ETM

The European Technology Transfer Manager

WP4 – Training course development

D.4.1. TTM: Blueprint of the training course

Lifelong Learning Programme

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1. Introduction

The Technology Transfer Manager (TTM) is an emerging occupational profile, highly skilled and specialised, with a wide range of activities, requiring a solid multidipliscinary academic background.

The TTM Competence profile has been the subject of a comprehensive study, involving an analysis of the current situation of the Technology Transfer in all countries of the consortium, a survey conducted in all partner countries through 326 questionnaires, 40 in-depth interviews with TTMs and 8 focus groups involving the representatives of national technology transfer organizations. The result of the study is presented in chapter 2 and it is the basis for our proposal of a training course for TTM.

The training has been developed as an e-learning course leading to a certification. In parallel, a validation of prior learning scheme will be developed and employees currently working as TTM can validate their competencies.

The training course has been developed based on the European Qualifications Framework (EQF), expressed in units of learning outcomes, corresponding to EQF level 6 and compliant with European Credit transfer and accumulation system for VET (ECVET).

Chapter 3 presents the methodological approach of the course, chapter 4 the learning outcomes and associated ECVET credit points and chapter 5 its structure and contents.

2. Technology Transfer Manager Competence profile

The TTM competence profile study report investigated the state of play of technology transfer in all partners countries: Italy, Romania, Bulgaria, Greece, Poland, Portugal and Spain in the two autonomous regions of Catalonia and Asturias. The study comprehended a survey among 326 professionals working in technology transfer, 40 in-depth interviews and the organisation of 8 focus groups. Here we present the main findings of the study that form the input for the development of the training course for TTMs.

2.1 TTM profile

According to the results of the study, a typical technology transfer professional is young (under 45 years old) with more than 10 years of professional experience in the industrial innovation sector and has a technical scientific background (engineering, physics, chemistry, economics etc.).

The technology transfer professionals currently occupy positions in:

- Business area:
  - Companies strongly oriented to innovation operating into different fields (ICT, textile, biotech, telecommunication, pharmaceutics, manufacturing, chemistry, construction, diagnostic systems, stone, tourism, training and consultancy)
  - Spin offs or start ups
  - Innovation poles
- Academic and research areas:
  - Research centres
  - Universities
  - Technology parks
  - Laboratories
- Service providers:
  - Technology transfer offices
  - Development agencies
  - Business incubators
  - Chamber of commerce
  - Association of employers
  - Public authorities

The most common positions the TTM cover in their organisations are:

- Manager (41%)
- Director (15%)
- Scientist or researcher (22%)
- Commercial area (15%)
- Technology transfer operator (7%)

The low number of professionals that have a job position as technology transfer operator indicates that the process of technology transfer in all countries is mostly conducted by non-specialized personnel, often the same general managers of the enterprises. It is therefore strongly needed a specific training on the argument.

Another important finding of the study is the fact that although all the respondent effectively work as Technology Transfer Managers, almost nobody has as an official recognition or professional certification. Few of them have attended a training course related to technology transfer management, ranging from 8% in Italy and Bulgaria, to 14-31% to the rest of the countries. The only exception is Poland, where a significant number of 64% has attended specialised training courses. The TTM course attended are mainly organized by universities, companies associations, academic institutions, European institutions and they are usually very short (few days).

Specific training in this field is not very common, and the training developed is generally focused only on specific fields of innovation transfer while it seems to be a lack of more structured courses.

The indications on the daily work activities reflect a situation of TTM tasks' fragmentation. The main activities carried out during their typical working appear to be the following:

1) General management and administration (coordination of the projects, finance etc) **16%**

2) Negotiating and intermediating the requests/needs of the stakeholders (phone calls, meetings, workshops, presentations etc) **14%**

3) Communicating and creating a network with the stakeholders (researchers, companies, public and private entities) **15%**

4) Developing a commercial process for technology (analyze the market, competitors, commercial potential of an invention, working with scientist on the market assessment of their ideas, find a commercial partner, find financial resources etc.) **14%**

5) Managing IPR and licensing issues (assess and design IP strategies, apply for patents, licences, write IPR agreements) **13%**

6) Gathering and analyse information (use of patent databases, looking for information sources) **14%**

7) Helping the development of new businesses, start-up/spin-off companies (planning, commercial analysis, funding etc.) **14%**

2.2 Technology Transfer Manager Competences Profile.

The required competences of a Technology Transfer Manager have been analysed in depth through the survey in a wide range of different professionals as described in section 1.1. The responders of the survey were asked to select the three most important competences for a TTM in theoretical knowledge and in practical skills in each one of the seven predefined units of competences. The seven units of competences have been identified by the partnership during the first project meeting :

- **IPR and licensing**
- **Information gathering**
- **Technology commercialisation**
- **New business development**
- **Project management**

- **Communication and networking**
- **Negotiation**

The results of the survey are presented in the tables below.

Table 1: IPR and licensing – theoretical knowledge

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
IPR Legislation	61.8	54.8	61.5	50.0	65.0	54.8	37.5	81.6
Patenting process	61.8	45.2	42.3	50.0	47.5	69.0	52.5	42.1
Types of IPR agreements	41.2	58.1	50.0	19.6	37.5	38.1	65.0	55.3
ICT and patent databases	35.3	38.7	38.5	32.6	35.0	52.4	35.0	18.4
IPR financial management	26.5	29.0	26.9	15.2	25.0	19.0	37.5	34.2
Other protection methods	23.5	16.1	26.9	34.8	20.0	35.7	25.0	23.7
Patent offices worldwide	11.8	6.5	11.5	19.6	2.5	7.1	15.0	2.6
Sector specific legal issues	8.8	16.1	23.1	19.6	32.5	11.9	32.5	23.7
Licensing process		35.5	38.5	32.6	25.0	28.6	57.5	23.7

