



2016

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1. Introduction

The European Credit system for Vocational Education and Training (ECVET) is the European instrument (recommended in 2009) to promote mutual trust and mobility in vocational education and training. ECVET is a European system of accumulation and transfer of credits and has been designed to enable the recognition of the learning outcomes of an individual in a learning pathway to a qualification. The system favours the documentation, validation and recognition of achieved learning outcomes acquired, in particular in the framework of transnational mobility, in both formal Vocational Education and Training (VET) and in non-formal context. It is centred on the individual and based on the learning outcomes approach, defined in terms of knowledge, skills and competences necessary for achieving a qualification. This enable a more accurate design of training courses which answers to the training needs of employees. Some of the ECVET concepts and processes are already embedded in many qualifications systems across Europe such as ECTS (European Credit Transfer Scheme).

ECVET was introduced after the introduction of ECTS in higher education sector. Like ECTS, it concerns the recognition of the learning by an individual in a learning pathway to a qualification and it has a uniform structure with a set of requirements. However one important difference is that while ECTS does not have to be based on a learning or a set of learning outcomes, ECVET requires the learning to have been or lead to acquisition of a given or a set of competence(s) and defined by a learning or a set of learning outcomes. The implementation of ECTS was primarily a voluntary process, that is to say, when two or a group of HEI (Higher Education Institutions) had agreed that there is a possibility that part of their students' programmes of studies can be undertaken in another university (often in another country) then arrangements are made to apply ECTS. It was pertinent for ECTS to note that both the sending and receiving universities are expected to undertake substantial amount of work to ascertain that the mobility opportunity being considered provides a series of advantages to students and would not academically or professionally disadvantage them. ECVET was initially intended to mirror ECTS in vocational schools/colleges at secondary as well as lower tertiary levels (Vocational diplomas/foundation degrees, and so forth).

The formal structure and basic building blocks of ECVET are described in the following paragraphs. Before considering the structure it is worth noting that ECVET is initiated to provide opportunity for exchange of students/learners/trainees where feasible and therefore may not be possible or desirable to apply it in some industrial applications/environments. The ECVET could apply to a set of formal and/or non-formal learning activities or experiences; in most cases an ECVET practice is developed to create opportunities for learning in another location other than the normal place of learning.

The example of ECVET in practice that have been included in this report have been produced to show the different ways that ECVET is being applied across sectors and countries in the EU. In some instances the initial vision for ECVET is realised - student exchanges, in other cases ECVET is used as a benchmarking tool to integrate learning and industrial requirements to make more labour relevant training courses, and in other cases new qualifications all together have been designed. The key features of the examples in this report is that they are all ECVET compliant and showcase different, innovative and effective approaches to implementing ECVET that other institutions can learn from.

2. ECVET Formal Structure and Requirements

ECVET has a formal structure which includes the following:

- **Learning outcomes**, which are statements of knowledge, skills, and competence that can be achieved in a variety of contexts.
- **Units of learning outcomes** that are components of qualifications. Units can be assessed, validated and recognized.
- **ECVET points**, which provide additional information about units and qualifications in a numerical form.
- **Credit** that is given for assessed and documented learning of a learning outcome of a learner. Credit can be transferred to other contexts and accumulated to achieve a qualification on the basis of the qualification standards and regulations existing in the participating countries.
- **Mutual Trust and partnership among participating organisations**. These are expressed in Memoranda of Understanding and Learning Agreements.

A Memorandum of Understanding (MoU) forms the framework for cooperation between the competent institutions. It aims to establish mutual trust between the partners involved. In this MoU partner organisations mutually accept their respective criteria and procedures for quality assurance, validation and recognition of knowledge, skill and competence for the purpose of transferring Credit.

There is also a provision for Agreements (within an MoU or as an attachment) set up by sector based organisations (e. g. by Chambers, regional and national authorities). This should include a list of organisations such as VET providers, companies, etc., who are able to operate in the framework set up by the MoU.

In order to recognise Credit, the competent institution in charge needs to be confident that the required learning outcomes have been assessed in a reliable and valid manner. It also needs to trust that the learner's credit does concern the learning outcomes expected and these are at the appropriate level.

On the basis of the assessed outcomes, the credit can be validated and recognised by another competent institution. The transfer process includes three distinct stages:

1. The hosting institution assesses the learning outcomes achieved and awards credit to the learner. The learning outcomes achieved and corresponding ECVET points are recorded in a learner's personal transcript.
2. The sending institution then recognises learning outcomes that have been acquired; this recognition gives rise to the award of the units and their corresponding ECVET points, according to the rules of the home system.

3. Credit accumulation is a process through which learners can acquire qualifications progressively by successive assessment and validation of learning outcomes. Accumulation of credit is decided by the competent institution responsible for the award of the qualification. When the learner has accumulated the credit required and when all conditions for the award of the qualification are fulfilled, the learner is awarded the qualification.

The following are five examples, one from each partner country so that partners' can learn from one another and also for other institutions and organisations who wish to develop an ECVET practice of their own or developing ECVET compliant new skills/competences and/or qualifications that could benefit from this output of the MariePRO Project. The intention is also to tabulate a set of guidelines or a cross-referencing table showing as to whether the requirements of ECVET are met for any ECVET initiative/project, providing an extra row(s) identifying additional key features of the practice/project.

3. Review of ECVET Implementation and Coordination between MariePRO partner countries

Although ECVET, as described previously, has been designed to be implemented across the EU to ensure transparency, mobility, standardisation of educational quality and mutual recognition of member states qualification, there are currently vast differences in how ECVET has been applied in each EU member state.

Just within the MariePRO partner countries there is a vast difference, for instance on the success of implementing ECVET. On the one hand is the UK and Finland who have incorporated the ECVET based approach (Learning outcome based Learning Units with assessments and credits building towards a final qualification) into their VET and Further Education (FE) sectors, but on the other hand Germany has decided against implementing ECVET in any kind of meaningful way as they have deemed it incompatible with their holistic approach to VET training. Yet in the middle are countries such as Malta and Italy (along with many other EU Member states) where ECVET has been applied strategically when and where needed to solve specific national/regional/local issues or to assist a particular industry needs.

Due to the varying degrees to which ECVET has been implemented in the member states it is clear to see that we are far away from achieving the ultimate objectives of ensuring transparency, mobility, standardisation of educational quality and mutual recognition of member states qualification, that is why projects such as MariePRO and this report are being produced to showcase innovative and effective ways ECVET can be implemented in any member state to the benefit of students and to encourage new users to try implementing ECVET themselves in similar or new ways. Below are 6 Good Practice examples of ECVET in use which all show how flexible ECVET is and the many ways it can be used. Also contained in this report are a set of Assessment Criteria to allow readers to test if their courses/practices are ECVET complaint.

4. Partner Examples of ECVET implementation

4.1 Italy's Example of Good Practice ECVET

Consortium of Vocational Schools to Send Students to Other Countries Primarily for Short Exchanges and Mainly to Give Recognition to a Set of Non-formal Learning Experiences

The example presented here is an initiative in Italy which has been developed to allow students from vocational schools to seek qualifications and recognition for knowledge and skills/competences gained according to ECVET requirements primarily for encouraging mobility of students to other European countries. Italy's experimentation in applying ECVET is relatively new. In recent years a great deal of work has been carried out in some vocational fields, for instance, this initiative which is a consortium of vocational schools taking an active role in the northern/central part of the country by putting a great deal of efforts in developing and coordinating ECVET mobility activities.

The initiative was instigated by the "Consorzio degli Istituti Professionali" (Consortium of vocational schools) which is a well established network of more than 60 vocational schools from several Italian counties, embarking on mobility projects that allow young students from the vocational fields to get competences abroad. The basic concepts that led to these activities is the deep conviction that the mobility opportunity provides additional experience to normal education process on one's own country, in formal and informal learning environment encompassing: integrating and interacting in a different context from a cultural, social, professional and linguistic perspective; facing new situations, increasing personal autonomy and responsibility; improving social, linguistic and communicational skills; getting new educational and training opportunities; learning new working practices; completing their vocational training in a different learning environment, using personal and professional skills in different situations; making choices on the basis of new information and developing new skills to respond flexibly and effectively to the demands, also improving employability. The vocational area in which the consortium is mostly active encompasses a wide range of subjects such as: Business Administration; Tourism; Catering / Reception; Social Care; Fashion and Mechanic / Electronic. The consortium has already created opportunities for the mobility of more than a hundred students, in different European countries: Sweden; Romania, Portugal; Finland; Ireland; Germany and France.

For more information on the incorporation of ECVET mobilities into Italian VET schools please see:

Annex 1 - Benchmarking the apparent best practices ITALY

Key Features of the Good Practice

The key feature of Italian project is that it is in line with the structure of the EU's ECVET model; the process involves preparing an agreement among the schools in the Consortium and vocational schools in several country based on ECVET practice. The consortium gives support to the schools in order to coordinate the mobility activities, which in each case often takes 3 weeks and involves about 10 students at a time, with one or two accompanying teachers. It gives support in terms of: Project layout and project management, contacts with National Agency; Engagement of Italian and European partners and sharing of goals and methods of project development through constant contact;

Organization of training courses for selection of beneficiaries and accompanying teachers; Organisation of travels, accommodation and logistics internships, local language courses and related costs; Check of insurance (accidents and civil liability of partner schools) and supplementary insurance; Reimbursement of the beneficiaries for any travel, accommodation, transport and cultural training cost incurred during the mobility abroad; Production and collection of the required documentation (evidence of expenditure contracts, training projects, Europass, evaluation sheets, etc.) in collaboration with hosting partners; Support of beneficiaries in evaluation and documentation of experience phases; Reporting and relations (interim and final); Dissemination of the results of the experience. Furthermore, the vocational school has to follow other steps that appear to be less “technical” but far more important in terms of education and that allow to make the experience really effective; for instance, it has to: Identify a contact person of the project who attends all the meetings and fulfils all the procedures for the best realisation of the project; Choose the most suitable participants and an accompanying teacher with a good command of the English language who takes an active role in the fulfilment of the project (Europass procedure, report instructions, formal sheets); Promote the mobility experience as a useful learning opportunity to improve linguistic competences and to learn to work in an international context; recognise the mobility experience as an integral part of the curriculum; Identify all the tools to receive the most reliable feedback of the mobility experience (through logbooks, evaluation sheets, skill certifications); provide a copy of all the bureaucratic files; Guarantee the linguistic training of the students and support them with the mobility documentation; Get in touch with the Consortium in all the different stages of the mobility activities, Answering promptly to its request in case of need and following scrupulously all the Consortium’s requirements as set in the Agreement.

4.2 Malta Example of Good Practice ECVET

Creating a Transnational New Qualification for Pilots Working at Sea, Rivers Ports/Passageways and Applying ECVET Practice in Collaboration with Several European Countries to Enable Recognition of the Qualification in These Countries

The Maltese report concerns the development of a framework that aims at having a transparent recognition of the maritime pilots qualifications under the ECVET and EQF, a qualification focused on Risk Prevention and Environmental Protection, referred to as CERTIPILOT. Their report illustrates the CERTIPILOT project concerns the Maritime Pilot profession in Malta. The report gives a background on the use of competences in the EU – ECVET and EQF, the relevance of competences for Maritime Pilots Qualifications and the skills portfolio for inclusion in the Europass CV. The report also shows how the Learning Outcome approach is applied to the Maritime pilots’ qualification focused on Risk Prevention and Environmental Protection.

Starting from the A960 Recommendation of IMO, CERTIPILOT links the training undertaken by pilots along their career with the European educational system without introducing new standards or new courses. After following the career development path which is common to Master and Officers, Pilots’ training needs become more specifically linked to their task of manoeuvring vessels in ports, but there

is no system in place to make it possible to assess the competences and the levels related to these competencies. CERTIPILOT fills this gap, in particular in relation to the use of technology in VET and environmental protection.

The project has created a comprehensive framework enabling Pilots' Associations and National Educational Authorities to assess pilots' qualification levels as well as the levels of training undertaken, both internally and abroad; and to facilitate qualifications recognition. Thanks to CERTIPILOT as it is possible, for the first time, to take formal, informal and non-formal learning into consideration when assessing a Pilot's training record. This innovative aspect is relevant to the profession, as the qualifications of Pilots are strongly linked with the experience gained through work as well as with testing carried out using the technology available. The solution was proposed by the end users of the service in a bottom up approach. Moreover, the issue of recognition of qualifications is addressed in a holistic manner, i.e. not focusing on just one specific training programme. In terms of comparison with existing solutions it has to be noted that CERTIPILOT focuses, for the very first time, on Maritime Pilots. For the first time, EUROPASS is applied to the Pilots' profession.

Malta Maritime Pilots Coop was the lead partner. The Maltese Maritime Research and Training Centre was another partner from Malta. The latter was mostly involved in the application of the ECVET framework to the Maritime Pilots' qualification in Risk Prevention and Environment protection. The project involved the Turkish Maritime Pilots Association i.e. the organisation representing the interest of all Turkish Maritime Pilots, which organises training sessions and CPD courses for its members. Another partner was the Colegio Oficial Nacional de Practicos de Puerto from Spain which established under National Law to act as supervisor for all the Spanish Pilots. The Colegio co-operates with the Spanish Government to safeguard the maritime sector and the environment. The fourth partner was CSEL s.r.l., a recognised training provider that delivers vocational training in Italy. The organisation's experience and knowledge of the European VET system was invaluable when it came to integrating the technical experience and skills of the Maritime Pilots within a framework that balances the needs of the profession with the requirements of ECVET and EQF.

For more information about the CERTIPILOT Project and its outcomes, as well as an example of the CERTIPILOT ECVET compliant qualification chart please see:

Annex 2 - FRAMEWORK FOR THE TRANSPARENT RECOGNITION OF MARITIME PILOTS QUALIFICATIONS

Key Features of the Good Practice

The project is applied to an existing profession relating to an area which currently does not require a formal qualification as against the examples provided by other partners. The aspects of good practice apparent from CERTIPILOT are the framework it has developed which allows for formal, non-formal and informal learning and assessment leading to a qualification for Pilots working at sea and river ports and passageways. It has filled a gap in gathering all the necessary competences for the profession and created an opportunity for other countries to become involved with a view to establish a common qualification in the future. The interaction and involvement of other countries will itself help in comparing practices and adopting good practices.

4.3 Finland's Example of Good Practice ECVET

Implementation of the National ECVET System as an Integral Part of the National Upper Secondary VET Curriculum/Qualification Reform Concerning All VET Qualifications Requirements; Concerning All Students Whether Continuing or Beginning Their Studies

The Finnish VET reform process has been based on the principles of the ECVET Recommendation, i.e. learning outcome-based approach; all qualifications have been divided into units of learning outcomes, and ECVET credit points have been calculated on the basis of the relative importance of the unit of learning outcomes to the overall qualification. The process is aiming towards more comprehensive acknowledgement of skills and competences, and the use of ECVET tools, including MoU, Learning Agreement, ECVET guides and so forth.

To develop a system for ECVET practice in Finland and to test the system a 3-phase national pilot project, FINECVET, was initiated. In the first two phases of the project, the ECVET system was tested with 9 vocational qualifications. The third phase of the project extended the pilot to include further and specialist vocational qualifications, and the piloting processes continued with 8 vocational qualifications, 4 further vocational qualifications, and 3 specialist vocational qualifications. Piloting therefore was widespread and focused on the different stages of the ECVET process and generated implementation models for both, activities and documentation.

What is interesting is that FINECVET was also applied in recognizing competence assessed abroad, when the acquisition and assessment of competence has occurred in a way that differs from regular mobility. This concerns, e.g., a situations where a Finnish adolescent or adult has lived abroad for a long time and has acquired assessed competence during this time from an educational institution, a workplace or both in the target country. He/she now wishes to pursue a Finnish qualification. The student or candidate may possess a full qualification, a unit of learning outcomes or other assessed competence acquired abroad. In addition, some professional fields demand various certificates of qualification at work, which the candidate might have obtained abroad.

For more information on the piloting and incorporation of ECVET into Finland's national curricula please see:

Annex 3 -Finecvet as a pioneer

Annex 4 - FINNISH VET CURRICULUM REFORM 2016

Key Features of the Good Practice

The Finnish practice is based on EU's ECVET model and clearly shows that it is a national scheme applied to several qualifications. The piloting project FINECVET included implementing of several mobility cases in different sectors, involving all the relevant phases of ECVET-based student mobility, that is, defining of the learning outcomes as part of the study programme concerned and agreeing on assessment; concluding of a Memorandum of Understanding between the sending and receiving educational institutions; signing of a Learning Agreement; identifying of the expected learning outcomes for the mobility period from the vocational skills requirements of the qualification requirements in the form of knowledge, skills and competence; and validating and recognizing of the

learning outcomes. The FINECVET project involved a total of eight education providers who piloted ECVET in 1–3 qualifications and who had one or more Finnish or international educational institutions as partners.

The ECVET initiative is hence a national initiative enforced by legislation with support from key stakeholders. Its strength is its transparency, which includes a core national curriculum for all VET qualifications including maritime. This creates an opportunity for a uniform practice throughout the country and assessed and evaluated on a national basis. Its key feature is also the fact that it is student-oriented providing individual study paths to enhance learning. The FINECVET project pilot cases provide evidence on ECVET tools and practices successfully taken into use in concrete cases while further processes of implementation and gaining experiences is an ongoing process.

4.4 United Kingdom's Example of Good Practice ECVET

Developing a transnational ECVET Curriculum and Qualification for a New Set of Design Knowledge and Skills/Competences Encouraging Continuous Professional Development and Seeking International Recognition

The ECVET initiative in the UK presented here is based on the development of a new skills for designing a curriculum for Wind Farm Support Vessels (WFSV) with a view to ensure it complies with the requirements of the European Credit system for Vocational Education and Training framework (ECVET) and at the same time ensuring the requirements of the Royal Institution of Naval Architects for their Initial and/or Continuing Professional Development (RINA's IPD/CPD). The practice in the UK is based on EU's ECVET norm but the recognition by RINA, a respected professional institution, with worldwide recognition under the Washington Treaty, is a novel aspect of this initiative.

For more information in the Wind Farm Support Vessels course, how it was developed to be ECVET compliant and to incorporate the professional industrial requirement please see:

Annex 5 -DEVELOPMENT OF EBDIG-WFSV CURRICULUM IN LINE WITH ECVET AND RINA.

Key Features of the Good Practice

The process of professional development whilst being continuous during a career, it is often considered as two stages: Initial Professional Development (IPD) and Continuing Professional Development (CPD). The work carried out to seek accreditation for WFSV curriculum and qualification from the Royal Institution of Naval Architects (RINA) should be considered a key feature of this initiative. Given the equal level of intended professional engagement in the design process between naval architects and marine designers, the WFSV's IPD/CPD training course learning outcomes and its mapping against RINA IPD development objectives for naval architects, the initiative was highly challenging. In addition to the Accreditation of WFSV's IPD/CPD courses by an international chartered professional body such as RINA, the opportunity for WFSV to support vertical and horizontal mobility of higher education and VET in the long run necessitated the implementation of ECVETS into this

mapping process so that both RINA and ECVET requirements are met. It is also very important to note that the formal assessment of the WFSV course is implemented through the academic partners of WFSV and is ensured that the assessment meets the ECVET requirements.

Cross-referencing two sets of requirements was also a key methodology in ensuring two totally separate set of requirements are satisfied. The project involved some 6 European partners and currently the curriculum/qualification is been evaluated in these partner countries. The cross-referencing technique also helped on deciding a right balance between marine engineering design naval architecture.

4.5 Germany's ECVET Example

The AEROVET project focuses on the development and piloting of learning outcomes oriented units within the context of the transnational mobility of trainees (EQF level 4).

AEROVET project involved the four countries of France, Germany, the United Kingdom and Spain, the principal nations which participate in the Airbus Group. Testing of ECVET took place within the transnational exchange of VET-students/apprentices between Airbus plants. Initial analyses of the national curricula within this sector in the four countries were enough to show that these could not serve as a basis for joint learning units. Spain, for example, does not have any occupation in the area of production. Work is carried out by workers from associated occupations (e.g. vehicle mechatronics technicians) who have been trained for the specific construction sites. Within the field of maintenance, Spain only trains higher level technicians (EQF Level 5). In Germany, on the other hand, skilled workers in the sector undergo a 3,5 year training programme to qualify in one occupations. The occupation of electronics technician for aviation systems forms part of the occupational group of electrical occupations, whereas the occupation of aircraft mechanic is a mono-occupation divided into three specialisms (maintenance engineering, production engineering and engine technology). Despite the different training approaches, it comes as very little surprise that the occupational work tasks, i.e. the competence fields of qualified workers are similar. Regardless of whether a landing flap is fitted at Airbus Bremen (DE) or Airbus Broughton (UK) and irrespective of whether the functionality of the onboard communication system is tested and repaired where necessary at a Spanish or French airport, work contents, processes, manuals and types of documentation are identical with each other or at least similar. Expert-skilled worker workshops have thus been able to draw up a total of 22 learning units which cover the essential work tasks carried out by both electronics technicians and mechanics within the sector and which, potentially, could be learned in a mobility phase. The main products of the AEROVET project are a description of the competences, elements of knowledge and skills which each of the 22 units contains, and a matrix comprising the mobility units which are an integral component of the unit and of the evaluation system which has been developed. Details can be found on ADAM-database.

