October 2008

Final Report WP3/WP4
Joint Working Paper

The Curriculum and the Organizational Framework for the Recognition of TT professionals

About the Project

CER-TTT-M means Certified Transnational Technology Transfer Manager and is a project within the FP6 programme of the European Union.

CER-TTT-M is based on ideas and findings of European IPR Experts giving advice to the European Commission by means of the Open Method of Coordination (OMC).

CERT-TTT-M faces crucial obstacles towards a common European Research Area respectively a common Technology Transfer Area:

- **Lack of TT skilled people**
- **No registered TT profession**
- **No TT education / training programme recognized all over Europe**

CER-TTT-M aims at building up a framework to qualify TT- managers on a transnational level and with mutual recognition in Europe.

Consortium Partners

Austria Wirtschaftsservice GmbH (Co-ordinator) – Austria

ASTER S. Cons. P.a. – Science Technology and Business - Italy

Department for Productive Activities, Economic Development and Telematics Plan of Emilia-Romagna Region - Italy

Institute Européen Entreprise et Propriété Intellectuelle - France

Institute for the Promotion of Innovation by Science and Technology in Flanders - Belgium

Management Center Innsbruck - Austria

Ministère délégué à l'Enseignement supérieur et à la Recherche - France

Ministerie van Economische Zaken – The Netherlands

Rotterdam School of Management Erasmus University – The Netherlands

State Agency Latvian Investment and Development Agency - Latvia

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Contents

Executive Summary

The CERT-TTT-M project aims at professionalizing Technology Transfer on a European level, by increasing the availability of Technology Transfer skilled professionals in the European Research Area (ERA). To realize this goal the project focuses on the quality and relevance of education opportunities for the Technology Transfer Profession, by doing proposals and draw general outlines for a European education framework for Technology Transfer Professionals.

This report is the combined final report of WP3 and WP4. It was decided to make a combined report because the deliverables of WP3 and WP4 are interlinked. They have impact on each other.
The deliverables of WP3 are:

- Modules for a European education program for technology transfer professionals.
- Organizational framework for implementing an education program.

The deliverables of WP4 are:

- Recognition issues (academic recognition, professional recognition).
- Quality assurance (standards, indicators, quality assurance systems).
- Sketch of a professional European education framework for technology transfer professionals.

Curriculum technology transfer professional
A model for the curriculum of the Technology Transfer Professional is formulated and presented during WP3 and WP4. This model aims to support training providers with relevant information in designing and delivering courses about technology transfer of high quality and sufficient relevance. Presenting this curriculum is a first step towards regulating the TT profession in Europe. The model contains information about different skills that are selected for the technology transfer professional curriculum, a description of what the skills mean, learning outcomes, education modules, methodologies, facilities, teaching staff, assessment methods and duration.

The skills that are selected for the Technology Transfer Professional curriculum are:
- Managing Communication, Information & Networking
- Understanding of IPR & Licensing
- Commercial Activities and Awareness
- New Business Development
- Negotiation
- Project management
- Information analysis

In the curriculum three levels of education are distinguished. A basic level, an advanced level and a expert level. The curriculum is constructed in a way that candidates are able to follow a course of 2 days to develop a specific skill on a certain level. These 2 days is the time the student physically attend the classes. It doesn't include the time to prepare for the classes and/or time for assignments. For

example the skill New Business Development can be followed on a basic or advanced level. Candidates are also able to apply for a professional title/degree in technology transfer. Therefore they have to gain knowledge on all defined skills for the Technology Transfer professional on a certain level. The different titles for a basic, advanced and expert level are:

- Basic: *Technology Transfer Professional (TTP)*
- Advanced: *Senior Technology Transfer Professional (STTP)*
- Expert: *Executive Technology Transfer Professional (ETTP)*

A candidate can be awarded the professional title, TTP, ATTP or ETTP if he/she has mastered all different elements of the relevant level, which is shown by passing the exam. Candidates can prepare for the exam by following all the courses of a level or by applying straight for the exam.

On the expert level it is not possible to follow loose courses. The expert level is set up to follow as one complete module/degree in which all Technology Transfer Professional skills are used. The skills on the expert level are taught with the assistance of a business case in which all knowledge, skills and competences of candidates come together.

Professional and Academic Recognition

The curriculum has provided a useful basis for the Technology Transfer profession. Recognition is a next step towards professionalizing the TT profession. To see how recognition in the TT profession can be reached European regulations and experiences of professional recognition are analysed. They illustrate different approaches to recognition: a top-down or a bottom-up approach. A top down approach means 'Automatic Recognition by means of Directive 2005/36/EC', a long and bureaucratic road in which the involvement of public, national and European institutions is required to decide on all aspects of the profession and to harmonize all existing training programs, qualifications and professional practise in all Member States.

The bottom-up approach, self regulation, seems to be the best way to provide recognition for TT Professionals within a reasonable time schedule and level of feasibility. In a bottom-up approach stakeholders themselves set the standards for the profession, qualify professionals and certify/accredit available education programs through quality indicators. Such a flexible approach gives room to the evolution of the TT profession. The self regulation approach implies a professional association, as a relevant authority in the field, to promote the use of the curriculum and to assure quality and accreditation standards and processes.

Quality Standards and Criteria

Quality standards and criteria are important conditions to create recognition and accreditation in the Technology Transfer profession. Quality standards can ensure the reliability of training providers by guaranteeing quality on the content and the organisational aspects and procedures with regard to training activities.

Quality standards/criteria for institutions and training providers usually cover general aspects and procedures:

- Internal quality policies and procedures
- Review of programmes and awards
- Evaluation and assessment
- Teaching staff, resources and facilities

Quality standards/criteria for education programmes can be focused on:

- Contents of education programme (general and professional studies)
- Levels of competence
- Background of teaching staff
- The capability for providing programmes in a specific field
- Student selection and support service
- Resources, facilities and equipment

The examples of standards/criteria for institutions and training providers and for education programmes provide useful reference points for quality measures for the CERT-TTT-M curriculum.

Recognition Path for the Technology Transfer Professional

The question that remains is how to organise a European educational framework for a TT Professional? It was concluded that a bottom - up approach in which the stakeholders themselves set the standards for the profession, qualify professionals and certify/accredit available education programs through quality indicators suits best in the current European situation. Such a flexible approach gives room to the evolution of the TT profession. This scenario requires the creation of a European association, a Professional Body (PB), where all major stakeholders should be involved in the setting up of this Body. Two important tasks of this future Body can be:

- ☑ To accredit existing education programs
- ☑ To award professional titles

By creating a Professional Body which accredits education programs and awards professional titles quality assurance can be assured. Such a PB can be attributed more tasks in the future. The establishment of such Professional Body falls outside the direct scope of the CERT-TTT-M project. The aim of this report is to provide a picture on how such a European framework could be organized. Because of the importance of a Professional Body for the regulation and organisation of the TT profession, a general outline of the future Body and its tasks has been given.

Recommendations of the CERT - TTT- M project

Based on the results of WP3 and WP4 of the CERT–TTT-M project the following recommendations are made to all stakeholders: EU-national policymakers, industry, public research organisations and training providers.

1. All stakeholders should recognise the present opportunities that are arising for the next step towards a European recognition of the TT profession.

2. All stakeholders should take notice of the CERT-TTT-M framework. And specifically, training providers are recommended to use the framework when assessing, designing or delivering their courses on TT.
3. The use of the CERT-TTT-M curriculum by a first group of training providers will represent the testing step of the framework and the starting point of a quality future path towards recognition...
4. All stakeholders should support the establishment of a 'Professional Body' as an independent and representative authority in the professional field which can recognise and/or in due course accredit the training programs for TT across the European Union. With the Professional Body the recognition path of the TT professional can be further developed.
5. Therefore it is recommended to do a feasibility study for the establishment of a Professional Body. This Body could develop an accreditation system, the further development of the professional framework (training and professional standards and code of conduct), ensuring quality control, the financial sustainability and the creation of European professional register for the TT Professionals.

Chapter 1 Introduction

The CERT-TTT-M project aims at professionalizing Technology Transfer on a European level, by increasing the availability of Technology Transfer skilled professionals in the European Research Area (ERA). To realize this goal the project focuses on the quality and relevance of education opportunities for the Technology Transfer Profession, by doing proposals and draw general outlines for a European education framework for Technology Transfer Professionals.

Open innovation and the link with Technology Transfer
The development of the knowledge economy is inducing a paradigm change in the innovation process, known as “open innovation” and characterized, among other features, by more collaborative research and sharing of knowledge and intellectual property. Universities and other research institutions have a critical role to play in this new context. Technology transfer plays a crucial role in open innovation. It is the linkingpin between public research organisations and business.

What is a Technology Transfer Professional?
What do we actually mean when we talk about a Technology Transfer Professional? Within the project of CERT-TTT-M the following description of the Technology Transfer Professional has been used:

“A Technology Transfer Professional is an individual who is active in delivering at least one technology transfer activity. Among the most prominent technology transfer activities considered in this survey are the identification, transfer, protection, development, and exploitation of technology. Such a definition of a technology transfer professional has allowed the inclusion of individuals who are involved in technology transfer at various hierarchical levels, functional areas, and organizational positions.”

Why do we focus on education and the development of the TT profession?
At this moment (2008) the TT education programmes in Europe are very heterogeneous and none are comprehensive. A common approach in the sense of mutual recognition does not exist (see WP2). The current lack of reciprocity and comparability between existing TT education programmes is hampering the development of know-how, experience and the exchange of personnel, because it is not possible to assess TT-skills. At present there are no means for PROs, industry and innovative SMEs to recognize which candidates have the skills required to manage technology transfer matters.

Candidates are currently hired based on their ability to identify highly-specialised technological developments (e.g. relevant PhDs in specific areas)), or commercial experience or on their legal skills or on their general communication abilities, etc. The candidates are currently hired based on one or two aspects of TT in the absence of a overall TT-framework.

The lack of recognised qualification, carreer path and overall recognition of the profession dissuades potential candidates entering in the TT-field.

Another consequence of the absence of an education framework for Technology Transfer Professionals is a lack of active interest and awareness in the TT profession by highly and appropriate candidates had a negative effect on recruitment and it is hard to attract the high calibre staff with real potential that are so urgently needed to develop technology transfer and the European Research Area (ERA). The need to attract high calibre staff is apparent when looking at the development of the market. An example is the IP StocK exchange. The creation of a an IP stock exchange in Europe in currently being discussed and might be able to operate by 2010. A similar stock exchange is being created in Chicago. As soon as they are created, TT management will be dramatically different. It will be a kind of "big bang" . New skills will be required (they are not taught today) and there will a shortage of well trained TT officers. As a consequence, it is becoming rather urgent to set up state of the art training programs for existing or new TT officers.

Furthermore, the current education programmes do not offer the full spectrum of competences that are needed to function in the technology transfer profession. The work of WP1 and the GAP-analysis of the results of WP1 and WP2 show that the existing courses are insufficient, as most countries' education programmes are ad hoc and piecemeal within a limited range of competencies rather than addressing a holistic approach to technology transfer management. The reports WP1 and WP2 estimate that the total amount of technology transfer professionals in Europe who are entitled to follow the training program is about 22,700. The estimated market size for technology transfer training in Europe is 40-60 mln. Euro's.

While there is evidence of developing good practice in training delivery, there is still a need in Europe for ensuring for quality, relevance and scope in the training programs for Technology Transfer.

In brief there were different reasons to start the CERT-TTT-M project to solve these issues and to develop and professionalize the TT profession in Europe. At the moment the Technology Transfer profession is not recognised as a formal profession with mutually recognised standards of training, behaviour and delivery. A first step towards formalisation of the profession could be to define and acknowledge the content and quality of existing (and future) education programs throughout Europe. By setting up an accreditation framework to accredit education programs and to create and award professional titles, the TT profession can be further developed and professionalized. This would impetus the development of the TT profession and to technology (and knowledge) transfer throughout Europe.

This report presents the first steps towards professionalizing the TT profession in Europe. It presents the outlines of a European curriculum for the TT Professional. It also shows how quality criteria are applied in different European quality systems and in professional organizations such as the Project Management Institute. Furthermore, it shows examples of systems of accreditation and how this could be organized in Europe by implementing a Professional Body.

Outlines and deliverables of this report

This report is the final report of WP3 and WP4. It was decided to make a combined report because the deliverables of WP3 and WP4 are interlinked; one impacts on the other.

WP3 would deliver the followings results:
- Modules for an European education program.
- Organizational framework for implementing an education program.

WP4 would deliver the followings results:
- Recognition issues (academic recognition, professional recognition).
- Quality assurance (standards, indicators, quality assurance systems).
- Sketch of a professional European education framework.

The above deliverables are combined and will be presented in the next chapters.

In chapter 2 the curriculum for the Technology Transfer Professional is presented. Questions like “What are the desired skills of a technology transfer professional?”, “How many levels of education do we need?”, “What is the ideal length of an education program?”, have been answered and converted to a curriculum which gives information about:
- Different skills that are selected for the curriculum of a technology transfer professional
- Description of what the skills mean
- Learning outcomes
- Levels of education (basic, advanced and expert)
- Education modules
- Methodologies
- Facilities
- Teaching staff
- Assessment
- Duration

This curriculum aims to support training providers in designing and delivering courses of high quality and relevance.

Chapter 3 “Professional recognition and academic recognition” aims to present a synthesis of the most relevant elements related to the recognition of qualifications in Europe and sketches paths for professional recognition of TT Professionals. How can such recognition be provided and by whom? The analysis of European regulations and experiences of professional recognition illustrates different approaches (top-down and bottom-up) and different ways for recognition. The bottom-up approach, which clearly includes the involvement of professionals and existing professional associations, seems to represent the best way to provide recognition for TT Professionals within both a reasonable timescale and level of feasibility. A single representative professional authority, which aims to coordinate existing professional associations and networks, seems to be the best way to assure recognition by taking into account the needs of flexibility and progressive adaptation to the evolution of the profession.

Chapter 4 ‘Quality standards and criteria’ aims to present some examples and practices related to quality assurance in education and training in order to support the development and the implementation of the CERT-TTT-M curriculum. This chapter describes some general quality standard systems in Europe regarding the Higher Education Area. These standards refer to internal and external quality assurance of institutions. Chapter 4 also provides useful examples of quality

standards for education programs and the role of professional organisations in this. Two professional organisations, FEANI (European Federation of National Engineering Associations) and PMI (Project Management Institute) are presented with their quality systems. These examples provide a basis for the development of a quality system for the TT profession.

In chapter 5 “A recognition path for the TT Professional” the possible path to recognition of the European TT Professional is described. Recognition starts by formalising the content of the profession and quality of education programs and their providers. Chapter 4 gave a useful general outline on how quality assurance is guaranteed in education and training by presenting examples of European quality systems and the role of professional associations in guaranteeing quality in their professional group. In this chapter we will describe how a recognition path for the TT Professional can be developed and what is necessary to organise this process further. As we have seen in chapter 3 the bottom-up approach is the approach which suits best development of the recognition path for the technology transfer professional. Within this approach the stakeholders themselves set the standards for the profession, qualify professionals and certify/accredit available education programs through quality indicators. This scenario requires the creation of a transnational association/institute or a federation of national associations that sets the standards and regulates the certification, a Professional Body. Specific demands and tasks of this Body are explored further in chapter 5.

Chapter 6 contains a summary, conclusions and recommendations on how the recognition of the TT professional should be realised in Europe.

Chapter 2 Curriculum Technology Transfer Professional

2.1 Introduction

In chapter one we have concluded that professionalizing technology transfer education programmes and professionalizing the TT profession is urgently needed. In the current situation existing programmes are variable in quality, relevance and scope. There are no formal definitions of the role of the technology transfer professional. This inhibits the development of know-how and experience in the TT profession and the availability and exchange of qualified personnel.

One of the deliverables of the CERT-TTT- M project was to provide a common model of core competences/skills and quality standards for training and educating the Technology Transfer Professional. Such a curriculum aims to support training providers in designing and delivering courses of high quality and sufficient relevance. By formulating such a model, different questions had to be answered like: 'What are the desired skills of a technology transfer professional?", "How many levels of education do we need?", "What is the ideal length of an education program? And "Can E-learning play a role in educating a technology transfer professional?"

In this chapter the curriculum for the technology transfer professional will be presented. In paragraph 2.2 a short explanation of the curriculum is given. In paragraph 2.3 the curriculum will be presented. The considerations that led to the current curriculum
can be found in the paragraphs 2.4 – 2-7.

We don't intend to pretend that this Master. It is a framework, reference for trainingproviders to compare training. It is not intended to be equivalent to a fulltime master-level. It is not focused on initial education.

2.2 Explanation of the curriculum of the technology transfer professional

In the process of constructing the curriculum for the technology transfer professional different questions and issues came up. Some of these were answered in WP1 or WP2. During WP3 and WP4 there were a lot of challenging and constructive discussions about the criteria and demands for a curriculum. The result of all this input is a curriculum for the technology transfer professional which gives information and guidelines on the following topics:

- Different skills that are selected for the curriculum
- Description of what the skill means
- Learning outcomes
- Levels of education (basic, advanced and expert)
- Education modules
- Methodologies
- Facilities
- Teaching staff
- Assessment

- Duration

All these topics are defined within different skills for a technology transfer professional for which seven have been defined and agreed during this project. In the curriculum that will be presented in the next paragraph in this chapter every skill is described in a table on a page, with the topics mentioned above. The seven different skills that were defined are:
1. Managing Communication, Information and networking
2. Understanding IPR & Licensing
3. Commercial Activities and Markets
4. New Business Development
5. Negotiating
6. Project management
7. Information analysis

In the curriculum three levels of education are distinguished. A basic level, an advanced level and a expert level. The curriculum is constructed in a way that candidates are able to follow a course 2 days to develop a specific skill on a certain level. These 2 days is the time the student spend to physically attend the classes. It doesn't include the time to prepare for the classes and/or time for assignments. For example a candidate wants to learn about New Business Development. The candidate is able to follow a course on a basic or advanced level.

