



**METHODOLOGY OF CONSTRUCTION OF  
EUROPEAN DIPLOMAS  
WITH COMMON FRAME OF REFERENCE**

**By Jean-Claude DUFRESNE**  
National Schools inspector

[www.europlastic.org](http://www.europlastic.org)

# METHODOLOGY OF THE CONSTRUCTION OF EUROPEAN DIPLOMAS WITH COMMON FRAME OF REFERENCE

## SKILLS, KEY SKILLS, ATTITUDES AND ASSESSEMENTS

During these last decades, the access to knowledge has considerably improved in such a way as the need to memorize knowledge has become less useful as before. However, the citizen needs to own more tools to use his/her knowledge and face the continuous evolutions of technology and individual practices whether they are of a behavioural, social or professional nature. The result of this evolution is **an increasing tendency to develop skills rather than teach factual knowledge**.

The skill is defined as a capacity to behave in a given situation: **the skill is based on knowledge but is not only constituted of it**. The skill mobilizes knowledge, know-how and experiences but also values and behaviours. In the same time, we evolved from the notion of skill in the strict sense to the notion of **"key skills"** identified as **"all the necessary skills to act in an "efficient, appropriate and responsible way in the human, economical and political field"**.

For a long time, a general consensus has acknowledged that the perfect command of reading, writing and arithmetic is a necessary condition but it is not enough to succeed. The skills in literature and mathematics exceed the simple command of the mother tongue and mathematics as they are considered in curriculum: it is now referred to the ability to understand, use and think on a text such as it is referred to the ability to use in a functional way mathematical knowledge.

At the same time **transversal skills** are defined: these skills, which are not linked to any subjects, can be mobilized in a broad range of fields and situations regardless of subjects. The fleeting side of skill is replaced by the notion of **"transferability and flexibility"** of know-how and **"generic skills"** such as communication, creativity, team work or ability to learn.

Similarly **social skills**, such as the ability to develop and professional and private relations, are defined: these skills have now become **"a way to employ"** people in the companies. Last, the importance given to **information and communication technologies** and to foreign languages is now acknowledged as real **"economical resources"** in a multicultural and multilingual Europe.

In modern societies, training all your life appears as the best suitable solution to meet the need of continuing training. But to reach expected results, this approach implies that for everybody the development of the ability to understand and **control one's own thinking and learning process**: this new skill specifies **"behaviour"**. At school the behaviours are often associated to personal skills: curiosity, motivation, enthusiasm, self respect, initiative, perseverance...; in everyday life behaviour is at the heart of learning of social and professional life and a successful integration.

These changes led to an increasing demand of certification: the level reached by the youngster becomes an indicator of his/her personal success and beyond that success, School success which aim today has become to provide knowledge, know-how and necessary **key skills**.

Par excellence, school is the place where these skills are acquired but today school can not do it alone: **"informal"** training through family, friends, media or associations and political groups is as important as **"formal"** training when it comes to develop cognitive, social, personal skills. These last personal learning depend on everybody's abilities and individual motivations: to develop for everybody these abilities and individual motivation implies a strong interaction between school and outside environments if we do not want to reinforce social handicaps linked to the environment inside which people initially live in.

In the same way, traditional assessments are particularly criticized when the modalities and tests are focused on the memorization of information rather than the application of knowledge through a critical and creative

thinking: in that case, factual knowledge are often memorized with the only aim of passing the exam and not of using this knowledge later.

This sort of assessment has long influenced the contents and methods of learning and teaching, which was kept alive by some “**complicity**” between the teacher and the pupil. It is common to observe a great number of pupils who develop these “**consumerist**” attitudes towards exams for which “**cramming**” remains the rule in many exams. One should help to develop new behaviours: the exam must become more and more a **situation** from which the person in charge with the assessment **can measure if the person is likely to develop a skill or not**. These practices must be spread to all the skills and in particular to the assessment of **potential skills** for which the acquisition is not directly measured but the ability (or not) to develop this sort of skill.

The assessment of professional skills follows the same approach: **the ability to carry out an activity does not come down to check the professional gesture but to measure the ability to “anticipate” in a specific professional context, according to the fixed degree of requirements, that can vary according to the level of the diploma.**

The assessment of the skills pose the problem of certification of abilities and individual talents developed in social and professional life. This assessment goes beyond the mere use and accepted acknowledgement of qualifications on paper: today it is the way opened by the validation of the acquired experience.

Skills, their assessment and their validation are now at the heart of the evolution of knowledge and know-how for each individual: they are the heart of the education act and have become the central element of the training all life long and during all economical and human progress in modern countries.

## THE METHODOLOGY OF THE CONSTRUCTION OF EUROPEAN DIPLOMA

The methodology suggested within the Sustainable Professionalization programme to build European diplomas with common frame of reference has been perfected from the development of two professional diplomas in the service sector. But in the assessment of the Sustainable Professionalization programme, the general direction Education and Culture of the European Commission approved the process implemented in the programme Sustainable Professionalization but found that the method that was developed for the carrying out of the diplomas was cumbersome and demanding as far as time and resources were concerned, which led the commission to make recommendations to adapt this methodology: « ... ***It is necessary to simplify the methodology developed by the sustainable professionalization....*** »

The working party established as part of the **Leonardo EuroPlastic** project aims at leading and applying these objectives in the construction of the diploma of the advanced technician in plastics industries.

The diploma of the advanced technician in plastics industries is interesting in many respects:

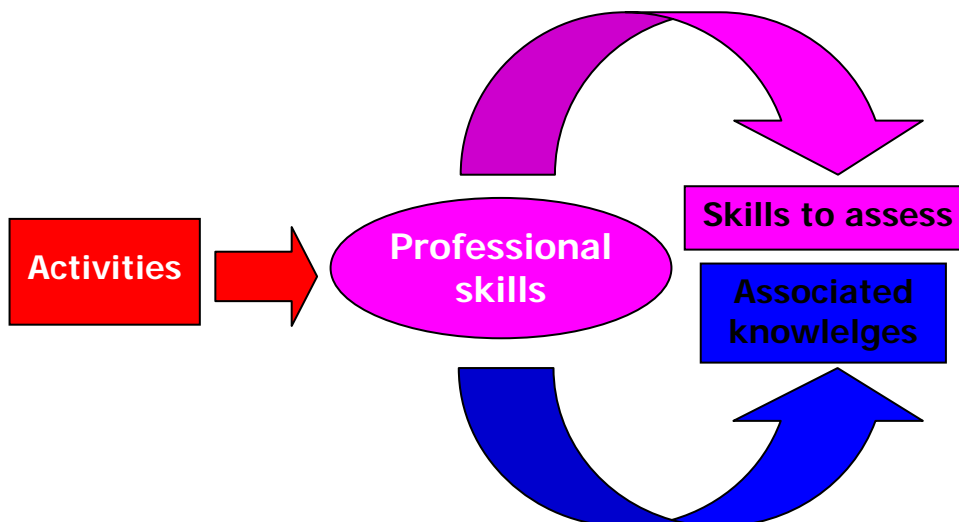
- Created to meet the needs of the plastic industries, it is part of the industrial sector and thus constitutes the first European diploma with a common frame of reference ;
- By spotting both the knowledge peculiar to the « plastic material » and the specificities linked to the practice of the job, it enables to extend this type of curriculum to other production industries.

The natural guide of the suggested methodology is « pragmatism and legibility »:

- « Pragmatism and legibility » for the professionals who expect and even demand to graduates to implement some skills.
- « Pragmatism and legibility » for the trainers who must transmit knowledge and know how that can be directly mobilized and used in the company.

The method applied for the creation of the diploma EuroPlastic is based upon the association of three concepts FRAME OF REFERENCE OF THE ACTIVITIES, FRAME OF REFERENCE OF THE SKILLS and FRAME OF REFERENCE OF THE ASSESSMENT. These concepts are close to those implemented in the creation of

professional diplomas in many European countries, but the methodology suggested is different as far as the part and the role given to professional skills are concerned.



**The professional skills play the part of a thread** in the construction of the diploma from the description of the job to the assessment; they lead the nature and the range of knowledge and the way this knowledge is taught and assessed.

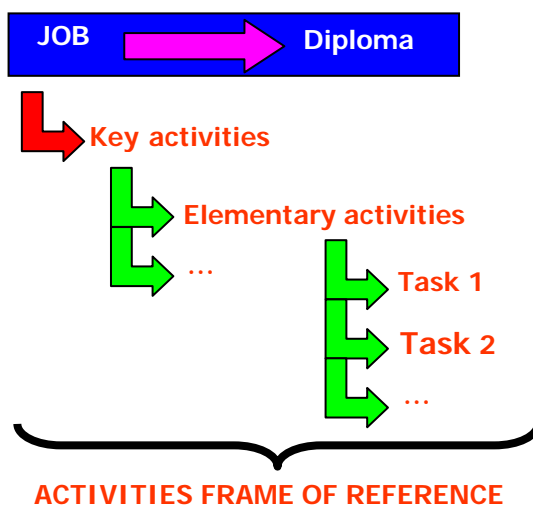
## THE ACTIVITIES FRAME OF REFERENCE

The frame of reference of professional activities describes the activities and tasks needed by the graduate during the first years of his/her professional life. These activities are neither those of a beginner nor those of an experienced professional, but the expected profile takes into account the necessary period of adaptation to the job (from six to twelve months according to the companies).

Mainly established by professional working in companies that are different in their size, organisation and the type of production or service, the frame of reference of professional activities specifies the professional purpose of the diploma: it constitutes the base from which the frame of reference of skills and assessment is built.

It is used by the teachers to be able to better comprehend the professional objectives of the diploma. It is also necessary to validate the acquired experience. Lastly it is useful for information and orientation organizations and national, European and international authorities of professional certification to describe the jobs and the diplomas.

The activities and the tasks done by the graduate while at work are specified as KEY ACTIVITIES, BASIC ACTIVITIES and TASKS; they are specified by action verbs.



