

AFNOR NORMALISATION

Feasibility and opportunity to develop a standardisation work programme concerning Engineering consultancy services

Final Report

Submitted by

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Table of contents

Executive Summary

Partners of the study

1. Introduction

- 1.1 - Scope of the feasibility study
 - 1.1.1 – Policy context
 - 1.1.2 – Scope
- 1.2 – Objectives and deliverables
- 1.3 – Rationale for choosing this service area

2 - Market and stakeholders

- 2.1- Market
- 2.2 - Stakeholders
- 2.3 - Context and environment

3 - Methodology

- 3.1 – Description of the methodology
- 3.2 - The main steps of the study
 - 3.2.1 – Research and data collection and results
 - 3.2.2 - Detailed investigations and results
 - 3.2.3 - Analysis and synthesis of different positions and results
 - 3.2.4 - Seminar and results

4 – Standardisation and Engineering consultancy services

- 4.1 – Existing documents and previous initiatives
- 4.2 – European relevance and standardisation strategy

5 –Conclusions and recommendations

- 5.1 - Conclusions
- 5.2 - Recommendations
- 5.3 – Next steps

Annex A - Construction sector

Annex B - Industry sector

Annex C- List of CEN/NSBs and EFCA members by country

Annex D - Overview of the information collected in the countries

Annex E - List of stakeholders

Annex F - Fields of intervention

Annex G - NEN report

Executive Summary

Policy environment

Within Europe, barriers to cross-border trade are being broken down. Measures are being taken at EU and national level to facilitate the provision of services in other Member States and to remove obstacles for professionals to work in other countries of the European Union. The goal is to provide a “level playing field” in which businesses can compete openly and fairly and in which clients and consumers enjoy increased choice, quality and protection.

Aim of the study

This study aims to make an inventory of what exists today in different countries in order to judge the opportunity and the feasibility to harmonise the best practices and to describe services commitments related to the **Engineering consultancy services**, in the view of a European standardisation approach.

Engineering consultancy services

Engineering consultancy services include advising clients, designing and building all kinds of facilities and managing the implementation of engineering solutions. Engineering consultancy services are thus not only technical but also managerial, the purpose of the Engineering consultancy contract being to split roles and responsibilities between the client and the Consulting engineering firm. Technical and commercial proposals in response to calls for bids from clients are the basis for each project.

All sectors in engineering are concerned:

- **Construction**
 - Infrastructures and networks
 - Buildings
 - Industrial units

- **Industry**
 - Product conception and development
 - Process engineering (not concerned by this study).

Work Programme

The Work Programme for the study consisted of five Steps:

- | | |
|--------|---|
| Step 1 | Information Research and data collection |
| Step 2 | Detailed investigation |
| Step 3 | Analysis and synthesis of the different positions. |
| Step 4 | Debate with European stakeholders – Seminar |
| Step 5 | Final report and communication of results of the feasibility study. |

Methodology

The methodology applied enabled to collect information and data via different ways (questionnaire, B to B meetings and studies organised in the field in 9 countries), to analyse the information and to identify some blocking points and market trends and finally to evaluate the needs of these sectors. Two workshops were organised to test the feasibility of standardisation. A seminar was held in April 2008 for presenting the first results of the study and for discussing the proposal with other stakeholders.

The stakeholders

Many categories of stakeholders intervene in Engineering consultancy activities.

Depending on the sector, the clients, the public or private market, they are organised with some particularities. The weight of some actors can have a considerable influence on how the services are delivered in the country.

The results

The number of participating countries in this study is high: **20 countries (Construction)** and **5 countries (Industry)**.

From the answers received to the questionnaire (13 EFCA members and 8 CEN/NSBs) and the analysis of the studies conducted in the countries, some main challenges were identified for example:

- **Some blocking points** hinder the opening up of the Internal Market

Construction sector	Industry sector
<ul style="list-style-type: none">▪ Insurance▪ Liabilities▪ Laws▪ Role of the Chambers▪ Cultural differences	<ul style="list-style-type: none">▪ Role of trade and industry associations▪ Status of Engineer▪ Cultural differences▪ Lack of technical resources
	<ul style="list-style-type: none">▪ A particularity: Role and importance of the client

- **Some market trends**

Construction sector	Industry sector
<ul style="list-style-type: none">▪ Emergence of new professions▪ New fields (environment, sustainable development)▪ Diversification of competencies and cooperation▪ New type of contracts (PPP, PFI)▪ Transfer of competence from central government to regions▪ New practices in the EU enlargement countries	<ul style="list-style-type: none">▪ Engineering consultancy sector: a strong growth▪ Development of outsourcing and co-development of products▪ Evolution of the type of contract: development of fixed-price contract

PPP : public/private partnership

PFI : Project Finance Initiative

- **Some needs and expectations**

- Harmonisation of the definitions and practices for a better cooperation between the actors.
- Harmonisation of the content of the services to avoid misunderstanding on the content of the services and the real cost.
- Preparation of the international and global competition.
- Standard: a tool for the implementation of the European market.

In conclusion, there are many differences in the way that engineering services are delivered, and regulated, from one EU country to another. There are also differences in practices, depending on the projects, sectors, clients and actors.

At the same time, the number of trans-national partnerships is increasing, project delivery timeframes are shortening, and new forms of contracts are gaining in popularity. Globalisation brings new opportunities on the international markets, but also new competitors closer to home.

All of these developments point out the need for some form of standardisation.

Standardisation could contribute:

- to limit misunderstandings when working abroad for foreign clients;
- to improve quality and safety for end-users and clients;
- to raise the image of the engineering consultancy profession;
- to favour the development of a European insurance market;
- to facilitate trans-border activities and transfer of human resources;
- to improve the visibility of the added value provided by the engineering consultancy firms to the clients and to have a better visibility of the services offered to the client;
- to harmonise the conditions of work and exercise of the profession within the European Union;
- to obtain a common recognition of the obligations and responsibilities of every participant in the project.

The proposal

Standardisation in the field of “Engineering consultancy services” is an adapted solution to answer the needs identified during this study. The main objective is to contribute to the implementation of the directive on services and to the development of the European market.

Two sectors are concerned: Construction and Industry.

The European level was chosen prior to the international level and CEN offers an adequate structure for working.

A draft work programme is proposed in the 2 sectors:

- **Construction sector**

- Functional stages of a project: a glossary of key words and terms to define the activities that take place within each stage.
- Project management: identification and definition of new and emerging project management services.

- **Industry sector**

- Functional stages of a project: a glossary of key words and terms to define the activities that take place within each stage

Recommendations

The proposal is to organise the appropriate conditions to start European standardisation work on “Engineering consultancy services” with the support of EFCA members (in particular Syntec-Ingénierie) and the CEN/NSBs by taking into account the 2 sectors: Construction and Industry. The creation of a CEN/TC (technical Committee) is recommended.

Support from the European Commission would be helpful for encouraging the participation of all the stakeholders and bringing them together around this project.

Partners of the study

The partners in the implementation of the study, with their principal contributors, were:

- **EFCA**

European Federation representing Engineering consultancy services
Jan Van Der Putten, Julia Ridsdale-Saw.

Members of the EFCA Standardisation Working Party set up to support the CEN project during the course of the 18 month study:

Rémi Cunin, Chair (CICF-SYNTEC), Anya De Bie (ORI), Mr Yves Dieleman (ORI), Yiannis Makatsoris (HELLASCO), Klaus Rollenhagen (VBI), Dik Spekkink (ONRI), Josef Robl (ACA/BS-Ing), Ryszard Dubno (SIDIR), Jean Félix (CICF - SYNTEC), Enrico Vink (FIDIC), Jan Van Der Putten (EFCA), Julia Ridsdale-Saw (EFCA).

- **SYNTEC-INGENIERIE**

French association of Engineering consultancy firms.

Jean Félix

- Two students from ENPC (Ecole Nationale des Ponts et Chaussée), Maria-Antonia Alvarez and Emmanuel Evrat, who conducted their final year thesis in line with the AFNOR study, under the supervision of Research Director, Elisabeth Campagnac (ENPC).

- Four students from HEI (Hautes Etudes d'Ingénieur): Thomas Lorthiois, Olivier Biau, Antoine Terrin et Michael Lefebvre who conducted their final year thesis in line with the AFNOR study. under the supervision of Isabelle Metzger (Syntec-Ingénierie).

- **AFNOR** (Project Leader)

Standardisation Unit
Annick Galpin,
Emilia Pinto (Secretary)

- **NEN**

Jappe van der Zwan

Additional information about the partners

EFCA, founded in 1992, has member associations in 28 countries and is the European federation lobbying on behalf of Engineering consultancy and related services, a sector that employs a staff of around one million in Europe.

EFCA

- Represents the business interests of the European Engineering consultancy services sector to the European institutions.
- Provides a strong and cohesive input to the legislative actions of its national associations on issues affecting market conditions.
- Offers a Europe-wide platform for national associations and their member firms to gather relevant facts and discuss business issues with their counterparts
- Delivers news on the latest EU legislative initiatives affecting business and the actions undertaken by the federation.
- Brings "Best Practice" resources in association management to its national members.

EFCA has established several committees in order to develop opinion and policy on various issues in each EFCA priority area. Each Committee provides relevant and valuable contributions to the Federation's ongoing dialogue with the European legislators, officials and high level policy makers.

SYNTEC-INGENIERIE has 320 engineering and technical design member companies, including the giants of the sector, and employs approximately 40 000 people of which more than 50% are engineers and executives.

Both nationally and internationally, the task of Syntec-Ingénierie is to operate at several levels:

- Assisting members: gathering and circulating information and any data that might assist their work (guides, specimen contracts, etc).
- Promoting the engineering profession and the members of Syntec-Ingénierie.
- Coordinating and facilitating communication between member companies and with all their partners.
- Developing and maintaining an ethos of professional behaviour.

1. Introduction

1.1. Scope of the feasibility study

1.1.1 Policy context

The European Commission recognizes that the European standardisation system, whereby all interested parties transparently and openly develop standards on a consensus basis with which compliance is voluntary, could contribute to the single market in services. This contribution would take the form of breaking down barriers to trade, thereby creating common European best practices and fostering competitiveness.

Within this policy framework the European Commission addressed the mandate M/371 in the field of services to CEN to support projects aimed at taking an in depth look at a particular service area and at making an analysis with the involvement of the stakeholders, in order to demonstrate the need for standards and the possibilities of their use. This study is one of the eleven projects proposed by CEN to the European Commission on various services, each project being led by a National Standardisation Body (NSB). The outcome of each project will provide an input to the overall CEN programme of standardisation work, where the project results show market and European relevance.

1.1.2 Scope

This study aims to make an inventory of what exists today in different countries in order to judge the opportunity and the feasibility to harmonise the best practices and to describe services commitments related to the Engineering consultancy services, in view of the European standardisation approach. Engineering consultancy services include advising clients, designing and building all kinds of facilities and managing the implementation of engineering solutions.

Engineering consultancy services are thus not only technical but also managerial, the purpose of the Engineering consultancy contract being to split up roles and responsibilities between the client and the Engineering consulting firm. Technical and commercial proposals in response to calls for bids from clients are the basis for each project.

Engineering consultancy services are market and client-driven. Clients increasingly require a full range of project-related services from Engineering consultancy firms.

Engineering consultancy services are by nature intellectual and therefore intangible. They apply to all stages of projects, in response to needs identified by clients.

All sectors in engineering are concerned:

- **Construction**
 - Infrastructures and networks.
 - Buildings.
 - Industrial units.
- **Industry**
 - Product conception and development.
 - Process engineering (not concerned by this study).

1.2 Objectives and deliverables

The main aim of the feasibility study is neither to select one of the existing reference frameworks, nor to create a new additional one, but to prepare a consensus on a standardisation scope of work in European engineering consultancy (field of activity, type of work, type of document, content of standardisation) in order to create conditions for standardisation that would be useful and acceptable and would become effective in most European countries.

All the results on the potential for standardisation in the selected service fields will take the form of reports. The results and findings will be disseminated at European level and presented to stakeholders during a CEN seminar at the end of the timeframe of 18 months. Where applicable, the results will take the form of standardisation proposals to CEN so as to transfer the strategic work into concrete standardisation work at European level.

1.3 Rationale for choosing this service area

Nowadays, it is necessary to increase the pace of the opening up of the European market. The European consultancy working on international markets need to share some common practices in order to be able to combine resources efficiently and thus be ready to face new competitors. It is particularly the case for transnational projects which refer and have to take into account the requirements from two countries.

Another major argument that justifies conducting the proposed feasibility study is the fact that the splitting of responsibilities in Engineering firm projects and subsequent insurance modes vary considerably from one country to another and also from public to private projects (legal obligations, qualifications, ...). As a positive consequence, harmonising the splitting of responsibilities and insurance modes would fit one of the future Directive on services requirements: the obligation for any Engineering consultancy firm to be insured in terms of civil responsibility.

The arrival of new types of contracts, such as the public/private partnership ones is another argument as there is a high risk of wide interpretation of such contracts.

2 Market and stakeholders

2.1 Market

Services are crucial to the European Internal Market. They are everywhere, accounting for between 60 and 70% of economic activity in the 27 Member State European Union, and a similar (and rising) proportion of overall employment. This underscores the economic importance of services in the European Union.

The central principles governing the internal market for services are set out in the EC Treaty. This guarantees to EU companies the freedom to establish themselves in other Member States, and the freedom to provide services on the territory of another EU Member State other than the one in which they are established. The principles of freedom of establishment and free movement of services are two of the so-called "fundamental freedoms" which are central to the EU internal market.

EFCA is the sole European representation of Consulting Engineers. It represents 29 professional associations from 28 countries in Europe.

The area of activities in which Engineering consultants are involved is vast, ranging from buildings to ports, airports, railways, irrigation, waste treatment, mining, renewable energies and environmental protection.

The industry employs a staff of about 1 million (highly qualified jobs) and generates an annual turnover of more than 26 billion Euros. Half of the companies ranked in the world's top 40 Consulting engineering and architectural groups are European.

For the same group of countries, the basic engineering investments are estimated at 1,530 billion Euros. Exports represent some 28% of production.

The average size of the Engineering consultancies varies considerably from one country to another, but is generally small: for example, in Denmark, France and Sweden most of the enterprises (more than 90%) have less than 10 employees. [\(EFCA source\)](#).

The distribution of turnover by market segments also varies considerably, although buildings, manufacturing, energy and environment are generally the most important market segments.

However, international trade in construction design and contracting services, although amounting to some Billions of Euros, is small compared with the total turnover of the sector. Construction is predominantly a national, regional or very local activity; SMEs dominate the sector and the vast majority of construction firms are in competition only with firms in their own locality or at the most in their own country.

Within the sector of Industry, during the last twenty years, a new sector of Engineering consultancy has emerged in Europe.

Manufacturing industries have developed the use of assistance and services for Concept definition, Design, Industrialisation studies of industrial products.

Increasing outsourcing of these services has been observed since 1990 in the automotive, aerospace and in some other manufacturing industries in many countries like:UK, Germany, France, Italy and Spain.

It represents today an employment equivalent to the Engineering consultancy for construction. [\(Syntec-Ingénierie source\)](#).

The particularity of this sector is the presence of major firms and small and medium-sized companies. The major clients of Engineering consultancy services for industrial production are:[\(2007 IDC Survey for Syntec-Ingénierie\)](#)

- Automotive: 63 %
- Aerospace and defence: 61 %
- Energy: 60 %
- Mechanical industry: 57 %
- Transport, vehicles: 36 %
- Consumer electronics: 31 %

Evolution of the market

The forecasting study conducted in France by BIPE for Syntec-Ingénierie underscored the long lasting growth of the Engineering sector.

From 1999 to 2005, the average annual growth rate of the Engineering sector rose to 4,4 % in volume (7 % in value).

The five-year forecasts, for the period 2008-2012, are positive and confirm this trend with an average annual growth rate in volume of 4,5 %.

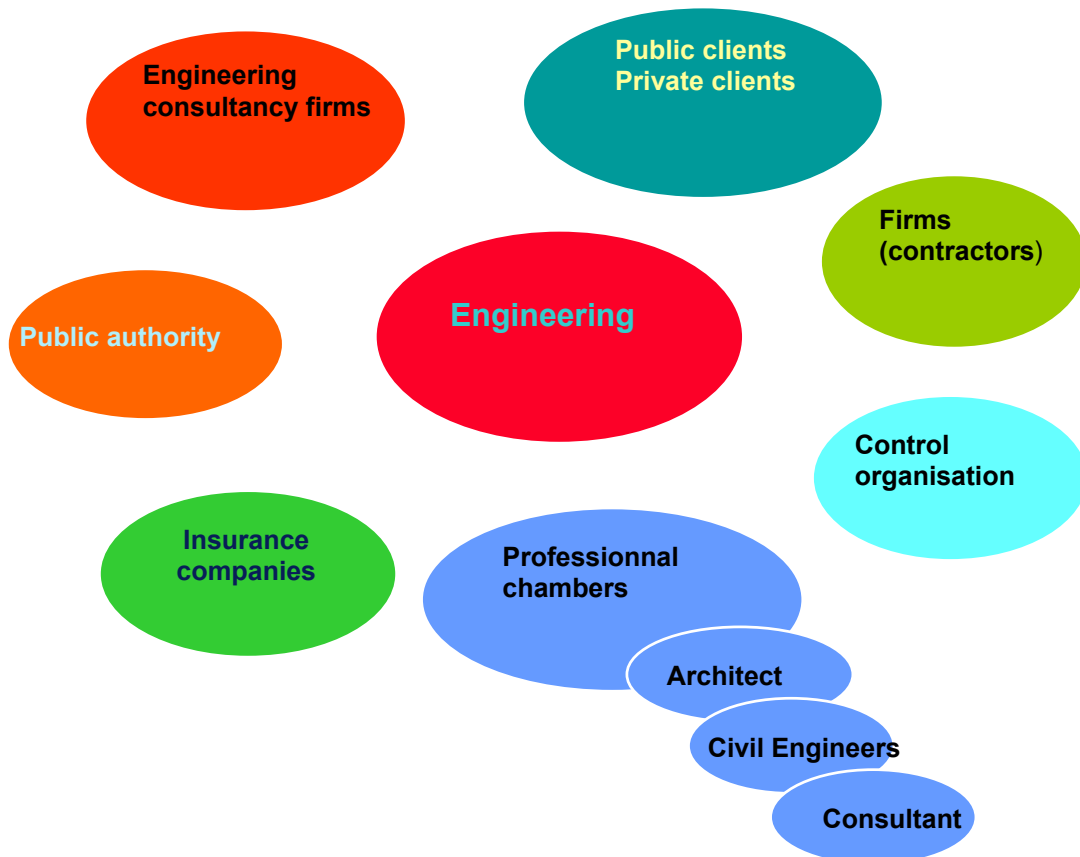
Parallel to its economic development, Engineering is a sector that is durably buoyant from the standpoint of employment.