On the expert level it is not possible to follow one course. The expert level is set up to follow as one total module where all skills are used. The skills on the expert level are taught with the assistance of a business case in which all knowledge, skills and competences of candidates come together.

Candidates should also be able to apply for a professional title/degree in Technology Transfer. The different titles for a basic, advanced and expert level are:
- Basic: *Technology Transfer Professional (TTP)*
- Advanced: *Senior Technology Transfer Professional (STTP)*
- Expert: *Executive Technology Transfer Professional (ETTP)*[1]

A candidate can be awarded the professional title, TTP, ATTP or ETTP if he/she has mastered all different elements of the relevant level which is shown by passing the exam. Candidates can prepare for the exam by following all the courses of a level or by applying straight for the exam. Or the candidates can straightforward apply for the examination. The student when doing the exam, will be questioned on all 7 skills. More information about a framework in which professional titles can be awarded and how to set this up, can be read in chapter five: A recognition path for the TT Professional.

Till so far the explanation of the curriculum. On the next six pages, paragraph 2.3, the curriculum for the technology transfer professional is presented skill by skill: Managing Communication, Information and networking, Understanding IPR & Licensing, Commercial Activities and Markets, New Business Development, Negotiating, Project management and Information analysis. The considerations

[1] These titles should become registered titles in the future. You will find more information about registration, quality standards, recognition and how to organise this in the next chapters.

behind the choices that have been made for the curriculum are explained in the paragraphs after the curriculum. Those considerations are about the choice for the skills and a description of the skills (paragraph 2.4), levels of education and professional titles (2.5), optimal length of a education programme (2.6), the possible role of E-learning in the TT curriculum (2.7) and a summary of all this in 2.8.

In the following section (2.3) the different skills of the curriculum are described.

2.3 Curriculum Technology Transfer Professional

Skill (basic/advanced level): Managing communication, Information and networking

Managing communication, information and networking	
The purpose of this module is to develop the skills of candidates in communication, information and networking. After this module candidates will be able to use communication, information and networking skills in an effective manner to realise TT matters.	
Basic	**Learning outcomes**
	Candidates must be able:
	Students must have basic communication skills (to listen, to summarise, to question, to present, non-verbal and verbal communication, to write)
	To know different levels of communication in a conversation (contents, procedures, interaction and emotion)
	To know the basic theories of communication
	To find, interpret and use relevant information from databases (like markets, industry)
	Basic understanding of information management in TT
	Knowledge of existing relevant TT stakeholders (national and international, e.g. regional development agencies, government, TT networks etc.)
	To be able to benefit from interaction with these TT stakeholders
	Modules
	Introduction communication theory (classroom)
	Communication skills (classroom / role playing)
	Basic information management
	TT-networks: how to find, use and build personal networks for own organisation (class room)
	Methodologies
	classroom teaching
	role playing
	e-learning
	Facilities
	Classroom
	ICT
	Teaching Staff
	Communication trainer
	TT-expert
	Database searcher
	Assessment
	Exam

Managing communication, information and networking	
The purpose of this module is to develop the skills of candidates in communication, information and networking. After this module candidates will be able to use communication, information and networking skills in an effective manner to realise TT matters.	
Advanced	**Learning outcomes**
	Candidates must be able:
	to manage a meeting / workshop
	to manage conflict situations
	to manage external communication providers
	to advise on TT matters
	to communicate effectively on different hierarchical levels, with people from different backgrounds (technical, legal, research background)
	to devise the communication strategy related to the commercial strategy
	to articulate the technology transfer objectives for the commercial portfolio of the organisation
	to manage the information flow from the different projects he/she is involved in
	to build up a network and build up relationships with important contacts within networks
	to coordinate or manage a network
	to maintain relevant networks and to be able to use them for the benefit of the project
	Modules
	Advisory skills
	Communication skills (advanced)
	Managing informationflow
	Building and maintaining a network
	Methodologies
	action learning / case study / role playing
	present results case study to relevant stakeholders
	e-learning (working in virtual projectenvironment)
	classroom (information management)
	Facilities
	Classroom
	ICT
	Teaching Staff
	senior communication trainer
	information manager
	Assessment
	Case study

Skill (basic/advanced level): IP rights & licensing

Understanding IP rights & licensing	
The purpose of this module is to give candidates knowledge and insight into IP rights, licensing, legislation and all practical and commercial implications of legal issues concerning technology transfer and business development.	
Basic	**Learning outcomes**
	Candidates must have:
	knowledge of IP rights
	introductory knowledge on legal issues related to research in general
	introduction to basic agreements (license, funding and collaboration agreement, NDA, MTA, options, evaluation agreements, etc.)
	understanding the commercial strategies related to above agreements
	basic understanding and use patent-database
	Modules
	IP legislation (national and international)
	IP and contractual issues arising from research funding
	Overview of IP matters in exploitation and Technology Transfer
	Agreements
	Licensing
	Methodologies
	Courses
	Case-studies
	Facilities
	Classroom
	Teaching Staff
	Teacher with working experience in IPR in TT-field (lawyer, industry expert, academic teacher)
	TT active professionals
	Assessment
	Exam

Understanding IP rights & licensing	
The purpose of this module is to give candidates knowledge and insight into IP rights, licensing, legislation and all practical and commercial implications of legal issues concerning technology transfer and business development.	
Advanced	**Learning outcomes**
	Candidates must know / be able to
	legal aspects of: 1. contract research 2. protection and exploitation of research results 3. spin- off creation 4. licensing
	oversee all practical implications of legal issues concerning technology transfer / business development
	The different kind of contracts
	exploitation strategies (contract research, IP protection and licensing, due dilligence research, spin-off creation, financing
	design an IP-strategy within a given budget
	about IP protection and defense (enforcement and infringement; alternatives to litigation e.g. ADR)
	oversee tax implications of new contracts
	manage the evaluation process of the IP
	IP contract maintenance (including auditing and policing royalties)
	awareness of patentability exclusions; bio-tech patents; CII-patents
	Modules
	Legal aspects & contracts
	Exploitation strategies
	Portfolio management
	Methodologies
	Workshops
	Courses
	Case studies
	Facilities
	Classroom
	Teaching Staff
	Teacher with working experience in IPR in TT-field (lawyer, industry expert, academic teacher)
	TT professionals
	IP experts
	Assessment
	Case study

Skill (basic/advanced level): Commercial activities and markets

Commercial activities and markets	
The purpose of this module is to give candidates the commercial knowledge and skills so as to be able to detect the possibilities for commercialisation and take the neccesary steps to develop commercialisation.	
Basic	**Learning outcomes**
	Candidates must have:
	insight into the commercial viability of technology
	knowledge of the business environment
	understanding of the importance of markets and their segmentation
	knowledge of the value of IP and technology and how to exploit them in the optimal way
	knowledge of the legal issues concerning commercialisation
	Modules
	Value and audit IP
	Channels of exploitation; business models and business planning
	Legal issues concerning commercialisation
	Methodologies
	Course
	Facilities
	Classroom
	Teaching Staff
	Staff specialised in the commercialisation of technology
	Assessment
	Exam
Advanced	**Learning outcomes**
	Candidates must be able / know:
	how through business development to push technology far enough for it to be pulled by the market
	how to get access to potential buyers / partners / investors
	how to market technology
	to understand the possible markets
	Modules
	Product development
	Technology marketing
	Market specific knowledge
	Envisioning and designing products/services from technology
	Methodologies
	Courses
	Case research
	Facilities
	Classroom
	Teaching Staff
	Staff experienced in the commercialisation of technology
	Assessment
	Case study

Skill (basic/advanced level): New Business Development

New Business Development	
TT professionals should be able to demonstrate the ability to identify hitherto unexploited sources of expertise and technology within their institution and to add substantial value to the opportunity by involving and motivating academics, identifying potential partners, identifying sources of strategic funding, shaping the business model and - in collaboration with other TT functions, conclude deals that provide substantial economic benefit (and thus new funding to the institution). In addition to their own portfolio, professionals must demonstrate the ability to develop the business development skills of others by mentoring, teaching or publications.	
Basic	**Learning outcomes**
	Candidates must know:
	about methods for market & industry research
	about the relevant financing instruments (subsidies, business angels, venture capital funds, IPO etc.)
	how to develop a business model and commercial strategy
	understanding of business plan and components
	The legal aspects (choice of legal company forms & IP related contracts)
	methods in building teams with the right mix of skills and experience
	Modules
	Finance I
	Strategies for commercialising new technologies
	Elements of a business plan
	Building Teams
	Methodologies
	Courses
	Facilities
	Classroom
	Teaching Staff
	Experienced business developer or advisor in business development
	Assessment
	Exam
Advanced	**Learning outcomes**
	Candidates must be able:
	to valuate tangible and non-tangible assets
	to assess/evaluate business opportunities for optimal route to the market
	to identify & persuade investors/ management by e.g. presentations & discussions
	to form strategic partnerships (e.g. joint ventures)
	to be able to deliver a business plan
	to raise the funds appropriate to the profile & scale of an opportunity
	to strategically use development funds (private sector, public sector, internal funds)
	Modules
	Market Entry Strategy
	Tactics in identifying and persuading Investors
	Business opportunities
	Investor relationships and strategic partnerships
	Finance II (define and realise financial sources for technology transfer)
	Developing a business plan
	Methodologies
	Course
	Case study in small group about financing
	Facilities
	Classroom
	Teaching Staff
	Experienced business developer or advisor in business development or investor
	Assessment
	Case study

Skill (basic/advanced level): Negotiating

Negotiating	
The purpose of this module is to teach candidates the skills of negotiation, from being able to understand negotiations up to developing a negotiation strategy and acting as the main negotiater in a complex negotiation process.	
Basic	**Learning outcomes**
	Candidates must be able:
	To identify the process & content in negotiations
	To recognise the different styles of negotiations
	To recognise the cultural and human factors affecting negotiations
	To recognise the factors that lead to successful negotiations
	Modules
	The negotiation process
	The content of negotiations
	Negotiation styles
	Cultural and human factors in negotiations
	Achieving success in negotiations
	Methodologies
	Course
	Mini group seminars (case studies)
	Facilities
	Class room
	Teaching Staff
	Negotiation trainer
	Assessment
	Exam (case analysis)
Advanced	**Learning outcomes**
	Candidates must be able:
	To critically assess the theory and pratice of negotiations
	To develop a framework that matches negotiation styles with specific scenarios in the field
	To analyse the organisation negotiation strategy and to highlight its strengths and weaknesses
	Modules
	Revisiting theory and pratice on basis of complex case
	Examining negotiation in pratice: role playing on basis of complex scenario
	Analysing negotiating strategy of student's and other organisation in specific case (e-learning)
	Methodologies
	Interactive: 1 day
	E-learning (analysing negotiating strategy of firm in specific case)
	Facilities
	Class room with videocamera
	ICTs
	Teaching Staff
	Experienced business negotiator
	Assessment
	2000 - 3000 word assignment (4/5 sides)

Skill (basic/advanced level): Project management

Project management	
The purpose of this module is to teach candidates about project management	
Basic	**Learning outcomes**
	Candidates must know:
	how to define an assignment and results of a project
	how to plan, know the different project phases
	The different projectfactors: time, budget, quality, information, organisation, communication and cooperation
	how to write a projectplan
	how to do a risk analysis
	Modules
	Projectmanagement: the basics
	Methodologies
	Course
	Facilities
	Class room
	Teaching Staff
	Specialists in project management
	Assessment
	Exam
Advanced	**Learning outcomes**
	Candidates must be able /have:
	to deal with the tasks and responsibilities of a TT-project leader (TT process as a project)
	insight in leadership, communication processes, cooperation and conflict management
	to coach TT project members / to optimise TT project cooperation
	to organise TT projects/processes effective and efficient
	to plan and budget
	to manage discontinuities and contractual relations
	to manage the research-teams
	to manage internal TT responsibles
	Modules
	Effective management and leadership
	Personal qualities projectleader
	Cooperation, communication, coaching and conflict mangement within a team
	Planning and budgeting
	Management external stakeholders (lawyers, contracting parties ...)
	Methodologies
	Course
	Practising and role play
	Facilities
	Class room
	Teaching Staff
	Specialists in project management & TT/IPR management
	Assessment
	Write a projectplan

Skill (basic/advanced level): Information analysis

Information analysis
Successful TT professionals must be aware of the diverse sources of IP, academic, technical, business and market information which can affect business decisions. They need to be familiar with patent databases and other IP, academic, technical and business information databases, and know how to analyse and manage the information they retrieve
Learning outcomes
Candidates must have:
knowledge of the commonly used patent databases (free and commercial)
knowledge of sources of patent search help (e.g. PATLIB centres; EPO, NPOs)
knowledge of patent classification schemes - IPC & ECLA
knowledge of trade mark and design databases
knowledge of business information databases
ability to perform market and industry research
knowledge of non-patent literature and information sources, e.g. academic/technical journals
Modules
Overview of patent information and sources of advice; Introduction to other public patent databases (e.g. USPTO; JPO; SIPO; Derwent; STN)
esp@cenet - the free access internet patent database of the EPO
How to read a patent (understanding what the document is telling you)
Classification I - IPC & ECLA
Introduction to trade mark and design databases (e.g. OHIM); classification therefor
Introduction to business information databases and market and industry research
Introduction to non-patent literature and information sources, e.g. academic/technical journals
Methodologies
Courses - hands-on at a pc
Facilities
Classroom (PC-teaching laboratory)
Teaching Staff
Experienced database searcher
Assessment
Exam

Information analysis	
Successful TT professionals must be aware of the diverse sources of IP, academic, technical, business and market information which can affect business decisions. They need to be familiar with patent databases and other IP, academic, technical and business information databases, and know how to analyse and manage the information they retrieve	
Advanced	**Learning outcomes**
	Candidates must have:
	knowledge of US and Japanese patent classification schemes
	knowledge of East Asian sources of patent information
	ability to use patent information to inform business decision-making
	ability to use non-patent information sources to inform business decision-making
	more sophisticated market and industry research techniques
	knowledge of the different types of patent search, e.g. novelty; validity; state-of-the-art; freedom to operate; infringement
	Modules
	Patent classification II - US scheme, Japanese scheme,
	Advanced search strategies
	Searching USPTO database
	Searching East Asian patent databases (China, Korea, Japan)
	Using patent information to inform business decisions; "patent-mapping"
	Advanced market and industry research techniques
	Methodologies
	Problem exercises
	Courses - hands-on at a pc
	Case-study
	Facilities
	Classroom
	Teaching Staff
	Experienced database searcher (leading)
	TT professionals
	Patent database searcher
	Assessment
	Exam

Skills on the Expert level

Expert level	
Managing communication, information and networking	
	Learning outcomes
	Candidates must be able:
	To manage all different forms of communication (crisis, intercultural, project ...)
	To interlink information from different fields, extrapolate trends and conclusions that have impact for the strategic level for the organisation
IP rights & licensing	
	Learning outcomes
	Candidates must be able:
	To make / validate policy proposals of IP strategy and exploitation
	To IP asset management
Commercial activities and markets	
	Learning outcomes
	Candidates must be able:
	To manage and evaluate the exposure to risk regarding the whole asset base for their organisation
	To manage his/her KTO/TTP-personnel and resources to achieve desired outcome
New Business Development	
	Learning outcomes
	Candidates must be able:
	To bring ideas to the market as leader of an entrepeneurial team
	To optimise a business plan suitable for substantial investment (target group oriented)
	To take the lead on innovation and growth management
	To convince investors and the management by prospectus (a complex illustration of a business case)
Negotiating	
	Learning outcomes
	Candidate must be able:
	To redefine the notion of success and best pratices in negotiations
	To act as a mentor of a newcomer in your firm: observe and monitor change
	To re-design your firm's negotiation strategy: drive change
	To act as main negotiater in TTprocesses
	To act as a leading negotiator in a complex scenario that involves challenging cultural and human factors
Project management	
	Learning outcomes
	Candidates must be able:
	To manage complex TT projects with large budgets in complex projectcircumstances
	To perform a TT due dilligence (covering the whole TT process)
Information analysis	
	Learning outcomes
	Candidates must be able:
	Gather all relevant information from a range of sources which impact the development of a project
	Produce a comprehensive analytical report based on the gathered information
Methodologies	Development of a joint business case with fellow students, which will be presented to a panel of peers and evaluated by them
Facilities	Seminar / Round table arrangements
Teaching Staff	Experienced peers from different TT stakeholders
Assessment	Presentation (and defense) of business case to panel of peers

For the expert level it is not possible to follow one course. The student on expert level should be able to show mastery over all the different skills. The expert level is set up to follow as one complete module where all skills are used. The skills on the expert level are taught with the assistance of a business case in which all knowledge, skills and competences of candidates come together.

2.4 Description skill competences Technology Transfer Professional

In paragraph 2.3 the technology transfer professional curriculum was presented. In the following paragraphs, the considerations that led to this curriculum will be described. First: the agreement of the skills of a TTprofessional.