## Example for the diploma of the advanced technician in plastics industries.

**Key activity** : CONTROL OF THE PRODUCTION

**Basic activity 1.** Organizing production

**Task 1** To identify the production requirements: staff, materials, machines, peripheral devices, inspections, treatments, packaging, etc.

**Task 2** To define the facilities: to list needs and existing facilities

**Task 3** To identify the sequences of actions and tasks related to production

**Task 4** To carry out tooling acceptance: try-out, testing, sample production, suggestions for changes

**Task 5** To organise and adjust the production floor: to verify the equipment used, to adapt the existing facilities or to purchase new ones, to establish the production cell

**Task 6** To validate the production procedures: procedures, settings, checks

**Task 7** To work out the route sheets: procurement requirements, manufacturing data sheets, inspection sheets, progress cards, quality control sheets

**Task 8** To tune up the production cell and evaluate the whole range of production costs

**Task 9** : To perform (or instruct someone to perform) production start-up, to check satisfactory operation of the different devices and equipment which make up the production cell, to set up the pre-series run and work out the operational methods with a view to ensure the continuity of production

**Task 10.** : To take part in the economic analysis of the production

**The professional profile of the advanced technician in plastics industries is characterised by 5 KEY ACTIVITIES, 17 BASIC ACTIVITIES and 79 tasks (appendix 2)**

## THE SKILLS FRAME OF REFERENCE

The skills are established from activities and tasks described in the frame of reference of professional activities. They compose the skills frame of reference. (Appendix 3)

The skills frame of reference describes the professional skills. It specifies the condition under which these skills are exercised and assessed and it specifies the expected performances: thus it is the base of the assessment. It is used at the same time as the frame of reference of professional skills to implement the assessment whatever the modalities: selective examination, continuous assessment or validation of acquired knowledge.

The specification of skills is the reference for the educational establishment: it is a contract of objectives between the different partners of the training and the certification, the educational establishment and the company, the training officer and the trainer.

A skill is defined as a **concrete measurable or observable and transferable activity defined according to the requirements that are expected by the companies and the labour market**. The implementation of these professional skills is based on different resources: they can be human means, material means, processes, information and of course knowledge.

To take up all the activities of the frame of reference of professional activities and **decline them under the form of skills without repeating the content**, the skills are established according to **the chronological or logical order of operations that are either part of production, or the functioning of the department or according to the large functions without taking into account the implementation of the assessment**. This work is generally carried out on the basis of the frame of reference of professional activities by the training officers who work closely with the professionals.

The skills description is composed of three elements: basic skill (or detailed skill), data,(or how they are achieved) and indicators of performances (or assessment criteria).

- **The basic skills (or detailed skills)**

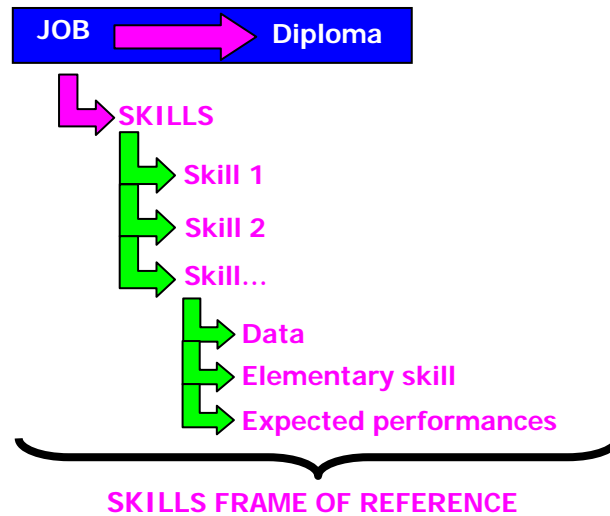
It is the detailed description of professional skills in terms of action: this is what must be done concretely.

- **How it is achieved (or resources)**

They specify the available resources that are necessary to achieve the activities implemented to reach the skill (data, material information, human means...) and they specify the industrial environment (or the nearest of the industrial context) in which the assessment takes place (real or simulated situation, place of the assessment ...)

- **The indicators of performances (or assessment criteria – professional requirements)**

They describe the expected performance that is to say what is required by the candidate. The level of performance must be in keeping with the professional activity.



**Example for the diploma of advanced technician in plastic industries.**

The activity « *to give work a particular meaning: to give a sense of responsibilities, to train, to organise, to supervise* » activity takes effect in an industrial context; however it remains abstract in a training context. How is it possible to assess that the future technician is able to carry out such an activity? To solve this problem the activity is specified under the form of skills that can be assessed.

The activity « *to give work a particular meaning: to give a sense of responsibilities, to train, to organise, to supervise* » is part of, like the activity « *to take part in staff management and to develop competences* » of the activity "management- organization;

**Key activity:** *management – organization*

- **Activity 1:** *to give work a particular meaning: to give a sense of responsibilities, to train, to organise, to supervise*
- **Activity 2:** *to take part in staff management and to develop competences*

These activities are detailed in the frame of reference of professional activities into 11 different tasks:

**Task D1.1:** *to manage individual capacities and production means*

**Task D1.2:** *to organize and to share the work out among the production teams according to the orders and production planning*

**Task D1.3 :** *to explain production tasks and to clarify the instructions*

**Task D1.4:** *to organize and ensure the training for the working station (newcomers, new technologies...)*

**Task D1.5:** *to control over the time the correct operation of production teams and the respect of the instructions*

**Task D2.1:** *to know the staff*

**Task D2.2:** *to be sure of the adequacy between the given tasks and the staff's level of skills*

**Task D2.3:** *to be able to pass a judgment and to give opinions on the results of the given tasks*

**Task D2.4:** *to know how to be the way out in the event of a difficulty*

**Task D2.5:** *to collect training needs*

**Task D2.6:** *to take part directly or indirectly in the evaluation of the production team performance*

These eleven tasks that are described **in a professional context** are now clarified in **a context of professional assessment** under the form of four main skills and eighteen basic skills:

<b>C8 - TO MANAGE AND LEAD</b>		
<b>C8-1 - MANAGE HUMAN RESOURCES OF THE PRODUCTION CELL</b>		
<b>Data</b>	<b>Detailed skills</b>	<b>Professional requirements</b>
Production file Economic situation (quantities, times, costs...) Various constraints (staff management, law....) Human and material means	The needs and the means must be coherent To organize the teams of the production cell To locate competences of the personnel	The organization suggested is justified, realistic and optimal. Right people are in the right place. The production is ensured in terms of quality, cost and time. Competences of the personnel for the operation of the production cell are identified and defined.
<b>C8-2 – TO LIST THE NEEDS AND TO TAKE PART IN THE STAFF TRAINING</b>		
Procedures Production system The economic situation (quantity, time, cost) Human and material means.	To explain the production tasks and the instructions. To identify the requirements in staff training for the production cell. To take part in the development of the plan of training for the personnel of the production cell. To train for the control of the working station and the respect of the security instructions.	The personnel are trained for an optimal operation of the cell. Training needs are defined, a training plan is proposed. Task are actually and correctly carried out The instructions are correctly implemented.
<b>C8-3 - TO MAKE PEOPLE AWARE OF THE PREVENTION OF THE PROFESSIONAL RISKS AND OF THE PROTECTION OF THE ENVIRONMENT</b>		
Reports of accidents or incidents. Situation of work. Regulations and Standards. Card-index data of safety (matter). Card-index of station (in term of safety). Awareness and information campaign.	To promote a prevention policy concerning risks and an environmental protection within the production cell. To make people respect the instructions. To spread information towards the concerned services ( such as the Committee of Hygiene and Safety and the Working conditions in France)	Pertinence of the organisation and the experience feedbacks. Quality of the communication as regards risks. The behaviours comply with the safety standards and respect the instructions.
<b>C8-4 TO MANAGE TEAMS</b>		
Performance appraisal. Knowledge of the staff and their personal experience. Structural knowledge of the company. Professional plan of evolution given by the department of human resources.	To evaluate the staff competences. To check the good execution of the tasks. To ensure the sense of responsibility and the evolution of the personnel. To handle the conflicts. To be ready to listen to the personnel. To pass relevant information on. To exert a hierarchical responsibility. To manage the non permanent personnel.	The assessment of competence is updated. The arguments exchanged at the time of an evaluation or maintenance is taken into account. The cell functions without conflict, harmoniously and with personnel who are qualified for the station which was entrusted to them.

**Example for the diploma of advanced technician in plastic industries.**

The different activities described in the professional activities frame of reference generally lead to a large number of detailed professional skills: in the case of the EuroPlastic diploma the skills frame of reference mention 145 basic skills.

The high number of basic skills shows both **the diversity of the job and the tasks** that are entrusted to the future graduate, and **the level of professional requirements**. The number of basic skills is also related to **the level of training** and increases with the rank of the diploma.

For the training officer, the description of basic skills is a capital data that enables him/ her to match the range of the knowledge with his/her educational practices. For the person in charge with the assessment, it is an indication of the number of skills to assess during the training and the level of the requirements. In reality, this sharing of the roles between the training officer and the person in charge with the assessment can vary according to the learning situations, the statute of training, the mode of assessment and the assessment system that is implemented nationally.

A skill is specific to an activity field, but it remains the same for all the actions within this field. This concept of 'transferability' is inherent in the representation of skills:

- as regards knowledge, it enables to avoid the catalogue of knowledge and some sort of redundancy in the educational methods that were developed during the professional learning.
- As regards educational methods, for the student undergoing training to go over the specificity of each action and for him/her to be able to do other actions in similar but different contexts.
- As regards assessment, it intervenes in such a way as the assessment situations that are implemented do not only come within one professional context, but enables to assess the professional adaptation of the future graduate.

