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Seeking Excellence in Maritime Education and Training – with special references to situation in Turkey

This paper is written in support of the TUDEV's proposal for the establishment of a major European centre of Maritime Excellence referred to as TMCE (Turkish Maritime Centre of Excellence). It outlines the current state of affairs with regards to MET practices and, gives the background to several factors affecting the quality of the provisions, and highlighting several deficiencies of the current systems.

Human Factor

The human factor is the most important element of the merchant shipping which directly affects the safety and security at sea. It also effects the competiveness of the shipping companies. The maritime education and training (MET) influences seafarers' quality for 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 (www.surpass.pro, www.maider.pro, www.martel.pro, ziarati 2007) has identified several major deficiencies in the current international standards.

Human factors are the most important resource in a successful merchant fleet and a well-educated and trained workforce is necessary for a strong and successful transportation industry.

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, sited in Kaptanoglu, 2009).

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 to be 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).

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	1.100.000.000 DWT

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 Mitropoulus, 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.

A major study was carried out by the Turkish Chamber of shipping in 2003 to ascertain the need for establishing a maritime university in Turkey. Visits were made to several 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. The MET practices in these countries were studied carefully. The review of maritime education and training practices in these countries concluded that the existing provisions in Turkey, 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 awarding, accrediting and licensing authorities.

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 Ziarati (2010 – See www.marifuture.org development papers). 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 in Turkey are responding to these minimum requirements. Another regulation that will affect maritime training is the new International Maritime Labor Convention adopted in Geneva on February, 2006. It is considered as the fourth pillar of international maritime regulation, together with the IMO Conventions on Safety of Life at Sea (SOLAS), MARPOL for environmental protection, while the STCW is related to seafarers' competence.

The Two Main Problems

The two main problem areas concerning the seafarers in Turkey were shortage of the seafaring officers and the quality of MET in the recent years. Many efforts were spent to find solutions for shortage of seafaring officers; new educations institutions were opened, number of the students was increased and better living conditions were introduced and young people were encouraged to choose seafaring profession as a career. The number of seafarers being deployed in Turkey is significantly increasing. Although officer shortages still continues for Western countries, the priority of this problem area is gradually receding in Turkey and improving the quality of MET has become more urgent. The term quality here means fitness for purpose and the need for external accreditation of MET programmes by professional institutions or awarding bodies.

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.

European Maritime Safety Agency

European Maritime Safety Agency (EMSA) was established to ensure safety at sea throughout the Union and further afield. EMSA also is involved in the application of EQF standards in the maritime sector and started to inspect and evaluate quality of the MET in member and candidate states. Considering the large number of the non- EU countries' seafarers deployed on board EU ships, EMSA kept an eye on the MET systems of third party countries and has inspected many MET institutions in these 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.

Not only the EU 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 unless they have guaranteed high level of competency standards. They directly involve with the MET systems in the countries which provide seafarers to them and cooperate to ensure the quality of the standards are as expected.

The Situation in Turkey

The Turkish fleet is growing rapidly and shortage of qualified seafaring officers is estimated to be over 20,000 in the next 5 to 10 years. 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 Turkish maritime industry. There are also severe shortages for qualified seafarers particularly relating to specialized vessels joining the national fleet.

The provision of high standard qualifications for seafarers is important not only for domestic demands but also for external demand. Turkey has a huge number of young populations, and the economy cannot provide sufficient employment opportunity for country's young people. The Turkish State Planning Agency has 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 Government and the maritime Community to create employment opportunities for young unemployed people.

Turkey, a candidate country to join the European Union has also adopted EQF. Turkey has established his new vocational qualification system by law in 2006. Turkish National Vocational Qualification (NQF) system is now under construction and gradually improving to meet EQF standards fully.

To reach the vocational qualification standards to be compatible with international standards is possible by improving the format and quality of the vocational education and training system.

Despite increasing the number of the maritime institutions and cadets in Turkey in the past five years, unfortunately the qualification standards could not be improved significantly. Increasing the number of the MET institutions was a quick solution to address the shortage of seafaring officers but could not create a positive effect on the quality of the provisions. It is now understood that Turkey needs to find remedies to improve quality rather than quantity in the field of MET.

Considering that most maritime education/training programmes and short course training programmes/certificates delivered in Turkey are not recognized internationally, the skill shortage problems in Turkey is expected to be exacerbated in the near future. Turkey is in need of imminent solutions for this shortage to meet international standards and its own requirements for the future merchant fleet.

The reformation of maritime training and education systems including short course provisions in Turkey and substantial expansion of provisions for merchant fleet officers and ratings through partnership is now under study. Development of partnerships with other MET institutions and leading awarding, accrediting and licensing authorise has shown to help to resolve the anticipated skill shortages and at the same time lead to international recognition.