In WP1 there was a extended survey on the importance of skills (Commercial Awareness, Industry Specific Expertise, New business Development, Negotiation, knowledge of IPR & Licensing, Networking, Communication) for a Technology Transfer Professional. [2]

Table 2.1 –Importance of skills (in percentages)

Question: In your opinion, how important are each of the following skills for a technology transfer professional ?:

Subject/ Skill	Mean	Rank	St. Dev.	Distribution of answers (in **percentages**) 1: not important	2: somewhat important	3: average	4: quite important	5: very important
Commercial Awareness	4.14	2	.93	0	6	18	32	44
Industry Specific Expertise	3.65	4	.95	1	10	33	36	20
New Business Developm.	3.74	3	.92	2	8	26	44	20
Negotiation	4.16	2	.88	1	4	15	39	41
Knowl. Of IPR & Licensing	4.19	2	.85	1	3	16	37	43
Networking	4.20	2	.91	1	5	15	43	46
Communication	4.38	1	.79	1	1	10	35	53

The respondents were also asked to give additional skills that were not questioned in the table, but were important for the TT profession. The respondents mentioned financial management 18% as an important area and marketing 22%.[3]

For the development of the skillset of a technology transfer professional, the skills defined in WP1 were used as a starting point. As a consequence of input of projectmembers and advisory panel, a few changes have been made in the required skillset for a technology transfer professional. Communication and networking have become one skill-set. Information is added to that skill set. Another new skill is projectmanagement. Projectmanagement is an essential skill for TT-professionals and that's why it was added. The skill 'Industry specific knowledge' was removed. Industry specific knowledge is not a part of common 'knowledge and skills' and further more it is a practical problem: how to realise knowledge modules of all different basic industries? The module Business Development is build up with a strong financial component. From the questionaire of WP1 and other input, it turned out to be important.

As a consequence of all the changes, the following skillset for a technology transfer professional has been decided upon. There was agreement that these skills were important on all levels of education of the technology transfer professional:
- Managing Communication, Information & Networking
- Understanding of IPR & Licensing
- Commercial Activities and Awareness
- New Business Development

[2] *Key Elements of Education Programme for "Certified Transnational TT Professionals*", CERT-TTT-M, p.22, august 2007.
[3] *Key Elements of Education Programme for "Certified Transnational TT Professionals"*, CERT-TTT-M, p. 40, august 2007.

- Negotiation
- Project management
- Information analysis

In table 2.2. the different defined skills of the technology transfer professional are described.

Table 2.2 Description Techology Transfer Professional skills

Managing Communication, information and networking
Set of information exchanges. Communications as a concept mainly refers to the exchange of thoughts, messages or information through speech, signals, writing or behavior. In the context of technology transfer, the collaboration between A and B often relies on the ability of these actors to communicate with each other. Various factors can negatively affect communications between parties, such as differences in skills base (technical, market or product related) or language and cultural differences.

Networking is the skill of understanding the importance of various members of a group, and aligning oneself with those most prone to advance one's objectives. In practice networking is the skill of building and maintaining contacts with various networks. In this regard, these networks may be seen as social networks that promote the creation and transfer of knowledge. Networking becomes imperative for technology transfer not only to open channels for allocating new and original technologies through one's own social network, but also for building trust within a social network to ensure that the entire transfer of technology is successful.

Understanding of IPR & Licensing
Intellectual property (IP) is an umbrella term for a variety of legal instruments which enable creativity in many forms to be protected, quantified and commercialized. IP can be registered (e.g. patents, utility models, trade marks, designs, plant varieties and PGIs) or unregistered (e.g. copyright, database rights, design rights, trade marks, and semi-conductor topography rights). Formal IP is complemented by other intellectual assets for which specific legislation is not provided but which are nevertheless valuable, quantifiable and protectable, e.g. know-how, trade secrets and confidential information.

A solid understanding of IP and of other intellectual assets is vital in business transactions, technology transfer and licensing. Knowledge needs to be both legal *and* strategic. It is not intended that TT professionals become IP lawyers; rather, when complex legal issues arise they should know when to refer the matter to a lawyer or an attorney.

Commercial Activities and Awareness
The individual and organizational awareness of the commercial drivers and the business environment with an understanding of the requirements for commercial viability and also an understanding of the mechanisms and strategies to market IP/technologies. This awareness allows actors to make informed strategic decisions. The awareness is in specific business areas such as, finance and marketing. In practice, commercial awareness is the skill that assists to recognize business opportunities at an early stage so that the potential technology can be leveraged through various channels such as spin-offs or joint ventures.

New Business Development
The strategic approach pursued to ensure the growth of the economic enterprise. In this regard, business development focuses on implementing a strategic business plan that may consist of various business tactics such as equity financing, acquisition of technologies, products, and companies, or the establishment of strategic partnerships where appropriate. In the context of technology transfer, new business development is the skill to consider various options as the route to market and select that that is most appropriate for the commercial exploitation of that technology taking account of a wide range of options and being able to assess their potential return as well as their impact on business development of the client.

Negotiation
Set of interactions through which A and B influence each other's perceptions. Such interactions may include various results, such as resolving disputes, agreeing upon a course of action, bargaining for an individual or a collective advantage, or crafting outcomes to satisfy various interests. Negotiation involves two basic elements: first, there is the process which is about how the parties negotiate; and second, there is the substance which is about what the parties negotiate over. In the context of technology transfer, research has persistently shown that

organizations fail to benefit from the commercialization of their technology partly because of poor negotiation skills.

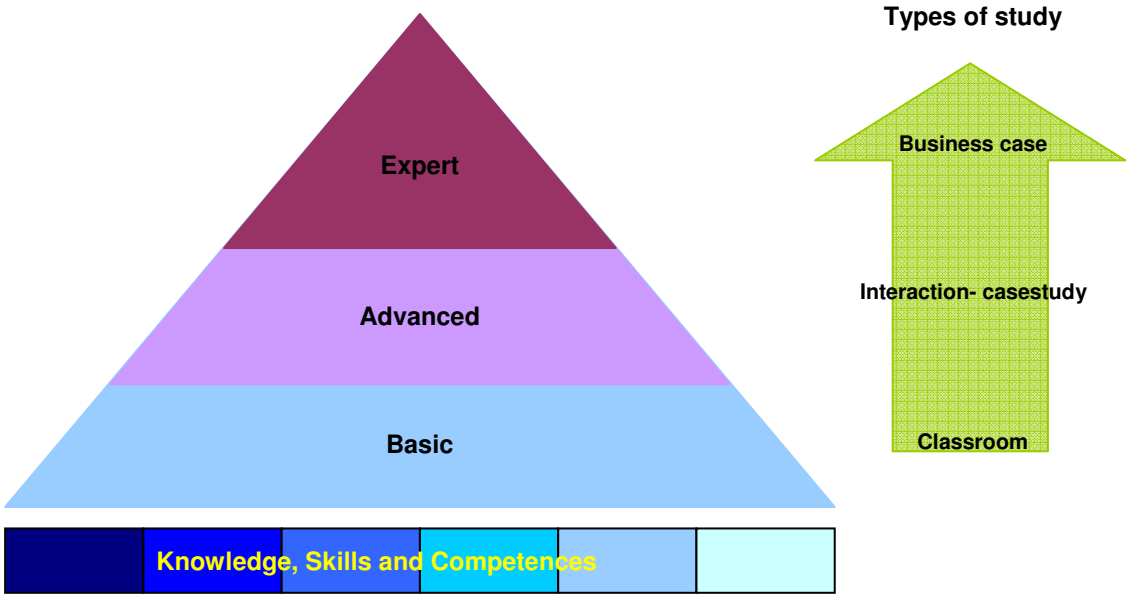
Project management
Ability to prepare a project proposal (business plan), evaluate its feasibility, define the resources needed, detect the main risk factors endangering its successful realization and propose the measures for their mitigation. In practice ability to lead and manage the innovation project, that is to set the project objectives and time schedule, evaluate the progress of project realization, coordinate the activities of various subject engaged and flexibly resolve arising unexpected or even critical situations.

Information analysis
Business decisions are only as good as the information upon which they are based. It is vital, therefore, that databases and other sources of relevant information be searched effectively, and that the results retrieved be analysed correctly. This requires a knowledge of the range of information sources available: patents, academic and technical journals (so-called non-patent literature - NPL), trade marks, designs, business records and market research. Additionally it is necessary to be skilled in the latest tools and techniques for selecting the most relevant documents and data from the mass of information returned by any search.

2.5 Levels of education

After the decision about the skills for a technology transfer professional, the following discussions were about e importance of different levels off education. After having studied different best-practices and discussions about what a technology transfer professional should be able to do, it was decided that three different levels of education cover the technology transfer profession, a basic level (Associate Technology Transfer Professional, ATTP), an advanced level (Technology Transfer Professional, TTP) and an expert level (Senior Technology Transfer Professional, STTP).

Figure 2.3 Levels of education for the TT professional



- The basic-level learning should be focused on learning the basics in technology transfer (for example 'What is IP-law'). This level is a 'knowledge level', preferred teaching method is classroom teaching.
- The advanced level could be focused on more in-depth, strategic and specialized issues, developing more skills, supported by classroom teaching, interactivity, case studies and e-learning.
- The expert-level is the level where knowledge and skills become integrated in an optimal way. Teaching methods could be based on business-cases where all dimensions of technology transfer come into play.

2.5.1 Modular education and professional titles

In a European education system candidates should be able to follow courses on the different levels to gain more knowledge or skills on a special TT subject. These courses are offered by existing and new training providers. A candidate receives a certificate as proof of having followed this module.

It should also become possible to gain a professional title/degree in Technology Transfer. The different titles for a basic, advanced and expert level could be:

- Basic: *Technology Transfer Professional (TTP)*
- Advanced: *Senior Technology Transfer Professional (STTP)*
- Expert: *Executive Technology Transfer Professional (ETTP)*[4]

A candidate can be awarded the professional title TTP, ATTP or ETTP if he/she has mastered all different elements of the relevant level which is shown by passing the exam. Table 2.4 gives an impression of what a basic / advanced / expert level means and what candidates are supposed to know and do. More information about a framework in which professional titles can be awarded and how to set this up, can be read in chapter five: A recognition path for the TT Professional.

Table 2.4 Levels, titles and activities of technology transfer professionals

Level	Title	Description	Activities / roles
Basic 0-3 years experience	Technology Transfer Professional™	Has general knowledge of all seven skills.	Assistant TT manager, Project Assistant
Advanced 3-8 years experience	Senior Technology Transfer Professional ™	Has deep knowledge of all seven skills and has knowledge and experience in all methods of technology transfer and conditions of application and several years of personal experience from participation in (projects in) technology transfer.	Project Manager, managing technology transfer or innovation projects along at least one of recognized lines of technology transfer.
Expert > 8 years experience	Executive Technology Transfer Professional ™	Has profound knowledge and experience in/of all seven skills and has knowledge and experience in all methods of technology transfer and conditions of	TTO manager, TT manager, supervising technology transfer, and managing very complex structured

[4] These titles should become registered titles in the future. You will find more information about registration, quality standards, recognition and how to organise this in the next chapters.

		application and an extensive and systematic personal experience from management of projects in some field or fields of TT. An senior technology transfer professional is able to manage and exploit large Technology Transfer processes and is able to manage a TT professional team. He or she should have track record of several successful spin-outs or licensing deals.	projects along at least one of recognized lines of technology transfer.

2.6 Optimal length of an education programme

Another point of attention for the curriculum was the optimal length of an education programme. In the survey of WP1, one of the questions was "What is the optimal length of a European training program in technology transfer?" According to the survey of WP1, the ideal length of an education program is 1-3 weeks (50% of the respondents). Unfortunately in this question, it was not specified whether we are talking about a total program, a module or adegree (TTP, ATTP or ETTP).

A length of 1 - 4 weeks (5-20 working days) was optimal regarding 64,9 % of the respondents. The startingpoint should be to have a reasonable studyeffort, candidates probably have to do programs next to their jobs. For every skillset on any degree (for example IPR on basic level) an education programme of around 2 days is suitable and common. Candidates who like to follow all courses for a professional title should not have more than 14 days of education (7 modules of 2 days) in one year. Time for selfstudy and time to make assignments is not counted in yet. By formulating an education model for the technology transfer professional, all single courses are indicated to have a maximum duration of 2 or 3 days.

Table 2.5[5]

"What is the optimal length of a European training program in technology transfer?"

Options	**%**
Max. 1 week	24,4%
2 - 3 weeks	25,7%
1 month	13,8%
2 months	5,8%
3 months	11,4%
4 - 6 months	11,2%
7 - 12 months	7,8%
Total:	**100,0%**

2.7 The role of E-learning in education

To set up a complete education model and framework, it was also important to see which role E-learning could have in the curriculum of the technology transfer professional. In the Appendix n. 1 we give a short overview on E-learning but here

[5] CERT-TTT-M *, Key Elements of Education Programme for "Certified Transnational TT Professionals"*, p. 67, august 2007.

we address its pros and cons to find out if and then how it could be useful in the framework of the TT Professional.

2.7.1 How to use E-learning in education framework?

In this paragraph different aspects of E-learning have been considered, to see if and how E-learning can be used in the education framework of the TTmanager.

It is important to remember that the learning process should be central point of departure and not technology. Having said that, E-learning can be an appropriate method to facilitate learning processes especially when learning situations can be enriched by visualising, simulation and games, by creating new possibilities of interaction and discussion and on-line testing. Then its added value is the highest.

We may also conclude that E-learning is not an easy, quick and cheap solution as a replacement of classroom teaching. There are a lot of advantages for education in classroom, face to face.

Within the education framework of the TTmanager E-learning can play a role for example by providing electronic project environments, or by playing a patent game or negotiation game etc. It is a useful instrument for assessment or for preparing on assessments. Or when candidates who are not able to attend a classroom lesson, they might follow it at home via the Internet. In this way, E-learning can contribute to maximize education goals. In the curriculum of the technology transfer professional, E-learning could be used in a few courses where it has added value on top of classroom teaching. Important is that providers and teachers are familiar with E-learning and teaching.

2.8 Summary

In this chapter we have provided a curriculum for the Technology Transfer Professional. This model aims to support training providers with relevant information in designing and delivering courses of high quality and sufficient relevance. Presenting this model is a first step towards regulating the TT profession in Europe.

In the model, presented at the start of this chapter, relevant information can be found about:

- Different skills that are selected for the technology transfer professional curriculum
- Description of what the skill means
- Learning outcomes
- Levels of education (basic, advanced and expert)
- Education modules
- Methodologies
- Facilities
- Teaching staff
- Assessment
- Duration

The rest of the chapter has described all the steps and considerations that led to this curriculum. In the next chapter, professional and academic recognition are the central topics. The most relevant elements related to recognition qualifications in Europe are described in the following chapter.

Chapter 3 Professional and Academic Recognition

3.1 Introduction

This chapter aims to present a synthesis of the most relevant elements related to the recognition of qualifications in Europe and the possible paths for professional recognition of TT Managers.

One of the issues of the CERT-TTT-M project was to provide background information on mutual recognition regulations and recommendations for the design and the implementation of the curriculum in order to support the career development of TT professionals on a European basis. Recognition of qualifications represents the possibility, for citizens of a country to go to study and work in another European country. In this way they can develop and improve their knowledge and skills. Recognition of qualifications is thus one of the key-factors to implement a knowledge society and economy, promoting both employability and freedom of movement for its citizens. There are still some relevant differences among the Member States even though it has to be said that efforts towards the harmonisation of education and training systems have been pursued both from the States and the European Institutions by means of mutually recognised regulations (in specific only for higher education qualifications), common standards and tools. Further details on recognition of qualifications, with special attention to higher education area, are described in the CERT-TTT-M Report “Recognition of academic and professional qualifications in accordance with the Bologna Process” (August 2008). As the CERT-TTT-M training curriculum aims to support the implementation of different type of courses the background that will be considered covers different type of education and training systems. At the present time the most relevant support to the development of the CERT-TTT-M curriculum on a European basis can be provided by the use of and/or link with quality standards and reference tools promoted by European institutions (European Commission, European Council) and by joint initiatives developed by national ministries of higher education and vocational education and training. Such tools and initiatives can not ensure mutual recognition but they can provide transparency to qualifications by referring to common standards, so making easier the mobility and the access to quality courses for TT Managers.

Professional recognition context will also be included in order to identify feasible solutions for the professional recognition of TT Managers. Existing rules and practices will be described and a final proposal will be presented.
Recognition always includes meanings like explicit definition of boundaries (what it is and what it is not), comparability of different experiences, common quality standards and criteria, harmonisation and/or decrement of differences, agreements among different institutions/ national authorities and/or countries in order to allow the professional mobility.

Regulating a professions (definition of training and professional standards, including the code of ethic) is the main way to arrive to the recognition, therefore leading to fix the characteristics of a profession.
In the case of the Technology Transfer Manager we can talk about a new profession, which can include different roles and functions, developed in different

types of organisations, with different levels of competences and different specialisations, which can cover a huge number of different topics. In any case, the TT Manager appears as a profession in evolution, difficult to define but which requires the enhancement of quality and the improvement of competences.
Who and how can provide such recognition? The analysis of European regulations and experiences of professional recognition illustrates different approaches (top-down and bottom-up) and ways for recognition.

The bottom-up approach – which clearly includes the involvement of professionals and existing professional associations - seems to represent the best way to provide recognition for TT Professionals in reasonable times and level of feasibility. A single representative professional authority, which aims to coordinate existing professional associations and networks, seems to be the best way to ensure recognition by taking into account the needs of flexibility and progressive adaptation to the evolution of the profession.

For a brief description of rules, common standards and tools for recognition in education and training see Appendix n. 2.

3.2 Professional recognition: rules and experiences

Professional recognition usually refers to formally recognized professions. The most relevant rule in Europe is represented by the Directive 2005/36/EC adopted on 7 September 2005. This Directive, which consolidates, modernises and simplifies 15 existing Directives adopted between 1975 and 1999, provides for a system of automatic recognition of qualifications for professions with harmonised training requirements (doctors, nurses, midwives, dentists, veterinarians, pharmacists) and also for architects. For the other regulated professions, for which the minimum training conditions are not subject to co-ordination at EU-level, the system is based on mutual recognition: currently around 800 professions are regulated by one or more Member States in the EU[6]. The regime of mutual recognition implies that each Member State remains competent to regulate (or not) professions on its territory, but shall in principle recognise the qualifications acquired in the other Member States. Given the absence of harmonisation and the differences which may therefore exist among qualifications in the various Member States (in terms of duration and/or content of training), the Directive allows Member States to require compensation measures from the migrant (an aptitude test or an adaptation period).