For more information on the AEROVET project and its approach to transparent industrial training courses please see:

Annex 6 - AEROVET

Key Features of the Good Practice

The method of Expert-Workers-Workshops (EWW) led to mutual trust on the content of the units (activity fields):

The underlying objective of the initial phase is to describe occupational profiles (jobs) in the workplace by relying on core professional tasks, so-called “activity fields” in the model. In this case, the blueprint aims to outline what professional tasks are deemed relevant for a range of job profiles in the sector of interest. Core professional tasks are specific activities of determined jobs. The tightening and loosening of structural components, for instance, is a core task of an aircraft mechanic. Three reasons explain why focusing on professional tasks to describe people’s jobs in the sector is better than other approaches:

- Workers are better equipped than external observers in describing comprehensively their tasks
- A bottom-up approach fits well the context: occupations are well-described if one looks at the different professional tasks composing them
- All sorts of professional tasks need a sufficient amount of knowledge and skills to be performed successfully.

Workshops in this first stage are the practical tools to achieve such goals. First they lead to the specific definition of professional tasks, then, once these are obtained, they group them together into well-defined jobs. Two types of actors take part in the workshops: facilitators and participants. Facilitators smooth out the discussion among participants with a neutral, yet possibly well-informed, attitude to the discussion. Workers with expertise in technologically advanced work processes who participate to the workshop, instead, bring insightful opinions on machines, tools, methods, work organisation when in the position to share so.

The first workshop-based stage can be broken down into five steps. Starting with analyzing professional tasks and finishing with shaping occupation profiles, it offers a grounded response on how to properly define jobs and units in the analysed sector. The table below summarizes the steps in the cycle and the core elements they foresee on the path to the meaningful definition of activity fields:

Table 1: “Expert Workers Workshops” cycle

STEP	CORE ELEMENT
1	Participants create outline of own professional career history and eventually identify breakthrough moments into it
2	Participants identify challenging, yet skill-enhancing, tasks linked to these breakthrough moments. These should be tasks that were crucial for their professional development
3	Participants compile in group lists with core professional tasks considered key for the specific job concerned (both tasks done and never conducted previously)
4	Participants discuss lists compiled. Similar tasks are merged and streamlined to obtain one final list
5	Participants assess final list of core professional tasks deemed crucial for the job giving score on scale of skills’ complexity to perform them. Disagreements over final score are dealt with by including all various positions. Fine-tuning of results happens too.

The completion of this five-step process lead to the emergence of a range of occupational profiles structured in activity fields, that can be used as units for mobility purposes. With this approach, occupational profiles (jobs) will therefore not be identified as such, but rather through the core professional tasks they will incorporate. As step 3 earlier signalled, **tasks rarely or never performed by the workshop’s participants can equally qualify for being included in the group of core professional tasks for a specific job.**

4.6 EU project example - SeaTALK Project

Multiple EU projects have been funded in a variety of educational and businesses sector in order to widen the understanding and use of ECVET in education and professional training courses and to encourage cross-border cooperation in ECVET implementation and recognition of national qualifications using ECVET. An example of one of these projects is when the UK MariePRO partner (C4FF) coordinated the SeaTALK project (<http://www.seatalk.pro/>) .

The SeaTALK project designed ECVET compliant competence grids, syllabi and materials that link professional requirements (STCW), the CEFR Language Levels, and ECVET system to provide Maritime Education Institutions access to training materials that exceed the current global minimum (and non-enforceable) standards for Maritime English.

An example of a SeaTALK competence grid, along with explanations as to how the grids designed and developed to be ECVET compliant are available in the Annex to this Report titled:

Annex 7 - SeaTALK ECVET compliance.

Key Features of the Good Practice

There are no International standards for Maritime English beyond the need to be able to 'communicate effectively'. Poor levels of English in seafarers have been responsible for several accidents over recent decades and have resulted in loss of life in cases such as the Scandinavian Star and the Costa Concordia. As such the use of ECVET in the SeaTALK project by European partners is trying to create a new minimum common standard of acceptable maritime English for seafarers and Cadets across the EU. This has significant implications for improving safety for everyone who works or travel at sea. This is good practice because it shows ECVET being used in a vital safety area of a new Industry, and shows European countries and educational institutions cooperating to lead the world in trying to set a common standard for 'Maritime English' that currently doesn't exist at the Global level.

Furthermore the work of the SeaTALK project and the standards it has set has directly influenced international education guidance in teaching and assessing Maritime English as the project team, and their work, was used in the writing of the International Maritime Organisations (IMO) new 2015 Maritime English model course. This is good practice because it shows how good use of ECVET in new Industries can lead to changes in International policy and guidance - and perhaps even regulations in the future.

Finally upon the conclusion of the SeaTALK project when Maritime English competence grids and outcomes had been designed for multiple types and ranks of seafarers (e.g. ratings, deck operational, engineering management etc) the K partner applied for, and received, recognition of SeaTALK as a Continuous Professional Development Qualification. This means that any organisation can now run this SeaTALK course and upon successful completion their students will receive a CPD qualification from the professional body IMarEST who have accredited the qualification. This is an example of good practice because receiving accreditation from an independent professional body validates the results of the project and ensures the use of ECVET beyond the EU as IMarEST and their accredited qualifications are recognised around the world under the Washington Treaty. This promotes and widens the use of ECVET not only into a new Industry (Maritime English) but also into new countries and regions around the globe.

5. A System for Compliance with ECVET Requirements – C4FF's Cross-Referencing Table

5.1 Template Cross-Referencing Table

Having reviewed the formal ECVET requirements as published by the EU, as well as external education programme evaluation tools such the C4FF team have developed the MariePRO Best ECVET Practice Cross-Referencing Table. Interested parties may submit their ECVET courses for evaluation at any time.

An example of the cross-referencing table is included on the next page of this report:

Course Title:	ECVET Complaint? (Yes / Referral)	Score: 5 best 1 Least	Comment
1. Is the learning/prior learning/qualification/course/unit competence based where the in the unit's content and assessment are based on ability to do?			
2. Are Learning Outcomes statements of knowledge, skills, and competence that can be achieved in a variety of contexts?			
3. Are Learning Units of learning outcomes components of qualifications where the unit(s) can be assessed, validated and recognised?			
4. Do the ECVET points provide additional information about the unit(s) and qualifications in a numerical form?			
5. Is the Credit given for assessed and documented learning of a learning outcome of a learner where the credit can be transferred to other contexts and accumulated to achieve a qualification on the basis of the qualification standards and regulations existing in the participating countries?			
6. Are the Mutual Trust and partnership among participating organisations are expressed in Memoranda of Understanding (MoU) and Learning Agreements?			
7.1 Does the Memorandum of Understanding (MoU) form the framework for cooperation between the competent institutions, namely does it aim to establish mutual trust between the partners involved. In this/the MoU partner organisations mutually accept/accepted their respective criteria and procedures for quality assurance, validation and recognition of knowledge, skill and competence for the purpose of transferring Credit ?			
7.2 Is it mandatory to recognise Credit , does the competent institution in charge feel confident that the required learning outcomes have been assessed in a reliable and valid manner.			
7.3 Does the competent institution in charge trust that the learner's credit does concern the learning outcomes expected and these are at the appropriate level NB: If there is/was also a provision for Agreements (within an MoU or as an attachment) set up by sector based organisations (e. g. by Chambers, regional and national authorities), this should/should have include/included a list of organisations such as VET providers, companies, etc., who are/were able to operate in the framework set up by the MoU.			
8.1 Does the hosting institution assess the learning outcomes achieved and awards credit to the learner?			

8.2 Are the learning outcomes achieved and corresponding ECVET points recorded in a learner's personal transcript ?			
9.1 Does the sending institution then recognise learning outcomes that have been acquired?			
9.2 Does this recognition given in 9.1 gave rise to the award of the units and their corresponding ECVET points, according to the rules of the home system ?			
10. Is the Credit accumulation a process through which learners can acquire qualifications progressively by successive assessment and validation of learning outcomes; namely the accumulation of credit is decided by the competent institution responsible for the award of the qualification?			
11. Is the learner, when they have accumulated the credit required and when all conditions for the award of the qualification are fulfilled, awarded the qualification ?			
Total Score			
Actions/Comments			

Each of the 11 MariePRO Best Practice Criteria is reviewed and graded using the Likert Rating Scale from 1 to 5. The scoring system is defined as follows:

1. Very weak: Significant deficiencies
2. Weak: Addresses the criterion but with some weaknesses
3. Acceptable: Addresses the criterion satisfactorily
4. Good: Addresses the criterion with some aspects of high quality
5. Very good: Addresses the criterion with all aspects of high quality

In order to be ECVET compliant any course must achieve a score of 3 in all 11 criteria totalling an overall score of 33.

In order to qualify as a MariePRO Best Practice the course must achieve an overall score of 44 - this is an average of a score of 4 for each of the criteria.

The total score for a course project is the sum of the scores given to the 11 main performance criteria. The maximum total points that a product or service may obtain is 55.

If any individual criteria does not meet the minimum score of 3 then the course is put into referral with feedback given so that the course can be updated and improved accordingly. The course can then be re-assessed once the feedback has been implemented.

For all criteria, no matter the score achieved, the reviewer is expected to provide comments and feedbacks to identify particular areas of strength and weakness to allow for continued improvement of the course.

5.2 MariePRO Cross-Referencing Table in use

Course Title: MariePRO: Marine Environment Awareness Course	ECVET Complaint? (Yes / Referral)	Score: 5 best 1 Least	Comment
1. Is the learning/prior learning/qualification/course/unit competence based where the in the unit's content and assessment are based on ability to do?	YES	4	Competences taken directly from industry regulations and so accurately reflect the needs of the industry. Multiple competences covered - need to ensure that sufficient time is given to teaching and assessing each competence and the appropriate teaching and assessment methods used.
2. Are Learning Outcomes statements of knowledge, skills, and competence that can be achieved in a variety of contexts?	YES	5	Clear information provided matching each learning outcome with the competence, knowledge, skill, assessment method and teaching time.
3. Are Learning Units of learning outcomes components of qualifications where the unit(s) can be assessed, validated and recognised?	YES	5	The MariePRO qualification contains 1 Learning Unit which is broken down into Learning Objectives. Each Learning objective is assessed in both an ongoing assessment based on performance throughout the course, and as a separate assessment at the end of the course. One overall grade is given for the Learning Unit / Qualification.
4. Do the ECVET points provide additional information about the unit(s) and qualifications in a numerical form?	YES	5	The number of ECVET points has been agreed by all parties concerned and they accurately reflect the learning hours and learning outcomes in each version (refreshment & full course) of the MariePRO course(s).
5. Is the Credit given for assessed and documented learning of a learning outcome of a learner where the credit can be transferred to other contexts and accumulated to achieve a qualification on the basis of the qualification standards and regulations existing in the participating countries?	n/a		The MariePRO course is 1 learning Unit which results in a qualification. There is no need to transfer and accumulate this credit as part of a larger qualification.
6. Are the Mutual Trust and partnership among participating organisations are expressed in Memoranda of Understanding (MoU) and Learning Agreements?	YES	5	Sample Memorandums of understanding and Learning Agreements have been drafted.
7.1 Does the Memorandum of Understanding (MoU) form the framework for cooperation between the competent institutions, namely does it aim to establish mutual trust between the partners involved. In this/the MoU partner organisations mutually accept/accepted their respective criteria	YES	5	Sample Memorandums of understanding and Learning Agreements have been drafted. The details of the MariePRO extended and refreshment courses have been detailed, learning outcomes and ECVET points clearly

and procedures for quality assurance, validation and recognition of knowledge, skill and competence for the purpose of transferring Credit ?			stated and assessment and validation procedures detailed.
7.2 Is it mandatory to recognise Credit , does the competent institution in charge feel confident that the required learning outcomes have been assessed in a reliable and valid manner.	YES	5	The assessment and validation processes are clearly outlined with both parties accepting and agreeing to implement these procedures jointly.
7.3 Does the competent institution in charge trust that the learner's credit does concern the learning outcomes expected and these are at the appropriate level NB: If there is/was also a provision for Agreements (within an MoU or as an attachment) set up by sector based organisations (e. g. by Chambers, regional and national authorities), this should/should have include/included a list of organisations such as VET providers, companies, etc., who are/were able to operate in the framework set up by the MoU.	YES	5	The MariePRO qualifications (refresher and extended) have been clearly broken down into learning outcomes which ensures that any credit awarded can be clearly matched to the learning outcomes.
8.1 Does the hosting institution assess the learning outcomes achieved and awards credit to the learner?	YES	5	There are two types of assessment of the learners during the course. <ul style="list-style-type: none"> The continuous assessment of each learner as they progress through each learning outcome and complete class activities and participate in group work, 60% weighting. Formal assessment at the end of the course which can be written or oral and is pass or fail which covers all learning outcomes of the qualification, 40% weighting. The two scores are combined to provide the final grade of the learner.
8.2 Are the learning outcomes achieved and corresponding ECVET points recorded in a learner's personal transcript ?	NO	1	To be drafted by institutes for each individual case / exchange/course.
9.1 Does the sending institution then recognise learning outcomes that have been acquired?	YES	5	Upon completing the learning outcome, as evidenced, in the assessment, the sending institution recognises and

			accepts the host institutions assessment and validation procedures.
9.2 Does this recognition given in 9.1 gave rise to the award of the units and their corresponding ECVET points, according to the rules of the home system ?	YES	5	Upon completing all the learning outcomes and passing the course the MariePRO environment awareness qualification is awarded to the learner by the home institution according to the ECVET points and rules of the home system.
10. Is the Credit accumulation a process through which learners can acquire qualifications progressively by successive assessment and validation of learning outcomes; namely the accumulation of credit is decided by the competent institution responsible for the award of the qualification?	n/a		The MariePRO course is one (1) learning Unit which results in a qualification. There is no need to transfer and accumulate this credit as part of a larger qualification.
11. Is the learner, when they have accumulated the credit required and when all conditions for the award of the qualification are fulfilled, awarded the qualification ?	YES	5	Upon passing the course the MariePRO environment awareness qualification is awarded to the learner by the home institution.
Total Score			
Actions/Comments			

6. Conclusions

The report presented here gave the key requirements of any EU compliant ECVET scheme. Six different examples were considered identifying their key features. A system for cross-referencing of ECVET schemes were developed to ensure compliance with all aspects of ECVET system. An additional indicator was added for any additional features to be included when any other set of requirements is also expected to be satisfied.

The course, Marine Environment Awareness, developed by the partnership was evaluated using the criteria developed and scoring system adapted.

This report includes as appendixes sample MoU and Learning Agreement (one for the 2-day course and one for the 1-Week course) for any maritime institution to use as template in any ECVET complaint jointly delivered Maritime Environment Awareness or similar courses. These Learning Agreement and MOU's are for guidance purposes only - and organisations undertaking their own exchange relating to the Marine Environment Course should fill in their own MoU and Learning Agreement.

7. Annexes

Annex 1 - Benchmarking the apparent best practices ITALY

General

Italy hasn't a strong experience in ECVET, but something has been done in some vocational fields: in the northern/central part of the country is active the *Consortium of vocational schools* that puts a lot of efforts in coordinating ECVET mobility experiences.

We are now going to introduce his role and to give a short description of one of the best developed projects.

The consortium of vocational schools

The "ConsortiodelgliIstitutiProfessionali" (*Consortium of vocational schools*) is a well established network of more than 60 vocational schools from several Italian country regions, that aims to develop projects allowing young students from the vocational fields to get competences abroad.

The basic concept that drives the activities of this organization is the deep persuasion thatthe experiences abroad activate abilities, formal and informal skills, personal resources for:

integrating and interacting in a different context from cultural, social, professional and linguistic perspective;

facing new situations, increasing personal autonomy and responsibility;

improving social, linguistic and communicational skills;

getting new educational and training opportunities;

learning new working practices;

completing their vocational training, using personal and professional skills in different situations;

making choices on the basis of new information and develop new skills to answer flexibly and effectively to the demands, also improving employability.

The vocational areas in which the consortium is mostly active are:

Business Administration

Tourism

Catering / Reception

Social Care

Fashion

Mechanic / Electronic

The consortium has created chances for the mobility of more than a hundred students, in different European country:

Sweden

Romania

Portugal

Finland

Ireland

Germany

France

The consortium gives support to the schools to organize the mobility experiences, that usually last 3 weeks and involve about 10 students at a time, with one or two accompanying teachers; it gives support in terms of:

- Project layout and project management, contacts with National Agency;
- Engagement of Italian and European partners and sharing of goals and methods of project development through constant contact;
- Organization of training courses for selection of beneficiaries and accompanying teachers;
- Organization of travels, accommodations and logistics internships, local language courses and related costs;
- Check of insurance (accidents and civil liability of partner schools) and supplementary insurance;
- Reimbursement of the beneficiaries for any expenses for travel, accommodation , transport, cultural training incurred during the mobility abroad;
- Production and collection of the required documentation (evidences of expenditure contracts, training projects, Europass , evaluation sheets , etc.) - in collaboration with hosting partners;
- Support of beneficiaries in evaluation and documentation of experience phases;
- Reporting and relations (interim and final);
- Dissemination of the results of the experience;

There are 4 phases that appear to be less “technical” but far more important in terms of education and that allow to make the experience really effective, where the support is also given:

Selection of participants;

Definition and customization of the training plan, identifying tools that can allow the feedback of experience (ex. logbook, evaluation sheets etc.);

Assessment;

Recognition of mobility experience instead of the internship / alternation and as an integral part of the curriculum.

After a first rough selection of the students, great care is taken over the preparation of the participants by means of a residential training (3-4 days), to be followed by a reinforcement training before departure; this phase allows students to become aware of activities/tasks to be performed on-site and to analyze the supporting materials to be used

Residential training is also made up by important training modules that can be considered “side information”; after the training has been given, an assessment is carried out in order to produce a ranking of the candidates and then make a more effective selection:

Foreign Language Module: it provides tools for the acquisition of language skills (also sectorial), referring to the language of the host country or the vehicular language;

Motivational Interviewing: it supports the motivation to mobility abroad;

Civilization Module: it provides information about the Country of destination (geographical, cultural, governmental and institutional, uses and customs);

Urban Orienteering: it improves the ability of spatial orientation through orienteering activities into the city.

RUNNING TOWARDS THE JOB

RUNNING TOWARDS THE JOB – RTJ is an Erasmus + project (KA1 - Learning Mobility of Individuals - N.2014-1-IT01-KA102-002223) promoted by the Italian Consortium of vocational schools.

The objectives of the project are:

Acquire and enhance skills that foster the transition to the world of work, taking into account transversal abilities and cultural diversity in order to meet the demands especially in a European dimension;

Improving communication through foreign languages and information technology tools;

Acquire the ability to understand the needs and to be flexible and able to work in group;

Develop creativity and self-employment and use the professional knowledge in innovative ways to respond to emerging needs;

Develop the ability to seize opportunities and educational opportunities and to increase its ability to "learn to learn", within the *lifelong learning* perspective.

RTJ reached the target to allow to 88 young students (age 17-19) accompanied by 12 teachers, to take part in lessons of the same studying fields in six different European countries, as guests of host partners such as schools and training institutions.

RTJ Mobility			
Countries	Fluxes	Students	Teachers
IRELAND	2	22	3
PORTUGAL	2	23	3
FINLAND	2	12	2
SWEDEN	1	10	1
HOLLAND	1	10	1
SPAIN	1	11	2

The host partners were in charge to identify enterprises where some practical modules could be developed (*on the job training*); the logistics of the internship was totally organized by the host partner, that was also in charge of the administrative issues and of the identification of the tutors.

Annex 2 - FRAMEWORK FOR THE TRANSPARENT RECOGNITION OF MARITIME PILOTS QUALIFICATIONS

DEVELOPMENT OF A FRAMEWORK FOR THE TRANSPARENT RECOGNITION OF MARITIME PILOTS QUALIFICATIONS UNDER THE ECVET AND EQF

E Turchetto, D Fantechi; MMRTC, Malta

SUMMARY

This paper reports on the development of a framework that aims at having a transparent recognition of the maritime pilots qualifications under the ECVET and EQF, a qualification focused on Risk Prevention and Environmental Protection.

The paper illustrates the CERTIPILOT project and the Maritime Pilot profession. Background on the use of competences in the EU – ECVET and EQF, the relevance of competences for Maritime Pilots Qualifications and the skills portfolio in the Europass CV are also illustrated.

The paper also shows how the Learning Outcome approach is applied to the Maritime pilots' qualification focused on Risk Prevention and Environmental Protection.

Keywords: European Credit system for Vocational Education and Training framework (ECVET), European Qualification Framework (EQF), Maritime pilots, Risk Prevention and Environmental Protection, Ports.