Table 2: IPR and licensing – practical skills

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Assess the best protection possibility for a certain innovation	79.4	71.0	51.9	52.2	50.0	75.0	77.8	71.1
Design and IP strategy	55.9	71.0	63.0	21.7	63.2	60.0	83.3	55.3
Write and IPR agreement	38.2	51.6		26.1	42.1	30.0	55.6	42.1
Apply for a certification & patents	35.3	19.4	37.0	32.6	44.7	35.0	19.4	18.2
Manage financial issues related to IPR	26.5	35.5	25.9	28.3	26.3	20.0	16.7	39.5
Manage in/out license agreements	17.6	51.6	14.8	21.7	15.8	40.0	55.6	34.2
Apply for a trademark	5.9	9.7	14.8	32.6	10.5	20.0	5.6	2.6
Apply for a copyright	2.9	6.5	25.9	32.6	23.7	2.5	8.3	5.3

Table 3: Information Gathering – theoretical knowledge

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Patent databases	80.0	83.3	50.0	55.8	65.0	80.5	66.7	81.5
Trademark and design databases	34.3	40.0	34.3	27.9	40.0	24.4	15.4	34.2
Innovative companies databases	45.7	46.7	43.8	44.2	45.0	29.3	51.3	34.2
Industrial researchers' databases	62.9	46.7	37.5	25.6	27.5	51.2	43.6	47.4
Journals and publications of the innovation sector	40.0	43.3	50.0	55.8	72.5	51.2	74.4	39.5
Other information sources	28.6	20.0	62.5	34.9	25.0	31.7	46.4	18.2

Table 4: Information Gathering – practical skills

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Data searching	73.5	80.0	53.1	63.0	75.0	85.4	71.8	64.9
Analyse the gathered information	64.7	80.0	53.1	60.9	57.5	58.5	71.8	62.2
Edit an analytical report	55.9	46.7	40.6	37.0	47.5	61.0	38.5	40.5
Be updated	55.9	50.0	84.4	50.0	32.5	46.3	59.0	43.2
Be proactive	52.9	43.3	43.8	30.4	60.0	61.0	71.8	29.7

Table 5: Technology commercialization – theoretical knowledge

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Market assessment	70.3	71.0	56.7	52.3	76.9	78.6	76.3	66.7
Technology marketing	62.2	61.3	73.3	63.6	51.3	66.7	57.9	38.9
Commercialization approaches and sales strategies for innovation	62.2	71.0	40.0	50.0	79.5	69.0	81.6	69.4
Knowledge of the main players of the specific industrial sector	56.8	29.0	36.7	36.4	41.0	40.5	57.9	30.6
Legal aspects of technology commercialisation	48.6	58.1	50.0	29.5	33.3	26.2	47.4	50.0

Table 6: Technology commercialization – practical skills

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Analyse the market and determine the invention's commercial potential and viability	69.2	43.3	53.1	53.3	64.1	65.1	61.9	64.0
Elaborate a business plan	59.0	30.0	21.9	40.0	41.0	34.9	47.6	36.0
Able to understand potential markets and ways of commercialization of innovation	46.2	50.0	21.9	6.7	15.4	41.9	38.1	37.0
Edit a sale strategy	38.5	56.7	31.3	11.1	33.3	20.9	23.8	22.0
Orient and stimulate the researchers towards certain fields which are requested from the market	38.5	33.3	37.5	24.4	33.3	41.9	50.0	17.0
Look for financial resources	28.2	6.7	21.9	31.1	23.1	25.6	52.4	19.0
Look for potential commercial partners	28.2	13.3	28.1	28.9	51.3	37.2	33.3	14.0
Communication skills	28.2	23.3	50.0	31.1	23.1	39.5	50.0	14.0
Encourage and find third parts interested to commercialization	15.4	16.7	18.8	15.6	7.7	25.6	26.2	19.0
Creativity	15.4	10.0	21.9	17.8	25.6	39.5	52.4	14.0
Able to involve potential buyer, partners, investors	15.4	30.0	43.8	20.0	17.9	30.2	28.6	17.0
Look for potential sponsors	12.8	6.7	28.1	8.9	15.4	16.3	19.0	6.0
Analytical skills	12.8	23.3	34.4	17.8	12.8	20.9	38.1	25.0
Write a license's plan for commercialisation	10.3	13.3	25.0	6.7	10.3	7.0	11.9	6.0
Conduct a financial analysis	7.7	16.7	40.6	15.6	5.1	9.3		28.0

Table 7: New business development – theoretical knowledge

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Business and economics fundamentals	60.0	66.7	58.1	57.8	62.5	79.5	73.2	65.7

General management motions	68.6	83.3	61.3	66.7	72.5	56.4	78.0	60.0
Business plan development and evaluation	88.6	93.3	87.1	66.7	92.5	74.4	82.9	74.3
Legal issues related to the creation of a new enterprise	45.7	46.7	64.5	33.3	42.5	41.0	56.1	40.0

Table 8: New business development – practical skills

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Elaborate a business plan	86.8	70.0	71.0	62.2	70.0	66.7	65.9	58.3
Find potential commercial partners, investors	47.4	66.7	48.4	53.3	37.5	43.6	46.3	41.7
Conduct a financial analysis	28.9	23.3	38.7	28.9	20.0	28.2	29.3	27.8
Look for financial resources	36.8	30.0	58.1	37.8	42.5	51.3	48.8	41.7
Look for potential sponsors	13.2	20.0	38.7	31.1	12.5	30.8	14.6	2.8
Entrepreneurship	50.0	56.7	51.6	37.8	50.0	30.8	61.0	36.1
Team building	47.4	36.7	29.0	20.0	47.5	41.0	78.0	22.2
Creativity	31.6	26.7	41.9	33.3	40.0	46.2	51.2	25.0

