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**Expanding Frontiers -  
Challenges and Opportunities in Maritime Education and Training**

**IMPACT – Innovative Maritime Training Products**

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**Abstract:** The IMPACT project partners are five major European Maritime Education and Training (MET) organisations. These are C4FF's Maritime Education based in the UK, TUDEV Institute of Maritime Studies from Turkey, Satakunta University of Applied Sciences in Finland (member of IAMU), the National Maritime College of Ireland and Spinaker based in Slovenia. The partners have many years of experience in developing programmes for the education and training of merchant navy officers based on the international standards.

The IMPACT project aims to promote the results of a number of completed maritime education and training projects which directly address particular problems or deficiencies in MET throughout Europe, and represent innovative use of ICT in lifelong learning. Initially, IMPACT will disseminate and transfer the innovative practices developed in several of these selected EU funded LifeLong Learning projects to MET providers across Europe and worldwide in order to support their valorisation. The long term vision for IMPACT is to expand its reach and valorise other innovative maritime based ICT projects developed for MET through its network and beyond. The IMPACT project has been supported and funded by the European Union through its Lifelong Learning Programmes.

The NetOSKAR project promotes vocational training, learning and competence evaluation for seafarers with a knowledge development and assessment tool based on a database of multimedia questions.

The EGMDSS project provides online training courses for the Short Range Certificate (SRC), which is mandatory for mariners operating vessels of up to 300 GT within 30 nautical miles from the coast. Access to GMDSS learning materials is limited and often

expensive, and this restricts the regular refreshing of knowledge. EGMDSS encourages life-long learning by providing a GMDSS e-learning web site, which is available in many languages, and now has over 27,000 registered users.

The E-GMDSSVET project completed the EGMDSS learning tool by adding long range certificate (LRC) courses, and simulators of commonly used GMDSS equipment. With these online simulators and professionally produced tests, users can learn about VHF radio, NAVTEX receivers, SART and EPIRB.

These EGMDSS projects have been award winning e-learning tools which have a number of animations and real life simulators included.

The MarTEL project developed Maritime English tests for seafarers in response to concerns expressed during the IMO's 82nd Maritime Safety Committee meeting (2006) that there was considerable need for an International set of Maritime English standards. With a significant number of accidents taking place at sea due to poor communication, it is hoped that the creation of these new Maritime English standards will not only help to save lives; but also reduce material and financial losses.

**Keywords:** online learning, e-learning, Impact, gmdss, netsoskar, mep, mareng, assessment, maritime English

## 1. Introduction

The European shipping industry now faces fierce competition from the Far East, and a shortage of 27,000 seafaring officers is predicted by 2015. For the waterborne sector to remain competitive, the quality of European standards must not be allowed to fall. The project consortium believes that by raising standards in the field of European MET, and providing institutions with tools to improve the quality of the education that they provide, the employability and mobility of European seafarers will be increased. All of the LLP projects to be valorised were developed according to international standards such as the International Maritime Organisation's (IMO) Standards of Certification, Training, and Watchkeeping (STCW). As the IMO is the United Nations specialized agency responsible for the safety and security of shipping and the prevention of marine pollution by ships, it is essential to follow the standards that they set. All the IMPACT products promote competencies specified to these standards, and some lead to internationally recognised qualifications.

The partners have a clear vision for developing MET in their countries and throughout Europe. C4FF, together with other partners, established maritime education partnerships and networks called MariFuture ([www.marifuture.org](http://www.marifuture.org)) and MarEdu ([www.maredu.co.uk](http://www.maredu.co.uk)). MariFuture and MarEdu have established programmes of cooperation to improve education and training practices in Europe, and go about the harmonisation of merchant navy officers' education. The MariFuture and MarEdu networks have instigated several European and EU funded projects to address specific deficiencies or problems in the maritime sector. IMPACT embraces these principals, and will support the development strategies that are already in place. The extensive knowledge base generated by partnerships working on maritime projects will be shared with the awarding, accrediting, and licensing bodies as well as the policy decision makers in governments and in the EU.