## THE ASSESSMENT FRAME OF REFERENCE

The assessment frame of reference is composed of three main parts:

- The group of basic skills that lead to the heart of professional skills to assess
- The list of associated knowledge
- The link between the knowledge and the professional skills to assess

### ➤ **First step: the group of basic skills**

The different activities described in the professional activities frame of reference generally lead to a high number of detailed professional skills. In order to make the job of the person in charge with the assessment (and the training officer) easy all the detailed skills are repeated and grouped in the objective of certification:

- 1) *The detailed skills are grouped around the fundamental skill or abilities*
- 2) *The detailed skills that are repeated twice in the table of basic skills have been erased and the similar skills are grouped*

The remaining skills compose the heart of the assessment: they are organized around large fundamental skills named « capacities ». This work carried out with professionals is made easy by organizing basic skills with the help of a spreadsheet to sort them and classify them according to criteria (alphabetical order, activity ...).

All these first skills constitute the heart of the job: for the person in charge of the assessment they determine the skills on which lies the assessment of the future graduate; for the future employer they represent the expected PROFESSIONAL REQUIREMENTS that the graduate must possess. These skills are necessarily less numerous than the basic initial skills (appendix 4): **THE EXPECTED PROFESSIONAL REQUIREMENTS** become the **REFERENCES OF ASSESSMENT**.

### **Example for the diploma of advanced technician in plastics industries**

<b>ABILITIES TO LEAD THE PRODUCTION</b>	<b>N°</b>	<b>Detailed skills to assess (<i>numbers of the second column refer to initial skills</i>)</b>
	3	To take delivery and check the conformity of tools.
	4-5-6	To test and to develop the tools.
	7	To install the definite equipment
	13	To produce a pre-production

15-53-54	To measure the parameters of the real costs of production and calculate the real costs.
18	To consign the parameters of production stability.
20	To check the strict implementation of the procedures planned in the production file and the quality plan.
21-22	To identify, locate and correct the dysfunctions of the cell.
29	To calculate the detailed loads.
31	To apply production management procedures.
32-33	To collect information related to the production.

In the case of the EuroPlastic diploma 145 basic skills have been initially marked, but the assessment is based only on 94 skills, 12 of which are potential skills and 19 constitute transversal skills around communication: to conclude, **the heart of the job of the advanced technician in plastics industries is based on the assessment of 63 skills** (instead of 145 at the beginning).

### 3) *The potential and the transversal skills are marked*

This group lead to two series of skills:

- Those that are **directly linked to the job** and define the **AXIS OF THE JOB**
- Those more **transversal and non specific to the job**, but necessary to the exercise of the job : it is the case for example of skills that are linked to communication or management (when they are not part of the axis of the job)

Sometimes, the assessment of some skills is not possible in the global context of the training whatever the forms and the place where this assessment takes place. These **POTENTIAL SKILLS** mainly concern the activities exercised by the graduate when he/she is definitely stabilized in the function he/she has in the company after several months of experience.

The assessment of professional skills can take different forms – selective exam, continuous assessment, assessment in the company, validation of acquired experience ...- and take place in different places – training centres, company ...

In most cases, the assessment of skills in the training centre or in the company does not pose any particular problems and meet few difficulties except those linked to the existence (or the non existence) of specific equipments, or even the availability of staff in the company. However there are skills for which the assessment remains more difficulties the training centre consequently this assessment usually takes place in the company.

### **Example for the diploma of advanced technician in plastics industries**

The main skill MANAGE- LEAD is detailed under the form of eighteen basic skills that can be assessed in the company or the training centre.

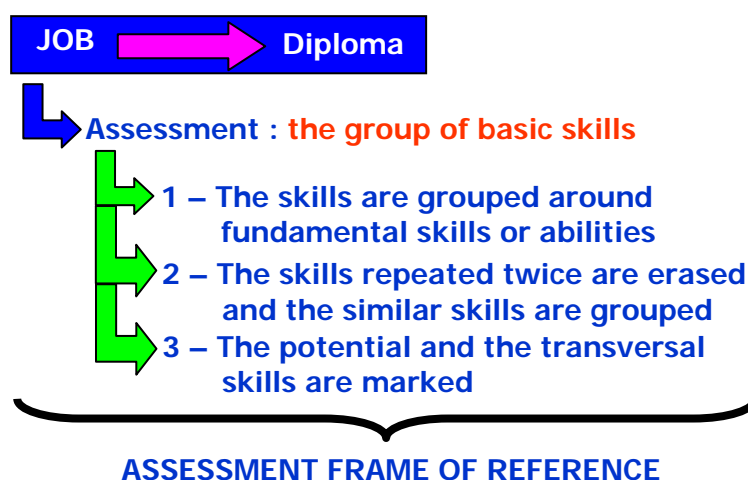
- The needs and the means must be coherent
- *To organize the teams of the production cell*
- *To locate competences of the personnel*
- To explain the production tasks and the instructions.
- To identify the requirements in staff training for the production cell
- *To take part in the development of the plan of training for the personnel of the production cell.*
- *To train for the control of the working station and the respect of the security instructions*
- To promote a prevention policy concerning risks and an environmental protection within the production cell
- To make people respect the instructions
- To spread information towards the services and the Committee of Hygiene and Safety and the Working conditions.
- To evaluate the staff competences
- To check the good execution of the tasks
- *To ensure the sense of responsibility and the evolution of the personnel.*
- *To handle the conflicts.*
- *To be ready to listen to the personnel.*

- To pass relevant information on.
- *To exert a hierarchical responsibility.*
- *To manage the non permanent personnel.*

The nine basic skills, marked here with normal fonts, are assessed in the company during the training period for example and not in the training centre.

If the assessment of these particular skills is almost impossible during the training, they give important further information on what is expected by the future employers and they constitute an aim to reach by the training officers. In the list of the previous skills the assessment of the nine skills written in italic is not possible during the training: they constitute potential skills. For the skill MANAGEMENT- LEADERSHIP none of the skills can be assessed in the training centre.

**A skill is generally assed only once.** This does not mean that other skills are not available during the achievement of the assessed activities, but they are not the object of an assessment, so as to assess a definite and identified number of skills for each unit of certification.



➤ **Second step : associated knowledge**

Whatever their nature, most technical realizations need:

- The perfect command of general culture
- The perfect command of scientific and technological tools
- The perfect command of professional knowledge and know-how

And the perfect command of human skills

The three poles “**general culture, scientific and technological tools and professional knowledge**” are at the heart of every technological and professional training, the human factor being the essential transversal element in all the fields.

Starting from the professional profile defined in the professional activities frame of reference and the skills frame of reference **a list of the needed knowledge for the exercise of the job according to the expected skills and requirements is established.**

All the technological and professional knowledge is grouped into large categories that specify the **AXIS OF THE DIPLOMA**. These teachings are done by specialized teachers and external people according to the place, the type and the form of the training.

Although it is not a training programme since diplomas can be obtained by different ways (initial training, apprenticeship, continuous education, validation of acquired experience ) **the associated knowledge described in the skill frame of reference constitute the base from which the training officers will define their teaching strategies. They also serve to the people in charge of the assessment to implement their assessment.**

The knowledge refer to scientific disciplines, technical concepts and practical knowledge for which one must set the limit of requirements: these limits linked to requirements of professionals and at the level of the diploma can be either set by a simple description or the use of taxonomy. This information is decisive as it set the level of training.

Four main levels of taxonomy can be brought out:

- **Stage 1 : information level.**

At this stage, the candidate receives minimal information about the studied concept (he globally knows the topic). He can for example identify, recognize, or name an element, a component within a system, name a working or organization method or roughly name the role and the function of the comprehended concept .

- **Stage 2: expression level.**

At this stage it is necessary to master a knowledge related to oral expression (speech, oral answers, and explanations) and to written expression (texts, sketches, graphic and symbolic representations). The candidate must be able to justify the subject by explaining for example its functioning, its structure or its methodology.

- **Stage 3: level of tool control.**

At this stage, it is necessary to control the implementation of techniques, tools, rules and principles so as to reach a result. It is the level where cognitive know-how is acquired (method, strategy...). This level enables to simulate, to implement an equipment, to carry out representation, to make the right choice.

- **Stage 4: level of methodological control.**

At this stage, the candidate is able to set and then solve problems inside an industrial context. This level corresponds to the perfect command of the implementation of a method in the view of reaching a goal. This level includes broadened skills, (partial, limited or total autonomy) and the respect of industrial-type working rules (respect of standards, procedures which guarantee the quality of products and services).

It is clear that each level contains the former one.

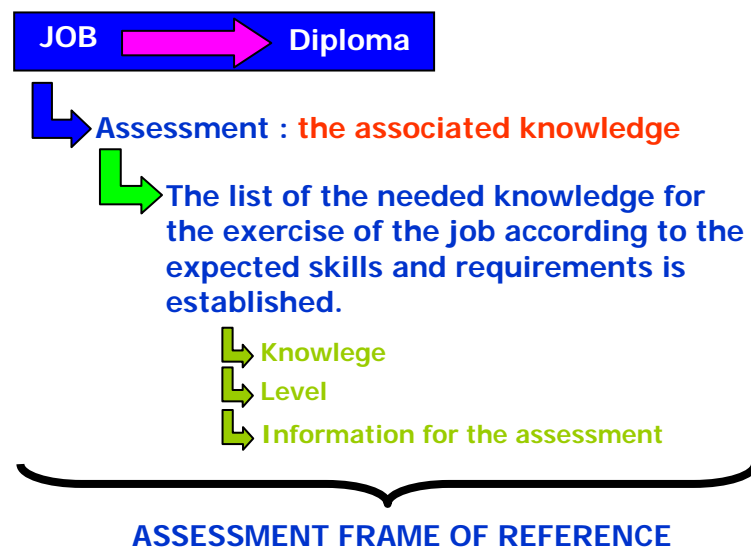
The highest level implies professional practice in the company and needs a close collaboration between the training centre and the company. The company is 'co-responsible of the training' and becomes the place of training in the same capacity as the centre. This practice necessarily leads to particular dispositions in the company and implies a "tutor" even partially or a "mentor".

The associated knowledge organized in large categories is represented in a three columns table: the first one in which are named and specified the knowledge, the second one which specifies the level of taxonomy and the third one which gives information for the assessment.