Table 9: Project Management – theoretical knowledge

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Fundamentals of project management	85.4	90.3		55.6	76.9	90.5	83.3	69.4
Operational and strategic planning	65.9	77.4	76.7	42.2	53.8	76.2	71.4	41.7
Risk management theories	41.5	16.1	63.3	22.2	41.0	16.7	33.3	27.8
Marketing notions	39.0	22.6	33.3	33.3	46.2	21.4	50.0	16.7
Managerial software	29.3	12.9	36.7	24.4	10.3	35.7	35.7	11.1
University research centres policies and internal procedures	29.3	48.4	36.7	17.8	17.9	23.8	46.7	27.8
Basic finance	24.4	35.5	43.3	40.0	35.9	35.7	54.8	33.3

Project management theories	76.7	37.8	33.3	59.5	50.0	25.0	

Table 10: Project management – practical skills

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Operational and strategic planning	75.0	67.7	46.7	33.3	61.5	76.2	58.5	50.0
Coordination of the work team	67.5	51.6	70.0	53.3	64.1	69.0	80.5	58.3
Leadership, coaching	42.5	22.6	66.7	31.1	25.6	42.9	58.5	27.8
Able to delegate the work and evaluate the results	40.0	35.5	53.3	22.2	46.2	45.2	53.7	22.2
Planning skills	35.0	45.2	46.7	53.3	30.8	61.9	53.7	19.4
Team building ability	32.5	41.9	50.0	8.9	38.5	33.3	53.7	36.1
General management	20.0	25.8	53.3		38.5	11.9	29.3	13.9
Analytical skills	20.0	38.7	46.7	44.4	15.4	33..3	39.0	22.2
Administrative office and finance		32..3	30.0	11.1	10.3	26.2	34.1	22.2

Table 11: Communication and networking – theoretical knowledge

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Wide contact network of technology transfer stakeholders	87.5	90.3	71.9	60.0	66.7	81.4	78.0	85.2
Fluent English	77.5	83.9	84.4	66.7	71.8	81.4	97.6	51.4
Knowledge of the professional terminology of the innovation sector	57.5	67.7	53.1	48.9	59.0	51.2	51.2	48.6
Communication theories and techniques	55.0	48.4	65.6	46.7	59.0	51.2	61.0	54.3

Table 12: Communication and networking – practical skills

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Promote and valorise the innovations	60.0	54.8	50.0	17.4	48.7	44.2	52.4	31.4

Develop good relationships with stakeholders (researchers and companies)	50.0	58.1	56.3	32.6	33.3	53.5	47.6	37.1
Able to speak in public, presentation skills	42.5	35.5	40.6	21.7	48.7	44.2	61.9	14.3
Collaborate actively with inventors / researchers	37.5	38.7	40.6	45.7	25.6	30.2	57.1	48.6
Orient the research programmes to fulfil market needs	37.5	29.0	40.6	39.1	38.5	41.9	47.6	28.6
Interactive , open	37.5	16.1	25.0	23.9	23.1	27.9	47.6	22.9
Support the researchers to valorize their outputs	32.5	54.8	53.1	28.3	25.6	39.5	50.0	14.3
Emphatic	32.5	6.5	25.0	15.2	7.7	41.9	45.2	5.7
Manage conflicts	30.0	19.4	25.0	15.2	38.5	34.9	47.6	17.1
Reassuring / advisory capacity	25.0	12.9	46.9	10.9	7.7	37.2	45.2	
Contact potential licensees for innovations	22.5	19.4	28.1	17.4	15.4	23.3	28.6	11.4
Public presentations of patented products	15.0	3.2	9.4	28.3	12.8	25.6	23.8	25.7
Elaborate a letter of intent	15.0	3.2	6.3	6.5	12.8	9.3	21.4	2.9
Moderate meetings / workshop	12.5	22.6	37.5	23.9	15.4	25.6	40.5	8.6

Table 13: Negotiation – theoretical knowledge

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Communication theories	75.0	63.3	54.2	63.4	47.4	68.4	64.7	64.7
Negotiation theories and strategies (phases, styles, variations, mediation, success factors)	77.8	100	83.3	73.2	76.3	86.8	91.2	85.3

Table 14: Negotiation – practical skills

(% of responders)

	Italy	Portugal	Greece	Bulgaria	Romania	Asturias	Catalonia	Poland
Analyse complex scenarios and propose simple solutions	57.9	61.3	48.3	43.5	43.6	42.9	53.7	64.7

Understand and merge the expectations of both researchers and companies	55.3	58.1	62.1	50.0	56.4	73.8	65.9	41.2
Intermediate between two different exigencies	47.4	38.7	34.5	26.1	25.6	33.3	43.9	23.5
Cultivate good relationship with all stakeholders	42.1	35.5	48.3	26.1	43.6	45.2	43.9	11.8
Wide network of personal contacts	42.1	16.1	51.7	34.8	12.8	28.6	43.9	14.7
Patience	36.8	16.1	27.6	30.4	30.8	19.0	53.7	2.9
Proactivity	36.8	32.3	31.0	13.0	25.6	35.7	56.1	8.8
Find an agreement which is acceptable and/or convenient for both sides	34.2	41.9	62.1	43.5	30.8	66.7	46.3	41.2
Empathy	31.6	16.1	27.6	4.3	25.6	35.7	58.5	8.8
Financial negotiation	28.9	25.8	48.3	43.5	25.6	16.7	24.4	35.3

2.3 Conclusions and implications for the training course

According to the study results, there is a need for a foundation course for TTM professionals, targeting graduates without or with some professional experience in technology transfer and working in related professional areas (research, engineering, business development etc). Our target groups are:

- people which already working on technology transfer area, without formal qualifications and a solid knowledge background;
- people working in other related professional areas and want to make a transition to technology transfer management;
- graduates from technical scientific backgrounds (engineering, science), business administration, economics and law, willing to take up the TTM career.