The main aim of IMPACT is to gather the results of innovative 'best practice' projects in the field of maritime education and training (MET), and encourage their use across Europe and in the whole maritime world. Case studies will identify best practice in these projects, and this will be applied to identify similar projects for promotion in the future. These projects directly address current deficiencies in MET and are developed according to international standards,

based on the innovative use of ICT-based content and services. The consortium has many years of experience in developing such projects. The consortium believes that ICT can improve the quality of teaching and learning in MET, and can help raise standards and provide institutions with tools to improve the quality of their educational programmes. Thus the employability of European seafarers and the future employability of those embarking on maritime training courses will be increased. IMPACT will identify best practice in innovative ICT based projects for MET and promote them fully and widely to the target groups. This will support quality and innovation in MET. IMPACT will promote collaborative projects in the field of MET, and will set quality criteria for projects to be included in its dissemination platform. This will encourage high quality work and co-operation between partnerships and allow them to develop good working relationships with other relevant bodies working towards the same objective of improving MET in Europe and in the whole maritime world.

The IMPACT consortium and other good European partners have co-operated successfully on a number of past and currently running LLP projects. You can read more at [www.maritimetraining.pro](http://www.maritimetraining.pro) and contact the project partners for possible co-operation.

## **2. MarTEL (Maritime Test for English Language)**

MarTEL has launched a novel set of Maritime English Language Tests. MarTEL has been designed to test mariners' Maritime English through a series of online tests designed to cater to seafarers of different ranks and types. The MarTEL Phase 1 Test aims to assess the English language proficiency level of cadets entering a maritime training institution. This test handles the testing of the English language in maritime contexts with the aim of making the seas safe.

The MarTEL Phase 2 Test for Deck and Engineering officers aims to assess the English language proficiency of Deck and Engineer officers who have recently graduated from a maritime academy or are already serving on board a ship and holding an officer position. It is designed to test English language usage in maritime contexts and professional discourse.

The test is designed to measure the English language proficiency of sea-going Deck and Engineering officers in a realistic and vocation specific context with specific maritime vocabulary directly, such as SMCP. The test is directly related to their field of work and the English Language skills needed for their roles and duties.

The MarTEL Phase 3 Test for Deck and Engineering officers aims to assess the English language proficiency of senior Deck and Engineering officers who are already serving on board a ship and holding a senior position. It is designed to test English language usage in maritime contexts and professional discourse. The test is designed to measure the English language proficiency of senior Deck and Engineering officers directly related to their field of work and the English Language skills needed for their roles and duties.



### 3. MarENG (Maritime English)

The MarEng project concentrated on creating an innovative Web-based Maritime English Language Learning Tool. The project was partially financed by the Leonardo da Vinci Programme of the European Union. The tools can be downloaded from <http://mareng.utu.fi/learningtool/index.html> (see Fig. 3)

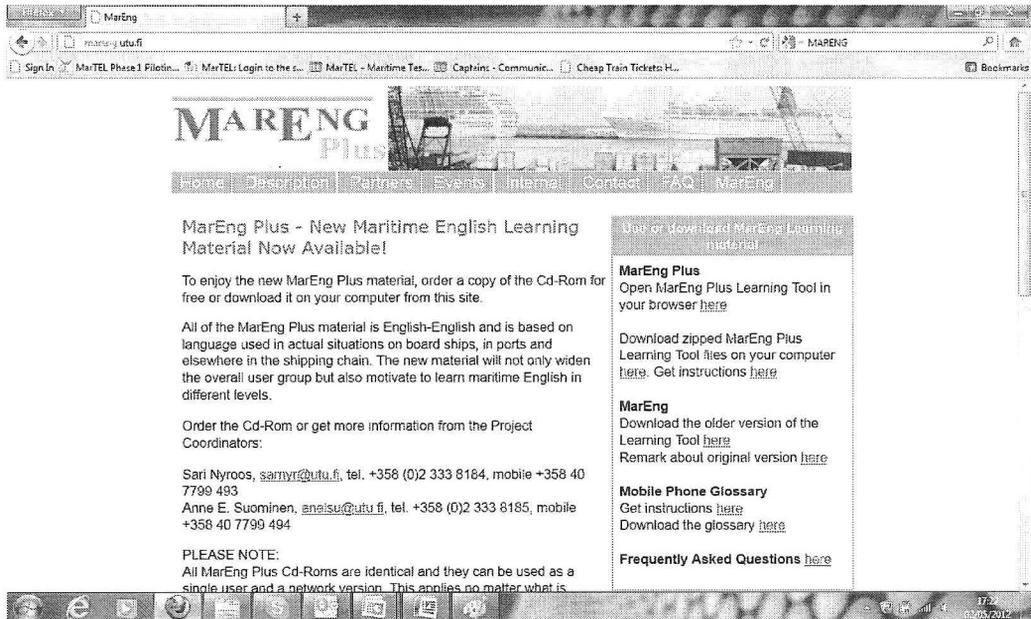


Figure 3 Homepage of MarEng ([www.mareng.utu.fi](http://www.mareng.utu.fi))