**Example for the diploma of advanced technician in plastics industries**

KNOWLEDGE	Level				BE ABLE TO
	1	2	3	4	
<b>SA MATERIALS</b>					
SA-1 : History and economy of materials					
History and economy of plastics		x			Historically and economically situate plastic materials compared to other materials.
Features of present materials		x			Name the strong points and the limits of present materials. Name the fields where polymers are essential
SA-2 : Structure (structural anatomy) of polymeric materials					
Composition of a plastic material				x	Explain the Plastic concept = polymer + adjuvant.
Composition of a composite				x	Explain the composite concept = die + reinforcement.
Thermoplastics Features, structure relations / proprieties / implementation				x	Give the definition of a thermoplastic from a molecular point of view (bond forces, macromolecule organisation). Explain the difference compared to a

				thermosetting plastic.
Features of tri-dimensional macromolecules Thermosetting (features, structure relation / proprieties / implementation)			x	Give the definition of a thermosetting from a molecular point of view (bond forces, reticulations). Explain the difference compared to a thermoplastic. Explain the influence of transformation upon the proprieties (network, reticulations rates...).
Elastomers			x	Give the main features of an elastomer and know the structural mechanisms (TP or TS) which are the basis of these features.
How to obtain of polymers		x		Explain the methods to get of polymers (polycondensation, polymerisation by addition) their differences and their interest for the implementation.



➤ **Third step : the link between knowledge and professional skills**

The associated knowledge specifies technological and professional basic knowledge that the future graduate must possess to be efficient in the exercise of his/her activities in the companies and fulfil the skills that are expected by their future employers. **This knowledge is meaningful only if it is closely associated to the skills it is likely to lead:** that is why it is important to link each detailed skill to assess to large categories of associated knowledge and axis that specify the diploma.

This link between skills and knowledge serves as an “educational guide” for the training officer: he/she is the one who gives the **professional dimension** to knowledge.

**Example for the diploma of advanced technician in plastics industries**

**TABLE OF ABILITIES AND PROFESSIONAL SKILLS TO ASSESS ACCORDING TO KNOWLEDGE CATEGORIES**

A – MATERIALS, B - PRODUCTION TECHNICS, C – TOOLINGS, D – INDUSTRIALIZATION, E - CONTROL AND IMPROVEMENT OF PRODUCTION, F – INNOVATION, G – QUALITY, H – MANAGEMENT, I – COMMUNICATION, J - SECURITY AND PREVENTION OF OCCUPATIONAL HAZARDS, K - SUSTAINABLE DEVELOPMENT, L – ECONOMY

Fundamental skills ABILITIES		N°	N° initial	Detailed skills to assess	A	B	C	D	E	F	G	H	I	J	K	L	
C1	TO LEAD THE PRODUCTION	C1-1	3	To take delivery and check the conformity of tools.	■	■	■	■	■					■			
		C1-2	4-5-6	To test and to develop the tools.	■	■	■	■	■					■			
		C1-3	7	To install the definite equipment								■			■		
		C1-4	13	To produce a pre-production													■
		C1-5	15-53-54	To measure the parameters of the real costs													■



To make the development of this part, that is specific to every country, easier it is better to follow a chronological order to develop the modalities of the certification. This progress starts from the list of the skills to assess.

It is thus successively established:

- The inventory of professional skills to assess in the training centre and in the company;
- The number and the definition of the different tests used in the assessment (selective assessment, continuous assessment, other shapes of assessment: **this distribution uses in generally the fundamental skills or abilities**;
- The distribution of these skills according to the different tests and situations of assessment.

The rules of the tests and the situations of assessment are specified from these tables according to the mode of training or the statute of the person who is trained: initial training, continuing training, and training during apprenticeship. In a second part, the teaching hours and the organization of the training period are specified. Then a last part specifies what is related to the modalities of the diploma award and of the recognition between national diplomas. Generally there is also an educational guide for all the training officers.

## RECOMMENDATIONS

### ➤ The initialization of the project

The development of a professional diploma usually starts from a **decision made by the professionals**, but the development of the diploma is **jointly carried out by professionals, training officers and teachers**. In this respect the choice of the professionals must represent the companies that are concerned by the expected job whatever their form or size in order to cover all the situations that can be met in a company during the job. The availability of the professionals is often less than the training officers: it is important that the distribution of tasks and organization of the meetings take this constraint into account.

Of course the definition of the activities and tasks lies with the professionals. If they are not available, the development of the skills is often carried out by training officers and people in charge of the assessment. When skills are being written, a close link between professionals, training officers and people in charge with the assessment is thus important for everybody to understand the professional activities frame of reference. This understanding by the training officers is the only guarantee that teachers meet "without problems" the requirements that are expected and develop suitable educational methods that are linked to professional aims that were defined in common.

In the same way the training officers should not be the only ones to "possess" the assessment processes. The information and the exchange with professionals is a guarantee against drifts and make sure that the assessment is based on professional skills and not on academic knowledge: what must be assessed is the availability, the implementation and the "transferability" of knowledge through professional situations and not the assessment of technical or technological isolated knowledge.

### ➤ The development of the project

Once the professionals have carried out the initiative and have asked for the qualification, a step of consulting is necessary to launch the project: this step aims at searching for information and leading to a general thinking on the job and collecting the first comments from professionals, teachers and training officers. This preliminary stage ends up by a seminar with all the members of the project during which the first thoughts on the diploma to build and on the organization of the project are tackled. (organization of the work, financing, schedule ...)

The project manager has a limited national team of professionals and training officers round him/ her; their vocation is to lead a discussion and write down documents: these documents aim at being discussed and modified in order to take into account the remarks made by the group and to serve as suggestions during the validation meetings. These **working meetings**, one day, are carried out at a national level with the professionals' financial support.

The **meetings of validation** are longer – two days – and reunite all the partners of the project: their aim is to validate the documents drawn up by the group. In order to make the discussions easy the preliminary documents are the subject of regular mailing to inform and feed the thinking.

The manager of the project must mobilize the professionals and manage the first meetings to develop the frame of reference concerning professional activities. Two working meetings followed by a validation meeting are necessary to establish this first document. Four working meetings followed by two meetings of validation are necessary to finish the skills frame of reference. The development of the assessment frame of reference requires an easier organization: a working meeting followed by a validation meeting.

All the needs come down to **four seminars at a European level lasting two days**, prepared by **eight to ten national meetings at the maximum** : that is how the development of the common part of the EuroPlastic diploma has been led.

#### ➤ **The writing of the diploma**

The writing of activities, tasks and skills should obey some basic rules if we want it to be readable by everybody (trainees, employers, teachers and people in charge with the assessment).

- Be clear in the words and concepts that are used
- Use words to name an activity or action verbs to describe tasks and skills
- To help with the writing of skills and make a difference from activities, use the expression "be competent in" or "be able to" at the beginning of the writing for each skill
- Use right words and avoid generic ones

The different activities of the professional activities frame of reference should be detailed enough in order to easily reformulate them into skills.

#### ➤ **The use of the Internet**

The direction Education and Culture of the European Commission insisted a lot on the necessity to call for less important resources to write down the curricula. The simplification and the flexibility of the suggested methodology enable a "relative liberty" in the organization of the meetings with the different partners and in the writing of the diplomas that, while remaining "supervised", permits a flexibility to adapt it to the various jobs and industrial sectors.

The frequency of the meetings and the working methods of the discussion group on the curriculum can be easily lightened by the use of the Internet. These new processes are the subject of a separate note. They mainly come down to the opening of a web site and by the use of web conference.

- The **web site**: it is **mainly used as a communication tool**. Accessible to everybody, it describes the main lines of the project (objectives, presentation of the partners, working programme...) and puts at everybody's disposal by direct loading under the format Word and Acrobat the working documents as they are being developed ( as the manager of the project or the working group decide to do it).The diffusion of these documents aim at making all those who are interested in the project to react –training officers, professionals, people in charge of the assessment...

In order to organize the response of information on these documents it is set, either on the site or next to it, a blog: this blog is not anonymous and is organized in the different languages spoken by the partners of the project. Its menu is organized according to partners and the type of expected reactions; it takes up all the available documents to spread their diffusion and make specialists or non-specialists to make comments and give their opinions on the reactions. The administration of the blog is provided by the project manager and the various partners.

- **The web conference**: the use of the Internet with high speed connection has changed the use of teleconference. Today there exist lighter, cheaper and more available tools. The suggested study aims at developing a technical and didactical methodology to use the web conference in the development of common frame of reference of European diplomas and educational documents and to inform social partners.

This study concerns the development and the uses the web conference in the organisation of meetings and in the driving of projects: it is a technical and didactical study that it brings methodical and computer science answers ([www.europlastic.org](http://www.europlastic.org)).

