

CIVIL ENGINEERING PROFESSION & EDUCATION

INTRODUCTORY NOTE FOR OPEN DISCUSSION

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A **Civil Engineer** is considered to be a person possessing the skills and the knowledge to combine analytical and synthetic approaches for detecting problems in order to find and to apply reliable, safe, economical and environmentally, socially acceptable solutions. From this point of view the **Civil Engineer** is a producer, as well as a decision maker.

The **Civil Engineer** is the Designer, the Constructor; the Producer the Supervisor, the LEADER of the integrated projects those that build the QUALITY OF LIFE OF THE HUMANITY.

The **Civil Engineer** must act as a professional within a framework of high morale and ethical standards seeking the sustainable development and the protection of the natural environment, with compatible construction activities for a modern and a viable urban environment.



CIVIL ENGINEERS SERVE THE PUBLIC INTEREST AND THE HUMANITY NEEDS

We must reveal, explain and promote our Profession's Public Interest Character. We can analytically present this "**public interest character**" in a broad range of Civil Engineering Activities as following indicatively referred:

- Safety and quality of the building constructions
- Conservation and restoration of the world cultural heritage
- Anti-earthquake protection
- Energy efficiency of buildings
- Sustainable Development of infrastructure
- Safety of the Dams
- Quality of the life with adequate water supply
- Quality of the life with sustainable transport
- Quality of life and environmental protection with upgraded and innovative sewage and waste water treatment plants
- Spatial planning for a sustainable urban environment
- Water Resources Management
- Renewable Resources of Energy
- Road Safety
- Transportation Plans, Public Transport Infrastructure for Sustainable Cities
- Developing of Railways and Highways Infrastructure, connecting peoples, enhance the sustainable development
- Facing the Greenhouse Phenomenon and the CO2 Emissions
- Public Health with advanced sanitary and social infrastructure

The above indicative catalogue must be enlarged and specified by our ECCE and the European/International Engineering Organizations. All the arguments, the works and the activities proving that our Engineering Profession has a vital and critical role serving the public interest and the quality of the people life should be emerged and promoted by the Engineering Organizations in our Societies. That should be achieved in the National and European level.

The Engineers' Chambers and Organizations are not "Associations of Undertakings" in the strict meaning of the Competition Law. They have clear public actions having members acting in order to create the development infrastructure and to protect and upgrade the public health, safety and quality, the public interest in general.

By the framework of the European Legislation in general, the implementation of fee scales are acceptable when they were set by the Member States/Ministries/Public Authorities. They are also partly acceptable in the case of protecting the general interest, the public interest, the public health and safety, the quality of services, the sustainability and they are connected to the reliability and trust relationship between the services' providers and the clients, to the deontology and code of ethics.

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In the EC Directive 2004/18 which is valid for the public contracts it must be underlined the Thought 47 in the Preamble of the Directive that the code of remunerations/payments are allowed if they were set by the Member States/Public Authorities.

You can find also below some critical points by the Resolution of the European Parliament B5-0247/2001 "Remuneration of Services by the liberal professions" announced in the OJ C21E/364/24.01.2002:

- A. whereas the liberal professions are one of the pillars of pluralism and independence in society and fulfil roles in the public interest...
 - B. whereas in some Member States there are compulsory tariffs which lay down the minimum and/or maximum amounts to be paid by clients for services provided by liberal professions,
 - C. whereas, according to the case-law of the Court of Justice, lawyers, and *pari passu* members of other liberal professions, are undertakings which are subject to competition rules,
 - D. whereas the case-law of the Court of Justice does not prevent Member States from establishing compulsory
 - E. tariffs (6) because .Articles 81 and 82 of the Treaty apply only to anti-competitive conduct engaged in by undertakings on their own initiative. If anti-competitive conduct is required of undertakings by national legislation or if the latter creates a legal framework which itself eliminates any possibility of competitive activity on their part, Articles 81 and 82 do not apply. In such a situation, the restriction of competition is not attributable, as those provisions implicitly require, to the autonomous conduct of the undertakings. (7), whereas Articles 81 and 82 may apply, however, if it is found that the national legislation does not preclude undertakings from engaging in autonomous conduct which prevents, restricts or distorts competition,
1. Considers that liberal professions are the expression of a democratic fundamental order based on law and, more particularly, an essential element of European societies and communities in their various forms;
 2. Considers the importance of regulations, satisfying the requirements of Articles 81 and 82 of the Treaty establishing the European Community, that are established under their own responsibility by professional groups to guarantee the quality of services, to fix special standards of value, to observe those regulations in a professional manner and to include professional ethics;
 3. Notes the high qualifications required for liberal professions, the need to protect those that distinguish liberal professions to the benefit of European citizens and the need to establish a specific relationship based on trust between liberal professions and their clients;
 4. Considers that diversities rooted in culture, legal history, sociology and ethnology of the various professional groups in the Member States need to be respected by application of the principle of subsidiarity;
 5. Recognises that the manifestation of traditional values of the liberal professions must adapt to the changing business world and the needs of the modern consumer;
 6. Calls on the Commission to keep a close eye on the rules adopted and the decisions taken by associations of members of liberal professions which make it difficult for nationals of other Member States to provide services freely;
 7. Recognises the importance attached in some Member States to compulsory tariffs with a view to providing high-quality services to citizens and to creating a trustful relationship between liberal professions and their clients;
 8. Calls upon the European Commission to follow strictly the interpretation of the Court of Justice in the application of competition rules to the compulsory tariffs of liberal professions;
 9. Considers that only compulsory tariffs established by professional bodies or associations of all members of a given profession may, according to the circumstances, be regarded as decisions adopted by associations of undertakings subject to competition rules;
 10. Considers that Member States are authorised to establish compulsory tariffs taking into account the general interest (and not only the interest of the profession), and to protect the high moral, ethical and quality standards that lawyers, tax consultants, accountants, doctors, psychotherapists, architects and members of other liberal professions represent and their clients trust in;
 11. Considers that the goal of promoting competition in the professions must, in each individual case, be reconciled with the objective of maintaining purely ethical rules specific to each profession;
 12. Points out that rules which are necessary, in the specific context of each profession, in order to ensure the impartiality, competence, integrity and responsibility of the members of that profession or to prevent conflicts of interest and misleading advertising, and which, in addition, do not represent barriers to the free movement of services, are not considered to be restrictions of competition within the meaning of Article 81(1) of the Treaty;
 13. Calls upon the Commission, within the scope of the new Internal Market Strategy for Services, to analyse rapidly, and to dismantle, persistent barriers to the cross-border provision of services;

14. Instructs its President to forward this resolution to the Commission.

THE CIVIL ENGINEERING PROFESSION IS AN "OPEN" AND NOT "CLOSE-RESTRICTED PROFESSION" AND THE ENGINEERING CHAMBERS MUST CONTROL AND REGULATE THE ACCESS TO THE PROFESSION AS WELL AS THE WHOLE PROFESSIONAL ENGINEERING EVOLUTION IN ORDER TO ENSURE THE QUALITY OF THE PROVIDING SERVICES TO THE CLIENTS AND CONSEQUENTLY THE SAFETY AND THE QUALITY OF THE LIFE OF THE PEOPLE.

THE ENGINEERING CHAMBERS SERVE OF COURSE THE GENERAL PUBLIC INTEREST ON THE DEVELOPMENTAL AND SUSTAINABILITY MATTERS IN ALL THEIR COUNTRIES AND IN THE EUROPE. ENGINEERING CHAMBERS THEY ARE NOT UNIONS OR ASSOCIATIONS OF UNDERTAKINGS/ENTERPRISES THAT THEY HAVE THE ONLY TARGETS TO PROTECT THE INTERESTS OF THEIR MEMBERS.

