

APPRENTICESHIPS MODEL

APPRENTICESHIPS MODEL FOR PORTS AND LOGISTICS SECTOR

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1 Introduction

Vocational Education & Training (VET) gives young workers the opportunity to train and become members of a workforce meeting sectoral needs. One model to achieve this is through work-based learning (WBL) which combines training in a VET provider with training in the workplace. The European Commission has identified this form of tuition as a strategic means for increasing employment opportunities for young people and providing businesses with a skilled workforce able to compete in the global market.

The European Union (EU) has done much to establish VET systems, however, work-based learning schemes within the Member States (MS) are influenced by their national economic and social needs. Because of this, the EU believes it is essential to invest in the transfer and implementation of the various WBL models and strategies into its VET systems as this will promote a high-quality offer of training. It will also ensure that knowledge, skills and attitudes acquired during the period of training are relevant for the labour market.

As part of a programme to achieve this, Onboard, an Erasmus+ funded project was instigated to foster the quality of apprenticeships for the ports and logistics sector. The project consortium members from Ireland, Portugal and the United Kingdom studied their national systems and gathered the views of people working in the sector. The information gained was pooled allowing the partners to identify the benefits and barriers of each system; and examples of 'good practice'. From this, the partners were able to develop and produce deliverables meeting Onboard's objectives.

One of these deliverables is the '**Onboard Apprenticeships Model**' produced with the intention of providing guidelines to assist employers and training organisations. These are based on the methods and good practices identified in national systems and suggestions made by stakeholders involved in the preliminary study of the project.

These support the actors of apprenticeship schemes in:

- establishing, reinforcing and maintaining fruitful and successful partnerships between vocational education and training (VET) organisations and representatives from the labour market;
- working in a team for the design of functional profiles and correspondent joint curricula, based on the continuous process of identification of needs and trends of the sector;
- cooperating and working together for the continuous increase of the quality of VET offer and update of the National Catalogues for the Qualifications of the countries.

The Onboard Apprenticeships Model is not intended to replace the Apprenticeship schemes existing or in development in the project partner's countries but to contribute to strengthening the VET-Business cooperation in the context of the current systems, specifically for the ports and logistics sector.

As part of developing and validating the Apprenticeships Model, the project partners used the guidelines to design two Functional Profiles and Training Curricula for port and logistics apprenticeship courses meeting the European Qualifications Framework (EQF). The EQF is a European-wide



framework allowing a method for learning providers and employers to compare qualifications across the national systems. Through this, it aims to facilitate the mobility of students and workers within the EU and encourage the development of a mobile and flexible workforce throughout Europe.

The partner countries in this project each use their own Frameworks to assess qualifications. Portugal has its National Qualifications Framework (NQF) which came into force in 2010 and linked to the EQF in 2011 with integration taking place since then. Ireland also has a National Qualifications Framework (NQF) launched in 2003 and formally linked to the EQF.

Within the UK, the responsibility for Education and Training is devolved and the Qualifications Frameworks are as follows:

- England and Northern Ireland – Regulated Qualifications Framework (RQF)
- Wales – Credit and Qualifications Framework for Wales (CQFW)
- Scotland – Scottish Credit and Qualifications Framework (SCQF)

As there is no direct equivalence between the number of levels in the Frameworks used by the partner nations, the European Qualifications Framework (EQF) is used in this document to provide a common reference for the two profiles developed by the partners. Comparisons between the European and National Frameworks Levels for other qualifications shown in this document can be undertaken on the following link: <https://ec.europa.eu/ploteus/en/compare>

1.1 Port and Logistics Sector in Partner Countries

Preliminary research and interviews¹ were carried out in each of the partner nations to understand the structure of their ports and logistics sector and the apprenticeship training schemes available to employers. As would be expected there is a considerable difference in the size and scale of the sectors between Ireland, Portugal and the UK, however, all are of vital importance to their nation's economy and can be summarised as follows:

1.1.1 Ireland

The Irish port sector is an important enabler of economic growth, playing a key strategic and macro-economic role within the Irish state enabling it to trade and export internationally. In terms of scale, the Irish port sector has 3 x Tier 1, 2 x Tier 2 and 10 Ports of Regional Significance. The Tier 1 ports employ approximately 300 people but there is limited data available for the numbers in the Tier 2 and regional ports. During stakeholder consultations and a national maritime skills review with members of the Irish Port sector, a majority suggested that there are primary employment opportunities within the ports and logistics sector.

Port traffic accounts for over 90% of Ireland's imported and exported goods on an annual basis. It is estimated that seagoing freight accounts for approximately 84% of its trade in volume and 62% in value. The Irish economy remains heavily dependent on seaborne transport, with more than 90% of our merchandise trade moving by sea. Its maritime industry has shown itself to be responsive to changing market conditions and capable of flexing capacity to meet demand. It is noteworthy that there are major redevelopment projects underway in our Tier 1 ports. A new cargo container

¹ A study on apprenticeships training needs and trends for the ports and logistics sector in Portugal, Ireland and the United Kingdom was held by the partnership in the beginning of the project.



terminal, for example, is under development at Ringaskiddy in Cork Harbour as part of an €80 million investment by the Port of Cork Company. This state-of-the-art facility is the most significant single investment in marine infrastructure and superstructure in the history of the Port of Cork Company. It will accommodate current and future container shipping which can be serviced by modern and efficient cargo handling equipment with innovative terminal operating and vehicle booking systems. The Port of Cork anticipates that Cork Container Terminal will become operational by 2020.

Since Dublin Ports masterplan was first published in 2012 two major elements of the plan have got underway. They are the €277m Alexandra Basin Redevelopment scheme and the development in a so-called "inland port" on a 44-hectare site near Dublin Airport. The Alexandra project, set to be completed by 2021, will improve the port's capacity for large ships by deepening and lengthening three kilometres of the port's seven kilometres of berths. Dublin Port Company expects to invest €1bn in capital over the next decade.

Together, Irish ports are preparing for the future and meeting the objectives set out in Ireland's National Ports Policy (2013) by leading the development of the port capacity to facilitate economic growth.

Traditionally, many port positions have been filled by ex-seafarers/commercial mariners. However, this source is decreasing, an ageing workforce is developing and there is a need to recruit younger people into the industry. The Onboard interviews identified a willingness of Irish employers to invest in training for school leavers as they could see the long-term benefits of standardised training to address the shortfall of skilled port professionals. The main challenge cited to achieve this was the financial investment needed but many participants suggested that industry regulation could be a major method to address this.

There are presently no port and logistics apprenticeships schemes for school and college leavers however numerous third-level courses in Transport Management, Logistics and Supply Chain Management are on offer in various Irish Institutes of Technology and in the University of Limerick (UL). UL coordinates the introduction of approved apprenticeship programmes; Supply Chain Associate NFQ Level 7, Supply Chain Specialist NFQ Level 8, Supply Chain Manager NFQ Level 9 and Lean Sigma Manager NFQ Level 9. The Logistics Associate Apprenticeship, a new Level 6 Higher Certificate in Logistics, is offered by Dublin Institute of Technology ([DIT](#)). The consortium of businesses and professional bodies supporting the Logistics Associate Apprenticeship programme, which includes Freight Transport Associate Ireland (FTAI), The Irish International Freight Association (IIFA), Chartered Institute of Logistics and Transport (CILT), the Institute of Chartered Shipbrokers Ireland (IPICS), The Supply Chain Management Institute and an impressive list of employers – are committed to delivering a meaningful, active programme which will deliver the necessary skills to young people which the Irish logistics industry needs to keep moving forward.

Onboard interviews identified an eagerness to address the lack of an Irish port apprenticeship programme and it was highlighted that perhaps a current logistics programme may incorporate a port career path into an already existing programme.



1.1.2 Portugal

Portugal is closely linked with the sea having a large coast on the mainland and two groups of islands in the Atlantic. Commercial ports are located on the mainland and in the islands of the Azores and Madeira.