The training course consists of seven units of competences, plus an introductory unit. Since the course addresses a range of professionals from different academic backgrounds, it will cover all seven units at a general and comprehensive level, providing all necessary theoretical knowledge, as well as building the required skills and competencies. The need of a foundation course combined with the limited time of the target groups, which are professionals working in demanding sectors, lead us to develop an e-learning course, that can be flexible and accommodate individual learning path and pace.

The training course will be a complete course for TTMs leading to a competence certification. Depending on the background of the trainees, they may already have acquired some units of competences. The trainees can also have acquired professional competencies during their working experience. Therefore, we propose as well a scheme of validation of prior knowledge and experience, that will be developed within work package 5 of ETM project. The validation scheme will assess the competencies acquired through previous studies and working experience (formal and non formal environments), providing credits to trainees. Therefore, the training course in combination with the validation scheme will facilitate the trainees to get their

certification by multiple methods: attending a training course; validating their prior knowledge and experience; combination of validation and training for specific units of competencies.

3. Training course description

Recommended background

Higher education degree in engineering, sciences, technology, economics, business administration, marketing, law.

English language skills at level C1 of Common European Framework of Reference for Languages (CERF).

Table 15: C1 level of CERF – self evaluation grid

Competence		
Understanding	Listening	I can understand extended speech even when it is not clearly structured and when relationships are only implied and not signalled explicitly. I can understand television programmes and films without too much effort.
	Reading	I can understand long and complex factual and literary texts, appreciating distinctions of style. I can understand specialised articles and longer technical instructions, even when they do not relate to my field.
Speaking	Spoken interaction	I can express myself fluently and spontaneously without much obvious searching for expressions. I can use language flexibly and effectively for social and professional purposes. I can formulate ideas and opinions with precision and relate my contribution skilfully to those of other speakers.
	Spoken production	I can present clear, detailed descriptions of complex subjects integrating sub-themes, developing particular points and rounding off with an appropriate conclusion
Writing		I can express myself in clear, well-structured text, expressing points of view at some length. I can write about complex subjects in a letter, an essay or a report, underlining what I consider to be the salient issues. I can select a style appropriate to the reader in mind.

General professional experience, especially professional experience in a field related to business innovation, like research, TT, business development, marketing, communications an advantage. Specific experience in technology transfer is not necessary.

ICT skills corresponding to European Computer Driving License for work (ICDL) is recommended. ICDL certifies that the user is fully competent in the use of a computer and common applications for working purposes. ICDL covers general ICT concepts, file management, word processing, spreadsheets, databases, presentations, web, image editing, IT security and project planning.

Learning objective

The TTM e-learning course aim at providing the necessary knowledge, skills and competences to professionals that are engaged in technology transfer.

Target groups

The target groups of TTM e-learning course are:

- people which already working on technology transfer area, without formal qualifications and a solid knowledge background;
- people working in other related professional areas and want to make a transition to technology transfer management;
- graduates from technical scientific backgrounds (engineering, science), business administration, economics and law, willing to take up the TTM career.

Learning methodology

The training course will be delivered through e-learning in a learning management system. We will use moodle that is the most widely used and tested open source learning management system.

The training course consists of 1 introductory/ orientation unit and 7 learning units.Each learning unit is defined in terms of learning outcomes. According to Cedefop VET terminology a learning outcome *is a set of knowledge, skills and/or competences an individual has acquired and/or is able to demonstrate after completion of a learning process, either formal, non-formal or informal* (Cedefop, 2008).

Each learning unit comprehends a general description of its objectives, duration, contents and assessment methodology. It is divided into different sessions and includes a range of learning materials, with the objective to support trainees to acquire theoretical knowledge and build up the skills and competences required for technology transfer management. The learning material that will be used in the course consist of:

- Powerpoint presentations
- Readings
- Videos
- Links to external sources
- Case studies
- Assignments

The training course will be managed by a team of trainers and e-learning facilitators. The trainers will have the main responsibility to manage the course, upload the learning material, guide and support the trainees. Optionally, the e-learning facilitators will support the e-learning course initiating and facilitating the discussions in the forums.

The training course will have a recommended duration of five weeks. Each week, the trainers will make an overview of the last week, a presentation of the learning units of the week and the required assignments. The trainees will study the learning material on their own time and pace, with the obligation to do their assignments in time.

Trainees assessment

The trainee assessment will be based on self – assessment quizzes. Each learning unit will have a final self-assessment quiz consisting of multiple choice questions or open text questions. The length of the self-assessment quizzes will be 10 questions.

In order to get a certificate the trainee will have to pass all seven quizzes with an average score of 70% or higher. The trainees that will have some units accredited through the validation of prior learning and experience scheme, will be excluded from the corresponding quizzes.

At the end of the training course, the trainees that have passed the assessment will get a certificate of completion of the TTM training programme, corresponding to 5 ECVET points.