## SUMMARY

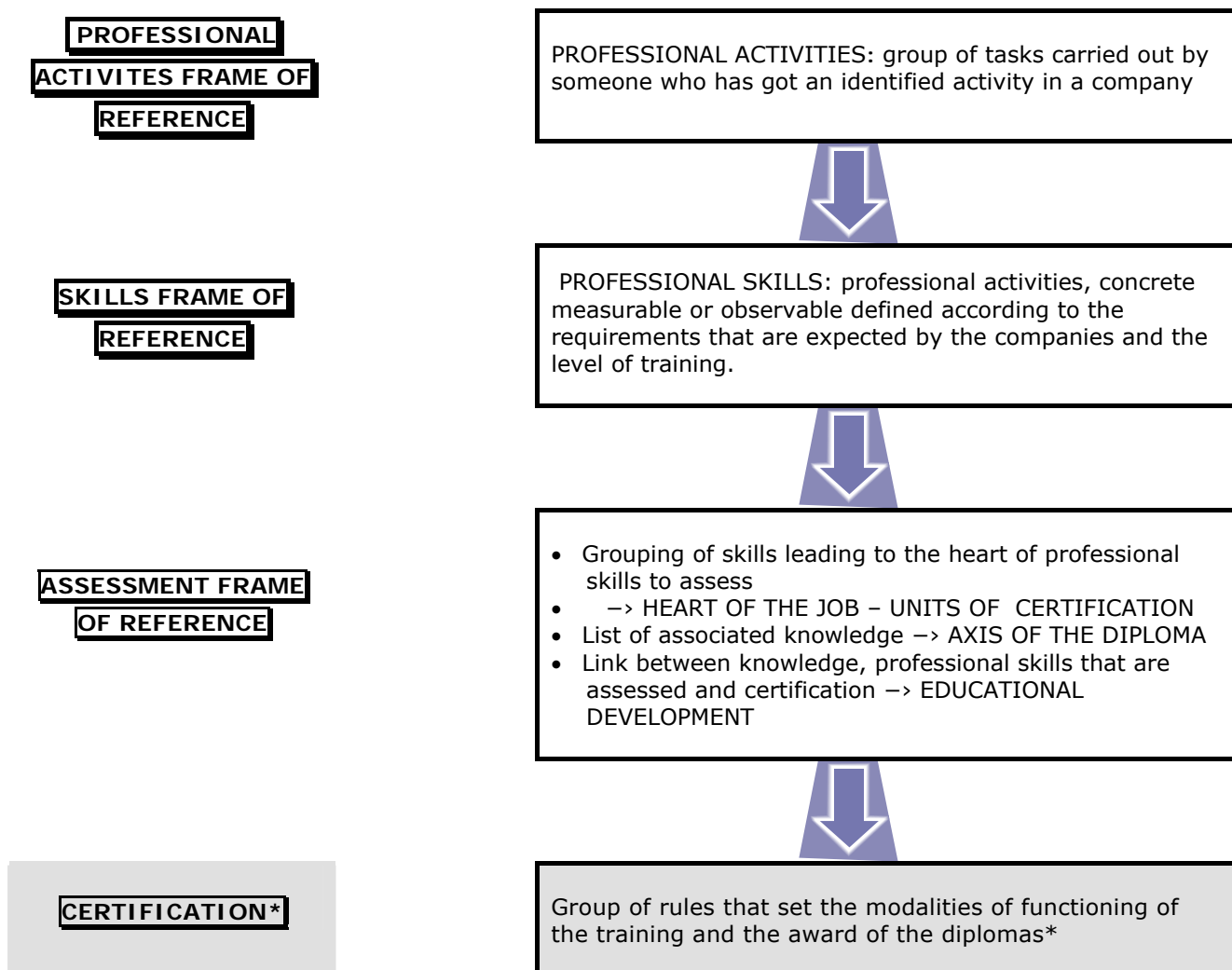
A methodology to build European diplomas with a common frame of reference was set within the frame of a programme Sustainable Professionalization from the development of two professional diplomas in the service sector. The general direction Education and Culture of the European Commission approved the approach implemented in the programme Sustainable Professionalization but thought that the method used for the development of the diplomas was clumsy and demanding in time and resources: a new methodology applied to the diploma of the advanced technician in plastic industries was developed.

This method is based on the association of three concepts PROFESSIONAL ACTIVITIES FRAME OF REFERENCE, SKILLS FRAME OF REFERENCE and ASSESSMENT FRAME OF REFERENCE .

These concepts are close to those implemented in the development of professional diplomas in many European countries but the methodology suggested is different as far as the place and the role given to professional skills in the diploma are concerned.

The professional skills are not established according to academic knowledge but according to knowledge, know-how and behaviours that are necessary to carry out identified professional activities. They play the part of a thread the construction of the diploma concerning the assessment, nature and the range of knowledge and the way this knowledge is taught: established from the activities and tasks described in the professional frame of reference, the detailed skills are then grouped in a limited number of skills to assess that serve as a base to the implementation of certification.

This methodology is condensed in the chart below:



(\*the subsidiary part of the diploma is indicated in grey )

A technical and methodological information to use the web conference to inform the social partners and to build the European diploma frame of reference and educational documents is presented at the same time ([www.europlastic.org](http://www.europlastic.org)).

# APPENDIX 1

## DIPLOMA STRUCTURE

**PROFESSIONAL  
ACTIVITES FRAME OF  
REFERENCE**

/

**SKILLS FRAME OF  
REFERENCE**

**ASSESSMENT FRAME  
OF REFERENCE**

**CERTIFICATION\***

**PROFESSIONAL ACTIVITIES:** group of tasks carried out by someone while working

- **KEY ACTIVITIES**
  - **BASIC ACTIVITIES**
    - **TASKS**

**PROFESSIONAL SKILLS:** professional activities, concrete measurable or observable defined according to the requirements that are expected by the companies and the level of training.

Chronological or logical declination of activities under the form of  
**BASIC PROFESSIONAL SKILLS**

Grouping of basic skills in order to establish:

- I. List of
  - **PROFESSIONAL ABILITIES** → characterize THE JOB
  - **PROFESSIONAL SKILLS to assess** → characterize THE HEART OF THE JOB
  - **POTENTIAL and TRANSVERSAL SKILLS**
- II. the list of **ASSOCIATED KNOWLEDGE**  
→ AXIS OF THE DIPLOMA
- III. Link between **KNOWLEDGE, PROFESSIONAL SKILLS THAT ARE ASSESSED**  
→ EDUCATIONAL DEVELOPMENT

Group of rules that set the modalities of functioning of the training and the award of the diplomas\*

(\*the subsidiary part of the diploma is indicated in grey)

## APPENDIX 2

### THE ADVANCED TECHNICIAN IN PLASTICS INDUSTRIES DIPLOMA

#### A – Professional activities frame of reference

5 KEY ACTIVITIES	17 DETAILED ACTIVITIES	79 KEY TASKS
<b>1. PRODUCTION CONTROL</b>	<b>1. Organising production</b>	<p><b>T 1</b> : To identify and the needs necessary to production: personal, material, machines, peripherals, controls, treatment, packaging...</p> <p><b>T 2</b> : To list the needs and the existing means and to define the means</p> <p><b>T 3</b> : To spot the chain of actions and tasks linked to production</p> <p><b>T 4</b> : To take delivery of tools: setting, trials, samples manufacturing , modification</p> <p><b>T 5</b> : To organize and to develop the production cell (to check out the equipment, adapt the existing means or acquire new ones, to establish the production cell)</p> <p><b>T 6</b> : To validate the production procedures (adjustments, control).</p> <p><b>T 7</b> : To prepare the production sheets : supplies, manufacturing, control, follow up and quality sheet</p> <p><b>T 8</b> : To develop the production cell and evaluate the production costs.</p> <p><b>T 9</b> : to ensure (or make someone ensure) the starting of the production, check out the functioning of different materials and equipments which constitute the production cell, set the pre-production and plan the procedures to ensure the continuity of the production.</p> <p><b>T 10</b> : To take part to the economic analysis of the production</p>
	<b>2. Supervising production</b>	<p><b>T 11</b> : To define and record the parameters needed to keep production under control.</p> <p><b>T 12</b> : To define and record the parameters needed to keep production under control</p> <p><b>T 13</b> : To correct (or instruct someone to correct) any operating trouble</p> <p><b>T 14</b> : To perform (or instruct someone to perform) the inspections required by the Specifications</p> <p><b>T 15</b> : To realize the reporting of the production cell</p>
	<b>3. Managing production</b>	<p><b>T 16</b> : To develop (or participate in the development of) production indicators</p> <p><b>T 17</b> : To measure (or instruct someone to measure) and monitor the production indicators</p> <p><b>T 18</b> : To use the results</p> <p><b>T 19</b> : To participate in the implementation of the production management policy of the company (as part of the workshop or the production cell)</p>

	<p><b>4. Optimising production quality</b></p>	<p><b>Task 20</b> : To understand and evaluate the quality requirements imposed by the customer and be involved in the discussions with the customer  <b>Task 21</b> : To define the product check points as agreed with the customer  <b>Task 22</b> : To propose and set up a Quality Plan for the product  <b>Task 23</b>: To select and finalise the methods and equipment to be used for inspections, taking into account the specific characteristics of materials, tools and equipment.  <b>Task 24</b> : To implement and record the inspection procedures  <b>Task 25</b> : To monitor the variations of product quality with time  <b>Task 26</b> : To implement (or instruct someone to implement) corrective actions</p>
	<p><b>5. Maintaining production performance</b></p>	<p><b>Task 27</b>: To take part to the economic analysis of the production  <b>Task 28</b> : To make use of quality tools and performance indicators  <b>Task 29</b> : To analyse and solve the problems regarding drifts in production quality (normal running, damaged running)  <b>Task 30</b> : To perform (or instruct someone to perform) pre-diagnostics with respect to equipment maintenance requirements  <b>Task 31</b> : To enforce the scheduled maintenance operations</p>
<p><b>2. IMPROVEMENT OF THE PRODUCTION</b></p>	<p><b>6. Analysing product specifications and suggesting modifications to the customer</b></p>	<p><b>Task 32</b> : To fathom out functional product specification  <b>Task 33</b> : To recognize main functions and constraints of the product  <b>Task 34</b> : To extract from the functional product specification technological data necessary to the industrialisation of the product : product characteristics, choice of the materials, tools characteristic , quality control...  <b>Task 35</b> : To talk with the customer and to put forward suggestions in order to modify the product</p>
	<p><b>7. To take part and contribute to the research of efficient solutions</b></p>	<p><b>Task 36</b> : To recognize the connections and the interfaces product – tools  <b>Task 37</b> : To recognize the connections and the interfaces matters- tools  <b>Task 38</b> : To recognize the connections and the interfaces process – tools  <b>Task 39</b> : To recognize the connections and the interfaces process – product  <b>Task 40</b> : To dialogue with the toolmaker (or the engineering departments) and to put forward optimisation and modification suggestions</p>
	<p><b>8. To suggest solutions to improve and optimize the production</b></p>	<p><b>Task 41</b>: To put together the studies and the results of preparatory project (initial product file, history...)  <b>Task 42</b> : To know how to use the results of the studies (mechanic, rheological, thermal studies, RDM...) to communicate with the qualified services  <b>Task 43</b> : To analyze and use economic data: estimate, costs, return on investment, reporting...  <b>Task 44</b> : To put forward suggestions to improve the production</p>
	<p><b>9. To take part in the organization and the optimization of production cell</b></p>	<p><b>Task 45</b> : To take part in machines and peripherals organization  <b>Task 46</b> : To optimize the organization of the production cell  <b>Task 47</b> : To draw up the completed production file and to transcribe the instructions</p>
<p><b>3. PREVENTION OF OCCUPATIONAL HAZARDS AND RESPECT OF THE ENVIRONMENT</b></p>	<p><b>10. To locate and evaluate risks and harmful effects</b></p>	<p><b>Task 48</b> : To identify and list the dangerous phases of the production process : during launching, "normal" mode, transitory stages and maintenance actions  <b>Task 49</b> : To estimate risks and harmful effects in term of health, safety and environment  <b>Task 50</b> : To analyze and compare the situations of risk and harmful effect with reference documents in force in the regulation and in the company  <b>Task 51</b> : To contribute to the analysis of the risks (single document)</p>