As regards to compensation measures it is important to recall Article 15 of the Directive, which aims to facilitate the recognition of professional qualifications on the basis of “common platforms”. The provision of common platforms should help to simplify the case-by-case assessment of individual applications by the competent national authorities and to provide increased legal security to the migrant concerning the outcome of his/her application. A common platform is defined as a collection of criteria on professional qualifications able to bridge the substantial differences between the training conditions in the different Member States. These criteria must be established in such a manner that Member State A, which may have higher training requirements than the training provided in Member State B, would not be justified in requiring a professional from Member State B to take a test or undergo

[6] A data base of regulated professions in the EU Member States, Iceland, Norway, Liechtenstein and Switzerland is available on the EU website http://ec.europa.eu/internal_market/qualifications/regprof/regprofs/dsp_bycountry.cfm

further training because, in compliance with the criteria of the platform, this professional will already have compensated for the differences in question in advance. Consequently, the criteria in question must be understood to be predefined "compensation measures".

The same Directive underlines the importance of specific "professional cards" provided by professional associations or organizations, which should facilitate the professional mobility by providing information on qualifications and career paths of the practitioner easy to use and to update.

In summary the professions in Europe can be:

Regulated professions[7] for which automatic recognition is provided.
These are where European professionals are able to practice such professions in all Member States regardless to where the qualifications required have been awarded. The professions for which automatic pan-European recognition is provided are: doctors, nurses responsible for general care, dental practitioners, specialised dental practitioners, veterinary surgeons, midwives, pharmacists and architects. Specific characteristics/requirements of these kind of professions are the following:

- Recognised and established as professions in all Member States.
- Specific qualifications required in all Member States.
- Well-structured training paths required in all Member States.
- Homogeneous education/training paths provided in all Member States.
- Standard regulations embedded in the national laws of each Member State.
- Professional registers required in all Member States

Mutually recognised professions regulated in a different manner in the various Member States.
The mutual recognition system is designed primarily for those citizens who are qualified to practice a profession in one Member State and wish to have their qualifications recognized in another, in order to practice the same profession there. The general system applies when a Member State requires a qualification in order to practise a profession on its territory (with the exception of the professions already covered by a sectorial directive for which automatic recognition is provided). Specific characteristics/requirements of these types of profession are the following:

- Recognised and established professions in the major part of Member States.
- Specific qualifications often required in one or more Member States.
- Well-structured training paths often required in one or more Member States.
- No harmonized education/training paths provided in Member States.
- Different national regulations in Member States.
- Professional register required in one or more Member States

Un-regulated professions
For these professions there is no legal requirement or restriction on practice with regard to licences, certificates, or registration. In such cases no specific procedures of recognition are foreseen. This means that in theory there are no obstacles to exercising a un-regulated profession in whatever Member State. Nevertheless, the problem arises because in this case there is a lack of common standards about the

[7] There are essentially two ways to regulate occupations: the use of specific titles or the restricted practice of the profession (it means that is legally forbidden to practise the profession unless specific requirements are met).

contents and main features of the un-regulated profession. So, even if the host Member State recognises the possibility to exercise it provided that the same conditions applicable to its citizens are respected, in practise it could be difficult to demonstrate that one is enabled to exercise the un-regulated profession in the host Member State (for example one may be expected to demonstrate a certain level of skill and competence, to have completed a certain number of years of education, and even to have personal characteristics suitable for the job)[8].
Un-regulated professions:

- Can be well established professions or new professions.
- Do not require specific qualifications for the practice.
- Do not require clearly defined training paths.
- Do not have national regulations or professional register

The TT Professional could be currently placed among the new, not regulated profession. In many Member States there are some regulated professions which, in terms of application contents, are close to the functions of the TT Professional. They are mainly related to the intellectual property management (for example Patent Agent / Trademark agent; Patentanwalt; Conseiller en propriété industrielle ou intellectuelle / avocat de brevets).

As regards to the possible path for the professional recognition of the TT Managers, the definition of professional competences and related training contents represents the first basis for building up a perspective of recognition. The CERT-TTT-M curriculum intends to represent this step, providing common standards for training contents which could be used by different training providers in different countries and adapted to different levels/fields of education and training.

3.3 Possible paths towards recognition

Professional recognition through regulation can be mainly pursued by three paths to be meant as alternative choices or progressive steps of a sole pathway: Self-regulation; Mutual Recognition; Automatic recognition.

1. Self-regulation. This is a bottom-up process which arises from the professional bodies representing professionals and stakeholders of a certain field by the creation of a transnational association and is recognised by potential employers. Such an association (professional body), with the general aim to support the development of a specific profession at European level, would have to ensure competence standards/criteria, professional levels and assessment modalities (quality criteria to assess professional competences) which could lead to the establishment of a professional register and to the provision of “professional titles”. Such titles should represent the proof that the profession has been recognised in accordance with the professional standards ensured by the professional Body. Such transnational professional Body could gather the representatives of all professional associations at national and European level, of training institutions which

[8] Since these requirements are not regulated by law, it is up to the employer to decide whether qualifications earned outside the country are equivalent to the credentials required for the occupation.

provide education in the field and of all the other relevant stakeholders. In its activity it could be important to create and develop an open dialogue and strong collaboration with the most important public national and European institutions (such as the European Commission, public national ministries/authorities). As much is the authority of the professional Body with national/transnational institutions and stakeholders as much this self-regulation can lead to strengthen the profession. Some self-regulation experiences have already been developed: for example, the European Federation of National Engineers Associations (FEANI) or the International Project Management Association (IPMA). In the TT field the Institute for Knowledge Transfer (IKT) in UK represents an important practice that should be taken into account in order to develop professional and educational standards. See Appendix n. 3 “Professional associations’ description” for further information on relevant professional associations related to different professional areas (engineering, project management, technology transfer)

PRO. This is easier than the other ways because it does not necessary involve national and transnational authorities (which may take part to this process later on) and bureaucratic aspects. Another important aspect is that in this case the definition of the professional framework and standards can be conducted “directly” by the professionals themselves through their representative associations.

CON. In the absence of the involvement of national and transnational authorities, procedures allowing recognition are more faded. That’s why this way of recognition is strictly depending on the influence of the professional Body on relevant organisation/institutions/stakeholders of the field. The experience of the Institute for Knowledge Transfer in UK (IKT) could give a good example on how to reduce this disadvantage.

This scenario appears the most accessible and feasible with regard to the current level of definition of the TT Professional profile. In this perspective, the major TT Professionals associations at European level have the possibility to decide and guide the development of the profession. The composition of the CERT-TTT-M project partnership and Advisory Panel is consistent with the possible choice related to this scenario.

A possible development of this result (after the end of the present project activities) could be the development of a feasibility study for the establishment of such European association, the development of the professional framework (training and professional standards and code of conduct) and the creation of European professional register for the TT Professionals.

2. <u>Recognition procedures by means of the “common platform” envisaged by Directive 2005/36/EC.</u> This platform has to be submitted to the European Commission/GD Internal Market and must involve national authorities of the certain professional field which will collect all relevant elements of the national contexts as regards to training, level of regulation and recognition of the profile. Then common and standardised compensatory measures will be fixed in order to bridge the gap among Member States and to establish quicker and

simpler procedures allowing recognition when a professional of a certain Member State asks for it in a different country.

PRO. This scenario allows placing the TT Manager within the recognition process envisaged by Directive 2005/36/EC. It has a stronger impact, compared to the previous scenario, on the professional profile, recognition at a European level and mobility.

CON. The common platform procedure requires time and resources and implies that the TT profession is regulated in some way in a certain number of countries. The common platform implies to involve Commission and national authorities.

In the future perspective this scenario could represent a second step towards the European TT Professional recognition.

3. Regulation of the professional profile and relevant training. This further step towards harmonisation of training and professional standards would place the TT Professional within the system of automatic recognition in order to exercise a certain profession in a Member State different from the one where qualification was achieved. It implies the involvement of public national and European institutions through a top-down approach in order to decide all aspects of the profession and to harmonize training paths, qualifications and professional practice in all Member States.

PRO. The advantage is the automatic recognition of the profession and of its exercise in all the EU Member States and the establishment of formally recognised standards. This allows easy movement across MS and between jobs.

CON. Employers and professionals at present do not need this in order to assure themselves that their objectives are being delivered by the TT activity. Also the profession is very small at present and such regulation may be an impediment to the rate of growth needed. Also, it might make definitions too rigid at a time when the changes in expectations and requirements mean that roles are fluid – and indeed in this field roles may always need to remain more fluid than such a system can accommodate.

In a future perspective this scenario could be the last step to complete the regulation path of the TT profession.

3.4 Summary

One of the ways by which enhance the quality and the results of technology transfer and innovation in Europe is to valorise professional competences and support the career development of TT Managers. The recognition of education and training paths, both with the professional recognition, is a necessary step of such a perspective. It has to be said that recognition is a formal procedure which usually implies the comparison between qualifications/competences acquired in different contexts/countries.

Recognition of qualifications

The sole regulation for the recognition of qualifications at European level actually refers to higher education. European countries still maintain differences among education and training systems and the development of regulations for recognition imply processes which necessarily involve national and international authorities, that is to say long and difficult procedures. The transparency and the comparability of qualifications and courses appear as a more feasible and concrete approach, able to go over national differences while respecting them, not ensuring recognition but eventually supporting it and making mobility easier.

A number of relevant initiatives have been developed in order to make qualifications and training contents more readable and understandable. All such initiatives are based on a lifelong learning perspective focusing on:

- Competences and skills wherever they have been acquired, through education or life/work experiences.
- Contents of competences and knowledge expressed in terms of learning outcomes, instead of type of courses and characteristics of training providers.
- Common system of measure in terms of credits (like ECTS), as necessary of enabling the comparison of the weight (workload) of different courses and experiences.
- Reference to the European Qualifications Framework and use of Europass transparency devices (like Diploma Supplement and Certificate Supplement).

The CERT-TTT-M curriculum is mainly focused on the development of professional core competences, especially thought for working people wanting to improve competences and skills. The use of descriptions in terms of learning outcomes and credits could ensure the possibility to be used by different training providers for the implementation of different types of education and training courses in different countries.

Professional recognition

As the existing professional recognition procedures only refer to professions requiring at least specific qualifications/training paths in one or more Member States, the only goal really achievable seems to be the creation of the basis for the development of the TT Manager as a more settled and regulated profession in a future perspective.

Such a perspective could be based on the adoption of a self-regulation approach to the professional recognition. The self-regulation approach implies that a transnational professional association (representing the most relevant professional associations, training providers and stakeholders) would define professional profile and standards at European level, in order to develop a transnational framework of the profession and consistent reference points for its recognition. This solution implies the recommendation for the future development of a European TT Professional Association.

The CERT-TTT-M curriculum could represent a set of standards that such a future Professional Association, as the relevant authority in the field, could valorise, by ensuring quality and controlling its right adoption by training providers and stakeholders.

Chapter 4 Quality Standards and Criteria

4.1 Introduction

This chapter presents our conclusions after reviewing some examples and practices related to quality assurance in education and training in order to support the development and the implementation of the CERT-TTT-M framework. In education and training field quality refers both to general/formal quality assurance standards and to quality criteria for the education programmes in specific disciplines/areas.

In the recent years, the quality assurance in education has become one of the crucial issues for the achievement of the 2010 Lisbon agenda goals. Common and recognized quality standards in education create the basis for the enhancement of the quality of programmes and qualifications; make easier the recognition of qualifications across Europe; support the mobility and the competitiveness of professionals.

Quality assurance can be referred to:

- Institutions / training providers (formal criteria and procedures)
- Education and training programmes (knowledge and skills to be acquired in a certain field)

Quality assurance systems usually aim to provide standards and guidelines for education programmes and institutions at transnational and/or national level .

Quality systems always imply accreditation procedures, in order to measure and testify the adequate use and compliance with defined quality criteria by training providers and programmes. Accreditation is usually provided by independent agencies or institutions assuring the development of accreditation procedures.

The Appendix n. 4 “Quality Assurance Systems for Education and Training: description of some relevant experiences” provides further information on some experiences aiming to illustrate possible approaches for the identification of quality indicators within which new education programmes/paths could be developed and/or give relevant references for the procedures of recognition/accreditation of existing education programmes by a possible transnational professional authority in TT Professional field.

4.2 Quality standards for institutions and training providers

Quality can be focused on formal criteria related to the adequacy of institutions / training providers to implement and supply of quality education programmes and the necessary requirements/procedures to assure the compliance of those standards.

Such criteria can refer to:

- Training providers active in a specific sector of education (i.e. higher education or vocational education and training)
- Training providers active in a specific type/level of education (i.e. Management and Business Administration)

Standards usually cover general aspects and procedures as followings:

- Internal quality policies and procedures
- Review of programmes and awards
- Evaluation and Assessment
- Teaching staff, Resources and facilities

In the case of international quality systems, detailed procedures are not included and institutions themselves can identify procedures in order to adopt the standards at national/local level. The recent "Common Quality Assurance Framework" for VET provides a check list of general questions to which each institution in its national contest should answer by the use of specific procedures.

In some cases, quality systems include standards and guidelines for external agencies aiming to control the correct adoption of such standards by training providers. Quality standards for external agencies can cover the following aspects:

- Official status
- Activities
- Resources
- Mission
- Independence
- Assurance criteria and processes used
- Accountability

The ENQA "Standards and Guidelines" for higher education in Europe represent a good example of such an approach. In each country where the standards have been adopted one or more accreditation agencies have been created.

4.3 Quality standards for education and training programmes

Quality can be focused on the education programme's contents and on their adequacy to prepare students in specific disciplines/areas of activities in order to practice specific professions. In other words, these criteria represent conditions or characteristics that should be present in the education programme necessary to access to the profession.

Regulated professions always require such education standards which aim to harmonise education programmes in the field. In some cases also not regulated professions requiring quality improvement and/or a certain level of self regulation. Aspects related to the regulation of professions have been described in the Chapter 3.

Quality criteria for education programmes often cover similar aspects of general quality assurance systems but also include other kind of details like:

- contents of education programme (general and professional studies)
- levels of competence
- background of the teaching staff
- the capability of the institute for providing programmes in a specific field

- student selection and support services
- resources, facilities and equipments

Accreditation systems include detailed accreditation procedures which can require to the applicant institution the signature of a letter of intent and a self-study report. A on-site visit by the representatives of the accreditation authority and a final decision complete the procedure.

Some existing professional associations support systems of accreditation of education programmes based on specific criteria The institution in charge for the accreditation procedure and which take the final decision is not the professional association itself but an independent agency or board.

See the annex for further information on concrete experiences of quality development in education and training.

4.4 Summary

Quality standards and criteria for training providers and programmes play an important role in the development and implementation of the CERT-TTT-M curriculum.

Quality standards for training providers can ensure the reliability of such institutions and the adequacy of organisational aspects and procedures to the training roles/functions and activities. Where fully implemented, they can provide a first general level of quality assurance for institutions and programmes. Such quality systems can include procedures for the accreditation of institutions and programmes by national agencies/relevant authorities.

The examples of accreditation indicators of programmes' contents show useful reference points as measure of quality used also for the CERT-TTT-M curriculum, underlining the adequacy to develop professional knowledge, competences and skills, such as:

- topics/domains expressed in term of learning outcomes
- education levels
- minimum duration of the course
- teaching competencies/experiences
- credits

The implementation of the CERT-TTT-M curriculum by accredited training providers, adopting existing general quality standards system, is recommended. Such standards are related to the school/institution capability to underpin quality, such as publicized quality policies, facilities, management system, financial resources, services, staff, etc.

The accreditation of the contents of the CERT-TTT-M curriculum by a specific authority in TT field is also recommended. As the curriculum would represent a common framework of competences and skills to be acquired by European TT Managers and could be implemented by different training providers, a European system of accreditation of programmes could ensure the continuing adequacy of programmes to training needs of working people.

The use of the CERT-TTT-M curriculum by a first group of training providers could represent the testing step of the framework and the starting point of a quality future path towards accreditation. In fact, by following the examples presented above, a transnational professional association of TT Manager Associations, coordinating activities and initiatives supporting career development at European level, would be a feasible and recommended solution.

Chapter 5 A Recognition path for the TT Professional

5.1 Introduction

One of the issues of the CERT-TTT-M project was to provide information on regulation and recognition rules and how to use them for the curriculum of the TT professional in order to develop the TT profession in Europe. It is necessary to start to regulate and recognize the TT profession in order to:

- be able to benchmark the TT profession
- develop the quality of education programs
- develop knowledge and skills of professionals
- allow and promote the mobility of professionals

Recognition starts by formalising a profession by defining and acknowledging the content and quality of education programs and their providers. In the case of the Technology Transfer Professional, we talk about a new profession which includes different roles and functions, developed in different types of organisations, with different levels of competences. This profession is in a stage of evolution, in which requirements have to be determined and quality standards have to be set. Chapter 4 gave a useful general outline on how quality assurance is guaranteed in education and training by presenting examples of European quality systems and the role of professional associations in guaranteeing quality in their professional group. In this chapter we'll describe how a recognition path for the TT Professional can be started and what is necessary to organise this process further.

5.2 From non regulated profession to a regulated profession?

As we have seen in chapter 3 there are three 'kinds 'of professions in Europe:

1. Non regulated professions.
2. Professions regulated in a different manner in various Member States.
3. Regulated professions.

For non regulated professions there is no legal requirement or restriction on practice in different Member States with regard to licences, certificates or registration. Option number 2 directs to citizens who are qualified to practice a profession in one Member State and wish to have their qualifications recognized in another MS in order to practise their profession there. Regulated professions (the third option) refer to European professionals that are allowed to practise there profession in all Member States, regardless where the qualifications required have been rewarded. Examples of regulated professions are doctors, dental practitioners, architects etc. From the three above options, the TT professional can be placed among the (new) non regulated professions.

