



# KNOWME

## DELIVERABLE D.3.2

### TRAINING NEEDS ASSESSMENT REPORT – FINAL DRAFT

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**Due Date:** 30<sup>th</sup> of June 2012  
**Submitted:** 29<sup>th</sup> of August 2012  
**Resubmitted:** 22 August 2014  
**Deliverable lead:** Workgroup Maritime Logistics - Jacobs University Bremen  
**Dissemination:** Dissemination Level



## DOCUMENT CONTROL SHEET

<b>Work package:</b>	3	
<b>Deliverable :</b>	3.2 Training Needs Assessment Report	
<b>Document short name:</b>	TNA Report	
<b>Version:</b>	V.1: 30 <sup>th</sup> of June 2012	Task partners
	V.2: 29 <sup>th</sup> of August 2012	Project and WP coordinator
	V.3: 28 <sup>th</sup> of October 2012	Project and WP coordinator
	V.4: 19 <sup>th</sup> of November 2013	Project and WP coordinator
	V.5: 22 <sup>nd</sup> August 2014	EC Project Officer

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**TP 3.2.2: University of the Aegean**

**TP 3.2.3: Bremen University of Applied Sciences**



## Abbreviations List

<b>AB</b>	Able Seaman
<b>BRM</b>	Bridge Resource Management
<b>BTM</b>	Bridge Team Management
<b>COM</b>	Commission of the European Communities
<b>CPD</b>	Continuous Professional Development
<b>D</b>	(KNOWME) Deliverable
<b>D2D</b>	Door To Door logistics
<b>DP</b>	Dynamic Positioning
<b>ECDIS</b>	Electronic Charts Display and Information System
<b>EMS</b>	Environmental Management Systems
<b>EMSA</b>	European Maritime Safety Agency
<b>ERM</b>	Engine Resource Management
<b>EU</b>	European Union
<b>HQ</b>	Head Quarter
<b>IMO</b>	International Maritime Organization
<b>IT</b>	Information Technology
<b>LNG</b>	Liquefied Natural Gas
<b>MCRM</b>	Maritime Crew Resource Management
<b>MET</b>	Maritime Education and Training
<b>OOW</b>	Officer of the Watch
<b>SCM</b>	Supply Chain Management
<b>STCW</b>	Standards of Training, Certification and Watchkeeping
<b>TP</b>	(KNOWME) Technical Paper

## Executive Summary

The Commission recognizes the importance of shipping for Europe's economic growth and employment, throughout history but also towards the future. However they also stated that updated strategies are needed in order to obtain further sustainable growth within the European maritime industry and in order to make sure it reaches its full potential. For Europe to compete with this ever globalising context the Commission's communication 'The EU's maritime transport strategy 2009-2018' presents the main strategic goals for the European maritime transport. It identifies which actions are needed in order to enforce the competitiveness of the European maritime sector and it focuses on six main directions:

- 1- Globalised markets
- 2- Quality shipping
- 3- Working in internationally scene
- 4- Exploiting full potential of short-sea shipping
- 5- Human resources and maritime know-how
- 6- Top maritime research and innovation

A special section is devoted to the human factor in European shipping. Both the Commission and the KNOWME project recognize the need for qualified European maritime professionals in order to keep the European maritime industry competitive in general. The Commission stated the importance for increasing the number of qualified European seafarers in order to continue a sustainable growth of the European maritime industry which can compete with other regions. This training needs assessment tries to find out what gaps exist in MET in relation to the trends in the maritime industry, as well as in relation to the expected future trends within the industry. The TNA tries to answer the following research question: *What type of training for seafarers is needed in the coming decades to improve the competitiveness of the European maritime industry?*

According to the EU's maritime transport strategy 2009-2018, according to seafarers themselves (as described in D2.1 of KNOWME), and according to experts in the MET field (e.g. from the Task Force on Maritime Employment and Competitiveness- TFMEC), MET should -additionally to the focus on classic seafaring competences- have a focus mainly on:

- Environmental issues;
- Intercultural relations;
- Safety and security guidelines;
- Soft skills;
- Maritime law;
- IT and computer skills.

Three technical papers discussed in this Deliverable, developed by different members of the KNOWME consortium, try to identify a gap in MET in one of the specific subfields mentioned above. In TP 3.2.1 (focused on environmental issues) shipping companies expressed a need for updates on technological progress and upcoming legal obligations, which now is only supplied by internal courses. In TP 3.2.2 (focused on cross-cultural education and training) maritime professionals indicated a need for managing conflict in culturally diverse teams, communicating efficiently in a culturally diverse working environment, leading and building culturally diverse teams and creating or improving the living conditions onboard for culturally diverse crew. In TP 3.2.3 (focusing on soft skills) seafarers argued that the development of skills related to teamwork, intercultural competences, leadership, and bridge resource management are necessary so that maritime professionals are better able to face the rapid changing context within the maritime industry.

The Commission and the TFMEC both argued for advanced training courses for seafarers during their study, which go beyond the basic STCW requirements. Moreover, seafarers are now mainly trained for only a career on board. However with the majority of European seafarers leaving the ship after 5 to 10 years it is wise if maritime education also puts a focus on the career of seafarers after their sea time. Future MET should therefore not only consider the industry's needs, but also integrate it with the needs of maritime professionals considering their career paths. The EU strategy 2009-2018 and the different technical papers discussed in this Deliverable mentioned that advanced training courses should also be accessible on board.



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## 1. 1. INTRODUCTION

The Commission stated the importance for increasing the number of qualified European seafarers in order to continue a sustainable growth of the European maritime industry which can compete with other regions. This training needs assessment tries to find out what gaps exist in MET in relation to the trends in the maritime industry and in relation to expected future trends within the industry. The TNA tries to answer the following research question: *What type of training of seafarers is needed in the coming decades to improve the competitiveness of the European maritime industry?*

## 2. 2. OBJECTIVES OF THE DELIVERABLE

Deliverable 3.2 includes the following specific Training Needs Assessment (TNA) as technical papers:

- TP 3.2.1 TNA in environmental policy in shipping,
- TP 3.2.2 TNA in management of cultural diversity, and
- TP 3.2.3 TNA in soft skills.

This deliverable provides a discussion and an overview of the three TNAs, and places the discussion in a framework of future trends described in the EU maritime transport strategy 2009-2018 and in other relevant documents from e.g. the Task Force on Maritime Employment and Competitiveness (TFMEC). The training needs identified are focused on highlighting the gaps in MET, which need to be filled in order to provide opportunities to people working in the industry for a successful career plan.

The three technical papers are included as appendix to this report.

### 3. METHODOLOGY

The basic methodology for this Deliverable consists of different parts. An overview from literature about future trends regarding the human factor in the maritime industry will be provided. In specific, this part is related to the topics discussed in the EU maritime transport strategy 2009-2018 regarding the human factor, as the objectives of this Deliverable prescribes. After discussing the future trend in the maritime industry several statements from experts and projects will be shown, which provide a response to the MET needs; needs which are evolving from the earlier discussed future trends. The results of the different TPs will also be summarised in this context and will help to provide a more specific overview of training needs in respectively environmental policies and issues, management of cultural diversity, and soft skills development.

The first technical paper (TP 3.2.1) from IVL Swedish Environmental Research Institute conducts a training needs assessment on environmental policies and issues in shipping. Information on the current status of knowledge of the environment and information regarding the organisation of environmental work within shipping companies has been gathered through interviews with personnel engaged in company environmental work at eight different ship owning companies. The interviews are conducted in March-April 2012. The scope of the technical paper is limited because the interviews were conducted only in Scandinavia. The purpose of the interviews is not to be representative for Scandinavia or for all European Members States, but to explore the perspectives on environmental work and future training needs.

The second technical paper (TP 3.2.2) focuses on the management of cultural diversity. The University of the Aegean conducted a literature review and a semi-structured questionnaire among maritime professionals in the European shipping industry also in March-April 2012. The conducted research focuses on topics such as cross-cultural competencies, cross-cultural MET, management of cultural diversity on board and/or shore, and the contribution of cross-cultural training in career mobility.

The third technical paper (TP 3.2.3) conducted by the University of Applied Sciences Bremen addresses the training needs regarding soft skills development. Interviews were conducted with individuals who are in different stages of their maritime career in order to find out what, according to their experiences, are the most important soft skills necessary for maritime professionals. Two rounds of interviews have been conducted for this technical paper. The first round of interviews conducted in July-August 2012 was followed up by a second round in August 2013. Following the recommendations of the first year review meeting the technical paper needed a more in-depth elaboration. Limitation of this TP is that the geographical focus is only on Germany and not on a wider European perspective. This TP discusses those soft skills which, according to the interviewees, need to be addressed more extensively in future MET.

The in-depth analysis has showed what the expressed training needs are from different stakeholders. Following recommendations of the Commission, three experts from the MET field reflected on the feasibility of the expressed training needs. They were asked to focus solely on the possibility and possible obstacles of implementing means to satisfy the already expressed training needs.

Another limitation of this study mentioned by the Commission was the lack of an analysis on the prioritization of the expressed training needs. However, in order to ensure open and (if applicable) critical responses, the respondents' anonymity was ensured in the different studies which are mentioned above. The anonymity, as promised to the participants, did not allow the tracking back of particular responses to particular respondents and thus, prevented the study to ask the respondents for a reflection on the ranking of the expressed training needs.

## 4. ADDRESSING FUTURE TRENDS IN THE EUROPEAN MARITIME INDUSTRY

The EU recognizes the importance of shipping for Europe's economic growth and employment, throughout history but also towards the future. The maritime economy has been growing faster than that of the overall economy in different regions in Europe. Container movement is growing and is expected to grow even faster in the forthcoming decade. Moreover, in the 'Integrated maritime policy for the EU'<sup>1</sup> the Commission states that Europe has the potential to become leader in world markets regarding the development of cutting-edge maritime products (shipbuilding, repair and marine equipment) and marine technology. However, it also stated that updated strategies are needed in order to obtain further sustainable growth within the European maritime industry and in order to make sure it reaches its full potential. New investments in research and technology are needed, for example in environmental-led technology. This will keep the European industry ahead in the competition and will be beneficial when new and promising industries develop<sup>2</sup>.