The mainland port system comprises of:

Commercial ports of National importance:

- Leixões
- Aveiro
- Lisboa
- Setúbal
- Sines

Commercial ports of Regional significance:

- Viana do Castelo
- Figueira da Foz
- Portimão
- Faro

Other ports without commercial activities:

Ports covering the coastline and supporting fishing and nautical recreational activities

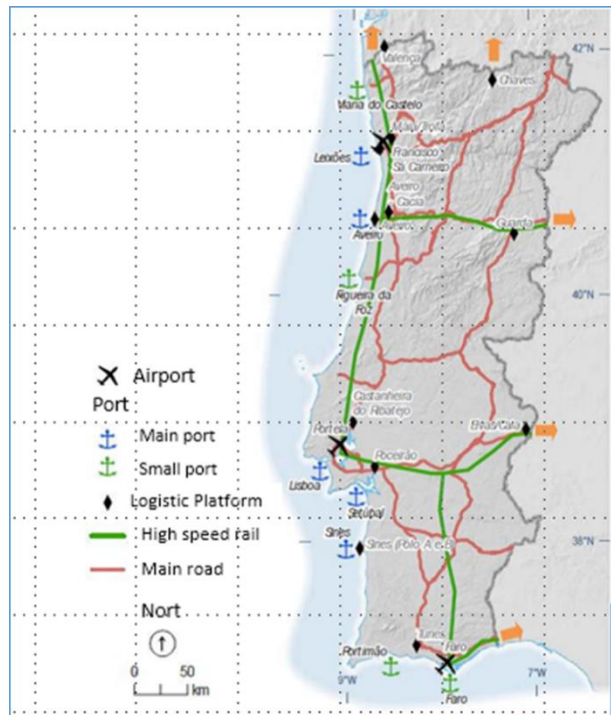


Figure 1 – Portuguese port system.

The commercial ports have recently had significant economic development offering a diversification of infrastructure. These will require more people with the skills and capabilities to operate them. They are under public ownership but moving towards private management through public concession tenders.

They deal with significant traffic requirements such as the import/export and transshipment of containerised cargo or grain cargo, petroleum products, natural gas and coal. These port activities play an essential role for internationalisation of the Portuguese economy.

The port authorities have good relations with the port communities and are key partners with the industrial and commercial clusters at national and regional levels.

Cargo movements within the commercial ports is approximately 96 million tons per year with a majority being handled in the Port of Sines. This is a deep-water port and one of the few harbours along the Atlantic side of the Iberian coast able to meet the requirements for the entry and exit of goods to Europe. The other major commercial ports are Leixões (19.5 million tons) and Lisbon (12.2 million tons).

The number and tonnage of commercial vessels controlled by Portuguese Shipowners have decreased significantly in recent years as the sector has experienced increased competition. In contrast, the Portuguese Shipping Register has seen continuous and positive growth of ships registered in the International Shipping Register of Madeira (MAR). In July 2017, a total of 523 vessels were registered in the MAR including commercial vessels (and pleasure and commercial yachts). The deadweight tonnage of the commercial vessels registered was 13,250,422 tons with almost all from non-Portuguese owners.

According to the 'National Strategy 2013-2020', Portuguese Govern, "*Portugal holds a strategic position in the Atlantic front of the Iberian Peninsula and in the crossroads of the equatorial and meridian maritime shipping routes*". The strategic vision for the commercial ports states the importance of them being the Global Logistic Platform generating value for the nation.

To achieve this, it recognises there must be an investment in the development of the infrastructure including technological and digital solutions. Linked to this is the requirement for a suitably trained workforce to operate the systems and processes effectively and have the skills to meet the future business requirements as the technology evolves.

In Portugal, the National Qualifications System (SNQ) states that the National Catalogue of Qualifications (CNQ) shall organize competence-based qualifications "by identifying for each qualification the corresponding training competence and training standards, and the qualification level in accordance with the National Qualifications Framework".

This development records the outcomes from the identification of the competencies associated with each qualification, made with the participation of social partners, enterprises and VET providers, in the construction and implementation process of the National Qualifications Framework (NQF), as it adopts a methodology based on learning outcomes to describe each level of qualification, with each level descriptor organized in "knowledge, skills and attitudes".

As previously described, this is integrated with the EQF to make qualifications more readable and understandable across different countries and systems in Europe. It has two principal aims: to promote citizens' mobility between countries and to facilitate their lifelong learning.

Some higher education institutes, as ENIDH – The Portuguese Nautical Academy, and ISCIA, are implementing port and logistics apprenticeships, developing some programmes with degree levels higher than EQF5.

On level EQF4, apprenticeship courses in Portugal have dual models, allowing the completion of secondary education and obtaining a professional qualification (recognized in the National Qualifications Catalogue) - the apprenticeship system and the professional courses.

Both systems have a relevant school-based model (strongly aimed at the professional courses), which combine the on-the-job learning with an important amount of time in workplace training, having a minimum duration of 600 hours at the professional courses and by rule greater for the apprenticeship courses. There are similar models, level EQF5, with courses of specialists, achievable in about one year and a half to two years.

The curricular internships, integrated in the study program of a given education cycle, are part of the student's evaluation. These internships are regulated and authorized by educational and training institutions.

There is enough flexibility in each case and the Schools or Training Centres, in conjunction with the companies and trainees, can define the ways to organize, concretize and evaluate the stages and the knowledge they provide.

There is also the possibility of extracurricular and professional traineeships, with a maximum duration of one year, as first work experience, to facilitate access to the labour market. The structure of recognized vocational courses, with possible public funding, are identified in the following table:

Courses	Hours of general and scientific training	Hours of technical or technological training	Hours of work-based learning
EQF level 4			
Apprenticeship system VET Centers	1175	1000	1500
Professional courses VET Schools	1500	1075	600 (mín.) 840 (máx.)
EQF level 5			
CTeSP – Professional Higher Technical Course Higher Professional Education	1800		810
CET -Technological specialization courses VET Providers	126 (mín.) 153 (máx.)	714 (mín.) 867 (máx.)	360 (mín.) 720 (máx.)

Table 1 – Identification of the vocational education and training courses available in Portugal for EQF level 4 and 5.

Each worker can have an official Individual Skills Book, where all relevant training can be registered, even if it does not correspond to the qualifications of the CNQ.

Portugal currently has the following Framework approved apprenticeships relevant to the ports and logistics sector:

- Transport Technician (NQF 4)
- Naval Administration Technician (NQF 4)
- Logistics Technician (NQF 4)
- Logistics Operator (NQF 2)
- Higher Professional Technician in Logistics (NQF 5)
- Higher Professional Technician in Transport and Logistics (NQF 5)

**Portuguese NQF Levels relate directly to EQF Levels*

1.1.3 United Kingdom

The UK port industry is the second largest in Europe, handling almost 500 million tonnes of freight each year, as well as over 60 million international and domestic passenger journeys. 95% of the nation's imports and exports by volume pass through the ports and the industry makes a substantive macroeconomic contribution.

The UK has 120 commercial ports directly employing 118,000+ people providing major all-purpose and specialised facilities for handling container traffic; oil and gas; bulk traffic; Ro-Ro; ferries and cruise liners; and offshore support. Smaller ports essentially cater for local traffic or specific sectors such as fishing or leisure boating. Despite a large number of ports in the UK, much of the freight

traffic is concentrated among a comparatively small percentage with the top 20 ports accounting for 88% of the total.

The UK Port ownership falls into three main models:

- Privately owned – Investment is privately financed on a commercial basis.
- Trust Ports – Independent Statutory Corporations run by Trustees but have no shareholders. Pay no dividends and profits are retained in the undertaking. Handle about 25% of the UK tonnage
- Municipal/Local Authority owned – In general these are not highly commercially active although notably Portsmouth and the oil terminals in Orkney and Shetland operate on a fully commercial and competitive basis.

A vital part of the port and logistics sector are the Freight Forwarders. They organise the movement of goods around the UK and between countries and must plan the most efficient ways of transporting by road, rail, air, land and sea. These companies play a key role in keeping the ports operating efficiently and provide employment for 140,000+ people. Additionally, the ports themselves are increasingly diversifying their activity into logistics and other value-added services.

The UK has a long tradition of apprenticeship training dating back several hundreds of years. The mid-1960s saw “the high-water mark for apprenticeships” when Industry Training Boards (ITBs) were set up to avoid skills shortages in the traditionally skilled occupations. These focused on key sectors such as Aerospace, Nuclear, and Automotive but there followed a decline in the use of apprenticeships with numbers of places falling from 340,000 per year to 53,000 by 1990. This was due to the changing nature of work, fewer traditional jobs and a rise in post-16 education.

The UK government introduced new schemes to revitalise the situation and in 2009 the National Apprenticeship Service (NAS) was founded to oversee the delivery of apprenticeships in England.