[\(Source :2007 BIPE study on the development of the engineering market for the 5 next years in France for Syntec-Ingénierie\)](#).

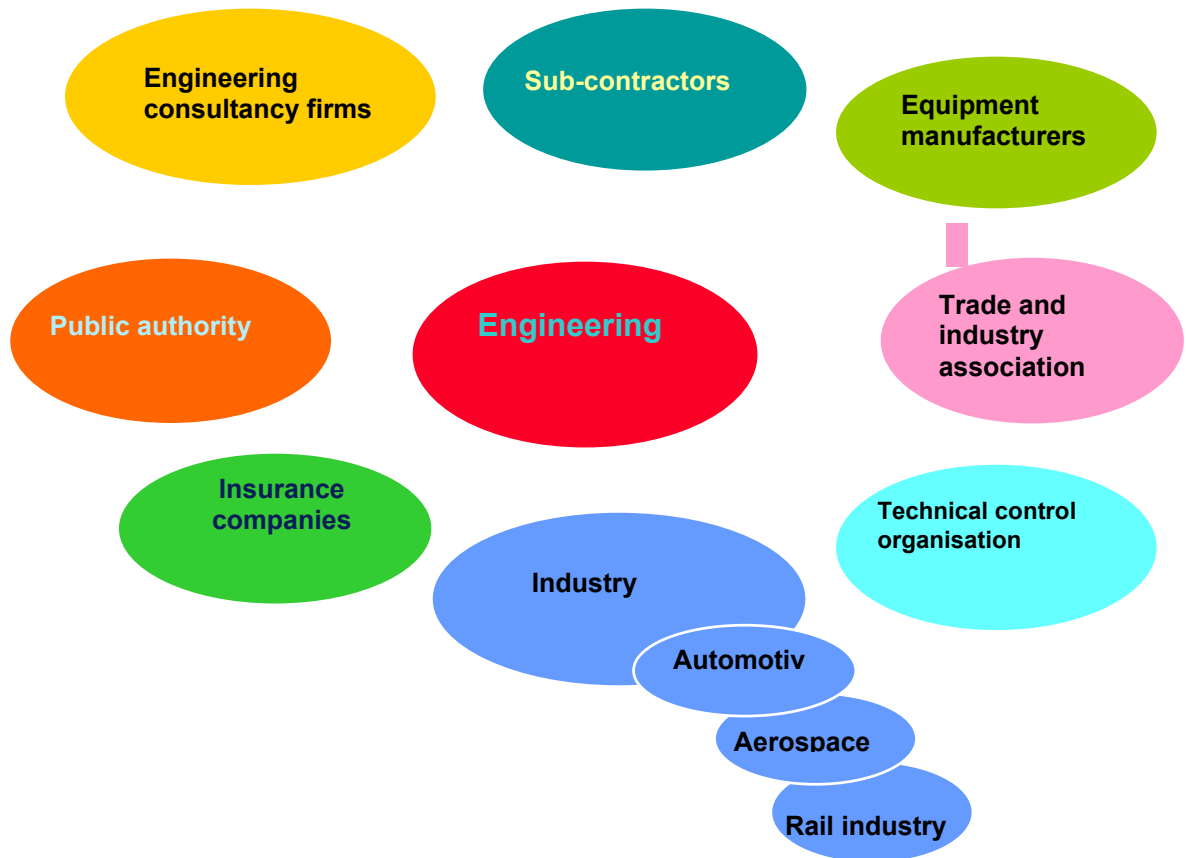
2.2 Stakeholders

Many categories of stakeholders intervene in Engineering consultancy activities. Depending on the sector, the clients, the public or private market, they are organised with some particularities. The weight of some actors can have a considerable influence on how the services are delivered in the country.

<i>Construction sector</i>		
Category of stakeholders	Associations	Particularities
<ul style="list-style-type: none"> ○ Engineering consultancy firms 	EFCA + National associations	EFCA is the only association representing the sector of Engineering consultancy services (see details above)
<ul style="list-style-type: none"> ○ Public clients ○ Private clients 		Decides to carry out a project and funds it, selects the contractors and signs the contract
Firms	FIEC – CEPMC - UEPC	
Public authority	National authority	Importance of the national regulations Differing laws have an impact on how projects are organised
Insurance	CEA	Compulsory in some countries, not in others
Professional chambers <ul style="list-style-type: none"> ○ Architects ○ Civil Engineers ○ Consultant 	National and European associations ACE/CAE ECCE FEACO	Related professions (e.g. architects) occupy similar functions, but the conditions of exercise vary between countries, linked to the existence and role of national professional chambers.
Control organisation		



<i>Industry sector</i>		
Category of stakeholders	Associations	Main firms
Engineering consultancy Firms	EFCA) and National associations	Altran – Alten – Assystem – Segula – Systra - Ricardo – Atkins – Bertrandt – Rücker – Ansaldo – Tecnosistem – Revelli – Airtren - Antonin
Industry <ul style="list-style-type: none"> o Automobile o Aerospace o Rail industry o Other sectors) 	Trade and industry associations linked to the category of market <ul style="list-style-type: none"> - GIFAS – AIAD – SBAC- BDLI – ATECMA - FIEV – SFEPA - - FIF – RIA - VDB 	<ul style="list-style-type: none"> - Airbus – EADS – Eurocopter – Snecma - Renault – PSA -Fiat – BMW – Volkswagen. - SNCF – Trenitalia – Eurista – Deutsche Bahn - Renfe
Equipment manufacturers	National associations Ex :SFEPA – SERNAUTO	Latecoptère – Agusta – BAE system – Thales - Valeo – Bosch – Siemens -
Sub-contractors		
Public authority		DGAC – UK civil aviation authority ...
Insurance		
Technical Control organisations		Bureau Veritas – Lloyd’s Register



2.3 Context and environment

There are many differences in the way that engineering services are delivered, and regulated, from one EU country to another. There are also differences in practices, depending on the projects, sectors, clients and actors.

At the same time, the number of trans-national partnerships is increasing, project delivery timeframes are shortening, and new forms of contracts are gaining in popularity. Globalisation brings new opportunities on the international markets, but also new competitors closer to home.

The situation today is that the market is quite fragmented, with some major obstacles and challenges facing companies with ambitions to extend their activities across national borders.

3 Methodology

All the details are given in annexes A and B

3.1 Description of the methodology - Work programme

➤ **The Work programme for the study consisted of five steps:**

- Step 1 Information Research and data collection.
- Step 2 Detailed investigation.
- Step 3 Analysis and synthesis of the different positions.
- Step 4 Debate with European stakeholders – Seminar.
- Step 5 Final report and communication of results of the feasibility study.

The Work programme was carried out following the timetable shown below:

Activity	Month 2007												Month 2008						
	Jan	Fev	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Fev	Mar	Apr	May	Jun	
Step 1	X	X	X	x															
Step 2					X	X	x	x	x IR										
Step 3										X	X	X	x	x	x				
Step 4													x	x	x	X S			
Step 5																	x	x FR	

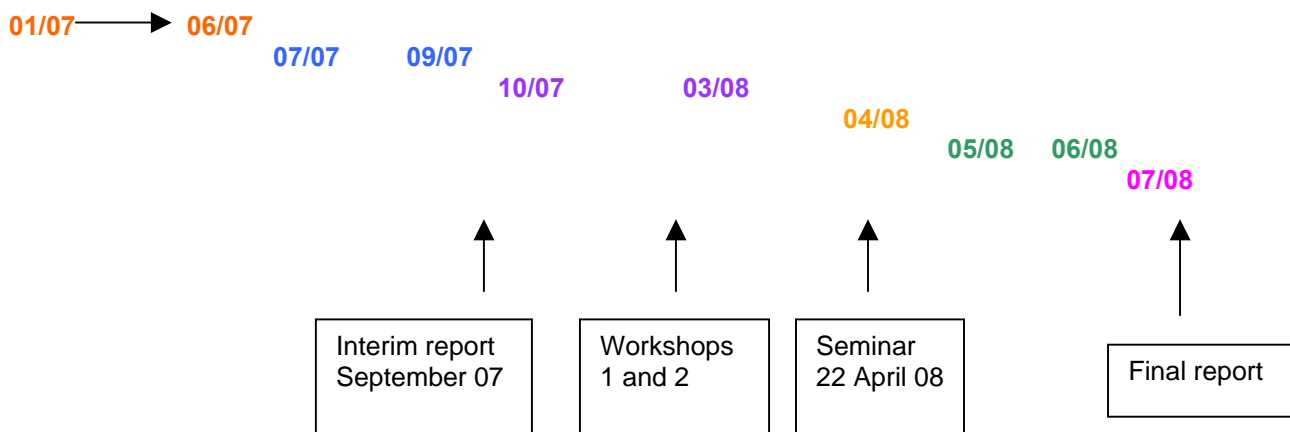
Key:

IR – Interim Report

S – Seminar

FR – Final Report

Research and data collection and results	Detailed investigation and results	Analysis and synthesis of different positions and results	Seminar	Conclusions	Final report
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- **Research and data collection and results**
 - A written **questionnaire** was sent to EFCA members and CEN/NSBs (National standardization bodies).
 - **Studies** were conducted by Syntec-Ingénierie with ENCP and HEI students.
- **Detailed investigation and results**
 - An **analysis** of data, information and studies which were collected during step 1.
 - An evaluation of the **needs**, identification of blocking points and market trends.
- **Analysis and synthesis of different positions and results**
 - Organisation of **2 workshops** to test the feasibility of standardisation.
 - Elaboration of a **synthesis** (First results and proposal).
- **Seminar**
 - Organisation of **a seminar** (22 April 2008) for presenting the first results of the study and for discussing the proposal with other stakeholders.
- **In the Netherlands**, the first 3 steps (Information Research and data collection, Detailed investigation and Analysis and synthesis of the different positions) were performed by NEN.
- **Advantages of the methodology**
This methodology provided some advantages to this study for example:
 - The various ways for collecting data and information have permitted to obtain a lot of information and to match this information.
 - The various methods for analysing the information have permitted to identify and confirm some principal needs, blocking points and market trends.
 - The role and the involvement of our partners - EFCA and Syntec Ingénierie - have given a good input to the study. The EFCA Standardisation Working Party has been set up by EFCA to support the CEN for regular reviews of the project findings, progress and difficulties.
 - The organisation of 2 workshops enabled representatives from industry to discuss items which would be of interest for standardisation.
- **How has this methodology been applied to this study?**
The study covers Engineering consultancy services that apply to the construction sector and industry sector.
 - The work got under way at the beginning of the study (January 2007).
The questionnaire sent to EFCA members and CEN/NSBs covered "Engineering consultancy services" that apply to the sector of construction and industry. However the answers received were mainly devoted to the construction sector. The first studies conducted by the students only focused on the construction sector.
All the main points of the methodology described above were assumed. The interim report gave the results obtained at the end of step 2 for the Construction sector.
 - The investigation for the Industry sector was reinforced in September 2007 and focused on the "Product conception and development" sector. The studies in 5 countries were conducted by Syntec-Ingénierie with the participation of students. The methodology described above was applied: questionnaire, B to B meetings, analysis and identification of the needs. The results were presented during the seminar as was the case for those in the construction sector.

3.2 The main steps of the study

As indicated above, this study involved many actors and partners who contributed to the collection of information and to the discussion and analysis through, in particular, the EFCA/SWP (Standardisation Working Party).

3.2.1 Research and data collection and results

The aim was to collect information from each country on the local market, the situation of the sector, its evolution, its relation and background with standardisation, and the strategies of the engineering firms.

A written questionnaire was sent to all 30 CEN/NSBs (National Standardisation Bodies) and to all 28 EFCA members at the beginning of 2007.

13 EFCA members answered the questionnaire from the following countries: Austria, Belgium, the Czech Republic, France, Finland, Germany, Greece, Italy, the Netherlands, Poland, Romania, Spain and Switzerland.

8 NSBs representing the following countries answered the questionnaire: Bulgaria, France, Germany, Ireland, Lithuania, Malta, Netherlands and Norway.

Participation of students

In the "Construction" sector, the students were asked to collect information in order to facilitate the comparison of the situation of Engineering consultancy services **in 9 countries**: the Czech Republic, France, Germany, Greece, Italy, Poland, Spain, Sweden, and the UK. For that purpose, EFCA member associations identified contacts to assist the students in setting up meetings with national stakeholders. These countries represent a large range of European countries.

In the "Industry" sector, Syntec-Ingénierie conducted the study with the participation of the students. They were asked to collect information in order to facilitate the comparison of the situation of Engineering consultancy services "Products conception and development" in **5 countries**: UK, Germany, France, Italy and Spain. These studies focused on the 3 main industries: Automotive, Aerospace and Rail industry. Syntec-Ingénierie made its network available via its members and the members of its ' Industry ' committee to organise the collection of the information and data and to conduct interviews in the various countries

3.2.2 Detailed investigation and results

During this period we particularly analysed the answers received from the questionnaires from NSBs (National standardisation bodies) and from EFCA members. We also analysed the results of the studies conducted by the students in the countries.

The first comments and interests concerning the field of Engineering consultancy services have been raised and the needs for developing a harmonisation in the field of Engineering consultancy services were identified.

A review of the existing documentation was undertaken in order to identify the factors that influence Engineering consultancy practices.

The discussion with the stakeholders (EFCA members) enables to analyse the European market trends and also to seek some points which could be considered as blocking points in view of the barriers to trade.

Construction

➤ Synthesis of answers from NSBs

The first analysis of the answers received underscores the following:

- there are many standards to be taken into account when delivering Engineering consultancy, **but no specific standards on services**;
- some private tools or specifications exist;
- the standardisation of Engineering consultancy services could contribute to the implementation of the Service directive:
 - providing clarification between the practices of European countries;
 - creating a fair level playing ground;
 - building confidence between clients and service providers especially in relation to small and medium sized businesses.

➤ Synthesis of EFCA answers

EFCA members expressed their needs and interests for this study by answering the questionnaire. The main ideas expressed are given below.

- Harmonisation of the definitions and practices for a better cooperation between the actors.
- Harmonisation of the content of the services to avoid misunderstanding on the content of the services and the real cost.
- Preparation of the international and global competition.
- Standard: a tool for the implementation of the European market.
- Needs for standardisation work.
- Possible content of a standard or any other standardisation document.

➤ Synthesis of Monographs produced by the students in 9 countries

The analysis of the content of the monographs enables to have an overview on the sector in each of the countries, to extract the main elements and to compare with the data collected via the questionnaire.

The following information was analysed in particular:

- the functioning of the market;
- the blocking point at national level;
- the perception of the stakeholders about working in another country;
- the trends of the market.

○ Identification of blocking points

There are many differences in the way that Engineering consultancy services are delivered, and regulated, from one EU country to another. There are also differences in practices depending on the projects, sectors, clients and actors. As a consequence, some of the blocking points for standardisation were identified:

- **Insurance**
- **Liabilities**
- **Laws**
- **Role of the Chambers**
- **Cultural differences.**

- **New trends of the market**

The clients of Engineering consultancy firms are becoming more and more global. They will use services from Engineering consultancy joint ventures made up of various European firms. A preliminary analysis of the trends was made in order to determine whether some favourable conditions for emerging standardization exist. The following trends that point out the need for standardisation were identified:

- **Emergence of new professions** (such as Project management).
- **New fields (environment, sustainable development).**
- **Diversification of competences and cooperation.**
- **New type of contracts (PPP, PFI).**
- **Transfer of competence from central government to regions.**
- **New practices in the EU enlargement countries.**

- **For the Netherlands** the investigation conducted by NEN confirmed what have been underlined in the other countries. (see in annex G the specific report for The Netherlands).

Industry

- **Synthesis of answers from NSBs**

The questionnaire covering the two sectors (Construction and Industry), the answers received were identical to those indicated above.
No specific standard on services.