The possible paths of recognition that were shown in chapter 3 are:

1. Recognition by self regulation.
2. Mutual recognition by means of the 'common platform' envisaged by Directive 2005/36/EC.
3. Automatic Recognition by means of Directive 2005/36/EC.

It may have become clear that self regulation is the most flexible way to start regulation of a profession. This is a bottom-up process in which different stakeholders (TT professionals, employers …) of different member States organise themselves in an association i.e. a professional Body and develop the profession by defining competence and professional standards, quality criteria, accreditation possibilities and professional titles. Recognition by means of the 'common platform' envisaged by Directive 2005/36/EC, the second option, demands a platform in which national authorities are involved. All national authorities have to make an inventory of all rules and measures for the specific profession. Then common and standardised compensatory measures have to be taken to bridge the gaps between MS. Automatic Recognition, the third option, is a top-down approach, which takes even a longer way because it implies the involvement of public, national and European institutions in order to decide on all aspects of the profession and to harmonize all existing training programs, qualifications and professional practise in all Member States.

5.3 Self regulation: a bottom- up approach

As seen in 5.1 there are different approaches to achieve regulation and recognition for the TT profession. Within the steering committee and the advisory panel, this subject has had a lot of attention, because is has a great impact on how you organize things.

Bottom-up approach: self regulation

Within this approach the stakeholders themselves set the standards for the profession, qualify professionals and certify/accredit available education programs through quality indicators. This scenario requires the creation of a transnational association/institute or a federation of national associations that sets the standards and regulates the certification. Possible advantages and disadvantages could be the following:

Advantages	Disadvantages
Full support of existing major stakeholders / close link with the labour market. Therefore buy-in is greater.	Implementation depends on support from major stakeholders.
Full use of existing expertise.	The role and the impact of the new transnational institute depend also from the relationships with existing stakeholders at professional and political level.
Maximum use of existing education programs.	Heterogeneous offer of education opportunities.
More flexibility and adaptation to the possible evolution of the profession.	

Top-down approach - regulation by Automatic Recognition

In the case of a top-down approach national governments from the different MS can set professional and educational standards for the TT profession. The education program has to be implemented within the respective national education systems. Possible advantages and disadvantages are:

Advantages	Disadvantages
Full implementation of the 'professional system' (education, professional practice, regulation).	More difficulties in taking into account the stakeholders' points of view and/or the labor market needs.
Homogeneous education programs available all around Europe.	Reduction of the autonomy in the training providers' offers.
Profession regulated at European level.	Risk fixing and fossilizing a profession which is in evolution.
Fewer difficulties in the professional recognition across European countries.	Necessity of much time for the realizing of a European agreement and its implementation at national level.

Weighing the advantages and disadvantages of the different approaches, the logical path to European recognition seems to start with self regulation: the bottom-up approach in which the definition of professional competences and related training contents represent the first step towards building a perspective of recognition. The CERT-TTT-M curriculum that was presented in chapter 2, intends to represent the start of a first step in providing common standards for training programs in terms of desired skills, levels of education, learning outcomes, education modules, methodologies, facilities, teaching staff etc. Important is that this bottom -up approach, self regulation, received the support from project members and advisory panel. Self regulation is a flexible approach and gives space to the possible evolution of the profession using the existing expertise and education programs. A next step in this self regulation process is to set standards for accreditation of programs. This requires the creation of a European association/institute, a Professional Body (PB) where all major stakeholders should be founding members of the board.

As said before, the step of self regulation is the start in the European path of regulation. As we have seen in chapter 3 a lot of professional associations for example PMI (Project Management Institute) function well by this sort of regulation and quality guarantee. It might turn out that self regulation is enough for professionalizing the TT profession. But of course it is also possible in the future to evolve towards 'Recognition by means of the 'common platform' envisaged by Directive 2005/36/EC'or towards 'Automatic Recognition'. However self regulation is point of departure. To 'organise' this a Professional Body is needed.

5.4 Professional Body

As we have seen a European association, a Professional Body (PB), is needed to start the process of self regulation in the TT profession. However the establishment of such body falls outside the scope of the CERT-TTT-M project. But because of the importance of this Body for the regulation of the TT profession, a general outline of the Body and its tasks will be given. Such a Professional Body with the aim to support the development of the TT profession in Europe should be able to set content and competence standards, quality standards, accreditation criteria and procedures, professional levels and assessment modalities (quality criteria to assess

professional competences) which can lead to professional titles and the establishment of a professional register. To be able to carry out these tasks it is crucial that the Professional Body does have sufficient support and authority to be recognized by its peers in the TT field. In its activity it is also important to create and develop an open dialogue and strong collaboration with the most important public national and European institutions (such as the European Commission, public national ministries/authorities etc.).

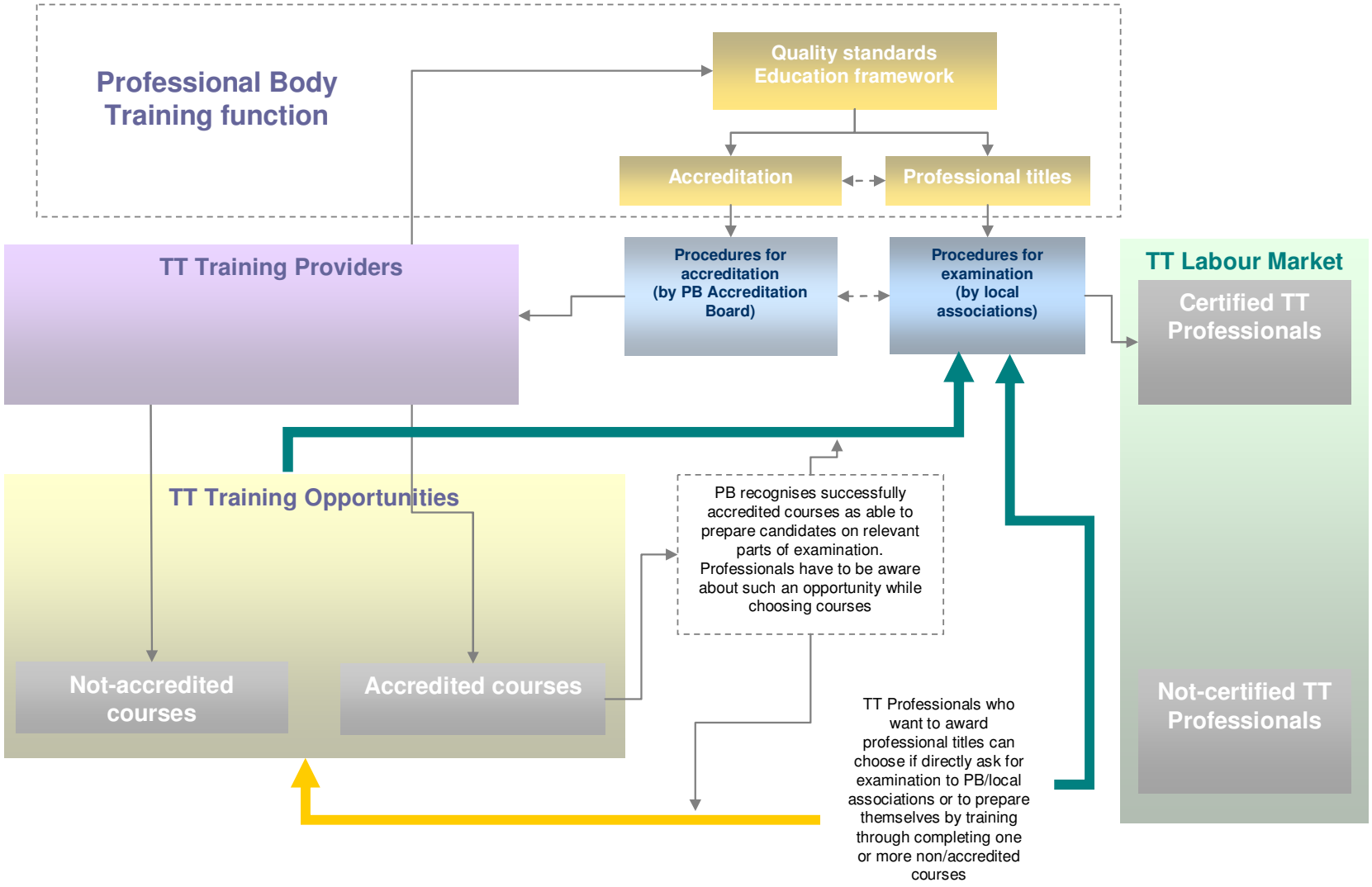
5.4.1 Tasks of the Professional Body

To provide relevant education programs of high quality and a coherent career-path for technology Transfer Professionals a Professional Body should have two functions:

- ☑ To accredit existing education programs
- ☑ To award professional titles

Another important aspect that includes these two tasks is quality assurance. Quality assurance precedes accreditation by setting quality standards and criteria for education programs and education providers. At the same time quality assurance also follows from the process of regulation, accreditation and awarding professional titles. In chapter 3 different quality systems are described and serve as an example for a future Professional Body. The Professional Body will have to decide how quality assurance can be reached in the TT profession and which quality standards and procedures have to be followed.

In the graph on the next page you can see how the regulation of the TT profession can be started, by showing the training environment and the possible role the Professional Body has in it.


Professional Body
Training function
Quality standards
Education framework
Accreditation
Professional titles
TT Training Providers
Procedures for accreditation (by PB Accreditation Board)
Procedures for examination (by local associations)
TT Labour Market
Certified TT Professionals
TT Training Opportunities
PB recognises successfully accredited courses as able to prepare candidates on relevant parts of examination. Professionals have to be aware about such an opportunity while choosing courses
Not-accredited courses
Accredited courses
Not-certified TT Professionals
TT Professionals who want to award professional titles can choose if directly ask for examination to PB/local associations or to prepare themselves by training through completing one or more non/accredited courses

Ad 2. Accreditation of education programs
An important task of the future Professional Body is to set accreditation standards, for the accreditation of the different existing education programs and new programs in the TT field. Accreditation should be based on quality criteria which correspond to specific professional standards and level of competencies.

Accreditation of courses/education programs

- Criteria are based on quality standards set up by the PB or an 'independent board' of experts supported by PB.
- Procedures are developed by the PB or an 'independent board' of experts supported by PB.
- Procedures allow institutions /education providers to apply for accreditation (of their programs).
- Courses that are accredited are supported and promoted by PB.

The PMI provides a good example of how accreditation can be implemented by a professional association. In the follow-up of this project the demands to such an accreditation system can be worked out further. Other interesting existing experiences of professional organisations on the self-regulation path are IPMA, AUTM, LES/CLP[9], etc.

Examples of procedures for the accreditation of education programs

PMI (Project Management Institute) provides an accreditation system of education programmes in the field of project management
The PMI **Global Accreditation Center** for Project Management (GAC) has specific responsibilities and functions to ensure a continual and effective process for the accreditation of degree-granting programmes pertaining to the field of project management. The GAC's membership includes voting representatives from relevant academic programmes, project management stakeholders across all industries and the public at large. GAC Board members serve without compensation.

The GAC Accreditation process consists of 4 steps:
1. Letter of Intent
2. Self-study Report
3. On-site Visit
4. GAC Decision

An institution applying for accreditation of its project management degree programmes may expect the entire process to take approximately one year. From acceptance of the Letter of Intent, the applicant may take up to six months to complete and deliver the Self-Study Report. Once the report is received, the GAC will evaluate the report at its next regularly scheduled monthly meeting. The result of the evaluation may be to authorize the on-site visit or the board may request further clarifying information. Once the self-study is approved, the on-site visit will be scheduled at a time mutually convenient to the applicant and the evaluation team. The on-site visit can normally be expected to occur within 60 days. Within three weeks following an on-site visit, the team will submit its report to the board and the board will review the report and recommendations at its next regularly scheduled meeting.

Source: *Handbook of accreditation of degree programmes in project management*, 2007 - www.pmi.org

[9] The CLP program has been launced in fall 2007 by the Licensing Executives Society USA/Canada. The non profit CLP Inc. is now the program administrator and operates under the guidance of a board of Governors and, in collaboration with Castle Worldwide, an independent professional certification testing provider. Applications from Europe and Asia are welcomed and there will be exams twice a year.

Ad 3. Awarding professional titles
To further professionalize the TT profession, it is desirable to be able to award professional titles and to establish a professional register. The PB can have the following tasks in this:

- PB provides general rules and structures.
    - Guidelines for TT Professionals career development (description of competences levels/titles to be awarded).
    - Assessment regulations/procedures.
- PB associates (i.e. local/national professional associations) organise examinations based on common guidelines and regulation/procedures set by the PB.

In chapter 2 it has become clear that in an ideal future situation there will be three levels of education for the technology transfer professional: a basic level, an advanced level and an expert level corresponding with the following professional titles:

- Basic: *Technology Transfer Professional (TTP)*
- Advanced: *Senior Technology Transfer Professional (STTP)*
- Expert: *Executive Technology Transfer Professional (ETTP)*

Other ideas from the CERT-TTT-M project group about professional titles are:

- The minimum entrance level to apply for an exam is a master degree.
- Candidates can prepare themselves for a title by completing one or more accredited/non accredited courses.
- Candidates should also be able to gain the titles TTP, ATTP and ETTP by applying direct for examination. Following the certified courses is not a requirement to be able to fill for an exam.
- For the title of ETTP (expert), candidates should follow a special program of around 10 -12 days[10] in which all aspects of there TT knowledge will be tested in a business case learning environment.
- To deserve/ keep a title on senior/executive level, candidates should also make a contribution to the development of the TT profession by writing articles, teaching, developing new teaching methods etc.

Finally the PB has to decide about rules and procedures on how candidates can apply for professional titles. But these ideas might give some inspiration on how the system could be formulated. Other activities and tasks that further develop the profession and knowledge of the Technology Transfer Professional, can be added and should be worked out in the future, for example the development of new teaching methods.

Below an example of a credential system for professionals in project management field from PMI.

[10] These 2 days is the time the student spend to physically attend the classes. It doesn't include the time to prepare for the classes and/or time for assignments.

An example PMI

The PMI (Project Management Institute) provides three different credential systems for professionals in project management field.

Program Management Professional (PgMP)[SM]
PMI's Program Management Professional (PgMP) credentialing service offers PMI's first credential designed to demonstrate project and program management skills. To be eligible for the PgMP credential, the professional must meet specific guidelines that objectively measure experience, education and professional knowledge, and undergo a rigorous application process as well as three assessments. He/She also must agree to adhere to the PMI Code of Ethics and Professional Conduct.

The Project Management Professional (PMP®) Credential
Individuals who hold PMI's PMP credential demonstrate a proficient level of project management leadership skills, and as a result are able to command salaries that exceed those of their non-credentialed counterparts. To be eligible for a PMP credential, the professional must meet specific guidelines that objectively measure experience, education and professional knowledge. He/She also must agree to adhere to the PMI Code of Ethics and Professional Conduct and pass a rigorous multiple-choice examination that assesses his/her abilities in project management.

Certified Associate in Project Management (CAPM®) Credential
Designed specifically for project team members, the CAPM credential is aimed at improving overall project success by helping to ensure project management knowledge. To become a CAPM credential holder, he/she must meet specific guidelines designed to objectively measure experience, education and professional knowledge. He/she must pass an examination that assesses his/her knowledge of A Guide to the Project Management Body of Knowledge (PMBOK® Guide).

Source: www.pmi.org/CareerDevelopment/Pages/Our-Credentials.aspx

5.5 Summary

In this chapter considerations for the European path of regulation and recognition of the TT professional have been given. We can conclude that the TT profession is a new non regulated profession in Europe. The best way to obtain recognition is tot start with self regulation. This is a bottom-up approach in which all important stakeholders participate to take steps towards regulation. The definition of professional competences and related training contents represent the first step towards building a perspective of recognition. A next step in this self regulation process is to set standards for accreditation of education programs. These steps require the creation of a European association/institute, a Professional Body (PB) where all major stakeholders should be involved when setting up this Body.

The establishment of such a Professional Body falls outside the scope of the CERT-TTT-M project. But because of the importance of this Body for the regulation of the TT profession, a general outline of the Body and is tasks haven been given in this chapter. To provide relevant education programs of high quality and a coherent career-path for technology Transfer Professionals a future Professional Body should have two functions:

- ☑ To accredit existing education programs
- ☑ To award professional titles

Another important aspect that includes these two tasks is quality assurance which precedes but also follows from accreditation and awarding professional titles. The Professional Body will have to decide how quality assurance can be reached in the TT profession and which quality standards and procedures have to be set.

To be able to carry out these tasks it is crucial that the Professional Body does have sufficient support and authority to be recognized by its peers in the TT field. It is then important when creating the body, the stakeholders are involved.

The establishment of a PB is a recommended development in the recognition path for the TT Professional. The presentation of the curriculum for the technology transfer professional in chapter 2, which is one of the main deliverables of the CERT-TTT-M project can be valorised by a future PB. This would be a first step in regulating the TT profession in Europe. Other tasks, awarded to this PB, can only further strengthen a European curriculum for the technology transfer professional.

Chapter 6 Conclusions and Recommendations

In this final report the deliverables of WP3 and WP4 of the CERT-TTT-M project are presented. The CERT-TTT-M project aimed at professionalizing the Technology Transfer on a European level, by providing qualified and skilled professionals. At the moment there is a lack of qualified TT personnel. The TT education programmes in Europe are very heterogeneous. A common approach in the sense of mutual recognition does not exist. Therefore comparability between existing TT education programmes is difficult. As a consequence the development of know-how, experience and the exchange of personnel is hampering because it is not possible to assess TT-skills. Current education programmes do not offer the full spectrum of competences that are needed to function in the Technology Transfer profession. They often lack quality and relevance. Another consequence of the absence of an education framework for technology Transfer Professionals is the failure to attract sufficient numbers of high qualified candidates because a matching career structure is lacking. It is difficult to attract the numbers of high calibre staff with real potential that are so urgently needed to develop technology transfer and the European Research Area (ERA).

