

# Harmonising Maritime Education and Training at Sea and Ashore

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## ABSTRACT

The IMO developed the International Convention on Standards of Training, Certification and Watchkeeping (STCW) that includes the minimum requirements for the maritime education and training (MET) of seafarers in 1978. There have been several major and minor amendments; most recent revisions were announced in June 2010.

There are three areas of concern; one is whether MET providers implement and maintain STCW requirements correctly, second is how these standards are monitored, and third why there is so much focus on minimum standards?

The IMO has passed the responsibility for STCW implementation to national governments and the European Union (EU) has established European Maritime Safety Agency to ensure the STCW standards are implemented in the EU member states. EMSA has widened its remit and is now monitoring STCW in countries outside the EU. Review of EMSA's work has found that there are countries or institutions that do not implement the STCW correctly.

To address the stated concerns UniMET project was initiated. UniMET intends to unify the core of MET and encourage the attainment of higher standards. This is being achieved by making sure that partner MET institutions go beyond the STCW and address some of the identified deficiencies of the STCW.

UniMET is based on the successful and internationally recognised Safety On Sea (SOS- 2005-07) project and embraces several recent successful EU projects such as MarTEL, EGMDSS, TRAIN 4Cs and intends to integrate the results of the newly completed EU projects SURPASS and MAIDER. The intention is to incorporate the outcomes of three on-going EU projects, CAPTAINS, Sail Ahead and MarTEL Plus.

This paper will also report on the findings of Sail Ahead project concerning the integration of seafarers' prior learning with the requirements of jobs ashore. Both projects are expected to make the profession attractive to young people.

*Keywords: Maritime Education and Training unification, UniMET, Master Class Standards*

# 1. Introduction

## Background to UniMET and Rational for its Development

The human factor is the most important element in merchant shipping which directly affects the safety and security at sea. A well-educated and trained workforce is necessary for a strong and successful water transportation industry. Human factor also affects the competitiveness of the shipping companies. The maritime education and training (MET) influences the quality of education of seafarers and their well-being in the future. Seafaring is an international profession and that is the reason why IMO established the common standards for seafarers' education and training. According to IMO (Ziarati, 2006) 80% of accidents at sea are caused by human error. It is reported that mistakes are usually made not because of faulty, deficient or inadequate regulations, but because the regulations and standards, that do exist, have been ignored. The IMO accident analysis reports (cited in Ziarati, 2007) clearly indicate the causes of many of the accidents at sea are due to deficiencies in education and training of seafarers or disregard for current standards and regulations as well as poor delivery of existing standards. A review of research (Ziarati 2007) has identified several major deficiencies in the current international standards (see for instance [www.martel.pro](http://www.martel.pro); [www.surpass.pro](http://www.surpass.pro); [www.maider.pro](http://www.maider.pro)).

The industry is facing shortages of well qualified officers primarily due to young people not to choose a seafaring career or leaving the career for land based jobs. Considering the aging profile of the current seafarer nearing an average of 45, the solution requires a concerted and a radical approach by all concerned in the maritime industry. The shipping industry needs to be an Industry of Choice (IOC) for the younger generation and, shipping companies recognised as Employers of Choice (EOC) in order to attract and keep the young generation in the worldwide shipping companies (Cahoon and Haugstetter, 2008, cited in Kaptanoglu, 2009).

## 2. Why UniMET? The Key Development Issues for MET

### The key issues addressed by UniMET are:

Development of a unified system consisting of several leading MET models covering the whole range of practices observed throughout the world identifying in parallel a number of good practices. The unified system would embrace the latest IMO and EU requirements and goes beyond the minimum standard set by STCW. The new system known as UniMET should provide a yard stick for organisation such as IMO and agencies such as EMSA to establish if STCW requirements have been fully implemented and if these standards have exceeded in any institutions, to report if there are indicators to identify any areas where higher standards are applied.

Creation of a European Credit Transfer mechanism based on recent European agreements and realisation of European Credit systems for vocational elements of the UniMET.

Provision of simple but flexible and comprehensive learning time facilitates the delivery of 4, 6 or 8 units per year. The system would allow for a range of variation as the overall year credit for knowledge requirement and vocational elements are based on current EU practice.

A greater focus is on automation system application and control and on emergency situation.