- **Synthesis of the needs expressed by the Engineering consultancy firms**

The people contacted during this study expressed their needs and interests for this study. The main ideas expressed are given below:

- To develop the opportunities of European exchanges in the consulting in technology. (Common Vocabulary).
- To improve the visibility of the added value provided by the Engineering consultancy firms to clients.
- To harmonise the conditions of work and exercise of the profession within the European Union.
- To obtain a common recognition of the obligations and responsibilities of every participant in the project, in order to reduce misunderstandings, conflicts and to clarify the responsibilities.
- To better clarify the services offered to the client.
- To allow to increase the outsourcing of the services such as the studies and the research work on engineering products.

- **Synthesis of Monographs produced by Syntec Ingénierie in 5 countries**

The study of the monographs enabled to have an overview of the industry sector in each of these countries.

The study was focused on 3 main sectors: Automotive, Aerospace and Rail industry.

The analysis of the information enabled to obtain information on the practices and to identify some blocking points, market trends and needs.

- **Identification of particularities and blocking points**

- **Role and importance of the client**
- **Role of trade and industry associations**
- **Status of Engineer**
- **Cultural differences**
- **Lack of technical resources.**

- **New trends of the market**
 - **Engineering consultancy sector: a strong growth**
 - **Development of outsourcing and co-development of products**
 - **Evolution of the type of contract : development of fixed-price contract.**

3.2.3 Analysis and synthesis of different positions and results

Construction

The first comments and interests concerning the field of Engineering consultancy services were expressed and the needs for developing a harmonisation in the field of Engineering consultancy services were identified during the previous steps.

A review of the existing documentation was undertaken in order to identify the factors that influence Engineering consultancy practices.

The discussion with the stakeholders (EFCA members) enabled to analyse the European market trends and also to seek some points which could be considered as blocking points in view of the barriers to trade.

Therefore, it was decided to hold workshops for further, more in-depth discussions within the Engineering consultancy sector. This period of *internal consultation* within the industry prior to drawing conclusions as to the feasibility of, and need for, standardising Engineering consultancy services enabled to mobilise the various stakeholders from different countries.

Meetings were organised from October 2007 to March 2008 to encourage debate on the topic and work towards a consensus.

- **EFCA/SWP meeting held on 16 October 2007**
The EFCA members approved the content and the first results presented in this interim report.
- **AFNOR/EFCA Workshop 1 held on 12 December 2007: "Functional stages"**
This workshop looked at defining the functional stages of a project, and sought to find agreement on common denominators, using a glossary of key words and terms, to define the activities that take place within each stage.
- **AFNOR/EFCA Workshop 2 held on 22 January 2008**
This workshop focused on the definition of project management, with special consideration for new and emerging services (for example, health & safety co-ordination, energy contracting). This workshop was organised in order to compare trends and practices across Europe and to test the way to work on new project management services. The main question was: What is the added value of Engineering consultancy firms practising project management ?
- **EFCA/SWP meeting held on 26 February 2008**
A meeting was organised with the stakeholders involved in this study (see list in annex 2) with the following objectives:
 - to deliver the outcome of workshops 1 and 2 ;
 - to present the first proposal for standardisation ;
 - to discuss and validate a programme ;
 - to organise the participation of the partners (EFCA and Syntec Ingénierie) in the seminar scheduled for April 2008 with all stakeholders.

Industry

The first comments and interests concerning the field of Engineering consultancy services were expressed and the needs for developing a harmonisation in the field of Engineering consultancy service have been identified.

Initial information on the possible development in this sector was presented to the members of EFCA during the meeting held on 26 February 2008.

3.2.4 Seminar and results

The first purpose of the seminar was to present the conclusions of the study and to obtain feedback and reactions from the interested parties for the 2 sectors: Construction and Industry.

The second purpose was to answer the question: How would standardisation work serve as a means to improve cooperation between all project parties, to avoid misunderstanding on the content and cost of services, and to open up the internal services market ?

The seminar was the opportunity to present the results of this study and to give the floor to the main stakeholders involved or not in the first steps of this study

- Participation : 28 people
 - European Federations: EFCA – FEACO – ACE/CAE – NORMAPME
 - European Commission: DG Enterprise
 - Stakeholders at national level
- Presentation of the first results
The methodology, the organisation and the results obtained at each step were presented throughout the day.
- Debate
Following these presentations, a fruitful debate took place and led to obtaining a consensus on the fact that standardisation work in the field of “Engineering consultancy services” is an adapted solution to answer the needs identified during this study for the 2 sectors: Construction and Industry.

4 Standardisation and engineering consultancy services

4.1 Existing documents and previous initiatives

A review of the existing documentation and data obtained via the questionnaire and the studies was undertaken in order to identify the factors that influence the Engineering consultancy practices.

Construction

- **Standardisation:** There are many standards to be taken into account when delivering Engineering consultancy (design and calculate building/installations on strength, energy performance, fire safety etc.), but no specific standards on services, such as terms and definitions, client information, best practices, guidelines for professionals, content of the service.
Some standards have been developed in the project management and environmental fields.
- **Regulation:** This sector is marked by many regulations applied to public and private markets

- **Other documents:** some specific professions have developed their own tools/specifications regarding project planning/project management, code of conduct/ethical behaviour, contracts, qualification. The role of chambers (Architects, Engineers...) is determining in each country.

Industry - Product conception and development

- **Standardisation:** There are many standards to be taken into account when delivering Engineering consultancy linked to the main activity for example Automotive or Aerospace, but no specific standards on services, such as terms and definitions, client information, best practices guidelines for professionals, content of the service.
Some standards have been developed in the project management and environmental fields.
- **Regulation:** There are very few regulations related to the activities concerning consultancy in industrial technology
- **other documents:** The main companies have developed their own tools/specifications regarding project planning/project management, contracts, quality management.

4.2 European relevance and standardisation strategy

Clients increasingly require the full range of project-related services from the consultancies, e.g. economic, legal, accountancy, financial and other ad hoc services. In addition to advising clients, these skills are required not only in a technical, but also a managerial capacity. For this reason, it is vital that the client, as well as all partners involved in a project, understand the splitting up of the roles, scopes and responsibilities of each partner, during each phase of the project. The challenge of reaching such an understanding cannot be underestimated for working in a foreign country, adhering to foreign regulations, and perhaps unfamiliar contract types, on a multi-national, multi-lingual and multi-sectoral team.

The advantages that standardisation can provide are:

- Increased competitiveness for business
- Greater transparency
- Improved insurance cover
- Higher quality

What can be expected from standardisation?

Standardisation could contribute:

- to limit misunderstandings when working abroad for foreign clients ;
- to improve quality and safety for end-users and clients ;
- to improve the image of the Engineering consultancy profession ;
- to encourage the development of a European insurance market ;
- to facilitate trans-border activities and transfer of human resources ;
- to help EU consultancies to compete more effectively on European and international markets ;
- to improve the visibility of the added value provided by the Engineering consultancy firms to clients and to better clarify the services offered to the client ;
- to harmonise the conditions of work and exercise of the profession within the European Union ;
- to obtain a common recognition of the obligations and responsibilities of every participant in the project.

5 – Conclusions and recommendations

5.1 Conclusions

- The European Commission has given a good input for the realisation of this feasibility study on “Engineering consultancy services”. The EC suggests and encourages the development of a voluntary standard without real specification and specific role for standards.
- The European standardisation is a partner of the legislation and can be considered as a complementary tool to implement the European Directive. Standardisation is made by and for the stakeholders involved in the work.
- The needs expressed by the profession for working on standardisation at European level in the field of Engineering consultancy services have been discussed and have been validated by those present at the seminar.
- The scope will cover the Construction sector and the Industry sector. Concrete items have been identified (2 for Construction and 1 for Industry).
- The project is quite mature to become a proposal:
 - to propose a new field of standardisation to CEN;
 - the way for conducting the work should be a CEN/TC (Technical committee) which is considered as the best solution.

- **The proposal:**

Standardisation in the field of “Engineering consultancy services” is an adapted solution to answer the needs identified during this study. The main objective is to contribute to the implementation of the directive on services and to the development of the European market.

Two sectors are concerned: Construction and Industry.

The European level is put forward prior to international level and CEN offers an adequate structure for working.

A draft work programme is proposed in the 2 sectors:

- **Construction sector**

- Functional stages of a project: a glossary of key words and terms to define the activities that take place within each stage
- Project management: identification and definition of new and emerging project management services

- **Industry sector**

- Functional stages of a project: a glossary of key words and terms to define the activities that take place within each stage

5.2 Recommendations

The proposal is to organise the appropriate conditions to start European standardisation work on “Engineering consultancy services” with the support of EFCA members (in particular Syntec-Ingénierie) and the CEN/NSBs by taking into account the 2 sectors: Construction and Industry.

The creation of a CEN/TC (technical Committee) is recommended.

Support from the European Commission would be helpful for encouraging the participation of all the stakeholders and bringing them together around this project.

5.3 Next steps

An official request (Form A) will be sent to CEN Management Center in September 2008 in order to organise the consultation of CEN/NSBs for launching the creation of a CEN/TC on "Engineering consultancy services".

Annex A

Results and identification of developments for Engineering consultancy services within the Construction sector

A.1 Presentation of the study – Communication paper

Within Europe, barriers to cross-border trade are being broken down. Measures are being taken at EU and national level to facilitate the provision of services in other Member States and to remove obstacles for professionals to work in other countries of the European Union. The goal is to provide a “level playing field” in which businesses can compete openly and fairly, and in which clients and consumers enjoy increased choice, quality and protection.

Engineering services are technical and managerial, comprising a number of complex skills, and interaction with other professions (consultants, clients and contractors) in the design and construction process. For a project to run smoothly, it is fundamental that the role, scope and liabilities of each player are clearly defined, for each phase of the project.

Today, there are differences in the way that Engineering consultancy services are delivered, and regulated, from one EU country to another. At the same time, the number of transnational partnerships is increasing, project delivery timeframes are shortening, and new forms of contracts are gaining in popularity. All of these developments point out the need for some form of standardisation which would provide the following benefits:

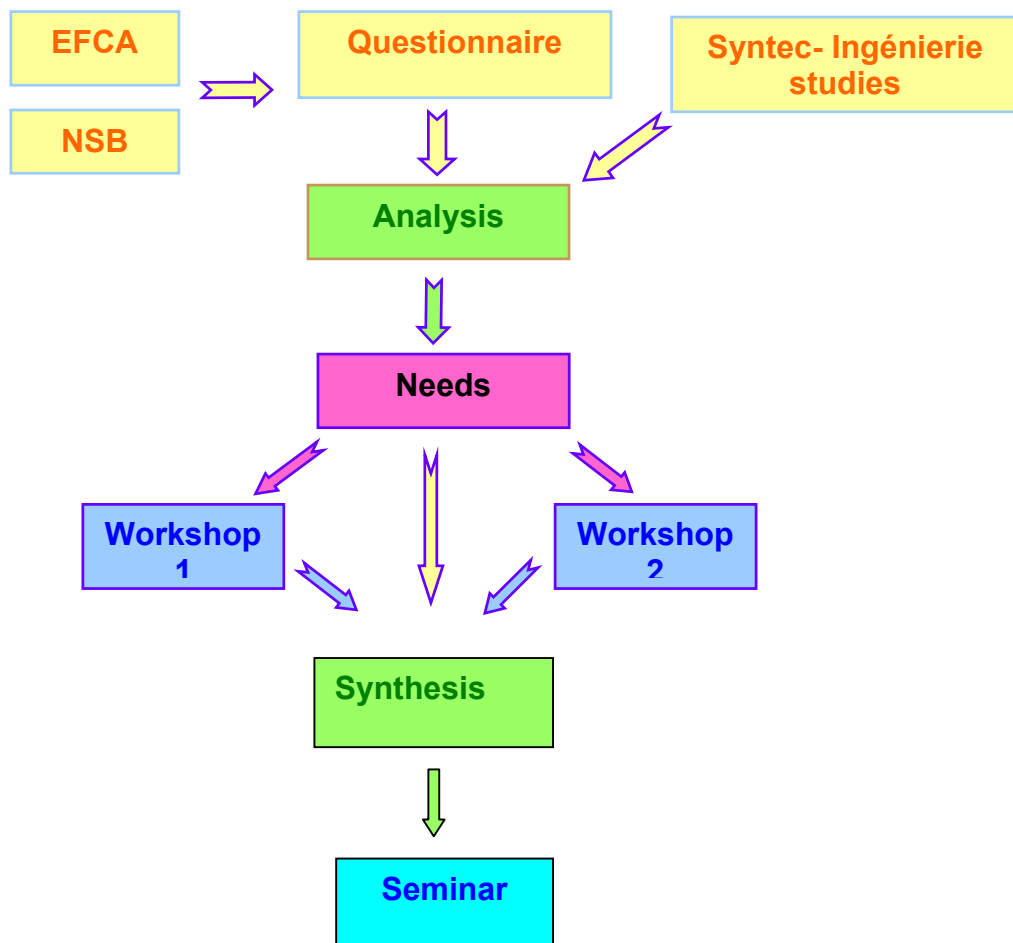
- Clarity in the definition of the scope of the services
- A common recognition of the obligations and liabilities of each discipline within the project, which would reduce potential misunderstandings and conflict
- Increased protection for the client
- Increased competitiveness for businesses, both at European and international level
- Increased visibility of the added value that engineering consultants provide to society.

The study covers Engineering consultancy services that apply to:

- Construction
 - Infrastructures and networks
 - Buildings
 - Industrial units
- Industry (see results in Annex B)
 - Product conception and development
 - Process engineering

A.2 Methodology

- For conducting this study the following methodology was applied:



- A written **questionnaire** sent to EFCA members and CEN/NSBs (National standardization bodies).
- **Studies** were conducted by Syntec-Ingénierie with ENCP students.
- An **analysis** of data, information and studies which were collected during steps 1 and 2.
- An evaluation of the **needs**, identification of blocking points and market trends.
- Organisation of **2 workshops** to test the feasibility of standardisation.
- Elaboration of a **synthesis** (First results and proposal).
- Organisation of **a seminar** (22 April 2008) for presenting the first results of the study and for discussing the proposal with other stakeholders.
- **In the Netherlands**, the first 3 steps (Information Research and data collection, Detailed investigation and Analysis and synthesis of the different positions) were performed by NEN

➤ **Advantages of the methodology**

This methodology provided some advantages for this study for example:

- The various ways for collecting data and information enabled to obtain a lot of information and to match this information
- The various methods for analysing the information enabled to identify and confirm some principal needs, blocking points and market trends
- The role and the involvement of our partners EFCA and Syntec-Ingénierie have given a good input to the study. The EFCA Standardisation Working Party has been set up by EFCA to support the CEN for regular reviews of the project findings, progress and difficulties.
- The organization of 2 workshops has enabled representatives from industry to discuss items which would be of interest for standardisation.

➤ **How has this methodology been applied to this study ?**

The study covers Engineering consultancy services that apply to the Construction sector and to the Industrial sector

- The work got under way at the beginning of the study (January 2007). The questionnaire sent to EFCA members and CEN/NSBs covered "Engineering consultancy services" that apply to the sector of Construction and Industry. However the answers received were mainly devoted to the Construction sector. The first studies conducted by the students only focused on the Construction sector. All the main points of the methodology described above were assumed. The interim report gave the results obtained at the end of step 2 for the Construction sector .
- The investigation for the Industry sector was reinforced in September 2007 and focused on the "Products conception and development" sector. The studies in 5 countries were conducted by Syntec-Ingénierie with the participation of students. The methodology described above was applied: questionnaire, B to B meetings, analysis and identification of the needs. The results were presented during the seminar as was the case for those in the Construction sector.

➤ **The EFCA contribution**

EFCA decided to support the AFNOR project. This approach ties in with the general objective to reduce regulatory and administrative barriers to cross-border service provision (e.g. insurance coverage). The current complex national regulatory regimes and the varying practices and habits which set the framework for the provision of Engineering consultancy services in the Member States tend to dissuade Engineering consultancy firms from cross-border activities. Harmonisation of various practices, and in particular the development of common terminology and scopes of work, may be an appropriate way to remove obstacles to cross-border operations.

An EFCA standardisation Working Party was set up to support the project during the course of the 18-month study. This Working Party will support the project for regular reviews of the project findings, progress and difficulties. Its members represent a wide sample of countries and areas of activity.

➤ **The Syntec-Ingénierie contribution - Participation of final-year project students**

Syntec-Ingénierie decided to support the AFNOR project and to contribute to this study. In order to enhance information gathered in step 1 and to go deeper into the needs and expectations of stakeholders, Syntec-Ingénierie organised and managed the involvement of several students who were conducting their final-year thesis in line with the AFNOR study.

➤ **Coordination with FIDIC, the International Federation of Consulting Engineers**

FIDIC performed a study on the need for definition of Engineering consultancy services This study was motivated by a business-driven goal, to improve business conditions for its members. FIDIC subsequently set up a Task Force to establish definitions for the scope of services in the Engineering

consultancy industry at global level. The Task Force is willing to provide information for the AFNOR study and to learn from the European Union situation as it works towards the development of global "standards".

A.3 The main steps of the study

As indicated above, this study involved a lot of actors and partners who have contributed to the collection of information and to the discussion and analysis through in particular the EFCA/SWP (Standardisation Working Party).

A.3.1 – Research and data collection and results

The aim was to collect information from each country on the local market, the situation of the sector, its evolution, its relation and background with standardisation, and the strategies of the engineering firms.

A written questionnaire was sent to all 30 CEN/NSBs (National Standardisation Bodies) and to all 28 EFCA members at the beginning of 2007.