1. INTRODUCTION

CERTIPILOT is voluntary framework, which focuses on the recognition of pilots' qualifications acquired through vocational training, specifically through the application of the European Credits system for Vocational Training (ECVET) and the European Qualification Framework (EQF) to the vocational training undertaken by Maritime Pilots. Starting from the A960 Recommendation of IMO, CERTIPILOT links the training undertaken by pilots along their career with the European educational system without introducing new standards or new courses. CERTIPILOT takes stock of the training needs that Maritime Pilots have and tries to go beyond the boundaries of the Maritime and Transport Authorities giving Maritime Pilots' training the dignity and relevance it deserves also in relation to the European qualification framework.

The target audience of the project were Maritime Pilots, recruited and licensed on the basis of the National legislation applicable to the different Countries. CERTIPILOT does not refer to the training undertaken by individuals before becoming Maritime Pilots; it does not set common obligations and it does not establish new courses or standards. The project allows for the recognition of the value and quality of Maritime Pilots' VET under the educational systems and in line with the EU legislative direction in the sector.

More specifically, CERTIPILOT provides a qualification for Maritime Pilots who wish to specialise in emergency manoeuvring and risk prevention in ports. The qualification is based on the competences that Maritime Pilots need to strengthen and links them with the existing training available.

After following the career development path which is common to Master and officers, Pilots' training needs become more specifically linked to their task of manoeuvring vessels in ports, but there is no system in place to make it possible to assess the competences and the levels related to these competencies. CERTIPILOT fills this gap, in particular in relation to the use of technology in VET and environmental protection.

The project has created a comprehensive framework enabling Pilots' Associations and National Educational Authorities to assess pilots' qualification levels as well as the levels of training undertaken, both internally and abroad; and to facilitate qualifications recognition. Thanks to CERTIPILOT it is possible, for the first time, to take formal, informal and non-formal learning into consideration when assessing a Pilot's training record. This innovative aspect is relevant to the profession, as the qualifications of Pilots are strongly linked with the experience gained through work as well as with testing carried out using the technology available. The solution was proposed by the end users of the service in a bottom up approach. Moreover, the issue of recognition of qualifications is addressed in a holistic manner, i.e. not focusing on just one specific training programme. In terms of comparison with existing solutions it has to be noted that CERTIPILOT focuses, for the very first time, on Maritime Pilots. For the first time, EUROPASS is applied to the Pilots' profession.

The aim of this project was to create a system for the recognition of Maritime Pilots' qualifications particularly in relation to training related to emergency manoeuvres in harbours, risk prevention and training with the use of simulations.

The objectives were to facilitate the recognition of competences acquired through formal, informal and not-formal training.

Before the CERTIPILOT project, although there were a number of training opportunities that are in line with the international standards set by IMO or recognised within specific networks, the ECVET/EQF system was not applied, thus creating inefficiencies and discrimination as some certificate courses may be acceptable in one country, but were not acceptable by the relevant educational authorities in other countries. CERTIPILOT addresses the situation and facilitates mutual recognition of vocational training of Maritime Pilots.

Consortium

The Certipilot project is being co-ordinated by the Malta Maritime Pilots Cooperative with the cooperation of three European partners: Turkish Maritime Pilots Association, Colegio Oficial de Practicos de Puerto and Centro Studi Enti Locali Srl: www.certipilot.eu

CERTIPILOT was based on the complementary experiences of the partners involved in the project. The Malta Maritime Pilots Cooperative, acting as a lead partner, is the organisation providing pilotage services in Maltese ports and has developed a number of initiatives in the area of training, especially with the use of a manoeuvring simulator, as well as other types of courses in line with IMO standards.

The Turkish Maritime Pilots Association is the organisation representing the interest of all Turkish Maritime Pilots. The Association also organises training sessions and CPD courses for its members.

The Colegio Oficial Nacional de Practicos de Puerto from Spain is established under National Law to act as supervisor for all the Spanish Pilots. It represents Maritime Pilots' interests and carries out activities of general interests such as negotiations with relevant authorities and the training and selection of Maritime Pilots. The Colegio cooperates with

the Spanish Government to safeguard the maritime sector and the environment.

The fourth partner was CSEL s.r.l., a recognised training provider that delivers vocational training in Italy. The organisation's experience and knowledge of the European VET system was invaluable when it came to integrating the technical experience and skills of the Maritime Pilots within a framework that balances the needs of the profession with the requirements of ECVET and EQF.

CERTIPILOT was based on a participative bottom-up approach with the end users (Maritime Pilots) developing the new model in collaboration with the VET expert partner and with the extensive involvement of National and European stakeholders.

2. THE RECOGNITION OF COMPETENCES IN THE EU – ECVET AND EQF

Background on the use of competences in the EU – ECVET and EQF

Knowledge, Skills and Competences constitute the core elements of the reference levels. In the Commission's Proposal for a Recommendation of the European Parliament and the Council, competence is defined as 'the proven ability to use knowledge [and] skills'. It is also described 'in terms of responsibility and autonomy' (European Commission, 2006, p. 16).

Skills 'mean the ability to apply knowledge and use know-how to complete tasks and solve problems'. A distinction is made between cognitive and practical skills. Knowledge 'means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of study or work'. In the

EQF, knowledge is described as theoretical and/or factual.

The focus on a competence-based approach to the development of the EQF is based on increased attention being paid to concepts of adaptive and workplace-oriented learning processes, of lifelong learning, of informal and non-formal learning and of the abilities and knowledge necessary for employability in a rapidly changing society (López Baigorri et al., 2006; Rigby and Sanchis, 2006). Fundamental importance is given to the consideration and accreditation of learning outcomes achieved in ways other than on a formal basis and of implicit knowledge. Hence the underlying principle of the terminology to be developed for vocational Knowledge, Skills and Competences in the EQF was 'to establish a typology of qualitative outcomes of VET in terms of knowledge, skills and competences that will serve as conceptual underpinning for the horizontal dimension in developing a European Credit System for VET' (Cedefop; Winterton and Delamare-Le Deist, 2004, p. 11). This concept, originally devised for the ECVET system, was later also used by the Expert Group as the basis for the definition of Knowledge Skills and Competences in the EQF.

The relevance of competences for Maritime Pilots Qualifications

As described by Cedefop, countries that introduce a qualifications framework are thereby seeking to make their national educational systems more transparent, more innovative and more competitive. They also aim to improve the match between the educational system and the labour market. Thus, qualifications frameworks are seen as engines of innovation: the point of introducing them is to promote a number of fundamental, long-term reforms. These include, for example,

wider access to opportunities for education, more ways of acquiring qualifications (other than solely by participation in institutionalised courses), the certification of non-formal and informal learning; and encouraging learners to acquire competences that are relevant to the labour market while getting employed people involved in describing and assessing such competences.

Competences, when used as the basis for occupational standards effectively define what it means to be competent in a specific job role such as Maritime Pilots. Competence is about taking skills and knowledge and applying them to show the understanding and ability necessary to carry out a work function, in this case of a Maritime Pilot and more specifically in relation to risk prevention and environmental protection.

Maritime Pilots are exposed to the increasing challenges brought by their profession, which are mainly influenced by the growing maritime traffic and the ships' technological development. Such challenges can be positively addressed if professionals who take care of manoeuvring the ships are adequately trained and updated to be equipped with the right competences to tackle specific circumstances.

The skills portfolio in the Europass CV

In 1998, the European Commission and Cedefop set up the European forum on transparency of vocational qualifications to bring together social partners with representatives of national training authorities around the issue of transparency. The European CV and the Certificate Supplement resulted from the work of the forum.

Europass includes three other documents, developed at European level in the late 1990s:

The Diploma Supplement for use by higher education institutions throughout Europe and elsewhere to complement the degrees they award.

The Europass Language Passport in which citizens can record their language skills on the basis of the Common European Framework of Reference for Languages (CEFR).

Europass Mobility, which replaced Europass Training a document recording work placement experiences abroad, as part of an education or training initiative. Europass Mobility has a wider scope, as it can also record experiences other than placements, such as academic periods abroad.

The objective of Europass is

to help citizens communicate their skills and qualifications effectively when looking for a job or training;

to help employers understand the skills and qualifications of the workforce; and

to help education and training authorities define and communicate the content of curricula.

A new Europass CV (template and online editor) was launched on 12 December 2012.

Improvements include:

more user-friendly online interface with direct preview of the final document;

new headings: Personal website, Instant messaging, Language certificate(s);

improved tutorials for better structured information: description of projects, conferences, publications, etc.; and

new graphical identity for better legibility of Europass CV generated: new font, use of colours, simplified headings, etc.

Also, the European Skills Passport was launched together with the new CV. The ESP is a user-friendly electronic folder to help students, workers or job-seekers build up personal, modular inventory of personal skills and qualifications acquired throughout life.

It can contain a range of documents (Language Passport, copies of degrees, attestations of employment, etc.). When attached to a Europass CV, the European Skills Passport will reinforce the CV by bringing evidence of the skills and qualifications listed.

The European Skills Passport helps individuals to document their skills and qualifications to find a job or further training and to validate their skills. The European Skills Passport is an electronic portfolio which provides a comprehensive picture of one's skills and qualifications.

Europass includes five documents which ensure that one's skills and qualifications can be clearly and easily understood in Europe:

Two documents which are freely accessible and are to be completed by European citizens:

the Curriculum Vitae which presents one's skills and qualifications effectively and clearly. One can create one's CV online using tutorials or by downloading the template with examples and instructions.

the Language Passport which is a self-assessment tool for language skills and qualifications. One can create one's Language Passport online using tutorials or by downloading the template, with examples and instructions.

Three documents issued by education and training authorities:

the Europass Mobility which records the knowledge and skills acquired in another European country.

the Certificate Supplement which describes the knowledge and skills acquired by holders of vocational education and training certificates.

the Diploma Supplement which describes the knowledge and skills acquired by holders of higher education degrees.

3. THE MARITIME PILOTS RISK PREVENTION AND ENVIRONMENTAL CPD QUALIFICATION

Using a Learning Outcome Approach

The European Commission's strategy for New Skills for New Jobs deals with the need to solve Europe's skill deficiencies and calls for an opening up of the worlds of education and training by making institutions operating in this area more responsive to learners' and employers' needs. In parallel it encourages the development of relevant qualifications that focus on concrete learning outcomes.

Learning outcomes are statements of what a learner knows, understands and is able to do on completion of a learning process. Learning outcomes are defined in terms of knowledge, skills and competence.

Knowledge: means the body of facts, principles, theories and practices that is related to a field of work or study. It is described as theoretical and/or factual knowledge.

Skills: means the ability to apply knowledge and use know-how to complete tasks and solve problems. They are described as cognitive (logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments).

Competence: means the proven ability to use knowledge, skills and personal, social and methodological abilities in work or study situations and in professional and personal development. It is described in terms of responsibility and autonomy.

Learning Outcomes can be used to establish descriptors of qualifications frameworks, define qualifications, design curricula, guide assessment based on knowledge, skills, and competences, etc. For each level of the European Qualification Framework (EQF), the learning outcomes are established in line with the respective level according to the level descriptors for each level within the EQF. A set of learning outcomes make up a study unit, and a collation of study units make a full qualification. To implement ECVET, it is necessary that qualifications are described using units of learning outcomes so as to be able to relate the outcomes of assessed or validated learning experiences in a common methodology.

The knowledge, skills and competencies identified in the occupational standard have been set as the skills, knowledge and competencies for the Maritime Pilots Risk prevention and Environmental Protection qualifications' learning outcomes.

The Maritime Pilots Risk prevention and Environmental Protection Qualification titled 'CPD Award in Risk prevention and Environmental Protection' has been set as a Continuous Professional Development (CPD) award at European Qualifications Framework (EQF) level 5. It has been designed into three modules which reflect the three competencies set in the related Occupational Standard. The modules are based on the Learning Outcomes identified by the team. After the assessment of Learning Outcomes ECVET credits are awarded and recorded in the Transcript of Records.

The modules have been entitled as follows:

Manoeuvring and handling ships in exceptional conditions and circumstances.

Avoiding, preventing and minimising pollution.

Assisting in Search and Rescue Operations.

The qualification is for Maritime Pilots, who need to have in hand a Pilot Licence as an entry requirement.

The objectives of the CPD qualification is to equip Maritime Harbour Pilots with knowledge and skills related to Risk Prevention and Environmental Protection through a customised award at level 5 offered over a period of one to two years.

The learning outcomes set for each module mirror the proposed Occupational Standards. The learning outcomes include a list of the related knowledge and skills. They also include communication and learning skills.

A reading list for each module has been set to enhance the self-study aspect of the qualification.

The modules will be thought through lectures, discussions, hands on practice and simulation and manned models.

The training will be aligned with developments in the education system in Europe, which recognises the need for training to be more focused on results/output -in order to prepare learners for the challenges they face in working in the maritime sector. This emerges from the learning outcomes approach, which focuses on the competences that the learner needs to develop at the end of the learning process. For each of the training modules the focus of the each lecture, seminar and simulation will be on what the learner will:

Know.

Be able to do.

Be able to do without supervision, independently and with responsibility.

This approach is designed to ensure that learners are not only exposed to the course content, but also assimilate knowledge, practice the skills learnt, and work towards implementing these skills without supervision, independently and with responsibility. This focus on competences ensures that trainees develop the skills, which they need to function as independently as possible in their work settings.

The training, with its focus on output, requires that the trainers to use a wide repertoire of training techniques in order to meet the specific learning styles and capabilities of the trainees.

The teaching methods will include a mix of group work, lecturing, case studies, simulation, used of manned models and interactive sessions.

The training will be delivered in English or language of the country adopting this qualification.

The Qualification Chart is given in Appendix 1.

4. CONCLUSION

In this paper the ECVET framework has been described in relation to an EQF qualification for Maritime Pilots. This work was developed during the CERTIPILOT project, partly financed by the European Union through the Leonardo da Vinci Development of Innovation action.

The ECVET and EQF frameworks have been applied to identify and recognize throughout the EU the CPD qualification of Maritime Pilots with the knowledge and skills related to Risk Prevention and Environmental Protection activities.

The Learning Outcomes approach has been described as the method that might ensure that formal, non-formal and informal education, acquired in the profession are taken

into account in the identification of the Maritime Pilot qualification.

A concrete example of the application of the ECVET and EQF recognition approach has been included.

In Appendix 1 the qualification chart delivered as a product of the CERTIPILOT project summarizes the findings of the consortium.

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Appendix 1: Qualification Chart

COMPETENCE		Learning Outcomes		Type of training	Delivery method	Assessment method	Hours	Reading List
Able to give advice to the Captain to manoeuvre and handle the ship in emergency circumstances in his designated port/area								
Knowledge	1. How to notify the relevant Authorities and call for the required assistance.	Knowledge of on how emergency communications shall be communicated to the relevant authorities		GMDSS Restricted Operator's Certificate	Lectures	Writtent test	10 theoretical	GMDSS Manual
	2. What needs to be communicated to the parties involved in the dealing with emergency (Captain, Bridge team, Authorities, etc.).	At the end of this module, a candidate would know the standard marine communication phrases		IMO Standard Marine Communication Phrases Training	Lectures	Written test and oral test	4 hours theory 1 hour assessment	Standard Marine Communication Phrases, IMO Resolution A.918 (22)
	3. How to anticipate the effects of that emergency	A candidate would have the necessary knowledge to anticipate effects the vessel may have due to the ongoing emergency	Emergency manouvre with different types of vessels such as Cargo, Gas and Oil Tankers, Container Ships, Car Carriers, RORO Ferries and Passenger Ships.					

			Use of ships' anchors to prevent drifting					
			Use of tugs to prevent drifting	Tailor made Computer Simulation or Manned model training Simulations on emergencies related to Rudder, Power, Grounding, Collision and other specific emergencies that can occur	Tailor made Computer Simulation or Manned model training	Debriefing	Simulation/Manned Model: 21 hrs training and 3 hours debriefing assessment	Manned models/Computer Simulation manual related to emergency situations - At least Rudder, Engine and Bow Thruster failures
	4. How to interpret the information displayed on the bridge navigational aids or given by the crew.	The candidate would have a sound understanding of how to interpret information retrieved out of the bridge navigational instruments and the information given by the crew		Bridge Resource Management for Pilots Training Course	Lectures:	Written test	BRMP 22 Hours Tuition and 2 hours assessment	Bridge Team Management for Pilots Manuals
				ECDIS Generic	Lectures:	Written test	ECDIS, 38 hours tuition 2 hours assessment	ECDIS and Positioning (Vol. 1 and 2) – Nautical Institute,
				ARPA and RADAR Observer course - mana level IMO Model course 1.08),	Lectures:	Written test	Radar Observer, 22 hours tuition 2 hours assessment,	Radar and AIS Vol 1 and 2 Nautical Institute or equivalent
				Training on AIS information	Lectures:	Written test	AIS interpretation training 2 hours tuition, 1 hour assessment	
	5. How different types of emergencies are handled.	Knows how to handle different types of	Handle emergency with Rudder failure	Tailor made Computer Simulation or Manned model training	Tailor made Computer Simulation or	Debriefing session	Simulation/Manned Model: 21 hrs training and 3 hours debriefing assessment	Manned models/Computer Simulation manual

		emergencies and how weather conditions can affect emergencies	Ship Handling after a Tug Failure	Simulations on emergencies related to Rudder, Power, Grounding, Collision and other specific emergencies that can occur	Manned model training			related to emergency situations
			Handle emergency with Power loss					
			Handle emergency with Grounding of Vessel					
			Handle emergency with Collision with other objects					
			Handle emergency with currents more than 1 knot					
	6. How weather conditions can effect that emergency.		Handle emergency with wind force of at least 24 knots in port					
			Handle emergency with restricted visibility					
Skills	1. Maintain good communication with the	At the end of this training, the			Practicum	Test	GMDSS 14 hours practical	GMDSS Manual

	<i>Captain, Authorities and all the parties involved in the dealing with emergency.</i>	candidate would have achieved the necessary skills to communicate clearly to all parties involved should an emergency arise		GMDSS Restricted Operator's Certificate				
	<i>2. To use and relay the information displayed on the bridge navigational aids or given by the crew.</i>							
	<i>3. Coordinate with the Captain on the most appropriate actions to be taken in that emergency.</i>	A candidate would be able to anticipate effects the vessel may have due to the ongoing emergency	Request relevant shore assistance	Tailor made Computer Simulation or Manned model training on emergencies related to Rudder, Power, Grounding, Collision and other specific emergencies that can occur	Tailor made Computer Simulation or Manned model training	Debriefing	Simulation/Manned Model: 21 hrs training and 3 hours debriefing assessment	Manned models/Computer Simulation manual related to emergency situations - At least Rudder, Engine and Bow Thruster failures
	<i>4. To support the Captain in different types of emergencies.</i>		Liaise with relevant authorities concerned by the emergency Handle emergency with Rudder failure Ship Handling after a Tug Failure					

			Handle emergency with Power loss					
			Handle emergency with Grounding of Vessel					
			Handle emergency with Collision with other objects					
			Handle emergency with currents more than 1 knot					
	5. Interpret the effects of weather conditions in the light of that emergency.		Handle emergency with wind force of at least 24 knots in port					
			Handle emergency with restricted visibility					

COMPETENCE		Learning Outcomes	Type of training	Delivery method	Assessment method	Hours	Reading List
Able to give advice to the ship Captain in order to avoid and or minimise pollution in emergency circumstances in his designated port/area							
Knowledge	1. Local emergency plan concerning anti-pollution.	A Pilot would know his role in the emergency plan and how the plan is implemented being the link between authorities and the vessel causing the incident	Theoretical training on the available means for dealing with a pollution incident in or outside port areas (non-standardised)	Seminar: by local anti pollution authorities	ongoing assessment during seminar	Theory: 6 hrs	Local Emergency Plan Manual; local places of refuge, presentation of relevant case studies
	2. The properties and effects of dangerous cargoes.	Properties and effects of dangerous cargo carried at sea	IMO relevant instrument about properties of dangerous goods – Model Course 1.10	Lecture or online training	written test	40 hours	IMDG code

	3. The effect of other pollutants spillage in the environment.	Understanding the impact of the polluting incidents on sea and environment as well as its economic effects	Seminar	Seminar	Ongoing assesment through active participation of trainees to the seminar. Questioning with all trainees shall be done.	4 hours	Case studies on incidents occurred with negative impact on environment
Skills	1. Apply local emergency plans to prevent or contain pollution.	A Pilot would be able to perform his role in the emergency plan being the link between authorities and the vessel causing the incident	Oil Pollution response drills in order to get familiar with the clean up procedure	Hands-on	Debriefing session to assess the drill	Hands-on: 8 hours – Briefing/Debriefing: 4 hrs	Local Emergency Plan Manual; local places of refuge
	2. Recognize and prevent situation of possible pollution.	The candidate will be able to support the captain to avoid bad practices which could cause pollution	Seminar - Pollution Prevention	Seminar: by local anti pollution authorities	Ongoing assesment through active participation of trainees to the seminar. Questioning with all trainees shall be done.	2 hours	International safety guide for tankers & oil terminal – ISGOTT