A further change took place in April 2017 when the Government introduced the ‘Apprenticeship Levy’ with the aim of enhancing skills and boosting productivity through high-quality apprenticeships. All employers in the UK, public and private, regardless of the sector with annual pay bills over £3M became liable to pay a levy of 0.5%. Money raised through this is used to help pay for apprenticeship training using a set formula with additional contributions being made by the government.

Levy payers receive a 10% uplift to their contribution, and this can be spent by them on apprenticeship training for all employees, at all levels and ages including graduates who may be eligible for UK Level 6 or 7 programmes. Another aspect of the scheme is that the finance goes into a digital fund for 24 months to pay for the training. Any amount unspent at the end of that period is reclaimed by the government.

Non-levy paying companies (less than £3M pay bill) also receive support for apprenticeships with the government expecting companies to pay 10% of training costs and it pays the other 90%. Further incentives are also provided in certain circumstances.

The Levy Scheme meets the criteria of the European Framework for Quality and Effective Apprenticeships, the EQAVET guidelines and includes examples of good practice. However, since its introduction, the Levy Scheme has received criticism from both employers and trade organisations. Complaints range from it “being a business tax”, to it “being excessively hard to

operate and understand as a system – especially for small and medium-sized enterprises (SMEs).” This has had the effect of causing a drop in the number of apprenticeship starts and there is a call from businesses and trade organisations for the government to review and reform the scheme.

A further change had occurred with the move from the Qualifications and Credit Framework (QCF) to the Regulated Qualifications Framework (RQF) in 2015. This applied to England, Wales and Northern Ireland and led to the establishment of the RQF, which does not contain specific rules for qualifications in the manner of the QCF.

Although the Levy Scheme has attracted criticism the move to the new apprenticeship standards is broadly seen as an improvement on the previous frameworks. In its first two years of operation, it has led to the approval of over 400 Standards between UK Levels 2-7 (EQF L3–7) for the key sectors. One of the benefits is they are now developed by the employer-led Trailblazer Groups, a scheme introduced in 2013.

As mentioned previously, responsibility for education and training is devolved within the UK. Money raised through the Apprenticeship Levy is apportioned between the Home Nations (England, Northern Ireland, Scotland and Wales) and used by them to support skills, training and employment through their own agendas. The examples given in this document cover England which is the main centre for developing apprenticeships standards.

During the Onboard interviews, the UK participants noted that there had been very limited formal training within the UK ports and logistics sector for several reasons. These included recruiting people having the relevant skills from previous occupations such as ex- seafarers and was common practice. A further reason given was that the national apprenticeship schemes focused on manufacturing and higher-value jobs. The number of people employed in ports and logistics was small in comparison to other sectors and this makes the delivery in a cost-effective manner difficult and often not commercially viable for the providers. In the interviewees’ experience, ad-hoc local training had been used by employers and mainly done through ‘in-company’ trainers. Work to develop apprenticeship training for the sector had recently commenced through the Trailblazer scheme. This required employers with similar staff training need to work together and produce the required apprenticeship standards and the scheme was making progress.

Overseeing the apprenticeship development for England is the Institute for Apprenticeships and Technical Education (<https://www.instituteforapprenticeships.org/about/>), an employer-led crown Non-Departmental Public Body. Established in April 2017 it ensures high-quality apprenticeship standards and advises the government on funding for each.

Since its inception the following English Apprenticeship Standards have been approved or are in development for use by the ports and logistics sector include:

- Harbour Master - RQF Level 6 (EQF Level 6) - under development
- Marine Pilot – RQF Level 5 (EQF Level 5)
- Port Marine Operations Officer – RQF Level 4 (EQF Level 5)
- Port Plant Machinery Operative – RQF Level 3 (EQF Level 4) – Proposal
- Port Agent – RQF Level 2 (EQF Level 3) - Proposal
- Supply Chain Leadership Professional (degree) – RQF Level 6 (EQF Level 6)
- International Freight Forwarding Specialist - RQF Level 3 (EQF Level 4)
- Supply Chain Operator – RQF Level 2 (EQF Level 3)



No specific standard has been submitted for digital skills in the port and logistics environment, but several generic ones have been approved for England. These range between RQF Levels 3 to 6 (EQF Levels 4 to 6). Details of all English Apprenticeship Standards can be viewed on:

<https://www.instituteforapprenticeships.org/apprenticeship-standards/>



2 Design of Functional Profiles and Joint Curricula

A key objective for the project was to design and validate two or three technical profiles and training curricula for apprenticeships in the port and logistics sector. This was to be done by following the principles of the European Quality Assurance Reference Framework for Vocational Education and Training (EQAVET) with the profiles and curricula based on the European Credit System for Vocational Education and Training (ECVET).

Soon after the project commenced a study² was carried out. An online survey was launched in each of the partner countries allowing members of the port and logistics sector to respond to questions about apprenticeship training.

The survey sought answers to a wide range of topics including:

- Organisational Training Policy and its effectiveness
- Identification of the sectors needs and future challenges
- Competences and skills required to integrate young skilled workers

Following analysis of the online survey, 'face to face' interviews were conducted with sector members involved in training either as an employer; member of a training provider; or an associated maritime organisation. A Focus Group meeting was also held in Portugal to discuss the findings further.

The level of response to the online survey and interviews varied between the nations. Portugal had the highest level of interest, followed by Ireland. The UK had the lowest response and is probably attributable to the fact that it had recently introduced the Apprenticeship Levy Scheme. This provides a formal structure which companies must follow to benefit from accredited apprentice training attracting government funding. UK companies had already gone through the process of identifying sector needs and the required skills and competences when developing the new Standards. One respondent noted that the Onboard survey was duplicating work already being done in the UK.

Despite the varied level of responses between the countries, there were many similarities in the replies. All three nations noted the decline in recruiting from the ex-seafarer community and the fact that this was creating an ageing workforce. The pooled responses showed that over 50% of companies believed:

- Apprenticeships provide a valuable method of training young people to become skilled members of the workforce.
- Allows the practical and soft skills to be learnt and used in the work environment and employers can develop the young person to meet the business needs.
- There was value in providing Continuing Professional Development (CPD) for their staff.

² A study on apprenticeships needs and trends of ports and logistics sector in Portugal, Ireland and the United Kingdom was held in the beginning of the project.

From the project's initial online survey five options for apprenticeship development were identified.

1. Technician of integrated logistic (operations, movements and distribution)
2. Technician on IT applied to ports and logistics
3. Shipping Operator
4. Ports Operators
5. Technician of Supply chain (planner, analyst, design)

Interviewees were asked to prioritise these in order of importance according to the sector's needs. Responses were influenced by the port or logistics background of the person being interviewed. However, a majority recognised that the sector faced major changes due to the evolving use of digital technology. This was already happening with its introduction for port security; 'Single Window' reporting; Blockchain; increased use of remote and autonomous systems; and Artificial Intelligence (AI).

Technology is changing the way parties operate and interact along the value-chain and this is a major topic being highlighted at Industry Conferences and Seminars. The importance of Digital Skills is recognised within the sector and it is aware that suitable training should be developed.

When Onboard commenced, the intention was to develop two or three EQF 4 subjects for the port and logistics sector aimed at young people aged 18-24. However, the study of National Frameworks and training in the partner countries showed marked differences in the way apprenticeship training is targeted and delivered.

- In Portugal, apprenticeship training is provided by schools/VET centres for most sectors/occupations. One part of the programme is focused on students/trainees aged 18 to 24 with the objective of them commencing their working life and achieving EQF Level 4.
- The Irish apprenticeship offer is specific to some sectors/occupations and delivered by Higher Education (HE) providers. The scheme addresses different target groups with programmes depending on the level of qualification delivered up to EQF Level 5.
- The UK commenced an apprenticeship reform programme in 2016 with the government moving from apprenticeship frameworks to standards by August 2020. The new employer-designed Standards have been in development for a wide range of sectors since this time. Covering EQF Levels 3-7 the scheme is designed to provide training to develop people for a career and at any age. Training can be delivered through VET Trainers, Further Education Colleges (FE) and Universities (HE) but this is determined by the size of the sector and level of demand.

The full report on the study on apprenticeships training needs and trends for the ports and logistics sector is available as:

- A sectoral plan for the design of new technical profiles and joint curricula ([English version](#))
- Plano sectorial para o Desenvolvimento de novos perfis técnicos e currículos associados ([Portuguese version](#))



Using these deliverables, the consortium agreed to develop an apprenticeship at **EQF Level 4 - “Technician on ports and logistics with competencies on Information Technologies”** (Appendix 5.1).