4. Learning outcomes and ECVET credit points

4.1 Learning outcomes

The TTM training course content is presented in table 16 in terms of learning outcomes. According to Cedefop definition (Cedefop, 2008) "learning outcomes is the set of knowledge, skills and competences that an individual has acquired after the completion of a learning process". For the development of the TTM training course in terms of learning outcomes, we have used the typology of the French qualification system as presented in Cedefop, 2006. According to this typology

- knowledge corresponds to theoretical knowledge, what a person knows about a specific vocational subject (savoir)
- skill correspond to functional competencies, what a person can do, by applying his/her knowledge (savoir faire).
- competence corresponds to soft skills or social competencies (savoir être)

Table 16: Learning outcomes of TTM training course

	Knowledge **The candidate should know:**	**Skills** **The candidate should be able to:**	**Competences** **The candidate should:**
Unit 1: IPR and Licensing	• IPR, patents and licences, other protection methods • IPR European, International and national legislation • Types of IPR agreements • Patenting process • Patent databases and patent offices worldwide • IPR financial management • Licensing process	• assess the best protection possibility for a certain innovation • design an IP strategy • compile an IPR agreement • apply for a certification & patents • manage financial issues related to IPR • manage in/out license agreements • apply for a trademark • apply for a copyright	• be precise and scrupulous in defining all the IP protection details
Unit 2: Information gathering	• Patent databases • Trademark and design databases • Innovative companies databases • Industrial researchers' databases • Journals and publications of the innovation sector • Other information sources	• search for data • analyse the gathered information • compile an analytical report	• be proactive, looking for the most up-to-date information
Unit 3: Technology commercialisation	• Market assessment • Marketing notions	• analyse the market and determine the invention's commercial potential and viability	• have communication skills and be able to promote a certain innovation to potential clients

	• Technology marketing • Commercialization approaches and sales strategies for innovation • Knowledge of the main players of the specific industrial sector • Legal aspects of technology commercialisation	• elaborate a commercialisation plan • understand potential markets and ways of commercialization of innovation • edit a sale strategy • look for financial resources • look for potential commercial partners • encourage and find third parts interested to commercialization • involve potential buyer, partners, investors • look for potential sponsors • write a license's plan for commercialisation • conduct a financial analysis	• be creative in finding commercial solutions • have strong analytical skills • be empathic with the final customer's needs.
Unit 4: New business development	• Business and economics fundamentals • General management notions • Business plan development and evaluation • Legal issues related to the creation of a new enterprise • Sector specific legal issues	• elaborate a business plan for an emerging company • find potential commercial partners, investors • conduct a financial analysis • look for financial resources • look for potential sponsors	• have entrepreneurial spirit • be a team player • be able to coordinate a group of people
Unit 5: Project management	• Fundamentals of project management • Operational and strategic planning • Risk management theories • Managerial software	• perform operational and strategic planning • delegate the work and evaluate the results	• be a leader and an affective coacher • able to coordinate teams • have strong analytical skills

	• University research centres policies and internal procedures • Basic finance • Project management theories	• plan the project according to the requirements and resources • perform general management • operate administrative office and finance • coordinate the work team	
Unit 6: Communication and networking	• Fluent English • Knowledge of the professional terminology of the innovation sector • Communication theories and techniques	• promote and valorise the innovations • develop good relationships with stakeholders (researchers and companies) • collaborate actively with inventors / researchers • orient the research programmes to fulfil market needs • support the researchers to valorize their outputs • contact potential licensees for innovations • give public presentations of patented products • elaborate a letter of intent	• be able to develop and maintain a wide contact network of technology transfer stakeholders • be interactive , open • be able to manage conflicts • have reassuring / advisory capacity • able to speak in public, presentation skills • able to moderate meetings / workshop
Unit 7: Negotiations	• Communication theories • Negotiation theories and strategies (phases, styles, variations, mediation, success factors)	• analyse complex scenarios and propose simple solutions • understand and merge the expectations of both researchers and companies • intermediate between two different	• be able to develop and maintain a wide network of personal contacts • be patient • be proactive

		exigencies • cultivate good relationship with all stakeholders • find an agreement which is acceptable and/or convenient for both sides • conduct financial negotiation	• be empathic

4.2 EQF level

The TTM training course corresponds to the level 6 of European Qualification Framework (EQF). Level 6. The learning outcomes of Level 6 are presented in table 17. The descriptors of level 6 has been agreed by the ministers responsible for higher education in the framework of the Bologna process. Level 6 corresponds to the first cycle of Bologna process, awarding a bachelor degree involving typically 180-240 ECTS.

Table 17: Learning outcomes at level 6 of EQF

	Knowledge	Skills	Competences
Level 6	advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	manage complex technical or professional activities or projects, taking responsibility for decision making in unpredictable work or study contexts take responsibility for managing professional development of individuals and groups

Source: EQF Recommendation, 2008

4.3 ECVET credit points

The TTM training course has been structured in units of learning outcomes according to the principles of EQF and ECVET. As there is not yet a commonly accepted convection for allocation of ECVET credit points to qualifications, we have used the methodological approach developed in the project COMINTER (DG Education and Culture, 2011). In order to set the total ECVET credit points for TTM training course, we use as a basis the European Credit Transfer and Accumulation System – ECTS, in which one academic year corresponds to 60 ECTS-credits. The TTM training course is equivalent to a semester course of 5 ECTS credits.

Using COMINTER methodology, after defining the total ECVET credit points, we allocated the sub-points to the units of learning outcomes, as shown in table 18. In this process, we have as a starting point the fact that TTM competence profile is a pan-European profile that has been developed following a comprehensive study in 7 Member States. The allocation of ECVET points, as shown in table 18, reflect the common European TTM competence profile. In national adaptation of TTM competence profile, there may be differences in the allocation of the sub-points, following different national situation.

Table 18: ECVET credit points

Unit of learning outcome	ECVET Credit points (% of 5)
Unit 1: IPR and Licensing	20
Unit 2: Information gathering	10
Unit 3: Technology commercialisation	20
Unit 4: New business development	20
Unit 5: Project management	15
Unit 6: Communication and networking	10
Unit 7: Negotiations	5
Total	100

5. Structure and contents of the training course

5.1 Syllabus

The e-learning course is structured in modules and includes: one introductory/orientation module and seven modules corresponding to the identified units of learning outcomes.