EFCA members were asked to fill in a questionnaire aimed at having a general picture of the situation in each national country on Engineering consultancy practices. The questionnaire was divided into three sections:

- I) Context, stakes and main stakeholders
- II) Inventory of existing documentation
- III) Perception of development of standardisation at European level.

The aim of section II was to collect existing documentation including:

- information on specific national legal requirements for engineering practice, such as public procurement rules, legal requirements in construction ;
- insurance systems and liability ;
- definition of content/contract forms/fees ;
- qualifications and qualification systems ;
- control organisations ;
- relations to other professions ;
- results of studies (sectorial, comparative, etc.).

In the same manner, the CEN/NSBs were asked to fill a questionnaire to gather information on the context, the stakes and the main stakeholders, the existing documentation (and especially the existing national standards) and to communicate their opinion on the possible need for standardisation and on which topic. The questionnaire was divided into three sections:

- I) Context, stakes and main stakeholders
- II) Inventory of existing documentation
- III) perception of NSB concerning development of standardisation at European level.

13 EFCA members answered the questionnaire from the following countries: Austria, Belgium, the Czech Republic, France, Finland, Germany, Greece, Italy, the Netherlands, Poland, Romania, Spain and Switzerland.

8 NSBs representing the following countries answered the questionnaire: Bulgaria, France, Germany, Ireland, Lithuania, Malta, Netherlands and Norway.

Participation of students

In the “Construction” sector, the students were asked to collect information in order to facilitate the comparison of the situation of Engineering consultancy services in 9 countries: the Czech Republic, France, Germany, Greece, Italy, Poland, Spain, Sweden, and the UK. For that purpose, EFCA member associations identified contacts to assist the students in setting up meetings with national stakeholders.

Study realized in the Netherlands by NEN

NEN was responsible to investigate the Dutch market. This was done by means of a market analysis and interviews with stakeholders. The report gives an overview and position of the Dutch consultancy engineering services market (see in Annex G the NEN report).

A.3.2 Detailed investigation and results

During this period, we analysed in particular the answers received from the questionnaires from the NSBs (National standardisation bodies) and from EFCA members. We also analysed the results of the studies conducted by the students in 9 countries.

The interests concerning the field of Engineering consultancy services and the needs for developing a harmonisation in the field of Engineering consultancy services were identified.

A review of the existing documentation was undertaken in order to identify the factors that influence the Engineering consultancy practices.

The discussion with the stakeholders (EFCA members) enables to analyse the European market trends and also to seek some points which could be considered as blocking points in view of the barriers to trade.

➤ Synthesis of answers from NSBs

The first analysis of the answers received underscores the following.

- There are many standards to be taken into account when delivering Engineering consultancy (design and calculate building/installations on strength, energy performance, fire safety etc.), but no specific standards on services, such as terms and definitions, client information, best practices guidelines for professionals, content of the service.
- Some main companies or some specific professions have developed their own tools/specifications regarding project planning/project management, code of conduct/ethical behaviour, contracts, qualification.
- The standardisation of Engineering consultancy services could contribute to the implementation of the Service directive:
 - providing clarification between the practices of European countries ;
 - creating a fair level playing ground ;
 - building confidence between clients and service providers especially in relation to small and medium sized businesses.

NSBs answered the enquiry (Bulgaria, France, Germany, Ireland, Lithuania, Malta, Netherlands and Norway) and could support possible standardisation projects in this field subject to the need being confirmed by the market. Attention should be paid to the fact that these standardisation projects do not conflict with the requirements of the regulatory framework.

➤ **Synthesis of EFCA answers**

EFCA members expressed their needs and interests for this study by answering the questionnaire. The main ideas expressed are given below:

- Harmonisation of the definitions and practices for a better cooperation between the actors.
- Harmonisation of the content of the services to avoid misunderstanding on the content of the services and the real cost
- Preparation of the international and global competition
- Standard: a tool for the implementation of the European market
- Needs for standardisation work
- Possible content of a standard or any other standardisation document

➤ **Review of documentation**

A review of the existing documentation was undertaken in order to identify the factors that influence the Engineering consultancy practices.

These were distilled into a small set of factors which formed a framework for the subsequent data collection processes:

- main principles ;
- actors (and also the relationships between them) ;
- functional stages (for public and private clients) ;
- related professions (conditions to practice, who organises them) ;
- responsibilities (which actor, for how long, which situation) ;
- insurances (which actor, obligation or use, what they cover) ;
- controls (compulsory or not, who makes them, when, how) ;
- permissions (planning, execution, health and security... Who gives them, how) ;
- legislation (concerning construction and general laws).

This review of existing documentation led us to investigate and specify the fields of intervention, the functional stages in an engineering project, the stakeholders and the potential benefits of standardisation.

A.3.3 Analysis and synthesis of different positions and results

The interests concerning the field of Engineering consultancy services and the needs for developing a harmonisation in the field of Engineering consultancy services were identified during the previous steps.

A review of the existing documentation was undertaken in order to identify the factors that influence the Engineering consultancy practices.

The discussion with the stakeholders (EFCA members) enabled to analyse the European market trends and also to seek some points which could be considered as blocking points in view of the barriers to trade.

Meetings with stakeholders will be held between October 2007 and March 2008 to encourage debate on the topic and work towards a consensus.

The next step was step 3: Analysis and synthesis of the different positions

The aim of this step was to propose a draft document presenting the various positions of the stakeholders and a synthesis.

- **The first objective** of this step was to validate the results presented in the Intermediate Report among the stakeholders who had contributed to this study. This report was sent to the CEN and then to the Commission in September 2007.

EFCA/SWP meeting held on 16 October 2007

A meeting was organised with the stakeholders involved in this study with the following objectives:

- to deliver the first results developed in the interim report ;
- to organise a debate in order to obtain their first reactions and comments ;
- to amend and validate these first results ;

The EFCA members approved the content and the first results presented in this interim report.

- **The second objective** was to organise meetings with stakeholders to encourage debate on the topic and work towards a consensus. These debates would contribute to shape a clear proposal which could be used when presenting the standardisation initiative to other stakeholders (step 4 of this study).

Therefore, it was decided to hold workshops for further, more in-depth discussions within the Engineering consultancy sector. This period of internal consultation within the industry prior to drawing conclusions as to the feasibility of, and need for, standardising Engineering consulting services enabled to mobilize various stakeholders from different countries.

Two workshops were held in December 2007 and January 2008 with the support of our partners (EFCA and Syntec Ingénierie).

AFNOR/EFCA workshop 1 held on 12 December 2007

This workshop looked at defining the functional stages of a project, and sought to agree on common denominators, using a glossary of key words and terms, to define the activities that take place within each stage.

Representatives from Industry and EFCA members participated in the debate which was managed by a consultant. The following countries were represented: Spain, Belgium, France, Poland, Czech Republic (and Germany via a proposal).

Based on the positive progress of the workshop, it can be concluded that the production of a glossary is feasible.

AFNOR/EFCA workshop 2 held on 22 January 2008

This workshop focused on the definition of project management, with special consideration for new and emerging services (for example, health & safety coordination, energy contracting).

This workshop was organized in order to compare trends and practices across Europe and to test the way to work on new project management services.

The main question was: What is the added value of Engineering consultancy firms practising project management?

Based on the positive progress of the workshop, it can be concluded that a definition of project management and the tasks which can be carried out can be considered at European level. The way this function is managed by Engineering consultancy firms or by project management firms as well as the expected benefits should be considered.

- **The third objective** was to validate the outcome of workshop 1 "Functional stages" and workshop 2 "Project management" by EFCA members.

EFCA/SWP meeting held on 26 February 2008

A meeting was organised with the stakeholders involved in this study with the aim:

- to deliver the outcome of workshops 1 and 2 ;
- to present the first proposal for standardisation ;
- to discuss and validate a programme ;

- to organise the participation of partners (EFCA and Syntec Ingénierie) in the seminar scheduled in April 2008 with all stakeholders.

A.3.4 - Seminar

The first purpose of the seminar was to present the conclusions of the study and obtain feedback and reactions from the interested parties for the 2 sectors: Construction and Industry.

The second purpose was to answer the question: How would standardisation work serve as a means to improve cooperation between all project parties, to avoid misunderstanding on the content and cost services, and to open up the internal services market ?

The seminar was the opportunity to present the results of this study and to give the floor to the main stakeholders involved or not in the first steps of this study.

- o **Participation:** 28 people

- European Federations: EFCA – FEACO – ACE/CAE – NORMAPME
- European Commission: DG Enterprise
- Stakeholders at national level

- o **Presentation of the first results**

The methodology, the organisation and the results obtained at each step were presented throughout the day.

- o **Debate**

There were interesting debates throughout the day related to the various presentations and the proposals and conclusion suggested on this subject. The following points were concerned:

- Functioning of CEN and NSBs regarding the role, place and participation of the stakeholders.
- Need to check the presence and involvement of all stakeholders in this work.
- Role and input of the European Commission.
- Standard on services versus quality assurance.
- The scope of the work.
- The work programme.
- The choice of the CEN structure: CEN/TC (Technical Committee) or CEN/CWA (CEN workshop agreement).

- o **Conclusion of the seminar**

Debate was conducted to obtain a consensus on the fact that standardisation work in the field of “Engineering consultancy services” is an adapted solution to answer the needs identified during this study for the 2 sectors: Construction and Industry. The following points were underscored:

- Good input from the European Commission for the realisation of this feasibility study on “Engineering consultancy services”. The EC suggests and encourages the development of a voluntary standard without real specification and specific role for standards.
- European standardisation is a partner of the legislation and can be considered as a complementary tool to implement the European Directive. Standardisation is made by and for the stakeholders involved in the work.
- The needs expressed by the profession for working on standardisation at European level in the field of Engineering consultancy services were discussed and validated by the people present.

- The scope will cover the Construction and Industry sectors. Concrete items were identified (2 for Construction and 1 for industry).
- The project is quite mature to become a proposal and to propose a new field of standardisation to CEN.

A.4 - Key figures in the Construction sector

A.4.1 - Participating countries

The number of participating countries in this study is high: **20 countries**.

The various ways used for collecting data and information contributed to obtaining this score. The tables given below give the link between the countries and how to obtain information. (See details in Annex C.

Answers received from the questionnaire

A questionnaire was sent to all EFCA members and all CEN/NSBs at the beginning of 2007. The following members sent their answers: (more details are given in the interim report):

- **13 EFCA members participated in this study by answering the questionnaire**

- | | |
|-------------------------------------|------------------------------------|
| ○ ACA (Austria) | ○ ORI (Belgium) |
| ○ CACE (Czech Republic) | ○ SKOLry (Finland) |
| ○ SYNTEC Ingénierie (France) | ○ VBI (Germany) |
| ○ HELLASCO (Greece) | ○ OICE (Italy) |
| ○ ONRI (Netherlands) | ○ SIDIR (Poland) |
| ○ ARIC (Romania) | ○ TECNIBERIA/ASINCE (Spain) |
| ○ USIC (Switzerland) | |

- **8 CEN/NSBs participated in this study by answering the questionnaire**

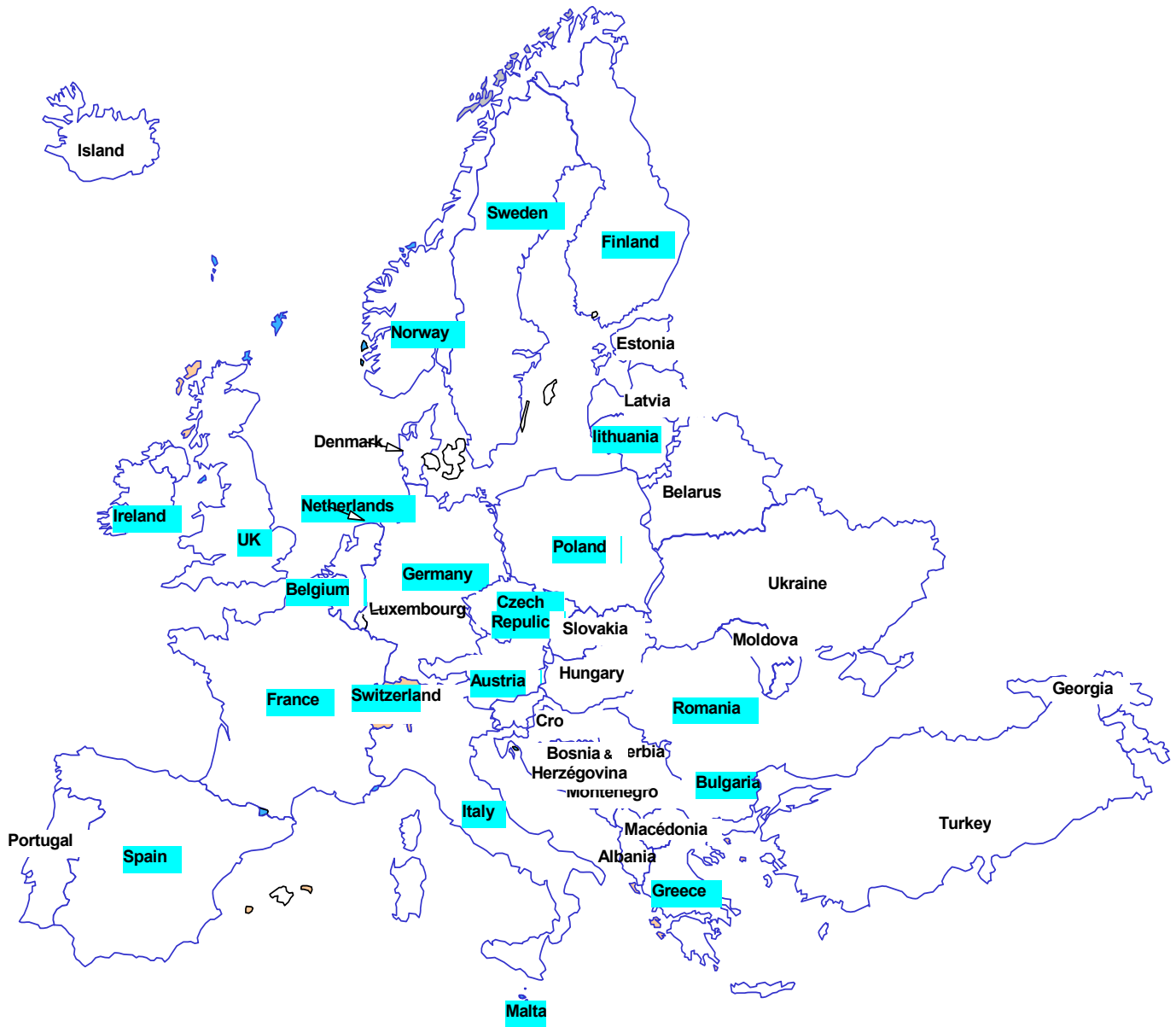
- | | |
|----------------------------|-------------------------|
| ○ BDS (Bulgaria) | ○ AFNOR (France) |
| ○ DIN (Germany) | ○ NSAI (Ireland) |
| ○ LST (Lithuania) | ○ MSA (Malta) |
| ○ NEN (Netherlands) | ○ SN (Norway) |

Other NSBs interested by the results of this study: NBN (Belgium) – SFS (Finland) – MSZT (Hungary) – UNI (Italy) – ASRO (Romania) – SIS (Sweden) – SNV (Switzerland).

Studies conducted by the students

Monographs were produced in the following 9 countries:

- | | | |
|------------------|----------|----------|
| ○ Czech Republic | ○ Greece | ○ Spain |
| ○ France | ○ Italy | ○ Sweden |
| ○ Germany | ○ Poland | ○ UK |



Identification of countries having participated in the study

A.4.2 EFCA/SWP (Standardisation Working Party)

A EFCA standardisation Working Party was set up to support the project during the course of the 18-month study. This Working Party intervened for regular reviews of the project findings, progress and difficulties.