COMPETENCE		Learning Outcomes		Type of training	Delivery method	Assessment method	Hours	Reading List
Participates in Rescue operations								
Knowledge	1. Knowledge of international, national and local SAR (Search And Rescue) procedures.	Communication to be done before initiating a search and rescue operation; type of search and rescue pattern; First Aid Procedures	Establish a datum	Tailor made course dealing with SAR in territorial waters	Lectures	Ongoing assesment through active participation of trainees to the lecture. Questioning with all trainees shall be done.	Contact hours 4 Hands on 2	International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual Volume 3
			Establish the search pattern applicable in the particular circumstances					
			Liaise with SAR coordination centre					
			Acknowledge and execute instructions received from SAR coordination centre					
			Perform First Aid Procedures					
	2. Knowledge of emergency response plans.	Types of emergencies and role of the pilot in the response plan (SAR)	Outline the main aspects of the local plan (SAR)	Tailor made course dealing with SAR in territorial waters	Lectures	Ongoing assesment through active participation of trainees to the lecture. Questioning with all trainees shall be done.	Contact hours 6	Port Emergency Response Plan relevant to the licensed area of operation of the pilot
			Describe the role of the pilot in the SAR					
			Recognise the various parties involved in the SAR					
			Recognise the different SAR patterns					
	3. Recognize and prevent	Understanding the situations that could lead to accidents	Describe examples of misinterpretation of the information from electronic	Seminar	Seminar	Ongoing assesment through active participation of trainees to the seminar.	2 hours	Case studies on incidents occurred

	risk/dangerous situations.		navigational aids leading to accidents			Questioning with all trainees shall be done.		
			Describe accidents caused by fatigue on the ships' crew					
			Describe examples of miscommunication within the Bridge Team leading to accidents					
	4. Personal Survival Techniques.	Basic principles of survival at sea, use of lifesaving appliances such as lifejacket, liferaft, immersion suits, etc.		STCW Personal Survival Techniques – STCW A-VI1-1	Lectures and Practical	Ongoing assessment: questioning and practical demonstration of aspects taught to ensure underpinning of knowledge	8 hours	Generic sea survival practical manual and notes
Skills	1. Apply international, national and local procedures in the SAR (Search And Rescue).	Proper application of relevant SAR procedures	Establish a datum	Tailor made Simulation exercise simulating SAR	Simulation	Debriefing after the simulation	Simulation 2 Assessment Debriefing 1 hour	International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual Volume 3
			Establish the search pattern applicable in the particular circumstances					
			Liaise with SAR coordination centre					
			Acknowledge and execute instructions received from SAR coordination centre					
	2. Utilize procedures to recover rescued persons.	Use of recovery systems and procedures utilised onboard the pilot boat	Operate recovery systems on board pilot boats	Tailor made drills on board of the pilot boat	Practical	Ongoing assesment through active participation of trainees to the drill. Questioning to all trainees.	3 hours	Recovery System Manual of the pilot boat
			Recover an unconscious survivor from water					
			Coordinate with pilot boat crew to recover the survivor					

Annex 3 -Finecvet as a pioneer

FINNISH VET CURRICULUM REFORM 2016 AND RELATED PROCESSES IN MARITIME SECTOR

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SUMMARY

This paper reports on the processes and phases of implementing ECVET, the European system of accumulation of credits in vocational education and training, in Finland as an integral part of the national vocational education and training (VET) curriculum reform concerning all VET qualifications and qualification requirements.

The paper provides national perspective and background in the MariePRO – Promoting Maritime ECVET Actions project, illustrating the ECVET implementation processes on the national level in Finland, with particular focus on maritime education and training (MET). Further, the paper also illustrates cooperational models and practices between actors involved in maritime education and training in Finland as examples of good practice.

Keywords: European Credit system for Vocational Education and Training (ECVET), Transparency, Transnational mobility, Good practices, Maritime education and training

1. INTRODUCTION

MariePRO – Promoting Maritime ECVET Actions project aims to smooth the way for MET institutes to integrate the demands deriving from the International Maritime Organization's IMO International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), other international rules and regulations together with the European ECVET Recommendation towards more transparent and comparable learning outcomes. The purpose of the ECVET Recommendation is to create a European Credit System for Vocational Education and Training (ECVET) to facilitate the transfer, recognition and accumulation of assessed learning outcomes achieved in formal, non-formal and informal contexts by individuals who are aiming to achieve a qualification.

The actions of the MariePRO project include examining the differences between vocational MET in the partner countries, Finland, Germany, Italy, Malta, and the UK; producing a Catalogue of Apparent Good Practices on

ECVET implementation; and drafting an example syllabus for protection of the marine environment. The process of producing a Catalogue of Apparent Good Practices on ECVET implementation involves identifying of good, pioneering practices within MET and other sectors in vocational education and training in each of the partner countries. This paper illustrates the apparent good practices identified and selected in Finland to be presented amongst the MariePRO apparent good practices examples.

MariePRO Partner Consortium

The partners involved in the MariePRO project include Centre for Factories of the Future, the UK; ITTL Nautico San Giorgio, Italy; Mediterranean Maritime Research and Training Centre, Malta; University of Bremen, Institute Technology and Education, Germany; and University of Turku, Centre for Maritime Studies, Finland as coordinator (www.utu.fi/mariepro).

2. ECVET IMPLEMENTATION IN FINLAND AS INTEGRAL PART OF NATIONAL VET REFORMS

Background

The purpose of the ECVET Recommendation, issued by the European Commission to its Member States in June 2009, has been to create a European Credit System for Vocational Education and Training (ECVET) to facilitate the transfer, recognition and accumulation of assessed learning outcomes achieved in formal, non-formal and informal contexts by individuals who are aiming to achieve a qualification.

In Finland, implementation of ECVET has been performed as an integral part of the national VET curriculum reform concerning all VET qualifications and qualification requirements. The changes in legislation regarding vocational education and training were enacted in October 2014, the qualification requirements for all vocational upper secondary qualifications during October-November 2014, and all the statutes, regulations and qualification requirements started taking effect in the beginning of August 2015, concerning all students whether continuing or beginning their studies.

The responsible parties for the implementation of ECVET on the national level have been the Ministry of Education and Culture together with the Finnish National Board of Education,

the Ministry having been responsible for the necessary decisions on the implementation as well as the required revisions to statutes, and the Finnish National Board of Education having been responsible for revising the qualification and education requirements, regulations and recommendations (concerning qualification certificates, certificate templates, the Certificate Supplement and the Diploma Supplement). The Finnish National Board of

Education has been responsible for informing actors about the credit transfer system and for ensuring that the actors were prepared to implement the system.

In terms of the implementation of the ECVET system, in Finland, the education provider is a competent authority responsible for validating and recognising competence, assessing competence and recording competence assessed during mobility into a personal transcript and a qualification certificate. Assigning credit points for parts of a unit also lies on the education provider's responsibilities.

Finecvet as a pioneer

Pioneering for the process of ECVET implementation in Finland – as well as on the European scale – can be considered a three-phase national pilot project FINECVET, the aim of which was to develop and test the ECVET system. The project was supported by the Finnish National Board of Education and financed by a state subsidy for the internationalization of VET.

The FINECVET project was launched in 2004. In the first two phases of the project, the ECVET system was tested in nine vocational qualifications (e.g., Vocational Qualification in Business and Administration and Vocational Qualification in Metalwork and Machinery). The third phase of the project extended the pilot to include further (e.g., Further Qualification in Travel Services) and specialist (e.g., Further Qualification in Travel Services) vocational qualifications, and the piloting processes continued in eight vocational qualifications, four further vocational qualifications, and three specialist vocational qualifications. The project involved a total of eight education providers who piloted ECVET in 1–3 qualifications and who had one or more Finnish or international educational

institutions as partners. MET providers were not involved. Piloting focused on the different stages of the ECVET process and generated implementation models for both, activities and documentation. The final phase of the FINECVET project was launched in autumn 2009, and it ended in December 2011.

Finland was involved in the ECVET technical working group appointed by the European Commission right from the start in 2002. The working group played a key role in preparing the Recommendation. The national pilot FINECVET was launched in 2004, and can thus be considered the first national ECVET pilot. (Finnish National Board of Education, 2012:15, p. 5)

Learning outcome-based approach

In Finland, the learning-outcome based approach has been implemented for several years in VET; the vocational qualifications have been structured from modules, and recognition of prior learning (for both formal and informal learning) is recognised and validated by law. Recognition of previous learning outcomes is not based on time, but the learning outcomes themselves.

The Finnish VET reform processes were based on the principles of the ECVET Recommendation, following the learning outcome-based approach; all qualifications being divided into units of learning outcomes, and the formerly used study weeks, which were calculated based on time spent, were replaced by ECVET credits (180 credits per vocational qualification at the EQF level 4), calculated on the basis of the relative importance of the unit of learning outcomes to the overall qualification. The processes were aimed towards more comprehensive acknowledgement of skills and competences, and the use of ECVET tools, including MoU, Learning Agreement, ECVET guides etc.

Based on the experiences from FINECVET, the implementation of ECVET requires an open approach towards the procedures used in other countries. In terms of Finnish education providers, this entails a change in values and attitudes towards more learner- and working life-oriented methods. The focus is no longer on individual teachers or subjects, but learning outcomes should, to a greater extent, provide the starting point when organising and planning instruction. (Finnish National Board of Education, 2012:15, p. 14) In Finland, all the statutes, regulations and qualification requirements with regard to ECVET having taken effect, and updated vocational curricula taken into use in the autumn 2015, the ECVET implementation together with turning values and attitudes towards learner- and working life-oriented methods, is on on-going process, and the concrete changes and impacts remain to be seen.

3. REFORM PROCESSES IN MARITIME EDUCATION AND TRAINING

Background

In Finland, the Ministry of Education and Culture sets the general goals for vocational education and training, determines the structure of qualifications, and the core subjects. Furthermore, the Finnish National Board of Education decides the national requirements of qualifications, detailing the goals and core contents of each vocational qualification. At the local level, the education providers draw up their own curricula based on the core curricula provided by the National Board of Education. Education providers are competent authorities with regard to assessment, validation and recognition of competence. The Ministry of Education and Culture grants the authority to provide vocational training. This authorisation determines the fields of study taught by a provider and the total number of students.

Within the framework of their authorisation and qualification structure, training providers are free to target their training provision as they choose, to meet the needs of business and industry.

At the local level, the concrete processes of drafting the curricula thus concern each individual vocational institute and their responsible personnel. While decisions on the recognition of competence are made by education providers - VET teachers in practice - this implies that the teachers find themselves in the core of ECVET implementation.

Curriculum reform in maritime education and training

In Finland, the following EQF level 4 vocational upper secondary qualifications are provided by vocational schools in seafaring (180 ECVET credits each; duration 3 years, 3½ in practice for Deck Officers): Study Programme for Engineer Officers, Watchkeeping Engineer Officer; Study Programme for Deck Officers, Deck Officer; Study Programme in Deck and Engine Repairing, Repairer; Study Programme in Electrical Operation, Ship's Electrician.

The curriculum reform, having taken effect in the autumn 2015, involved replacing of the former, calculated based on time spent 120 study weeks per vocational qualification by 180 ECVET credits.

Following the principles defined in the ECVET Recommendation, not only each qualification but also each unit of learning outcomes in a qualification can be assigned a certain number of ECVET points.

The ECVET Recommendation uses the term 'unit of learning outcomes', which means a component of a qualification, consisting of a coherent set of knowledge, skills and competence that can be assessed and

validated. According to the definition, the specifications for a unit should include:

the generic title of the unit,

the generic title of the qualification (or qualifications) to which the unit relates, when applicable,

the reference of the qualification according to the European Qualifications Framework (EQF) level and, where appropriate, the national qualifications framework level, with the ECVET credit points associated with the qualification,

the learning outcomes contained in the unit,

the processes and criteria for assessment of these learning outcomes. (Finnish National Board of Education, 2012:15, p. 16)

As the vocational qualifications were already structured from modules, and recognition of prior learning (for both formal and informal learning) was recognised and validated by law, ECVET did not imply changes to qualifications, titles or vocational skills requirements. Furthermore, the vocational education and training in the maritime field is regulated by the International Maritime Organization's IMO International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), which is based on competency-based education, training and assessment. The STCW Convention aims to provide universal regulations for maritime education, qualifications and watchkeeping – at least in reaching the minimum requirements. Thus, MET providers were faced with the tasks to restructure their curricula, replacing the study weeks with ECVET points calculated based on the relative importance of the unit of learning outcomes to the overall qualification, and their instruction accordingly. Within the Finnish MET institutes, the curriculum reform processes evolved deepening cooperation between different

maritime institutions in order to have their curricula restructured by the ECVET principles; increased change of views between teachers and combining of resources of the institutes where appropriate.

Furthermore, individual institutes were seen to take innovative approach in the process having, for example, replaced 'modules' and 'courses' by 'learning workshops', and shared responsibilities between different departments taking charge of detailed planning of each of the learning workshops. Further, responsibilities were also shared by separate modules with responsible teachers planning the content of individual learning workshops (incl. defining the number of contact hours etc.).

There are altogether six maritime institutes in three locations in the Mainland Finland. The vocational upper secondary qualifications at the EQF level 4 are provided by vocational schools, and the following two EQF level 6 training programmes (270 ECTS credits each; duration 4 years) are provided by universities of applied sciences: Bachelor of Marine Technology and Bachelor of Engineering, Maritime Technology. Completion of an approved education and training programme, combined with the required sea-service, results into the Finnish Transport Safety Agency issuing a license concerned (operational level CoCs on the EQF level 4 and management level CoCs on the EQF level 6). As the MET actors in Finland comprise a relatively small community, situated in certain geographical locations, the operational level studies are overlapping in the vocational schools and universities of applied sciences, and the international rules and regulations together with STCW Convention regulates the education and training at all levels, it is only natural that the MET providers work in close cooperation. Furthermore, the same principles and aims of increased transparency to facilitate

the transfer, recognition and accumulation of assessed learning outcomes apply at all levels of education and training, including HE. The difference is that, due to the Bologna reforms, national HE-systems already have much more in common than VET-systems; HE is based on modules and uses the ECTS system.

Good Practices

Also worth pointing out as apparent good practices between maritime institutes in Finland is that particular attention has been paid and effort put for the increased cooperation of the institutes during the recent years; a national STCW Committee was founded a few years ago with representatives of all the Finnish maritime institutes. The results have been very positive, as founding of the Committee has clearly increased the cooperation. The regular Committee meetings can be considered to have promoted to the successful cooperation in the curriculum reform, as well.

To further illustrate the good practises within maritime education and training in Finland, efforts have been made by the maritime actors to improve the difficult situation in arranging of the on-board training periods; a maritime Apprentice Mill (HarjoitteluMyly) was established in the autumn 2012. The Apprentice Mill serves as a link between maritime institutes and ship-owners. The most important task of the mill is to co-ordinate training places and inform educational institutes and ship-owners of the seafaring apprentice situation. The activities of the mill gather together all the Finnish maritime institutes. There are altogether 85 vessels under the Finnish flag that take students in; the smaller ones take only one student at a time, and the bigger ones take one on the deck and another on the engine department. In addition, cruise ships can take an electrician student, as well.

4. CONCLUSION

In this paper the national processes of ECVET implementation in Finland have been described as integral part of national VET reforms. The reform processes have been regulated by national legislation, and sector-specific cooperation has been in place in concrete processes of reforming the curricula. In the Finnish VET system, the national core curricula for all VET qualifications provided by the National Board of Education ensures the transparency and uniform regulation for VET on the national level, whereas flexibility is allowed for local variations. The Finnish VET system promotes to student-oriented, individual study paths to enhance learning outcome-based approach.

Furthermore, good, pioneering practices amongst the Finnish MET institutes at all levels together with relevant actors in the field have been presented, highlighting the importance of cooperation between MET institutes and all the relevant actors in the maritime industry.

This paper was produced in a MariePRO project, partly financed by the European Union Erasmus+ programme. The good, pioneering practices amongst the Finnish MET institutes presented are based on interviews of the Finnish MET actors in the MariePRO project.

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DEVELOPMENT OF EBDIG-WFSV CURRICULUM IN LINE WITH ECVET AND RINA'S CPD REQUIREMENTS

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SUMMARY

This paper reports on the development of EBDIG-WFSV curriculum and to establish the ground work to ensure its compliance with the requirements of the European Credit system for Vocational Education and Training framework (ECVET). It is also expected that the curriculum would also satisfy the requirements of the Royal Institution of Naval Architects' Initial and/or Continuing Professional Development (RINA's IPD/CPD).

The paper includes an investigation into the ECVET framework to ensure that the EBDIG-WFSV course is developed in line with this system's requirements and at the same time the course also satisfies the requirements of the Royal Institution of Naval Architects' IPD and/or CPD.

In this paper the ECVET framework is described and RINA's requirements for accreditation are identified. A cross-referencing technique is used to ensure all requirements are met and EBDIC-WFSV will be compliant with ECVET and ready for accreditation by RINA.

Keywords: European Credit system for Vocational Education and Training framework (ECVET), Initial and/or Continuing Professional Development (RINA's IPD/CPD),

1. INTRODUCTION

The European Credit system for Vocational Education and Training (ECVETS) is the new European instrument to promote mutual trust and mobility in vocational education and training. ECVET is a European system of accumulation and transfer of credits and has been designed to enable the recognition of the learning outcomes by an individual in a learning pathway to a qualification. It favours the documentation, validation and recognition of achieved learning outcomes acquired, in particular in the framework of transnational mobility, in both formal Vocational Education and Training (VET) and in non-formal context.

The process of professional development whilst being continuous during a career, it is often considered as two stages: Initial Professional Development (IPD) and Continuing Professional Development (CPD)[1]. The intention is to seek accreditation

for EBDIG-WFSV from the Royal Institution of Naval Architects (RINA). Given the equal level of intended professional engagement in the design process between naval architects and marine designers, the EBDIG IPD/CPD training course learning outcomes will be mapped against RINA IPD development objectives for naval architects. In addition to the Accreditation of EBDIG-WFSV IPD/CPD courses by an international chartered professional body such RINA, the opportunity for EBDIG-WFSV to support vertical and horizontal mobility of higher education and VET in the long run necessitates the implementation of

ECVETS into this mapping process so that both RINA and ECVET requirements are met. It is also very important that a formal assessment of the EBDIG-WFSV course is implemented through the academic partners of EBDIG-WFSV and ensure that the assessment meets the ECVET requirements.

For a successful project outcome, it is very important that during the curriculum development process, both objectives are to be addressed carefully and in some depth.

This paper reports on the development of the process of accreditation of EBDIG-WFSV applying a cross-referencing technique ensuring a right balance between marine engineering design naval architecture.

Consortium

The consortium is led by the UK and supported by several European partners from NL, IT, TR and TU. The project will benefit from an Advisory Group (AG) made up of; RINA, BMF Commercial and Lloyds Register. They will be joined by industry & research institutions in each country. Delivery partners, educational institutions and small and multinational companies represent the UK, Italy, Netherlands and Turkey. They will contribute existing projects in marine design, ergonomics, and e-learning to develop the EBDIG materials/infrastructure. www.ebdig.eu

2. ECVET AND LEARNING TIME

The European Credit system for Vocational Education and Training (ECVET) is the new European instrument to promote mutual trust and mobility in vocational education and training. ECVET is a European system of accumulation and transfer of credits and has been designed to enable the recognition of the learning outcomes by an individual in a learning pathway to a qualification. The system favours the documentation, validation and recognition of achieved learning outcomes acquired, in particular in the framework of transnational mobility, in both formal Vocational Education and Training (VET) and in non- formal context. It is centred on the individual and based on the learning outcomes approach, defined in terms of knowledge, skills and competences necessary for achieving a qualification. This

enable a more accurate design of training courses which answers to the training needs of employees. ECVET is based on concepts and process which are used in a systematic way to establish a user-friendly language for transparency, transfer and recognition of learning outcomes. Some of these concepts and processes are already embedded in many qualifications systems across Europe[2].

ECVET has a formal structure which includes the following:

Learning outcomes, which are statements of knowledge, skills, and competence that can be achieved in a variety of contexts.

Units of learning outcomes that are components of qualifications. Units can be assessed, validated and recognized.

ECVET points, which provide additional information about units and qualifications in a numerical form.

Credit that is given for assessed and documented learning of a learning outcome of a learner. Credit can be transferred to other contexts and accumulated to achieve a qualification on the basis of the qualification standards and regulations existing in the participating countries.

Mutual Trust and partnership among participating organisations. These are expressed in Memoranda of Understanding and Learning Agreements.

A Memorandum of Understanding (MoU) forms the framework for cooperation between the competent institutions. It aims to establish mutual trust between the partners involved. In this MoU partner organisations mutually accept their respective criteria and procedures for quality assurance, validation and recognition of knowledge, skill and

competence for the purpose of transferring Credit.

There is also a provision for Agreements (within an MoU or as an attachment) set up by sector based organisations (e. g. by Chambers, regional and national authorities). This should include a list of organisations such as VET providers, companies, etc., who are able to operate in the framework set up by the MoU.