Development of a range of comprehensive set of scenarios for emergency situations and automation system and components are included in UniMET programmes.

Provision of a range of maritime English material and a set of comprehensive maritime English test to ensure there is a measure to determine the level of competency of seafarers' command of English language in the context of their profession.

Development of a set of e-learning platforms as examples of how these platforms could be developed for distant access to material that can improve safety at sea and make learning more user-centred.

Making the profession more attractive by developing tools would help young people to work at sea and onshore through their career as merchant navy officers.

Development of a novel quality assurance system with a set of tangible quality criteria focused on the need of the learner.

Working in conjunction with leading awarding, accrediting and licensing bodies to ensure UniMET is recognised worldwide and UniMET qualifications are accepted throughout the world.

Since the UniMET programmes and courses are expected to be recognised worldwide, this would allow surpluses from one European country to work in others where there are shortages; and since, there are pathways for seafarers to work onshore, this would make the profession more attractive to young people. Provision of online e-learning and e-assessment facilities would also make the seafaring more attractive and allow remote access a number of learning material.

It is worth pointing out that UniMET is supported by MariFuture ([www.marifuture.org](http://www.marifuture.org)), a platform integrating innovation, education and research in MET and providing the latest development in Europe.

Last but by no means least, is the development of PC based learning material for those institutions which have no or little access to bridge and/or Engine-room simulators. UniMET partnership is proud to have developed a range of learning material for PCs in parallel to the development of materials for ship simulators.

### **3. Challenges facing the Shipping Industry**

#### **Officer shortages**

There are acknowledged shortages of merchant navy officers, maritime business professionals and marine scientists and technologists (Ziarati, 2003). There are two ways of considering the shortages. One method is those predicted by organisation such as BIMCO/ISF. According to BIMCO/ISF (2005) the additional number (estimated shortages) of merchant navy officers needed worldwide is 27000. Same report noted possible shortages reaching 46000 officers in 2015. The BIMCO/ISF estimated shortages of officer in 2010 are not dissimilar to the shortages reported in 2005 if different assumptions used by them are taken into consideration. A good review of shortages and OECD figures are given in Ziarati (MariFuture project – [www.marifuture.org](http://www.marifuture.org)).

The other method proposed by Urkmez (2005) is by reviewing the tonnage for world maritime trade. OECD in 2004 reported the tonnage to be:

2001 Year	755.600.000 DWT
Sept. 2005	883. 900.000 DWT (% 18)
Orders	231.000.000 DWT
2010 Forecast	<u>1.100.000.000 DWT</u>

Urkmez (2005) relying purely on the number of ship orders and scrap (recycled) numbers estimated the shortage of officer worldwide to be around 100000 and those by the Turkish fleet around 5000 by the year 2010. Urkmez (ibid) shortage figures are a great deal closer to Drewry Consultation shortage figure of 83000 for officers as quoted by the President of IMO, Mr Mitropoulos, in 2009. Turkey has a massive surplus of ratings and a shortage of officers, particularly Marine Engineers (OECD, 2003, 2005 and 2007). This means that the manpower resources in this sector needs to be corrected by producing more officers and giving opportunities to some Ratings with the potential to receive additional education and training and become officers. However, the massive increase of maritime faculties and courses has to large extent redress the balance in Turkey. This shortage situation was particularly remedied by TUDEV, recruiting over 1000 cadets over a three-year period, during the 2004-2008 alone.

### **Learning from previous research**

It was also noted that there have been several research reports which have pointed out that while some countries are applying good practices there are those that need support. A study by (Torkel, 2004) reports that 25% of the world fleet was responsible for more that 50% of shipping accidents around the world. The study notes that the top 25% of the safest ships were involved in just 7% of all accidents. The University of Technology and Science in Norway (Ziarati, 2003), reports that by improving the quality of the world fleet to the same level as those in the safest 25% category, there might be an overall reduction of 72% in shipping accidents.

### **International Standards**

The current international Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) was recently revised and a good review of the changes is given in Yongxing (2009) (sited in Ziarati 2010 – See [www.marifuture.org](http://www.marifuture.org) development papers,

October 2010). These standards are the minimum level of education and training for seafarers worldwide. While minimum standards should be respected what is needed is to aim for higher standards and seek excellence rather than embrace lowest possible standards.