The CERT-TTT-M project aims to solve these issues by professionalizing the TT profession. A first step towards professionalizing the TT profession is to define and acknowledge the content and quality of (existing) education programs. Within WP3 and WP4 a curriculum for the technology transfer professional is developed. This curriculum gives information about:

- Different skills that are selected for the curriculum of a technology transfer professional
- Description of what the skills mean
- Learning outcomes
- Education modules
- Methodologies
- Facilities
- Teaching staff
- Assessment
- Duration

Furthermore, the curriculum three levels of education (basic, advanced and expert). Candidates should also be able to apply for a professional title/degree in Technology Transfer. The different titles for a basic, advanced and expert level are:

- Basic: *Technology Transfer Professional (TTP)*
- Advanced: *Senior Technology Transfer Professional (STTP)*
- Expert: *Executive Technology Transfer Professional (ETTP)*[11]

A candidate can be awarded the professional title, TTP, ATTP or ETTP if he/she has mastered all different elements of the relevant level which is shown by passing the exam. Candidates can prepare for the exam by following all the courses of a level or by applying straight for the exam. Or the candidates can straightforward apply for the examination. The student when doing the exam, will be questioned on all 7 skills.

[11] These titles should become registered titles in the future. You will find more information about registration, quality standards, recognition and how to organise this in the next chapters.

This curriculum can serve as a model for training providers to support them in designing and delivering courses of high quality and sufficient relevance. The curriculum functions as a standard in what a technology transfer professional is supposed to know and is able to do.

Recognition is a next step towards professionalizing the TT profession. To see how recognition in the TT profession can be reached different path to recognition were described in chapter 3. The analysis of European regulations and experiences of professional recognition illustrated different approaches to recognition a top-down or a bottom-up approach. A top down approach means 'Automatic Recognition by means of Directive 2005/36/EC', a long and bureaucratic road in which the involvement of public, national and European institutions is required to decide on all aspects of the profession and to harmonize all existing training programs, qualifications and professional practise in all Member States.

The bottom-up approach, self regulation, seemed to be the best way to provide recognition for TT Professionals within a reasonable time schedule and level of feasibility. The self regulation approach implies a professional association, as a relevant authority in the field, to valorise the curriculum and to assure quality and accreditation standards and processes.

Quality standards and criteria were the subject of chapter 4. Quality standards can ensure the reliability of training providers and institutions by guaranteeing quality on the content of the programs and on the organisational aspects and procedures with regard to training activities.

Quality standards/criteria for institutions and training providers usually cover general aspects and procedures:

- Internal quality policies and procedures
- Review of programmes and awards
- Evaluation and assessment
- Teaching staff, resources and facilities

Quality standards/criteria for education programmes can be focused on:

- Contents of education programme (general and professional studies)
- Levels of competence
- Background of teaching staff
- The capability for providing programmes in a specific field
- Student selection and support service
- Resources, facilities and equipment

The examples of standards/criteria for institutions and training providers and for education programmes provide useful reference points for quality measures for the CERT-TTT-M curriculum.

In chapter 5 a recognition path for the TT Professional is described. A bottom - up approach in which the stakeholders themselves set the standards for the profession, qualify professionals and certify/accredit available education programs through quality indicators suits best in the current situation. It is a flexible approach, which gives room to the evolution of the profession.

It is important that the major stakeholders support this approach. This scenario requires the creation of a European association, a Professional Body, where all major stakeholders should be involved in the setting up of this Body. Two important tasks of this future Body can be:

- ☑ To accredit existing education programs
- ☑ To award professional titles

Another important aspect that includes these two tasks is quality assurance. Quality assurance precedes but also follows from accreditation and awarding professional titles. Other ideas about future tasks of the PB and the performance of the curriculum and professional titles are also described. The establishment of such Professional Body falls outside the scope of the CERT-TTT-M project. But because of the importance of this Body for the regulation of the TT profession, a general outline of the future Body and its tasks has been given.

Recommendations of the CERT - TTT- M project

Based on the results of WP3 and WP4 of the CERT–TTT-M project the following recommendations are made to all stakeholders (EU-national policymakers, industry, public research organisations and training providers):

1. All stakeholders should recognise the present opportunities that are arising for the next step towards a European recognition of the TT profession.
2. All stakeholders should take notice of the CERT-TTT-M framework. And specifically, training providers are recommended to use the framework when assessing, designing or delivering their courses on TT.
3. The use of the CERT-TTT-M curriculum by a first group of training providers will represent the testing step of the framework and the starting point of a quality future path towards recognition...
4. All stakeholders should support the establishment of a ‘Professional Body’ as an independent and representative authority in the professional field which can recognise and/or in due course accredit the training programs for TT across the European Union. With the Professional Body the recognition path of the TT professional can be further developed.
5. Therefore it is recommended to do a feasibility study for the establishment of a Professional Body. This Body could develop an accreditation system, the further development of the professional framework (training and professional standards and code of conduct), ensuring quality control, the financial sustainability and the creation of European professional register for the TT Professionals.

Appendix 1

The role of E-learning in education

To set up a complete education model and framework, it was also important to see which role E-learning could have in the curriculum of the technology transfer professional. In this paragraph a short overview on E-learning and its pros and cons will be given in order to find out if and then how it could be useful in the framework of TT Professional. The following subjects will be treated:

1. E-learning in the European context.
2. What is e-learning?
3. Didactics: do media influence learning?
4. Advantages and disadvantages of E-learning
5. Recommendations for E-learning in the education framework TT Professional

E-learning in European context

At the Lisbon European Council of 23 and 24 March 2000, the Heads of State and of Government set a new objective for the European Union: "to become the worlds most competitive and dynamic knowledge economy by 2010". Since 2000, Europe has already made substantial progress in introducing ICT, but much remains to be done in order to develop its educational uses. The eLearning Program aimed to plug these gaps by intensifying the efforts already undertaken. This program was started in 2003 for the effective integration of information and communication technologies (ICT) in education and training systems in Europe.[12] Since then a lot of initiatives and projects on e-learning have started in the European Union,[13] to promote the use of ICT in education and training.

What is e-learning?

E-learning (Electronic Learning) is commonly referred to the intentional use of networked information and communications technology in teaching and learning.[14] Another definition is: E-learning is a collective term for education and learning with the use of information and communication technology, particularly online technology. E-learning is used in companies and in (higher) education. *Distance learning* and *flexible learning* are important characteristics of e-learning.

In *'E-learning. A Guidebook of principles'* four different forms of e-learning are formulated:

1. Individualized self-paced e-learning online
2. Individualized self-paced e-learning offline
3. Group-based e-learning synchronously and
4. Group-based e-learning asynchronously

1.Individualized self-paced e-learning online refers to situations where an individual learner is accessing learning resources such as a database or course content online via an Intranet or the Internet.
2. Individualized self-paced e-learning offline refers to situations where an individual learner is using learning resources such as a database or a computer-assisted learning package offline, for example a CD or DVD.

[12] http://europa.eu/scadplus/leg/en/cha/c11073.htm
[13] http://www.elearningeuropa.info/main/index.php?page=home
[14] S. Naidu, *E-learning. A Guidebook of Principles, Procedures and Practices*, Commonwealth Educational Media Center for Asia: 2006 (2nd edition).

3. Group-based e-learning synchronously refers to situations where groups of learners are working together in real time via an Intranet or the Internet. Examples of this include learners engaged in a real-time chat or an audio-videoconference.
4. Group-based e-learning asynchronously refers to situations where groups of learners are working over an Intranet or the Internet where exchanges among participants occur with a time delay (i.e., not in real time). For example on-line discussions and text-based conferencing within learning managements systems.

So when we talk about E-learning, we talk about a broad concept which covers all different forms of learning with the use of information and communication technology.

Didactics: do media influence learning?

Didactics/digital learning and instruction is about the knowledge and learning with regard to ICT by facilitating the learning process.[15] E-learning is still a quite new area, it became poplar around 1999 with the internet hype. Theo Bastiaens, Dutch professor in the Theory of Education and specialised in Didactics (Pedagogy) of New Media states in 2007 that 'the learning processes should be the point of departure and not the technology. 'What is the added value of learning by new media?' This is an important question that needs to be addressed more often. Not a lot of research exists in this field of science yet. And most teachers are also not prepared yet to use new media in a responsible manner. In secondary teacher training, there is not a lot of attention for didactics of new media and the design of teaching aids.[16]

Summarizing discussions on E-learning, some authors argue that E-learning makes a special contribution to the learning process and some authors doubt this. What is important to realize is that E-learning can only make a contribution to the learning process when necessary conditions are fulfilled. The skilful integration of media and instructional method (i.e., learning and teaching strategies) is critical in the optimization of the influence of media in learning. This has to do with careful selection and matching of media attributes with learning and teaching strategies.[17] Naida supports the vision of Bastiaens, that learner and learning-centeredness is regarded as a desirable trait in education and training. E-learning demands an approach in which didactic, technological en organisational aspects play a balanced role.[18] While creating opportunities for learning, online learning environments also create demands on learners for new skills in managing their own learning. Being successful in such learning environments requires learners to have the ability to organize, evaluate, and monitor the progress of their learning.[19]

Advantages and disadvantages of E-learning

In this paragraph some advantages and disadvantages of E-learning will be summed up shortly.

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[15] http://home.tiscali.nl/robertjansimons/publicaties/Digitale%20didactiek%20thema.doc
[16] www.scienceguide.nl/article.asp?articleid=103297
[17] Naidu, p.14.
[18] http://dspace.ou.nl/handle/1820/294
[19] Naidu, p.40.

Advantages of E-learning

1. E- learning is flexible.
2. Access 24 hours a day 7 days a week to there learning environment.
3. Learning has become place and time independent.
4. Students learn just in time, just enough in their own pace.
5. Students save travel time and money.
6. Companies are able to educate more students/employees at the same time.
7. Education programmes are easy to update.
8. Students are offered the same information.
9. Competence learning on individual base is also possible.
10. Students able to skip parts of courses they already know.
11. Focus on topics they like to learn.
12. Learning situations can be enriched by visualising, simulation and games.
13. New possibilities of interaction and discussion and on-line testing.
14. Opportunities for capturing and representing real-world scenarios.[20]

Disadvantages of E-learning

1. Demands a lot of discipline from students.
2. Students must be very motivated.
3. People prefer to learn by personal contacts.[21]
4. Employees don't like to offer private time to learn instead of following a course during work time.
5. A risk is that students just finishing teaching material, the learning process not getting started.
6. Learning and reading from a screen can be tiring.
7. The development of high quality content, tailor made is expensive.
8. Teachers are not well qualified to use E-learning.

How to use E-learning in education framework?

In this paragraph different aspects of E-learning have been considered, to see if and how E-learning can be used in the education framework of the TTmanager.
It is important to remember that the learning process should be central point of departure and not technology. Having said that, E-learning can be an appropriate method to facilitate learning processes especially when learning situations can be enriched by visualising, simulation and games, by creating new possibilities of interaction and discussion and on-line testing. Then its added value is the highest.

We may also conclude that E-learning is not an easy, quick and cheap solution as a replacement of classroom teaching. There are a lot of advantages for education in classroom, face to face.

Within the education framework of the TTmanager E-learning can play a role for example by providing electronic project environments, or by playing a patent game or negotiation game etc. It is a useful instrument for assessment or for preparing on assessments. Or when candidates who are not able to attend a classroom lesson,

[20] Naidu, p.27.
[21] http://www.e-learning.nl

they might follow it at home via the Internet. In this way, E-learning can contribute to maximize education goals. In the curriculum of the technology transfer professional, E-learning could be used in a few courses where it has added value on top of classroom teaching. Important is that providers and teachers are familiar with E-learning and teaching.

Appendix 2

Recognition in education and training: rules, common standards and tools

The sole existing European regulation as regards to recognition in education and training is the Lisbon Convention on Recognition22, signed in Lisbon on April 1997. It provides a common general framework for the mutual recognition of higher education qualifications among European countries:

- Giving access to higher education.
- Recognising periods of study completed within the framework of a higher education programme in another country.
- Facilitating access to further higher education studies and/or labour market.
- Concerning qualifications held by refugees and displaced persons.

Relevant experiences at European level have been focused on the definition of common standards and tools, which cannot ensure recognition but can make it easier. The most important one is the so called "*Bologna Process*" (official starting date: 1999), which objective is the building up of the European Higher Education Area by stimulating the reform of higher education systems in 46 signatory countries, on the common basis of an overarching framework of qualifications.

Among the main objectives of the Bologna Process the followings are of particular interest for the scope of the CERT-TTT-M project:

- Implementing a common over-arching framework for higher education systems based essentially on three main cycles (bachelor, master and doctorate) and which contents are described in terms of learning outcomes;
- Establishing a system of credits in order to have a common measure for workload required to students for successfully completing a course (such as ECTS);
- Supporting the mobility of students, teachers and researchers and enhancing the attractiveness of the European Higher Education Area;
- Promoting European cooperation in quality assurance at institutional, national and European levels by implementing common standards and guidelines[23];
- Promoting lifelong learning by creating opportunities for flexible learning paths in higher education, including procedures for recognition of prior learning;

The transparency of systems, procedures and shared principles among different countries can lead to the implementation of common tools and standards for quality assurance of institutions and programmes. Even in this case, the aim is to facilitate recognition of higher education qualifications for the improvement of mobility and employability in Europe. That's why among the most interesting initiatives developed within the Bologna process there are the implementation of complete qualification frameworks at national level and the inscription of higher education reform within lifelong learning policies. The level of implementation of the Bologna Process inputs within signatory countries are periodically analysed by Stocktaking reports.[24]

Following the positive impulse of the Bologna Process, a similar initiative has been developed for Vocational Education and Training (VET), including the

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[22] Council of Europe and UNESCO-European Region (1997) *Convention on the Recognition of Qualifications concerning Higher Education in the European Region,* http://conventions.coe.int/Treaty/en/Treaties/Html/165.htm

[23] More detailed analysis of quality assurance in education and training is provided within the Chapter 4 of this report

[24] *Bologna Process Stocktaking,* London May 2007 - http://www.dcsf.gov.uk/londonbologna/uploads/documents/6909-BolognaProcessST.pdf

recognition/validation of informal and non-formal learning. The *"Copenhagen Process"*[25] intends to develop common reference levels, principles for certification and measures in VET. At the present time, no binding regulations have been adopted by European countries even though some relevant goals have been achieved with regard to the definition of:

- Credits system for VET (ECVET) largely inspired to the ECTS system adopted in higher education.[26]
- Quality assurance guidelines for institutions providing VET training courses, following and in synergy with quality assurance standards and guidelines adopted in higher education.[27]
- Principles for the validation of informal and non-formal learning.[28]

All those tools cannot directly ensure recognition but aim to support and create a context of common understanding and reliability which can make easier the recognition procedures in different contexts.

European policies on lifelong learning are directly connected and integrated with such initiatives by promoting tools and devices for transparency of qualifications and learning.

The European Qualifications Framework (EQF) for Lifelong Learning[29]. The EQF is a common European reference framework which links countries' qualifications systems together, acting as a translation device to make qualifications more readable and understandable across different countries and systems in Europe. It has two principal aims: to promote citizens' mobility between countries and to facilitate their lifelong learning. The EQF model consists of eight reference levels describing what learners know, understand and are able to do - their learning outcomes - regardless of where a particular qualification was acquired.

The European Credit Transfer and Accumulation System (ECTS)[30] is a student-centred system based on the student workload required to achieve the objectives of a programme. The education objectives are preferably specified in terms of the learning outcomes and competences to be acquired.

The Europass Portfolio[31] consists of five documents: two documents (Europass curriculum vitae and Europass Language Passport) that each person can fill by him self; three other documents (Europass Certificate Supplement, Europass Diploma Supplement and Europass Mobility) filled in and issued by competent organisations. With regard to the scope of the present report, two of them are of particular interest: the Diploma Supplement and the Certificate Supplement:

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[25] European Commission (Brussels, 2002) *Declaration of the European Ministers of vocational education and training, and the European Commission, convened in Copenhagen on 29 and 30 November 2002, on enhanced European cooperation in vocational education and training.* http://ec.europa.eu/education/copenhagen/index_en.html

[26] COM (2008) 180 Final, *Recommendation of the European Parliament and of the Council on the establishment of the European Credit system fo Vocational Education and Training (ECVET)* – 9/04/2008 http://ec.europa.eu/education/policies/educ/ecvet/com180_en.pdf

[27] *Conclusions of the Conference "Quality Assurance in Higher Education and Vocational Education and Training",* 11/12 May 2006, University of Graz - http://eu2006.bmbwk.gv.at/veranst/qual/12_5_2006_conference_conclusions.pdf

[28] Council of the European Union, *Conclusions of the Council and of the representatives of the Governments of the Member States meeting within the Council on Common European Principles for the identification and validation of non-formal and informal learning* - (Brussels, 18/05/2004) http://ec.europa.eu/education/policies/2010/doc/validation2004_en.pdf

[29] European Commission (2008) *The European Qualifications Framework for Lifelong Learning (EQF)* http://ec.europa.eu/education/policies/educ/eqf/eqf08_en.pdf

[30] Further information are available on the website: http://ec.europa.eu/education/programmes/socrates/ects/index_en.html

[31] Europass was established by the Decision No 2241/2004/EC of the European Parliament and the Council of 15 December 2004 on a single transparency framework for qualifications and competences. http://europass.cedefop.europa.eu/europass/home/hornav/Downloads/MiscDocs/EuropassDecision/navigate.action

- *The Europass Diploma Supplement* is issued to graduates of higher education institutions along with their degree or diploma. It helps to ensure that higher education qualifications are more easily understood, especially outside the country where they were awarded.
- *The Europass Certificate Supplement* is delivered to people who hold a vocational education and training certificate; it adds information to that which is already included in the official certificate, making it more easily understood, especially by employers or institutions outside the issuing country. The information in the Europass Certificate Supplement is provided by training providers and/or relevant certifying authorities.