### 4. MarEng Plus

The original MarEng Learning Tool consists of intermediate and advanced level learning material on different maritime topics. Based on the feedback by different user groups all over the world, the usability of the original Tool has been improved. As a result of the MarEng Plus project, two new topics, Maritime Security and The Marine Environment, as well as elementary level learning material, a Teacher's manual and a mobile phone application of the glossary, have been added in the Tool. MarEng Plus provides more learning materials and all of the MarEng Plus material is English-English and is based on language used in actual simulators on board ships, in ports and elsewhere in the shipping chain. The new material will not only widen the overall user group but also motivate to learn maritime English in different levels.

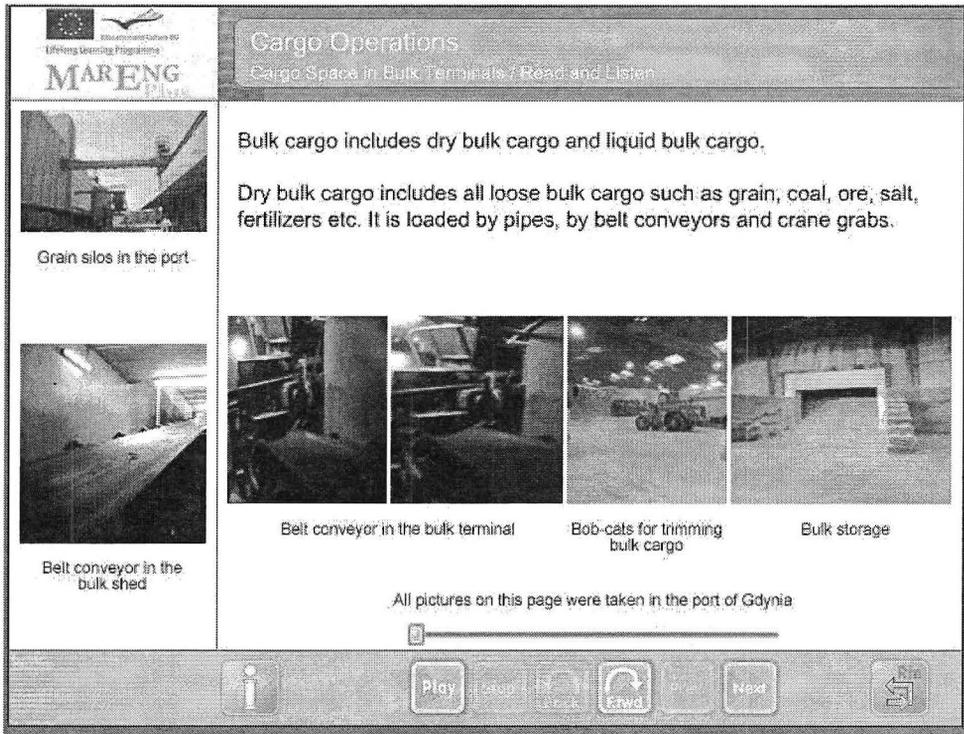


Figure 4 Example of MarEng

## 5. MEP (Maritime Education Platform)

MEP project provides high quality educational materials in e-learning platform on certain subject. The project provides improvement in the quality of maritime educational material, cooperation between maritime educational institutions and an innovative virtual learning space filled with high quality e-learning sources.

The project has a set of learning materials available online to improve competency of seafarers in maritime subjects across Europe. Lecturers and maritime students in maritime institutions update their knowledge continuously from relevant media.

Learning materials are available at [www.mep.stc-r.nl](http://www.mep.stc-r.nl).

## 6. EGMDSS (Global Maritime Distress Signalling Service)

The Global Maritime Distress and Safety System (GMDSS) has been fully implemented worldwide since February 1999, specifying the GMDSS communication equipment for marine vessels and rescue procedures for vessels and humans at sea with the objective to maximise safety at sea. People working in marine areas i.e. mariners, seafarers, fishermen, yacht captains, sailing boat skippers, marina workers, nautical science students/cadets, etc. must be qualified through different MET to operate the specified equipment.