During the study, interviewees had expressed the view that in addition to developing training for a Technician grade, there was a need for a higher-level qualification more oriented to support management and future planning. This was discussed by the Onboard partners and a decision was made to substitute the proposed second EQF Level 4 with the **EQF Level 5 – “Specialist Technician on Information Technology applied to port and logistics”** (Appendix 5.2). This provided a further level for career progression and matched the schemes being offered in Ireland and the UK.

Previously, the port and logistics sector has not had IT training specific to it and has relied on generic qualifications. The emerging digitisation of the sector’s operations requires new competencies, and this gives an opportunity for developing profiles providing the skills essential to meet its future needs.

During the study, a high percentage of interviewees expressed the importance for IT staff to have knowledge and experience of port and logistics activities. They stated this is crucial for the companies operating in the sector and for those enterprises that have activities related to domestic and international trade requiring the movement of goods using maritime transport, port activities and logistics services.

2.1 EQF Level 4 – Technician on port and logistics with competencies on Information Technologies

The EQF Level 4 qualification has been designed to provide a technician on ports and logistics with IT competencies needed by the sector.

Upon completion of the course, students will have the skills to:

- Know the main economic, technical and operational aspects of ports, logistics activities;
- Recognize the essential aspects of trade activities of companies, at an internal and international level, but also the legal and contractual issues of the trade of goods;
- Identify the relationship between the trade of goods and the use of transportation for the movement of goods related to the trade;
- Have a good knowledge of the safety, security and environmental aspects of the ports and logistics activities.

Technical Profile	Brief description
Technician on ports and logistics with competencies on Information Technologies EQF 4	Have ability to understand and use business theory and manage business digital applications; have essential knowledge of key areas of warehousing operations; know all types of freight transport operations and different elements of transport planning; understand the operation of supply chain management; know the types and functions of ports and terminals and their management, operation and maintenance; have ability to deal with digital competences and manage IT supports, software and tools required for ports and logistics activities.

Table 2 – Brief description of the technical profile “Technician on ports and logistics with competencies on Information Technologies” – EQF4.

2.2 EQF Level 5 - Specialist Technician on Information Technology applied to port and logistics

The Level 5 qualification has been developed for people who have achieved the computer technician (level 4) and the curricula proposed is in the area of computer science. It is designed to train staff in the use of applications to support management. Logistics is a complex activity that requires intensive relationships with different actors and deals with very complex information flows that must be integrated.

Specialist IT technicians working in the analytics logistic field explore, verify and validate the quality of the big Data used by the global markets as this is critical for reliable and effective operations.

At the end of this course, students will have the skills to:

- Organize groups based on the characteristics of customers or suppliers according to the type of information that is to be provided;
- Know how to classify transactions as fraudulent or legitimate;
- Establish metrics/business KPIs to be always available and in real-time;
- Define a Service Level Agreement (SLA) and verify and validate if they are accomplished by the provider;
- Analyse whether the service provided exceeds a minimum level, based on a sample of clients;
- Understand what factors are based on the evolution of sales and logistics network;
- Analyse all possible returns on investment scenarios and give the best PKI to decision-makers.

Technical Profile	Brief description
Specialist Technician on Information Technology applied to ports and logistics EQF 5	Implementing Information Technologies in companies and organizations, particularly in the service of various aspects of port management and logistics activities.

Table 3 – Brief description of the technical profile "Specialist on Information Technology applied to ports and logistics" – EQF5

3 Guidelines for VET-Business cooperation and communication

European VET providers in the European Business Community are aware of the need to improve and extend the opportunities provided through Apprenticeships and Work-Based Learning (WBL), especially for young people seeking to enter the labour market. Many Member States have well developed systems and National Frameworks in terms of skills development and curriculum design and delivery but as the Onboard project has shown some are further ahead than others.

The EU recognises the importance of investing in the transfer and implementation of the various WBL models and strategies into its VET systems. By capturing 'good practice' it will help promote a high-quality offer of training. Onboard has observed that National systems are constantly evolving and subject to review. It has also shown that there is no single solution to meeting the training needs as there is a wide variation in the skills required by the sectors and the number of people needing them.

Aware of this, in this document is introduced a possible approach to strengthening the VET-Business cooperation and communication in the apprenticeship setting (see Figure 2.):

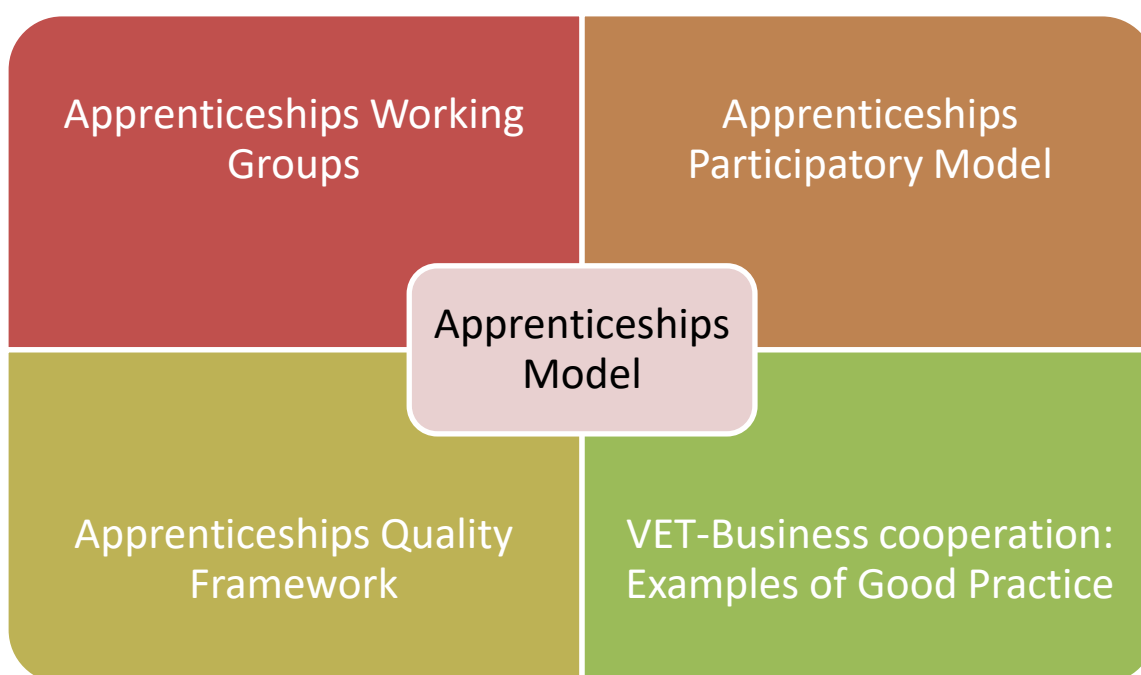


Figure 2 – Apprenticeship Model for the establishment and maintenance of VET-Business cooperation in Apprenticeship system.

3.1 Apprenticeships Working Groups

One important aspect which should be remembered is that SMEs constitute a significant part of the Member States workforces. Encouraging them to use Apprenticeships and Work-Based Learning is vital, however, they are often wary of using this type of training because of their business size.

To gain the benefits from the National systems there needs to be an effective network of National working groups to be responsible for identifying and keeping updated the qualification and training needs and trends of the sector. These should comprise of actors from education and learning but more importantly should have representation from companies of all sizes, skills alliances and trade organisations. By gaining their input the EU will be able to improve and quality assure apprenticeship training for use by the Member States (see Figure 3.):

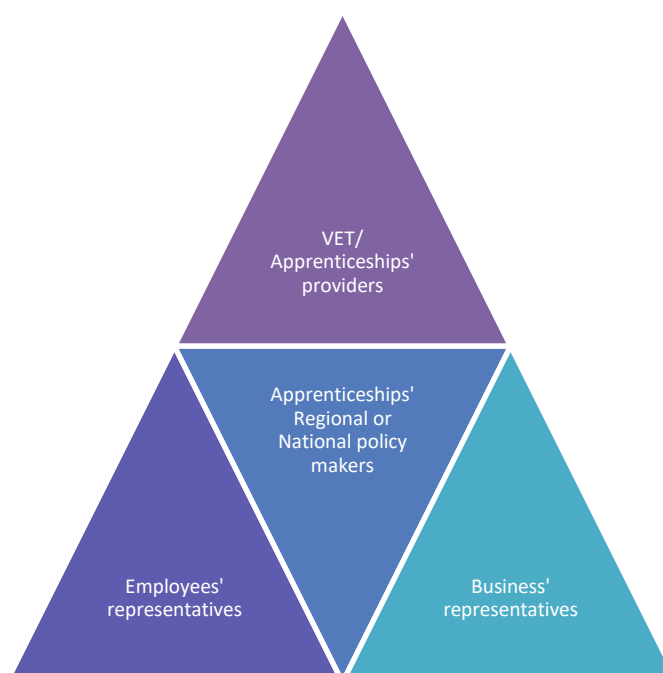


Figure 3 – Identification of the institutions that should be part of the National Working Groups.