	<b>11. Suggest prevention and protection measures</b>	<b>Task 52</b> : To contribute to the development of measures of prevention, protection, and control of environmental quality <b>Task 53</b> : To contribute to the management of waste <b>Task 54</b> : To take part in the validation of prevention and protection measures
	<b>12. Participate to the set up of prevention and protection measures</b>	<b>Task 55</b> : To apply and instruct somebody to apply prevention and protection measures in the various work stations or production cells <b>Task 56</b> : To ensure the effectiveness and the continuation of prevention and protection measures
	<b>13. To keep up with innovations in the fields of safety and environment</b>	<b>Task 57</b> : To apply the legal new rules <b>Task 58</b> : To collect information and to share the observations and the suggestions dealing with safety and environment with the production line teams <b>Task 59</b> : To relay information between the production cells and the other departments of the company
<b>4. MANAGEMENT AND LEADERSHIP</b>	<b>14. To give work a particular meaning : to give a sense of responsibilities, to train, to organise, to supervise</b>	<b>Task 60</b> : To manage the production capacities and means <b>Task 61</b> : To organize and to share the work out among the production teams according to the orders and production planning <b>Task 62</b> : To explain production tasks and to clarify the instructions <b>Task 63</b> : To organize and ensure the training for the working station (newcomers, new technologies...) <b>Task 64</b> : To control over the time the correct operation of production teams and the respect of the instructions
	<b>15. To take part in staff management and to develop competences</b>	<b>Task 65</b> : To know the staff <b>Task 66</b> : To be sure of the adequacy between the given tasks and the staff's level of skills <b>Task 67</b> : To be able to pass a judgment and to give opinions on the results of the given tasks <b>Task 68</b> : To know how to be the way out in the event of a difficulty <b>Task 69</b> : To collect training needs <b>Task 70</b> : To take part directly or indirectly in the evaluation of the production team performance
<b>5. COMMUNICATION</b>	<b>16. To control communication techniques in the work relations</b>	<b>Task 71</b> : To know how to communicate in a professional way inside and outside the company : to introduce oneself, to represent the company, to be welcoming <b>Task 72</b> : To be willing to listen to other people, to analyse messages and situations: to be understood by the others <b>Task 73</b> : To give an account of something in a concise and global way, either orally or in writing <b>Task 74</b> : To know and control written communication: reports, internal notes, technical diagrams, information and communication data-processing <b>Task 75</b> : To know and control oral communication: transmission of the instructions, animation, communications by telephony and the Internet
	<b>17. To control international English in the work relations</b>	<b>Task 76</b> : To know how to communicate in English in a professional way inside and outside the company: to introduce oneself, to represent the company and to be welcoming <b>Task 77</b> : To analyse messages and situations in English: to be understood by other people <b>Task 78</b> : To give an account of something in a concise and global way, either orally or in writing <b>Task 79</b> : To give an account of something in a concise and global way, either orally or in writing

# APPENDIX 3

## Skills frame of reference – list of basic skills

### ACTIVITIES AND SKILLS OF THE ADVANCED TECHNICIAN IN PLASTICS INDUSTRIES

#### C1 - TO ORGANIZE THE PRODUCTION

- 1 **C1-1 - TO DETERMINE NECESSARY MEANS FOR THE INDUSTRIALIZATION OF THE PRODUCT**
  - 1 To define, identify and count the means necessary to industrialization
- 2 **C1-2 - TO DEFINE ACTIONS AND TASKS SEQUENCE**
  - 2 To work out the range of products (chronology of the actions, material means used, essential human resources).
- 3 **C1-3 - TO TAKE DELIVERY AND VALIDATE THE TOOLS**
  - 3 To take delivery and check the conformity of tools.
  - 4 To test the tools.
- 4 **C1-4 - TO DEVELOP THE TOOLS**
  - 5 To develop the tools.
  - 6 To propose possible modifications or final improvements
- 5 **C1-5 - TO ORGANIZE THE PRODUCTION CELL**
  - 7 To install the definite equipment.
  - 8 To assign the personnel.
  - 9 To define flows.
- 6 **C1-6 - TO ELABORATE MANUFACTURING DOCUMENTS**
  - 10 To work out all manufacture, quality control and follow-up documents
  - 11 To validate the procedures (adjustments, control).
- 7 **C1-7 - TO VALIDATE MANUFACTURING DOCUMENTS**
  - 12 To check and optimize all the parameters of adjustment and control.
  - 13 To produce a pre-production
- 8 **C1-8 - TO ENSURE THE LAUNCHING OF THE PRODUCTION**
  - 14 To check the outputs of the cell in terms of quality, continuity and costs
- 9 **C1-9 - TO EVALUATE THE COSTS**
  - 15 To study all the observed costs.
  - 16 To propose an optimization of the costs and/or investments.

#### C2 - TO LEAD THE PRODUCTION

- 10 **C2-1 - TO ENSURE THE CONTINUATION OF PRODUCTION**
  - 17 To define the parameters of production stability.
  - 18 To consign the parameters of production stability.
  - 19 To identify the critical slide parameters
- 11 **C2-2 - TO CONTROL THE RESPECT OF THE PROCEDURES**
  - 20 To check the strict implementation of the procedures planned in the production file and the quality plan.
- 12 **C2-3 - MANAGE DYSFUNCTIONS (computer-integrated manufacturing)**
  - 21 To identify, locate the dysfunctions of the cell.
  - 22 To act by bringing adapted corrective measures
- 13 **C2-4 - TO PROVIDE FOR CONTROLS with the products**
  - 23 To carry out or make someone carry out the controls required by the quality plan, and or by the proven failures
- 14 **C2-5 - TO DRAW UP A PRODUCTION DASHBOARD**
  - 24 To suggest and/or exploit methods allowing to draw up a synthetic dashboard of the manufacturing units. (in terms of logistic, output, quality, times, cost) (Production reporting)

#### C3 - TO MANAGE THE PRODUCTION : TO PRODUCE WITH THE VIEW TO CONSTANT IMPROVEMENT

- 15 **C3-1 - TO PLAN AND SCHEDULE THE PRODUCTION**
  - 25 To plan the production.
  - 26 To schedule the production.

- 27 To choose the indicator
- 28 To calculate the needs.
- 29 To calculate the detailed loads.
- 30 To manage the provisioning of the cell
- 16 **C3-2 - TO MEASURE OR MAKE SOMEONE MEASURE PRODUCTION INDICATORS**
  - 31 To apply production management procedures.
  - 32 To collect information
- 17 **C3-3 – TO EXPLOIT THE RESULTS**
  - 33 To analyze the results.
  - 34 To propose solutions for problems resolution
- 18 **C3-4 - TO PARTICIPATE TO THE CONTINUOUS PRODUCTION IMPROVEMENT**
  - 35 To analyze the production.
  - 36 To propose optimization solutions

#### **C4 - TO ENSURE PRODUCTION QUALITY**

- 19 **C4-1 - TO TAKE INTO ACCOUNT the CUSTOMER'S REQUIREMENTS**
  - 37 To analyze the specifications.
  - 38 To define the product acceptance indicators
- 20 **C4-2 - TO PROPOSE AND SET UP A PRODUCT QUALITY PLAN**
  - 39 To determine the characteristics of the controlled product and to give the aiming.
  - 40 To determine the parameters controlled for each operation and to give the aiming.
  - 41 To define for each characteristic and each parameter : Who controls? Which means? How often?
  - 42 To set up a document allowing to have a trace of controls.
- 21 **C4-3 - TO EVALUATE THE OVERALL ABILITY OF THE CELL**
  - 43 To evaluate the aptitude machine.
  - 44 To evaluate the aptitude of the process.
  - 45 To validate the choices (tools, machine, matter, peripherals).
  - 46 To evaluate the aptitude of the control methods.
- 22 **C4-4 - TO DEFINE THE VALIDATION AND FOLLOW-UP PROCEDURES OF MATERIAL QUALITY**
  - 47 To work out the procedures of the material delivery.
  - 48 To work out quality checking procedures of the material after transformation.
- 23 **C4-5 TO SOLVE THE PROBLEMS RELATED TO PROCESS DRIFTS AND PRODUCT NON QUALITY**
  - 49 To analyze the problems linked to drifts and non- quality
  - 50 To propose solutions linked to drifts and non- quality
  - 51 To solve the problems linked to drifts and non- quality
- 24 **C4-6 - TO MAKE SOMEONE ENSURE QUALITY**
  - 52 To make sure the quality procedures are implemented.