Appendix 3

Professional associations' descriptions

In the following pages a schematic description of some relevant existing professional associations is provided. The aim is to explore activities and organizations, with specific interest for the activities on education and professional career development.

In order to easily compare different experiences the information are based on some common description criteria.

Criteria

GENERAL INFORMATION
- GENERAL DESCRIPTION
- AIM
- HEADQUARTERS ADDRESS
- REGISTERED OFFICE
- DATE OF FOUNDATION
- GEOGRAPHIC COVERAGE
- ROLE IN POLICIES ISSUES

ORGANIZATION
- TYPE OF ORGANIZATION (legal form)
- ORGANIZATION CHART
- RESOURCES / FEES
- JOINT PROCEDURES

COMMETTEES / WORKING GROUPS ON SPECIFIC TOPICS
- EDUCATION STANDARDS
- PROFESSIONAL STANDARDS

SUPPORT TO EDUCATION
- EDUCATION PROVIDED
- RECOGNITION/ACCREDITATION SYSTEM OF EDUCATION PROGRAMMES

SUPPORT TO CAREER DEVELOPMENT
- PROFESSIONAL TITLES / CERTIFICATIONS
- PROFESSIONAL AWARDS

Following such criteria, the document presents detailed information on:
- FEANI - European Federation of National Engineering Associations
- IPMA - International Project Management Association
- PMI - Project Management Institute
- AUTM - Association of University Technology Managers

The analysis has been conducted by collecting information available on the associations' official websites.

FEANI - European Federation of National Engineering Associations

GENERAL INFORMATION	
GENERAL DESCRIPTION	FEANI is a federation of professional engineers that unites national engineering associations from 29 European countries. FEANI represents over 3.5 million professional engineers in Europe. FEANI is striving for a single voice for the engineering profession in Europe and wants to affirm and develop the professional identity of engineers.
AIM	Through its activities and services, especially with the attribution of the EUR ING professional title, FEANI aims to facilitate the mutual recognition of engineering qualifications in Europe and to strengthen the position, role and responsibility of engineers in society.
HEADQUARTERS ADDRESS	**General Secretariat FEANI aisbl** Avenue Roger Vandendriessche 18 B-1150 Bruxelles Tel. + 32 2 639 0390 Fax. + 32 2 639 0399 Email: secretariat.general@feani.org Website: http://www.feani.org
REGISTERED OFFICE	See address above
DATE OF FOUNDATION	1951
GEOGRAPHIC COVERAGE	30 European country are represented within FEANI: Austria; Bulgaria; Cyprus; Czech Republic; Germany; Denmark; Estonia; Spain; Finland; France; United Kingdom; Greece; Hungary; Ireland; Iceland; Italy; Luxembourg; Malta; Netherlands; Norway; Poland; Portugal; Romania; Russia; Sweden; Serbia; Slovenia; Slovakia; Switzerland.
ROLE IN POLICIES ISSUES	FEANI is officially recognised by the European Commission as representing the engineering profession in Europe. The federation also has consultative status with UNESCO, UNIDO and the Council of Europe

ORGANIZATION	
TYPE OF ORGANIZATION	Not-for-Profit Association
ORGANIZATION CHART	• General Assembly, • Executive Board (including President, Vice President, the Treasurer) • Secretary General • Internal Auditors
RESOURCES / FEES	• It's members' subscriptions, • Gifts, grants and subsidies if any, • Revenues from its own authorised activity if any, • The yield of its bank accounts, • Any other legal means that comply with the purpose and objective of FEANI
JOINT PROCEDURES	FEANI is a federation of professional associations so only associations can joint. To be admitted, an association, and the country that represents, has to correspond to specific criteria : • Conform to Article §8 and agree with §9 of the Statutes • Being an association apolitical and representative of the profession, democratically organised and independent • Having an adequate level of engineering, education and professional organisation • Association committed to bear financial burden of membership and cooperation • A sufficient amount of people in the engineering population of the country of the applicant should be able to speak one of the official FEANI languages • From a democratic country in peace with its neighbouring countries and without territorial claims • Territory within Europe and having an European identity FEANI has only one National Member per country, represented either by the engineering body of the country, or by a "FEANI National Committee" representing that country's engineering associations. Countries outside Europe may apply for membership with WFEO - World Federation of Engineering Organisations.

COMMETTEES / WORKING GROUPS ON SPECIFIC TOPICS	
EDUCATION STANDARDS	**European Monitoring Committee (EMC)** EMC is the responsible body at European level for the content of the INDEX, the list of Institutions of engineering higher education of 28 National Members and their engineering courses recognised by FEANI and for awarding the EUR ING title. It reviews the applications submitted through the National Monitoring Committees and checks that they conform to the standards laid down in the "Guide to the FEANI Register". The EMC is composed of members, experts in the different European engineering education systems. **The National Monitoring Committee (NMC)** NMC is a national body, established in every FEANI country, and composed of representatives from national engineering associations, industry and education. The members of the National Monitoring Committees are nominated by FEANI's National Members. It is the task of a NMC: - To maintain the registration on the basis of education - To keep the EMC well informed on the structure of engineering education and the standard of the individual Schools and/or Courses. - To check and review the Professional Engineering Experience of an applicant before proposing registration as EUR ING to the EMC. - To review any changes and/or additions to the approved list of Schools and Courses and notify the Secretariat General on the 1st of January each year.
PROFESSIONAL STANDARDS	**Committee for Continuing Professional Development (CPD)** Established in 1993, the aim of the CPD are: - To implement FEANI policy on continuing professional development, as directed by the General Assembly or the Executive Board. - To assist the Executive Board in the development and formulation of FEANI positions and policy in respect of continuing professional development. - To advise the Executive Board concerning other issues related to continuing professional development, pertinent to the aims of FEANI.

SUPPORT TO EDUCATION	
EDUCATION PROVIDED	-
RECOGNITION / ACREDITATION SYSTEM OF EDUCATION PROGRAMMES	**FEANI INDEX** FEANI maintains an INDEX listing the institutions of engineering higher education in 28 European countries represented within FEANI, and their engineering programmes, which are all recognized by FEANI as fulfilling the mandatory education requirements for the EUR ING title. The FEANI INDEX is regularly updated and maintained by the FEANI Secretariat. Schools and programmes are submitted for inclusion in the FEANI INDEX by the respective National Member, subject to approval by the EMC (European Monitoring Committee), according to the 'FEANI INDEX Procedures to analyse proposals from National Members'.

SUPPORT TO CAREER DEVELOPMENT	
PROFESSIONAL TITLES / CERTIFICATIONS	**EUR ING** The EUR ING title delivered by FEANI is designed as a guarantee of competence for professional engineers, in order: - to facilitate the movement of practicing engineers within and outside the geographical area represented by FEANI's member countries and to establish a framework of mutual recognition of qualifications in order to enable engineers who wish to practice outside their own country to carry with them a guarantee of competence - to provide information about the various formation systems of individual engineers for the benefit of prospective employers - to encourage the continuous improvement of the quality of engineers by setting, monitoring and reviewing standards The EUR INGs are listed in the FEANI Register, a database maintained by the Secretariat General in Brussels. Currently over 29.700 European Engineers are listed in the register (October 2007). The "Guide to the FEANI Register" gives the details on the purpose of the Register and how it is managed. The European Commission, in a statement to the European Parliament, has recognized the FEANI Register and the EUR ING title as valuable tools for the recognition of national diplomas among member states. The fee for the EUR ING is determined by the General Assembly, it amounts to 140 Euros for 2008 (some national members require an additional fee for their administrative costs).
PROFESSIONAL AWARDS	-

IPMA – International Project Management Association

GENERAL INFORMATION	
GENERAL DESCRIPTION	IPMA is a world project management organisation which represents 45 national project management associations on the international level.
AIM	IPMA promotes project management to businesses and organisations around the world, certify project managers, award successful project teams and researchers, and provide project management publications.
HEADQUARTERS ADDRESS	**IPMA** P.O. Box 1167 3860, BD Nijkerk The Netherlands Tel.: +31 33 247 3430 Fax: +31 33 246 0470 Email: info@ipma.ch Website: www.ipma.ch
REGISTERED OFFICE	Advokaturbüro Maurer & Stäger Fraumünsterstrasse 17, Postfach 2018 CH-8022 Zurich Switzerland
DATE OF FOUNDATION	1965
GEOGRAPHIC COVERAGE	Around 30 European countries are represented within IPMA: Austria; Bulgaria; Croatia; Czech Republic; Denmark; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Italy; Latvia; Netherlands; Norway; Poland; Portugal; Romania; Russia; Serbia; Slovakia; Slovenia; Spain; Sweden; Switzerland; Turkey; United Kingdom; Ukraine. IPMA has representatives in Africa, Asia, North and South America
ROLE IN POLICIES ISSUES	No relevant information founded

ORGANIZATION	
TYPE OF ORGANIZATION	Not-for-Profit Organization
ORGANIZATION CHART	**Council of Delegates** is the steering committee of IPMA composed by 45 representatives of national member associations **Executive Board** is responsible for the operational management of IPMA and sets the strategies and guidelines for all approved activities **Secretariat** is responsible for the professional administration of IPMA and the primary point of contact for all enquiries - it reports to the Executive Board
RESOURCES / FEES	**Member Associations:** Annual fee: depending on various criteria (more information can be obtained by contacting the IPMA Secretariat) **Individual member:** Annual fee € 100 - (pro rated per quarter) **Corporate Member C1** (only after approval by the Board - less than 1.000 employees): Annual fee: € 500,- **Corporate Member C2** (only after approval by the Board - more than 1.000 employees): Annual fee: € 1000,-
JOINT PROCEDURES	**National member organisations** IPMA accepts only one National Member Association per country. The IPMA by-laws, which can be received from the secretariat, set out the conditions and requirements for membership approval. **Individuals** IPMA only accepts direct individual members if there is no Member Association in their country. Membership in a National Member Association includes indirect membership of IPMA. To become an Individual Member of IPMA the applicant hasto complete the registration form and send it to the IPMA secretariat. There are no specific entry criteria, individual membership is open to anyone who has an interest in project management. **Companies** Corporate Membership is primarily for organisations in countries without a National Member Association, as Membership of the National Association includes indirect membership of IPMA. To become a Corporate Member, the applicant has to contact the IPMA secretariat. All applications for Corporate Membership are considered by the Executive Board.

COMMETTEES / WORKING GROUPS ON SPECIFIC TOPICS

EDUCATION STANDARDS

Certification System - CVM Board
Each member association is responsible for developing and managing its own qualification and competence program and for establishing its bodies for certification. The IPMA CVMBoard is responsible for the development and coordination of the national associations' qualification and certification programmes at IPMA level. The rules and regulations governing the operation of the certification system can be found in the ICRG (IPMA Certification Regulation and Guidelines).

Education and Training Board
No details founded

PROFESSIONAL STANDARDS

Young Crew
IPMA Young Crew provides experimental learning, identify the needs of the young and provide opportunities for interaction and information exchange. Young Crew is network for young project management professionals and students in the age from 25 to 35 years.

SUPPORT TO EDUCATION

EDUCATION PROVIDED

IPMA provides Advanced Courses for experienced professionals and support project management knowledge to new regions through its aid projects, Training Aid Project (Tap) and Volunteers in Training (VIT).

RECOGNITION / ACREDITATION SYSTEM OF EDUCATION PROGRAMMES

-

SUPPORT TO CAREER DEVELOPMENT

PROFESSIONAL TITLES / CERTIFICATIONS

Levels/Certificates
- IPMA Level A - Certified Projects Director
- IPMA Level B - Certified Senior Project Manager
- IPMA Level C - Certified Project Manager

IPMA Level D - Certified Project Management Associate

To achieve the IPMA certification, candidates must demonstrate an acceptable level of understanding, knowledge and practical experience of project management as defined by the IPMA Competence Baseline.
Certification is an independant third party assessment based on a level-specific combination of:
- Self assessment
- Written exam
- Report on the management of a project, programme or portfolio
- Interview

There are also optional country specific parts of the assessment.

The Certification Program is carried out by National Member Associations and/or Certification Bodies in membership countries.

PROFESSIONAL AWARDS

IPMA Awards
IPMA annually presents project management awards to the most successful project teams and researchers. The aim of the awards is to increase the recognition of project work and to motivate project teams to develop and improve. The IPMA award categories are:
- Project Exellence Award
- Research Award
- Young Project Manager Award

PMI – Project Management Institute

GENERAL INFORMATION	
GENERAL DESCRIPTION	International project management association, with 260.000 members in 171 countries all over the world. It represents individuals, it is not an association of associations
AIM	PMI is engaged in advocacy for the profession, setting professional standards, conducting research and providing access to a wealth of information and resources. PMI also promotes career and professional development and offers certification, networking and community involvement opportunities.
HEADQUARTERS ADDRESS	**PMI Global Operations Center** 14 Campus Boulevard Newtown Square, PA 19073-3299 USA **Tel:** +1-610-356-4600 **Fax:** +1-610-356-4647 **E-mail:** customercare@pmi.org Website: www.pmi.org
REGISTERED OFFICE	-
DATE OF FOUNDATION	1969
GEOGRAPHIC COVERAGE	Based in US, it has two regional service centres in Europe (Brussels) and Asia (Singapore) and a representative office in Beijing (China).
ROLE IN POLICIES ISSUES	No relevant information founded
ORGANIZATION	
TYPE OF ORGANIZATION	Not-for-Profit Organization
ORGANIZATION CHART	PMI is governed by a volunteer board of directors comprised of 15 elected directors-at-large serving three-year terms. Three directors, who are elected by others on the board each year, serve as officers of the Institute.
RESOURCES / FEES	Annual membership fees No other relevant information founded
JOIN PROCEDURES	**Individuals** interested in project management : • Individual Membership (for new members) – Fee $ 129 • Individual Membership Renew – Fee per year $ 119 **Students** enrolled in a degree-granting program at an accredited or global equivalent, college or university: • New membership – Fee $ 40 • Membership Renew – Fee per year $ 30 **Retirees** who have been PMI members in good standing for five consecutive years and have retired from active employment are eligible for retiree membership: • Fee per year $ 60

COMMETTEES / WORKING GROUPS ON SPECIFIC TOPICS

EDUCATION STANDARDS

Global Accreditation Center (GAC)
The GAC is a voluntary committee of the Board of Directors of the PMI. established in 2001 as a semi-autonomous governing body for the policies, procedures and standards for accrediting project management programs at the bachelor's, master's and doctoral degree levels. The PMI Board also assigned independent authority to the GAC to accredit those institutions and programs that meet and maintain the standards of performance as set forth in the GAC Handbook of Accreditation. The GAC Board is governed by a board of up to 11 volunteer members comprised of a balance between academic faculty and industry representatives, with at least one member representing the interests of the public.
As recommended by the 1998 PMI Accreditation Options Feasibility Report, the GAC Accreditation Standards are outcome based rather than prescriptive in nature, and allow for recognition of current educational trends such as distance learning. These outcomes have been determined through the study and validation of the roles and tasks which are generally required within the practice of project management.

PMI Education Foundation
PMI Educational Foundation was founded in 1990. It is a non-profit, non-political, public charitable organization. As a charitable organization, it is dependent on contributions to provide the income necessary to undertake its purposes. It provides scholarships, confer honorary awards, undertake research, prepare and disseminate project management related educational information, and award financial grants to support project management life skills-related projects.

PROFESSIONAL STANDARDS

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SUPPORT TO EDUCATION

EDUCATION PROVIDED

PMI organizes seminars and web-based self study programs. Other events like congresses are annually organized in different areas all around the world.

RECOGNITION / ACREDITATION SYSTEM OF EDUCATION PROGRAMMES

The PMI® Global Accreditation Center (GAC) serves two fundamental purposes — to ensure the quality of academic degree programs in project management and to assist faculty and universities in the improvement of degree programs. A specialized *programmatic accreditation body*, such as the GAC, focuses on an individual program within an institution and not on the characteristics of the entire institution. Its primary concern is programs within academic institutions that prepare students for a specific profession or occupation, such as project management.

SUPPORT TO CAREER DEVELOPMENT

PROFESSIONAL TITLES / CERTIFICATIONS

Program Management Professional (PgMP)℠
PMI's Program Management Professional (PgMP) credentialing service offers PMI's first credential designed to demonstrate project and program management skills. To be eligible for the PgMP credential, the professional must meet specific guidelines that objectively measure experience, education and professional knowledge, and undergo a rigorous application process as well as three assessments. He/She also must agree to adhere to the PMI Code of Ethics and Professional Conduct.

The Project Management Professional (PMP®) Credential
Individuals who hold PMI's PMP credential demonstrate a proficient level of project management leadership skills, and as a result are able to command salaries that exceed those of their non-credentialed counterparts. To be eligible for a PMP credential, the professional must meet specific guidelines that objectively measure experience, education and professional knowledge. He/She also must agree to adhere to the PMI Code of Ethics and Professional Conduct and pass a rigorous multiple-choice examination that assesses his/her abilities in project management.

Certified Associate in Project Management (CAPM®) Credential
Designed specifically for project team members, the CAPM credential is aimed at improving overall project success by helping to ensure project management knowledge. To become a CAPM credential holder, he/she must meet specific guidelines designed to objectively measure experience, education and professional knowledge. He/she must pass an examination that assesses his/her knowledge of A Guide to the Project Management Body of Knowledge (PMBOK® Guide).

PMI Career Framework
PMI provides also a tool for career development with the aim to shows practitioners the path to career advancement by assessing their skill level and build a case for advancement or further training. The career framework is available for PMI members and credential-holders.