In order to recognise Credit, the competent institution in charge needs to be confident that the required learning outcomes have been assessed in a reliable and valid manner. It also needs to trust that the learner's credit does concern the learning outcomes expected and these are at the appropriate level.

On the basis of the assessed outcomes, the credit can be validated and recognised by another competent institution. The transfer process includes three distinct stages:

1. The hosting institution assesses the learning outcomes achieved and awards credit to the learner. The learning outcomes achieved and corresponding ECVET points are recorded in a learner's personal transcript.
2. The sending institution then recognises learning outcomes that have been acquired; this recognition gives rise to the award of the units and their corresponding ECVET points, according to the rules of the home system.
3. Credit accumulation is a process through which learners can acquire qualifications progressively by successive assessment and validation of learning outcomes. Accumulation of credit is decided by the competent institution responsible for the award of the qualification. When the learner has accumulated the credit required and when all conditions for the award of the qualification are fulfilled, the learner is awarded the qualification[2].

3. RINA'S PROFESSIONAL DEVELOPMENT REQUIREMENTS

As a graduate, a marine designer is only at the beginning of their professional career. The achievement and maintenance of professional competence, especially where it cannot be acquired solely by formal study, necessitates lifelong professional development. Professional development is acquisition, maintenance, improvement and broadening of knowledge, understanding and skills, and the development of personal qualities necessary to carry out their professional duties throughout a member's working life. It is important to consider the difference between the role of a marine designer (industrial designer) and a naval architect. Whilst both are of equal professional standing, within the industry, and work together in team, the marine designer has a primary focus on aesthetics design underpinned by technical knowledge of ergonomics and engineering technology, which facilitates an informed design process. Whereas, the naval architect has a detailed technical knowledge and engineering analysis capability, can complete the detailed realisation of design concepts, proposed by a marine designer.

The process of professional development whilst being continuous during a career, it is often considered as two stages: Initial professional Development (as an Associate Member) prior to achieving Corporate membership of the Institution (as a Member), and Continuing Professional Development (as a Member or Fellow) thereafter.

EBDIG-WFSV like its predecessor project EBDIG (The European Boat Design Innovation Group) is a Leonardo Transfer of Innovation (TOI) project which aims to provide innovative professional development training and networking to commercial marine industry employees (Naval Architects, project

managers) by transferring embedded practices within automotive design, interior design and the leisure marine industry (Super yachts) which will enable the European commercial marine sector to understand and exploit growing design opportunities in the wind farm support vessel sector to produce more appealing working conditions for this new and growing sector to help recruit new staff and reduce the risk of human error.

This EU funded Leonardo project will create innovative learning materials for employees working within the marine industry and a networking framework for professionals. This will be achieved by transferring embedded practices within the automotive industry through courses in: Marine Design; Wind Farm Support Vessel design; WFSV mother-ship design; Human Factors Integration (HFI)). The courses will be delivered by an interactive web based called “Digital Innovation Studio”.

4. AIMS AND OBJECTIVES OF EBDIG-WFSV MARINE DESIGN IPD/CPD MODULES

The aims of the EBDIG-WFSV IPD/CPD modules are:

To enable a Marine Designer to achieve a sound understanding of the design principles of the types of vessels in which they are currently involved (IPD) or a new type of vessel that they have no experience of designing (CPD)

To develop academic abilities appropriate to an honours graduate in order to analyse marine design problems and identify innovative and practical solutions.

To develop a range of personal, professional and transferrable skills to assist the professional/graduate to gain/enhance employment opportunities

To promote in the professional/graduate the aptitude and professional development and further study

The curriculum of the courses is given in Appendix 1.

Given the equal level of professional engagement in the design process between naval architects and marine designers (industrial design) and in order to achieve these aims and RINA accreditation the objectives the EBDIG IPD/CPD training course learning outcomes are mapped against the RINA IPD development objectives for Naval Architects. The objectives of the EBDIG IPD/CPD awards are: (Appendix 2)

(a) To achieve an appropriate appreciation of marine design and marine technology skills

(b) to perform practical analysis of design workflow exercises in marine design

(c) to demonstrate communication skills to explain and demonstrate such workflow and related technology systems.

d) to investigate and analyse innovative technologies relating to the marine industry, specifically the implementation of telematics.

e) to appreciate the regulatory considerations of the design process in the marine industry

(f) to evaluate an individual and creative design project based on contemporary technology and needs within the marine industry.

(g) to exercise and enhance the range of personal/transferrable skills as part of the learning process within the course

The implementation of the IPD/CPD modules relies upon the industry professional to engage in self-directed learning and record access time to the e-learning material, in accordance with RINA IPD/CPD logbook recommendations.

Accreditation by an international body such as RINA overcomes the issue transnational mobility, due to its engagement with the global marine industry. However, the opportunity for EBDIG to support vertical and horizontal mobility between higher education and VET in the long term, will inform the curriculum development. The vessel specific modules will have their learning time calculated in ECVET credit units (1 unit defined as 25-30 hours of learning time). These IPD/CPD units would need to have a formal assessment implemented through the academic partners of EBDIG WFSV to meet the ECVETS requirements. The potential Master level qualification would need to be examined[3].

5. CONCLUSION

In this paper the ECVET framework has been described and RINA's requirements for accreditation are identified.

This paper reported on the work of Piri Reis University in Turkey, as a partner in the EBDIG-WFSV and the previous EU funded EBDIG project, in supporting the development of EBDIG-WFSV curriculum and has established the ground work for ensuring that it is compliant with the requirements of ECVET. It is also now feasible to continue developing the curriculum so that is in line with the requirements of the RINA's IPD/CPD now that these requirements are identified.

A cross-referencing technique developed as part of the EU's EURITECNET project tested in several EU funded project has been used to ensure all requirements are met and EBDIG-WFSV will be compliant with ECVET and ready for accreditation by RINA.

The paper included the outcome of the investigation into the ECVET framework to ensure that the EBDIG-WFSV course is developed in line with this system's requirements and at the same time the course

is on track to satisfy the requirements of the RINA' IPD and/or CPD.

With regard to the content of the course, given the equal level of intended professional engagement in the design process between naval architects and marine designers, the EBDIG IPD/CPD training course learning outcomes are mapped against RINA IPD development objectives for naval architects. In addition to the accreditation of EBDIG-WFSV IPD/CPD courses by an international chartered professional body such RINA, the opportunity for EBDIG-WFSV to support vertical and horizontal mobility of higher education and VET in the long run necessitates the implementation of ECVETs into this mapping process so that both RINA and ECVET requirements are met. It is also very important that a formal assessment of the EBDIG-WFSV course is implemented through the academic partners of EBDIG-WFSV and ensure that the assessment meets the ECVET requirements.

For a successful project outcome, it is very important that during the curriculum development process, the need to transform the curriculum as summarised in Appendix 1 below is addressed carefully and in some depth.

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7. AUTHERS BIOGRAPHY

Sezai IŞIK (MSE NA&ME) served in the Turkish Navy as Project Officer, Superintendent, Chief Engineer, Head of Ship Construction Department, and Turkish Navy Project Coordinator. After retirement, he joined the TÜDEV teaching team and currently he is a lecturer at Piri Reis University.

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Appendix 1: EBDIG-WFSV Curriculum

Module 1 - Maritime Human Factors

The aim of this module is to comprehend commercial marine vessel types, functions, limitations and solutions.

Intended Module Learning Outcomes

On completion of this module the student should be able to:

- Carry out a comparative analysis of characteristics of the following vessel platform types: displacement monohull; planing monohull; SWATH; catamaran; Surface Effect Ship; hydrofoil
- Identify the relationship between commercial vessel function and platform type appreciate functional vessel limitations and solutions of : accommodations; access; safety; life at sea
- Define the following symptomatic areas of concern relevant to the design and operation of marine vessels: Motion Sickness; Fatigue; Sleep loss; Injury; Human Error
- Appreciate the influence of following Human stressors: Mental workload; airborne noise; whole body vibration; motion; impact; lighting issues; temperature extremes; lack of ventilation
- Appreciate the significance of the following aspects of Human-Machine Interface: automation; controls; instrumentation; seating; General Arrangement (GA); crew size; HVAC; lighting; anthropometrics
- Understand the Ship as a Socio-Technical System and the potential of Human Systems Integration
- Identify the details of the following approaches to Human Factors research and design: simulator testing and field research; computer modelling; questionnaires.

Indicative Content

- Peer-to-peer learning using blogs and VOIP (10%)
- Self-directed online learning and other self-directed learning (90%)

Module 2 - Marine Design

The aims of this module are:

To introduce the skills, knowledge and understanding involved in Marine Design, as an Industrial Design approach

To demonstrate the relevance of, and application of the Marine Design (Industrial Design) processes for a range of commercial marine vessels.

To develop the ability to analyse and evaluate vessel design and enhance design decisions

Intended Module Learning Outcomes

On completion of this module the student should be able to:

- Define Marine Design as an Industrial Design approach, its purpose and processes
- Appreciate creative and lateral thinking methods
- Identify the key stages of a number of Industrial Design processes
- Define innovation as a process in the context of Marine Design
- have familiarity with the User-Centred Design process and emotional design
- Appreciate the relevance and potential of Design-Driven Innovation
- Appreciate basic aesthetic principles and the principles of interior design
- Appreciate the impact of design upon the environment

Indicative Content

- Peer-to-peer learning using blogs and VOIP (10%)
- Self-directed online learning and other self-directed learning (90%)

Module 3 - Marine Design of Wind Farm Support Vessels (WFSV)

The aims of this module is to demonstrate the relevance of, and application of Marine Design in the design process of a Wind Farm Support Vessel

Intended Module Learning Outcomes

On completion of this module the student should be able to:

- Identify the key stages of the User Centred Design process to determine mission requirements and platform design, including task analysis and the consideration of symptomatic areas of concern
- Appreciate the application and potential of Emotional Design methodologies
- Identify the key stages in Design-Driven Innovation scenario development
- Appreciate the application of exterior form development
- Appreciate the application of the principles of interior design and UCD analysis in the development of vessel General Arrangement (GA) and interior development
- Identify the key considerations of the domains of Human Systems Integration for Wind Farm Support Vessels

- Appreciate the application of Digital Human Modelling (DHM) to resolve both anthropometric and cognitive aspects of command and control
- Appreciate the implications and challenges of design regulations for Wind Farm Support Vessels

Indicative Content

- Peer-to-peer learning using blogs and VOIP (10%)
- Self-directed online learning and other self-directed learning (90%)

Module 4 - Marine Design of Wind Farm Support Vessel Mothership

The aims of this module is to demonstrate the relevance of, and application of Marine Design in the design process of a Wind Farm Support Vessel mothership.

Intended Module Learning Outcomes

On completion of this module the student should be able to:

- Identify the key stages of the User Centred Design process to determine mission requirements and platform design, including task analysis and the consideration of symptomatic areas of concern
- Appreciate the application and potential of Emotional Design methodologies
- Identify the key stages in Design-Driven Innovation scenario development
- Appreciate the application of exterior form development
- Appreciate the application of the principles of interior design and UCD analysis in the development of vessel General Arrangement (GA) and interior development
- Identify the key considerations of the domains of Human Systems Integration for Wind Farm Support Vessel motherships
- Appreciate the application of Digital Human Modelling (DHM) to resolve anthropometric aspects of key tasks
- Appreciate the implications and challenges of design regulations for Wind Farm Support Vessels

Indicative Content

- Peer-to-peer learning using blogs and VOIP (10%)
- Self-directed online learning and other self-directed learning (90%)

Appendix 2 : Mapping EBDIG IPD/CPD objectives to RINA Associates professional developement objectives,,

EBDIG IPD/CPD learning outcomes	RINA Associate Professional Development Objectives						
	(a) To achieve an appropriate appreciation of marine design and marine technology skills	(b) to perform practical analysis of design workflow excercises in marine design	(c) to demonstrate communication skills to explain and demonstrate such workflow and related technology systems	(d) to investigate and analyse innovative technologies relating to the marine industry, specifically the implementation of telematics	(e) to appreciate the regulatory considerations of thr design process in the marine industry	(f) to evaluate an individual and creative design project based on contemporary technology and needs within the marine industry	(g) to excercise and enhance the range of personal/transferable skills as part of the learning process within the course
1.1 Carry out a comparative analysis of characteristics of the following vessel platform types: displacement monohull; planing monohull; SWATH; catamaran; Surface Effect Ship; hydrofoil	1						
1.2 Identify the relationship		1					

between commercial vessel function and platform type							
1.3 appreciate functional vessel limitations and solutions of : accommodations; access; safety; life at sea	1						
1.4 Define the following symptomatic areas of concern relevant to the design and operation of marine vessels: Motion Sickness; Fatigue; Sleep loss; Injury; Human Error	1						
1.5 Appreciate the influence of following Human stressors: Mental workload; airborne noise; whole body		1					

vibration; motion; impact; lighting issues; temperature extremes; lack of ventilation							
1.6 Appreciate the significance of the following aspects of Human-Machine Interface: automation; controls; instrumentation; seating; General Arrangement (GA); crew size; HVAC; lighting; anthropometrics		1					
1.7 understand the Ship as a Socio- Technical System and the potential of Human Systems Integration		1					
1.8 Identify the details of the following		1					

approaches to Human Factors research and design: simulator testing and field research; computer modelling; questionnaires.							
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Mapping EBDIG IPD//CPD objectives to RINA Associates professional development objectives

EBDIG IPD/CPD learning outcomes	RINA Associate Professional Development Objectives						
	(a) To achieve an appropriate appreciation of marine design and marine technology skills	(b) to perform practical analysis of design workflow excercises in marine design	(c) to demonstrate communication skills to explain and demonstrate such workflow and related technology systems	(d) to investigate and analyse innovative technologies relating to the marine industry, specifically the implementation of telematics	(e) to appreciate the regulatory considerations of thr design process in the marine industry	(f) to evaluate an individual and creative design project based on contemporary technology and needs within the marine industry	(g) to excercise and enhance the range of personal/transferable skills as part of the learning process within the course
2.1 Define Marine Design as an Industrial Design approach, its purpose and processes	1						

2.2 Appreciate creative and lateral thinking methods		1	1				
2.3 Identify the key stages of a number of Industrial Design processes		1					
2.4 define innovation as a process in the context of Marine Design				1			
2.5 have familiarity with the User-Centred Design process and emotional design	1						
2.6 Appreciate the relevance and potential of Design-Driven Innovation				1			
2.7 appreciate basic aesthetic principles and the principles of interior design	1						
2.8 appreciate the impact of design upon the environment					1		

EBDIG IPD/CPD learning outcomes	RINA Associate Professional Development Objectives						
	(a) To achieve an appropriate appreciation of marine design and marine technology skills	(b) to perform practical analysis of design workflow exercises in marine design	(c) to demonstrate communication skills to explain and demonstrate such workflow and related technology systems	(d) to investigate and analyse innovative technologies relating to the marine industry, specifically the implementation of telematics	(e) to appreciate the regulatory considerations of the design process in the marine industry	(f) to evaluate an individual and creative design project based on contemporary technology and needs within the marine industry	(g) to exercise and enhance the range of personal/transferable skills as part of the learning process within the course
3.1 Identify the key stages of the User Centred Design process to determine mission requirements and platform design, including task analysis and the consideration of symptomatic areas of concern	1		1				
3.2 Appreciate the application and potential of	1		1				

Emotional Design methodologies							
3.3 Identify the key stages in Design-Driven Innovation scenario development							1
3.4 Appreciate the application of exterior form development							1
3.5 Appreciate the application of the principles of interior design and UCD analysis in the development of vessel General Arrangement (GA) and interior development							1
3.6 Identify the key considerations of the domains of Human Systems Integration for Wind Farm Support Vessels		1					
3.7 Appreciate the application of Digital Human						1	

Modelling (DHM) to resolve both anthropometric and cognitive aspects of command and control							
3.8 Appreciate the implications and challenges of design regulations for Wind Farm Support Vessels					1		

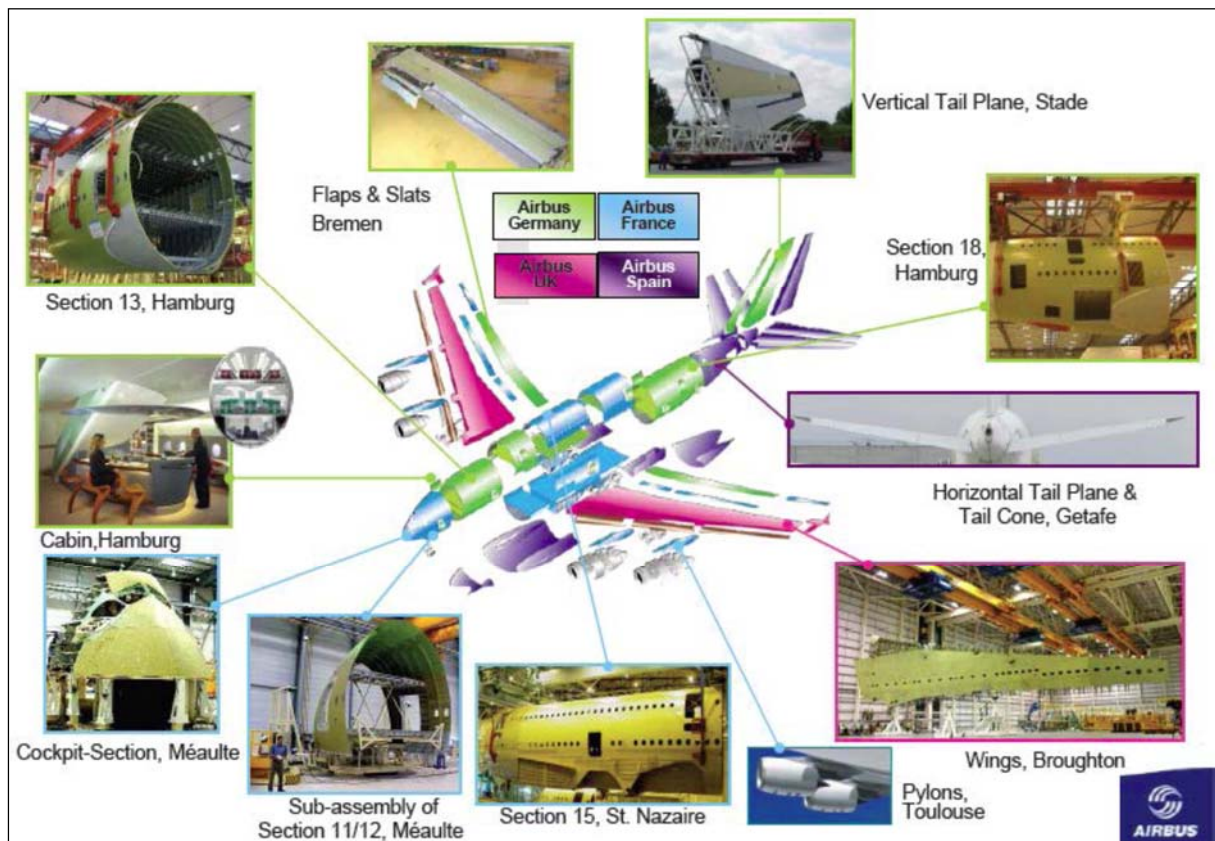
AEROVET: “Inner flexibility of training occupations instead of fragmented modularisation”

Andreas Saniter

Introduction

The AEROVET project focuses on the development and piloting of learning outcomes oriented units within the context of the transnational mobility of trainees. The first part of the paper presents the findings and further considerations with regard to the project goals. Projects with a limited term and involving a small number of partners always harbour the inherent risk that results will simply seep away following completion, i.e. no further structural developments will follow. In the case of AEROVET, we enjoy the rare fortune that the German social partners initiated a realignment of technical occupations within the aviation sector which coincided with the term of the project. This meant that we were able to develop the *contents* of the *units of learning outcomes* for transnational mobility in conjunction with those for the *competence fields* of the new structure of training occupations. The second part of the present paper will outline the realignment approach whilst also debating the framework agreement of the German social partners with regard to the further development of the ECVET Recommendation.

Figure 1: Division of labour at AIRBUS



Background

The AEROVET project is one of the 11 pilot projects selected within the scope of the 2008 EACEA-Leonardo da Vinci “European Call for Proposals to “Test and Develop the Credit System for Vocational Education and Training (ECVET)”. The main piloting framework of the project, the term of which is from March 2009 to February 2012, is the transnational mobility of trainees in the sector of technical aviation occupations. This sector is doubly suited for a consideration of the possibilities offered by European, units-based approaches. In the field of production, it is dominated in Europe by a single transnational company (Airbus). In its capacity as a joint venture between several EU countries, Airbus effectively offers a blueprint in the field of vocational education and training for the opportunities and threats of European cooperation and the principle of subsidiarity. Whereas there is convergence between contents and forms of professional work and therefore between training objectives, the structures of vocational training are subject to the respective national laws and traditions – and these vary greatly.