All mariners must obtain the appropriate type of GMDSS certificate; however, access to the required knowledge is limited (traditional MET is expensive and distance learning is not feasible except for the SRC course) which doesn't encourage regular refreshing of knowledge – lifelong learning. Keeping the GMDSS skills up-to-date is crucial because emergencies at sea rarely occur. The knowledge and skills should be regularly refreshed to ensure safety of the crew, passengers and freight (even though this is not a legal requirement).

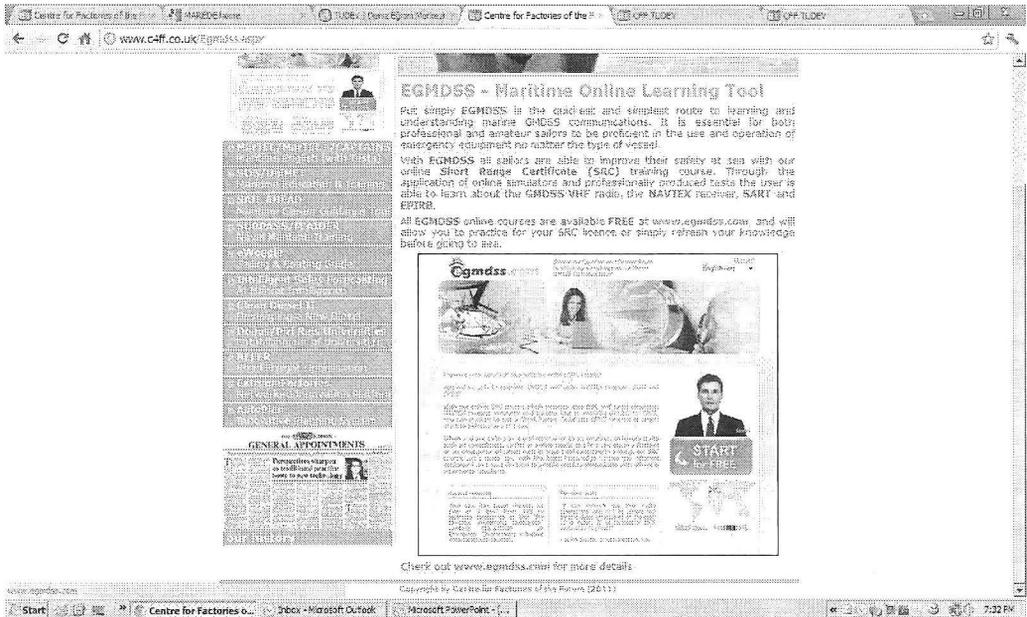


Figure 5 The beginning page of EGMDDSS

EGMDDSS includes the GMDSS communication device simulators (MF/HF DSC radio and Inmarsat-C terminal) putting the learner into an active role where, instead of answering questions, the learner actively practices and verifies his/her knowledge on a simulator.

EGMDDSS is available in English, Slovenian, Turkish, Italian, French, Polish, Finnish, Spanish, Norwegian and Dutch. It includes a real-life animation of the GMDSS communication device operation (conveying to the learner how a device operates) with separate quizzes for each chapter.

EGMDDSS was developed considering the harmonised examination procedures for maritime radio operator's certificates (CEPT/ERC/RECOMMENDATION 31-05 E) issued by the European Radio communication Office.

This online platform provides the quickest and easiest route to obtain knowledge about GMDSS. The course includes two sections;

- SRC (Short Range Certificate) course
- LRC (Long Range Certificate) course

All ranks of seafarers are able to practise on these pieces of equipment at anytime and in anywhere.

Learning materials are available at [www.egmdss.com](http://www.egmdss.com)