Under the sponsorship of Turkish Chamber of Shipping (DTO), TUDEV (Turkish Maritime Education Foundation) has been established to improve MET in Turkey in 1993. Considering late response of the Government to solve the urgent problems due to highly excessive bureaucratic process in the country a private entity, TUDEV has established his own MET centre, TUDEV IMS (Institute of Maritime Studies) in 1995. This maritime education and training (MET) centre was selected by many EU maritime authorities as a modal for reforming of education system instead of any public maritime institution. More than 1300 deck and marine engineering officers are graduated. TUDEV also assists other MET institutions to improve their quality and supported the distribution of DTO donated of

sophisticated ship simulators to several major maritime institutions including Dokuz Eylul University and provided training on the application of these simulators for their staff.

At the beginning of 2000s it has been understood that the shipping industry needs improvement not only for quantity but also quality. TUDEV started cooperation with MET institutions, accreditation and awarding bodies abroad. IMS started to deliver UK BTEC (Business Technology Education Council) programmes in English and cooperated with Edexcel seeking and succeeding international recognition for its programmes in 2003. TUDEV developed its EU funded well known SOS MET programme in collaborations with its European partners and support from major accrediting institutions (IMarEST) and certification authorities (such as the UK MCA).

The Turkish NVQ system is based on the Scottish Vocational Qualification (SVQ) system. Having been informed on this situation; IMS started to cooperate with SVQ authorities and accepted SVQ standards for accreditation for sea training as well as Edexcel based SOS MET programmes.

The content of IMO modal courses were not revised since last decade and needed to be updated to meet new requirements. TUDEV started to improve its course design to create an effective, optimum duration, internationally recognized MET programmes.

Navigation Engineering and Marine Engineering HND (High National Diploma) programmes of United Kingdom which are applied in many countries successfully, has been selected as a base model for TUDEV SOS programmes. A two and half year academic programme was improved which meet the requirements of both BTEC (Business and Technology Education Council) of UK and local Turkish requirements. These programmes were supported with a one year sea training programme (6 months for Marine Engineering) and one year Foundation English language course underpinning the main programmes. UK MNTB (Merchant Navy Training Board) standards used to conduct sea training.

TUDEV has initiated EU funded project, SOS (Safety on Sea) has improved the quality of education and training and has led to international recognition of its programmes. This project has been also supported three EU funded mobility projects (TRAIN4C-I-II-III) to enable its cadets to improve their skills abroad. This experiment encouraged TUDEV to initiate and participate in many MET related EU projects, such as MarTEL (Tests for Maritime English), E-GMDSS (Distance Learning for Short Range Communication), E-GMDSS II (Distance Learning for Long Range Communication), MarTEL PLUS, CAPTAINS (Maritime English for Masters at Business) SAIL AHEAD (Job Opportunities for Captain at Shore), SUPRPAS (Short courses to reduce automation related accidents), MAIDER (Scenarios for CBT) etc. Today TUDEV is a leading partner for the UniMET (Unification of Marine Education and Training) which is an enhanced project to improve the quality of MET in EU. In addition to project studies TUDEV become an active member of many MET activities, such as IMLA, MarEdu and MariFuture, etc.

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 seafarer 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.

All these efforts have created a new vision for the TUDEV IMS leading to initiating innovative research studies to underpin its prestigious MET programme recognised internationally.

The Requirement to Establish a Maritime Centre of Excellence

The grooving Turkish maritime sector needs the know-how on international and EU maritime practices, legal matters (especially vocational competencies in the sector, and European policies and projects. This is not the requirements of the sector also for public bodies, civil society. A number of positive developments are expected in the near future:

- On a macro level, the speed and the quality which the Turkish maritime sector harmonizes with the EU will increase on policy and acquits level,
- Close coordination with various public and private bodies in the maritime field,
- The maritime sector needs advice on meeting international and EU requirements, especially in terms of human resource development.
- The growing maritime economy needs to increase the quality levels of Turkish seafarers and ships, which will increase maritime safety
- Turkey needs shipping costs down on a global scale and this provides opportunity for international competition which is vital,
- Ensuring the competencies of Turkish seafarers according to international standards

Turkey 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 centers of excellence in other countries, the country need to trigger exchange of information and knowledge between European Countries.