In particular, its members checked all information stemming from the questionnaires and the monographs. They also debated on the following items:

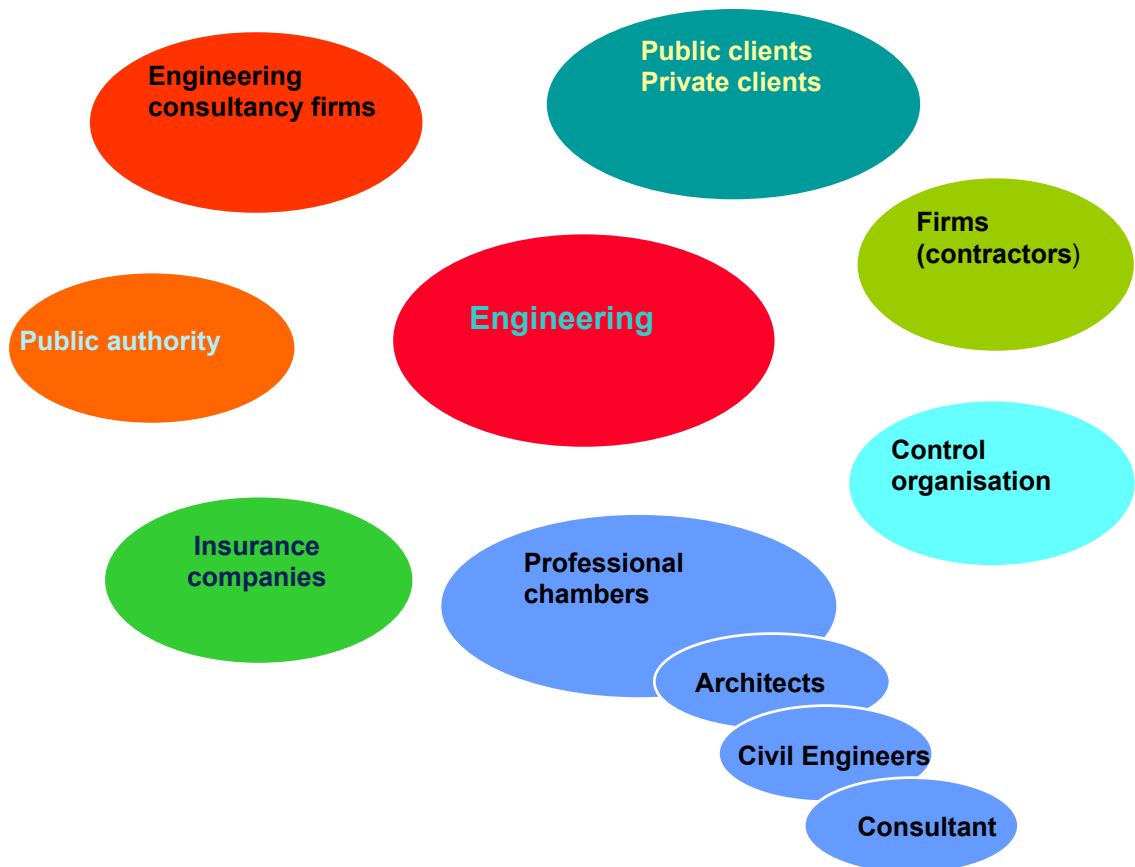
- Field of intervention
- The communication paper
- The functional stages of a project

During the time of the study, EFCA/WP on standardisation met **4 times** and organised **2 workshops**.

A.5 - Results of the study in the Construction sector

➤ The following categories of stakeholders were identified

- Public/private clients
- Engineering Consultancy Firms
- Firms (contractors)
- Public authority (for legal requirements)
- Insurance companies
- Professional chambers
 - Architects
 - Civil Engineers
 - Consultant
- Control organisation



➤ Identification of blocking points

There are many differences in the way that Engineering consultancy services are delivered, and regulated, from one EU country to another. There are also differences in practices depending on the projects, sectors, clients and actors. As a consequence, some of the blocking points for standardisation were identified:

Insurance which is compulsory in some countries and contractual in some others.

Liabilities: the definition is given either by law or by private contract (personnel liability)

Laws: the differences between the laws have an impact on the organisation of the projects.

Role of the Chambers: the various stakeholders (in particular the architects and the engineers) occupy similar functions in the different countries. Nevertheless, their conditions of exercise and their privileges vary. In particular, the presence of professional chambers plays an important role.

Cultural differences, which are probably a greater barrier for competition than “technical” harmonisation of definitions of consulting engineering services.

➤ New trends of the market

The clients of Engineering consultancy firms are becoming more and more global. They will use services from Engineering consultancy joint ventures made up of various European firms. European Engineering consultancy firms working on international markets need consequently to share some common practices in order to be able to combine resources efficiently and thus be ready to face new competitors.

A preliminary analysis of the trends was made in order to determine whether some favourable conditions for emerging standardisation existed. The following trends that point out the need for standardisation were identified:

Emergence of new professions (such as project management)

The increasing complexity of projects leads to the creation of new functions such as "project managers".

New fields (environment, sustainable development)

The emergence of new concepts such as sustainable development or responsible investment brings more and more complex features into projects and small Engineering consultancy firms could find it difficult to convert those concepts into practices.

Diversification of competences and cooperation

Large consultancy firms tend to diversify, thereby diversifying risks and seeking out new markets. There is also a tendency to create alliances and partnerships, so firms can offer a wider range of competences and services.

New type of contracts (PPP, PFI)

The privatisation of the market and the introduction of the private sector into public projects opened up the market to new types of projects, which led to new forms of contracts such as public/private partnership (PPP) or Project Finance Initiative (PFI).

Transfer of competence from central government to regions

More and more projects are being conducted by the regions in European countries for example in Germany, France, Spain, the Czech Republic. Decision-making competences have devolved from national to regional level, which changes the dynamics of market relationships between all stakeholders.

New practices in the EU enlargement countries

In these countries, new laws are in preparation and new models are emerging. In the case of EU funded project, FIDIC contracts were used. These practices are ongoing.

➤ **Results of the consultation of EFCA members concerning their needs and interests for this study**

Harmonisation of the definitions and practices for a better cooperation between the actors.

Importance to have basic rules on the content of a design job. Mainly in the case of cooperation on a project with a foreign company or in the case of subcontracting, it is of the utmost importance that parties understand what to deliver and what to expect.

To have a common language with clients, partners.

Harmonisation of the content of the services to avoid misunderstanding on the content of the services and the real cost

The Engineering consulting business is, largely due to European regulations concerning tendering, becoming more and more an international business. One of the most important preconditions for participation of national Engineering consulting firms in international tenders is a common understanding of the work to be done.

The standardisation of Engineering consultancy services could be an important step in industry within the EU. For example: specification for the design, scope and content of each design phase, standard guidelines of consultancy.

Preparation of the international and global competition

Engineering consultancy activities remains basically national in Europe. This sector, with some exceptions, is not sufficiently prepared to international and global competition. Standardisation should favour the structuring of the European engineering sectors and reinforce ability to compete in Europe with global competitors from outside Europe and to support European industry.

Standard: a tool for the implementation of the European market

The need for a standardisation of Engineering consultancy services is felt for domestic reasons in Italy. We need to bring the requests made by the Public Authorities into uniformity and to know what they are asking exactly for each service. This would be particularly useful for the evaluation of all the offers in public tenders. Of course, standardisation will be useful to implement the European market.

Needs for standardisation work

Standardisation could contribute:

- to limit misunderstanding when working abroad for foreign clients ;
- to improve quality and safety for end users and clients ;
- to raise the image of the engineering consultancy profession ;
- to favour the development of the European insurance market ;
- To facilitate trans-border activities and transfer of human resources ;
- to help EU consultancies to compete more effectively on European and international market.

Possible content of a standard or any other standardisation document

- Terms and definition;
- Specification for the scope and content for each phase;
- Standard guidelines of consultancy services;
- Increasing of the quality of services.

➤ **Results of the consultation of CEN/NSBs concerning their needs and interests for this study**

No specific standard on services

There are many standards to be taken into account when delivering Engineering consultancy (design and calculate building/installations on strength, energy performance, fire safety, etc.), but no specific standards on services, such as terms and definitions, client information, best practices guidelines for professionals, content of the service.

Some standards have been developed in the project management and environmental fields.

Some main companies or some specific professions have developed their own tools/specifications regarding project planning/project management, code of conduct/ethical behaviour, contracts, qualification.

Standard: a tool for facilitating the implementation of the Directive

The standardisation of Engineering consultancy services could contribute to the implementation of the Service Directive:

- providing clarification between the practices of European countries ;
- creating a fair level playing ground ;
- building confidence between clients and service providers especially in relation to small and medium-sized enterprises.

Market needs

NSBs answered the enquiry (Bulgaria, France, Germany, Ireland, Lithuania, Malta, Netherlands and Norway) and could support a possible standardisation project in this field subject to the need being confirmed by the market.

Standardisation/Regulations

Attention should be paid to the fact that these standardisation projects do not conflict with the requirements of the regulatory framework.

➤ **Monographs produced by the students in 9 countries**

The studies conducted by the students were aimed at examining for the Construction sector the differences and the similarities in 9 countries: Czech Republic, France, Germany, Greece, Italy, Poland, Spain, Sweden and UK.

In a first part, it was shown how the principal type of regulation influences the practices. Then these practices were compared with the framework of the control of a project as well as the characteristics concerning the actors. Lastly, the problems related to control, the right of the responsibility and the right of the insurances were examined and compared.

The analyses of the monographs contributed to the identification of blocking points and market trends. (See details in Annex D)

➤ **Identification of items for standardisation**

Two workshops were organised for a more in-depth discussion within the Engineering consultancy sector in order to test the feasibility of working on 2 items:

- functional stages of a project, and sought to find agreement on common denominators, using a glossary of key words and terms, to define the activities that take place within each stage ;
- the definition of project management, with special consideration for new and emerging services (for example, health & safety coordination, energy contracting).

Based on the positive progress of the workshops, it can be concluded that the production of a glossary and a definition of project management and the tasks which can be carried out at European level are feasible.

A 6 Conclusion and proposal

Standardisation in the field of “Engineering consultancy services” is an adapted solution to answer the needs identified during this study.

Two sectors are concerned:

- the Construction sector
- the Industry sector

The European level is put forward prior to international level and CEN offers an adequate structure for working.

The main objective is to contribute to the implementation of the directive on services and to the development of the European market.

A draft work programme is proposed in the 2 sectors:

- Construction sector
 - Functional stages of a project: a glossary of key words and terms to define the activities that take place within each stage.
 - Project management: identification and definition of new and emerging project management services.
- Industry sector
 - Functional stages of a project: a glossary of key words and terms to define the activities that take place within each stage.

Annex B

Results and identification of developments for Engineering consultancy services within the Industry sector

B.1 Presentation of the study

Within Europe, barriers to cross-border trade are being broken down. Measures are being taken at EU and national level to facilitate the provision of services in other Member States and to remove obstacles for professionals to work in other countries of the European Union. The goal is to provide a "level playing field" in which businesses can compete openly and fairly and in which clients and consumers enjoy increased choice, quality and protection.

Engineering services are technical and managerial, comprising a number of complex skills and interaction with other professions (consultants, clients and contractors) in the design and construction process. For a project to run smoothly, it is fundamental that the role, scope and liabilities of each player are clearly defined for each phase of the project.

Today there are differences in the way that Engineering consultancy services are delivered, and regulated, from one EU country to another. At the same time, the number of trans-national partnerships is increasing, project delivery timeframes are shortening, and new forms of contracts are gaining in popularity. All of these developments point to the need for some form of standardisation which would provide the following benefits:

- Clarity in the definition of the scope of services
- A common recognition of the obligations and liabilities of each discipline within the project, which would reduce potential misunderstandings and conflict
- Increased protection for the client
- Increased competitiveness for businesses, both at European and international level
- Increased visibility of the added value that engineering consultants provide for society.

➤ **The study covers Engineering consultancy services that apply to:**

- **Construction** (see in Annex A)
 - Infrastructures and networks
 - Buildings
 - Industrial units.
- **Industry**
 - Product conception and development
 - Process engineering.

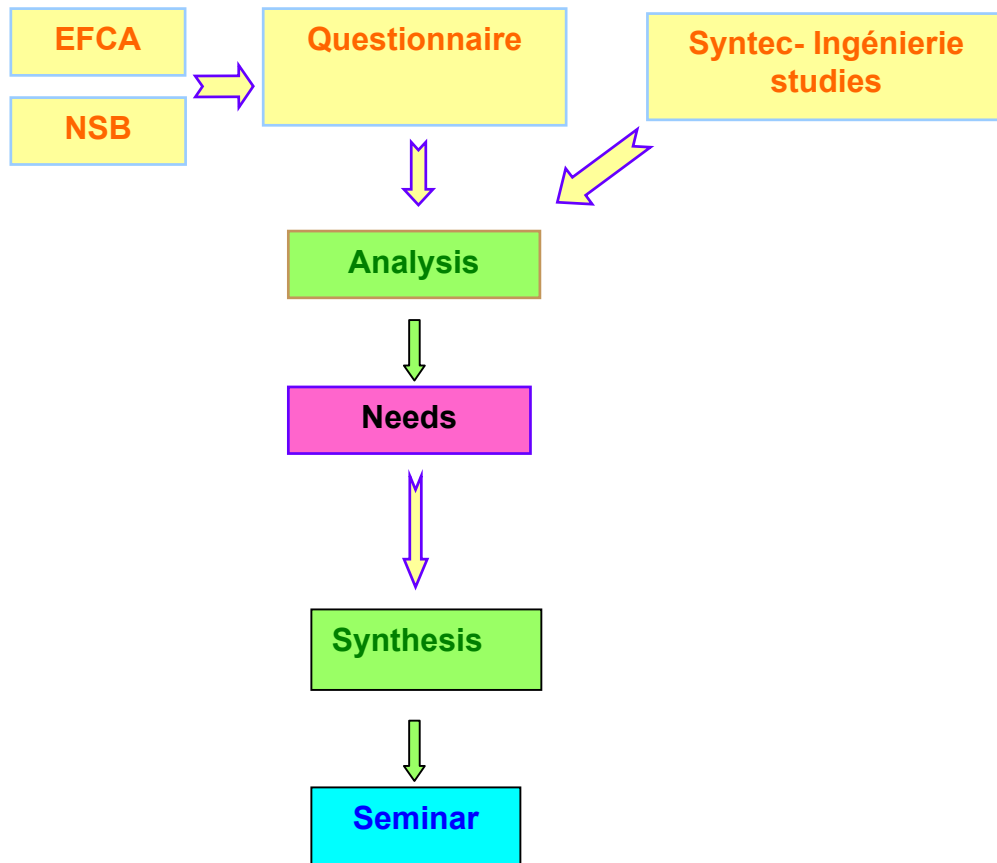
➤ **In the "Industry" sector**, the study was concentrated on "Product conception and development".

The activities of consulting cover all design operations and industrialisation of products and equipments to be manufactured or sold. The activity of consulting in industrial technology is however mainly present in four sectors:

the automotive, aerospace, energy and mechanical industries.

B.2 Methodology

➤ For conducting this part of the study the following methodology was applied :



- A written **questionnaire** sent to EFCA members and CEN/NSBs (National standardisation bodies) at the same time as Construction sector.
- **Studies** conducted by Syntec-Ingénierie with students.
- An **analysis** of the data, information studies which were collected during steps 1 and 2 in particular stemming from the students monographs.
- An evaluation of the **needs**, identification of blocking points and market trends.
- Elaboration of a **synthesis** (first results and proposal).
- Presentation of the first results during the **seminar** (22 April 2008) and discussion with other stakeholders.

➤ **Advantages of the methodology**

This methodology provided some advantages to this study, for example:

- The various ways for collecting data and information enabled to obtain a lot of information.
- The role and the involvement of our partner Syntec Ingénierie have given a good input to the study.

➤ **How has this methodology been applied to this study?**

The study covers Engineering consultancy services that apply to the Construction sector and the Industry sector.

- The work got under way at the beginning of the study (January 2007). The questionnaire sent to EFCA members and CEN/NSBs covered "Engineering consultancy services" that apply to the Construction and Industry sectors. However the answers received were mainly devoted to the Construction sector. The first studies conducted by the students only focused on the Construction sector.
- The investigation for the Industry sector was reinforced in September 2007 and focused on the "Product conception and development" sector. The studies in 5 countries were conducted by Syntec-Ingénierie with the participation of students. The methodology described above was applied: questionnaire, B to B meetings, analysis and identification of the needs. The results were presented during the seminar as was the case for those in the Construction sector.

➤ **The Syntec-Ingénierie contribution - Participation of final-year project students**

Syntec-Ingénierie decided to support the AFNOR project and to contribute to this study. Concerning this part of the study, the involvement of Syntec-Ingénierie was very active and capital for the results. Syntec-Ingénierie, together with the participation of 4 students (who conducted their final-year thesis in line with the AFNOR study) performed the study in 5 countries and drew up monographs for each of them. Syntec Ingénierie made its network via its members and the members of its 'Industry' committee available to organize the collection of information and the data and conduct interviews in the various countries.

B.3 The main steps of the study

B.3.1 Research and data collection and results

The aim was to collect information from each country on the local market, the situation of the sector, its evolution, its relation and background with standardisation, and the strategies of the engineering firms.

A written questionnaire was sent to all 30 CEN/NSBs (National Standardisation Bodies) and to all 28 EFCA members at the beginning of 2007.

EFCA members were asked to fill in a questionnaire aimed at having a general picture of the situation in each national country on Engineering consultancy practices. The questionnaire was divided into three sections:

- I) Context, stakes and main stakeholders
- II) Inventory of existing documentation
- III) perception of development of standardisation at European level.

The aim of section II was to collect existing documentation, including:

- information on specific national legal requirements for engineering practice, such as public procurement rules, legal requirements in construction ;
- insurance systems and liability ;

- definition of content/contract forms/fees ;
- qualifications and qualification systems ;
- control organisations ;
- relations with other professions ;
- results of studies (sectorial, comparative, etc.).

In the same manner, the CEN/NSBs were asked to fill a questionnaire to gather information on the context, the stakes and the main stakeholders, the existing documentation (and especially the existing national standards) and to communicate their opinion on the possible need for standardisation and on which topic. The questionnaire was divided into three sections:

- I) context, stakes and main stakeholders
- II) inventory of existing documentation
- III) perception of your NSB concerning development of standardisation at European level.

The answers received from:

- **13 EFCA members** (representing the following countries: Austria, Belgium, the Czech Republic, France, Finland, Germany, Greece, Italy, the Netherlands, Poland, Romania, Spain and Switzerland).

And

- **8 NSBs** (representing the following countries: Bulgaria, France, Germany, Ireland, Lithuania, Malta, Netherlands and Norway.)

Were mainly devoted to the Construction sector. The majority of EFCA members were more concerned by the Construction sector. It was the reason why it was decided to investigate via studies conducted by Syntec Ingénierie with the participation of students in 5 countries.