Competition between shipping companies is, equal to international shipping, a global and fierce competition. Besides the assets of the companies are also crew members mobile and recruited around the globe<sup>3</sup> and it is not expected that this phenomenon is changing or decreasing in the future. In order for Europe to compete with this ever globalising context the Commission's communication 'The EU's maritime transport strategy 2009-2018'<sup>4</sup> presented the main strategic goals for the European maritime transport. It identified which actions are needed in order to enforce the competitiveness of the European maritime sector and it discussed six directions for the maritime industry to focus on in order to strengthen the competitiveness of the maritime industry:

1- Keep a good position on the global market by improving ship and port operations, promoting alignment of substantive competition rules and strongly support fair international trade.

2- Strong strategies are necessary regarding the fleets' environmental performance, regarding maritime transport safety and security, and regarding maritime surveillance. This means steadily reducing greenhouse gas emissions (a), implementing amendments adopted by the IMO regarding sulphur oxides and nitrogen oxides emissions (b), energy efficiency (c), promote alternative fuel solutions in ports (d), and strengthen legislation regarding ship-generated waste (e), are important key strategies which international shipping needs to improve in order to reach the long-term objective of 'zero-waste and zero-emission'.

Furthermore, Europe should take its responsibility on the forefront of safety and security efforts regarding (a) extreme weather navigation, (b) treatment of persons rescued at sea, (c) fulfilment of responsibilities by European maritime administrators, (d) increasing legal international cooperation, (e) implementation of security measures and training against terrorist attacks and piracy, and (f) regarding the integration of an information management system to enable the monitoring and reporting of all vessels.

3- International instruments regarding safety and security policies should be incorporated and agreed by the IMO and the Commission should be pushing towards an international regulatory framework for shipping.

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<sup>1</sup> COM (2007), 574 final, 'Conclusions from the Consultation on a European Maritime Policy.

<sup>2</sup> COM (2007), 574 final, 'Conclusions from the Consultation on a European Maritime Policy.

<sup>3</sup> TFMEC (2011) 'Report of the Task Force on Maritime Employment and Competitiveness and Policy Recommendations to the European Commission', 09/06/2011.

<sup>4</sup> COM (2009), 8 final, 21.01.2009, 'Strategic goals and recommendations for the EU's maritime transport policy until 2018'  
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4- As maritime transport in the EU-27 is predicted to grow massively towards 2018 the industry and the infrastructure needs to be adjusted in order to cope with this increase. Removing the unnecessary administrative barriers and the cross-border controls is essential.

5- The competitiveness of Europe's maritime industry depends largely on how research and innovation are properly addressing the challenges within the industry. Research and innovation should lead to new ship designs and equipment which address the safety and environmental challenges (a), maximised efficiency of the overall transport chain in a sustainable way (b) the development and implementation of ICT inspection and monitoring tools. This is discussed in more detail in the e-Maritime initiative<sup>567</sup> and in chapter 4 of KNOWME deliverable 5.1.

6- Losing know-how due to scarcity of skilled human resources in Europe, which eventually can lead to transferring head offices and maritime industries overseas, is threatening the shipping industry. Staffing policies, working and living conditions, and education and career prospects need to be improved if Europeans are to be attracted to the maritime industry, both at sea and on shore<sup>8</sup>. This should be implemented through facilitating lifelong career prospects with a special emphasis on developing advanced skills and qualifications of European seafarers and providing good career paths for ratings to become an officer.

Training and education is discussed in a special section of the Commissions' communication, emphasising its importance for the future of European shipping. It is stated that "*the maintenance of high training standards and the professional competence of crews are essential to ensure safe, secure, effective, and environmentally sound shipping operations*".<sup>9</sup>

The KNOWME project covers the main action points addressed in the EU's maritime transport strategy 2009-2018 which are related mainly to the environmental and human factor (point 2, 4 and 6 mentioned above). Both the Commission and the KNOWME project recognize the need for qualified European maritime professionals in order to keep the European maritime industry competitive in general.

Alongside ensuring enforcement of the STCW guidelines, creating exchange possibilities between maritime training institutions, ensuring cooperation between maritime training institutions, providing postgraduate courses which go beyond STCW requirements, and the need for training and education of seafarers to keep up with the technological progress within the maritime industry is highlighted by the Commission, the KNOWME project, and several other studies (see KNOWME deliverable 3.3).

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<sup>5</sup> Pipitsoulis, C. (2009), 'The EU e-Maritime initiative: Accelerated Implementation of EU Maritime Transport policy', SKEMA - PROPS Stakeholder workshop, Riga, 11.06.2009.

<sup>6</sup> Rødseth, O.J. (2007), 'E-Maritime Standardisation Requirements and Strategies', SST-2007-TREN-1 - SST.2007.2.2.4, SKEMA Coordination Action.

<sup>7</sup> Lynch, G. (2007), 'SKEMA Periodic Study: e-Maritime Task 1 Report', SST-2007-TREN-1 - SST.2007.2.2.4, SKEMA Coordination Action.

<sup>8</sup> COM (2007), 574 final, 'Conclusions from the Consultation on a European Maritime Policy.

<sup>9</sup> COM (2009), 8 final, 21.01.2009, 'Strategic goals and recommendations for the EU's maritime transport policy until 2018'

## **5. TRAINING NEEDS FOR THE EUROPEAN MARITIME INDUSTRY**

As the former paragraphs show the context is changing rapidly for the European maritime industry: Technological advances on board and on shore, globalising trade and employment markets, increased economic growth and international trade, more pressure on the crew because of smaller crew sizes per vessel, risk of losing know-how from experienced seafarers and port operators because of ageing patterns, and an increasing demand for environmental friendly practices, all have a huge impact on how the training should be shaped for existing and future maritime professionals. Furthermore is it important that MET is prepared for the expected future changes in the maritime industry, both worldwide and in Europe.

In a workshop at the European Maritime Days 2012 in Gothenburg<sup>10</sup>, different stakeholders also discussed how training for maritime professions should be tailored more towards the industry's needs and the expected trends within the industry. Prof. Oliveira, EU coordinator of Motorways of the Sea stated that training towards port safety, port activities coordination, D2D logistics, maritime law, and new shipping IT systems should be important features of the training of maritime professionals. Prof. Paolo Lindroos, explained findings from the Baltic University Programme. This programme deals with education in maritime spatial planning and recognized a need for knowledge and training in topics such as natural resources, safety and security, and governance cooperation. Brief overview courses following these needs are implemented in order to complement to existing education and training for maritime professionals.

The Task Force on Maritime Employment and Competitiveness (TFMEC) concluded similar statements in the report regarding Maritime Employment and Competitiveness<sup>11</sup>. They recommend creating added value for European seafarers through implementing advanced training courses, both during their education as during their actual sea time. This will eventually also bring benefits to the maritime industry as a whole, both through continuing innovation and through cost reduction. Examples mentioned by the TFMEC of topics in which advanced training is needed are: quality management of ship and port operations, behavioural matters for officers in charge of security and border checks, and renewable energy applications in the maritime industry.

Finally, in D 2.1 of the KNOWME project, Chalmers conducted a survey among seafarers which partly described the training needs from the seafarers' point of view. Besides classical competences such as navigation, manoeuvring and cargo handling the following topics should deserve extra attention within MET according to the seafarers (for a more detailed overview see D2.1, KNOWME):

- General safety competences,
- Maritime law and regulation knowledge,
- Security skills,
- Cross-cultural management and understanding,
- Leadership and team management,
- Health care and medical first aid,
- Decision making and problem solving,
- General IT and computer competences,
- Shipping's environmental impact and sustainability.

From the discussion in the last two chapters it becomes clear that certain topics need more attention within MET. According to The EU's maritime transport strategy 2009-2018,

<sup>10</sup> Onthemosway (2012), 'European Maritime Days – Training for maritime professions tailored to business needs', conf.

<sup>11</sup> TFMEC (2011) 'Report of the Task Force on Maritime Employment and Competitiveness and Policy Recommendations to the European Commission', 09/06/2011.

according to seafarers themselves (as described in D2.1 of KNOWME), and according to experts within the maritime industry, MET should, additionally to the focus on classic seafaring competences, have a focus mainly on:

- Environmental issues
- Intercultural relations
- Safety and security guidelines
- Soft skills
- Maritime law
- IT and computer skills

For this deliverable the choice was made by the KNOWME consortium to develop technical papers which assess the training needs more specifically regarding one of the aspects mentioned in the list above. Not all the six important aspects were addressed by the technical papers. The different partners from the KNOWME consortium focused on the training needs regarding: Environmental issues and policy, management of cultural diversity, and soft skills development.

## 5.1 TRAINING NEEDS ASSESSMENT IN ENVIRONMENTAL POLICY IN SHIPPING (TP 3.2.1)

As described before, environmental friendly, safe, and innovative shipping operations are high on the agenda of the international maritime industry. The focus is that international shipping needs to improve its performance in order to reach the long-term objective of 'zero-waste and zero-emission'. This means that employees in the maritime sector, and especially seafarers, need to be aware of the environmental risks and challenges, and the possibilities and solutions to reduce the environmental impacts.

IVL Swedish Environmental Research Institute conducted a training needs assessment on environmental policies and issues in shipping. Information on the current status of knowledge of the environment and information regarding the organisation of environmental work within shipping companies has been gathered through interviews with personnel engaged in company environmental work at eight different ship owning companies.

The interviewees explained that the knowledge of new employees depends on their nationality and on the time of graduation. Europeans, Americans and employees from more industrialised countries are said to be more informed on environmental issues than employees from other parts of the world. A few of the respondents indicated also that this depends on whether the employee has recently graduated or has experience from similar work in other companies.