The Higher education institutions providing maritime training worldwide are responding to these minimum requirements. Another regulation that will affect maritime training is the new International Maritime Labour Convention adopted in Geneva on February, 2006 and its recent revision in 2012. It is considered as the fourth pillar of international maritime regulation; the other three being the conventions on Safety of Life at Sea (SOLAS), MARPOL and the STCW which is related to seafarers' knowledge, skill, and competence minimum requirements.

### **The Two Main Problems**

There several challenges to MET providers and those who use their products and services. However, the two main problem areas concerning the seafarers in Europe are shortage of the seafaring officers and the quality of MET. Many efforts have been put into finding solutions to the shortage of seafaring officers amongst these were the emergence of many new maritime institutions and the expansion of existing resources. The number of seafarers being deployed in Europe is significantly increasing. Although officer shortages still continues to be a problem in some of the Western countries, the significance of this problem area is gradually receding in Eastern Europe, nevertheless, the quality of MET is still a major issue, here quality means fitness for purpose and the need to ensure quality is fit not by the administration or institutions for saying so but through peer assessment such as external accreditation of MET programmes by professional institutions or awarding bodies. If the quality issues are resolved in identified regions of Europe then there will countries in these areas will help create a bank of European seafarers available to overcome shortage in other regions of the Western world.

### **European Qualification Framework**

The global maritime community have become very keen on vocational qualifications. These qualifications have become an important subject to be visited and reconsidered not only by Western countries but also by the others globally. European Union (EU) has established Qualification Framework (EQF) and all members and cooperating countries have started to adopt this system in their national occupational framework. The main aim of the EQF is to ensure quality of manpower to support industry is the same throughout Europe. EQF establishes standards for a safe, secure and productive work environment.

Europe needs to fully embrace by what is meant to create a MET system that is fit for purpose. Not all seafaring officers need to be university graduates and at the other end of spectrum we need seafarers with higher qualification beyond university diploma and degrees.

## **European Maritime Safety Agency**

Whilst IMO legislates and introduces standards such as STCW, it has not and probably would not monitor the implementation of its own minimum standards. IMO has a huge inertia and often has been reactive to shipping industry's needs. It has passed the responsibility for implementing and monitoring of its standards, rules and conventions to the national governments. The problem is that IMO established the STCW after several major accidents and SOLAS and MARPOL also came about after major accidents. The core of STCW was developed in 1978 and since then there has been several cosmetic changes to these standards, the most significant being the one in 2010, many of the changes forced upon IMO by larger and more progressive companies canvassing through several national government delegation to the IMO committees. Although the number of accidents and incidents at sea are on the decrease, the number of accidents and incidents due to automation failure has been on the increase and those due to communication errors and linguistic problems have remained substantial Trekner, (2002), Ziarati, (2006). Intertanko recently reported (SAS 2010) to experience on engine stop per week; this one accident per week waiting to happen for company alone; one accident too many!

European Maritime Safety Agency (EMSA) was established to ensure safety at sea throughout the Union and further afield. One area of focus for EMSA (2003) has been the enforcement of STCW throughout Europe and in countries providing seafarers to Europe or visiting Europe's waters or ports. EMSA is involved in the application of EQF standards in the maritime sector and has, as stated earlier, started to inspect and evaluate quality of the MET in member and candidate countries.

EMSA made a detailed study on the MET systems in 2010 and submitted a report to EU countries and ship-owners about the findings of this study. It is clearly stated that some countries are not able to meet STCW standards and seafarers from these countries are not eligible to be employed on board EU ships. For instance, Certificate of Competencies (CoC) issued by Georgia are refused. Another example is the EMSA formal requested for the closure of 12 MET institutions in Philippines which are found to be sub-standard unless they improve their quality. There have also been quality issues with several EU member states.

Not only the EU member states but also other developed countries such as US, Canada, Japan are very keen on stamping out on the low quality seafarers. There is no employment opportunity for the foreign seafarers in these countries unless they have guaranteed high level of competency standards. They, similar to EMSA, are directly involved with the MET systems in the countries which provide seafarers to them and cooperate with to ensure the quality of the standards are as expected.