The main priority of these working groups is:

- Innovation and flexibility of the apprenticeship provided in the sector;
- Strengthening the quality of apprenticeships of the sector by adapting curricula and training programmes to the needs of the companies of the sector;
- Defining strategies and ways of cooperation between stakeholders to guarantee the creation of multiple and complementary spaces of learning adapted to young and experienced workers;
- Defining policies and rules to facilitate and strengthen the cooperation and partnership among the different stakeholders of the sector;
- Cooperate at European level to promote and support the apprenticeships learning mobility of young and experienced workers.

Institutions	Role	Responsibility
Apprenticeships' Regional or National policymakers of the sector	Leader	<ul style="list-style-type: none"> Defining and establishing the conditions for the establishment and function of these working groups, in terms of goals, competencies, participants, impact and function, conditions to be agreed by all participants. Identifying and inviting organisations to integrate the working group, guaranteeing the integration of all relevant stakeholders of the sector. Assuring the involvement and engagement of all participants in the meetings and activities to be prepared and promoted by the working group. "Giving voice" to the working group in what concerns the policies and strategies to take into consideration for the promotion of innovation and quality of apprenticeships provision.
VET/ Apprenticeships' providers	Effective member	<ul style="list-style-type: none"> Identify, jointly with other members, strategies for promoting the innovation, flexibility and sustainability of the apprenticeship's courses. Lead the co-designing process of the participatory model for the identification of qualifications and training needs, jointly with the companies of the sector. Proceed with continuously updating of the qualification and training needs of the company and labour market, aligning the training to it. Define, jointly with companies, strategies of systematic and continuous cooperation and communication between VET/Apprenticeships' providers, companies and other relevant stakeholders. Cooperate closely with companies supporting them in the planning of the trainees' training at the workplace, preparation of professionals to guide and provide training to young trainees, monitoring and evaluation of trainees' learning and competences. Support companies in the identification of strategies to act as a privileged context of learning by preparing and promoting events, training and raising awareness sessions.
Business' representatives	Effective member	<ul style="list-style-type: none"> Contribute to the identification of strategies for promoting the innovation, flexibility and sustainability of the apprenticeships' courses. Be part of the process of co-designing of the participatory model for the identification of qualifications and training needs.

		<ul style="list-style-type: none"> • Work and cooperate closely with VET/Apprenticeships' providers in the identification of qualification and training needs of young workers/trainees. • Be part of the process of designing strategies of communication and cooperation with VET/Apprenticeships' providers in the different phases of Apprenticeships' courses. • Invest in the resources (e.g. logistics, training of professionals) to be able to provide training at the workplace to young trainees, aligned with the training plans agreed with VET/Apprenticeships' provider. • Define, with the support from other members, the company to act as a privileged context of learning, facilitating the adequate resources and professionals for it. • Prepare and promote, with the support from other members, companies' professionals to be a learning organisation supporting the training of young trainees at the workplace.
<p>Employees' representatives</p>	<p>Effective member</p>	<ul style="list-style-type: none"> • Contribute to the identification of strategies for promoting the innovation, flexibility and sustainability of the apprenticeships' courses. • Be part of the process of co-designing of the participatory model for the identification of qualifications and training needs. • Work and cooperate closely with VET/Apprenticeships' providers in the identification of qualification and training needs of young workers/trainees. • Support companies in the preparation of the setting to act as a privileged context of learning, contributing to the definition of the role and preparation of experienced workers in that process.

Table 3 – Definition of the role of the member of the Regional and National Apprenticeship Working Group of the sector.

To generate a bigger impact is important to establish a network of Regional/National Apprenticeship Working Groups of the sector, essential to:

- Promote the exchange of experiences and know-how, enlarging the capacity of the working groups to innovate and promote the quality of apprenticeships of the sector;
- Contribute to the mobility of young and experienced workers in apprenticeships and labour market.
- Strengthen the position of the working groups at the policy level, namely in the review of the models and strategies at the Regional or National level.

Is also important to guarantee the contact of integration of this network and working groups with relevant European organisations, including:

- ETF - European Training Foundation
- EAfA - European Alliance for Apprenticeships
- BusinessEurope | Social Affairs Working group
- Eurochambres
- EVTA - European Vocational Training Association
- EfVET - European Forum of Technical and Vocational Education and Training
- EUproVET – European Providers of Vocational Education and Training
- European Youth Forum
- EEN – Enterprise Europe Network| Portuguese Contact Point
- EuroApprenticeship – Apprenticeship in Europe
- EVBB - Europäischen Verbandes Beruflicher Bildungsträger (European Association of Institutes for Vocational Training)
- VETNET - Vocational Education and Training
- ESPO - The European Sea Ports Organisation
- IPCSA - International Port Community System Association
- NETWBL - Work-based Learning and Apprenticeships Network
- VETNET - German Chambers worldwide network (AHK) for cooperative, work-based Vocational Education & Training

3.2 Apprenticeships Participatory Model

The most effective strategy to identify the labour market needs and its integration in Apprenticeships' training plans is throughout the definition and implementation of a participatory model, gathering all the relevant stakeholders in this process of diagnosis and conception. The Regional/National Apprenticeships Working Groups can be a great way to start this work once:

- The stakeholders to involve in the participatory diagnosis and conception are the same integrating the working groups.
- The working group is the ideal context for the discussion, definition and agreed on the apprenticeships participatory model and to its operationalisation.
- It involved representatives from policymakers, which can guarantee the generalization of the practice at the Regional or National level.

The main idea of the *Apprenticeships Participatory Model* is to involve all the interested part in the:

- Process of identification of the qualification and training needs of the companies, based in the present and in the future of the sector, particularly in what concerns young workers.
- Define learning outcomes of the training to jointly be provided by VET/Apprenticeships providers and companies of the sector, guaranteeing the match between the training and the needs of the labour market.
- Process of attracting new and qualified young workers to the sector.

So, how can these working groups guarantee the implementation of participatory diagnosis?

The working groups can select and use different tools to promote this participatory diagnosis and, in the table, below, are identified as the ones that can be more relevant to the sector:

Tools	Brief description	Goals	How to use?	Tips
Brainstorming³	Is a tool for creative problem solving, in which a group of people meet to generate new ideas around a specific area of interest, follow the instructions of a mediator.	<ul style="list-style-type: none"> - Promote creativity and innovation in solving a challenge/problem; - Involve different participants with different perspectives and expertise in a participatory process; - Generate a high number of ideas to answer a challenge/problem; - Contribute to the improvement of a situation. 	<ul style="list-style-type: none"> - Guidance: The mediator introduces the challenge or problem to be discussed by the group. - Preparation: The mediator establishes the time for the activity (between 30-45 minutes), during which all participants need to share ideas. - Analysis: Once finalised the time is defined; the mediator will organise the ideas in groups with the support of participants. This task usually takes around 15 minutes. - Ideation: Deep analysis of the relation between the ideas, selecting the most relevant, removing the repetitions and joining different groups. 	<ul style="list-style-type: none"> - The tool is not applicable to large groups of participants. - It can be interesting to discuss and identify strategies of innovation and flexibility of curricula or of cooperation and communication between stakeholders.
Community of practice⁴	Communities of practices are groups of people who share a common interest, that engage in joint activities and discussions, help each other, and share information and produce an outcome to solve a specific problem (e.g. methodology, resources, strategies).	<ul style="list-style-type: none"> - Promote interpersonal relationships and skills; - Generate knowledge and exchange of experiences; - Develop tasks and projects; - Learn and innovate. 	<p>This community is a tool that will allow the discussion, reflection and exchange of experiences related to practice, aiming at identifying or defining strategies to improve interventions, process or approaches.</p> <ul style="list-style-type: none"> - 1st phase: Establishment of the community of practice, defining its goals and expected outcomes and inviting key participants to take part in it. - 2nd phase: Establishment and reinforcement of relationship and cooperation among participants, essential to the success of the community. - 3rd phase: Learning and generation of practices, through reflection, discussion and process of search, the community needs to develop new approaches or strategies to the challenge or problem identified in the beginning. 	<ul style="list-style-type: none"> - Is important to define a leader of the community recognised by all parties and that will assume an active role in all its phases. - The tool is quite important for the identification of strategies to promote innovation.