On the direct questions about training needs, only a few respondents could express direct wishes. One wish was that students should be taught the fundamental steps of the ISO14001 standard. Another respondent mentioned that people that are to work on board ships should be more aware of issues related to work environment; more information about the chemicals used on board, the substitution and information on how to handle chemicals in a safe manner should therefore be a part of their education. According to this respondent, it is important for all crew members to be able to make their own decisions and at least assess risks in the work environment.

Two interviewees indicated that educational institutions ought to be more aware of the technological, legislative, and environmental developments within the maritime industry; they should be updated on what happens at present in the industry and also what is about to happen. One stated: "*the educational institutions have neither the competence nor the resources to keep updated*", and refers to a very rapid technological development in the industry.

Internal training, provided or organised by the shipping companies and ship management companies themselves, is an important way to keep employees updated or

keep seafarers updated even more. Two of the companies indicated that there are difficulties to achieve a comparable knowledge level throughout the company depending on the employees' previous educations. The fact that these companies give a basic introductory education for the less educated employees is possibly a sign of a wish to level knowledge within the company (difficult for education to address all different segments).

**The need for knowledge specific to a segment in which a shipping company operates is today addressed by offering new employees internal training. Also, the shipping companies express a need for updates on technological progress and upcoming legal obligations, which today is solved by company-specific training to employees ashore and on board. These needs could possibly also be cared for by courses which are provided externally by private training institutions.**

Furthermore, there are also indications shared towards larger training needs for new employees from non-Western countries which could be an important gap to fill. This could be realised by providing basic courses for individuals from abroad who are to work for European ship owning or ship management companies that have organised work with environmental issues. One clear direct issue that should be included in the course material is energy efficiency measures.

It finally seems that web based education is a familiar way to spread information, which can possibly be further utilised.

## 5.2 TRAINING NEEDS ASSESSMENT IN MANAGEMENT OF CULTURAL DIVERSITY (TP 3.2.2)

The second technical paper from the University of the Aegean conducts a training needs assessment regarding the management of cultural diversity. International trade and globalisation leads to an increase of intercultural contacts within trade and business, this is not different for the maritime industry. Moreover, the crew on board of a vessel will have to work with different nationalities and cultures and will have to be trained in order to work effectively and safe in an intercultural environment.

The management of the cultural diversity is considered by academics and some practitioners to be one of the most crucial competencies that people employed in the globalised shipping industry should hold. Cross cultural communication skill is an essential part of this competency. A review of previous studies supported by the EU confirms that a restricted number of studies have been conducted only in the general field of cross cultural communication in shipping and maritime education and training. At the same time, literature review proposes that the development of cross cultural competency has not been in the agenda of MET for many years.

The task environment analysis for seagoing and shore-based personnel proposes that a cross-cultural training program should include components such as culture in general, cultural self-awareness, culture specific information, acquisition of new attitudes and competencies associated with effectiveness in cross cultural business settings, and patterns of verbal and non-verbal communication.

To gain a more thorough view of the training needs of seagoing and shore-based personnel on the management of cultural diversity, a survey among maritime professionals in the European shipping industry was conducted. **The competencies that respondents ranked as most important for the cross-cultural education and training are: The fair attitudes towards people from different cultures, the ability to read, manage and receive orders from and cooperate with people of different nationalities, the awareness of cultural differences, the understanding and the ability to handle the dynamics among people from different cultures, the ability to follow orders from people from different cultures, the awareness one's own culture in relation to other cultures, the ability to recognize verbal and non-verbal communication styles, the**

ability to reach and learn from people from different cultures, and the ability to utilize the cultural diversity of a team both in routine and dynamic conditions.

With regard to the content for cross cultural education and training the sections proposed by the respondents as the most important were: How to manage conflict in culturally diverse teams, how to communicate efficiently in a culturally diverse working environment, how to lead and build culturally diverse teams and how to live together with other cultures onboard.

Techniques proposed as more effective and promising for cross-cultural training were: The lectures and discussions, role playing, and supervising or being supervised by a person from another culture. All these techniques can be supported through distance learning and e-learning approaches, at the same time emphasizing the contribution of the blended learning approach for the cross-cultural training.

### 5.3 TRAINING NEEDS ASSESSMENT SOFT SKILLS IN SHIPPING – A MODERN APPROACH TO A TRADITIONAL INDUSTRY (TP 3.2.3)

The third technical paper conducted by Bremen University of Applied Sciences is a training needs assessment regarding soft skills in shipping. New ways of international trade and shipping (bigger ships and ports with more modern technology and on average a smaller crew size) leads to new responsibilities and challenges on board of a ship. These new responsibilities require new or improved skills which go beyond solely technical skills. Therefore, among others, Moss and Tilly<sup>12</sup> argue for MET which is focused on soft skills, skills related to personality, attitude and behaviour.

Soft skills have become more important within business in general and TP 3.2.3 shows that soft skills are slowly on recognised within the maritime industry as well. Likewise the EU strategy 2009-2018 has a specific focus on the development of seafarers beyond the STCW requirements. They both acknowledge the importance of not only qualified but also experienced seafarers. Besides navigation and administration skills, good seafarers need good personal competences to increase efficiency of all the crew members with whom they are working together. This opinion is supported by statements of experienced professionals in the maritime industry and by the demands from seafarers themselves as expressed in D2.1. In this third technical paper two rounds of interviews were conducted with individuals who are in different stages of their maritime career. Current Masters and chief mates participated, as well as an ex-master working ashore and current maritime students with at least twelve months of experience at sea. The training needs expressed are compared to the provided “soft skills” training and education in the curriculum of MET institutions.

**All the participants argued that ‘teamwork’ and ‘intercultural competences’ are necessary soft skills a seafarer should possess or develop. The need for intercultural competences is already discussed earlier in paragraph 5.2. For the respondents in this context it is meant that all crew members should respect each other and in order to do so need to learn to understand and cooperate with other cultures.**

The need for the inclusion of ‘teamwork’ in management training in general, and in MET in specific is discussed by several sources. Katzenbach and Smith<sup>13</sup> for instance describe teamwork and a team as a ‘small number of people with complementary skills who are committed to a common purpose, set of performance goals and approached for which they hold themselves mutually accountable’. The degree of teamwork on board can be described on a scale regarding the leadership style. On the one hand a merely autocratic leadership style in which the ‘captain is next to God’, and on the other hand a merely democratic leadership style. Grech, Horberry, and Koester<sup>14</sup> explain the advantage of a

<sup>12</sup> Moss, P., Tilly, C. (2003), ‘Stories Employers Tell - Race, Skill, and Hiring in America’, New York: Russell Sage Foundation.

<sup>13</sup> Katzenbach, J.R., Smith, D.K. (1993), ‘The Discipline of Teams’, in: *Harvard Business Preview*, 1993, March-April, p.112.

<sup>14</sup> Grech, M.R., Horberry, T.J, Koester, T. (2008), ‘Human Factors in the Maritime Domain’, B.R, Taylor & Francis, p.86.



more democratic leadership style based on teamwork and appreciation of each other's skills: 'Synergy is obtained when the whole crew works together as a team, supporting each other through communication and the sharing of information. The democratic leadership style facilitates the creation of synergy and is therefore the preferred style under normal circumstances.' Finally, also in the 'Manila Amendment'<sup>15</sup> the 2010 revision of the STCW-Convention, teamwork is recognized as of major importance in training and education for future personnel. More attention to teamwork does not directly mean that the captain will lose its position on board. The Master is not giving up its strong position as leader, but becomes the leader of a team who is working dynamically hand-in-hand with his crew while complementing one another.

Some of the interviewees further mentioned the following soft skills as important skills for maritime professionals:

- 1- The ability to be working properly under pressure for a long time period (pressure from fatigue, fear during heavy weather, not knowing updates regarding home, strong responsibility, and time concerns)
- 2- The ability to resolve conflicts where neutral outsiders are not present on board
- 3- Flexibility and adaptability (dealing with changing crew, routes and unclear instructions from ashore)
- 4- Communicative skills (mainly communication from the Master to the crew members)
- 5- The ability to create a good atmosphere on board, having strong work ethics (self-motivation, honesty etc., which influences trust levels on board and therefore the feeling of safety),
- 6- The ability to deal with criticism
- 7- To be at eye level with subordinates

**Many of the soft skills mentioned above, which are according to the interviewees necessary skills for future maritime professionals to react on recent and future trends within the maritime industry, are related to the concepts 'leadership' and 'bridge resource management' which are also mentioned in the 'Manila Amendment' 2010 as important MET features.**

**Peter G. Northouse described leadership as 'a process whereby an individual influences a group of individuals to achieve a common goal.'<sup>16</sup> This does not mean that certain personal characteristics and talents are not positively influencing the leadership skills of an individual. However, as the interviewees indicated, the soft skills 2, 4, 5 and 7 are clearly linked to the more general concept 'leadership' and these skills can to a certain degree be learned.**

**Points 1 and 3 are on the other hand more addressing 'bridge resource management'. This is a process which helps to enable Officers on board to use all the available resources during critical operations.<sup>17</sup> Not technical abilities needed for ship operations are part of BRM, but mainly non-technical skills, skills related to psychological management, to diminishing stress, and to be able to handle the large amount of data which an officer is faced with.<sup>18</sup>**

**All the respondents agreed that soft skills are of great importance. A ship could be managed also without applying soft skills and without seafarers being socially competent, however soft skills make working and living easier, safer and more efficient. Seafarers improve their teamwork and maintain a lifelong-learning culture where everyone onboard benefits from interpersonal skills. This causes the seafarers to desire getting further training and to be better prepared for the challenges of their job. Moreover, it seems that training has improved over the last**

<sup>15</sup> ISF & ICS (2010), 'Manila Amendments: to the STCW Convention, a Quick Guide for Seafarers'

<sup>16</sup> Northouse, P.G. (2010), 'Leadership: Theory and Practice', New York: Russell Sage Foundation, p.3.

<sup>17</sup> The Rexford Penn Group (2010), 'Bridge Resource Management', 1st edition, Wilmington: The Rexford Penn Group.