Introductory/orientation module

Title:	Introduction / orientation to the course
Objectives/ expected outcomes	By the end of this module, the trainee will • become familiar with the course through reading the syllabus and browsing to the learning management system • become familiar with using the learning management system and the forum
Estimated duration:	1 hour
Assessment activity:	None
Contents	• Introduction to the course • Introduction to the learning management system
Learning material	• Syllabus • Introductory video • Discussion topic: presentation of participants, expectations from the training course
Activities	None

Module 1: IPR and licensing

Title:	IPR and licensing
Objectives/ expected outcomes	By the end of this module, the trainee will: • have comprehensive knowledge in the area of IPR, patents, licenses, relevant legislation, IPR management and financial management • be able to define an IPR strategy, compile and manage an IPR agreement • have knowledge of IPR issues in his/her specific sector
Estimated duration:	5-10 hours
Assessment activity:	Self-assessment quiz with 10 multiple choice questions. Each question counts for 1 point, the whole quiz counts for 10 points. After the completion of the quiz, the learner gets the result without feedback and has the chance to

	repeat the quiz once more with different questions. After the completion of the second quiz, (s)he can get feedback for both quizzes. The quiz with the better score will count for the final assessment.
Contents	1.1 IPR Fundamentals • Intellectual property as a drive for innovation • Categories of Intellectual Property Rights (IPRs) • Patents • Licenses • Trademarks • Designs • Copyrights • EPO - European Patent Office • IPR European, International and national legislation 1.2 IPR management • Ownership of IPRs in EC funded Research and Development Programs • IP strategy • The patenting process • Patent databases and patent offices worldwide • IPR financial management • Licensing process • IPR agreement 1.3 Sector specific IPR • Example of IT sector: software, database and internet • Copyrights of IT products
Learning material	• Presentation of the module (ppt) • EPO - European Patent Office (link to web-site) • EPC - European Patent Convection (link to web-site) • Patent information tour (link to online module) • How to get a European patent (link to online module) • Licensing and technology transfer (link to online module) • Financing and valuation (link to online module) • Sample of an IPR agreement (document) • Glossary (html)
Activities	• Assignments: o Assess the best protection possibility for a certain innovation Assignment o Prepare a plan for applying for a patent Assignment

Module 2: Information gathering

Title:	Information Gathering
Objectives/ expected outcomes	By the end of this module, the trainee should be able to: • Acknowledge the relevance of the information gathering process within the R&D sector; • Describe what information gathering is and identify successful information gathering techniques; • Choose the most appropriate strategy of information gathering in relation to their context and purpose; • Search and obtain useful and relevant data; • Analyze the gathered data in an effective way; • Write and/or edit an analytical report on the obtained information; • Acknowledge the importance of constant monitoring and updating processes; • Identify and exploit relevant sources of information for their specific sector; • Develop a proactive attitude toward information within the innovation sector.
Estimated duration:	15 hours
Assessment activity	Self-assessment quiz with 10 multiple choice questions. Each question counts for 1 point, the whole quiz counts for 10 points. After the completion of the quiz, the learner gets the result without feedback and has the chance to repeat the quiz once more with different questions. After the completion of the second quiz, (s)he can get feedback for both quizzes. The quiz with the better score will count for the final assessment.
Contents	2. Introduction 2.1. What is Information Gathering? • Definition and objectives • Methodologies of information gathering • Proactive attitude of the TTM 2.2. General sources of information • Choosing the best strategy of research • Survey • Individual or in-depth interview • Focus group 2.3. Specific sources of information for the innovation sector • Patent and trademark databases • Public and governmental databases

	• Independent international databases • Academic journals and other resources 2.4. How to analyze and summarize the gathered information • Data analysis • Quantitative data analysis o Prepare data for analysis o Options for displaying distributions o Statistics and Ethics • Qualitative data analysis • The data analysis report – analytical report
Learning material	• Information Gathering. (PDF) • 2.1 What is Information Gathering?. (PPT) • 2.2. General sources of information. (PPT) • 2.3. Specific sources of information for the innovation sector. (PPT) • 2.4. How to analyze and summarize the gathered information. (PPT) • Marketing Plans : How to Conduct Market Research (link to YouTube video) • How to do Market Research with Google Trends (link to YouTube video) • A history of desk research (link to YouTube video) • The nature of desk research (link to YouTube video) • The benefits and limitations of desk research (link to YouTube video) • Differences in Quantitative and Qualitative Research (link to YouTube video) • Webinar: Conducting effective surveys (link to YouTube video) • How to Conduct the Informational Interview (link to YouTube video) • Focus Group Tutorial (link to YouTube video) • Focus Group- The Good, The Bad and The Ugly! (link to YouTube video) • WEBINAR: Basic Data Analysis (link to YouTube video) • Webinar: How to Use Excel for Data Analysis and Reports (link to YouTube video) • Excel and Questionnaires: How to enter the data and create the charts (link to YouTube video) • Qualitative Data Analysis Techniques (link to YouTube video) • Analysis of Qualitative Data (link to YouTube video) • Analytical Reports: Writing Analytical Reports (link to YouTube video) • Glossary of terms (html)

Module 3: Technology commercialisation

Title:	Technology commercialisation
Objectives/ expected outcomes	By the end of this module, the trainee will: • have general knowledge on commercialization process specific knowledge on technology transfer • have developed the skills to analyse and assess the market potential for technology, position the technology in the market, create commercialization plan, commercialization strategies and financial sources for technology commercialization • have developed communication skills, creativity and analytical skills
Estimated duration:	5 hours
Assessment activity:	Self-assessment quiz with 10 multiple choice questions. Each question counts for 1 point, the whole quiz counts for 10 points. After the completion of the quiz, the learner gets the result without feedback and has the chance to repeat the quiz once more with different questions. After the completion of the second quiz, (s)he can get feedback for both quizzes. The quiz with the better score will count for the final assessment.
Contents	• Concept of Commercialization • The commercialization process • Technology and Business • Commercialization as roadmap • Technology Commercialization Assessments • Stakeholders map • Barriers and opportunities for commercialization • Development status of technology, basic resources for commercialization • Competing technologies and competitors • The commercialization strategies
Learning material	• Global Perspective on Technology Transfer and Commercialization, ed. J. S. Butler, Edward Elgar, 2011. • G. Kozmetsky, F. Williams, V. Williams, New Wealth. Commercialization of Science and Technology for Business and Economic Development, Praeger, London, 2004. • V. K. Jolly, Commercializing New Technology, Harvard Business School Press, 1997. • Glossary of terms (html)