At the current year (Judgment No 7732/11.06.2009 of the SAC) the Chamber of Engineers in the Investment Design (KIIP-Bulgaria) won a positive decision by the Supreme Administrative Court of the Republic of Bulgaria concerning its established (by the KIIP) Methodology for Determining the Remunerations for Provision of Design Services by Engineers in Spatial Development Planning and Investment Design (CEID 2008). This decision was taken judging a previous No 651/24.07.2008 decision against to the above Methodology by the Commission for Protection of Competition of the Republic of Bulgaria.

The whole case has many "lessons learnt", knowledge and experience concerning critical matters within the framework of the National and European Law of Competition and its special implementation and acceptance for Engineering Remuneration Fees and Codes of Payment.

THE EUROPEAN ENGINEERING ORGANIZATIONS AND THE NATIONAL ENGINEERING CHAMBERS SHOULD ESTABLISH A STRONG ALLIANCE FOR DEMONSTRATING AND PRESENTING THEIR CRITICAL ROLE TO THE SOCIETY AND PROMOTING THEIR ENGINEERS' ACTIVITIES IN THE EUROPEAN UNION LEVEL. THIS STRONG ALLIANCE CAN ENSURE THE SAFETY AND THE QUALITY FOR THE EUROPEAN CITIZEN LIVES.

We must consider and define many successful schemes and initiatives, to inform and inspire the society for our Civil Engineering critical and vital role, of many actions for enhancing the visibility of our profession can be organized and launched in the national and in the EU level.

In the USA a great dialogue and a proposed big transformation is held last years concerning the Civil Engineering Profession (needs of a challenging world in the future) and the correspondent educational and professional requirements for access and career evolution in the profession.

In that broad dialogue coordinated by the American Society of Civil Engineers (ASCE) they participated International Engineering Organizations, Universities, National Engineering Organizations, Technical Universities, the biggest multinational construction and design companies, senior professional Civil Engineers, futurists et al

The ASCE announced on 2006-2007 the "Aspirational Vision for Civil Engineering for 2025" the basic outcomes of that great continuing elaboration for the big transformation in the education pre-required for the profession are the following:

In a world of 6,5+ billion people

- 1,6 billion do not have safe drinking water
- 2,6 billion do not have basic sanitation
- 1,6 billion do not have adequate shelter
- 1,6 billion do not have reliable power
- 3,4 billion do not have adequate access to information or communication

In an increasingly demand and conflict competitive world we need

- Sustainability
- Research and Development Expected Benefits
- Managing Risk
- Innovation and Integration
- Reform in the preparation of Engineers

Civil Engineers entrusted by the Society to create a sustainable world and enhance the global quality of life. The Engineers are and will be:

- Master planners, designers, constructors and operators of society's economic and social environment
- Master innovators and integrators of ideas and technology
- Master stewards of the natural environment and its resources
- Managers of risk and uncertainty caused by natural events, accidents and other threats
- Leaders in discussions and decision making and shaping public environmental and infrastructure policy

The modern profile of the Engineer needs:

- Knowledge
- Skills
- Attitudes

The Engineer should be Knowledgeable:

- Mathematics, physics, chemistry, biology, mechanics and materials
- Design
- Sustainability
- Public Policy and Administration
- Business Basics
- Social Sciences
- Ethic Behavior

The Engineer should be Skillful:

- Apply Basic Engineering Tools
- Learnt about, Assess and Master New Technology
- Communicate
- Collaborate
- Manage
- Lead

The Engineer should Embrace Attitudes:

- Creativity and Entrepreneurship
- Commitment
- Curiosity
- Honesty and Integrity
- Optimism
- Respect and Tolerance
- Thoroughness and Self-Discipline

All the above lead the Future Vision of Civil Engineers to a new long and strong educational background required for acting as a professional called the BODY OF KNOWLEDGE (BOK). The BOK needs absolutely three categories of knowledge (foundational, technical and professional). For that the Technical Depth and the Technical & Professional Breadth of the BOK should be surely founded on Basic Sciences, Mathematics, Humanities and Social Sciences.