➤ **Syntec-Ingénierie studies**

These studies were conducted in

- the 5 following countries: France, UK, Germany, Italy and Spain ;
- the 3 industrial markets: Automotive industry, Aerospace industry and Rail industry.

The method chosen to conduct these studies is based on a questionnaire and B-to-B discussion. The objective of the questionnaire was to collect information on the practices that influence the outsourcing of different services such as studies or research on product engineering. The B-to-B meeting with the firms allowed us to go deeper into the understanding of the market and the practices.

B.3.2 Detailed investigation and results

During this period we analysed in particular the answers received from the questionnaires from NSBs (National standardisation Bodies).

We also analysed the results of the studies conducted by Syntec Ingénierie.

The interests concerning the field of Engineering consultancy services and the needs for developing a harmonisation in the field of Engineering consultancy services have been identified.

A review of the existing documentation was undertaken in order to identify the factors that influence the Engineering consultancy practices.

➤ **Synthesis of answers from NSBs**

The first analysis of the answers received underscores the following.

- There are many standards to be taken into account when delivering consultancy engineering (management standards), but no specific standards on services, such as terms and definitions, client information, best practices guidelines for professionals, content of the service.
- Some main companies or some specific professions have developed their own tools/specifications regarding project planning/project management, code of conduct/ethical behaviour, contracts, qualification.
- The standardisation of Engineering consultancy services could contribute to the implementation of the Service Directive:
 - providing clarification between the practices of European countries ;
 - creating a fair level playing ground ;
 - building confidence between clients and service providers especially in relation to small and medium-sized enterprises.

➤ **Monographs produced in 5 countries (see Annex D)**

The analysis of the content of the monographs enabled to have an overview of the sector in each of the country, to extract the main elements.

The following information was particularly analysed:

- The functioning of the market.
- The particularities and blocking points at national level.
- The perception of the stakeholders about working in another country.
- The trends of the market.

B.3.4 Seminar

The first purpose of the seminar was to present the conclusions of the study and obtain a feedback and reactions from interested parties for the 2 sectors: Construction and Industry.

The second purpose was to answer the question: How would standardisation work serve as a means to improve cooperation between all project parties, to avoid misunderstanding on the content and cost services, and to open up the internal services market?

The seminar has offered the opportunity to present the results of this study and to give the floor to the main stakeholders involved or not in the first steps of this study.

- **Participation:** 28 people
 - European Federations: EFCA – FEACO – ACE/CAE – NORMAPME.
 - European Commission: DG Enterprise.
 - Stakeholders at national level.
- **Presentation of the first results**

The methodology, the organisation and the results obtained at each step were presented throughout the day.

- **Debate**

There were interesting debates throughout the day related to the various presentations and the proposals and conclusion suggested on this subject. The following points were concerned:

- Functioning of CEN and NSBs regarding the role, place and participation of the stakeholders.
- Need to check the presence and involvement of all stakeholders in this work.
- Role and input of the European Commission.
- Standard on services versus quality assurance.
- The scope of the work.
- The work programme.
- The choice of the CEN structure (CEN/TC or CEN/CWA).

- **Conclusion of the seminar**

Debate was conducted to obtain a consensus on the fact that standardisation work in the field of "Engineering consultancy services" is an adapted solution to answer the needs identified during this study for the 2 sectors: Construction and Industry. The following points were underscored:

- Good input from the European Commission for the conducting of this feasibility study on "Engineering consultancy services". The EC suggests and encourages the development of a voluntary standard without real specification and specific role for standards.
- European standardisation is a partner of the legislation and can be considered as a complementary tool to implement the European Directive. Standardisation is made by and for the stakeholders involved in the work.
- The needs expressed by the profession for working on standardisation at European level in the field of Engineering consultancy services were discussed and validated by the people present.
- The scope will cover the Construction and Industry sectors. Concrete items were identified (2 for Construction and 1 for Industry).
- The project is quite mature to become a proposal and to propose a new field of standardisation to CEN.

B.4 Key figures in the “*Industry - Products conception and development*” sector

- **The participating countries**

Five countries and 32 firms participated in this study

The only source for obtaining information and data was the survey conducted in the field and information stemming from studies.

Monographs were produced in the following 5 countries:

- France
- Germany
- Italy
- Spain
- UK

- **8 CEN/NSBs participated in this study by answering the questionnaire**

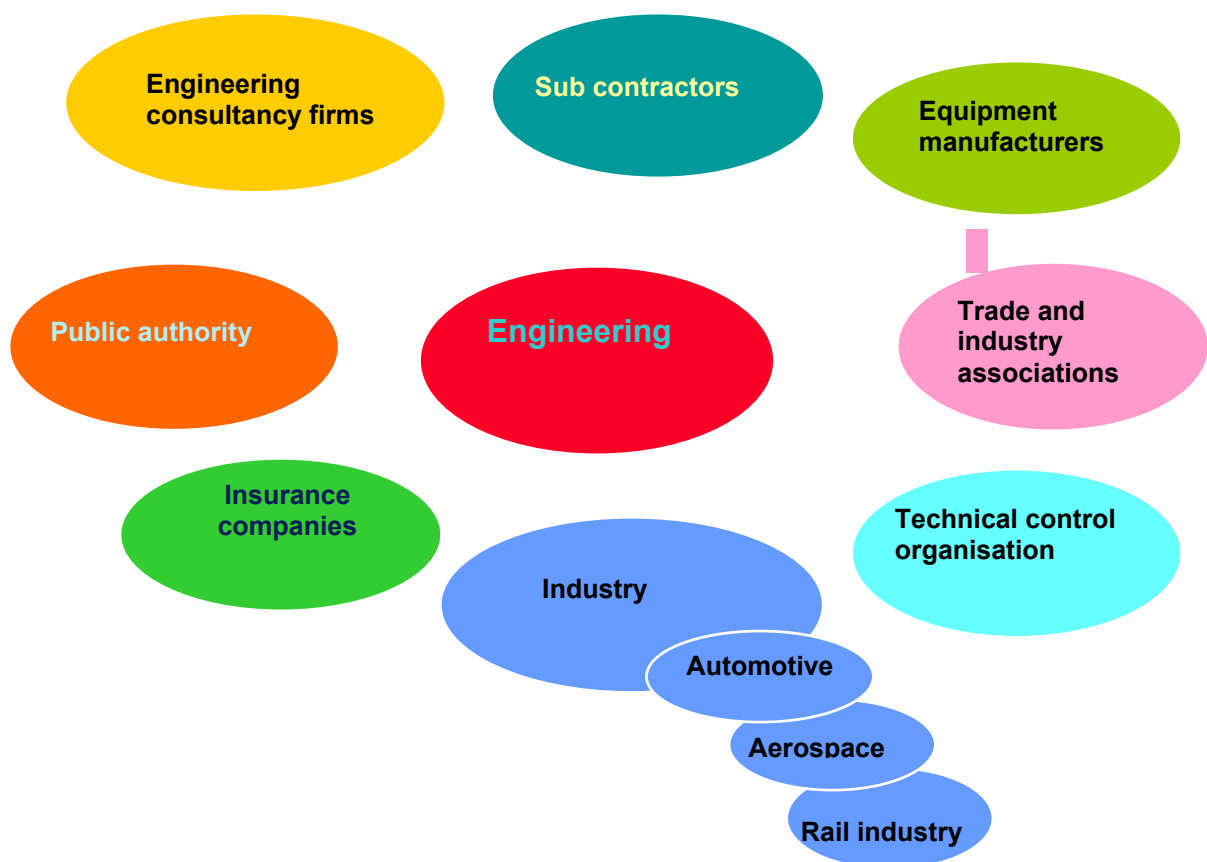
- **BDS** (Bulgaria)
- **DIN** (Germany)
- **LST** (Lithuania)
- **NEN** (The Netherlands)
- **AFNOR** (France)
- **NSAI** (Ireland)
- **MSA** (Malta)
- **SN** (Norway)

Other NSBs interested by the results of this study: NBN (Belgium) – SFS (Finland) – MSZT (Hungary) – UNI (Italy) – ASRO (Romania) – SIS (Sweden) – SNV (Switzerland).

B.5 Results of the study in the “*Industry - Product conception and development*” sector

- The following categories of stakeholders were identified

- Engineering Consultancy Firms.
- Industry (automotive, aerospace... sectors).
- Subcontractors.
- Public authority.
- Insurance.
- Technical control organisations.
- Equipment manufacturers.
- Trade and industry associations.



- **Identification of particularities or blocking points**

There are differences in the way that Engineering consultancy services are delivered, from one EU country to another and from a sector to another. There are also differences in practices depending on the projects, sectors, clients and actors. The following particularities which could influence the delivery of the services were identified.

Role of the client

Clients are often of great importance and for some markets the only one. It is the case for example in the aerospace industry. De facto, the client imposes on its partners its own quality management system, its commercial requirements and its control management system (with or without certification). All the suppliers are requested to apply these requirements (for products or services).

The interest of the Engineering consultancy firms would be to have an harmonisation of the practices and requirements of their clients.

A client can also have different level of requirements depending on the country.

Role of trade and industry associations

These associations play a major role in the promotion of the activities of their sectors. At national level they establish themselves as one of the leading players on the market.

Status of Engineer: no evident recognition of the status (title) of engineer in other countries. This fact is considered as a barrier for the movement of persons.

Cultural differences which are probably a greater barrier for competition than technical harmonisation of definition of Engineering consultancy services. The main problem is the barrier of language and vocabulary.

Lack of technical resources

The "Industry – Products conception and development" sector has increased significantly since several years. The Engineering consultancy firms need more and more specialised technical resources for working on the projects. The recognition of diplomas by the countries and the development of the movement of persons (engineers) would contribute to fill the lack of resources.

An important point has to be noted: 75% of firms have some difficulties for recruiting.

- **New trends of the market**

The clients of Engineering consultancy firms are becoming more and more global. They will use services from Engineering consultancy joint ventures made up of various European firms. The European Engineering consultancy firms working on international markets need consequently to share some common practices in order to be able to combine resources efficiently and thus be ready to face new competitors.

A preliminary analysis of the trends was made in order to determine whether some favorable conditions for emerging standardisation existed. The following trends that point out the need for standardisation were identified

Engineering consultancy sector: a strong growth

The strong growth of the Engineering sector was confirmed by a new study of the BIPE for Syntec-Ingénierie in 2007.

From 1999 to 2005, the average annual growth rate of the Engineering sector amounted to 4,4 % in volume (7 % in value).

The five-year forecasts, for the period 2008-2012, are positive and confirm this tendency not only in France but also in the other European countries.

Development of outsourcing and co-development of products

The pressure on the price given by the clients leads, besides the development of the fixed price services, to the outsourcing of the activities considered as peripheral. Increasing outsourcing of these services has been observed since 1990 in the automotive, aerospace sectors and in some other manufacturing industries in many countries like UK, Germany, France, Italy, Spain.

Among the ordering parties, industries (which belong to the automotive or aerospace sectors) are outsourcing more and more whole or part of their preliminary studies for example in research and development.

The outsourcing of the services is made either by calling upon local companies or on companies in Low Cost Countries.

In 2006, 26 % of consultancy firms delivered services in centres of offshore services (solely or in subcontracting). This share should increase to 41 % in 2009 (IDC study for Syntec-Ingénierie in 2007).

Evolution of the type of contract: development of fixed price contract

Engineering firms may intervene either in the form of technical assistance or at a fixed price . A major element of evolution of this market is the ever-increasing weight that the fixed price services are going to have.

In France in 2006, consultancy firms conducted 58 % of their services at a fixed rate. Under the pressure of the demand, the fixed rate services should represent 64 % of the activity of the consultancy firms (IDC study for Syntec Ingénierie in 2007).

➤ **Results of the consultation of CEN/NSBs concerning their needs and interests for this study**

No specific standard on services

There are no specific standards on services, such as terms and definitions, client information, best practices guidelines for professionals, content of the service.

Some standards have been developed in the project management and environmental fields.

Some main companies or some specific professions have developed their own tools/specifications regarding project planning/project management, code of conduct/ethical behaviour, contracts, control and qualification.

Standard: a tool for facilitating the implementation of the Directive

Standardisation in general could contribute to the implementation of the Service Directive:

- providing clarification between the practices of European countries ;
- creating a fair level playing ground ;
- building confidence between clients and service providers especially in relation to small and medium-sized enterprises.

Market needs

NSBs answered the survey (Bulgaria, France, Germany, Ireland, Lithuania, Malta, Netherlands and Norway) and could support a possible standardisation project in this field subject to the need being confirmed by the market.

➤ **Monographs produced by Syntec-Ingénierie (and students) in 5 countries**

The studies were aimed at examining for the "Industry - Products conception and development" sector the differences and the similarities in 5 countries: France, Germany, Italy, Spain and UK. For each country the main elements are given below : see tables in Annex D)

- **Stages of a project**

In the following table the common basic design stages conducted by the Engineering consultancy services were identified in each of the 5 countries.

Assistance for definition of needs (marketing studies, product/systems plan, technical/functional objectives)	-
Specifications and project management	+
Feasibility studies	+
Development (conception, development, improvement)	+++
Prototyping, tests and validation	+++
Product life cycle: product, quality and performance improvement	++
Production support and assistance for industrialization process	+
Safety and Maintenance in Operating Conditions	++

It has to be noted that detailed design process is more or less specific to each industry or country

- **Needs for standardisation work – Identification of the advantages**

Standardisation may contribute:

- To develop the opportunities of European exchanges in consulting in technology. (Common Vocabulary).
- To improve the visibility of the added value provided by the Engineering consultancy firms to the clients.
- To harmonize the conditions of work and exercise of the profession within the European Union.
- To obtain a common recognition of the obligations and responsibilities of every participant in the project, in order to reduce misunderstandings, conflicts and to clarify the responsibilities.
- To better clarify the services offered to the client.
- To allow to increase the outsourcing of the services such as the studies and the research work in the engineering products.

➤ **Identification of items for standardisation**

There is a strong demand for:

- A common glossary of Engineering consultancy services to industrial production. The main aim is to reduce misunderstandings and conflicts between the actors.
- An harmonisation of functional stages as common references in order to improve cross-border cooperation.
- A clarification on liability according to scope of work which has to be elaborated in connection with the clients: aerospace, automotive industries.

B. 6 Conclusion and proposal

Standardisation in the field of "Engineering consultancy services" is an adapted solution to answer the needs identified during this study.

Two sectors are concerned:

- *the Construction sector*
- *the Industry sector.*

The European level is put forward prior to international level and CEN offers an adequate structure for working.

The main objective is to contribute to the implementation of the directive on services and to the development of the European market.

A draft work programme is proposed in the 2 sectors:

- *Construction sector*
 - Functional stages of a project: a glossary of key words and terms to define the activities that take place within each stage.
 - Project management: identification and definition of new and emerging project management services.
- *Industry sector*
 - Functional stages of a project: a glossary of key words and terms to define the activities that take place within each stage.

Annex C

List of CEN/NSBs and EFCA members by country

This document gives the names of EFCA members and CEN/NSBs which have answered the questionnaire.

A list of contacts and the data for each of the above members is given in Annex E.