³ Creative Education Foundation. 2015. The CPS Process [online]. <http://www.creativeeducationfoundation.org/creative-problem-solving/the-cps-process/> [Accessed April 23, 2019].

⁴ Wenger, Etienne. 2006. Communities of practice: a brief introduction. Available on: <http://www.ewenger.com/theory/index.htm> [Accessed April 23, 2019].



Tools	Brief description	Goals	How to use?	Tips
			- 4 th phase: Acquisition and generation of new knowledge, mobilizing it to promote the innovation, flexibility and quality of the process, intervention or approach.	
Focus Group⁵	The technique of qualitative search to produce information, based in a group discussion, moderated by a person responsible for launching key questions.	- Collect specific information related to a selected topic and involving key participants.	<ul style="list-style-type: none"> - Preparation: The moderator needs to define, clearly, what he/she needs to know and prepare a set of questions for the collection of qualitative information about a certain topic. - Planning: Is important to identify and select the participants with an adequate profile to answer the questions and also interested in taking part in the process. The group can have, between 6-15 participants, and sessions of a maximum of 2h. - Guidance of the group: The moderator needs to introduce goals of the focus groups and what is expected to accomplish. Is also desirable to promote the knowledge of the participants involved in the focus group, to maximize the contribution of each participant. The moderator will be responsible for launching the questions previously prepared, promoting the participation of all members, respecting different opinions and contributions. - Analysis of the data: After the focus group, the moderator will proceed with the systematization and compilation of the results of the focus group, identifying its main conclusions. 	- Is an important technique to complement the collection of quantitative data.
Delphi Inquiry⁶	Collection and synthesis of the expert's knowledge base in an interactive strategy of research.	Reach the consensus related to a complex problem, for which there is no information available.	<ul style="list-style-type: none"> - 1st step: Establish a team of researchers to develop the research tools, collect and analyze data, involve experts and validate conclusions. - 2nd step: Select the group of experts to involve, that will integrate the Delphi panel. - 3rd step: Launch an open questionnaire to experts to select the approach of the study. Prepare a structured questionnaire based on the information collected throughout an open questionnaire. Experts are challenged to answer to the structured questionnaire, answering to 	<ul style="list-style-type: none"> - It can be important for the identification of qualification and training needs and trends of the sector, matching it with the available offer. - This technique can take too much time.

⁵ Gibbs, Anita. 1997. "Focus Groups", Social Research Update, n^o 19, Available on: <http://sru.soc.surrey.ac.uk/SRU19.html> [Accessed April 23, 2019].

⁶ Anderson, Dorothy and Ingrid Schneider. 1993. "Using the Delphi Process to Identify Significant Recreation Research-Based Innovations". Journal of Park and Recreation Administration, 11(1), 25-36.



Tools	Brief description	Goals	How to use?	Tips
			<p>the questions according to its relevance (in their perspective) and identifying, whenever possible, the questions that are not relevant or clear.</p> <ul style="list-style-type: none"> - 4th step: Researchers provides the results to experts and launch a new questionnaire, updated with the contribution from experts. Experts can maintain or change their opinions in this 2nd questionnaire. - 5th step: The questionnaire is reviewed once again, according to the relevance of the questions. Delphi panel receives updated information about the results and is challenged to explain or justify the most radical answers, looking for the convergence of the data. - 6th step: A new questionnaire is distributed, duly reviewed keeping the items more relevant, giving a final opportunity to justify and explain divergent opinions. Researchers can distribute updated questionnaires as much as the need to get a coherent and consensual questionnaire. 	
<p>The World Cafe⁷</p>	<p>A participative methodology based on a creative and structured process of idea generation, by promoting constructive dialogue.</p>	<ul style="list-style-type: none"> - Promote the discussion of different participants related to a specific topic in a relaxed context. - Promote the contribution of all participants in the discussion, providing a set of confidence to the exchange of opinions. 	<ul style="list-style-type: none"> - 1st step: Clearly define the goal of the meeting and the topic to be discussed to all participants. - 2nd step: Promote a safe setting, allowing participants to feel comfortable to participate. - 3rd step: Explore the questions that are really relevant to the group, essential to define strategies and approaches. - 4th step: Establish relation and connection between ideas and participants, promoting the exchange of groups of discussion, exchange of opinions with different participants, have access to different perspectives. The mobility and exchange of participants between groups is one of the most distinctive aspects of the world café. - 5th step: The groups need to introduce the results in the large group, explaining their perspective and insights. This is essential to create a connection between the different ideas and results. - 6th step: In the large group, define and draft the main conclusions of the discussion. 	<ul style="list-style-type: none"> - It works very well when working in large groups.

⁷ Thunberg, Odd Arne. 2011. "World cafes and dialog seminars as processes for reflective learning in organisations". Reflective Practice, 12(3), 319-333.

Table 4 – Identification and a brief description of the most relevant tools to support the participatory diagnosis for the identification of qualification and training needs in the apprenticeships of the sector.



3.3 Apprenticeships Quality Framework

Quality Assurance is an important part of developing high-quality vocational education and training. Currently, VET providers in the Member States use many different approaches to achieve it. Some of these are in line with existing national or international quality assurance systems and others have been designed to meet the VET provider's own circumstances. To assist providers the EU offers an online tool to support and develop their systems.

EQAVET (www.eqavet.eu) is a community of practice that promotes European collaboration in developing and improving quality assurance in VET. It promotes an approach to quality assurance or reference framework which has been agreed by the Member States. It offers providers a straight forward way to monitor and improve the quality of their provision. Based on the four-stage cycle of planning, implementation, evaluation and review which is at the heart of many other quality assurance approaches. This web-based resource provides guidance on how to develop a quality assurance method and gives examples of different approaches used by the Member States.

In March 2018 the European Council adopted a recommendation for a European Framework for Quality and Effective Apprenticeships. This set out 14 criteria to define quality and effective apprenticeships to help young people enter the world of work. The criteria ensure both the development of job-related skills and the personal development of apprentices and the full list can be viewed on [http://europa.eu/rapid/press-release MEMO-17-3586 en.htm](http://europa.eu/rapid/press-release_MEMO-17-3586_en.htm)

Covering learning and working conditions they include:

- a written agreement which should be concluded to define the rights and obligations of the apprentice, the employer and, where appropriate, of the vocational education and training institution within a clear and consistent regulatory framework,
- there should be clear results leading to recognised qualifications,
- apprentices should be paid or otherwise compensated,
- apprentices should be entitled to social protection,
- career guidance, mentoring and learner support should be provided to apprentices both before and during the apprenticeship in order to ensure a successful outcome,
- pedagogical support should be provided to teachers, trainers and mentors, especially in micro-, small and medium-sized companies.

In a study conducted in preparation for this Framework initiative, only eight Member States (including Ireland and England) had more than two-thirds of the criteria in place. Work is taking place to extend the use of criteria in the remaining countries. The Framework builds on the input from the European VET providers associations and stakeholders in the European Alliance for Apprenticeships and supports the priorities of the European Apprentices Network.



3.4 VET-Business cooperation: Examples of Good Practice

During the study of national systems, the project partners identified examples of good practice which were either part of the formal requirement or had been put in place by trainers and companies.

3.4.1 MSC Academy, Portugal

Portugal reported an interesting example that may be considered as a good practice for VET Apprenticeships, showing good results in terms of cooperation between training objectives and business needs.

This joint venture involves two partners:

- MSC Portugal – The local Shipping Agent of MSC – Mediterranean Shipping Company, the international Ship owner and Ship operator from Switzerland, operating in Portuguese Ports for a long time; and
- ENIDH – The Portuguese Nautical Academy, with high degree courses for the training of Officers in Portugal and high-level courses in Port Management and Transports and Logistics Management.