<sup>18</sup> A similar concept – so called "Engine Resource Management" - is applied in the engine department.



years as some shipping companies already provide training additionally to the job. For the most part maritime studies were assumed presenting only a small factor of soft skill based training. Most interviewees, who mentioned their studies, considered the training being not sustainable enough to be prepared for the career onboard. The main aspect of soft skill gaining was the experience thus the essential basic requirements are still the hard skills. Furthermore, a better appraisal system for seafarers and a bigger focus on assessments procedure during application processes were highlighted by seafarers to provide more social competence onboard ships.

## 5.4 FEASIBILITY OF EXPRESSED TRAINING NEEDS

Which skills and what knowledge should be included in MET as discussed in this deliverable is one side of the discussion. However, the implementation of the needed or wished changes is according to three experts from the maritime education field only partly feasible and needs to be included in a long term planning.

Three ex-seafarers, now working as lecturer and program coordinator at a maritime academy and at a maritime education institution, were asked to provide feedback from the educational point of view on the training needs expressed in this Deliverable. They were asked to reflect on the feasibility of including the expressed needs into their curriculum. The discussion was not focused on further elaboration of the training needs assessment, meaning that no specific questions during the interview were focused on the necessity of the expressed needs. Clear was however that the three respondents were not unanimously supporting all the different expressed training needs of this deliverable, not content wise and not practical wise, but that in general the different training needs could be beneficial to MET.

The respondents selected work respectively within a maritime academy from Portugal, a university focused on maritime education from Germany, and a university focused on maritime education from Finland, and are selected based on the diversity of the time they are working within the MET field. Respectively 4, 10, and 22 years are the respondents working in this field.

All three respondents explained that their curriculum is already fully filled with essential courses for seafarers. Short courses and courses offered for industrial partners are according to the respondents essential for and their institution and for the maritime industry. If new topics or courses need to be provided then this will have to go at the cost of courses already existing. Much of the training courses already provided have been founded after many years of experience (and partly based on STCW requirements), which means there is no support for the institutions to exchange these easily with possible new courses, even if wished for. Some topics might be possible to be incorporated in already provided courses. Especially 'intercultural relations' and 'safety and security guidelines' are topics which are according to the respondents already partly assessed in their courses and which could relatively easy be incorporated more in the already existing courses. Other training needs expressed are by the respondents more interpreted as new and not covered topics, for which new courses need to be developed.

Furthermore, if they will need to provide training and education focused on several of the expressed training needs, they need to train or hire new staff members. The use of guest lecturers will not be sufficient if these topics will be really included in MET. Especially 'environmental issues' and 'IT and computer skills' are mentioned as topics on which they themselves do not have specific knowledge, or for which they do not see their own institution capable enough to be teaching them. Financially it is nowadays not easy for the institutions to just hire or train new staff members.

One of the respondents mentioned that if the institution wants these new topics included then the best way would be to incorporate them with already existing courses. 'Soft skills', 'intercultural relations', 'safety and security guidelines', and 'environmental issues' should according to this respondent be only addressed and highlighted during existing training and during the time on board. Especially during the seagoing time students and seafarers have the best circumstances to learn and acquire these skills. The other two respondents however believe that the different topics if applied in MET should get in-depth attention, both the practical and the theoretical side. This would mean the theory needs to be addressed during courses in a traditional class room, with a large part of the course focused on the specific topic (meaning not just one lecture). This would also mean that the curriculum as a whole needs to be revised and that the longer term planning regarding the whole program offered should ensure the program stays complete and interlinked. The respondents believe the expressed training needs would be beneficial for both deck and engineering personnel.

## 6. CONCLUSION

This deliverable shows that the maritime industry changes rapidly along with globalisation, modernisation, and internationalisation of the economy in general. If the European maritime industry wants to stay competitive within the worldwide maritime industry, then MET of European seafarers should keep track of this ever changing context of the maritime industry. On the other hand, European MET should make sure that both the needs from the industry and the needs of the seafarers are combined in high quality training.

The new techniques within the shipping and port industry require maritime professionals who are capable to work with these new techniques. The internationalisation of global trade and the internationalisation of the crew on board and on shore require maritime professionals who are capable to work within a cross-cultural environment. And as a result from the changing responsibilities on board and because of the high chance of seafarers going to work within the maritime industry on shore later during their career, advanced social and soft skills need to be trained to seafarers, such as: Leadership, teamwork and bridge resource management skills.

All the rapid changes resulting from globalisation, modernisation, and internationalisation are furthermore an enormous pressure on the environment. The EU 2020 strategy<sup>19</sup> argues that economic growth should be also sustainable and that emissions need to be reduced. The maritime industry needs to address environmental issues more effectively and efficiently. The knowledge of seafarers regarding environmental issues and policies therefore require continuous updating and require more specific training.

The Commission and the TFMEC both argued for advanced training courses for seafarers during their study, which go beyond the basic STCW requirements. Moreover, seafarers are now mainly trained for only a career on board. However with the majority of European seafarers leaving the ship after 5 to 10 years it is wise if maritime education also puts a focus on the career of seafarers after their sea time. With the thread of losing know-how training should be offered that will contribute to the retention of the seafaring profession and to the increase of the possibility to follow second career at a position ashore. This means that future MET should not only consider the industry's needs, but also integrate it with the needs of seafarers regarding their career paths. The availability and accessibility of advanced training courses on board is one of the proposed improvements towards this goal. Both from the shipping company perspective (TP 3.2.1) as the seafarers' perspective (TP 3.2.2 and TP 3.2.3) web-based education and blended training modules are mentioned as a possibility to assess and incorporate the described training needs properly. This will be further discussed in D3.3.

Indicating which skills and what knowledge needs to be added or improved within MET does not mean this can automatically be implemented. Existing well-structured MET is a result of years of education and training experiences, build towards a comprehensive program or course which enables students and seafarers to be best prepared for their occupation. Just adding more courses or skills that need to be acquired will make the programs to be overloaded. And as experts indicated, one lecture squeezed into an existing course might not realize the wished effect of implementing the expressed training needs. Also the expertise of the people working within the different MET institutions might not be specialized towards some of the proposed new skills, which means new means have to be available for training or hiring new staff; means which are often not available. A well planned adjustment of the course or program needs to be implemented if the new topics will be addressed without losing essential skills and knowledge from derived from other courses.

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<sup>19</sup> COM (2010), 2020 final, 'A strategy for smart, sustainable and inclusive growth'  
Date: [19 Nov 2013]

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## **APPENDIX**

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**APPENDIX I: PEER REVIEW PROCESS**

**APPENDIX II: TECHNICAL PAPER 3.2.1: TRAINING NEEDS ASSESSMENT IN ENVIRONMENTAL POLICY IN SHIPPING - IVL SWEDISH ENVIRONMENTAL RESEARCH INSTITUTE**

**APPENDIX III: TECHNICAL PAPER 3.2.2 - TNA IN MANAGEMENT OF CULTURAL DIVERSITY – UNIVERSITY OF AEGEAN**

**APPENDIX IV: TECHNICAL PAPER 3.2.3 - TNA SOFT SKILLS IN SHIPPING – A MODERN APPROACH TO A TRADITIONAL INDUSTRY – BREMEN UNIVERSITY OF APPLIED SCIENCES**

## APPENDIX I: PEER REVIEW IMPLEMENTATION

### PEER REVIEW

Each Deliverable will have to pass through a review process of two external peer reviewers. This shall provide assurance of the objective quality of the deliverable. The peer reviews are accompanied by a peer review form, which allows the peer reviewer to present his/her recommendations and critiques clearly and precisely.

<b>Project acronym</b>	<b>KNOW-ME</b>
<b>Deliverable No</b>	<b>D3.2</b>
<b>Deliverable Title</b>	<b>Training Needs Assessment Report</b>
<b>Version</b>	<b>1.0</b>
<b>Reviewer</b>	<b>Dr. Maria Progoulaki, Dr. Ioannis Theotokas</b>
<b>Classification</b>	<b>Accepted with minor modifications</b>
<b>Date</b>	<b>30/09/2013</b>

For each of points 1 to 4 below, only a couple of paragraphs are required (although you are allowed to expand as much as you want), or in a few cases (e.g. point 2 for the Project Presentation Leaflet) even only a “not applicable”.

#### 1. Relevance of Deliverable

D3.2 provides knowledge critical for the development of educational approaches and material aimed to the training of seafarers and young people that wish to join maritime career. The Deliverable examines the training needs of seafarers with regard to the environmental management, cross cultural competencies and soft skills. In all cases analysis is based on primary data that come from the interested groups of people.

#### 2. Contribution to **KNOW-ME** Strategy

The conclusions of the deliverable which are based on three technical papers can be used as a basis for the development of training methodologies and material that could contribute to the implementation of the Know-ME general objective to “enhance the attractiveness for professionals and young people both of the seafaring professions and careers onshore within the maritime sector, particularly addressing career management and to enhance its competitiveness compared to other sectors” which is related to certain specific objectives: (a) to introduce an integrated approach for the development of Maritime Education and Training at the European Level, (b), to offer education and training which facilitates the acquisition of hard and soft skills needed for the modern career management of seafarers and of shore staff under the a life-cycle approach, (c) to offer education and training which facilitates knowledge transfer and the transition from on-board to on-shore position

### 3. Depth and Extent of Coverage

D3.2 incorporates in a coherent deliverable the extensive analyses included in three TPs (the training need analysis for the environmental management, the cross cultural competency and the soft skills). All TPs base the analysis on primary data. The depth and the extent of the analysis of the deliverable is considered as appropriate.

### 4. Clarity of Presentation

The deliverable is logically structured and well-written.

### 5. Further Comments

The following comments (below highlighted in **Bold**) are proposed to the authors. The implementation of the comments is explained in normal font.