#### **C5 - TO MAINTAIN THE PERFORMANCE (QUALITY, COSTS, TIMES)**

- 25 **C5-1 - TO TAKE PART TO THE ECONOMIC ANALYSIS OF THE PRODUCTION**
  - 53 To measure the parameters of the real costs of production.
  - 54 To calculate the real costs of production.
  - 55 To compare estimated costs and real costs.
  - 56 To suggest improvements
- 26 **C5-2 - TO INFER ADAPTED CORRECTIVE ACTIONS FROM PERFORMANCE INDICATORS**
  - 57 To identify the indicators adapted to aimed objectives (for example: TRS...).
  - 58 To appreciate the level of efficiency of the cell,.
  - 59 To decide, if necessary, of suitable corrective actions
- 27 **C5-3 - TO REVEAL AND TO BRING REMEDIES FOR THE PRODUCTION SLIDES**
  - 60 To choose the methods of assistance to the diagnosis adapted.
  - 61 To locate the potentially critical drifts.
  - 62 To implement the procedures and corrective actions.
- 28 **C5-4 - TO PROVIDE (OR MAKE SOMEONE PROVIDE) WITH THE PRE DIAGNOSIS OF CURATIVE MAINTENANCE OF EQUIPMENT**
  - 63 To establish a pre diagnosis.
  - 64 To start the suitable maintenance actions.
- 29 **C5-5 - TO GUARANTEE THE APPLICATION OF THE PLANNED MAINTENANCE ACTIONS**
  - 65 To make ensure the planned maintenance actions

## **C6 - TO IMPROVE AND INNOVATE**

### **30 C6-1 - TO ANALYZE AND TAKE INTO ACCOUNT THE PRODUCT SPECIFICATIONS.**

**66** To recognize the principal functions and the constraints.

**67** To extract the technological data necessary to the production.

**68** To suggest the modifications of the product by using the specific knowledge of a plasturgist to dialogue with the customer.

**69** To study feasibility and to bring technical solutions by a plasturgist.

**70** To modify a design drawing produced according to a process (machine, material, tools

### **31 C6-2 - TO TAKE PART AND CONTRIBUTE TO THE DEFINITION OF THE SPECIFIC FUNCTIONS OF THE TOOL IN PLASTURGY**

To suggest, argue and/or validate solutions adapted to the correct realization of the product in the framework of the following functions tools/machine/ process

**71** To put forward design or modification suggestions in order to optimize the tools., by

**72** talking with the toolmaker.

### **32 C6-3 - TO TAKE PART TO THE CONTINUOUS PRODUCTION IMPROVEMENT**

**73** To make the most of the studies and the results.

**74** To write a summary

**75** To suggest complementary studies (tests...)

**76** To suggest corrective solutions.

### **33 C6-4 - TO TAKE PART TO THE IMPROVEMENT OF THE OPERATION OF THE PRODUCTION CELL**

**77** To propose modifications of the organization of the production cell

## **C7 - TO WARN AND PROTECT**

### **34 C7-1 - TO LIST THE DANGEROUS PHENOMENA AND TO TAKE PART TO THE EVALUATION OF THE RISKS AND HARMFUL EFFECTS**

To list the dangerous phases of the production process during launching, normal activity and during the transitory stages (maintenance...).

**78** To take part in the evaluation of the risks and the harmful effects in term of health, safety and environment

**79**

### **35 C7-2 - TO IMPLEMENT THE PROCEDURES**

**80** To implement the procedures of safety and environmental protection

**81** To ensure the implement of these procedures in time.

### **36 C7-3 - TO PUT FORWARD MEASURES OF PREVENTION AND PROTECTION**

**82** To take part in the analysis of the incidents and accidents.

**83** To take part in the drafting of the procedures.

**84** To take part in the evaluation of the risks (single document).

**85** To take part in the keeping up with technological innovations.

## **C8 - TO MANAGE AND LEAD**

### **37 C8-1 - MANAGE HUMAN RESOURCES OF THE PRODUCTION CELL**

**86** The needs and the means must be coherent

**87** To organize the teams of the production cell

**88** To locate competences of the personnel

### **38 C8-2 - TO LIST THE NEEDS AND TO TAKE PART IN THE STAFF TRAINING**

**89** To explain the production tasks and the instructions.

**90** To identify the requirements in staff training for the production cell.

To take part in the development of the plan of training for the personnel of the production cell.

**91**

**92** To train for the control of the working station and the respect of the security instructions.

### **39 C8-3 - TO MAKE PEOPLE AWARE OF THE PREVENTION OF THE PROFESSIONAL RISKS AND OF THE PROTECTION OF THE ENVIRONMENT**

To promote a prevention policy concerning risks and an environmental protection within the production cell.

**93**

**94** To make people respect the instructions.

To spread information towards the services and the Committee of Hygiene and Safety and the Working conditions

**95**

### **40 C8-4 - TO MANAGE TEAMS**

**96** To evaluate the staff competences.

**97** To check the good execution of the tasks.

**98** To ensure the sense of responsibility and the evolution of the personnel.

- 99 To handle the conflicts.
- 100 To be ready to listen to the personnel
- 101 To pass relevant information on.
- 102 To exert a hierarchical responsibility.
- 103 To manage the non permanent personnel

## **C9 - TO COMMUNICATE**

### **41 C9.1- WRITTEN COMMUNICATION**

- 104 To identify the stakes (economic actors, situation, times)
- 105 To choose communication means
- 106 To control the tools of presentation
- 107 To design a document of communication
- 108 To make written account
- 109 To analyze situations
- 110 To transmit the instructions
- 111 To present the company and to welcome people
- 112 To include/understand a written document

### **42 C9.2- ORAL COMMUNICATION**

- 113 To identify the stakes (economic actors, situation, times)
- 114 To choose communication means
- 115 To control the tools of presentation
- 116 To analyze situations
- 117 To transmit the instructions
- 118 To present the company, to welcome
- 119 To write a report, technical diagrams for an oral presentation
- 120 To give an oral account
- 121 To be ready to listen to people
- 122 To understand an oral communication
- 123 To build an argumentation

### **43 C9.3- ENGLISH WRITTEN COMMUNICATION**

- 124 To identify the stakes (economic actors, situation, times)
- 125 To choose communication means
- 126 To control the tools of presentation
- 127 To design a document of communication
- 128 To make a written account
- 129 To analyze situations
- 130 To transmit the instructions
- 131 To present the company and to welcome people
- 132 To understand a written document

### **44 C9.4- ENGLISH ORAL COMMUNICATION**

- 133 To identify the stakes (economic actors, situation, times)
- 134 To choose communication means
- 135 To control the tools of presentation
- 136 To know technical vocabulary used in the plastics processing domain
- 137 To analyze situation
- 138 To transmit the solutions
- 139 To present the company, to welcome people
- 140 To be able to communicate on the telephone
- 141 To write a report, technical diagrams for an oral account
- 142 To give an oral account
- 143 To be ready to listen to people
- 144 To understand an oral communication
- 145 To build an argumentation

## APPENDIX 4

### Assessment frame of reference– TABLE OF ABILITIES AND PROFESSIONAL SKILLS TO ASSESS

(the potential skills are indicated in grey and the skill assessed in firm are in bold)

ABILITIES TO LEAD THE PRODUCTION	N°	Detailed skills to assess ( <i>numbers refer to initial skills</i> )
	3	To take delivery and check the conformity of tools.
	4-5-6	To test and to develop the tools.
	7	To install the definite equipment
	13	To produce a pre-production
	15-53-54	To measure the parameters of the real costs of production and calculate the real costs.
	18	To consign the parameters of production stability.
	20	To check the strict implementation of the procedures planned in the production file and the quality plan.
	<b>21-22</b>	<b>To identify, locate and correct the dysfunctions of the cell.</b>
	29	To calculate the detailed loads.
	31	To apply production management procedures.
	<b>32-33</b>	<b>To collect information related to the production.</b>
	43-44-58	To evaluate the aptitude of the equipments.
	63-64	To start the suitable maintenance actions.
	67	To extract the technological data necessary to the production.
	66-78	To list the dangerous phases of the production process during launching, normal activity and during the transitory stages
	79-84	To take part in the evaluation of the risks and the harmful effects in terms of health, safety and environment.
	80	To implement the procedures of safety and environmental protection
	83	To take part in the drafting of the procedures.
<b>TO ORGANISE PRODUCTION</b>	1	To define, identify and count the means necessary to industrialization
	2	To work out the range of products (chronology of the actions, material means used, essential human resources).
	9	To define flows.
	12-17	To check and optimize all the parameters of adjustment and control and define the parameters of production stability.
	25-26	To plan the production..
	28-86	To calculate the needs and make sure they are coherent.
	30	To manage the provisioning of the cell.
	41	To define for each characteristic and each parameter: Who controls? Which means? How often?
	42	To set up a document allowing to have a trace of controls.
	47-48	To work out quality checking procedures of the material when delivered and after transformation.
	65	To make ensure the planned maintenance actions
	104	To identify the stakes (economic actors, situation, times)
<b>TO ENSURE QUALITY</b>	10	To work out all manufacture, quality control and follow-up documents.
	11-46	To validate the procedures (adjustments, control).
	14	To check the outputs of the cell in terms of quality, continuity and costs
	19-61	To identify the critical slide parameters.
	23	To carry out or make someone carry out the controls required by the quality plan, and or by the proven failures.
	24	To suggest and/or exploit methods allowing to draw up a synthetic dashboard of the manufacturing units (reporting)
	39-40	To determine the characteristics of the controlled product and to give the aiming
	45	To validate the choices (tools, machine, matter, peripherals).