ASCE's great proposals for the big transformation underline also the LEADERSHIP IN ENGINEERING. You can find some indicative components of the subject as following:

- Leadership begins with our Engineers/Members
- Building Leaders
- Personal Qualities of a Leader (Driven by a vision, Able to inspire others, Committed to motivate the team, Recognizes opportunities to help make vision a reality)
- Leaders motivate others
- Engineers/Members sharing Expertise
- Informing the Public and Inspiring the Society
- Being Prominent
- Spreading the World
- Our Infrastructure Message

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- Leading the Nation in Infrastructure Action
- Leading in Public Policy Advocacy
- Leading in Technical Expertise
- Finding Transportation and Development Solutions
- Building International Alliances
- Promoting Innovation
- Protecting Critical Infrastructure
- Reaching out to Kids
- Inspiring Achievement
- Engaging Students
- Recognizing Achievement and sharing excitement

FOR ALL THE ABOVE THE WELL PREPARING OUR CIVIL ENGINEERING PROFESSION IS NEEDED. It is underlined: "ASCE's Vision includes preparing our profession for the future. ASCE has long been an advocate for elevating standards for a career in civil engineering. Future Civil Engineers will face an increasingly demand world requiring more professional specialization. At the 2006 Annual Meeting of the National Council of Examiners for Engineering and Surveying (NCEES) delegates voted to encourage States to strengthen educational requirements for licensure. The change strongly backed by ASCE calls on States to increase their educational requirements"

ASCE released in 2008 the second edition of the BODY OF KNOWLEDGE in a launch event at the National Academy of Engineers. This new report defines knowledge, skills and attitudes necessary to enter the profession. Implementation will lead to the revision of current undergraduate and post-graduate education.

In that strong educational background the Engineering Professional Recognition and the Access to the Profession should be strongly founded. The Engineers Chambers and the relevant organizations should control and keep strictly the quality of the provided Civil Engineering services for their Members in order to protect and upgrade the Public Interest and this can be achieved mainly with the exams for accessing to the profession and taking the professional license.

Within this framework the Mobility of Engineers could be easily and effectively be faced. The Mobility is not a self-target, the safety and quality in the provided services, in the built environment must be ensured for all European people. The Engineers Chambers should keep and upgrade their critical role of assessment of the access and the career evolution in the Engineering Profession. It is our mission to the Society; it is our duty for our Members.

Engineers Chambers should assert the above critical role in order to express and ensure it clearly in the European Legislation (the dialogue for the possible reform of 2005/36 EC Directive will start from 2010). We must prepare on that and our strong alliance must present its strong arguments for the Engineering Profession serving the Public Interest under strong Educational and Professional Prerequisites.

I was participated carefully on behalf of Engineering Organisations National or European in all the procedures for attempting Mutual Professional Recognition from 1986. In the firstly General Directive 89/48 adopted and in all discussions then there is no any special focus for our Engineering Profession. **We must persuade EU Institutions for our critical and vital role.**

For my personal view we must consider very seriously of any proposed approaches about "automatic and mechanistic" formulas of mutual professional recognition. These "automatic mechanisms" surely degrade the quality of provided Engineering services in Europe and inactive our Engineers Chambers. Apart of that, these systems seem fully unrealistic concerning the diversities in our Europe of 27.

THE ENGINEERS CHAMBERS SHOULD KEEP HIGH UP THE FLAG OF THE SAFETY & QUALITY PROTECTING THE PUBLIC INTEREST.

The Human Resources and the investment on them is the main factor of the Society Development. This has an important special meaning for Engineering. We cannot allow the degradation of our human resources by the deregulation of the workforce market (concerning the educational and professional prerequisites).

The recent global financial crisis should not be copied also in the Human Resources Sector. The recent "lesson learnt" must remind us the directions for the future. The following paragraph by our ECEC and

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ECCE Common Opinion/Position Paper on "Small Business Act" is importantly clear and always updated:

"At the same time ECEC and ECCE would like to stress that-in view to consumer protection and public interest/public welfare-it has to be part of SME policies to safeguard the quality of services provided by professionals. The financial crisis has yet again clearly shown that there is no need for "deregulation" but for better "regulation". The academic Engineers that are represented by ECEC and ECCE provide services that are very often of crucial interest for the public, for the functioning of daily life, for technical progress and sustainable development."