PROFESSIONAL AWARDS PMI Professional Awards program recognizes:

- Projects
- Individuals
- Organizations
- Professional development products
- Literature (books or articles)

AUTM – Association of University Technology Managers

GENERAL INFORMATION	
GENERAL DESCRIPTION	AUTM is a network of members coming from universities, research institutions, teaching hospitals and government agencies as well as companies involved with managing and licensing innovations derived from academic and nonprofit research.
AIM	The aim is to promote, support and improve academic technology transfer worldwide and demonstrate its benefits globally through education, advocacy, networking and communication.
HEADQUARTERS ADDRESS	**AUTM Headquarters** 111 Deer Lake Road, Suite 100 Deerfield, IL 60015 phone: 847.559.0846 fax: 847.480.9282 Email: info@autm.net Web site: http://www.autm.net/
REGISTERED OFFICE	See the address above
DATE OF FOUNDATION	1974
GEOGRAPHIC COVERAGE	USA, Canada
ROLE IN POLICIES ISSUES	AUTM expresses formal positions related to specific issues in TT field, with regards to law and use of patents

ORGANIZATION	
TYPE OF ORGANIZATION	Not-for-Profit Organization
ORGANIZATION CHART	**AUTM Board of Trustees** is composed by the President, the President-Elect and the Immediate Past President and include several Vice Presidents on specific topics and related number of Commettees and Task Forces **President is reported to by:** President-Elect, Immediate Past President, VP for Finance, VP for Professional Development, VP for Communications, VP for Public Policy and other special purpose task forces and committees that may be established, including the Executive Committee **President-Elect is reported to by:** VP for Affiliate Members, VP for Annual Meeting and Surveys (formerly VP for Planning), VP for International Relations, VP for Membership **Immediate Past President is reported to by:** Nominations and Awards Committee, Regional Vice Presidents [TBD]. AUTM include also Special Interest Groups focus on specific areas of interest within the technology transfer field. The groups meet in person during the AUTM Annual Meeting, and facilitators may choose to hold additional meetings according to SIG members' needs. Contact facilitators to learn more about specific SIGs.
RESOURCES / FEES	AUTM membership rates are $210 for each individual member and $87.50 for student members.
JOIN PROCEDURES	Electronic and downloadable forms are available: • new member membership application form • membership renewal form AUTM's membership year is January 1 through December 31. New members joining after Oct. 1 will be considered members through December 31 of the following year. All others will be invoiced for dues prior to January 1. Membership dues are deductible as business expense, but not as charitable contribution for federal tax purposes. Membership dues are nonrefundable and nontransferable.

COMMETTEES / WORKING GROUPS ON SPECIFIC TOPICS	
EDUCATION STANDARDS	**Professional Development Course Committees** determine content, speakers and overall organization of all AUTM Professional development courses. Committee members meet regularly via conference call. Committees are: • Software and Digital Media Course Committee • Basic Licensing Course Committee • Canadian Basic Licensing Course Committee • Technology Operations and Organization Licensing Skills Course Committtee • Start-Up Business Development Course Committee, Software and Digital Media Course

- Executive Forum Committee
- Graduate Course Committee

The Distance Education Curriculum Committee works with the National Technology Transfer Center to develop and maintain online courses covering topics of interest to AUTM members and related audiences. The Distance Education Advisory Board reviews courses during development and identifies content experts for future courses. Members of both groups should posses thorough knowledge of numerous aspects of technology transfer and professional development needs.

PROFESSIONAL STANDARDS

The Tech Transfer Practice Manual Committee develops the outline for content for different editions of the TTP Manual.

SUPPORT TO EDUCATION

EDUCATION PROVIDED

AUTM Professional Development Courses

Basic Licensing Course The AUTM Basic Licensing Course℠ is geared to professionals who are new to technology transfer. Presenters cover topics that are fundamental to academic technology transfer including university-industry relationships, valuation, license agreements, negotiations, market research and managing expectations.

Canadian Basic Licensing Course. Offering a range of topics for newcomers to the profession, the AUTM Canadian Basic Licensing Course℠ provides a clear understanding of the licensing process and technology transfer within any kind of academic or public sector environment in Canada. Sessions cover issues such as IP protection, basic licensing law, industry-funded research agreements, disclosure, potential markets, risks and auditing.

Startup Business Development Course. The AUTM Startup Business Development Course℠ — a must for anyone thinking about start-up creation — features veterans of the start-up process who share their experiences through case studies, examples and lessons learned. SUBD speakers discuss issues such as start-up models, raising seed money, opportunity analysis, venture capital deals and ongoing university responsibilities.

Technology Operations and Organization Licensing Skills Course. Designed for administrative and support staff, the AUTM Technology Operations and Organization Licensing Skills Course℠ concentrates on the licensing process and technology transfer within an academic setting. With its hands-on workshops, interactive discussions and a continually updated curriculum, the TOOLS Course guarantees that attendees will glean valuable insights, no matter how many times they attend. Key topics include government compliance, software and database options, management skills and operating procedures.

Graduate Course. The AUTM Graduate Course℠, developed as a follow-up to the ever-popular Basic Licensing Course, is designed specifically for seasoned technology transfer professionals who want to hone skills and enhance capabilities. The curriculum delves into advanced topics from a hands-on, practical perspective — building attendees' ability to meet daily challenges, overcome obstacles, advance negotiations and enhance professional development.

Software and Digital Media Course. The AUTM Software and Digital Media Course℠ is for technology professionals who work with numerous types of electronic intellectual property. Presenters discuss the development cycle of information products as well as management techniques and their legal underpinnings so that attendees can improve success in developing university information products.

RECOGNITION / ACREDITATION SYSTEM OF EDUCATION PROGRAMMES

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SUPPORT TO CAREER DEVELOPMENT

PROFESSIONAL TITLES / CERTIFICATIONS

Further information are required, if any

PROFESSIONAL AWARDS

Further information are required, if any

Appendix 4

Quality Assurance Systems for Education and Training: description of some relevant experiences

Quality System in Higher Education

ENQA *"Standards and Guidelines for Quality Assurance in the European Higher Education Area"* (2005)

Within the Bologna Process reform, a Quality Assurance System in European Higher Education Area has been defined. The ENQA report was presented at the Bergen meeting of European Ministers of Higher Education in 2005 and adopted. The 2007 Stocktaking Report shows that the standards and guidelines have been already implemented by one third of signatory countries of the Bologna Process, while the other have started work on aligning their quality assurance system with the Standards and Guidelines.

How it works:

- Standards and Guidelines are designed to be applicable to all higher education institutions and quality assurance agencies in Europe, regardless of their structure, function and size, and the national system in which they are located.
- No detailed procedures are included.
- Institutions and agencies themselves decide the procedural consequences of adopting the standards at national/local level

What it provides:

1. Standards and guidelines for internal quality assurance of institutions.
2. Standards and guidelines for external quality assurance within higher education.
3. Standards and guidelines for quality assurance external agencies involved in evaluation, review, audit, assessment and accreditation of higher education institutions and programmes.

Focus on the standards for internal quality assurance of institutions

These standards mainly refer to the quality requirements that higher education institutions should have with regard to:

- Policy and procedures.
- Approval, monitoring and periodic review of programmes and awards.
- Published criteria, regulations and procedures for the assessment of students.
- Qualified and competent teaching staff.
- Adequate and appropriate learning resources and student support.
- Effective information systems of relevant information management.
- Up to date, impartial and objective information about the programmes and awards offered.

An important aspect of such quality system is that it includes standards and guidelines for the evaluation and accreditation of higher education institutions and programmes by external quality assurance agencies recognized at national level.

EQUIS Standards and Criteria

Another specific quality assurance system has been adopted by an international network of the management and business administration schools. The main reference is the EFMD *"EQUIS Standards and Criteria"*. EQUIS is the international system of quality assessment, improvement, and accreditation of higher education institutions in management and business administration. The EQUIS Standards and Criteria is one of the core documents. The European Foundation for Management Development (EFMD) is a non-profit networking organization which involves management development professionals from academia, business, public service and consultancy in more than 75 countries all over the world. EFMD is actually Candidate Membership of ENQA.

How it works:

- EQUIS is an international accreditation system for institutions (called "School") providing business and management education. It aims to give guidance to schools in preparing their Self-Assessment report.
- The Schools include:
    - Free-standing business schools.
    - Part of a wider institution, usually a university (for example faculty, school or department).
    - Part of a specialised engineering school or affiliated to an institution such as a Chamber of Commerce.

What it provides:

- Quality standards are related to:
    - Institution's position in the regulatory and competitive environment in which it operates.
    - Institution Resources and Activities (Programmes, Students, Faculty, Research and Physical resources).
    - Executive education (education of working adults in non-degree programmes).
    - Contribution to the Community.
    - Resources and Administration.
    - Internationalisation.
    - Corporate connexions.

Focus on the EQUIS standards on Programmes and Executive Education

With regard to the objective of this report, the standards related to the Programmes and to the Executive education could provide relevant reference points in the definition and design of the TT Professional education programme.

Programmes[32] *should be well designed with clear learning outcomes and an appropriate balance between knowledge acquisition and skills acquisition. Delivery methods should be diverse and reflect up-to-date educational practice. The curriculum should emphasise student learning and allow for practical work. There should be rigorous assessment processes for monitoring the quality of students' work. Programmes should be regularly evaluated through feedback from students and other stakeholders. Programmes should be adequately staffed, managed and administered.*

The key areas are: Programme portfolio; Programme design; Programme content; Skills acquisition; Programme delivery; Student assessment; Programme evaluation; Internationalisation; Corporate relevance; Societal relevance.

Executive Education[33] *should be appropriately integrated into its overall strategy and into its central management systems. Whatever its organisational or legal structure, Executive Education should be seen as central to the strengthening of the School's connections with companies and organisations within the markets that it is serving. It should contribute to the development of the faculty in maintaining relevance in their teaching and research. It should contribute to the improvement of business practice by putting the School's distinctive expertise at the disposal of practising managers.*

The key areas are: Positioning within the School; Product Portfolio; Marketing and Sales; Participant Management; Programme Quality and Impact; Faculty; Research and Development; Internationalisation

[32] With regard to the definition of "Programme" an EQUIS document's note precise that the term 'programme' refers to a structured period of study, usually for a duration of one or more years, leading to a degree qualification as in 'MBA programme', 'undergraduate programme', Masters programme, etc.

[33] With regard to Executive education, the EQUIS document underlines that the definition primarily concerns the delivery of short courses and programmes to working professionals in companies and organisations. Some of the longer programmes may lead to the award of a certificate, but this is essentially a non-degree activity within business schools.

Quality in Vocational Education and Training (VET)

At the present time no common European Quality System in VET has been adopted by European countries. Different national VET systems and VET Quality Assurance Systems already exist. Within the "Copenhagen Process" (which started in 2002), the European Ministers of VET, the representatives of Social Partners and of the European Commission have worked on the development of common policies, principles and tools to facilitate mobility, transparency, recognition and quality in VET. Tools and technical proposals have been created by technical working groups. A Common Quality Assurance Framework for VET in Europe has been identified, in order to support the reform of quality in VET at national systems' and providers' levels.

The main reference is the European Commission *"Fundamentals of a 'Common Quality Assurance Framework' (CQAF) for VET in Europe"* (2005). The report was developed within the Copenhagen Process and represents the main outputs of the two years work programme (2002-2004) of the Technical Working Group (TWG) on Quality in VET, composed by representatives of European countries (Ministers of Vocational Education and Training), European Social Partners and European Commission. Cedefop and European Training Foundation actively collaborated to TWG work programme.

How it works:

- CQAF is a common reference framework designed to support the development and reform of Quality Assurance in Vocational Education and Training at systems and providers levels in all VET sectors, including initial, continuing, adult, public and private);
- The responsibility and the autonomy of Member States to develop their own quality assurance systems are respected.

What it provides:

- CQAF identifies basic aspects and for each one defines core quality criteria, presented in form of possible answers associated to specific questions which are transversal to any VET system or provider. The basic aspects are:
    - Planning
    - Implementation
    - Evaluation and Assessment
    - Review
- CQAF also provides:
    - a methodology for assessment and review of systems (self assessment and external evaluation);
    - a monitoring system (at national/regional level possibly combined with voluntary peer review at European level);
    - a measurement tool aiming at facilitating Member States to monitor and evaluate their own systems at national or regional levels.

FEANI Accreditation System

The "*EUR-ACE Framework Standards for the Accreditation of Engineering Programmes"* (2005)[34] has been developed within the EUR-ACE Accreditation of European Engineering Programmes and Graduates project (2004-2006 / supported by European Commission through Socrates and Tempus Programmes). The project had the following objectives: to provide an appropriate "European label" to the graduates of the accredited educational programmes; to improve the quality of educational programmes in engineering; to facilitate trans-national recognition by the label marking; to facilitate recognition by the competent authorities, in accord with the EU Directives; to facilitate mutual recognition agreements. In order to operate the system, an International non-profit Association (ENAEE: European Network for Accreditation of Engineering Education) has been established. It promoted the EUR-ACE Implementation project (2006-2008), that aims at making such proposals operational by setting up the necessary organization, planning and supervising the award of the EUR-ACE labels, favouring the spread of the system to other countries, establishing a fee policy that can make the system self-supporting.

How it works:

- The EUR-ACE quality criteria for the assessing of engineering education programmes for accreditation purpose are intended to be widely applicable and inclusive, in order to reflect the diversity of engineering degree programmes that provide the education necessary for entry to the engineering profession.

What it provides:

- EUR-ACE general guidelines and related assessment criteria for the accreditation of education programme are based on the following elements:
    - Needs, Objectives and Outcomes (Needs of the interested parties; Educational objectives; Programme outcomes).
    - Educational Process (Planning; Delivery; Learning assessment).
    - Resources and Partnerships (Academic and Support Staff; Facilities; Financial Resources; Partnerships).
    - Assessment of the Educational Process (Students; Graduates).
    - Management System (Organisation and decision-making processes; Quality Assurance System).
- The EUR-ACE standards also provide:
    - specific educational contents criteria[35]
    - detailed accreditation procedures
    - recommended template for the publication of the accredited programmes

Focus on the EUR-ACE template for the publication of the accredited programmes

[34] The document is available on the FEANI official website www.feani.org

[35] The EUR-ACE contents criteria are expressed as Programme Outcomes that describe in general terms the capabilities required of graduates from accredited First Cycle and Second Cycle engineering programmes, as defined in the European Qualification Framework. The six Programme Outcomes are related to: Knowledge and Understanding; Engineering Analysis; Engineering Design; Investigations; Engineering Practice; Transferable Skills.

The recommended template includes the following elements:

- Higher Education Institution (name in original language and in English)
- Country
- State/province (where applicable)
- Name of the Programme (name in original language and in English)
- Degree awarded
- Qualification Level (First Cycle / Second Cycle)
- Programme objectives / Profile (where applicable)
- Programme Duration (Semesters; in case of “terms” of different length, indicate them and the equivalent in semesters)
- Total number of ECTS / Credits awarded
- Curriculum analysis (% and credits):
    - engineering fundamentals
    - advanced engineering subjects (including final thesis)
    - mathematics / natural sciences fundamentals
    - interdisciplinary contents
- Brief description of the programme
- Accredited without / with prescriptions
- Prescriptions (where applicable)
- Accredited by (agency, country)
- Accredited (from ... to …)

PMI Accreditation System

The *"Handbook of accreditation of degree programs in project management"* (2007)[36] has been developed by the Global Accreditation Center for Project Management (CAG) of the PMI - Project Management Institute. The GAC is a voluntary committee of the Board of Directors of PMI. The PMI Board established the GAC in 2001 as a semi-autonomous governing body for the policies, procedures and standards for accrediting project management programs at the bachelor's, master's and doctoral degree levels. The PMI Board also assigned independent authority to the GAC to accredit those institutions and programs that meet and maintain the standards of performance as set forth in the handbook. The GAC Board is governed by a board of up to 11 volunteer members comprised of a balance between academic faculty and industry representatives, with at least one member representing the interests of the public.

How it works:

- The accreditation standards represent the conditions or characteristics that should be present in a project management degree programme awarded GAC Accreditation status.
- Candidate programmes have to demonstrate compliance with each of these standards through a Self-study Report.
- The GAC Accreditation Standards are outcome based rather than prescriptive in nature. These outcomes have been determined through the study and validation of the roles and tasks which are generally required within the practice of project management.

What it provides:

- GAC standards and guidelines are based on the following elements:
    - Mission and Objectives.
    - Assessment and Anticipated Outcomes.
    - Academic Community/Faculty and Staff.
    - Student Support Services.
    - Student Selection.
    - Curriculum and Learning and Performance Objectives.
    - Student Performance Criteria.
    - Library/Learning Resource Centre and Educational Innovation and Technology.
    - Financial Resources, Facilities and Equipments.
- The GAC handbook also provides:
    - Contents of education programme, in term of general studies and professional studies.[37]
    - Detailed accreditation procedures.

[36] The document is available on the PMI official website: www.pmi.org/PDF/pdc_handbookofaccreditation.pdf

[37] The GAC standards on Project Management professional studies point out on specific performance domains: Initiating the Project; Planning the Project; Executing the Project; Controlling the Project; Closing the Project; Professional Responsibility.

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Focus on the GAC accreditation process

The handbook briefly present the accreditation process overview and time frame

The GAC Accreditation process consists of the following steps:

- Letter of Intent

- Self-study Report

- On-site Visit

- GAC Decision

An institution applying for accreditation of its project management degree programs may expect the entire process to take approximately one year. From acceptance of the Letter of Intent, the applicant may take up to six months to complete and deliver the Self-Study Report. Once the report is received, the GAC will evaluate the report at its next regularly scheduled monthly meeting. The result of the evaluation may be to authorize the on-site visit or the board may request further clarifying information. Once the self-study is approved, the on-site visit will be scheduled at a time mutually convenient to the applicant and the evaluation team. The on-site visit can normally be expected to occur within 60 days. Within three weeks following an on-site visit, the team will submit its report to the board and the board will review the report and recommendations at its next regularly scheduled meeting.