Within the field of maintenance of civil commercial aircraft, a unit-based system of modules already exists, albeit at certification level. The EASA (European Aviation Safety Agency) has established a multi-level modular system (EASA Part 66) for the approval of work on aircraft in civil use within the EU. Irrespective of the respective national educational systems, successful examination of the modules is a prerequisite for work on aircraft (licensed for commercial transportation of passengers).

Approach

The AEROVET project involves the four countries of France, Germany, the United Kingdom and Spain, the principal nations which participate in the Airbus Group. Initial analyses of the national curricula within this sector in the four countries were enough to show that these could not serve as a basis for joint learning units. Spain, for example, does not have any occupation in the area of production. Work is carried out by workers from associated occupations (e.g. vehicle mechatronics technicians) who have been trained for the specific construction sites. Within the field of maintenance, Spain only trains higher level technicians (EQF Level 5). In Germany, on the other hand, some skilled workers in the sector undergo a 3,5 year training programme to qualify in one or two occupations. The occupation of electronics technician for aviation systems forms part of the occupational group of electrical occupations, whereas the occupation of aircraft mechanic is a mono-occupation divided into three specialisms (maintenance engineering, production engineering and engine technology). Despite the different training approaches, it comes as very little surprise that the occupational work tasks, i.e. the competence fields of qualified workers are similar. Regardless of whether a landing flap is fitted at Airbus Bremen (DE) or Airbus Broughton (UK) and irrespective of whether the functionality of the onboard communication system is tested and repaired where necessary at a Spanish or French airport, work contents, processes, manuals and types of documentation are identical with each other or at least similar. Expert-skilled worker workshops have thus been able to draw up a total of 22 learning units which cover the essential work tasks carried out by both electronics technicians and mechanics within the sector and which, potentially, could be learned in a mobility phase. The main products of the AEROVET project are a description of the competences, elements of knowledge and skills which each of the 22 units contains 4 (cf. Figure 2), and a matrix comprising the mobility units which are an integral component of the unit and of the evaluation system which has been developed (cf. Figure 3).

Figure 2: Description of Learning Unit 12

12. Production of bunched circuits for aircraft systems
<p>The production of wires and bunched circuits (for energy, signals and data) for aircraft systems is one of the principal tasks of the profession. The basics of the production of bunched circuits are engineering drawings, technical regulations and dimensional sketches. Examples of activities are to crimp and to plug contacts and connectors and to seal connectors. The requirements concerning functionality and quality of wires or bunched circuits have to be considered and checked during production. Two examples of these checks are isolation and continuity tests. The rigorous rules (by VDE, Electrical engineers syndicate) concerning “health protection” and “safety at work” have to be considered during the checks, especially when working with high voltages.</p>

Figure 3: Mobility Pass (excerpt)

Unit 12: <i>Production of bunched circuits</i> Remarks:							
Mobility unit	Assessment				Place	Date	Signature
	observed	under instruction	under surveillance	independently			
Production of copper bunched circuits							
Production of fibre glass bunched circuits							
Reading & understanding work order							
Work resource-saving							

Providing & preparing the material							
Knowledge about material property							
Cutting cables, crimping							
Cooperating with the colleagues, asking for advice when needed							
Testing and preparing the circuit for transport to the next workplace							
Production of aluminium bunched circuits							
Production of bunched circuits							

With regard to the issue of recognition and examination, the project developed a 2-stage procedure due to the fact that many learning outcomes within the sector cannot be acquired within a single phase of learning (with or without mobility activities). Even mastery of a seemingly simple skill such as “riveting” requires repeated longer-term phases of practice in variable contexts. The learning outcomes from the individual mobility units are assessed by the relevant support staff from the host institution using a qualitative performance oriented scale. Certifiable evidence of successful learning does not take place until after acquisition of the respective mobility units relevant to the unit in question within the scope of the applicable national examination regulations.

Reactions of participants

The added value of the approach outlined is perceived to be the fact that both the trainee and the relevant teachers and trainers at the home or host institution can agree on the units which will form the object of the respective mobility phase *before* the mobility phase takes place. (Even if the 22 units are not evenly distributed in practice, freedom of choice is of crucial significance in the case of deployment in the company). *During* the mobility phase, clarity and simplicity is of particular advantage. Probably the most common reaction we received was “please do not burden us with any additional paper work”. *After* the mobility phase, the completed matrices show the mobility units on which the learner has worked (company requirements may mean that prior agreements may not be

adhered to in all cases) and how well he or she has performed, i.e. which prior knowledge or skills the teaching staff at the home institution can take as their starting point.

The EASA modules

It is not the intention of the present paper to give rise to the impression that AEROVET or the ECVET Recommendation was the reason behind the application for the realignment of the technical aviation occupations. This was, in fact, due to the requirements of another European authority, EASA (European Aviation Safety Agency). These requirements, which are formulated within the structure of modules, will be outlined below. They form the essential reason behind the application for realignment whilst also being the cause of a considerable degree of scepticism on the part of teaching staff in the sector with regard to modular based approaches. In contrast to EACEA, EASA is not subject to any prohibition on harmonisation. It enacts, modifies and monitors safety requirements in civil aviation within the EU and from and to airports in the EU. Its most high profile public act is probably the ban on taking more than 100 ml of a liquid on board a commercial aircraft. EASA Part 66, which forms the object of consideration here, affects only skilled maintenance and repair workers on licensed civil commercial aircraft, i.e. both military maintenance and production (and modification prior to licensing) are explicitly not included. In the interests of horizontal permeability, this restriction is certainly regrettable. Highly qualified skilled workers from these two branches need to undergo extensive retraining if they switch to a civil airport. Part 66 describes the conditions required to achieve a maintenance staff licence and is formulated in 17 modules.

The licences themselves are divided into three categories A, B and C depending on the complexity of the maintenance. The respective certification authorisation rises accordingly:

- Category A: Line Maintenance Certifying Mechanic
- Category B: 1 Maintenance Certifying Technician Mechanical
- Category B: 2 Maintenance Certifying Technician Mechanical
- Category C: Base Maintenance Certifying Engineer

The formulation of the modules was based purely on technical requirements. No didactic or educational system related considerations were accorded.

Structure of the licences

Within the context of initial vocational training, no further consideration will be accorded to Category C (Engineer). The mechanic categories A and B 1 have been subdivided by EASA according to the type and drive of the aircraft.

- Licence A1 or B1-1 for mechanics with the additional qualification aircraft with turbine engines
- Licence A 2 or B1-2 for mechanics with the additional qualification aircraft with piston engines
- Licence A3 or B1-3 for mechanics with the additional qualification helicopters with turbine engines
- Licence A4 or B1-4 for mechanics with the additional qualification helicopters with piston engines

Including the Licence B2 for electricians, this means that 9 licences need to be considered. The joint reference framework for these 9 licences is formed by a total of 17 modules of extremely differing scope (e.g. Module 8, Basic Aerodynamics, at only 14 hours Module 7, Maintenance Practices, at 257 hours in all CAT A licences).

The individual licences differ in terms of various learning times within the individual modules. For example, Module 15 “Gas Turbine Engines” is a component part of Licences A1, A3, B1.1 and B 1.3, but not of the other 5 licences.

The modules are divided into sub-modules and sub-sub modules. The excerpt (Figure 4) states the sub-modules 6.4 (Corrosion) and 6.5. (Fasteners) from Module 6 (Materials and Hardware) and the respective sub-sub modules for Licence CAT B1.

Figure 4: Excerpt from the EASA modules

Module	CAT B1.1							
	Complete course					462 hours		
	Level I CAT A	Level I CAT B1	Theory Require- ment (hrs)	Practice Require- ment	Number of question s MMC	Theory Require- ment (hrs)	Practice Require- ment	Number of question s MMC
6.4 Corrosion								
a) Chemical fundamentals	1	1	5	3	2			
b) Types of corrosion and their identification	2	3	10	10	6	3	2	3
6.5 Fasteners								
6.5.1 Screw threads	2	2	5	4	3			
6.5.2 Bolts, studs and screws	2	2	5	4	3			
6.5.3 Locking devices	2	2	5	4	3			
6.5.4 Aircraft rivets	1	2	12	20	4	2	1	2

The sub-sub modules may each be obtained at 3 levels. The respective level is reflected in the learning time per sub-module and the number of multiple choice questions (final column). The excerpt (Figure 4) documents, for example, that the sub-module 6.4.b) (Types of corrosion and their identification) needs to be learned at Level 2 for Licence CAT A and at Level 3 for Licence B1. The whole of the learning time for Level 3 is 20 hours, and the sub-sub module is examined via 6 questions. If the candidate is already in possession of a CAT A1 Licence and has two years of occupational experience, he or she thus needs to learn for an additional 5 hours only and only answer 3 questions. If the levels of the sub-sub modules correspond as in the case of 6.4.a. (Chemical fundamentals), a CAT A1 licensed candidate does not need to demonstrate any further hours of learning with regard to this module and is not required to answer any extra questions.

the EASA modules are not used as learning units for mobility. They have been institutionally legitimised, their assessment is stipulated (multiple choice and open questions to be answered in writing for 3 of the modules), relative weighting corresponds to duration of learning and would be creditable and they are binding across the EU, learning venue independent and identical. The AEROVET partners are, however, of the view that they do not fulfil 2 essential criteria of the ECVET approach.

Learning outcome orientation: the EASA modules are strongly input aligned – learning time and materials are the relevant criteria for admission to the multiple choice test.

Learning venue independence: in order to be able to issue licences, the training providers themselves need to undergo an extensive certification process (Part 147) operated by the respective national aviation authorities. Since the modules only apply to trainees who are undergoing civil maintenance training, training providers save the costs and effort of certification in the areas of production, private aviation and military aviation and are therefore not entitled to issue (partial) licences.

The reaction of the fragmented systems in the United Kingdom and Spain can be summarised very briefly. New training providers or courses are being established within existing institutions to offer training in accordance with the EASA modules. In Spain, for example, there are 10 vocational schools, eight of which provide training both for higher level technicians for maintenance in the field of onboard electronics (avionics) and higher level technicians for maintenance in the field of aircraft mechanics and two of which offer only the latter. On the other hand, there are 15 EASA recognised training centres which provide preparatory training for licensing. Because the qualifications achieved by the Spanish learners are the highest considered within the project due to the fact that they are aligned to EQF Level 5, there is an additional special rule which is not offered in the other systems. Those who have successfully completed vocational education and training within the Spanish qualifications system may apply for a licence, although they are required to pass a so-called ‘free examination’ as stipulated by the ‘General Directorate of Civil Aviation’ (Dirección General de Aviación Civil - DGAC). This means that the relevant EASA training and VET as stipulated by the Spanish Ministry of Education are functionally equivalent to B licensing according to EASA.

The occupationally organised training systems in France and Germany find it more difficult to react to these requirements. On the one hand, training providers offering specific training in the modules are also establishing themselves alongside the VET system in these two countries, whereas on the other hand there is a desire to integrate the certification into the regulatory instruments. The situation is very unsatisfactory at present. *“Current regulations do not permit people who have completed an outstanding course of vocational education and training of 42 weeks’ duration to be afterwards licensed to work on aircraft. This means that they are able to do a lot, but are not permitted to do anything, whereas it is perfectly possible that there are people elsewhere who may know a lot but cannot do anything and yet are permitted to do everything”* (quotation from a training coordinator). The current situation in France also involves a mixed form comprising recognition, additional learning and examination and is similar to that faced by German aircraft mechanics.

Part of the teaching programme for those completing the “Bac Pro” in the sector is validated by the GSAC as recognition for Licences A and B, the consequence being that two cultures for the evaluation of competences and knowledge exist in parallel: the traditional French examination-based evaluation and the EASA multiple choice procedure. An equivalent situation pertains in continuing training as a technician, where partial validation for Licences B1-1 and B2 is awarded to the teaching programme leading to the BTS .

In Germany too, even though the curriculum covers large parts of the B licences in terms of content, qualifications are not recognised as adequate. In the case of aircraft mechanics, the German Federal Aviation Office recognises a delta of 98 hours for CAT A (cf. Figure 5, until September 2010 the duration was only 55 hours). No learning outcomes are currently recognised in the case of electronics

technicians for aviation systems. The main cause for the removal of partial certification here is the structuring of the school-based parts of training in the form of learning fields. The Federal Aviation Office certifiers are of the view that the open employability skills oriented formulation of such learning fields cannot be transferred to the contents of the modules. A further problem is due to the dual principle and lies in the certification of the training providers. Because significant elements of the training take place within the companies, these companies would also need to be certified pursuant to Part 147. The German Federal Aviation Office does not believe it has the necessary capacity to do so. As in France, there is also the problem of the different examination forms: the very specific “company order” which may apply in training and the highly standardised multiple choice tests in the case of the modules.

Figure 5: German Federal Aviation Office “Delta Report”, status August 2010,

Zielgruppen u. Voraussetzungen	Erfahrung in Jahren	Module													Stunden ges.	Tage ges.	Lg.-Nr.
		1	2	3	5	6	7	8	9	10	11a	15	17				
Fluggerätmechaniker/-elektroniker mit IHK-Abschluß an einer Part-147 zugelassenen Schule (duale Ausbildung)	1			X	X	X	X	X	11	11	33	X	X	55	9	FJA1003-01	
Fluggerätmechaniker/-elektroniker mit IHK-Abschluss	1			22	6	44	44	11	11	11	112	37	7	305	50	FJA1002-01	
Förderliche Berufsausbildung außerhalb der Luftfahrt	1¹			22	6	58	85	16	17	22	264	72	7	569	90	FJA1001-01	
Teil-66 Forderung für „Certifying Mechanic Cat A1“	1²	20	45	22	6	126	183	16	17	22	264	72	7	800	123	FJA1000-01	
Differenzschulung von Cat. B2 zu Cat. A1	0,25					19	42				141	72	7	281	46	FJA1xB2-01	
X = Abschluß mit Prüfung in diesem Modul		Mathematics	Physics	Electrical Fundamentals	Digital Techniques	Materials & Components	Maintenance Practices	Basic Aerodynamics	Human Factors	Aviation Legislation	Aerodynamics, Structures & Systems, Turbine Aeropl.	Gas Turbine Engines	Propeller				
1 Die praktischen Erfahrungen können nach dem Grundlagenlehrgang erbracht werden																	
2 Für andere technische als förderliche Berufe mit IHK-Abschluß entfallen die Module 1 und 2																	

(Mathematics and Physics) are, for example, recognised without an additional examination, whereas Module 3 (Electrical fundamentals) is only recognised with an additional examination. And, as already outlined above, the training of electronics technicians for aviation systems is now no longer recognised at all. This intolerable situation provided a direct reason for initiating a realignment of the technical aviation occupations. The approach adopted by the AEROVET project is also being brought to bear in the formulation of the German Key Issues Paper. The targets set out by the German Aerospace Industries Association (BDLI) and the trade unions IG Metall and Ver.di included the following.

Orientation towards transnational employability skills fields (the AEROVET learning units)

Integration of the contents of (at least) the CAT A Licences

Demonstration of (at least) equivalence of final examinations and the EASA tests

Certification of the training course not the training centre

The key issues and the framework agreement

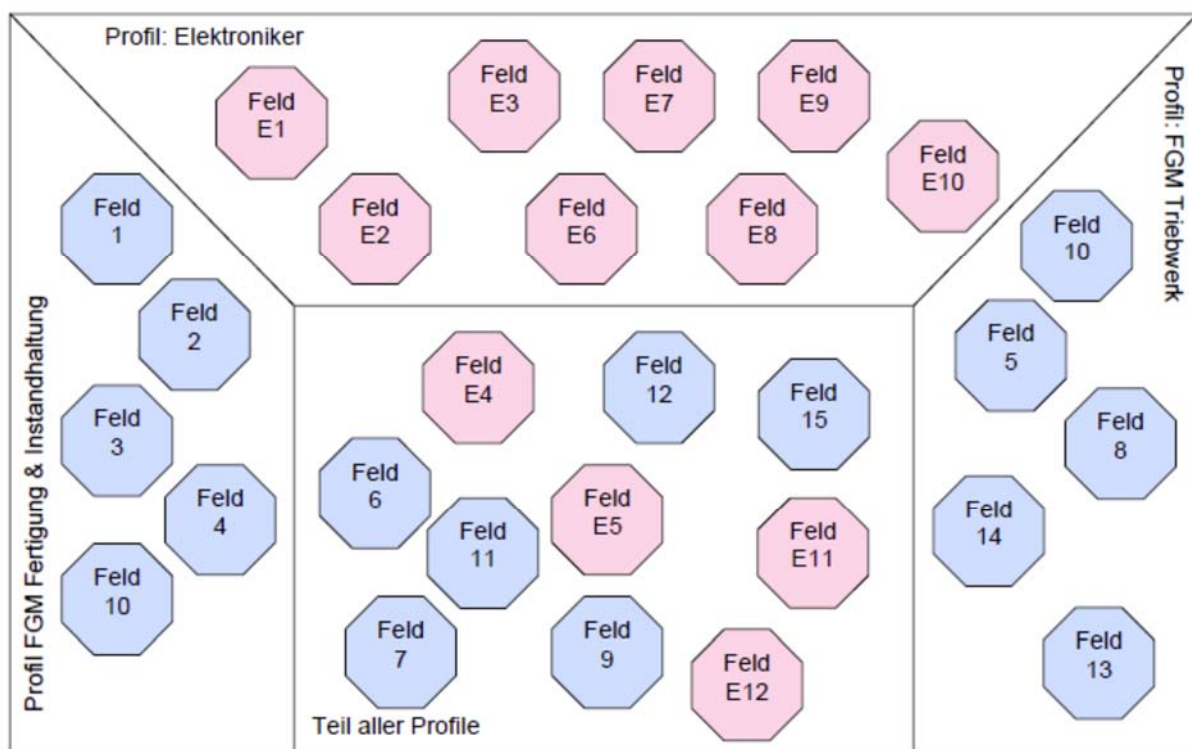
The lines in italics in this section are quotations from the “Framework Agreement for the realignment of technical aviation occupations between the BDLI, IG Metall and ver.di” (November 2010). The full

text of the agreement can be viewed on the project homepage at www.pilot-aero.net. Without being specifically written as such, this agreement can also be read as a response to the elements contained within the ECVET Recommendation. The following emphasis is, for example, placed regarding mobility.

“The descriptions of the competence fields and associated competences contained in the regulations should help create transparency of training contents and thus fulfil the prerequisite for completing parts of training abroad in other European countries and obtaining a credit transfer in respect of the relevant contents. The social partners support international exchange programmes for trainees and recommend that companies should take part in appropriate programmes” (p. 4, emphasis by the author). At the same time, the recommendation is made that regulatory instruments be aligned to the AEROVET competence fields as learning units (cf. Figure 6), remarks being appended under the same programmatic heading taken as the title of the present paper *“Inner flexibility of training occupations instead of fragmented modularisation”*.

“The signatories to the present framework agreement understand competence fields to be the useful collation of the contents of individual competences required to deal professionally with typical occupational work requirements within defined work processes (e.g. assembly and disassembly of devices and systems in/to the airframe). Although competence fields describe individual components of an occupational profile, they do not constitute a completed qualification within the meaning of modules. The vocational qualification arises from mastery of all associated competence fields. (...) The time structure of the general training plan takes place in accordance with the time frame method in line with the present occupation electronics technician for aviation systems” (p.3, emphasis by the author).

Figure 6: Desired structure of occupations in the group “Technical aviation occupations” – Learning Unit 12 listed above corresponds to field E1.



There is also a rejection of the examination of individual units proposed in the ECVET Recommendation. The aim is for the prevailing examination regulations largely to remain in place. *“The examination takes place in the form of an extended final examination. It is divided into two examination areas. Investigation needs to take place as to the extent to which Part 1 of the final examination can be appropriately structured for the identification of employability skills”* (p.3).

Conclusion

Especially in the case of the examinations, a considerable difference arises between the interests of the project partners and the Recommendation. Alongside the expected consequences in educational law, this part of the ECVET Recommendation represents a dramatic pedagogical paradigm shift.

Should overall employability skills be tested or a cluster of partial qualifications? This is an area where the experiences in the sector with the EASA modules are of relevance. For the schools affected, additional expenditure for documentation and examination is considerable.

According to the experiences from AEROVET and the preparatory realignment discussion, a differentiation needs to be made between learning units (as a structuring element) and qualification units (as examined elements of a qualification). Whereas the former seems to be useful in advancing the goals of transparency, mobility and permeability within a vocational education and training system, the latter has the potential to bring about a schism in the VET system.

The determination of the relative weighting of learning units within the meaning of ECVET credit points is not practical or useful at the abstraction level of a qualification. The relative weighting of the units as such is not a valid object of evaluation. The only thing which is capable of evaluation is the relative weighting within a specific programme, as the following examples from the United Kingdom and Germany show.

In the United Kingdom, the learning units are a component of many qualifications of a wide range of breaths and depths. This means that their weighting depends directly on the scope of the qualification.