Following many studies, in coordination and cooperation with European Countries, the Turkish Chamber of Shipping has submitted a detailed study to ascertain the need for establishing a maritime centre of excellence in Turkey in 2003. Visits were made to several 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. The best maritime policies and practices in these countries were studied carefully. The review of maritime practices in these countries concluded that the existing provisions in Turkey, 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, being an EU member candidate, Turkey has accepted EMSA (European Maritime safety Agency) inspections. EMSA has conducted inspections on overall maritime administration system in 2005, 2007 and 2009 in particular on education, training and certification system. During the inspection conducted January 19-23, 2009, EMSA inspectors have visited the following institutions and prepared a report based on the findings of the inspection.

- UMA (Under-secretariat of Maritime Affairs) HQs
- UMA Directorate of the Istanbul Region,
- Seafarers Examination Centre,
- Maritime Schools and Training Centers (Faculties, Higher Vocational Schools, Maritime High Schools) and TUDEV IMS)

The Report indicates some deficiencies regarding the MET system of Turkey and the actions taken by the institutions to correct these deficiencies. The report states that most of the deficiencies regarding maritime training, certification and monitoring which were indicated in the former EMSA report (2007) were corrected by the UMA.

As a result of all above mentioned realities, the maritime sector has realized that it needs a suitable institute to be enabling its own sources of income (in the form of consulting, certification and accreditation fees, etc).

Conclusion

Both European Union policy and Turkish Government policy support that 'the public works rather than defence, security, justice and foreign policy should be conducted by private sector and such activities should be only regulated and controlled by government. The new laws and regulations published in the last decade are based on this policy.

The Vocational Qualification Certification and Examination Regulations (Statuary Gazette 30 December 2008, No: 27096) is clearly defines that Vocational Qualification Certification and Examinations will be conducted by private companies designated by Vocational Qualification Department (Mesleki Yeterlik Kurumu) (Article 17 through 34). Also accreditation of Education and Training will be conducted by same type of private entities (Article 35 through 42).

The Company Article of Association (aim) of the TUDEV (Deniz Eğitim Merkezi İktisadi İşletmesi) published in Turkish Commercial Registration Gazette is as follows ;

To improve Turkish Maritime Shipping in the level of advanced countries in this regard to access and our country's economic strength, prosperity and improve the efficiency of maritime policies and the creation of the necessary work in order to make the identification of objectives; To conduct and to be conducted all necessary activities, and to conduct training of personnel who will serve Turkish Maritime Sector open and operate private educational institutions and provide support for existing and future Maritime Education and Training institutions to develop both their training and facilities.

The Company Article of Association fully supports the aim and objectives of a maritime excellence centre.

EU projects are focused on VET (Vocational Education and Training) and VQ (Vocational Qualification) rather than academic studies. So a VET and VQ projects will be strongly supported by European Commission. TUDEV being a significant partner for many EU VET and VQ projects and having an unrivalled reputation is fully eligible and has been supported by the EU and many maritime authorities in Europe.

The maritime centre for Excellency is also considered as a good candidate for VQ accreditation and awarding (certification) body for MET (Maritime Education and Training) in Turkey for all level.

References

1. MariFuturel Project (2010), www.marifuture.org
2. R Ziarati, 'Maritime and Training – A way forward', confidential report to Turkish Maritime Education Foundation, July 2003.
3. Ziarati, R., "Safety At Sea – Applying Pareto Analysis", Proceedings of World Maritime Technology Conference (WMTC 06), Queen Elizabeth Conference Centre, 2006.

4. IMO, 'sub-committee minutes', 12th session, 2004 (and 13.01.2005, www.imo.org/human element and www.itu.edu/new/acad/tuzla/safety)
5. IMO MSC82 82/15/2 and 82/15/3, 2006
6. MarEdu Leonardo Pilot Project Safety On Sea (SOS), 2005-2007 (www.mareduc.co.uk)
7. MarEdu Leonardo Mobility Project (2006-2007) (www.mareduc.co.uk)
8. SURPASS, **S**hort Co**ur**se **P**rogrammes in **A**utomated **S**ystems in **S**hipping, 2007 (www.mareduc.co.uk)
9. **MarTEL Mar**itime **T**ests of **E**nglish **L**anguage, 2007 (www.mareduc.co.uk)
10. Maritime Sector Report 2010, (2011): IMEAK Chamber of Shipping, ISBN 978-9944-60-315-7, Istanbul
11. Technical Report, (2005): EMSA (European Union Maritime Safety Agency), Project Number C.2.44.05, Brussels
12. Ship Slaves and Competition, (2001), ICS (International Commission on Shipping-ICONS), Canberra
13. Ziarati, R., Ziarati, M., (2007), Review of Accidents with Special References to Vessels with Automated Systems – A Way Forward

Supporting publications:

Ziarati, R. (2003), Establishing a Maritime University in Turkey', Confidential report to TUDEV Management Board developed into a report for Higher Education Council (YÖK) of Turkey consideration in 2005 and a version of it published by IMLA: Ziarati, R et al., An Innovation MET model in Global Higher Education- Piri Reis Maritime University-Turkey, IMLA 16, 2008.
BIMCO/ISF (2005), The Worldwide Demand for and Supply of Seafarers, IER, University of Warwick, UK.
Ziarati, R., "Safety At Sea – Applying Pareto Analysis", Proceedings of World Maritime Technology Conference (WMTC 06), Queen Elizabeth Conference Centre, 2006.
Ziarati, R. and Ziarati, M., 'Review of Accidents with Special References to Vessels with Automated Systems – A Forward, AES07, IMarEST, 2007.
Urkmez, S (2005). Seafarer Shortages, Report to the Turkish Chamber of Shipping
Akdemir, B., Bilgili, R. Ziarati, M. and Stockton, D., 'Supply and Demand in Shipping Market Using Intelligent Neural Networks'**,** IMLA 2008, Izmir, 2008
Cahoon and Haugstetter, 2008, sited in Kaptanoglu, 2009 – see below.
Kaptanoglu, S., Ziarati, R., and Albayrak, T., 'Women in Maritime Businesses', IMLA 09 – IMWC, Turkey, 2009
IMO (2009b). Comprehensive review of the STCW convention and the STCW code, 41st session, Sub-committee on standards of training and Watchkeeping, STW 41/7/9, 5th of October.
EU (2009). Maritime Transport Strategy 2009-2018, Communication on the strategic goals and recommendations for the EU's maritime transport policy from 2009-2018, Brussels
Demirel, E., and Mehta, R., (Report on the work of **Reza Ziarati**), 'Developing an Effective Maritime Education and Training System- TUDEV Experiment', IMLA 2009, Istanbul 2009.
Albayrak, T., and Ziarati, R., 'Training: Onboard and Simulation Based Familiarisation and Skill Enhancement to Improve the Performance of Seagoing Crew', International Conference on Human Performance at Sea, HPAS 2010, Glasgow, Scotland, UK, 16th-18th June 2010.
Ziarati, R., Demirel, E. and Albayrak, T., 'Innovation in Maritime Education and Training', IMLA 2010, China.
Ziarati, R. and Ziarati M., 'Surpass - Short Course Programme in Automated Systems in Shipping'**,** *International Conference on Human Performance at Sea, HPAS 2010, Glasgow, Scotland, UK, 16th-18th June 2010*
Ziarati, R., Ziarati, M. and Turan, O., 'M'aider: Maritime Aids' Development for Emergency Responses', *International Conference on Human Performance at Sea, HPAS 2010, Glasgow, Scotland, UK, 16th-18th June 2010*
Ziarati, R. and McCartan, S., **'**European Boat Design Innovation'
International Conference on Human Performance at Sea, HPAS 2010, Glasgow, Scotland, UK, 16th-18th June 2010
Albayrak, T. and Ziarati, R., 'Training: Onboard and Simulation Based Familiarisation and Skill Enhancement to Improve the Performance of Seagoing Crew', *International Conference on Human Performance at Sea, HPAS 2010, Glasgow, Scotland, UK, 16th-18th June 2010*
Ziarati, R., Demirel, E. and Albayrak, T., 'Innovation in Maritime Education and Training', IMLA 2010, China
Ziarati, R., Demirel, 'Cadets Views on Undergoing Maritime Education and Training in English', China, IMLA 2010
Ziarati, R., Demirel, E. and Albayrak, T., 'Research in Maritime English: Measuring Students' Competence and Performance (Application of MarTEL)', IMEC, 2010, Egypt
Ziarati, R., Ziarati, M, 'External Evaluation of MarTEL Standards', IMEC 2010, Egypt.