## **Immediate Technology Issues**

The new technology provides us to use Pseudo and real simulation systems. The excessive use of simulators is strongly advised by STCW. Use of simulators requires adequate equipment, highly experienced instructors and well-designed scenarios. A campaign has been started to upgrade existing simulator systems which will fully support course programme. CBT (Computer Base Training) and CBTM (Computer Base Training Assessment) have become essential elements of

the MET to provide more realistic training for cadets and seafarers working in the maritime industry. The computer assisted systems have been also deployed to create new scenarios and make research studies in support of the maritime industry.

It is recognised that not all MET institutions have sophisticated bridge and Engine-room simulators and those that have some have limited access to them. The real problem is that not any of the simulator exercises observed in many of the visits is based on real accidents or incidents these include some of the leading maritime authorities who award or their certificates are used as the basis for CoC/OOW qualifications. It seems that many of the tests are based on exercises rather than real accidents or incidents. Furthermore, many of these examiners have not worked as seamen for substantial number of years. If was for these reason the several major EU projects were initiated to overcome both technology related problems viz., lack of realistic scenarios for simulators and finding a way to increase access to simulators.

#### **4. The Situation in Europe**

Ignoring the current economic crisis and considering the trends, the European fleet is growing rapidly and shortage of qualified seafaring officers is estimated to be over 30,000 in the next 5 to 10 years. The shortages reported in BIMCO/ISF reports of 2005 and 2010 are not that dissimilar (Urkmez, 2005). Enforcement of ISM and ISPS applications forced ship owners and the Government to take rapid measures to review their ship management applications. The emergence of high value and modern ships in service had necessitated an urgent need for qualified seafarers to service the European maritime industry. As reported earlier there are also severe shortages for qualified seafarers particularly relating to specialized vessels.

The provision of high standard qualifications for seafarers is important not only for the EU domestic demands but also for external demand. Europe has a huge number of young populations, and the economy cannot provide sufficient employment opportunity for continent's young people. There European countries which have considered export of manpower as a serious opportunity to solve unemployment problem (DPT, 2006). The world shipping sector is a ripe employment area well suited for exploitation by the some of the European governments and the maritime Communities to create employment opportunities for their young unemployed people.

#### **5. UniMET Project**

Europe needs knowledge and resources to participate in or initiate many innovative projects in the maritime field. Considering many of these projects involves cooperation with EU bodies and similar maritime centres in other countries, the continent need to trigger exchange of information and knowledge between European countries and worldwide.

Following many studies, in coordination and cooperation with several European Countries, and a number of visit to MET institutions in Norway, England, Scotland, USA and contacts were established with maritime institutions in Sweden, Finland, Poland, Slovenia, Lithuania, Bulgaria, China, Japan and several other countries considering the variation in MET practices the need for

harmonising these differing approaches was considered necessary. The review of maritime practices in these countries concluded that the existing provisions in Europe, while in many aspects are satisfactory and that there are pockets of excellence in several noted practices, overall it was short of what are required and existing maritime institutions needed to rapidly increase their current capacities and improve their provisions to standards expected by international and European research, awarding, accrediting and licensing authorities.

In addition to the national monitoring and evaluation system at national level, European countries have accepted EMSA (European Maritime Safety Agency) inspections. EMSA has conducted inspections on many maritime administration systems of many EU and non-EU countries in particular on education, training and certification system. A review of EMSA's reports clearly shows that there are a range of differences and practices in implementing the IMO minimum standards for maritime education and training (STCW) in the various countries. EMSA also focuses on minimum standards.

The EMSA's report indicates some deficiencies regarding the MET systems in several countries and refers to some of the actions taken by the administration and/or institutions to correct these deficiencies. The reports state that most of the deficiencies regarding maritime training, certification and monitoring which were indicated in the previous visits were subsequently seen to be correct in the second or subsequent visit(s). While EMSA should be commended for trying to monitor the IMO STCW as a European safety agency it should focus on any means to improve the safety of ships at sea. There are always more than one party involved in accidents and incidents and on this basis EMSA can not and should not ignore the quality of MET in other countries with ships passing through its waters and visiting its ports, while at the same time be pro-active and progressive in seeing ahead, through reviewing and/or promoting research work to promote safety at sea and ports.