Country	EFCA members	CEN/NSBs	<i>CEN/NSBs * Interested by the results of the study</i>
Austria	ACA		
Belgium	ORI		NBN
Bulgaria		BNS	
Czech Republic	CACE		
Finland	SKOLry		SFS
France	SYNTEC Ingénierie	AFNOR	
Germany	VBI	DIN	
Greece	HELLASCO		
Hungary			MSZT
Ireland		NSAI	
Italy	OICE		UNI
Lithuania		LST	
Malta		MSA	
Netherlands	ONRI	NEN	
Norway		SN	
Poland	SIDIR		
Romania	ARIC		ASRO
Spain	TECNIBERIA/ASINCE		
Sweden			SIS
Switzerland	USIC		SNV
UK			

Some of CEN/NSBs are interested by the result of the study. However they indicated that they had no activity in this area at national level and they had some difficulties for collecting information and data. They have to identify and establish contacts with the firms or associations representing the sectors of engineering consultancy services

Annex D

Overview of the information collected in the countries

<i>Construction sector</i>	<i>Industry sector</i>
The Czech Republic France Germany Greece Italy Poland Spain Sweden United Kingdom	France Germany Italy Spain UK Market: Aerospace – Automotive – Rails industry

First part: Construction sector

The Czech Republic

<i>General and legal frame</i>		Both legal and under contract Laws still changing		
		Client	Consultant	Contractor
<i>Preliminary studies</i>	<i>Public</i>			
	<i>Private</i>			
<i>Design</i>	<i>Public</i>	Participation of the public	FIDIC in infrastructures and environment. Best offer	
	<i>Private</i>		Authorized professional (Architect or Engineer)	Sometimes, general company
<i>Execution</i>	<i>Who</i>		Authorized professional. Client's supervision or design too	Company or individual (qualification). Authorized professional responsible for management. Construction log
	<i>How</i>			
<i>Control</i>	<i>What</i>	New building Act Building inspection Safety and health Environment Construction log		
	<i>Who</i>	Authorized Engineers Inspectors Ministry of Regional Development, Local Authorities, Ministry of Industry		
<i>Permits</i>		Building permit (approvals of local authorities and planning documents) Permission to use in the end		
<i>Liability</i>	<i>General</i>	<i>Main contractor</i> is responsible with the client Responsibility transferred to physical persons (design, management) 3-5 years liability (under contract) for latent defects. Latent defect liability period (12-24 months usu)		
	<i>Building</i>	2 years for houses		
	<i>Infrastructure</i>	5 years for infrastructure		
<i>Insurance</i>		Every member must be insured liability for damages authorized people can be assured independently (chamber) or by the company. General insurance taken by firms No obligation of insurance for latent defects (it is not even common) Insurance frequent for public projects		
<i>Main points</i>		No PPP projects for the moment Chambers Transfer of competences to regional bodies Prices going down		

France

<i>General and legal framework</i>		System mainly based on law for public project, liability and insurance.		
		Client	Consultant	Contractor
<i>Preliminary studies</i> <i>"Esquisse" and APS</i>		Possible for public client	AMO: Project management now possible by private consultant	BOT/New contracts
<i>Design</i> <i>APD-PRO</i> <i>ACT-V</i>		No	Public or private Integrated team Engineer (no regulated) Architect (regulated)	BOT/New contracts
<i>Execution</i>	<i>Who</i>	No	Seldom for execution drawings Project management	General contractor
	<i>How</i>			
<i>Control</i>	<i>What</i>	Structure: Quality, safety, fire for building for public or tall buildings		
	<i>Who</i>	Private society: Veritas,... Authorities		
	<i>When</i>	During the whole process Special mission: Visa		
<i>Permits</i>	<i>What</i>	Building permit: in accordance with urbanism rules Ask only by an architect		
	<i>Who</i>	Municipality		
	<i>When</i>	In practical, at the stage of APS		
<i>Liability</i>	<i>Who</i>	Consultants Contractors		
	<i>What/time</i>	1 year responsibility: all damages 2 years responsibility: damages 10 years responsibility: hidden damages without mistake		
<i>Insurance</i>	<i>Who</i>	For consultants and Contractor: insurance for responsibility For private client: insurance for latent defects		
	<i>What</i>	Compulsory by law		
<i>Main points</i>		Design and execution are not clearly different Protection of the Architects Liability and insurance define by law Spinetta		

Germany

<i>General and legal framework</i>		Contract based on BGB VOB and VOF for public projects. HOAI for fees and LBO for control		
		Client	Consultant	Contractor
<i>Preliminary studies Phases 1-2</i>		Infrastructure (Public)	Projectsteuerer Integrated teams for private projects	General planner
<i>Design Phases 3-5 Public Private</i>		No	Architect TU Engineer TU Techn Architect FH Tech. Engineer FH	General planning
<i>Execution</i>	<i>Who</i>	No	Projectsteuerer	Yes
	<i>How</i>			
<i>Control</i>	<i>What</i>	Structure: LBO: norm, quality, safety		
	<i>Who</i>	Structure: Prüfenieur LBO: Kreis		
	<i>When</i>	Stage 4: "Genehmigungsplanung" at the end of the design		
<i>Permits</i>	<i>What</i>	Building permit Receipt		
	<i>Who</i>	Kreis or Town		
	<i>When</i>	Stage 4: "Genehmigungsplanung" at the end of the design ask by engineer or architect		
<i>Liability</i>	<i>Who</i>	People who sign (Prüfenieur) In general, defines by contract according BGB		
	<i>Building</i>	Private: 5 years Public: 2 years (VOB)		
	<i>Infrastructure</i>	Private: 1 year Public: 1 year (VOB)		
<i>Insurance</i>		Cover by a system of guarantee		
	<i>Building</i>	Not compulsory		
	<i>Infrastructure</i>	Not compulsory		
<i>Main points</i>		Design and execution are clearly different Importance of the Chambers in each Land		

Greece

<i>General and legal framework</i>		Law 3316/2005 for services and law 1418/1984 for works Importance of the Technical chamber of Greece TEE		
		Client	Consultant	Contractor
<i>Preliminary studies Different stages according the nature of the project</i>		<i>Public</i> : Classification of people and societies in 5 classes.	Not involved directly in design	Preparatory studies often made for public projects
		<i>Private</i> : Compulsory to be registered at the TEE		
<i>Design Different stages according the nature of the project</i>		<i>Public</i> : Classification of people and societies in 5 classes	Not involved directly in design except for concession	Not directly involved
		<i>Private</i> : Compulsory to be registered at the TEE		
<i>Execution</i>	<i>Who</i>	No	Yes, law 1418	
	<i>How</i>			
<i>Control</i>	<i>What</i>	Fire Sismic risks		
	<i>Who</i>	Army/firemen State: legal framework Municipality: technical specifications		
	<i>When</i>	For the building permit At the End of the project		
<i>Permits</i>	<i>What</i>	Public: building permit: paleodomiki adia Private: paleodomiko graphio		
	<i>Who</i>	Architect, civil engineer and electromechanical engineer 3 drawings		
	<i>When</i>	Second stage by the engineer responsible of the project		
<i>Liability</i>	<i>Who</i>	People who sign the project Contractor: until 25 years in justice Consultant: until 6 years		
	<i>What/time</i>	Art 688, 689 and art 693 civil code 15 months for guarantee of perfect completion 3 years for maintenance of public building 10 years for damages		
<i>Insurance</i>	<i>Building</i>	Private: not compulsory ; failure of a recent project af law Public: not compulsory, but begin to be requested by contract.		
	<i>Infrastructure</i>			
<i>Main points</i>		Design and execution are clearly different For liability: defined by law but often modified by contract		

Italy

<i>General and legal framework</i>		System mainly based on law: "legge Merloni" and "Decreto legislativo163"		
		Client	Consultant	Contractor
<i>Preliminary studies (Programmazione and progetto preliminare)</i>		Public or important Private one	More and more often in the case of traditional stages or LSTK formula	Seldom for the impresa in a traditional way; Often for BOT
<i>Design -Progetto definitivo)</i>		More and more seldom	Always Architect Compulsory in certain cases	Seldom for the impresa in a traditional way
<i>Execution</i>	<i>Who</i>	Never except sometimes project management	Never	Yes
	<i>How</i>			
<i>Control</i>	<i>What</i>	Law Merloni 4 Monitor according the different laws and rules for publics projects		
	<i>Who</i>	L'Autorita per la Vigilanza sui lavori pubblici Direttore dei lavori contro the procedure of construction		
<i>Permits</i>	<i>What</i>	Building permit: permesso di costruire for private project Piano regulore for public project		
	<i>Who</i>	According the project, Client (comittente), engineer or architect can ask.		
	<i>When</i>	Conferenza dei Servizi at the end of progetto preliminare.		
<i>Liability</i>	<i>Who</i>	Designer and contractor Importance of the progettista who sign the project		
	<i>What/type</i>	Define by 2 articles of the civil code: 1667 and 1668		
	<i>Time</i>	10 years for the contractor or consultant with fault.		
<i>Insurance</i>	<i>Public</i>	Compulsory with a system of guarantee for the consultant (law 109/94) and contractor		
	<i>Private</i>	Non compulsory For building, direct consequence of the law 210/04		
		System of guarantee		
<i>Main points</i>		Design and execution are clearly different Importance of the "progettista" who sign the project		

Poland

<i>General and legal frame</i>		Mainly legal Legal framework still changing		
		Client	Consultant	Contractor
<i>Preliminary studies</i>	<i>Public</i>	He makes the most of it.	FIDIC contracts	
	<i>Private</i>	Depending on his knowledge.	Depending on the contract.	In some private projects
<i>Design</i>	<i>Public</i>		Authorized Engineer. Defined in the building Act	
	<i>Private</i>			
<i>Execution</i>	<i>Who</i>	Almost no possibility of modifications. Control	Client's supervision	CM must fulfill the Construction Log. Tasks, obligations in the Building Act
	<i>How</i>			
<i>Control</i>	<i>What</i>	Continuous control Construction log BIOZ (H&S) PZJ (quality) WIOZ (environment) Environment, fire, work and hygiene inspections before Occupancy permit		
	<i>Who</i>	Authorized professionals, public Administration		
<i>Permits</i>		Planning permit (zoning plans) Building permit (many documents) Occupancy permit (environment, fire, work and hygiene inspections)		
<i>Liability</i>		Authorized Engineer or Architect signing the design Authorized Engineer or Architect signing works management Building Act defines them 1 year defect liability period, under contract 3 year period for construction (contractor responsible) Civil liability for persons practicing "independent technical functions" Work coordinators for 3-6 years if negligence Unlimited liability on latent defects		
<i>Insurance</i>		persons practicing "independent technical functions" must be insured (PII). Building company, "Basic Obligatory Guarantee". In the Civil Code. Responsible for the building for 3 years. Builder, responsible for life (limit of 50.000€).		
<i>Main points</i>		Many obligations Many public control No PPP projects for the moment FIDIC Chambers, obstacle for foreigners		

Spain

<i>General and legal frame</i>		Both legal and under contract		
		Client	Consultant	Contractor
<i>Preliminary studies</i>	<i>Public</i>	Information	studies	
	<i>Private</i>			
<i>Design</i>	<i>Public</i>	Supervision	After bidding Specified in the LCE	
	<i>Private</i>		Specified in LOE for housing. Other, in the different acts	General firm for some projects
<i>Execution</i>	<i>Who</i>		Client's supervision	Project Manager: Director de obra
	<i>How</i>		Quality control	
<i>Control</i>	<i>What</i>	Obligatory: materials, H&S Not obligatory: quality		
	<i>Who</i>	OCT and laboratories Engineers signing		
<i>Permits</i>	<i>What</i>	Permiso de obra: building permit Licencia de funcionamiento: final issuing Specific permits		
	<i>Who</i>	Everybody can ask for them. But, "visados" (issued by the competent Chamber), delivered to Engineers or Architects.		
	<i>When</i>	Permiso de obra: before starting construction Licencia de funcionamiento: before use		
<i>Liability</i>		Engineer or Architect signing the design Engineer or Architect signing works management Managed under contract 10 years for contracts liabilities 1 year for public/tortuous Liability 1 year for Personal Injuries claims		
	<i>Building industry</i>	Ley de ordenacion del territorio (building Act) All actors liable: 1 year for latent defects 3 years habitability 10 years solidity		
	<i>Infrastructures</i>	Acts concerning each field define guarantee periods Tendency to ask for longer periods Caps 15 years latent defects liability for the contractor (LCE)		
<i>Insurance</i>	<i>General</i>	PII: Architects, Engineers, policy (Chambers). 2 years "Visados" give guarantees Global insurances Guarantee sums also possible		
	<i>Building</i>	10-year guarantee insurance obligatory (client)		
	<i>Infrastructure</i>	High levels of insurance usually required.		
<i>Main points</i>		Reduction of obligations – Regionalism – Chambers		

Sweden

<i>General and legal framework</i>		Both under contract (professional) or law (Consumer-Private Client) Contact ABK 96 (consultant), AB92/06 Law PBL		
		Client	Consultant	Contractor
<i>Preliminary studies</i>	<i>Public</i>	Yes, public sometimes	Yes, contract ABK 96	Yes, contract ABT 94/06 AB92/04
	<i>Private</i>			
<i>Design</i>	<i>Public</i>	Yes	Yes, contract ABK 96	Yes, contract ABT 94/06 AB92/04
	<i>Private</i>			
<i>Execution</i>	<i>Who</i>	No	No except Construction Client	Yes, contract AB 92/04 ABT 94/06
	<i>How</i>			
<i>Control</i>	<i>What</i>	Law PBL : security, consumer protection According AB inspection whose slutbesiktning (final inspection)		
	<i>Who</i>	Under the responsibility of the client (PBL law): control protocol Local Authorities verify it is completed.		
<i>Permits</i>	<i>What</i>	Law PBL: rules for the consumer protection.		
	<i>Who</i>	Local Authorities		
<i>Liability</i>	<i>Who/time</i>	Consultant ABK 96: 10 years after final completion; Contractor: AB 04: 5years (2for AB 92 and material) and until 10 years if negligence Contractor ABT 06:		
	<i>Building</i>	Konsumenttjänstlagen 1985:716: 10 years guarantee against latent defects for the client (compulsory)		
	<i>Infrastructure</i>	By contract		
<i>Insurance</i>	<i>Who/time</i>	Contractor AB 92 and AB 04:two insurances compulsory (allriskförsäkring, 2 years and ansvarsförsäkring 10 years) Consutant ABK 96: compulsory 10 years		
	<i>Building</i>	Lag om Byggfelsförsäkring 1993: insurance compulsory during 10 years for the client against latent defect AB 04: allskförsäkring during the project Ansvarsförsäkringen		
	<i>Infrastructure</i>	By contract		
<i>Main points</i>		Contract: Allmänna Bestämmelser AB according to the type actors		

United Kingdom

<i>General and legal framework</i>		Under contract Case Law Proven fault	
		Client	Consultant Contractor
<i>Preliminary studies</i>		A contract signed with each player	Their tasks depend on the type of contract. Traditional, design & build, management, partnering...
<i>Design</i>			Traditionally, Architects or Engineers New professions
<i>Execution</i>	<i>Who</i>	Depending on his knowledge	New professions for economical, contract, management: PM, surveyors...
	<i>How</i>		
<i>Control</i>	<i>What</i>	Health and Safety	
	<i>Who</i>	Health & Safety Executive, planning supervisor	
<i>Permits</i>		Planning permission: urbanism control issued by the local Authority. Health and Safety plan	
<i>Liability</i>		6 years in contract actions 12 years under seal actions 6 years in tort actions All liabilities, managed under contract but to thirds Workmanlike manner Reasonable care and skills fitness for the purpose Professionals: prosecuted by mistakes in their profession for 10 (Criminal Law) or 15 years (Civil law)	
<i>Insurance</i>		The only compulsory insurances are public liability and employer's liability ARB imposes it to Architects (PII) Insurances depending on contracts Not common to take a global insurance NHBC for the protection of users (housing) Guarantee period after completion	
<i>Main points</i>		Common Law Many standard contracts Evolutions	

Second part: Industry sector

This part provides some information on the organisation of the market and the main stakeholders involved by country in the following markets:

- ✓ Aerospace
- ✓ Automotive
- ✓ Rails industry

This information is not exhaustive and should be deeper investigated in particular for the list of firms given for each country.

Aerospace	France	Italy	UK	Germany	Spain
Associations	Syntec-Ingénierie	OICE - CNI	ACE – ECUK -ETB	VBI	Techniberia
Public authority	DGAC		UK civile aviation authority		
Trade and industry associations	GIFAS	AIAD	SBAC	BDLI	ATECMA
	3AF	AIDAA	RAeS	DGLR	COIAE
				ALROUND	
Industry	- Airbus EADS - Safran - ATR – Dassault Aviation- SNECMA, Thales – Eurocopter	-Finmeccanica	Airbus UK,	Airbus	EADS casa- Airbus – Eurocopter - Aernnova
Equipment manufacturers	Latécoptère, Messier Bugatti – Zodiac - Goodrich – Actuation – Systems	Agusta – Avio- Piaggio - Galileo	BAE Systems- Rolls-Royce - Bombardier aerospace - Smith group	Dallach - WD Flugzeugleichtbau – DASA - BAE system - Airbus - DG Flugzeugbau - Fieseler Flugzeugbau - Glasflügel, Kaiser Flugzeugbau GmbH - Diehl – Smiths – Liebherr - Safran - Thales	ITP – INDRA - Aries Complex - Iberia Mantenimiento
Engineering consultancy firms	Akka technologie – Altran – ABMI – Assystem – Alten – Segula -Sogeti High Tech - Teuchos	Assystem Italia - Rucker Italia - Tecnosistem - Selex Communications – Ansaldo Ricerche – Revelli - Alten	Atkins - Atos Origin - Cimpa – CS – Geci - GKN – Hyde - Labinal Group – Rucker - Altran Group – Assystem - ABMI	- Aerospace Group – INC – Assystem Aerospace Germany - Aviation Consulting Services - - Lufthansa Consulting - Powerplant & Aircraft Consulting Aerospace -	CT Ingeniería – Aeroconseil Iberica – Geci – Grupo TAM – Edag Sigma – GKN – Sener Aerotech Engineering – SMA - Alten
Standards	ISO 9001 - EN 9100 - EN 9200	ISO 9001 - EN 9100 - EN 9200		ISO 9001 - EN 9100 - EN 9200	ISO 9001 - EN 9100 - EN 9200

Automotive	France	Italy	UK	Germany	Spain
Associations	Syntec-Ingénierie	OICE - CNI	ACE – ECUK -ETB	VBI	Tecniberia
Trade and industry associations	CCFA		SMMT	VDA	ANFAC
	FIEV - SFEPA		ADF GAU		SERNAUTO
Industry	Renault – PSA - etc	Fiat	BMW –Ford General motors – Honda –Nissan –Toyota - Volkswagen	Volkswagen – Mercedes-Benz Audi - BMW.	PSA Peugeot – Volkswagen – General Motors Espana – Ford – Renault - Nissan
Equipment manufacturers	Valeo - Faurecia – Visteon – Bosch — Autoliv SAS - Delphi France – SAS - Hutchinson SA - Saint Gobain Sekurit – Siemens VDO Automotive	Comau – TEKSID – Brembo – LPR – Bassano – Sogefi - Fiamm	A lot of firms	Bosch - ZF Friedrichshafen – ThyssenKrupp automotive – Continental - Siemens VDO Automotive	– Siemens - Ames – Antolin – Ayatts – Castrosua – Cie Automotive – Estampaciones Sabadell – Fagor Ederlan – Ficosa International – Fainsa – Gestamp – Autoliv — Delphi - Etc.
Engineering consultancy firms	Edag – Bertrandt - Assystem Altran - Alten	Magna Steyr Italia – Akka Italia – Assystem Italia - Tecnosistem SPA - Alten	Ricardo – Atkins -	Bertrandt, - Rücker – Assystem Germany – Ricardo - Wahler –Geci – Zelzer - Ferchau	Antolin - CT Ingeniería – GKN - Rücker Lypsa - A+ - Fundación CTAG – Assystem - Alten
Standards	ISO 9001 - ISO 14001 - ISO TS 16949	ISO 9001 - ISO 14001 - ISO TS 16949	ISO 9001 - ISO 14001 - ISO TS 16949	ISO 9001 -ISO 14001 ISO TS 16949	ISO 9001 -ISO 14001 ISO TS 16949
Contrôle	Bureau Véritas International - Lloyd's Register QualityAssurance - AFNOR				