#### Deliverable:

- **Executive Summary should be included.**
  - Executive summary was already present, however has been adjusted accordingly and title of executive summary formatted as a header.
- **Methodology described, but it is not mentioned when the different surveys took place.**
  - Both the methodology section in the deliverable and in the technical papers is now mentioning the time frames of the surveys that have been conducted.
- **Appendices of technical papers should be titled different from appendices of the deliverable in order to prevent confusion.**
  - The titles of the Appendices have been changed accordingly.
- **List of abbreviations missing.**
  - List of abbreviations included accordingly.
- **Integration of the different styles of TPs would add**
  - Efforts have been made in order to reach a more common style within the Deliverable and the Technical Papers, without changing the original text of the different authors too extremely.
- **Romania and Poland as new members states have not been included in any of the sample of all surveys conducted within the frame of D3.2. Limitations of the geographical scope are not mentioned.**
  - This limitation is now described in the methodology section of both the deliverable and the technical papers 3.2.1 and 3.2.3.
- **P 17, 3rd paragraph: “However with the majority of European seafarers leaving the ship after 5 to 10 years it is wise if maritime education also puts a focus on the career of seafarers after their sea time” This argument could be seen from the point of view of know-how that is missed, i.e. to mention the need to offer training that will contribute to the retention to the seafaring profession and to the increase of the possibility to follow second career at a position ashore.**

- This important point of view has been added, including a link to the objectives of the KNOWME project in general.
- **Reviewer's recommendation to include info from SIRC and Observatoire des droits des marins is not totally satisfied.**
  - TP3.2.2 cites works of SIRC (e.g. Kahveci & Sampson 2001, Lane, etc.) but not of Observatoire des droits des marins. The documentation of the latter is mainly in French and is hard to obtain. The consortium does not have the resources for analyzing French documents in-depth for inclusion in this study.
- **Recommendations from the Commission have been in general implemented but are not addressed in a separate section and not directed to the Commission.**
  - The recommendations of the Commission were in general addressed by the Deliverable. In the methodology section a special paragraph is now explaining and referring how the recommendations of the Commission are addressed.
- **Shipowners' and seafarers' interests are examined, while MET lecturers' opinions are also examined. However governments' positions are not examined.**
  - The governments' position is recognized as a valuable source in the deliverable and the different technical papers. However, the focus of the surveys remained on the central actors "Seafarers", "Ship Owners", and "MET institutions" as they directly influence MET. The governments' position is acknowledged as a supporting position.

### TP 3.2.1:

- **Literature review is missing from TP3.2.1. Some previous research in the field should be explored?**
  - Paragraphs added in goal and scope section explaining the absence of a literature review. The subject is unexplored and needs more extensive studies for further analysis.
- **Data collected & analyzed in TP3.2.1 reflects countries ONLY from the Scandinavia. This is a limitation and should be explained as such (in the methodology section).**
  - Methodology section is improved and now mentioning this limitation.
- **Expression in TP3.2.1 needs improvement.**
  - Language and train of thought in the technical paper has been improved according to the reviewers' comments.

### TP 3.2.3:

- **Sample in TP3.2.3 is restricted to Germans only. This is a limitation and should be mentioned as such.**
  - The following sentence (page 64, chapter 2) has been added in order to emphasize the limitation: "Even though this research mainly concentrates on German seafarers and their opinion about vital soft skills, it could be assumed that mariners in general – no matter what their cultural background is – might have similar experiences and needs since every crew member of whatever nationality has to face similar challenges in their daily working life aboard a vessel."
- **The reviewer's comments in p.6 "The results provided a good overview of the deficiencies. For example, the isolation has been very well underlined. These issues need to be considered:**
  - Who is going to pay the cost of the telecommunication at sea?



- Who is going to monitor the webmaster in order to protect privacy of seafarers?
- How to deal with the risk of leakage of commercial/security information? " these have not been addressed in TP3.2.3.
  - ➔ KNOWME TP 1.1.1 (Internet for Seafarers) deals with the topic "internet for seafarers. This technical paper has been mentioned in footnote 31
- **Footnotes in TP3.2.3 could be avoided and a common style of referencing and citation could be used in all 3 TPs.**
  - ➔ Referencing and citation style has been changed according to the other TPs
- **TP3.2.3 could make reference to TP3.2.2 when mentioning intercultural competency**
  - ➔ See footnote 32 on page 69, TP 3.2.2 is now mentioned
- **Discussion of data from the 2 surveys in TP3.2.3 is too detailed. The results from the two surveys should be summarized (and discussed as a whole) in a single section.**
  - ➔ Changes according to this suggestion has been made in chapter 7
- **Same applies to the results from the 3 experts.**
  - ➔ Changes according to this suggestion has been made in chapter 7
- **Discussion is too long and detailed. Results from the 3 MET experts should be summarized in 1 section.**
  - ➔ Changes according to this suggestion has been made in chapter 7
- **Figures in section 7 (page 89-90) should reflect the results from both groups of surveys. It is unclear to me.**
  - ➔ Figures have been changed according to the suggestion



**APPENDIX II. TECHNICAL PAPER 3.2.1 - TRAINING NEEDS  
ASSESSMENT IN ENVIRONMENTAL POLICY IN SHIPPING**

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**Due Date:** 17 April 2012  
**Submitted:** 29 October 2013  
**Main Author:** IVL Swedish Environmental Research Institute  
**Dissemination:** Dissemination Level



## DOCUMENT CONTROL SHEET

<b>Workpackage:</b>	3.2		
<b>Deliverable :</b>	D3.2 training Needs Assessment Report		
<b>Document short name:</b>	TP 3.2.1		
<b>Version:</b>	V.1		
<b>Document History:</b>	Version	Issue Date	Distribution
	V1	17 April 2012	Task Leader
	V2	29 October 2013	Project and WP coordinator



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A training needs assessment has been performed as a basic effort to analyse the gap between knowledge about environmentally related issues of new employed personnel in ship owning companies and requirements of the same company. The conclusions from the needs assessment should function as a guide for the content of new courses on the issue.

This TNA reflects the shipping industry's needs for training on environmental policy, environmental management systems (EMS) and environmental and ecology issues related to the business.

## 1. GOAL AND SCOPE

The objective of this assessment is to identify and describe gaps between the educational levels on environmental knowledge of new employees in ship owning companies and ship management companies and the needs from the industry as experienced by environmental personnel in shipping companies.

The shipping industry comprises many actors with influence on environmental performance of ships and the ship industry in general. This study focuses on ship owning companies in Scandinavia. The geographical scope of the selection of respondents is thus limited, and the conclusions of the study may be more valid from a Scandinavian perspective than from a European perspective. Differences in engagement in internal environmental policy work between countries have not been part of the study, which makes the effects of the chosen geographical scope difficult to describe. Other factors might be equally important for the outcome. These are for example which segment of shipping that a company belongs to, the company size, and the company annual turnover. Stakeholder requirements are likely to differ between different segments of the business and have a potentially strong effect on the efforts to uphold a well-organised environmental work. The size and financial strength of a company influence both the budget for environmental policy work and the potential to reach the whole organization.

This study is intended to provide an initial orientation in the field, which so far is unexplored. The conclusions drawn can be further elaborated on in the light of studies on environmental policy work and training needs assessments from other industries. Studies including previous work in related fields would also facilitate analyses and descriptions of how the selection of respondents influences the conclusions. However, such studies were not feasible to include within the scope of the present study.



## 2. METHOD

Information on the current status of knowledge of the environment and ecology and organisation of environmental work in companies has been gathered through interviews with personnel engaged in company environmental work at eight ship owning companies. Knowledge among new employees has been in focus but also training needs in general have been mapped. The interview questions have been of direct character when the aim has been to establish how the company approaches the environmental work. This results in brief and clear answers. When the aim has been to establish training needs, the questions have been of a more discussing character which allows the respondents to give elaborate answers based on their experiences and thoughts.

The answers from the interviews have been interpreted collectively and general conclusions that are considered of significant importance for training progress are presented. The degree of importance is evaluated based on the following criteria:

- explicit requirements from one or several ship owning companies
- potential for environmental improvements achieved in one company that could be transferred to other companies through training

Also conclusive remarks that are not directly related to training needs are addressed.



## 3. 1. INTERVIEWEES

The interviewees are all in positions that either have a good overview of, or responsibility for, the environmental policy work in their respective companies. All approached companies have well informed and organised environmental management policies.

The companies can be divided into different segments; there are four companies active in offshore supply, there is one passenger/ro-ro company, one car and vehicle carrier company, one in the bulk and tanker segment and one that spans over bulk- container- and ro-ro ships. A list of the companies and contacted persons are found in Appendix B.

The answers to questions 1-3 in the interview (see appendix A) from each of the interviewees are used to describe the companies' approaches to environmental policy and environmental efforts.

### 3.1 Wallenius Marine (SWEDEN): Per Tunell

Wallenius Marine is responsible for management and design of the Wallenius-owned fleet. The ships transport cars and heavier vehicles in ocean going trades.

Per Tunell is Head of Environmental Management at Wallenius and following his words the room for environmental efforts in the company can be explained the following way:

The Wallenius companies are family driven and the environmental work and visions have always been important aspects of their business. The company is certified by ISO 14001 since 1998 and environmental issues are considered in an integrated manner in business decisions. Wallenius has constructed a map over the environmental areas in which their ships have an impact and addresses these areas. Ship emissions of SO<sub>2</sub> and NO<sub>x</sub> to air are most important today and also impact on water from ballast water discharge and anti-fouling paint are covered. Other issues are emissions of particles and the handling of chemicals, sludge and oil although this list is not conclusive. Per Tunell's function as Head of Environmental Management in the company is not limited to a single division but is a staff function and he supports all parts of the company with guidance on environmental issues.

### 3.2 Stena Line Scandinavia AB (SWEDEN): Cecilia Andersson

Stena Line is one of the largest ferry companies in the world and operates in Northern Europe. Their Scandinavian division transports people and ro-ro-goods between the Scandinavian countries, Poland and Germany.

Cecilia Andersson is Environmental Controller at Stena Line Scandinavia and from her words the room for environmental efforts in the company can be explained the following way:

Stena Line Scandinavia is certified according to ISO14001 and their environmental policy is supported by the management group as is required by the environmental management system. Cecilia Andersson works within the division "technical operation". She says that environmental aspects are often a parameter that influences decision making in the company, although sometimes, decision that counteract environmental improvements are taken. As an example she mentions investments on their passenger ships that are done in order to have a more pleasant journey, for example solariums. There is, however, since a long time an awareness of these issues. Today, she mentions energy efficiency as the most important parameter followed by noise and ballast water management.