This co-operative project between the two institutions allowed the creation of a Specialization course in "Shipping & Logistics Management" lasting one academic year (320 hours) prepared to meet the needs of MSC Portugal. It developed a training profile and a curriculum corresponding to the operational requirements of the company, but also of relevance to other companies involved in Shipping Agency activities.

For the organisation of the initiative, a group of professors and specialists were selected, including academic teachers from Nautical School, professionals from the MSC itself and other experts recruited from the maritime and the port sectors in Portugal. Training costs are supported by MSC and fees paid by students. The students recruited included MSC workers, Nautical School students and others interested in working for Portuguese Shipping Agencies.

Candidates participating in the course were drawn from two groups. Those who were already professionally active within the MSC organisation, students from Nautical School and young people who try an opportunity of recruitment by companies of the sector. The course enabled the experienced employees to reflect, review and improve their knowledge and help the new entrants to gain an understanding of the sector's work.

This co-operative project between MSC Portugal and ENIDH developed training meeting the employer's needs. Following the success of the initial course, a further 3 courses have been delivered to train around 100 students.

3.4.2 Trailblazers, The United Kingdom

A criticism of the previous apprenticeship scheme in the UK was the disconnect between training providers and employers. Often the employers were presented with their Apprenticeship programme as a fixed package that was defined by the provider and not open to change. This frustrated employers and affected relationships between the trainer and the company.



In 2013 the government introduced the 'Trailblazers' Scheme with the purpose of ensuring that training was employer-led. Through this, groups of employers come together as the creators and early adopters of new apprenticeship standards. Focused on the specific knowledge, skills and behaviours for their sector, they work together, supported and guided by the Institute for Apprenticeships and Technical Education, to develop new programmes of learning that will directly impact their workforce. (<https://www.instituteforapprenticeships.org/developing-new-apprenticeships/forming-a-trailblazer-group/>)

Employers can join an existing trailblazer group if one already exists within their specific sector, or a new one can be formed to create a new standard.

Trailblazer groups must meet certain criteria prior to submitting a proposal for a new apprenticeship standard. These are as follows:

- The trailblazer membership covers a wide range of employers – at least 10. Professional bodies and trade associations can also be members, but do not count towards the total of employers.
- The members must be committed to getting actively involved in the development of an apprenticeship standard and should intend to use it themselves when it is ready.
- Membership of the group should reflect the type of organisations that employ people in this occupation. This should include size – a group should normally include at least 2 employers with fewer than 50 employees – geographical spread and sector.
- Trailblazer groups should be open to new members and prepared to consider carefully how the standards they're working on relating to the needs of other sectors.

A trailblazer group isn't allowed to set a charge for admission or fee for membership and once the group has come together, an employer member should be chosen to act as Chair.

This scheme and the funding changes under the Apprenticeship Levy Scheme has given employers more control over the training delivery.

3.4.3 Institute of Apprenticeships and Technical Education, The United Kingdom

The Institute for Apprenticeships (IfA) ensures high-quality apprenticeship standards and advises the government on funding for each standard. The IfA is an executive non-departmental public body, sponsored by the Department for Education and acts only for England. It is employer-led and works with Trailblazers to help develop apprenticeship standards and assessment plans. It is responsible for overseeing External Quality Assurance (EQA) across all EQA providers to ensure quality, consistency and credibility and is accountable for the quality of apprenticeships and technical education.

The IfA has a dedicated website which provides comprehensive information for training providers, employers and other interested parties. It provides guidance on how to develop apprenticeship standards through the Trailblazer route and lists all standards which have been approved or in development; and proposals in development. The online list carries



comprehensive information about the approved standards including the Level, duration, funding, assessment plan and date for review and can be easily viewed by employers and training providers

An example showing the apprenticeship standard for a 'Port Marine Operations Officer' can be viewed on the following link: (<https://www.instituteforapprenticeships.org/apprenticeship-standards/port-marine-operations-officer/>)

The IfA also values the views of young people and has established a Panel of Apprentices which reports directly to the Board. The panel consists of approximately 26 current and recent apprentices who come from different occupations and have had varying experiences.

The main purpose of the panel is to ensure that the views of apprentices are represented across the work and governance of the Institute. The panel decides for itself which issues to focus on and can advise and challenge the Board. Members of the panel have also been involved in developing content aimed at apprentices, for the Institute website.

3.4.4 Maritime SuperSkills, The United Kingdom

Apprenticeships are a key element of UK Government policy, targeting the creation of three million new apprenticeships by 2020 and overseeing increased employer investment and involvement in skills training. To help this happen a project part-funded by the European Social Fund (ESF) has been working to help develop training to get young people into work and provide life-long learning in the Liverpool City-Region (LCR).

With the formation of 'trailblazer' groups to develop simplified apprenticeship standards from Levels 2 to 7 and other reforms, there has been an increased involvement and uptake in apprenticeships from employers.

The Maritime SuperSkills Project (<https://www.ljmu.ac.uk/microsites/maritime-superskills>) is a consortium comprising Liverpool John Moores University, Mersey Maritime, Hugh Baird College (Port Academy Liverpool), Wirral Metropolitan College, The Engineering College and Northern Logistics Academy. Through the project, LCR is investing support in businesses to develop high-level apprenticeship standards that are in line with City-Region growth sectors.

Maritime SuperSkills has achieved good engagement with LCR maritime-focused employers and has brought together trailblazer groups to map and develop a complete pipeline of maritime/logistics/advanced manufacturing skills progression from EQF Levels 3/4 (advanced/higher apprenticeships) through to Masters Level 7 (Degree Apprenticeships) for the key occupations that will accelerate economic growth.



4 Using the Apprenticeships Model

The Apprenticeships Model provides a set of guidelines to strengthen VET-Business co-operation for the development and delivery of training. It is based on the work undertaken by the Onboard partners using information obtained through desk research, fieldwork and consultation with policymakers, training providers, employers and professional organisations of the partner nations and took place as the project progressed. Subsequently, the guidelines were used by the project team to design and develop the functional profiles and joint curricula for the two IT related apprenticeships. Although these are for use in Port and Logistics, the Model is equally of value for use by other sectors.

The guidelines offer a useful tool which can be adapted to meet employers and VET organisation needs, however, certain elements are vital to ensure success. The most important is having effective communication and a good working relationship between the relevant parties. Training should be employer-led to ensure it meets the sector's current and future needs and the role of the VET is to design and deliver effective training. Professional representative bodies operating in the sector also have an important role to play in this.

Quality Assurance of training also needs to be considered. EQAVET- the European Quality Assurance in Vocational Education and Training provides resources through its website (www.eqavet.eu) enabling VET providers a straight forward way to monitor and improve the quality of their provision.

The European Framework for Quality and Effective Apprenticeships is another aspect which is important to consider. Adopted by the EC in March 2018 it sets out 14 criteria which benefit the development of job-related skills and the personal development of apprentices. As previously noted, the number of criteria in place varies between the Member States with 14 countries having less than 50% in place. Work is now taking place to alleviate this, but VET/Business partnerships should try and address the criteria where possible.

Training costs companies time and money and is an investment to ensure they remain competitive and successful in the future. Recruitment and retention of trainees are points which need to be considered. Ideally, an apprentice will undertake training and upon completion will become a skilled member of the workforce with an opportunity to progress. For a trainee to leave partway through or upon completion is not a beneficial outcome for the employer or the apprentice.

During the project interviews and the follow-up validation workshops, this was a topic of discussion. A high percentage of participants expressed the importance of integrating trainees into companies and believed this was work which commenced whilst the young people were still at school. They noted that young people are often not aware of what a sector does; the types of job; skills required; and career pathways available. By giving them an insight into the work of the sector they would be in a better position to decide whether it offered career opportunities for them. They would also be better prepared for the recruitment process.

It was suggested that VET-Business partnerships have an important role to play in informing and preparing young people for their future careers. By working together, they can deliver joint initiatives promoting the work of a sector and raise the awareness of the potential recruits. The partnerships



should identify and share examples of good practice which could then be implemented.

Suggestions from the workshop attendees from the port and logistics sector included:

- Bilateral meetings between VET representatives and sector businesses allowing the VET providers to gain a better and updated knowledge about the companies, how they work and what their current and future training needs are.
- Raising young people's awareness of the sector and the careers it offers. Highlight the challenges it faces with the use of new technology and emphasise that their generation has the potential to be part of the skilled workforce.
- Arranging school visits to companies allowing the students to learn not just about the sector but also about the company itself.
- Offering work placements to young people to gain skills and practical experience from people already working in the sector.
- Promoting employment in the sector through Careers Fairs, Outreach programmes, Challenges and Competitions linking the work of the sector to subjects in the school curricula.