Our Engineering Organisations represent the professional interests of Academic Chartered Engineers on European Level promoting simultaneously the highest educational, professional and ethical standards within the Engineering Profession in Europe.

USA and Japan are in front of Europe in the investment on Human Resources in Engineering Sector (Education & CPD Training). A benchmarking feedback dialogue with ASCE (American Society of Civil Engineers) and JSCE (Japan Society of Civil Engineers) can be easily developed between our European Organizations.

The Development of the Europe is also a result, amongst the others, of the strong and qualitative educational system of its Engineers. For me personally is unbelievable how it was attempted to deprecate this effective and successive educational system and to "push" to "accept" the low cycle educated persons as "professional engineers" by a bureaucracy interested putting only "mechanistic formulas" and producing rules apart of the safety & quality requirements of the modern societies and the needs of the future.

I follow up strictly for many years all this international dialogue concerning the educational and professional pre-requisites in Engineering and I am deeply surprised when I notice how this dialogue be late and comes behind in our Europe comparing USA. As a real Eurofederalist in my concept for many years before, I strongly believe that we must re-establish the common EU Education Area & the relevant policies in the basis of a strong and long pre-required educational background to meet the future needs of the new competitive society of knowledge.

At the last years the voices criticizing "Bologna Agreement" and asking for more strong & effective (qualitative and quantitative) Engineering Education in Europe for meeting the higher needs of the society and the industry thicken and become louder by all the involved partners, Industry, Technical Universities, European and National Engineering Organizations et al.

THE MEETING (IN BRUSSELS, FEBRUARY 2009) OF THE EUROPEAN ENGINEERING FEDERATIONS PRESIDENTS (ECCE, ECEC, EFCA, FEANI, SEFI) UNDERLINED THE ABOVE SUBJECT. OF COURSE SPECIAL RELATIVE INITIATIVES SHOULD BE UNDERTAKEN.

In our ECCE we've discussed broadly about Professional Recognition matters and recently an Integrated Draft Proposal for Engineering Professional Recognition, was presented in our General Assembly (Ljubljana, May 2009) by our ECCE ExBo Responsible Member Fernando Branco introducing the concept of "Partial Recognition".

Continuing Professional Development (CPD) can be defined as the planned acquisition of knowledge, experience and skills and the development of personal abilities necessary for the execution of professional and technical duties throughout an Engineer's professional life. It encompasses both technical and non technical matters.

Our Engineering Organisations can play an important role on their Engineers/Members CPD.

A big dialogue for the above CPD has been developed in the European Engineering Federations (FEANI, SEFI et al) and main focus is given also in many national Engineering Organizations (e.g. ICE, IEEE, the Engineering Council in UK etc). Our experience about the Engineering CPD Implementation in many EU Member States concerning also the involvement of the Engineering Organisations is deep and broad. Some current questions on the subject to be discussed furthermore are:

- Actively encourage the development of CPD policy and infrastructure both at EU and national levels
- Initiate and coordinate our actions
- Benchmark good practice and disseminate information on the latest trends, developments and research findings
- Initiate, encourage and coordinate joint ventures for SMEs with higher education and large industry and promote training for SME managers in definition of skill needs and the filling of these needs in practice

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- Enhance CPD policy by encouraging collaboration by all parties
- Examining for introducing CPD data in our Chambers' title registration
- Recommended methods accepted for the accreditation of CPD providers
- Initiatives undertaken on Engineering CPD and mutual cooperation between our Engineering Organizations in the national and in the European level.

All the above are only my personal thoughts for our CE Profession and Educational formulated by my experience of my participation in the International Engineering Organizations. I put them to your consideration and elaboration as a first introductory note that it should be opened to our ECCE broad and deep discussion.-

Athens, 10th of September 2009