### **3.3 Transatlantic Industrial Shipping /Viking Supply Ships (SWEDEN): Annelie Rusth Jensen**

Transatlantic Industrial Shipping and Viking Supply Ships are sprung from the company Transatlantic. Transatlantic Industrial Shipping mainly services large European industries and owns a fleet of bulk-, container- and ro-ro-ships that mainly sail in European traffic. Viking supply ships are operating within the offshore and offshore/icebreaking segment on a worldwide basis.

Annelie Rusth Jensen is sustainability coordinator for both companies. From her words the room for environmental efforts in the company can be explained the following way:

Both Transatlantic Industrial Shipping and Viking Supply Ships are certified according to ISO14001 since 2004. Their environmental policy is supported by the management as according to the requirements of the environmental management system. Annelie Rusth Jensen has experienced an increased engagement from the company management in environmental questions during the last years following an increasing interest by customers.

### **3.4 Farstad Shipping (NORWAY): Børge Nakken**

Farstad Shipping ASA is a major international supplier of large, modern offshore support vessels. The Farstad Shipping Group owns vessel owning companies in Norway, Scotland, Singapore and Brazil.

Børge Nakken is Chief Operating Officer at Farstad Shipping and from his words the room for environmental efforts in the company can be explained the following way:

Farstad Shipping is certified according to ISO14001 and has an environmental policy that is supported by the company management. The overall policy is that at incidents, the safety of employees comes first followed by environmental protection and lastly safeguarding of material values. Nakken considers the environmental aspects to be well integrated in the daily work and relates that to the nature of the business as such.

Farstad Shipping has one person employed to work with Corporate Social Responsibility issues of which environmental policy is considered a part.

### **3.5 Bourbon Offshore (NORWAY): Alfred Remøy**

Bourbon Offshore Norway AS is a fully integrated offshore supply ship owning company. The Company is a member of the Bourbon group, a leading player within offshore shipping providing ship borne supplies to oil and oil-related companies all over the world.

Alfred Remøy is Safety Officer at the Health Safety Environment and Quality HSEQ division and from his words the room for environmental efforts in the company can be explained the following way:

Bourbon Offshore is certified according to ISO14001 and thereby has an environmental policy supported by the management. He considers environmental aspects to be well integrated in everyday decision making in the company and states that everyone is occupied by environmental issues today, although, as he says, not all decisions need to be viewed from an environmental perspective. The main issue for Bourbon Offshore regards fuel consumption of their vessels.



The manager of the HSEQ division is responsible for the environmental performance and organisation in the company and works together with the technical department.

### **3.6 REM Offshore (NORWAY): Rune Kopperstad**

REM Offshore is within the offshore supply vessel industry based in Norway.

Rune Kopperstad is the HSEQ manager of REM Offshore and from his words the room for environmental efforts in the company can be explained the following way:

REM Offshore has an environmental policy supported by the management and HSEQ is certainly on the agenda. REM Offshore expects to be certified according to ISO14001 before June 2012. The integration of environmental aspects in daily decision making naturally differs depending on the decision to be taken. Consumption of fuel oil is high on the agenda and a lot of efforts are made to minimise the use of marine fuel. The company also makes efforts for a wise handling of chemicals and also consumption of paper. He also mentions that ships that are a lot in domestic service are part of the Norwegian NO<sub>x</sub> fund.

Part of Rune Kopperstad's task is to be in control of environmental work in the company.

### **3.7 TORM (DENMARK): Troels Jørgensen**

Torm operates one of the largest fleets in the tanker and bulk segment of international shipping.

Troels Jørgensen is senior manager of environmental and technical support. From his words the room for environmental efforts in the company can be explained the following way:

Torm is certified according to ISO14001 on their land based activities. The ships that they own are also certified although ships that they only operate are not necessarily. The environmental policy is supported by the management and as customers' awareness and requirements are increased the environmental aspects become more important to integrate in every day decision making. Mainly, in their line of business, avoiding oil spills has been the main concern, but now also optimisation of propulsion is important. The company has goals set to reduce CO<sub>2</sub> emissions from ships by 20% per tonne-km and ship by 2020, calculated from the levels of 2008. On offices, reductions should be 25 % calculated for the same time frame and per employee.

Troels Jørgensen has the overall control of environmental issues in the company. Formerly, his position was in the safety department but now he works with the division for technical support. The company works a lot on evaluating how improvements on environmental and economic performance can be met by the same measures.

In addition, he mentions, all ships have safety officers that have the responsibility for internal and external environmental issues on board. The safety officer is always part of the ship board management team.

## 4. 2. RESULTS - ANALYSIS OF ANSWERS

Most of the addressed companies regard the environmental aspect as a parameter in every day decision making, although, as pointed out by a few of the interviewees, not all decisions require an environmental perspective. Four interviewees mention fuel consumption and energy efficiency as the most important issues. Other parameters mentioned by one or more interviewees are emissions to air and water, ballast water management, anti-fouling paints, chemicals on board, sludge and oil handling and noise. Also requirements from customers on energy efficiency are mentioned.

Environmental policy and management systems are in place in all companies although one company has not yet certified its system according to a standard.

The knowledge of new employees can, from answers from all the interviewed persons, be concluded to depend on nationality. Europeans, Americans and employees from more industrialised countries are said to be more informed on environmental issues than employees from other parts of the world, although there are individual exceptions. This is valid both for knowledge about environment and ecology and the organisation of environmental work in the company. A natural comment from a few of the respondents is also that this depends on whether the employee has recently graduated or has experience from similar work in other companies. Two respondents mention that experienced people can have good knowledge of companies' organisation of environmental work.

According to ISO14001, there should be recurring training/education of employees. This is also the case in all represented companies of which four explicitly mention that they have web based training.

All interviewees say they experience external requirements on environmental performance. However the requirements appear to differ for companies in different segments. All ship owning companies involved in the offshore supply industry have very direct requirements from their customers. The oil companies require certification according to standardised environmental management systems and one interviewee mention that without an EMS it is not possible to have long term contracts with a large oil company. Another respondent mention that the oil companies are very occupied by environmental issues and three of the interviewees in the offshore supply segment mention that their customers request low fuel consumption. A reasonable explanation that is indicated is that the oil companies pay for the fuel.

The companies active in the other segments also experience external requirements on environmental knowledge although these requirements seem less explicit. One interviewee mentions that this is mainly due to that the company he works for communicates the importance of engagement in these questions; the external requirements are more driven by this company's communication than by customers. Another interviewee says that the requirements are a consequence of them having a certified EMS. Yet another one experience a lot of questions and says that it seems they are expected to keep statistics readily available for actors such as the port authority, the municipality, neighbours, politicians and cargo owners. The only company in the bulk segment mention external requirements related to environmental protection from oil/cargo spills. On the question of whether they have external requirements to follow an EMS standard the answers diverge; one says "no, or maybe indirectly via Clean Shipping Index<sup>20</sup>" and that other standards such

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<sup>20</sup> Clean Shipping Index is a system that index ships according to environmental performance in order to facilitate for cargo owners to choose a more environmentally adjusted transport

as sustainability standards are more modern, another says yes, more and more and a third says that “no, this is not the reason we have chosen to certify our EMS”<sup>21</sup>.

On the direct questions on training needs, only few respondents could express direct wishes. One wish was that students should be taught the fundamental steps of the ISO14001 standard. Another respondent mentions that people that are to work on board ships should be more aware of issues related to work environment; more information about the chemicals used on board, the substitution and information on how to handle chemicals in a safe manner should therefore be a part of their education. According to her it is important for all crew members to be able make their own decisions and at least assess risks in the work environment.

Two interviewees indicate that educational institutions ought to be more aware of the development within the industry; they should be updated on what happens at present in the industry and also what is about to happen. One states: “the educational institutions have neither the competence nor the resources to keep updated”<sup>21</sup>, and refers to a very rapid technological development in the industry. These statements can be coupled to the viewpoint of a third respondent who says that there is a need to be able to interpret new legal requirements that often are complex.

Another wish is for more specific knowledge for a certain segment of the fleet although the respondent also says this would not be practicable.

Two interviewees indicate a positive development in education and that personnel working at sea today have more knowledge on these issues than was the case thirty years ago. As one of them states this situation is maybe not only seen in the shipping industry.

One respondent states that a satisfying level of education is knowledge of the MARPOL requirements. A common view is however that more knowledge is good although it seems difficult for the respondents to specify what this knowledge should contain. **Internal training is an important way to keep employees updated. Two of the companies indicate that there are difficulties to achieve a comparable knowledge level throughout the company depending on the employees’ previous educations. The fact that these companies give a basic introductory education for the less educated employees is possibly a sign of a wish to level knowledge within the company (difficult for education to address all different segments).**

Presently, internal education and training of staff appear to be more important than what is learnt at schools and universities in knowledge related to segment specific environmental issues and EMS organisation.

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<sup>21</sup> Authors translation  
Date: [19 Nov 2013]



### 5. 3. CONCLUSIONS ON TRAINING NEEDS

The need for knowledge specific to a segment in which a shipping company operates is today addressed by offering new employees internal training. Also, the shipping companies express a need for updates on technological progress and upcoming legal obligations, today solved by company specific training to employees on land and on board ships. **These needs could possibly be cared for also by external courses.**

There are also indications of larger training needs for new employees from non-Western countries which could be an important gap to fill. This could be done by providing basic courses for persons from abroad that are to work for European ship owning companies that have an organised work with environmental issues.

One direct issue that should be included in the course material is energy efficiency measures.

It also seems that web based education is a familiar way to spread information which can possibly be further utilised.



## APPENDIX TP 3.2.1

### Appendix A Interview questions

#### Organization of environmental work within your company

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1. How is environmental work organised within your company/organization; does it include
  - a. a certified environmental management system (EMS)?
  - b. a designated environmental coordinator?
  - c. an environmental policy by the management?
2. Would you say that environmental work is integrated in your daily business; is environment a parameter that influences everyday decision making?