The German vocational education and training system works with minimum standards rather than norm standards. The regulatory instruments provide for “suggested time allocations” or “time frameworks”. In this way, time frames of “2 to 4 months” are allocated to sections of training, i.e. approximately between 5% and 10% of the learning time. The business fields of companies providing training are the reason for this possible variation. The experts from Premium AEROTEC in Nordenham (main focus: manufacture of shells) accord a far lower weighting to the unit “Assembly and disassembly of devices and systems in/to the airframe” than do their colleagues at Airbus Hamburg (where main focuses include final assembly lines).

Beyond possible pragmatic solutions within specific mobility projects, the AEROVET Consortium expressly recommends revising the relevant statements in the ECVET specifications. The fear is that rigid or negligent assumption of the aspect of fixed points in possible national implementations will bring about a long-term reduction in the readiness of specialised companies to provide training in dual systems.

This paper has originally been published in:

Eberhardt, C. (Eds.)

ECVET AS A VEHICLE FOR BETTER MOBILITY? MOVING FROM RECOMMENDATION TO PRACTICE
(2012) BiBB discussion papers 132. p.21-29

Annex 7 - SeaTALK ECVET compliance.

INTRODUCTION

The SeaTALK project aims to develop Maritime English Training modules and an ECVET-based model for mutual recognition and transparency of learning outcomes and competencies in Maritime English in Europe. The aim was to create a learning outcomes-based course for 7 ranks of seafarers based on the IMO Model Course 3.17. The SeaTALK project establishes a bridge between the IMO Model Course, the European Qualification Framework and the Common European Framework for Languages thanks to the elaboration of Learning Outcomes linked to the expected performance of the different ranks. <http://www.seatalk.pro/>

ECVET Compliance

To implement ECVET it is necessary to describe qualifications using learning outcomes.

Learning outcomes are grouped to create units. Assessed learning outcomes constitute points.

Points are the basis for enabling transfer between learning contexts and for the accumulation of learning outcomes.

An ECVET compliant competence grid should develop a qualification/profile into the following elements:

A. Occupational Standard
B. Learning Outcomes
C. Performance Criteria
D. Required knowledge
E. Required skills
F. Assessmentmethod

Knowledge, Skills and Competences constitute the core elements of the reference level

A. Occupational Standard

Each competence grid starts from the definition of the Occupational Standards, i.e. what it is expected to be performed by that specific profile.

Competence: means the proven ability to use knowledge, skills and personal, social and methodological abilities in work or study situations and in professional and personal development. It is described in terms of responsibility and autonomy.

B. Learning Outcomes

Learning outcomes are used as a basis to identify whether what the learner has achieved in one learning setting or context is comparable to what she/he is expected to have achieved in another setting or context. This is possible because learning outcomes are not dependent on the learning process or the learning context in which they have been achieved.

Usually, qualifications frameworks indicate the overall level of learning outcomes in a qualification. For ECVET purposes the EQF is used as a reference for levels.

Learning outcomes can be used for various purposes such as to establish descriptors of qualifications frameworks, define qualifications, design curricula, assessment, etc. Learning outcomes are set out in various levels of detail depending on their purpose and context. Learning outcomes are developed in the process of designing qualifications. Learning outcomes may be acquired through a variety of learning pathways, modes of delivery (school-based, in-company, etc.), in different learning contexts (formal, non-formal and informal) or settings (i.e. country, education and training system).

It is essential in implementing ECVET to ensure that learning outcomes for qualifications and units are clearly identified and described to enable mutual understanding of qualifications and judgments on whether:

the qualifications concerned by the mobility partnership lead to the same or similar occupation;

learning outcomes as described in one setting or context are comparable with those in another setting or context.

Learning outcomes are statements of what a learner knows, understands and is able to do on completion of a learning process. Learning outcomes are defined in terms of knowledge, skills and competence.

C. Performance Criteria

Each Learning Outcome is linked to specific Performance Criteria. The latter are crucial to evaluate concretely what is assessed in terms of Maritime English at the end of a learning experience.

While the Learning Outcome defines what the learner is expected to achieve at the end of the training path, the Performance Criteria are designed to assess and evaluate the extent of such an achievement. Performance criteria and Learning Outcomes are two sides of the same coin, which constitute the core aspects of the learning experience.

In order to achieve quality assurance and meet expectations, there must be a coherent link between the learning experience on the one hand and corresponding measurement system on the other.

D. Required knowledge

Knowledge 'means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of study or work'. In the EQF, knowledge is described as theoretical and/or factual.

It is described as theoretical and/or factual knowledge.

E. Required skills

Skills: means the ability to apply knowledge and use know-how to complete tasks and solve problems. They are described as cognitive (logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments).

A distinction is made between cognitive and practical skills.

F. Assessment method

An assessment method should be identified for each learning outcome. This can be in the form of dissertation, project, oral, written text, discussions etc..

Mou and ILA

Once the course has this Competence Grid structure it will be possible to use the Learning Outcomes in the agreements, namely in the Memorandum of Understanding between two training institutions and the Individual Learning Agreement between the two training institutions and the learner. The contract models produced under CERTIPILOT and SeaTALK could be easily adapted for the MariePRO Maritime Environment Awareness course, provided that the Learning Outcomes are presented in a clear and structured manner.

SEATALK: Maritime English Language Competence Grid Example

The SeaTALK project focuses on the creation of a learning outcomes-based course for 7 ranks of seafarers based on the IMO Model Course 3.17.

A. The proposed Occupational Standards for Deck Rating Support.

The first step towards developing the ME standard was to identify the key competencies for the profession.

The Technical Competences identified specify that a Deck Rating (support level) shall:

Steer the ship and also comply with helm orders in the English language

Keep a proper look-out by sight and hearing

Contribute to monitoring and controlling a safe watch

Operate emergency equipment and apply emergency procedures

Note that these are technical competences and do not directly refer to the linguistic aspects. The latter are derived from the technical competence.

The example competence grid below addresses the first Occupational Standard, i.e. Steer the ship and also comply with helm orders in the English language.

A. Occupational Standard	1. Steer the ship and also comply with helm orders in the English language	
B. Language Learning Outcomes	1.A. The learner should demonstrate the ability to comprehend and respond to the orders given by the person in command related to steering of the ship.	1.B. The learner should demonstrate the ability to explain deficiencies and malfunctions related to steering of the ship.
C. Language Performance Criteria	1.A.1 Understand the given helm orders 1.A.2 Repeat the helm orders clearly, accurately and fluently	1.B.1 Report any wheel malfunction perceived 1.B.2 Use SMCP related to helm malfunctions

	<p>1.A.3 Respond to the given orders correctly and take appropriate action upon linguistic stimulus.</p> <p>1.A.4 Report the action taken</p> <p>1.A.5 Use SMCP related to helm orders</p>	
D. Required knowledge	<p>Knows:</p> <p>1.A.K1 Terminology and relevant grammar to understand the given helm orders</p> <p>1.A.K2 Terminology and relevant grammar to repeat the helm orders clearly, accurately and fluently</p> <p>1.A.K3 Terminology and relevant grammar to respond to the given orders correctly and take appropriate action upon linguistic stimulus.</p> <p>1.A.K4 Terminology and relevant grammar to report the action taken</p> <p>1.A.K5 Terminology and relevant grammar to use SMCP related to helm orders</p>	<p>Knows:</p> <p>1.B.K1 Terminology and relevant grammar to report any wheel malfunction perceived</p> <p>1.B.K2 Terminology and relevant grammar to use SMCP related to helm malfunctions</p>
E. Required skills	<p>Able to:</p> <p>1.A.S1 Use of appropriate terminology and relevant grammar to understand the given helm orders</p> <p>1.A.S2 Use of appropriate terminology and relevant grammar to repeat the helm orders clearly, accurately and fluently</p> <p>1.A.S3 Use of appropriate terminology and relevant grammar to respond to the given orders correctly and take appropriate action upon linguistic stimulus.</p> <p>1.A.S4 Use of appropriate terminology and relevant grammar to report the action taken</p>	<p>Able to:</p> <p>1.B.S1 Use of appropriate terminology and relevant grammar to report any wheel malfunction perceived</p> <p>1.B.S2 Use of appropriate terminology and relevant grammar to use SMCP related to helm malfunctions</p>

	1.A.S5 Use of appropriate terminology and relevant grammar to use SMCP related to helm orders	
F. Assessmentmethod	English language competence requirements at elementary level (CEFR A1-A2) – language skills and communicative functions	

Table: MET for Deck Rating Support

B. Setting the Learning Outcomes for one of the areas of Competence

In order to understand how the required ME Language skills and knowledge are linked to the Occupational Standards identified through the Survey in the Appendix of this manual, we will focus on the Occupational Standard 1, Steer the ship and also comply with helm orders in the English language.

A. Occupational Standard	1. Steer the ship and also comply with helm orders in the English language
--------------------------	--

Once the competences of Deck Rating Support were identified, the Language Learning Outcomes for each competence were derived.

The Language Learning Outcomes set for the first area of competence (OS) (Steer the ship and also comply with helm orders in the English language) were defined as follows:

The learner should:

1.A Demonstrate the ability to comprehend and respond to the orders given by the person in command related to steering of the ship.

1.B Demonstrate the ability to explain deficiencies and malfunctions related to steering of the ship.

A. Occupational Standard	1. Steer the ship and also comply with helm orders in the English language	
B. Language Learning Outcomes	1.A. The learner should demonstrate the ability to comprehend and respond to the orders given by the person in command related to steering of the ship.	1.B. The learner should demonstrate the ability to explain deficiencies and malfunctions related to steering of the ship.

C. Setting the Performance Criteria for each Learning Outcome for this Competence

The language performance criteria set for the first Language Learning Outcomes (Demonstrate the ability to comprehend and respond to the orders given by the person in command related to steering of the ship) were defined as follows:

1.A.1 Understand the given helm orders

1.A.2 Repeat the helm orders clearly, accurately and fluently

1.A.3 Respond to the given orders correctly

1.A.4 Report the action taken

1.A.5 Use SMCP related to helm orders

Note that the language performance criteria attempt to incorporate use of appropriate 'action' verbs which indicate the linguistic and communicative content of the criteria, namely 'comprehend', 'respond' and 'explain' in the examples given above.

A. Occupational Standard	1. Steer the ship and also comply with helm orders in the English language	
B. Language Learning Outcomes	1.A. The learner should demonstrate to comprehend and respond to the orders given by the person in command related to steering of the ship.	1.B. The learner should demonstrate to explain deficiencies and malfunctions related to steering of the ship.
C. Language Performance Criteria	1.A.1 Understand the given helm orders 1.A.2 Repeat the helm orders clearly, accurately and fluently 1.A.3 Respond to the given orders correctly 1.A.4 Report the action taken 1.A.5 Use SMCP related to helm orders	

The language performance criteria set for the second Language Learning Outcomes (Demonstrate the ability to explain deficiencies and malfunctions related to steering of the ship) were defined as follows:

1.B.1 Report any wheel malfunction perceived

1.B.2 Use SMCP related to helm malfunctions

In a similar manner, the verbs used in the above language performance criteria reflect the linguistic aspect of the criteria.

A. Occupational Standard	1. Steer the ship and also comply with helm orders in the English language
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B. Language Learning Outcomes	1.A. The learner should demonstrate to comprehend and respond to the orders given by the person in command related to steering of the ship.	1.B. The learner should demonstrate to explain deficiencies and malfunctions related to steering of the ship.
C. Language Performance Criteria		1.B.1 Report any wheel malfunction perceived 1.B.2 Use SMCP related to helm malfunctions

D. Knowledge and Skills for the area of competence

The language performance criteria provide the foundation to identify the related knowledge and skills.

In the light of this, given the first Language Performance Criteria (Report any wheel malfunction perceived), Deck ratings should know:

- The terminology and relevant grammar to understand the given helm orders
- The terminology and relevant grammar to repeat the helm orders clearly, accurately and fluently
- The terminology and relevant grammar to respond to the given orders correctly
- The terminology and relevant grammar to report the action taken
- The terminology and relevant grammar to use SMCP related to helm orders

Under the same Language Performance Criteria (Report any wheel malfunction perceived), the Deck ratings should also be able to:

- Use appropriate terminology and relevant grammar to understand the given helm orders
- Use appropriate terminology and relevant grammar to repeat the helm orders clearly, accurately and fluently
- Use appropriate terminology and relevant grammar to respond to the given orders correctly
- Use appropriate terminology and relevant grammar to report the action taken
- Use appropriate terminology and relevant grammar to use SMCP related to helm orders

A. Occupational Standard	1. Steer the ship and also comply with helm orders in the English language	
B. Language Learning Outcomes	1.A. The learner should demonstrate to comprehend and respond to the orders given by the person in command related to steering of the ship.	1.B. The learner should demonstrate to explain deficiencies and malfunctions related to steering of the ship.
C. Language Performance Criteria	1.A.1 Understand the given helm orders	

	<p>1.A.2 Repeat the helm orders clearly, accurately and fluently</p> <p>1.A.3 Respond to the given orders correctly</p> <p>1.A.4 Report the action taken</p> <p>1.A.5 Use SMCP related to helm orders</p>	
D. Required knowledge	<p>Knows:</p> <p>1.A.K1 Terminology and relevant grammar to understand the given helm orders</p> <p>1.A.K2 Terminology and relevant grammar to repeat the helm orders clearly, accurately and fluently</p> <p>1.A.K3 Terminology and relevant grammar to respond to the given orders correctly</p> <p>1.A.K4 Terminology and relevant grammar to report the action taken</p> <p>1.A.K5 Terminology and relevant grammar to use SMCP related to helm orders</p>	
D. Required skills	<p>Able to:</p> <p>1.A.S1 Use of appropriate terminology and relevant grammar to understand the given helm orders</p> <p>1.A.S2 Use of appropriate terminology and relevant grammar to repeat the helm orders clearly, accurately and fluently</p> <p>1.A.S3 Use of appropriate terminology and relevant grammar to respond to the given orders correctly</p> <p>1.A.S4 Use of appropriate terminology and relevant grammar to report the action taken</p> <p>1.A.S5 Use of appropriate terminology and relevant grammar to use SMCP related to helm orders</p>	

Memorandum of Understanding

1. Objectives of the Memorandum of Understanding

institutions signing this Memorandum of Understanding declare that

- They mutually accept and recognise their respective status; They mutually accept and recognise their respective quality assurance policies, including future adaptations and modifications;
- The Memorandum of Understanding is the legal basis for the comparability of the qualifications hereby identified within the European Qualification Framework
- The Memorandum of Understanding regulates the procedures for assessment, validation and recognition criteria for the purpose of credit transfer within the context of the applicable International, European and National legislation

In addition, it is hereby declared that the institutions signing this Memorandum of Understanding commit on the respect of the conditions for the operation of the partnership as set by the MoU and its reviews.

Are other objectives agreed on? Please tick as appropriate	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes – these are:
--	---

2. Organisations signing the Memorandum of Understanding

Organisation 1

Country	United Kingdom
Name of organisation	Maredu
Address	4 Highgrove, Westwood Heath, Coventry, CV4 8JJ, UK
Telephone/fax	+44 (0)1926 80 2000
E-mail	reza.ziarati@c4ff.co.uk
Website	www.maredu.co.uk
Contact person	Name: Reza Ziarati

	Position:Partner
Telephone/fax	+44 (0)1926 80 2000
E-mail	reza.ziarati@c4ff.co.uk
Organisation 2	
Country	Italy
Name of organisation	Istituto Tecnico Trasporti e Logistica Nautico San Giorgio
Address	Edificio Calata Darsena, Genova, 16126, Italy
Telephone/fax	+390102518821
E-mail	riccardoantola@tiscali.it
Website	www.itnautico.it
Contact person	Name: RiccardoAntola
	Position:Teacher
Telephone/fax	+390102518821
E-mail	riccardoantola@tiscali.it

3. The qualification(s) covered by this Memorandum of Understanding

Qualification 1

Country	Italy
Title of qualification	Marine Environment Awareness: Refreshment Course
EQF level (if appropriate)	4 (an EQF level of between 4-6 can be awarded but this is Dependant on institutions involved on their specific requirements)

	Competence	Knowledge	Skills	Learning Outcomes	Assessment
Unit(s) of learning outcomes for the mobility phases (refer to enclosure in the annex, if applicable)	<i>Apply the BWM Convention technical content</i>	Ship's ballast plan Ballast system and respective controlling equipment	Initiate correct actions in order to prevent any pollution into the sea Operate with the ballast and over board discharge systems Maintain and correctly record relevant entries in the ships log book for solid waste and ballast operations	Handle the ballast water system Monitor the adequateness of the relevant documents and log book	Written/Oral/ Simulation
	<i>Apply the MARPOL Convention technical content</i>	Principles and safe methods of arranging for the proper loading, stowage and carriage of oil, gas and chemical cargoes Garbage handling on board Vessel's plan for solid waste handling Sewage handling and discharge Controlling machinery providing emission content information	Initiate correct actions in order to prevent any pollution into the sea Operate relevant discharge controlling apparatus Maintain and correctly record relevant entries in the ships log book for solid waste and ballast operations	Handle oil, chemical products, harmful substances in packaged form, sewage and garbage Properly manage discharges at sea Monitor the adequateness of the relevant documents and log book	Written/Oral/ Simulation
	<i>Deal effectively with a pollution incident</i>	Emergency procedures	Correctly communicate in case of actual marine pollution	Execute the right procedures in the case of an emergency	Simulation/Oral

Enclosures in annex - please tick as appropriate	<input type="checkbox"/> Europass Certificate <input type="checkbox"/> Other: please specify here
Qualification 2	
Country	Italy
Title of qualification	Marine Environment Awareness: Extended Course
EQF level (if appropriate)	4 (an EQF level of between 4-6 can be awarded but this is Dependant on institutions involved on their specific requirements)

	Competence	Knowledge	Skills	Learning Outcomes	Assessment
Unit(s) of learning outcomes for the mobility phases (refer to enclosure in the annex, if applicable)	<i>Applies different types of pollution and intervention techniques</i>	<p>Basis of the applicable marine ecology</p> <p>Biofouling procedures for produced</p> <p>Ships and company procedures for environment preserving</p>	<p>Implement correctly and on time all techniques and means for marine environment protections</p> <p>Motivate all crew to safeguard the sea environment</p>	<p>Able to apply intervention techniques in different types of pollution at sea scenarios</p> <p>Properly handle a pollution incident</p>	<p>Written/Oral</p> <p>Ongoing assessment is also to be performed</p>
	<i>Identifies the main sources of law in the marine environment field</i>	<p>Basic international requirements and local rules and marine regulatory framework</p> <p>IMO products implementation status and feedback</p>		Identifies different sources of law about specific type of pollution at sea	Written/Oral
	<i>Apply the BWM Convention technical content</i>	<p>Ship's ballast plan</p> <p>Ballast system and respective controlling equipment</p>	<p>Initiate correct actions in order to prevent any pollution into the sea</p> <p>Operate with the ballast and over board discharge systems</p> <p>Maintain and correctly record relevant entries in the ships log book for solid waste and ballast operations</p>	<p>Handle the ballast water system</p> <p>Monitor the adequateness of the relevant documents and log book</p>	Written/Oral/ Simulation
	<i>Apply the MARPOL Convention technical content</i>	Principles and safe methods of arranging for the proper loading, stowage and carriage	Initiate correct actions in order to prevent any pollution into the sea	Handle oil, chemical products, harmful substances in	Written/Oral/ Simulation

		of oil, gas and chemical cargoes Garbage handling on board Vessel's plan for solid waste handling Sewage handling and discharge Controlling machinery providing emission content information	Operate relevant discharge controlling apparatus Maintain and correctly record relevant entries in the ships log book for solid waste and ballast operations	packaged form, sewage and garbage Properly manage discharges at sea Monitor the adequateness of the relevant documents and log book	
	<i>Deal effectively with a pollution incident</i>	Emergency procedures	Correctly communicate in case of actual marine pollution	Execute the right procedures in the case of an emergency	Simulation/Oral
Enclosures in annex - please tick as appropriate	<input type="checkbox"/> Europass Certificate <input type="checkbox"/> Other: please specify here				

4. Assessment, documentation, validation and recognition

By signing this Memorandum of Understanding we confirm that we have discussed the procedures for assessment, documentation, validation and recognition and agree on how it is done.