The main question raised by the research reported in this paper was how and why there are so many differing MET practices particularly considering the core of these practices is satisfying the IMO STCW and related requirements. A review of the MET in several European countries indicated that there is possibility of harmonising the MET programmes and developing a unified system for presenting several models for consideration not only by European countries but by all IMO member states. The core of the harmonised MET could still be the latest STCW presented by IMO revised Model courses supplemented by several good practices within unified quality assurance and control system underpinned by a set of quality criteria. To ensure there is a harmonised MET practice UniMET proposal was drafted and submitted to the EU for funding.

An overview of UniMET project is presented in Figure 1. The unit structure is flexible and the UniMET Credit Transfer Scheme is based on current practice in the EU. Table 1 shows the credit system within the EQF. The pathways for Officer Class 1 to 2 and to Master Class and Captain of Industry are also set as shown in Tables 2 and 3. Table 4 shows the UniMET corresponding ECTS and ECVET and Variation of Number of Units in a year. The Top-up system show Tables 2 and 3 are 2+1 or 3+1 schemes; so that cadets from one institution could at certain points exit the system and they wish study in one of the UniMET partner institution or go to sea and return to continue their studies at higher level.

## 6. Sail Ahead Project

Seafaring is a challenging and extraordinary profession having dangerous work conditions, long-term stays, long working hours and job instability. They work in alternating 4 hour shifts and often have to face temperature changes of over 30° on some occasions. They mostly need to work in such condition in order to remain in the profession. Captains, including junior and senior officers, need to have various managerial, technical and administrative duties as per their contractual requirements. EU reports that there is a reluctance of young generation to join sea as IMO has been campaigning to attract more young generation to work at sea with “GOTOSEA” project. To remedy the problem and to encourage young generation to join sea profession by providing them a second career opportunity, Sail Ahead project was funded by European Commission.

The project identified the transferable skills that Captains (including senior and junior officers) develop both during their training at maritime academy and at sea. The curriculums of each partners’ countries were examined to identify the competencies developed both at academy and at sea. In parallel, a set of questionnaire were developed for Deck Cadets/Officers/Master to obtain feedback about their point of view on the competences they developed. These questionnaires were supported and validated by a complementary questionnaire grid for maritime lecturers.

### Findings of Transferable Skills Report

The curricula of Turkey, UK, Greece, Finland, and Poland were cross-referenced with the IMO Model courses (7.03 for officers and 7.01 for senior officers/captains). The comparison showed that there was no appreciable difference between the set of knowledge and skills developed among the countries selected. The differences were more at what took place beyond the minimum standards set by STCW (or IMO model courses 7.03 and 7.01).

Comparison of curricula was followed by a comprehensive questionnaire to find out the view of key target groups. 414 responses were received at Captains and Deck Officer Level, 337 were received from cadets, overall representing a good crossing section of the current maritime community in the world. One of the important finding of the questionnaire was to see where they would like to work.

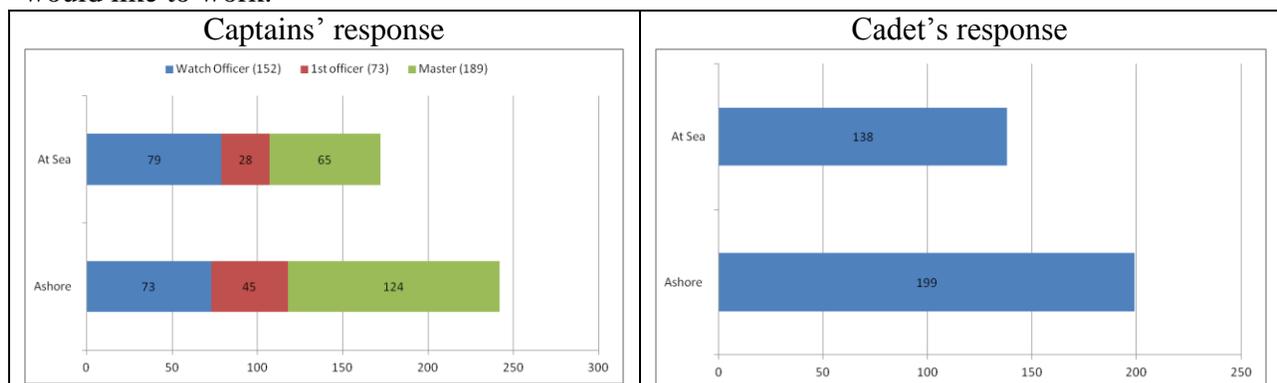


Figure 1 – Response of cadets and captains on where they would like to work

It has become apparent that from the findings that the more time a seafarer spends at sea; the more reluctant he is to stay and work off-shore. Masters are one of the ranks that more than 75 percent of them wish to have some sort of employment opportunity ashore.