Module 4: New business development

Title:	Development of a new business
Objectives/ expected outcomes	By the end of this module, the trainee will: • Be able to evaluate the potential commercial value of a technology or an invention, eventually turning it into a new business.

	• Be able to write a business plan for the development of a new company. • Be able to choose the best company model for his invention. • be able to identify the organizations which can support the process of creating a new company. • Have general knowledge of entrepreneurship and business plan and specific knowledge in new business in technologic fields.
Estimated duration:	10 hours
Assessment activity:	Self-assessment quiz with 10 multiple choice questions. Each question counts for 1 point, the whole quiz counts for 10 points. After the completion of the quiz, the learner gets the result without feedback and has the chance to repeat the quiz once more with different questions. After the completion of the second quiz, (s)he can get feedback for both quizzes. The quiz with the better score will count for the final assessment.
Contents	4.1. Fundamentals of entrepreneurialism • Develop a business idea/ Strategic design • Assess the market opportunities • Turn an idea into reality 4.2. How to write a Business plan for a new company – part 1 • Investigate your market • Describe your product/ service • Evaluate the feasibility and potential of your idea/ market opportunities. • Choose a business model 4.3. How to write a Business plan for a new company – part 2 • Marketing plan • The management/ network • Financial plan • Fund raising strategies 4.4. New business in technology • Spin out company • Spin off company • Start up company 4.5. Support resources for aspiring entrepreneurs • Technology transfer centres • Universities • Enterprises' Associations • Chambers of commerce • Business incubator centres

	• Business accelerators • Employment centres • Banks • Public authorities
Learning material	Learning material: • 4.1 Fundamentals of entrepreneurialism. (PPT) • 4.2. How to write a Business plan for a new company – part 1. (PPT) • 4.3. How to write a Business plan for a new company – part 2. (PPT) • 4.4. New business in technology. (PPT) • 4.5 Support resources for aspiring entrepreneurs. (PPT) • What's Strategy? (link to YouTube video) • What is Strategy? (link to pdf document) • Strategic Framework (link to pdf document) • What is value proposition? (link to YouTube video) • The customer value proposition (link to pdf document) • Mission & Vision, Pixar vs. Disney (link to YouTube video) • Mission, Vision, Values & Goals (link to pdf document) • Explanation PEST Analysis (link to YouTube video) • Value Chain Analysis (link to YouTube video) • Value Chain Analysis for Assessing Competitive Advantage (link to pdf document) • The Right game: use the game theory to shape the strategy (link to pdf document) • Strategy and society (link to pdf document) • Philip Kotler: Marketing (link to YouTube video) • What is the Marketing Mix? (link to YouTube video) • Porter's Five Forces of Analysis (link to YouTube video) • What Type Of Small Business Legal Entity Should You Form? (link to YouTube video) • Blue Ocean Strategy and the World (link to YouTube video) • Blue ocean strategy example: Nintendo wii (link to YouTube video) • Entrepreneurial Strategies: Developing an Effective Business Plan and Presentation (link to YouTube video) • Debt VS Equity : How to choose the right startup funding structure? (link to YouTube video) • What's a startup (link to YouTube video) • MIRA-Entrepreneurship and Spin-off Companies (link to YouTube video) • UAB Research Foundation holds spin-out companies forum (link to YouTube video)

	• Technology Transfer at Eastern Michigan University (link to YouTube video) • Stanford's Office of Technology Licensing - Innovation Inspiration (link to YouTube video) • EFPIA Disclosure Code - Richard Bergström (link to YouTube video) • What Does a Chamber of Commerce Do, Anyway? (link to YouTube video) • Springfield Business Incubator Virtual Tour (link to YouTube video) • What is a business incubator (link to YouTube video) • What is a business accelerator (link to YouTube video) • YTKO Business Accelerator Case Study - Da Bara Bakery (link to YouTube video) • Glossary of terms (html)
Activities	• Assignment: Elaborate e Business plan for a spin-out company Assignment

Module 5: Project management

Title:	**Project Management**
Objectives/ expected outcomes	By the end of this module, the trainee will: • have knowledge on what is project management, the main processes includes in the project management • be able to initiate, plan, execute, monitor and control, and close a project • understand the knowledge and skills that needs a project manager • understand the different project management methodologies: waterfall, agile, etc.
Estimated duration:	5-10 hours
Assessment activity:	Self-assessment quiz with 10 multiple choice questions. Each question counts for 1 point, the whole quiz counts for 10 points. After the completion of the quiz, the learner gets the result without feedback and has the chance to repeat the quiz once more with different questions. After the completion of the second quiz, (s)he can get feedback for both quizzes. The quiz with the better score will count for the final assessment.
Contents	5.1 Project Initiation • Initiation Process Group • The Project Business Case • The Project Charter • Stakeholder Analysis 5.2 Project Planning • The Planning Process Group • Planning: Project Performance

- Scope
- Time
- Human Resources
- Cost
- Risk
- Procurement
- Quality
- Communications
- The Budget Plan
- Change Control Plan

5.3 Execution and Control of the Project

- Execution and Control Processes
- Deliverable Control
- Project Team Management
- Project Control
- Stakeholder Management

