value of research-oriented project work;
  - Line C: *Enhancing the attractiveness of EEE*. Attracting young people, especially women, to engineering education also with initiatives such as joint/double degrees;
  - Line D: *Sustainability*. Sustaining engineering education institutions by developing continuing education, open, and distant learning opportunities; studying ways to make valuable tools, identified during the TN.
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### 3.3. TREE Thematic Network (Teaching and Research Engineering in Europe) 2004-2007

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The activities carried out in particular by Line A of TREE Thematic Network gave a great contribution towards the creation of a European accreditation system and new initiatives to reach this goal are actually still taking place.

A rather novel way of international accreditation of engineering degree programmes has been elaborated by the EUR-ACE (Accreditation of European Engineering Programmes and Graduates) Project.

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## 3.4. Techno TN Archipelago

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The Archipelago is made up by a consortium of leading university institutions co-ordinating European ERASMUS Thematic Networks. Through these TN some 850 European Higher Education institutions are involved, and considering their links with professional organisations, students, local, regional and national authorities and decision-makers, social partners, etc. This Archipelago represents a real European dimension in education and will have a lasting and widespread impact across a large range of institutions.

The TN Archipelago ([www.upv.es/TechnoTN/](http://www.upv.es/TechnoTN/)), is mainly aimed at coordinating TNs and organising European TechnoTN Expert Fora.

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## 4. Dissemination of TREE Thematic Network Results (TREE-diss project)

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Following the great impact of TREE, a new project called "TREE-diss" - Dissemination of TREE Thematic Network Results, has been approved by the DG Education and Culture of the European Commission in the frame of the Accompanying Measures of LifeLong Learning programme for the year 2007/2008

The aim of this project is the dissemination of the results of TREE Thematic Network which are collected in the publication "Re-engineering Engineering Education in Europe" (volume plus CD-Rom).

The Project foresees 5 international conferences at European Level in which TREE activities and its results will be presented.

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## 4. TREE-diss conferences

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<b>What</b>	<b>When</b>	<b>Where</b>
First Regional Conference (Nordic Countries)	07.03.08	Espoo, FI
Second Regional Conference UK)	30.05.08	Birmingham, UK
Third Regional Conference (Mediterranean Countries)	29.08.08	Thessaloniki, EL
Fourth Regional Conference (jointly with the "EUR-ACE Implementation" project final event)	19-20.09.08	Delft, NL
Final (closing) conference	10.10.08	Florence, IT

Additional information on [ww.unifi.it/tree](http://ww.unifi.it/tree) or by contacting [tree@unifi.it](mailto:tree@unifi.it)

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# 5. TREE-TWO (Towards Widens Objectives) 2008-2011

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Several considerations suggest that there still is a rationale for a new TN having its roots in the work of E4 and TREE.

- the European scenario in Higher Education is continuously evolving, hence requiring to update and complete the set of instruments suggested to EE Institutions.
- the active involvement of all stakeholders, in particular Industrial Associations, into the identification of problems and instruments for their solution.
- considering the set of results of TREE (and to the six volumes reporting those of E4) several true instruments have been identified, but the whole still looks like incomplete and not coherent enough.

It is a firm opinion of those proposing this new TN that the achievement of a more satisfactory set of instruments, organised into a coherent whole, is worth pursuing. The completion, updating, and dissemination of such a coherent set of "tools" for enhancing European EE is the general goal of the new TN, which we propose to denominate TREE-TWO (for "Teaching and Research in Engineering in Europe – Towards Wider Objectives").

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## 6. Education in Science and Technology: a world-wide Research Network (pilot project) (1/2)

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**The proposal: more competitiveness and innovation through better engineering education and research**

The core partners of TREE TN, in close cooperation with major industries, professional organisations, engineering education associations and engineering students organisations are now studying the feasibility of a new project aiming at setting in motion a world-wide, action-oriented research network with the purpose of identifying ways in which engineering education and research could enhance their contribution to economic growth, regional competitiveness and sustainable development

The working name of the project is:

**Competitiveness and Innovation through Better Engineering Education and Research (CIBEER)**

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## 6. Education in Science and Technology: a world-wide Research Network (pilot project) (2/2)

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The proposed CIBEER project would provide participating organisations an opportunity to capitalise on their previous knowledge and expertise in order to leverage the capacity of engineering education to contribute to economic growth and competitiveness.

All previous expertise gained through the work done within SOCRATES TNs of DG-EaC will be suitably exploited and will build a solid background for the research developments (including the expertise gained through the Techno-TN, i.e. the Archipelago of networks grouping all TNs in Technology).

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## 7. Conclusions (1/2)

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The Thematic Networks, with the support of the Directorate General of Education and Culture of the European Commission, have contributed during all these years in many aspects of general interest for the university education: harmonising the studies the development of life-long learning, use of ICT, appraisal of the quality, accreditation, innovation of the learning methods, and last but not least, the birth of a network of institutions in continuous contact and trusting each other.

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## 7. Conclusions (2/2)

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Given the extreme rapid changes in the field of Engineering Education it must be highlighted that the contribution of SOCRATES Thematic Networks are to be considered only a small contribution.

It appears however that the ambitious goals of H3E and E4 before and of TREE later have put solid basis for the creation of an effective instrument with the main aim of following the evolution of Engineering Education in Europe.

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# Thank you for your attention!

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Elisa Guberti

Head of the International Relations Office

Facoltà di Ingegneria – Univ. di Firenze

Via di S. Marta 3

50139 Firenze

T. +39.055.4796543

Fax +39.055.4796544

[intreling@unifi.it](mailto:intreling@unifi.it)

[tree@unifi.it](mailto:tree@unifi.it)

[www.unifi.it/tree](http://www.unifi.it/tree)

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