The results indicate that seafarers believe that they have required skills to work ashore. The results of the questionnaire show that in general sea officers are stronger in business, people, personal and vocational skills while being comparatively weaker in analytical skills. They are also of the view that maritime industry needs more seafarers to be employed ashore. However, they agree that they might need to acquire additional skills. Introducing courses to bridge the knowledge and skill differences at sea and onshore they consider being useful. They are convinced that the maritime industry would benefit employing seafarers as this would improve the quality of the workforce in shore-based jobs.

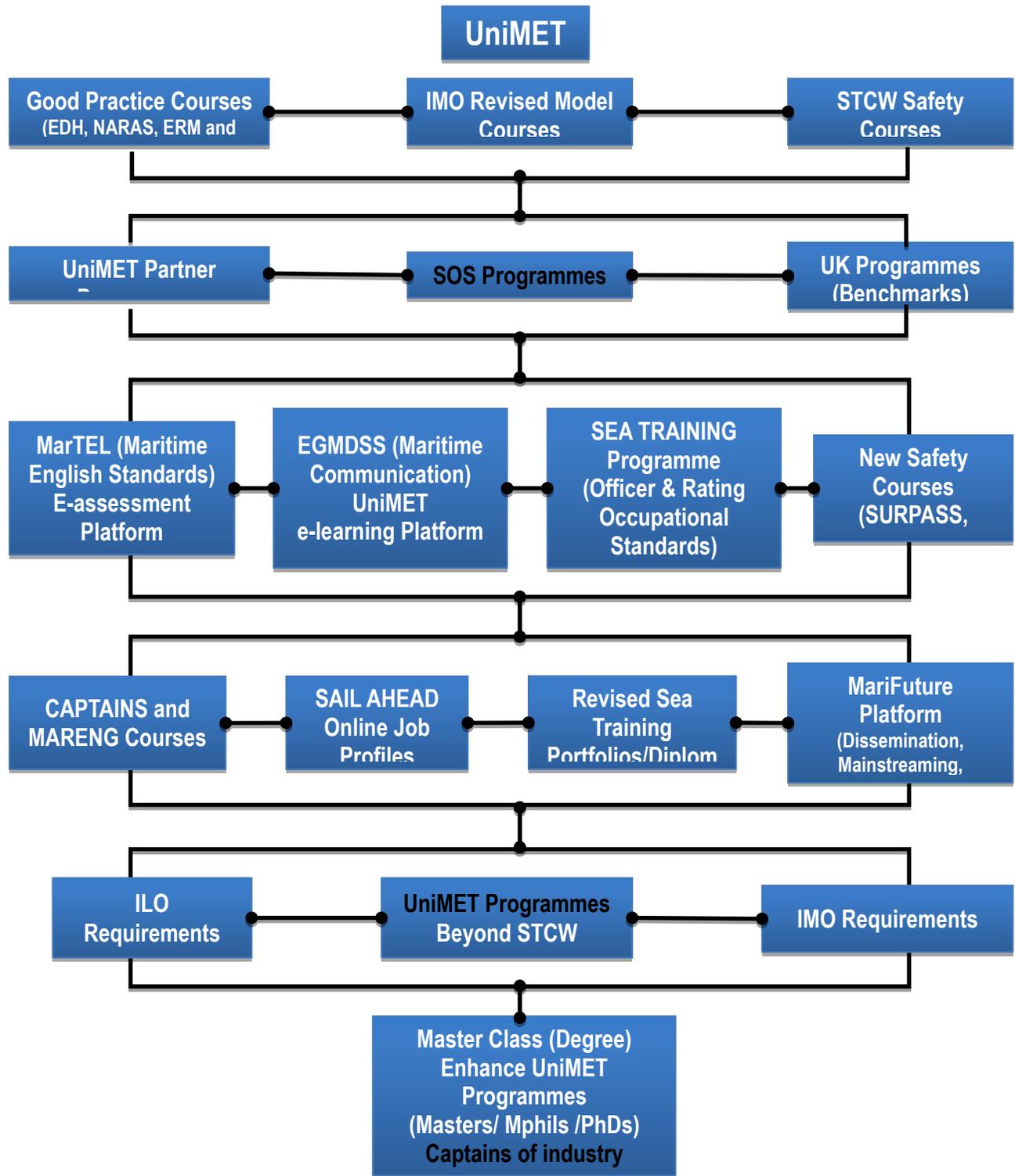
Sail Ahead project primarily is concerned with the development of an online career guidance tool to provide second career opportunities to seafarers. Opportunity of working at sea and ashore is expected to make the profession more attractive to young people.