49-50-51	To analyze the problems linked to drifts and non- quality
52-81	To make sure the quality procedures are implemented from the start and in time
57	To identify the indicators adapted to aimed objectives (for example: TRS...).
<b>82</b>	<b>To take part in the analysis of the incidents and accidents</b>

**TO IMPROVE AND INNOVATE**

16	To propose an optimization of the costs and/or investments.
27-35	To choose the indicator and analyze the production.
34-36-37-38	To analyse the specifications to propose optimization solutions
55	To compare estimated costs and real costs. To suggest improvements and to decide, if necessary, of suitable corrective actions
56-59	To choose the methods of assistance to the diagnosis adapted.
60	To implement the procedures and corrective actions.
62	To suggest the modifications of the product by using the specific knowledge of a plasturgist to dialogue with the customer
68	To study feasibility and to bring technical solutions by a plasturgist.
69	To modify a design drawing produced according to a process (machine, material, tools)
70	To suggest, argue and/or validate solutions adapted to the correct realization of the product in the framework of the following functions tools/machine/ process
71	To put forward design or modification suggestions in order to optimize the tools, by talking with the toolmaker.
72	To make the most of the studies and the results.
73	To suggest complementary studies (tests...) and corrective solutions.
75-76	To propose modifications of the organization of the production cell
77	To take part in the keeping up with technological innovations.
85	To spread information towards the services and the Committee of Hygiene and Safety and the Working conditions
95	To write a summary
74-108-111	To analyze situations
109	

**TO MANAGE AND TO LEAD**

8-87	To assign the personnel and to organize the teams of the production cell
88-96	To locate and evaluate the staff competences.
<b>89</b>	<b>To explain the production tasks and the instructions.</b>
<b>90</b>	<b>To identify the requirements in staff training for the production cell.</b>
91	To take part in the development of the plan of training for the personnel of the production cell.
92	To train for the control of the working station and the respect of the security instructions
<b>93</b>	<b>To promote a prevention policy concerning risks and an environmental protection within the production cell.</b>
<b>94-97</b>	<b>To check the good execution of the tasks and to make people respect the instructions.</b>
98	To ensure the sense of responsibility and the evolution of the personnel.
99	To handle the conflicts.
100-121	To be ready to listen to the personnel
<b>101</b>	<b>To pass relevant information on.</b>
102	To exert a hierarchical responsibility.
103	To manage the non permanent personnel

**Transversal abilities:**

<b>TO COMMUNICATE</b>		
	105-106-115-114-125	Choose the communication means and control the tolls of presentation
	107	Build a document of communication

<b>110-117</b>	<b>Give the instructions (written and oral)</b>
<b>112-118</b>	<b>Present the company and welcome people (written and oral)</b>
119	Write a report, technical graphs in order to present it orally ;
113-116-129	Identify the stakes and analyse a situation
120-122	Give an oral report
123	Build a line of argument
126-127-134-135	Build a document of communication in English
128-133	Give a written report in English
130-137-138	Give the instructions in English(written and oral)
131	Understand a written document in English
132-139	Present the company and welcome people in English (written and oral)
136	Know the technical vocabulary used in the field of plasturgy
140	Speak on the telephone in English
124-141	Write a report, technical graphs in order to present it orally in English ;
142	Give an oral report in English
143-144	Understand an oral communication in English
145	Build a line of argument in English

**POTENTIAL SKILLS:** some skills are very difficult to assess, and it is even impossible to do it within the global context of the training whatever assessment it is: these **potential skills** mainly concern the activities carried out in the company when the graduate is stabilized in the post that he is holding: twelve skills are concerned. If the assessment of these skills is almost impossible within the training, they give information on the expectations of the future employers of the graduate and they constitute an objective to reach by the trainer officers.

**TRANSVERSAL SKILLS:** the transversal characteristic of the capacity « communicate » is not specific to the advanced technician of plastic industries, but the detailed skills are necessary at work. Thus this ability is not the aim of a specific professional assessment but the skills that are joined will be controlled, either during the various assessments implemented in the five main units of certification, or under the form of a selective assessment.

# APPENDIX 5

## NOTE FOR INFORMATION TO THE MEMBERS OF CONSULTATIVE COMITEE FOR PROFESSIONAL TRAINING

Object : Sustainable Professionnalization : Conclusions of the exterior assessment study and recommendations in terms of follow up.

### 1. Introduction

This note presents the main results of the assessment of the project Sustainable Professionnalization. These results are used as a base to a group of conclusions by the European Commission focussing on the way the developed methodology by this project can be used in the bigger frame of the Copenhagen declaration on a closer cooperation in the field of European professional training.

### 2. Context

The Project Sustainable Professionnalization was launched in 2001 by the French ministry of education. In 2001 and 2002, the project developed and tested a methodology for the creation of European common qualification norms (frame of reference) and certificates. Nine countries took an active part in the project (Belgium, Czech Republic, France, Greece, Hungary, Italy, The Nederland, Spain and Rumania) while four other (Germany, Denmark, Ireland and Luxemburg) took part as observers. The CEDEFOP and the European Foundation for the training took also part. The project was funded both by the European Commission and the French ministry of education. In a common declaration of the countries that took a part in the project in February 2002, it was said that the subsequent development of the project was to be based on the assessment study. The Commission was induced to undertake and coordinate this study. Following a limited invitation to tender in autumn 2002, the general direction Education and Culture hired Cynthia Deane, consultant in teaching and development in *Options Consulting* –Ireland to implement this study.

### 3. Main conclusions of the study of outside assessment.

The study of assessment concludes that the sustainable professionalization was a successful project, undertaken under ambitious objectives and leading to a demanding working programme in a relatively short time. The concrete results were:

*Creation of a methodology to describe the activities, tasks and skills within the frame of a particular profession, leading to what was called a frame of reference; development of professional profiles for the housing managers and the logistic technicians; development of objectives of certification for these two professions and orientations for the objectives of training and the content of the lessons; agreement on a glossary constituting a terminological base for the project: a common political declaration (by the nine countries mentioned above) stating that they will implement the validation and the acknowledge of the diplomas on the base of the work of the project taking into consideration the recommendations of the project. Moreover, common processes for a certification were prepared but no agreement has been reached, as the requirements are a little different among the countries.*

While appreciating these positive results but noting also some fields in which improvements are necessary, the study of the assessment puts forward four main recommendations:

#### 3.1 Accent

*It is necessary to stress the strategic key objectives raised politically, in particular those structured in the process of Lisbon and developed by the Copenhagen declaration.*

Key actions: use the experience of sustainable professionalization to identify orientations in terms of good practices, norms of quality and critical factors of success for the development of skills and qualifications at the sectoral, national or European level. Communicate and spread the model as a good solution to carry out the priorities stated in the Copenhagen declaration.

### 3.2 Simplification

*It is necessary to simplify the methodology developed by sustainable professionalization.*

Key actions: make the methodology evolve into a tool that can be used flexibly at different levels: sectoral, national and European. The methodology should be developed so that it meets different objectives; for example the standard development of professional objectives, the standard development of a professional training and the standard development with a view to a certification. Make social partners and countries take part in the development and the implementation of the new model. Develop a web tool to implement the "new look" frame of reference.

### 3.3 Consolidation

*Strengthen the work on the project of Sustainable professionalization to tackle the question of the updating of qualifications, making sure they are really sustainable.*

Key actions: Make the social partners be active participants in future developments within sectors. Explore the creation of transversal qualifications or units of certification at intersectoral levels. Ensure that the models of better practices of research and international practices are examined and used as a basis by the project rather than being reinvented.

### 3.4 Intégration

*It is necessary to include the tools developed by the project into the work in progress in the project as part of the Copenhagen declaration.*

Key actions: The Commission will be responsible of linking the project in progress into the Copenhagen process (especially in the fields of quality, transfer of units of capitalizable courses and transparency). Encourage the project manager to play the role of coordination and encourage other key participants to help the implementation of strategy aspects. Help the Greek and Italian presidencies to carry out the work plan suggested in 2003, referring to the development of simplified orientations and experimentation of the model of frame of reference in the fixed sectors. Be ready to include completely the new model on the base of voluntary service at a national or sectoral level from 2004.

## **Recommendations for the follow up of the outside assessment.**

The project of sustainable professionalization has been very well managed in spite of the lack of participation of social partners. It has carried out an ambitious and demanding work programme in a short period of time. The project has important results that must systematically be included into the follow up of the Copenhagen declaration, especially linked to the work groups on transparency, transfer of units of capitalizable courses and quality, and it is necessary to continue very quickly the development of the methodology of the project. The following points are extremely important:

- Carry on the project of sustainable Professionalization in a second more permanent stage requires a simplification and rationalization of methodology. It is difficult to imagine how the existing methodology could be sustainable given the extremely demanding approach in terms of time and resources applied in 2001 and 2002. These resources have been justified during the first stage but it is difficult to imagine how this level of spending could be maintained in a normal situation where resources are rare. A simplification is also necessary to create a strong methodology to use on a base from bottom to top and one should not consider as acquired that the highest level of skills is available and can be mobilized.
- Continue the project of sustainable Professionalization in a second more permanent stage requires the entire participation of social partners at every level, European, national and sectoral. The methodological approach developed by the project may not succeed if it is based on a centralized

model that is exclusively managed at a European level. It is crucial to develop a practical methodology that can be used by the branches and sectors that feel the need to have European or international norms of qualification. This decentralized approach from bottom to top, must be included into a frame that establishes links with existing national qualifications and political European objectives. However, a European coordination is also necessary in order to avoid a useless duplication of work and to draw up an agreement on the sectors, branches and professions where common profiles are extremely necessary.

- The approach of the sustainable Professionalization *must be entirely included into the follow up of the Copenhagen declaration* and can serve as a concrete model (but not the only one) aiming at developing qualifications and skills at a sectoral level. On the base of the suggestion of the Commission concerning the way to coordinate the work on sectoral qualifications and skills, it would mean that the consultative Committee on professional training should be involved into the global coordination of methodology of sustainable Professionalization.

- The follow up of the methodology of sustainable Professionalization requires resources. The Leonardo Da Vinci programme could be used for that purpose. The Commission suggested strengthening the sectoral stress of the programme Leonardo Da Vinci as early as 2003/2004. If the suggestions of the project meet the necessary requirements concerning quality, one could find a financial base to make the methodology evolve toward a second more permanent stage.

To sum up: the methodology developed by the project of sustainable Professionalization deserves to be continued and widely used in Europe. It is nevertheless necessary for the methodology to be still developed, both in accordance to the advice given by the study of assessment and in accordance to the points listed in this conclusion.

Brussels, 21/05/03 – DG EAC B/1 JBJ