Rails industry	France	Italy	UK	Germany	Spain
○ Associations	Syntec-Ingénierie	OICE - CNI	ACE – ECUK - ETB	VBI	
○ Trade and industry associations	FIF	ASSIFER - UCRIFER	RIA	VDB	CEMAFE
	RFF	RFI			ADIF
○ Industry	SNCF RATP	Trenitalia - Ferrocarril Circumvesuviana - Ferrovie Nord Milano	Eurostar – Eurotunnel - EWSI Ltd - Network Rail Limited	Deutsche Bahn (DB) AG	Renfe - FGC (Ferrocarrils de la Generalitat de Catalunya) - FGV - Metro de Madrid - Euskotren - TMB - Metro de Bilbao - Transfesa
○ Equipment manufacturers		- AnsaldoBreda – Convesa - Fervet -) – Siemens ect.			Alstom - Bombardier - CAF (Construcciones y Auxiliar de Ferrocarriles) – Siemens – Tefesa - Talgo
○ Engineering consultancy firms	Systra – Alten – Assystem -	Ansaldo - Tecnosistem SPA - Revelli	Ricardo – Atkins -	EDAG Engineering -Tricon Design AG -Bochumer Verein Verkehrstechnik - SGW Werder - Voith Turbo - Talgo	Airtren - CT Ingeniería - Ineco-Tifsa – ETT - Proyntec – Mecsa - Ansaldo STS Espana - Ametsis
○ Standards	ISO 9001 - ISO 14001	ISO 9001 - ISO 14001 - IRIS		ISO 9001 - ISO 14001 - IRIS	

Aerospace

GIFAS	(Groupement des Industries Françaises Aéronautiques et Spatiales)
DGAC	(Direction Générale de l'Aviation Civile)
3AF	(Association Aéronautique et Astronautique de France)
AIDAA	(Associazione Italiana di Aeronautica e Astronautica)
AIAD	(Associazione industrie per l'Aerospazio, i Sistemi e la Difesa)
SBAC	(Society of British aerospace companies)
RAeS	(Royal Aeronautical Society)
COIAE	(Colegio Oficial de Ingenieros Aeronáuticos de España)
ATECMA	(Asociación Española de Constructores de Material Aeroespacial)
BDLI	(Bundesverband der Deutschen Luft- und Raumfahrtindustrie e.V.)
DGLR	(Deutsche Gesellschaft für Luft- und Raumfahrt Lilienthal-Oberth.eV)
ALROUND	(Aktionsgemeinschaft luft und raumfahrtorientierter Unternehmen in Deutschland)

Automotive

VDA	(Verband der Automobilindustrie)
CCFA	(Comité des Constructeurs Français d'Automobiles)
ANFAC	(Asociación Nacional de Fabricantes de Automóviles y Camiones)
SERNAUTO	(Asociación Española de Fabricantes de Equipos y Componentes para Automoción)
FIEV	(Comité des Constructeurs Français d'Automobiles)
SFEPA	(Syndicat des Fabricants d'Equipements et de Pièces Automobiles)
UTAC	(Union Technique de l'Automobile, du Motorcycle et du Cycle)
SMMT	(Society of Motor Manufacturers and Traders)
ADF	(Automotive Distribution Federation)
GAU	(Group Auto Union UK)

Rails industry

VDB	(Verband der Deutschen Bahnindustrie e.V.)
CEMAFE	(Asociación Nacional de Constructores Españoles de Material Ferroviario)
FIF	(Fédération des Industries Ferroviaires)
ADIF	(El Administrador de Infraestructuras Ferroviarias)
RFF	(Réseau ferré de France)
RIA	(Railway Industry Association)
RFI	(Rete ferroviaria italiana)
ASSIFER	(Associazione Industrie Ferroviarie)
UCRIFER	(Unione Costruttori e Riparatori Ferrotramviari)

Annex E

List of stakeholders contacted during the feasibility study in the construction sector

Key:

Q: answer to the questionnaire

SWP: participation to EFCA/SWP (Standardisation Working Party)

S: participation to seminar

WS: participation to AFNOR/EFCA workshop

This table does not take into account the organisms and the name of people met during B-to-B meetings in all the countries.

Organisms	Email	Firstname	Name	Comments
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ACA	office@arching.at	Susanne	Jenner	SWP -
ACA	josef.robl@vienna.at	Josef	Robl	
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Annex F

Engineering Consultancy Services

Fields of intervention

The following 4 fields of intervention have been identified from various documents.

- Infrastructures and networks.
- Buildings.
- Industrial units.
- Consulting and engineering in industrial technologies.

Infrastructures and networks

- Urban and interurban transportation systems.
 - Infrastructures and structures in the fields roads, railways, air, river navigation and harbour.
 - Bridges and civil engineering constructions.
 - Studies of mobility, plan of displacement, equipment associated.
 - Town planning - City centers restructuring.
 - Rural planning.
 - Zones of activities.
 - Urban engineering.
 - Urban and Territorial Planning (Territorial planning, Urban design plans, Landscape plans, Natural parks).
 - Geotechnics.
- Water, collecting, provisioning and treatment plants.
 - Waste water: directing diagram, stations of purification, system drainage, installation and management of services.
 - Rain water: operation of the network.
 - Water supply structures and landscape engineering.
- Waste management; selective sorting, collection, treatment and recycling.
- Others.
 - Networks of transmission of information (TIC).
 - Natural and technological risks and management of the crise.

Buildings

- Public, administrative buildings and of offices
- Hospitals and health centers
- Cultural facilities
- Sport, hotel and tourism
- Collecting and individual housing
- Commercial building
- Building engineering structures
- Buildings, open-air facilities and room creating interior work.

Industrial units

- Energy distribution and production
- Equipment and transformation, manufacturing units
- Buildings with logistic vocation
- Research and development center
- Industrial buildings

Consulting and engineering in industrial technology

- Industrial Engineering (process and products)
- Steel, iron and metallurgical industry
- Mechanical and manufacturing industry
- Mining and oil industry
- Chemical and petrochemical industry
- Electronics and electro technical industry
- Telecommunications and aerospace industry
- Hydro electrical and thermal energy
- Nuclear energy
- Alternative energies
- Energy transmission and distribution
- Other industries (cement, paper, pharmaceutical, food, Automotive etc.)

Annex G

**NEN Report on the study realised in the Netherlands for
the construction sector**

Draft report overview and position Dutch market consultancy engineering services

1. Introduction

This paper gives an overview and position of the Dutch consultancy engineering services market. It is part of the European wide investigation on the feasibility of European standardization in the area of consultancy engineering services, performed by the French Standardization Institute AFNOR within Mandate M/371 given by the European Committee to CEN. NEN was responsible to investigate the Dutch market. This was done by means of a market analysis and interviews with stakeholders.

2. Scope

Consultancy engineering services are defined as services concerning the following sectors:

- urban and regional development ;
- infrastructures and networks ;
- buildings ;
- environmental projects ;
- all industrial sectors.

3. Stakeholders

The following stakeholders are identified in the Dutch market:

ORGANIZATION TYPE	ORGANIZATION
<i>Clients (public and private owners/users of buildings/infrastructure works)</i>	<i>Governmental bodies:</i> Ministry of Housing, Spatial Planning and the Environment (VROM) Dutch Government Building Department * Ministry of Waterways and Public Works * Ministry of Defense – real estate department Association of Dutch Municipalities <i>Other</i> Housing corporations * Prorail
<i>Branche organization property developers</i>	NEPROM
<i>Branche organization consultancy engineering firms</i>	ONRI *
<i>Branche organization organization consultancy</i>	ROA
<i>Branche organization energy performance advisors</i>	AVEPA
<i>Branche organization architects</i>	BNA
<i>Branche organization building companies</i>	Bouwend Nederland

ORGANIZATION TYPE	ORGANIZATION
Branche organization installers	Uneto-VNI TVVL
Professional organization of urban designers and planners.	BNSP
Service provider (consultancy engineering firms, major and selection)	Akzo Nobel Engineering Arcadis Chemelot Plant Inspection Finnforst Holland BV Fugro Gasunie Grontmij Nederland BV Imtech Consultancy * KPMG Global Sustainability Services NAM Stork Tebodin

* Organizations interviewed.

4. Relevant documents

There are no general standards on consultancy engineering services, but there are a lot of specific technical standards to be taken into account when providing consultancy engineering. For example standards for design and calculate building/installations on strength, energy performance, fire safety etc. Within this feasibility study these specific technical standards are left aside.

National legislation

- Aanbestedingswet (AV) -> Translation of the European Public Procurement regulations.
- Besluit aanbestedingsregels voor overheidsopdrachten (Bao).
- Besluit aanbestedingen speciale sectoren (Bass).

More general documents are:

- ***DNR 2005 (De Nieuwe Regeling 2005)****This document is about a standardized legal relationship between client – architect, engineer or advisor including a basic contract model.*
- ***ARVODI: General Government Terms and Conditions for public service contracts***
- ***UAV-GC 2000 (Uniform Administrative Conditions for Integrated Contracts)****In this document uniform administrative conditions for integrated contracts are laid down.*
- ***ROA –terms and condition: General Terms and Conditions for organization consultancy***
- ***Standard Task Description (STD)****This document is a tool for specifying individual work packages (appendix to a contract between a client and a consulting engineer) => this is relatively new, not widely used (yet) and/or formally standardized.*

DNR 2005 (available in English)

- ***Liability is part of Dutch Law and regulation. Organizations have liability:***
 - *for 20 years ;*
 - *for all direct/indirect damage, harm, injury ;*
 - *resulting from an imputable fault ;*
 - *with the possibility to differ in a private agreement.*
- ***DNR 2005 en UAV limit the liability. The use of these documents is not mandatory. However they are used very often***

- ***In DNR 2005 consultancy engineering firms have only liability for:***
 - ***direct damage ;***
 - ***resulting from an imputable fault, with a written proof of default ;***
 - ***for a maximum of 5 years ;***
 - ***for a maximum amount equal to the consultancy engineering costs, with an upper limit of 1 million euro.***
 - ***The UAV-GC 2000 is similar in this.***
 - ***The height of the insurance premium is tuned in relation to this liability condition.***
 - ***DNR 2005 is widely regarded as a balanced document with both interesting conditions from client and service provider perspective.***
-
- Clients, especially governmental clients, have in some cases their own liability conditions. The Dutch government has a standardized liability condition in which service provider have unlimited liability. This condition brings in high risks and service providers will only agree as the content of the service do not imply high risks. Some governmental bodies, like the Dutch Government Building Agency use the DNR 2005 with small adjustment like the upper limit of 1 million euro.
 - Clients in the private sector very often use DNR 2005.

Standard Task Description

- Appendix to the DNR 2005 is a 'Contract Model' that can be completed and specified per project and the 'Standard Task Description' (STB).
- ONRI participates to the working commission involving all disciplines that are involves with the design of buildings and their direct surroundings, that develops a "Standard Task Description" (STD), with standardized, interconnected tasks per phase in the design process, for all disciplines. The STB is a tool for assigning and contracting interconnected tasks in a design project. It has been introduced in 2005 and is slowly but surely finding it's way to practice.
- Based on this experience, ONRI underlined in his answer that the use of standard definitions of work packages could avoid misunderstandings and lower transaction costs (or avoid unnecessary costs) for both clients and consulting engineering firms.

5. Market, issues

The following characteristics and issues are common in the Dutch market for consultancy engineering services:

- In general consultancy engineering services are related to big projects. The call for tenders for small projects will not often be given cross border.
- Design & construct are more and more connected and given to 1 organisation which is responsible for both. The design work is often assigned to a subcontractor. In this way risks are being given to the provider.
- Tenders go more and more in an dialogue-format. Interaction in the design phase is essential.
- From a Dutch export perspective consultancy engineering services focuses primarily on projects in the area of infrastructure, environment, 'soft ground', dredge etc. Important organizations in this area are for example Arcadis, Grontmij, Fugro etc.
- From a Dutch import perspective, primarily very specific projects are concerned, for example tunnel construction.
- In European tenders, very often no or hardly any international organizations compete. And if so, foreign companies very often tender for big projects in collaboration with a consortium where a local party is member of the consortium.

- Organization that are not obliged to do public tenders will in many cases not do it. In many cases a shortlist of 'preferred suppliers' will be asked to submit a quotation for the service.
- The following possible barriers can be identified for the lack of international participation. Extensive research need to be done on this issue, as the take-away of the barriers could support the open and transparent European Market
 - Differences in knowledge on local law and regulations. Connected to this the investment for developing (internationalising) this knowledge is high.
 - Differences in liabilities and insurances rules between countries.
 - Differences in language. Very often juridical issues are done in the local language but also on a project level often is chosen for the local language.
 - Requirements concerning local certificates.
 - Design and realization are closely related. In construction logistics is important. Personnel and materials needs to be close to the building site. Consultancy could theoretically be done for a distance, but in practice it remains difficult.

Contracts

- Contracting is complicated. The knowledge of contracting and contracting rules is limited. Within the process of drawing contracts different stakeholders occur: management, technical oriented people and juridical oriented people.
- The total amount of the assignment is in many cases related to the type of contract and the level of detail in it in terms of reporting, credentials, task descriptions etc.
- In many organizations standardized contracts are available. Small additions are done to specify the contract for its desired purposes. Standardized contracts lead to efficiency both in terms of drawing as in terms of contract management.
- Within contracts the balance between client and service provider is important. Common understanding and agreement on risks is essential.

6. Standardization

Scope

The scope of a possible standardization project should be made clear. Consultancy engineering services should be well-defined. Some questions:

- Does consultancy engineering services include organizational consultancy, risk management consultancy, financial services consultancy.
- Is consultancy engineering services related to a project or also to an organization?
- Does consultancy engineering services include all phases design, realization, utilization and demolition? What are examples of consultancy engineering services in each phase?

Content

In general organizations are positive towards standardization. The following areas were mentioned specifically:

1) Investigation on existing law and regulation

ONRI sees as the first benefit to be made seems to make transparent how issues like local law and regulations, liabilities and insurances are organized among the different countries. From that investigation the main differences and barriers will become clear. Some examples:

- In the Netherlands, law and regulations for building state that building permits are to be provided by local municipalities (city, town). They are given upholding responsibilities.
- In Germany, building permits should be applied for by a competent (and certified) person, for instance an architect.

- In the UK, liability conditions and insurance premium are different from these in other countries.

Also applied standards can be made clear.

An overview that makes the different situations in different countries more transparent will have a huge added value. This has to be the first step. In a later stage the content of the services can be subject of investigation. This approach is brought forward by ONRI and in line with the EFCA approach towards this subject.

2) Standard Task Description

Another opportunity is the "Standard Task Description" (STD), with standardized, interconnected tasks per phase in the design process, for all disciplines. The STD is a tool for assigning and contracting interconnected tasks in a design project. Based on this experience, the use of standard definitions of work packages could avoid misunderstandings and lower transaction costs (or avoid unnecessary costs) for both clients and consulting engineering firms.

3) Contracting and contracts

Standardized contracting processes/procedures and standardized frameworks of contracts, possibly with standardized general terms and conditions could improve the efficiency and transparency. Especially finding the right balance between client and service provider is essential. Standardization is a good tool to realize this balance. Furthermore tools that provide guidance in drawing contracts are seen as useful.

Restrictions

In general organization feel that standardization will contribute to breaking down technical barriers. But also it will hardly take away cultural and language differences, which are probably a larger barrier for competition than "technical" harmonisation of definitions of consulting engineering services. If design and realization are connected logistical issues may also influence.

There are some concerns to be identified on European standardization:

- European standards have an important status. With the widening the scope, only the bigger organisations will compete in tenders. For local SME's this could have negative effects. From a general economic perspective this could have a negative effect.
- European standards could lead to a new balance in terms of responsibilities, although clients are satisfied with the current situation. Flexibility with standards is important.
- European standards should provide both client and service provider enough flexibility in terms of the content of the services and the performance. If described, Content of the services needs to be defined from a functional point of view.

7. Conclusion

The Dutch market is in general positive towards standardization, but with some reservation.

The scope needs to be clarified.

Three standardization possibilities are identified

- 1) Investigation on existing law and regulation -> a first major step is to make transparent how issues like local law and regulations, liabilities and insurances are organized among the different countries.
- 2) Standard Task Description -> a second opportunity might be "Standard Task Description" (STD), with standardized, interconnected tasks per phase in the design process, for all disciplines.

- 3) Contracting and contracts -> a third possibility is standardized contracting processes/procedures and standardized frameworks of contracts, possibly with standardized general terms and conditions.

ONRI supports the approach by EFCA

The Dutch market identifies some important restrictions to be taken into account.

Extensive research need to be done on these possible barriers for the European open and transparent market, as the take-away of the barriers would need to improve the open and transparent European Market.

**For any complementary information
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