## **7. Conclusion**

UniMET is not just a set of harmonised MET programmes. It is an entire and comprehensive MET practice with its own unique and innovative quality assurance and control system derived from best practices in world. It contains its own online platform with several variation of MET programmes all harmonised around the IMO STCW and in line with IMO model courses. What is also significant with regard to UniMET is its whole suite of good practice courses, all with their own online, yet independent, platform. It was developed after reviewing all previous projects and attempts to unifying MET programmes or practices in Europe and worldwide. It came about as a result of several major research and development projects followed by over twenty visits to many countries and their MET institutions. The paper here only refers to current map of UniMET which includes tools such as Sail Ahead which has its own online guidance helping seafarers to find jobs onshore.

Sail Ahead is expected to make the profession more attractive to young people. Furthermore, a future map (including a sustainability plan) has been developed for UniMET and work has already commenced to realise the next stage of its development. One area is to bring the less privilege seafarers also into the scheme of UniMET and to this end, work is currently being carried out to provide similar opportunities to Ratings and giving some of them the opportunity of becoming officers. There are also projects which will link up with UniMET to identify current good practices and ensure their outcomes are disseminated and incorporated into UniMET. UniMET and every individual element of it have already been tested in real environments and many of constituents parts are being used worldwide. There are clear indicators that UniMET and its good practices will receive international recognition.

**Figure 2 – UniMET Framework**



**Table 1 – UniMET Credit Transfer System**

LEVEL	TIER	CREDITS
<b>Captains of Industry</b>	LEVEL 8 LEVEL 7 (EQF)	4 years – 240 ECTS 2/3 years – 120/180 ECTS per year
<b>Master Class</b> Semestr 1 - 5: School Semestr 6&8: Sea Tra. <b>Officer Class 1(7.03/4)</b> Semester <b>7</b> (Additional Units for degree) <b>Officer Class 2 (7.01/2)</b>	LEVEL 6 (EQF)	3 years at school - 180 Credits 1 year at sea (Deck,ME) 60 Credit TOTAL 240 ECTS
<b>Officer Class</b> Master Class Semester 1 - 5: School Semester <b>6 &amp;7</b> : Sea Training <b>Officer class 1</b>	Level 5 (EQF&	2 ½ years 150 ECTS 1 year at sea (Deck+ME) 60 CVET/ECTS ½ years 30 ECTS (See slide 3) for degree and 7.01/7.02 education
<b>Vocational School Limited Officer</b>	LEVEL 4 (CVET)	3/4 years 120 or 160 CVET For each month at sea 5 CVET

**Table 2 –Additional Units for Master Class (Degree)**

No	Unit	Hours	Credit
1	Marine Project DECK&ME)	<b>250 (100 hours during Sea Training)</b>	<b>12 ECTS</b>
2	Marine Management, Finance and Law ( <b>DECK&amp;ME</b> ) (Management Level)	<b>125-150</b>	<b>6 ECTS</b>
3	<b>DECK</b> Advance Navigation and Watch for Management Level <b>ME</b> Advance Marine Engineering for Management Level	<b>250-300</b>	<b>6 ECTS</b>
4	<b>DECK</b> Marine Operations (Cargo and Passengers) Marine Industry Applications <b>ME</b> (Maintenance&Technology)	<b>250-300</b>	<b>6 ECTS</b>