#### Knowledge level of new and existing employees

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1. Do new employees have knowledge about the environment and environmental conditions and ecology?
2. Do new employees often have knowledge about how companies can organise environmental work?
3. Do new employees often have knowledge about the environmental issues specifically related to the shipping industry?
4. Do you experience a need for more knowledge about environmental issues that specifically relate to the shipping industry among your employees?
  - a. What knowledge is missing?

#### External requirements

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1. Do you experience requirements on good environmental knowledge from external contacts?
2. Do you experience requirements on following EMS from external contacts?

#### Training needs

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1. Does your company offer training for employees on environmental issues?
2. Do you consider that maritime educations today (upper secondary schools, universities and training academies) offer students what you demand?
  - a. If not, which gaps are most important to fill?



## Appendix B List of interviewees

Bourbon Offshore Norway  
Alfred Remøy, Safety Officer HSQE  
tel +47 70086187  
(24 Feb 2012)

Farstad Shipping  
Børge Nakken, Chief Operating Officer  
tel +47 70117575  
(22 Feb 2012)

REM Offshore  
Rune Kopperstad, HSQE Manager  
tel +47 70080893  
(6 Mar 2012)

Stena Line Scandinavia  
Cecilia Andersson, Environmental Controller  
tel +46 31 858253  
(28 feb 2012)

TORM  
Troels Jørgensen, Senior Manager of Environmental and Technical Support  
tel + 45 3917 9227  
(14 Mar 2012)

TransAtlantic Industrial Shipping/Viking Supply Ships  
Annelie Rusth Jensen, Sustainability Coordinator  
tel +46 31 7574344  
(24 Feb 2012)

Wallenius Marine  
Per Tunell, Head of Environmental Management  
tel + 46 8 7720529  
(22 Mar 2012)



**APPENDIX III. TECHNICAL PAPER 3.2.2 – TNA IN  
MANAGEMENT OF CULTURAL DIVERSITY**

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**Due Date:** 17 April 2012

**Submitted:** 19 April 2012

**Main Author:** University of the Aegean

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**Dissemination:** Dissemination Level



**DOCUMENT CONTROL SHEET**

<b>Workpackage:</b>	3.2		
<b>Deliverable :</b>	3.2. Training Needs Assessment Report		
<b>Document short name:</b>	TP3.2.2		
<b>Version:</b>	V1		
	Version	Issue Date	Distribution
<b>Document History:</b>	V1	19 April 2012	Task Leader



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## 1. INTRODUCTION

As more and more people participate in international business activities and companies become multinational, the need for training programmes that will prepare them to work in other cultures and with colleagues from culturally diverse backgrounds in a formal way turns to be essential. Cross-cultural training has been introduced to many business sectors, such as aviation (Johnston, 1993; Gregorich and Wilhelm, 1993; Helmreich *et al.*, 1999), marketing and consumer behaviour (Munson and McIntyre, 1979; Luna and Gupta, 2001), expatriates' management (Kealey and Protheroe, 1996; Ferraro, 1998; Bennett *et al.*, 2000), as well as in military operations (Soeters and Recht, 2001; Lichacz and Farrell, 2005) and higher education (Harrison and Hopkins, 1967; McAllister and Irvine, 2000). The changing nature of the workplace environment illustrates for cross-cultural training. As Littrell and Salas (2005) mention, in order to identify, address and resolve the challenges that will stem from increased organizational diversity, use of multinational teams and internationalisation of economy and business activities, it is important to examine in depth the various contents and potentials of cross-cultural training programmes.

Before specialising to the maritime industry, it is vital to understand the concept of training in the field of culturally diverse environment; thus, certain key terms need to be defined. More specifically, according to Ptak *et al.* (1995:430), "cross-cultural" refers to a parallel analysis or study of more than one culture. An "intercultural" programme refers to preparation given to people from different cultures coming together for work, while a "multicultural" programme is expected to help an expatriate feel at home in more than one culture. Bennett (1999; 2011) gives a more detailed definition of multicultural education, according to which it refers to "a commitment to combat racism, sexism, and all forms of prejudice and discrimination through the development of appropriate understandings, attitudes, and social action skills" (Bennett, 1999: 12-13), while "emphasis is on clearing up myths and stereotypes associated with gender, different races, and ethnic groups" (Bennett, 2011: 31). Parsons *et al.* (2010) have defined cross-cultural competence (CCC) and cross-cultural education and training (CCET) with special regard to the maritime context. According to them, "cross-cultural education/training" refers to the skills education and training that addresses the effects of national culture on working styles, decision making, conditions of cooperation among different national cultures, communication and perceptions of roles of management and leadership. Moreover, "cross-cultural competence" entails demonstrating ability and skills in communicating across cultures, anticipating cultural effects on decision making and acting accordingly, continuously learning how culture may affect role perception and self-efficacy in decision making, prioritization of resources and actions, and more.

For the needs of this report, the term "cross-cultural training" will be used in general to describe education and training programmes in the field of cultural diversity. The report aims at describing the objectives of cross-cultural training that can be provided to both seafarers and shore-based personnel. Previous research in the field of cross-cultural training in the maritime context is presented in Section 2. The task environment and training needs for seagoing and shore-based personnel are analysed in Section 3. Methodology used is outlined in Section 4, while results of the survey and conclusions follow in Sections 5 and 6 respectively.

## 2. PREVIOUS RESEARCH IN THE MARITIME INDUSTRY

A thorough survey among previous studies supported by the European Union shows that a restricted number of research has been conducted only in the general field of cross-cultural communication in shipping and maritime education and training. More specifically, MARCOM (1998) was the first European project that examined the impact of multicultural and multilingual crews on maritime communication. MARCOM aimed to improve communications, and thereby promote maritime safety, by dealing with the fundamentals in maritime socio-linguistic communications, ship-ship and ship-shore communication. The project also demonstrated that decisions concerning manning strategy were taken according to criteria associated with tradition, seafarers' linguistic skills, general skills and training, and manning costs. The factors which turned out to be crucial in the performance of multicultural crews were their cultural background and linguistic skills. The project's findings supported the conclusion that one single syllabus for maritime English is unlikely to cover all the needs identified in the specific seafarers' context. The basis for improvements was seen in sharing and adopting best practice curricula and material, and in choosing a modular approach towards comprehensive syllabi for teaching maritime English.

Later, METNET Project (2000), entitled "Thematic Network on Maritime Education, Training and Certification", aimed to improve the quality, harmonise the contents and extend the applicability of maritime education and training for ship officers (MET) in the EU. Further, METHAR Project on the "Harmonization of European MET Schemes" (2000) aimed to contribute to the harmonisation of MET at a European level and increase the competitiveness of the European maritime industry by improving the level of qualification of seafarers and other maritime personnel, and through a better provision of ship-board experienced personnel in the maritime industry, in order to achieve higher standards of safety, environmental protection and efficiency. The project's findings highlight the need for policies to improve MET for ships' officers, making MET more harmonised and more widely applicable.

Moreover, with special regard to distance learning techniques and new technologies' effect in Maritime Education and Training, two EU-funded projects showed significant results. THALASSES (2000) was a project on the "New Technologies in Maritime Transport interacting with the Human Element Assessment of Impacts". The project's main objective was the assessment of the socio – economic impacts of new technological concepts in maritime transport, on the human element on board. From the findings of THALASSES it became clear that the impact of new technologies on human operators is highly context-specific, and that new technologies' application will have considerable effects on MET schemes - however, the perception of the impacts of specific new technologies was found to differ widely between maritime students and experienced ship officers.

SEAGULL Project (2001) on "Long Distance Learning Technologies in Maritime Education and Training" aimed to assess the impact on costs and the effectiveness of long distance learning technologies in maritime education and training. Specifically, a concept for long distance learning was developed which included a baseline communication system, an appropriate educational concept, and adjusted courses together with an appropriate test environment, such as a demonstrator. In order to ensure a significant contribution not only to long distance learning but also to international co-operation in maritime education, relevant bodies such as shipping companies were involved through the demonstrator. A work shop ensured the participation of schools, as well as government representatives, ports and shipping companies.

The SKEMA Project (2008) on the "Interactive Knowledge Platform for Maritime Transport and Logistics" focused also on the education and training of maritime human resources (MHR). The aim of the special focus on MHR was to give a review of the human resource situation within the maritime sector in Europe. The research showed –among others- that the reason for the staffing problem on today's agenda within the maritime sector

is mainly due to the experienced shortage of sea officers, i.e. lack of employees with core competences for taking responsibility for the navigation of the ships, which can be classified as the core activity of the sector. Also, the offered educational possibilities need expansion, but such an expansion needs demand, and demand may rise only if work and career conditions develop and are made visible in ways which attract the new generations coming.

Previous research on cross-cultural training in the shipping industry shows that the development of cross-cultural competency<sup>22</sup> has not been in the agenda of maritime education and training for many years, despite the fact that the shipping sector is highly globalised. Horck (2006; 2010) highlighted the importance of the communication among culturally diverse crew in the safety of shipping, by examining the perspective of culturally diverse maritime classroom. There are numerous cases of marine accidents or near misses caused by misunderstandings, language and culture barriers in communication and low team cohesion among culturally diverse crew. These working conditions turn cross-cultural competence to be an essential part of the seafarers' skills. Horck (2010: 19) argues that the "today's MET institutions do not give room for an adequate amount of time to target communication and diversity management skills" and that "the shipping industry is slow in being proactive i.e. to take initiatives of action before the lawmakers tell them what to do". The author highlights that "multicultural differences and the crews' often weak knowledge of English make it necessary to add supplementary education in English to something much more than bare basic and to build a seafarer's cultural awareness insight", thus suggests that diversity management is a new challenge especially in MET institutions.