Reza Ziarati, Erdem Bilgili, Design and Development of a Replica Brain using novel 3D Neural Networks, 2011 – Being reviewed for publication by Professor Zadeh (USA).
Kaptanoglu, S., Ziarati, R., and Albayrak, T., 'Women in Maritime Businesses', IMLA 09 – IMWC, Izmir, Turkey, 2009
Albayrak, T., Ziarati, R., Evaluation, Assessment, And Testing In Maritime English: Measuring Students' Competence And Performance - Martel-Maritime Test Of English Language, IMEC 21 (2009), Poland, 2009.
Demirel, E., and Mehta, R., (Report on the work of **Reza Ziarati**), 'Developing an Effective Maritime Education and Training System- TUDEV Experiment', IMLA 2009, Istanbul 2009
S. Ozkaynak, R. Ziarati, E. Bilgili, Design and development of a diesel engine computer simulation program, IMAM 2009. Istanbul, 2009
Urkmez, U., Ziarati, R., Bilgili, E., Ziarati, M. and Stockton, D., 'Design and Development of Ships Using an Expert System Applying a Novel Multi-layered Neural Network', IMLA 2009, Istanbul, 2009.
Albayrak, T. and Ziarati, R., 'Encouraging Research in Training Institutions, IMLA 2009
Ghana, 2009
Ahmet MERT, Sarper Ozlaynak, Reza Ziarati, Suleyman Ozkaynak, Haluk Kucuk, 'Design and Development of a Computer Controlled Marine Diesel Engine Facility for Maritime Engineering Research and Training', IMLA 2009, Ghana, 2009
Serhan Sernikli, reviewed by **Reza Ziarati**, 'Fusion of Content and Skill in MarTEL Standards', IMEC 21, 2009, Poland, October 2009
Ziarati R., Ziarati, M.and Calbas R., 'Developing standards for Maritime English', Bridge 09, Rauma, Finland, 2009
Ziarati, R., Ziarati, M., and Calbas, B., 'Improving Safety at Sea and Ports by Developing Standards for Maritime English II', IMAM 9, Istanbul, Turkey, 2009
Ziarati, R., Koivisto, K., and Uriasz, Y., 'Development of Standards for Maritime English – The EU Leonardo MarTEL Project', IAMU 2009 Assembly, Russia, September 2009
Ziarati, R., Ziarati, M., Calbaş, B., Moussly, L., 'Improving Safety at Sea and Ports by Developing Standards for Maritime English I', IMLA 2008, Izmir, 2008
Akdemir, B., Bilgili, R. Ziarati, M. and Stockton, D., 'Supply and Demand in Shipping Market Using Intelligent Neural Networks'**,** IMLA 2008, Izmir, 2008
Urkmez, S., Bilgili, E., Ziarati, R. and Stockton, D., 'Application of Novel Artificial Intelligent Techniques in Shipbuilding Using Activity Based Costing and Neural Networks', IMLA 2008, Izmir, 2008
Kaptanoglu, S., Ziarati, R., Stockton, D. and Albayrak, T., 'Developing Competitive Advantage through Cooperative Decision Making In Shipping Family Businesses', IMLA 2008, Izmir, 2008.
Kamil Sag, O., Ziarati, R.,Özkaynak, S., and Yıldırımalp, M., 'An Innovative MET Model in Global Higher Education-Piri Reis Maritime University' -Turkey, IMLA 2008, Izmir, 2008
Albayrak, T. and Ziarati, R., 'Methodologies and Technologies In MET', IMLA 2008, Izmir, 2008
Demirel E., (Reporting on the Work of **Reza Ziarati), '**New Approaches in Design and Delivery of Nautical Sciences Programmes -SOS Navigation Engineering', IMLA 2008, Izmir, 2008
Ziarati, R.; Ziarati, M., Review of Accidents with and on Board of Vessels with Automated Systems – A Way Forward, AES07, Sponsored by Engineering and Physical Science Research Council in the UK (EPSRC), Institute of Engineering and Technology (IET, Previously IEE), Institute of Mechanical Engineers (IMechE), IMarEST, 2007.
Yucel Akdemir, B.; Ziarati, R.; Stockton, D., 'Application of forecasting in Shipping Industry**,** International Conference in Manufacturing Research' 2007, Leicester, UK, published by InderSciences Publishers, ISBN No:978-0-9556714
Kaptanoglu, S.; Ziarati, R.; Stockton, D., 'Sustaining Competitive Advantage Through Cooperative Decision Making In Shipping Industry', International Conference in Manufacturing Research 2007, Leicester, UK, published by InderSciences Publishers, ISBN No:978-0-9556714
Urkmez, S., Ziarati, R.; Stockton, D., 'Activity Based Costing For Maritime Enterprises', International Conference in Manufacturing Research 2007, Leicester, UK, published by InderSciences Publishers, ISBN No:978-0-9556714
Kaptanoglu, S.; Ziarati, R.; Kamil Sag, S.' 'Turkish Chamber of Shipping Response to EU Maritime Policy Green Paper, June 2007.
Ziarati, R., 'Report to IMarEST on IMO MSC 82', for consideration by TAC, 2007
Ziarati, R., "Safety At Sea – Applying Pareto Analysis", Proceedings of World Maritime Technology Conference (WMTC 06), Queen Elizabeth Conference Centre, 2006.
For projects please refer to EU sites and use project numbers.