**Table 3 – Additional Units for Master Class (Top up)**

No	Unit	Hours	Credit
1	Marine Project DECK&ME)	270	30 ECTS
2	Marine Management, Finance and Law ( <b>DECK&amp;ME</b> ) (Management Level)	90	10 ECTS
3	<b>DECK</b> Advance Navigation and Watch for Management Level  <b>ME</b> Advance Marine Engineering for Management Level	90	10 ECTS
4	<b>DECK</b> Marine Operations (Cargo and Passengers) Marine Industry Applications <b>ME</b> (Maintenance&Technology)	90	10 ECTS

**Table 4 – UniMET ECTS and ECVET and Variation of Number of Units in a year**

<b>NB:1</b>	<b>Officer Class 1 (Equivalent to IMO 7.03 and 7.04) Officer Class 2 (Equivalent to IMO 7.01 and 7.02)</b>	<b>1 Year = 8 Units of study. 1 unit = 7.5 Credits</b>
<b>NB:2:</b>	<b>1 UniMET Credit = 1 ECTS Credit = 1 CVET Credit</b>	<b>Each Unit = 60 hours of learning (Nominal)</b>
<b>NB: 3</b>	<b>1 Year = 60 ECTS/CVET 1 ECTS/CVET is 25-30 learning hours, self study or practice. One semester is 15 weeks.</b>	<b>1 Year = 6 Units of study. 1 unit = 10 Credits Each Unit = 90 hours of learning (Nominal)</b>
<b>NB:4</b>	<b>Maximum 30 ECTS can be delivered in one semester.</b>	<b>1 Year = 4 Units of study. 1 unit = 15 Credits</b>
<b>NB:5</b>	<b>Normally 2 semester in 1 year. 3 semester may be applied for Level 5</b>	<b>Each Unit = 120 hours of learning (Nominal)</b>

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He previously served as Director of Oxford Brookes University/Dogus Institute, Istanbul, Turkey, Dean of Faculty of Sciences, Head of Department of Computer Engineering and Pro Vice Chancellor (External Relations) of Dogus University, Executive Director of Centre for Factories of the Future, External Examiner for higher degrees, degrees and BTEC/Edexcel programmes.

He holds a number of directorships and industrial professorships. Chaired and participated in a number of international consortiums, conferences, business programmes and industrial partnerships.

He has over 80 major papers and/or articles and awarded a number of national and international prizes.

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**Dr Martin Ziarati, BA Hons (Business Economics), PhD (Engineering)**

**Dr Ziarati** has been a Director and Head of maritime education and training at the Centre for Factories of the Future (C4FF) for a number of years.

He is the coordinator of the MarEdu and MariFuture networks. He has undertaken coordination activities for a number of EU funded projects. He is presently the project director for six ongoing EU funded projects including two Maritime English focused projects: MarTEL Plus and CAPTAINS. C4FF lead the MarTEL Plus project which intends to establish International standards for Maritime English with a total of 22 EU partners.

He has written a number of International referred papers in the area of Maritime English. He has also had written a number of articles printed in International maritime publications in the area of Maritime Communications. He is a member of the Excellence Club, represented by leading innovative companies in the region and a personal member of the EU Research and Development funding group, both established by the regional development agency.

He is a Working Group Member, MILC Technology & Innovation Group, MILC (Marine Industries Leadership Council (UK's forum for the industries' key stakeholders supporting UK Government Policy Making)

He is a visiting Senior Research Fellow and advisor on a number of ongoing PhDs at De Montfort University, UK

His recent activities include being a member of the organisation committee for an International workshop and session chair of an International conference.

**Dr. Martin Ziarati, Director**

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**Mr Ugurcan Acar, BSc (Marine Studies), OOW (Officer of Watch)**

He is a maritime project officer in the maritime education and training division at Centre for Factories of the Future (C4FF).

He has worked as a researcher on a number of EU funded projects, including six ongoing EU funded projects: UniMET, M'aider, Surpass, Sail Ahead, Captains and MarTEL Plus. He is supporting the coordinators in the ongoing development of the MariFuture network.

He has written a number of International papers in the area of Maritime training and education including Colregs. He has dual Unlimited Certificates of Competency, one from UK and one from Turkey. He has two years experience at sea as merchant navy deck officer and junior officer serving Oil, Container and Bulk carriers. He has also been involved in mentoring Turkish students at Glasgow Collage of Nautical Studies, UK.

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