5. Validity of this Memorandum of Understanding

This Memorandum of Understanding is valid until: 31/12/2017

6. Evaluation and review process

The work of the partnership will be evaluated and reviewed by: 31/12/2017, University of Turku (Ms Sari Nyroos)

7. Signatures

Organisation / country	Organisation / country
Name, role	Name, role
Place, date	Place, date

8. Additional information

See below the suggested outline for the qualification agreed between the organisations. All Knowledge understanding and proficiency outcomes listed below are to be included in the Maritime Environment awareness Extended Qualification, **but for the Refreshment Qualification only the Knowledge understanding and proficiency outcomes in purple are included:**

<i>Knowledge understanding and proficiency</i>	<i>Lecture hours</i>	<i>Tasks hours</i>
<p>1. Describe the types of pollution and intervention techniques</p> <ul style="list-style-type: none"> 1.1. General causes and effects of marine pollution <ul style="list-style-type: none"> 1.1.1. Difference between organic and non-organic substances 1.1.2. Eutrophication 1.1.3. Effect on plankton 1.2. Systems to counteract an oil pollution incident <ul style="list-style-type: none"> 1.1.4. Use of booms 1.1.5. Skimmers 1.1.6. Sorbers 1.1.7. Disperdants 1.1.8. Procedures for biological action and in situ burning 1.1.9. Case studies 	<p>1,0</p> <p>3,0</p> <p>4,0</p>	
<p>2. Recognize the main sources of law in the marine environment field</p> <ul style="list-style-type: none"> 2.1. Brief history of the marine environment legislation 2.2. General legislation about maritime pollution <ul style="list-style-type: none"> 2.2.1. UNCLOS (Montego Bay) 2.2.2. Local legislation (where applicable) <p>NB: countries that must comply with the EU legislation, it has to be analyzed (ex. directive 2009/123/CE)</p> 2.3. Brief analysis of the main IMO instruments about environment protection and pollution prevention: <ul style="list-style-type: none"> 2.3.1. PSSAs concept 2.3.2. Anti-fouling (<i>AFS Convention</i> and <i>Biofouling Guidelines</i>) 2.3.3. Ship recycling (<i>Hong Kong Convention</i>) 2.3.4. <i>BWM Convention</i> 2.3.5. <i>MARPOL Convention</i> (history from OILPOL until today) 2.3.6. MEPC resolutions systems 2.3.7. Polar code 	<p>0,25</p> <p>1,0</p> <p>1,75</p>	

Task 1

Debriefing of Task

		1,5 0,5 2,0
<p>3. Apply the BWM Convention technical content</p> <p>3.1. Necessity of the ballast on board and associated risks for the spreading of <i>Aquatic Invasive Species</i></p> <p>3.2. Application of the Convention</p> <p>3.3. Ballast water management Documentation</p> <p>3.3.1. <i>Ballast Water Record Book</i></p> <p>3.3.2. <i>International Ballast Water Management Certificate</i></p> <p>3.4. Ballast water technical management</p> <p>3.4.1. Ballast water exchange</p> <p>3.4.2. <i>Ballast water management system – BWMS</i></p> <p>3.4.3. Special provisions in polar waters</p> <p>3.5. Biologic pollution cases</p> <p>3.5.1. <i>Zebra Mussel</i></p> <p>3.5.2. <i>Golden mussel</i></p> <p>3.5.3. <i>North American Comb jelly</i></p> <p>3.5.4. <i>Cladoceran Water Flea</i></p> <p>3.5.5. <i>Mitten crab</i></p> <p>3.5.6. <i>Round Goby</i></p> <p>3.5.7. <i>North Pacific Seastar</i></p> <p>3.5.8. <i>Asian kelp</i></p> <p>3.5.9. <i>European Green Crab</i></p> <p>3.6. Technologies for the ballast water treatment</p> <p>3.6.1. Filtering</p> <p>3.6.2. Disinfection by UV, ozone, oxidation, chlorination, etc.</p> <p>3.6.3. Analysis of the main products on the market</p> <p>Relevant IMO products:</p> <p>✓ <i>Resolution A.868(20)</i></p> <p>✓ <i>Resolution MEPC.124(53)</i></p> <p>✓ <i>Resolution MEPC.174(58)</i></p> <p>✓ <i>Resolution MEPC.127(53)</i></p> <p>✓ <i>Resolution MEPC.149(55)</i></p> <p>✓ <i>Resolution MEPC.150(55)</i></p> <p><i>Task 1, Task 2, Task 4</i></p> <p><i>Debriefing of Tasks</i></p>	<p>0,5</p> <p>0,25</p> <p>0,5</p> <p>1,0</p> <p>0,5</p> <p>1,25</p>	

<p>4.7.5. Special provisions in polar waters</p> <p>4.8. Prevention of pollution by garbage from ships (Annex V)</p> <p>4.8.1. Definition of garbage</p> <p>4.8.2. Special areas</p> <p>4.8.3. Discharge of garbage</p> <p>4.8.4. Garbage management plan</p> <p>4.8.5. Filling the garbage record book</p> <p>4.8.6. Special provisions in polar waters</p> <p>4.9. Prevention of Air Pollution from Ships (Annex VI)</p> <p>4.9.1. Survey and certificates</p> <p>4.9.2. Special areas</p> <p>4.9.3. Ozone-depleting substances (relation with Montreal P.)</p> <p>4.9.4. Nitrogen oxides NOx</p> <p>4.9.5. Sulphur oxides SOx and particulate matter</p> <p>4.9.6. Volatile organic compounds – VOC</p> <p>4.9.7. Shipboard incineration</p> <p>4.9.8. Reception facilities</p> <p>4.9.9. Bunker delivery note</p> <p>4.9.10. Greenhouse gas – GHG (relation with Kyoto P.)</p> <p>4.9.11. Energy efficiency for ships and related technology</p> <p>4.9.12. Noise reduction from ships</p> <p>Relevant IMO products:</p> <ul style="list-style-type: none"> ✓ Resolution A.446(XI), A.497(XII), A.897(21) ✓ Resolution A.496(XII) ✓ Resolution MEPC.193(61) ✓ Resolution MEPC.201(62) ✓ Resolution MEPC.202(62) ✓ Resolution MEPC.203(62) ✓ Resolution MEPC.245(66) ✓ Resolution MEPC.251(66) <p>Task 1, Task 2, Task 3, Task 4, Task 5</p> <p>Debriefing of Tasks</p>	<p>2,0</p> <p>2,0</p>	<p>7,0</p> <p>1,0</p>
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	8,0	8,0
5. Deal with a pollution incident 5.1. Manage the emergency 5.2. Contact competent authorities 5.3. Dealing with media 5.4. Case studies Task 6 Debriefing of Tasks	1,0 0,5 1,0 1,5 4,0	 2,0 1,0 3,0
Final written test TOTAL	 22,0	1,0 18,0

9. Annexes

Learning Agreement

10. Information about the participants

Contact details of the home organisation

Name of organisation	Istituto Tecnico Trasporti e Logistica Nautico San Giorgio
Address	Edificio Calata Darsena, Genova, 16126, Italy
Telephone/fax	+390102518821
E-mail	riccardoantola@tiscali.it
Website	www.itnautico.it
Contact person	Riccardo Antola
Telephone/fax	+390102518821
E-mail	riccardoantola@tiscali.it

Contact details of the host organisation

Name of organisation	Maredu
Address	4 Highgrove, Westwood Heath, Coventry, CV4 8JJ, UK
Telephone/fax	+44 (0)1926 80 2000
E-mail	reza.ziarati@c4ff.co.uk
Website	www.maredu.co.uk
Contact person	Reza Ziarati
Tutor/mentor	Reza Ziarati
Telephone/fax	+44 (0)1926 80 2000
E-mail	reza.ziarati@c4ff.co.uk

Contact details of the learner

Name	
Address	
Telephone/fax	
E-mail	
Date of birth	(dd/mm/yyyy)
Please tick	<input type="checkbox"/> Male <input type="checkbox"/> Female

Contact details of parents or legal guardian of the learner, if applicable

Name	
Address	
Telephone	
E-mail	

11. Duration of the learning period abroad

Start date of the training abroad	03/10/2016
End date of the training abroad	04/10/2016
Length of time abroad	2 days

12. The qualification being taken by the learner - including information on the learner's progress (knowledge, skills and competence already acquired)

Title of the qualification being taken by the learner (please also provide the title in the language of the partnership, if appropriate)	Marine Environment Awareness: Refreshment Course
EQF level (if appropriate)	4 (an EQF level of between 4-6 can be awarded but this is Dependant on institutions involved on their specific requirements)

Information on the learner's progress in relation to the learning pathway (Information to indicate acquired knowledge, skills, competence could be included in an annex)

Competence	Knowledge	Skills	Learning Outcomes	Assessment
<i>Apply the BWM Convention technical content</i>	<p>Ship's ballast plan</p> <p>Ballast system and respective controlling equipment</p>	<p>Initiate correct actions in order to prevent any pollution into the sea</p> <p>Operate with the ballast and over board discharge systems</p> <p>Maintain and correctly record relevant entries in the ships log book for solid waste and ballast operations</p>	<p>Handle the ballast water system</p> <p>Monitor the adequateness of the relevant documents and log book</p>	<p>Written/Oral/ Simulation</p>
<i>Apply the MARPOL Convention technical content</i>	<p>Principles and safe methods of arranging for the proper loading, stowage and carriage of oil, gas and chemical cargoes</p> <p>Garbage handling on board</p> <p>Vessel's plan for solid waste handling</p> <p>Sewage handling</p>	<p>Initiate correct actions in order to prevent any pollution into the sea</p> <p>Operate relevant discharge controlling apparatus</p> <p>Maintain and correctly record relevant entries in the ships log book for solid waste and ballast operations</p>	<p>Handle oil, chemical products, harmful substances in packaged form, sewage and garbage</p> <p>Properly manage discharges at sea</p> <p>Monitor the adequateness of the relevant documents and log book</p>	<p>Written/Oral/ Simulation</p>

		and discharge Controlling machinery providing emission content information			
	<i>Deal effectively with a pollution incident</i>	Emergency procedures	Correctly communicate in case of actual marine pollution	Execute the right procedures in the case of an emergency	Simulation/Oral

Enclosures in annex - please tick as appropriate

- ☐ Europass Certificate
- ☐ Europass CV
- ☐ Europass Mobility
- ☐ Europass Language Passport
- ☐ European Skills Passport
- ☐ Other: please specify

13. Description of the learning outcomes to be achieved during mobility

Title of unit(s)/groups of learning outcomes/parts of units to be acquired	<i>Apply the BWM Convention technical content</i> <i>Apply the MARPOL Convention technical content</i> <i>Deal effectively with a pollution incident</i>
Number of ECVET points to be acquired while abroad	3

Learning outcomes to be achieved	<p>Apply the BWM Convention technical content Handle the ballast water system Monitor the adequateness of the relevant documents and log book</p> <p>Apply the MARPOL Convention technical content Handle oil, chemical products, harmful substances in packaged form, sewage and garbage Properly manage discharges at sea Monitor the adequateness of the relevant documents and log book</p> <p>Deal effectively with a pollution incident Execute the right procedures in the case of an emergency</p>
Description of the learning activities (e.g. information on location(s) of learning, tasks to be completed and/or courses to be attended)	<p>All learning and assessment activities to take place in a structured face-to-face training course lasting approximately 2 days at the host organisations office/teaching site in the UK.</p> <p>Active learning approaches are to be encouraged with group work, investigative research, case studies and role plays to be used for learners to research and apply theory.</p> <p>Assessment tasks to be completed are:</p> <ol style="list-style-type: none"> 1. Theoretical evaluation: final written/oral test (pass/fail) – weight 40% 2. Competence oriented evaluation: results from observations during role play or presentation activities, - weight 60%

14. Assessment and documentation

Person(s) responsible for assessing the learner's performance	Name: Reza Ziarati
	Organisation, role: Maredu, Professor and Partner
Assessment of learning outcomes	Date of assessment: 04/10/2016
	Method: <ol style="list-style-type: none"> 1. Theoretical evaluation: final written/oral test (pass/fail) – weight 40% 2. Competence oriented evaluation: results from observations during role play or presentation activities, - weight 60%

How and when will the assessment be recorded?	<p>Theoretical evaluation will take place under exam conditions either as an interview or as a written exam in the offices of Maredu in the UK on the afternoon of the 4th October 2016 - the last day of the training.</p> <p>The competence based evaluation is an ongoing evaluation and will be implemented throughout the training course based on the learners involvement, responses and demonstration of competence in the group tasks, role plays, presentation tied to each learning outcome. A final cumulative grade will be reached on the 4th October 2016.</p> <p>The two assessment scores will be combined on the 4th October 2016 and a final assessment score given.</p>
Please include	<p><input type="checkbox"/> Detailed information about the assessment procedure (e.g. methods, criteria, assessment grid)</p> <p><input type="checkbox"/> Template for documenting the acquired learning outcomes (such as the learner's transcript of record or Europass Mobility)</p> <p><input type="checkbox"/> Other: Please specify</p>

15. Validation and recognition

Person (s) responsible for validating the learning outcomes achieved abroad	Name: Riccardo Antola
	Organisation, role: Istituto Tecnico Trasporti e Logistica Nautico San Giorgio, Teacher
How will the validation process be carried out?	Dependant on institutions involved
Recording of validated achievements	Date: 0510/2016
	Method: Dependant on institutions involved
Person(s) responsible for recognising the learning outcomes achieved abroad	Name: Riccardo Antola
	Organisation, role: Istituto Tecnico Trasporti e Logistica Nautico San Giorgio, Teacher
How will the recognition be conducted?	Dependant on institutions involved

16. Signatures

Home organisation/country	Host organisation/country	Learner

Name, role	Name, role	Name
Place, date	Place, date	Place, date

17. Additional information

18. Annexes

Learning Agreement

19. Information about the participants

Contact details of the home organisation

Name of organisation	Istituto Tecnico Trasporti e Logistica Nautico San Giorgio
Address	Edificio Calata Darsena, Genova, 16126, Italy
Telephone/fax	+390102518821
E-mail	riccardoantola@tiscali.it
Website	www.itnautico.it
Contact person	Riccardo Antola
Telephone/fax	+390102518821
E-mail	riccardoantola@tiscali.it

Contact details of the host organisation

Name of organisation	Maredu
Address	4 Highgrove, Westwood Heath, Coventry, CV4 8JJ, UK
Telephone/fax	+44 (0)1926 80 2000
E-mail	reza.ziarati@c4ff.co.uk
Website	www.maredu.co.uk
Contact person	Reza Ziarati
Tutor/mentor	Reza Ziarati
Telephone/fax	+44 (0)1926 80 2000
E-mail	reza.ziarati@c4ff.co.uk

Contact details of the learner

Name	
Address	
Telephone/fax	
E-mail	
Date of birth	(dd/mm/yyyy)
Please tick	<input type="checkbox"/> Male <input type="checkbox"/> Female

Contact details of parents or legal guardian of the learner, if applicable

Name	
Address	
Telephone	
E-mail	

20. Duration of the learning period abroad

Start date of the training abroad	04/11/2016
End date of the training abroad	08/11/2016
Length of time abroad	5days

21. The qualification being taken by the learner - including information on the learner's progress (knowledge, skills and competence already acquired)

<p>Title of the qualification being taken by the learner (please also provide the title in the language of the partnership, if appropriate)</p>	<p>Marine Environment Awareness: Extended Course</p>
<p>EQF level (if appropriate)</p>	<p>4 4 (an EQF level of between 4-6 can be awarded but this is Dependant on institutions involved on their specific requirements)</p>

Information on the learner's progress in relation to the learning pathway (Information to indicate acquired knowledge, skills, competence could be included in an annex)	Competence	Knowledge	Skills	Learning Outcomes	Assessment
	<i>Applies different types of pollution and intervention techniques</i>	<p>Basis of the applicable marine ecology</p> <p>Biofouling procedures for produced</p> <p>Ships and company procedures for environment preserving</p>	<p>Implement correctly and on time all techniques and means for marine environment protections</p> <p>Motivate all crew to safeguard the sea environment</p>	<p>Able to apply intervention techniques in different types of pollution at sea scenarios</p> <p>Properly handle a pollution incident</p>	<p>Written/Oral</p> <p>Ongoing assessment is also to be performed</p>
	<i>Identifies the main sources of law in the marine environment field</i>	<p>Basic international requirements and local rules and marine regulatory framework</p> <p>IMO products implementation status and feedback</p>		<p>Identifies different sources of law about specific type of pollution at sea</p>	<p>Written/Oral</p>
	<i>Apply the BWM Convention technical content</i>	<p>Ship's ballast plan</p> <p>Ballast system and respective controlling equipment</p>	<p>Initiate correct actions in order to prevent any pollution into the sea</p> <p>Operate with the ballast and over board discharge systems</p> <p>Maintain and correctly record relevant entries in the ships log book for solid waste and ballast operations</p>	<p>Handle the ballast water system</p> <p>Monitor the adequateness of the relevant documents and log book</p>	<p>Written/Oral/ Simulation</p>
	<i>Apply the MARPOL Convention technical content</i>	<p>Principles and safe methods of arranging for the proper loading, stowage and carriage of oil, gas and chemical cargoes</p> <p>Garbage handling on board</p> <p>Vessel's plan for solid waste handling</p> <p>Sewage handling and discharge</p>	<p>Initiate correct actions in order to prevent any pollution into the sea</p> <p>Operate relevant discharge controlling apparatus</p> <p>Maintain and correctly record relevant entries in the ships log book</p>	<p>Handle oil, chemical products, harmful substances in packaged form, sewage and garbage</p> <p>Properly manage discharges at sea</p> <p>Monitor the adequateness of the relevant</p>	<p>Written/Oral/ Simulation</p>

		Controlling machinery providing emission content information	for solid waste and ballast operations	documents and log book	
	<i>Deal effectively with a pollution incident</i>	Emergency procedures	Correctly communicate in case of actual marine pollution	Execute the right procedures in the case of an emergency	Simulation/Oral

Enclosures
in annex -
please tick
as
appropriate

- ☐ Europass Certificate
- ☐ Europass CV
- ☐ Europass Mobility
- ☐ Europass Language Passport
- ☐ European Skills Passport
- ☐ Other: please specify

22. Description of the learning outcomes to be achieved during mobility

Title of unit(s)/groups of learning outcomes/parts of units to be acquired	<i>Applies different types of pollution and intervention techniques</i> <i>Identifies the main sources of law in the marine environment field</i> <i>Apply the BWM Convention technical content</i> <i>Apply the MARPOL Convention technical content</i> <i>Deal effectively with a pollution incident</i>
Number of ECVET points to be acquired while abroad	3

<p>Learning outcomes to be achieved</p>	<p><i>Applies different types of pollution and intervention techniques</i> Able to apply intervention techniques in different types of pollution at sea scenarios Properly handle a pollution incident</p> <p><i>Identifies the main sources of law in the marine environment field</i> Identifies different sources of law about specific type of pollution at sea</p> <p><i>Apply the BWM Convention technical content</i> Handle the ballast water system Monitor the adequateness of the relevant documents and log book</p> <p><i>Apply the MARPOL Convention technical content</i> Handle oil, chemical products, harmful substances in packaged form, sewage and garbage Properly manage discharges at sea Monitor the adequateness of the relevant documents and log book</p> <p><i>Deal effectively with a pollution incident</i> Execute the right procedures in the case of an emergency</p>
<p>Description of the learning activities (e.g. information on location(s) of learning, tasks to be completed and/or courses to be attended)</p>	<p>All learning and assessment activities to take place in a structured face-to-face training course lasting approximately 5 days at the host organisations office/teaching site in the UK.</p> <p>Active learning approaches are to be encouraged with group work, investigative research, case studies and role plays to be used for learners to research and apply theory.</p> <p>Assessment tasks to be completed are:</p> <ol style="list-style-type: none"> 3. Theoretical evaluation: final written/oral test (pass/fail) – weight 40% 4. Competence oriented evaluation: results from observations during role play or presentation activities, - weight 60%

23. Assessment and documentation

Person(s) responsible for assessing the learner's performance	Name: Reza Ziarati Organisation, role: Maredu, Professor and Partner
Assessment of learning outcomes	Date of assessment: 08/11/2016 Method: 3. Theoretical evaluation: final written/oral test (pass/fail) – weight 40% 4. Competence oriented evaluation: results from observations during role play or presentation activities, - weight 60%
How and when will the assessment be recorded?	Theoretical evaluation will take place under exam conditions either as an interview or as a written exam in the offices of Maredu in the UK on the afternoon of the 8th November 2016 - the last day of the training. The competence based evaluation is an ongoing evaluation and will be implemented throughout the training course based on the learners involvement, responses and demonstration of competence in the group tasks, role plays, presentation tied to each learning outcome. A final cumulative grade will be reached on the 8th November 2016. The two assessment scores will be combined on the 8th November 2016 and a final assessment score given.
Please include	<input type="checkbox"/> Detailed information about the assessment procedure (e.g. methods, criteria, assessment grid) <input type="checkbox"/> Template for documenting the acquired learning outcomes (such as the learner's transcript of record or Europass Mobility) <input type="checkbox"/> Other: Please specify

24. Validation and recognition

Person (s) responsible for validating the learning outcomes achieved abroad	Name: Riccardo Antola
	Organisation, role: Istituto Tecnico Trasporti e Logistica Nautico San Giorgio, Teacher
How will the validation process be carried out?	Dependant on institutions involved
Recording of validated achievements	Date: 09/11/2016
	Method: Dependant on institutions involved
Person(s) responsible for recognising the learning outcomes achieved abroad	Name: Riccardo Antola
	Organisation, role: Istituto Tecnico Trasporti e Logistica Nautico San Giorgio, Teacher
How will the recognition be conducted?	Dependant on institutions involved

25. Signatures

Home organisation/country	Host organisation/country	Learner
Name, role	Name, role	Name
Place, date	Place, date	Place, date

26. Additional information

27. Annexes