Carrying out this work would provide benefits to young people and employers. It would also strengthen the VET/Business partnership.

Once the trainee has been recruited the integration process can continue by providing mentoring and support. By addressing these aspects, the apprentice retention rates can be improved and trainees job satisfaction enhanced.

Participants in the interviews and workshops also noted that the ports are multigenerational contexts of work and it is important to consider and plan how different generations, with different backgrounds, can work, cooperate and learn with each other. The processes and systems used in the sector are evolving and it is important to raise the awareness of experienced workers to the need of embracing the use of ICT and automation. It is also important to ensure that young trainees have a comprehensive knowledge of the sector and to understand how they can use ICT to benefit the companies.

The purpose of the Apprenticeships Model is to provide guidelines to help strengthen and maintain VET/Business partnerships and assist them in developing and delivering high-quality apprentice training needed by SMEs in the ports and logistics sector. The Model is targeted at VET providers, SMEs, local and regional authorities, apprenticeship professionals and organisations responsible for certification. It summarises the ideas and feedback given by people employed in those roles and reflects their professional experience gained in the port and logistics sector and combines it with the work that is being done through the national systems.



5 Appendices

5.1 Appendix 1-Technician on port and logistics with competencies on IT

**Figure 1 – Training Units (TU) for
“Technician on ports and logistics with competencies on Information Technologies”**

FUNCTIONAL AREAS	N. ° TU	TRAINING UNITS	WORKLOAD (HOURS)
Computing (COM) 350 hours	001	NETWORK - DESIGN AND ADMINISTRATION	50
	002	COMPUTING ARCHITECTURE ON WEB ENVIRONMENT	50
	003	MANAGEMENT INFORMATION SYSTEM	50
	004	PERSONAL PRODUCTIVITY TOOLS	25
	005	SPREADSHEET - LEVEL I	25
	006	SPREADSHEET – LEVEL II	25
	007	DATABASE MODELLING AND ADMINISTRATION	50
	008	E-BUSINESS LANGUAGES	50
	009	INFORMATION SAFETY AND SECURITY (WEB ENVIRONMENT)	25
Management, Ports, and Logistics (MPL) 600 hours	001	GENERAL MANAGEMENT	50
	002	TRANSPORTATION AND LOGISTICS SYSTEM	50
	003	TRANSPORTATION AND LOGISTICS TECHNOLOGIES	50
	004	TRANSPORT ECONOMICS	50
	005	GLOBAL MARKET AND INTERNATIONAL TRADE	50
	006	TRANSPORT LAW	50
	007	DOCUMENTATION AND QUALITY MANAGEMENT IN PORTS AND LOGISTICS	50
	008	OPERATIONAL MANAGEMENT IN LOGISTIC CHAIN	50
	009	SAFETY AND ENVIRONMENT IN TRANSPORTS AND LOGISTICS	50
	010	QUALITY MANAGEMENT - SERVICES AREA	50
	011	MANAGEMENT INFORMATION SYSTEM APPLIED TO LOGISTICS AND PORTS	50
	012	INFORMATION SYSTEMS APPLICATIONS IN PORTS AND LOGISTICS	50
Soft skills (SOS) 125 hours	001	COMMUNICATION AND ORGANIZATIONAL BEHAVIOUR	25
	002	TEAM MANAGEMENT	25
	003	TIME MANAGEMENT AND WORK ORGANIZATION	25
	004	PROFILE AND POTENTIAL OF THE ENTREPRENEUR - DIAGNOSIS/DEVELOPMENT	25
	005	ENVIRONMENT, SAFETY, HYGIENE AND HEALTH AT WORK - BASIC CONCEPTS	25
On job training (OJT) 600-800 hours		TRAINING AT WORK	600-800

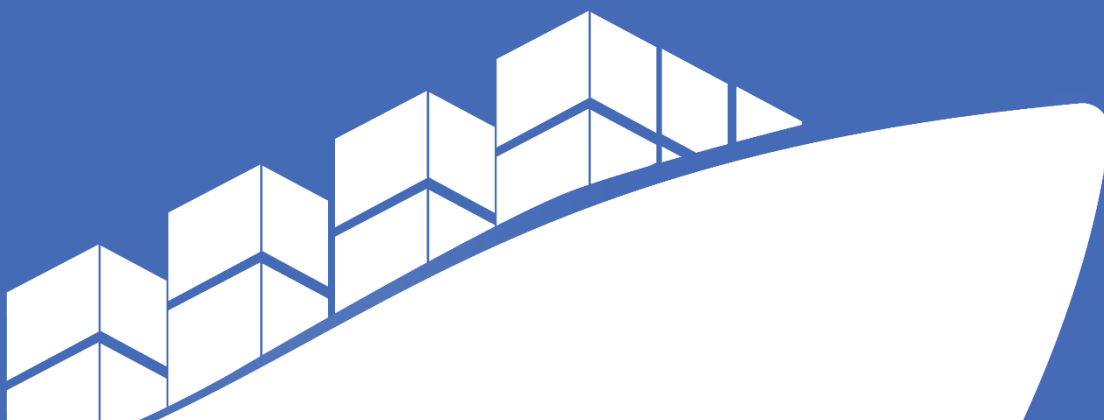
5.2 Appendix 2 – Specialist Technician on IT applied to port and logistics

Figure 2 – Training Units (TU) for
“Specialist Technician on Information Technology applied to ports and logistics”

FUNCTIONAL AREAS	N.º TU	TRAINING UNITS	WORKLOAD (HOURS)
Computing (COM) 600 hours	001	NETWORK DESIGN AND ADMINISTRATION	50
	002	IT ARCHITECTURE ON WEB ENVIRONMENT	50
	003	IS/IT MANAGEMENT	50
	004	PERSONAL AND COLLABORATIVE PRODUCTIVITY TOOLS	25
	005	INFORMATION SECURITY MANAGEMENT (WEB ENVIRONMENT)	50
	006	INVESTIGATION METHODS	25
	007	WEB ENVIRONMENT SOFTWARE DEVELOPMENT	50
	008	PROJECT MANAGEMENT	50
	009	DATA REQUIREMENTS ANALYSIS AND MANAGEMENT (WEB ENVIRONMENT)	25
	010	DATABASE MODELLING AND STRUCTURE	25
	011	SOFTWARE QUALITY CONTROL AND AUDIT	25
	012	DIGITAL TRANSFORMATION & MATURITY MODEL INFORMATION	50
	A13	DATA MINING AND BUSINESS INTELLIGENCE	50
	A14	DESCRIPTIVE AND PREDICTIVE MODELS	50
	A15	RISK AND UNCERTAINTY	25
	A16	ADVANCED MANAGEMENT AND MANIPULATION OF SPREADSHEET APPLICATIONS	50
Management, Ports, and Logistics (MPL) 300 hours	001	GENERAL MANAGEMENT	25
	002	HUMAN RESOURCES MANAGEMENT	25
	003	ECONOMIC AND FINANCIAL ANALYSIS	25
	004	INTERMODALITY AND LOGISTICAL NETWORKS	25
	005	OPERATIONAL MANAGEMENT IN LOGISTIC CHAIN	25
	006	GLOBAL MARKET AND INTERNATIONAL TRADE	25
	007	DOCUMENTATION AND QUALITY MANAGEMENT IN PORTS AND LOGISTICS	25
	008	INFORMATION TECHNOLOGIES APPLIED TO LOGISTICS AND PORTS	50
	009	COMMUNICATION, ORGANIZATIONAL BEHAVIOUR AND RELATIONSHIP MANAGEMENT SOFTWARE	25
	010	MARKETING SERVICES ON DIGITAL ERA	25
	011	USING SOCIAL MEDIA ON LOGISTICS	25
	012	QUALITY MANAGEMENT	25
Soft skills (SOS) 50 hours	001	TEAM MANAGEMENT	25
	002	ENVIRONMENT, SAFETY, HYGIENE AND HEALTH AT WORK - BASIC CONCEPTS	25
	003	PROFILE AND POTENTIAL OF THE ENTREPRENEUR - DIAGNOSIS/DEVELOPMENT	25
On job training (OJT)		TRAINING AT WORK	600-800

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