5.4 Project Closure

- Main Activities
- Assets
- Client's Assets
- Organization's Assets
- Project Management Assets
- Team Personal and Professional Growth
- Summary and Conclusions

5.5 project Typologies

- Cascade Model
- Agile Projects
- When to Use Each Model

Learning material	PowerPoint presentation to cover from 5.1 to 5.5 External documents, links and videos for project management What is Project Management: http://www.YouTube.com/watch?v=sqwTv9sODhg Project Management Standards: http://www.pmi.org/en/PMBOK-Guide-and-Standards/Standards-Library-of-PMI-Global-Standards.aspx Project Initiation: • Project Initiation Documents: http://www.mindtools.com/pages/article/newPPM_85.htm

	• Project Initiation video: http://www.YouTube.com/watch?v=yuj2vFCymGw • Articles on Project Initiation: http://www.pmhut.com/8-essential-rules-for-effective-project-management Project Planning: • Definition of project plan: http://en.wikipedia.org/wiki/Project_plan • 5 Steps to project planning: http://www.YouTube.com/watch?v=Do8iykQKMfU • Project Management & Project Planning http://www.YouTube.com/watch?v=HWeUb1VMgJg External links for project management software • ProjectManager.com http://www.projectmanager.com/ • Basics of MS Project http://www.YouTube.com/watch?v=sPwURRG9_Gs Glossary of Basic Terms (html)
Activities	• Assignment: Prepare a project plan based on the case study Assignment

Module 6: Communication and networking

Title:	**Communication and networking**
Objectives/ expected outcomes	By the end of this module, the trainee will: • have knowledge of communication theories and techniques • be able to communicate effectively with stakeholders, orient the research programmes to fulfil market needs, give public presentations in specialised technical subjects • Develop communication skills, conflict management skills, presentation and facilitation skills and the ability to build a wide network of contacts. • Be able to express ideas and opinions clearly and understandable. • Be able to listen actively to the partners, ensuring the understanding of the messages received by repeating or additional questions. • Be able to establish contact with others to request information or support. • Be able to adapt the messages to the type of listener and context in which it is located. Consider the views and opinions of others to communicate. • Be able to establish and maintain formal and informal communication with key networking for the job. • Be able to persuasively argue and present ideas effectively in order to transmit to the receiver of the message.
Estimated duration:	12 hours

Assessment activity:	Self-assessment quiz with 10 multiple choice questions. Each question counts for 1 point, the whole quiz counts for 10 points. After the completion of the quiz, the learner gets the result without feedback and has the chance to repeat the quiz once more with different questions. After the completion of the second quiz, (s)he can get feedback for both quizzes. The quiz with the better score will count for the final assessment.
Contents	6.1 COMMUNICATION (3h) • The importance of communication • Communication process • Effective and efficient communication • Verbal and non verbal communication • Active listening and feedback • Methods and techniques of communication 6.2 INTERNAL COMMUNICATION (3h) • Internal communication • Impact of Poor Communication • Advantages of Effective Communication in the Workplace 6.3 PRESENTATION SKILLS (3h) • How to improve your presentation skills o Preparation o Delivery o Questions 6.4 NETWORKING (3h) • What is networking? • Social networking • Benefits of Networking
Learning material	• 6.1 COMMUNICATION. (ppt) • 6.2 INTERNAL COMMUNICATION. (ppt) • 6.3 PRESENTATION SKILLS. (ppt) • 6.4 NETWORKING. (ppt) • The importance of effective communication (link to online module) • Nonverbal Communication (link to online module) • Communication Methods (link to online module) • History Channel Secrets of body language (link to YouTube video) • Best Practice Guide Internal Communications (link to online module) • L'Oreal on Engaging Internal Communications (link to YouTube video) • Presentation Skills for Emergent Managers (link to online module) • Oral Presentation Skills – A Practical Guide (link to online module)

	• Presentation Skills (link to online module) • The History of Social Networking (link to YouTube video) • Five Benefits of Networking (link to online module) • Benefits of networking (link to online module) • Glossary of terms (html)

Module 7: Negotiation

Title:	**Negotiations**
Objectives/ expected outcomes	By the end of this module, the trainee will: • have comprehensive knowledge about negotiation theories and strategies • be able to analyse, understand scenarios and propose simple solutions • have knowledge of who to cultivate good relationship with all stakeholders and find an agreement which is acceptable and/or convenient for both sides
Estimated duration:	6-12 hours
Assessment activity:	Self-assessment quiz with 10 multiple choice questions. Each question counts for 1 point, the whole quiz counts for 10 points. After the completion of the quiz, the learner gets the result without feedback and has the chance to repeat the quiz once more with different questions. After the completion of the second quiz, (s)he can get feedback for both quizzes. The quiz with the better score will count for the final assessment.
Contents	7.1 Introduction to negotiation • Negotiation defined • Steps and phases in negotiation • Negotiating fears • Mistakes in negotiations • Compromise 7.2 Negotiation strategies and tactics • Negotiation styles • Planning and preparing for negotiation • Creative thinking • Negotiation approaches 7.3 Negotiation in practice • The context of negotiations • Successful / case studies negotiation • Decision making • Negotiations scripts
Learning material	• 7.1 Introduction to negotiation (ppt) • 7.2 Negotiation strategies and tactics (ppt)

- 7.3 Negotiation in practice (ppt)
- On-line learning modules - Life Skills for Business (link to web-site)
- European Patent Convention (link to pdf document)
- The Handbook of Negotiation and Culture - STANFORD BUSINESS BOOKS (link to pdf document)
- NEGOTIATION The Art of Getting What You Want (link to pdf document)
- Mastering "Negotiation Skills" (link to pdf document)
- Glossary of terms (html)

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