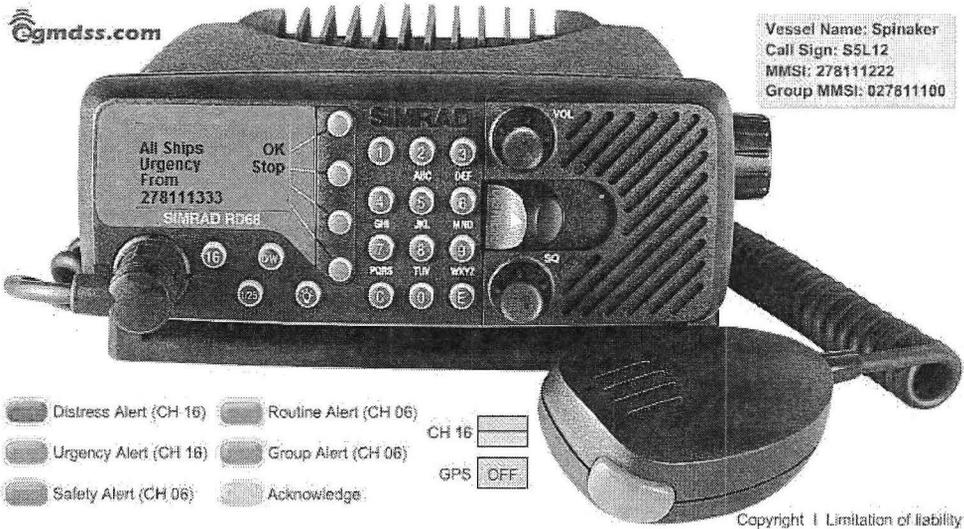


Figure 6 Real equipment in use

## 7. NetOSKAR

A national pilot project for development of a STCW 95 question database has been carried out by Satakunta University of Applied Sciences in co-operation with five Finnish shipping companies. Experiences from the pilot project were encouraging and it has gained much interest among organisations of the international shipping industry. The competence assessment method based on a question database was found useful for further development. Experiences from the pilot period made it clear that establishment and development of a large high-quality question database should be done on a larger scale by a network of experts in international co-operation. The partner group of the NetOSKAR-project was formed from maritime training institutes located in different parts of Europe, complemented by a leading Finnish shipping company and a maritime authority. The role of each partner was defined by its expertise, varying from mechanical engineering to navigation and from project management to quality assurance. All partners participate in evaluation and dissemination activities. The Moodle platform was first used and found to be a very useful tool to produce the questions into the editing bank and from there to the final bank of approved questions after a double assessment phase.

Action	Question name
Cat 02 O	A-II/1 Terrestrial and coastal n
<input checked="" type="checkbox"/>	1437PL
<input type="checkbox"/>	1438PL
<input checked="" type="checkbox"/>	1439PL
<input checked="" type="checkbox"/>	1440PL
<input type="checkbox"/>	1443PL
<input type="checkbox"/>	1444PL
<input checked="" type="checkbox"/>	1446PL
<input type="checkbox"/>	1448PL

Figure 7 Category 02 operational level STCW A-II/1 terrestrial and coastal navigation

NetOSKAR is heavily used by the International maritime training community and it is specifically this OSKAR-method (OSAamisen = Knowledge KARtoittaminen = Assessment), which has been used as the fairway knowledge assessment of pilots and VTS operators. Together with the STX Shipyard in Rauma, Finland, the testing of the crew of the newly built vessel RV MIRABILIS was partly done with the NetOSKAR questions in May 2012.



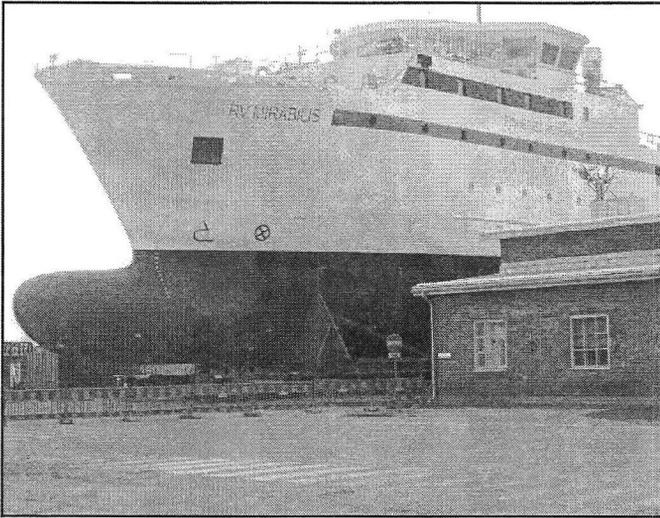


Figure 8 Testing the crew of the RV MIRABILIS in May 2012 with NetOSKAR

## 8. Conclusion

All these products, MarTEL, MarEng, MEP, eGMDSS and NetOSKAR are being widely used and have been found to be very useful in maritime training by the International Maritime Training community. These products support the lifelong learning of seafarers and cadets using the latest training tools and methodologies, as well as meeting new requirements and standards. It is highly recommended for everyone to use these products in Maritime Training, with over 30000 persons registered to use these tools.

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