Theotokas and Progoulaki (2005) highlighted the absence of cross-cultural training in the Greek MET studies, while Progoulaki (2003) mentions that very few Greek seafarers (19% of the sample) have ever attended any kind of cross-cultural training or briefing. Further, Progoulaki (2008) showed that only a small part of the Greek-owned shipping companies (19%) offer some kind of –rather informal- cross-cultural training, which mainly focuses on Greek officers. It is worth quoting the results of two surveys conducted in 2003 and 2007; In the first, a large percentage of the Greek seafarers (79%) responded positively to the importance of maritime cross-cultural training and were willing to participate in such, while in the latter, 51% of the shipping companies acknowledged the importance of cross-cultural training for its seagoing and shore-based personnel as a pro-active measure that could help in the avoidance of the negative effects in crew cohesion and risks in ship safety due to cultural diversity on board. According to the 2007 survey (Progoulaki, 2008), the development of multicultural leadership and management skills, as well as cultural awareness in the frames of an organised training programme offered by either public MET system and/ or private training institutions were highly acknowledged by the shipping companies' respondents. Progoulaki (2010) recommends two frameworks for the development of maritime cross-cultural training in shipping companies and in MET institutions. Both frameworks follow certain key steps, which include:

- (1) Analyse education and training needs in different areas, i.e. the maritime industry in general and per sub-sector, each MET institution, shipping company or organization, the individual, either seafarer or positioned at shore and the job content;
- (2) Define education and training goals, such as cultural self awareness, cultural awareness, leadership skills and others, and considering certain learning issues (type of teaching, experiential learning, etc.);
- (3) Design maritime cross-cultural education and training programme, based on the availability and appropriateness of training methods (in-class, by distance or on-the-job), as well as given the interrelation with other offered courses and onboard internship;

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<sup>22</sup> Ross (2008:3) defines cross-cultural competence as "the development of knowledge and skill through experience and training that results in a complex schema of cultural differences, perspective-taking skills, and interpersonal skills, all of which an individual can flexibly (or adaptively) apply through the willingness to engage in new environments even in the face of considerable ambiguity, through self-monitoring and through self-regulation to support mission success in a dynamic context".

- (4) Apply the programme, where profile of attendants (cultural mix, gender, etc.) and trainer (background and culture-specific knowledge and skills) should be analysed; and,
- (5) Evaluate the programme, in terms of reaction, learning, behavior and outcomes; 360 ° degree assessment by instructors, participants, colleagues and other third parties may apply best. Also, outcomes of assessment should be used to enrich the learning system and provide information in several tasks of an organization (with special regard to maritime human resources' recruitment, selection and evaluation).

Cross-cultural competency development for maritime professionals through education and training was examined in depth in a two-phase project supported by the International Association of Maritime Universities and the Nippon Foundation. CCUL.COMPET<sup>23</sup> Project (Parsons *et al.* 2010; Parsons *et al.* 2011) was the first international research that focused on the need for cross-cultural training in the maritime context. Phase I of the Project aimed to examine the state of cross-cultural education and training for future maritime professionals, in Maritime/Marine Universities and Marine Academies, to identify training needs in specific to cross-cultural competency through qualitative methodologies and to identify potential constraints to implementation of a related course. According to the research (Parsons *et al.* 2010), no maritime international regulatory body specifically requires cross-cultural skills for current and future maritime professionals. However, there is strong interrelation between the level of quality of offered services by a ship operator, and the concern on cultural awareness, cultural sensitivity, interpersonal, diversity and negotiating skills, mainly addressed by certain sectors of the maritime industry.

The findings clearly showed that there are numerous courses which may address culture's effects, cross-cultural and national diversity. However, this is not to say that this constitutes training, and rather is mostly passive learning. Through a websites' and career links analysis it was revealed that almost half of the shipping companies perceive cross-cultural competency as a human resources' competitive advantage over the long term; finding that has significant implications to maritime training and professional development over the long term. Convenient samples assembled for five focus groups that took place in Canada, USA and the Philippines supported that cross-cultural competency should be integrated throughout the MET curriculum, to varied extents, and not just for the licensed programs. The topic of cross-cultural competency was generally considered to be very broad and diverse, and consequently was not considered suited for delivery in a standalone, single course offering. The need for an "international perspective" regarding the issue of cross-cultural competency was emphasized. Training needs identified included, but were not limited to, attention to education content pieces such as protocols for interaction and decision making, education about stereotyping and stereotyping avoidance, gender roles, cross-cultural perceptions of gender roles, reporting relationships, world religions, dietary practices, culture's influence on teamwork and social interaction processes, job roles and perceptions of personal space. Findings also showed that challenges to implementation might be mitigated through partnerships with private sector and not-for-profit agencies with diverse cultural and national constituencies and workforces.

In order to address the broad range of needs, cultural contexts and priorities of maritime universities around the world, Phase II of the CCUL.COMPET research project (Parsons, *et al.* 2011) was dedicated to identifying, collecting, and compiling training materials that could be adapted to the needs and resources of the maritime institution. The research team's efforts to compile education and training materials showed that there is considerable variation to the types, content and even quality of materials used for the development of cross-cultural competency among maritime professionals. Phase II also confirmed that there is a lack of a common and universal policy on the issue of cross-cultural competency among

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<sup>23</sup> Acronym of the project entitled "Cross-CULtural COmpetency for Maritime Professionals through Education and Training".

maritime professionals through education and training. Having no recommended standard or compilation of materials readily available for such training, it is understandable that the industry and the selected maritime academies researched borrow, lend and develop course materials that are markedly different in many respects. Also, due to the lack of a common standard generated by maritime regulatory organizations or from the private or public sectors on cross-cultural maritime education and training, the quality and effectiveness of the currently used materials is questionable as to their effectiveness over the short or long term.

Perkins (1993) argues that cross-cultural training is necessary to enable culturally diverse groups to live up to their potential and overcome communication difficulties. Considering the high level of cultural diversity in the maritime industry, it is believed that seafarers, executives and employees in maritime shore-based positions (shipping companies, port authorities, etc.) should be able to work and communicate effectively and safely in the highly multicultural environment that they experience both onboard and ashore. Maritime cross-cultural training could optimize the seagoing and shore-based personnel's skills in conflict resolution, team building, communication, and decision making-competencies that are vital to ship and crew safety at sea. Nevertheless, and to the best of the authors' knowledge, course design seldom targets clearly intercultural competence in a multilingual working environment such as the ship. According to Iakovaki (2011) if such practices are going to succeed, a fusion between form and content must be accomplished.

In other words, it is no longer sufficient to advocate an interculturally sensitive way of training seafarers in decision-making processes, or conflict management, or even face-saving situations, if the above are scheduled in the absence of an operational contextualised description of what these tasks look and sound like onboard. Therefore, a situational and linguistically unambiguous description must precede the design of educational material of this sort. This idea as well as the concomitant one which dictates that in order to achieve safety and security on board one needs to build rapport and team cohesion, a feat which cannot be accomplished with some sort of linguistic means, are new to the field.

Previous research (i.e. Parsons *et al.* 2010; 2011) confirms Ferraro's argument (1998:151) that there is no generic or packaged programme which would be appropriate for all situations. In order to determine the content and length of a particular cross-cultural training programme, one shall consider the participants' previous experience in an international and multicultural environment, previous experience with a certain culture<sup>24</sup>, nature of the job, language capability, and the extent of the cultural differences. A thorough needs assessment helps define trainee's expectations from a cross-cultural program and helps identify their level of understanding (Ptak *et al.*, 1995:430). The major training components that could be considered during the development of a cross-cultural training programme may include (Ferraro, 1998: 151):

1. Culture in general, where the culture-related key concepts are analysed. Understanding of the concept of culture is considered the first step in gaining understanding of a foreign cultural environment. As Ptak *et al.* (1995:432) mention, "culture" has to be defined early in the program in such a way that everyone understands the concept for the purpose of discussion.
2. Cultural self-awareness is crucial, since an awareness of the cultural influences on one's own thinking will enable participants to better diagnose and handle problems encountered during cross-cultural communication and cooperation.
3. Culture specific information is especially important before entering an international business environment. This type of information assists the person to become familiar with as much specific cultural details as possible and thus, possibly adjust quicker and more smoothly to the new cultural environment.
4. Development of cross-cultural skills requires acquiring new attitudes and modifying old ways of doing things. This step requires more than the acquisition of information,

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<sup>24</sup> This is what Ferraro (1998:151) calls "host country experience" in the case of expatriate managers.



such as this provided in the earlier steps. Ferraro (1998:151) mentions the following competencies associated with effectiveness in cross-cultural business settings: capacity to tolerate ambiguity; display empathy; show resourcefulness; be nonjudgmental; maintain a sense of humor; be patient but persistent; improve one's perceptual acuity; become emotionally resilient; and be able to collect cultural data during being exposed to the different culture(s).

5. Patterns of verbal and non-verbal communication are important to be analysed, since effective communication can be difficult due to cultural and lingual differences. Understanding both verbal and non verbal patterns of communication is an essential part of learning another culture.

Moreover, Fine (1995: 143) proposes three basic types of diversity training that can be used in maritime cross-cultural training singly or in combination depending on their personal pedagogical assumptions about training and a particular organisation's needs: (a) informative presentation, mainly to provide basic information related to culture and cultural diversity, (b) Consciousness- raising, a technique to bring new ways of understanding and interpreting experience into one's conscious awareness, and (c) Experiential skills building, which pedagogically is similar to consciousness raising. The importance of the last two lies to the fact that it is necessary that the training goals are relevance to the trainee, i.e. to the trainee's real life experiences and daily activities (Ptak et al., 1995:431).

### 3. METHODOLOGY

For the needs of this task, the research team decided –apart from the literature review- to collect primary data by conducting a survey among maritime professionals in the European shipping industry. AEGEAN and CHALMERS cooperated on the development of a semi-structured questionnaire for a combination of different tasks of WP2 and WP3, which was forwarded to selected maritime professionals (seafarers, maritime executives, representatives of governmental organisations, port authorities and others), as well as to the other members of the Project Consortium. The survey took place during March to April 2012 mainly in Sweden, Greece and Germany. The questionnaire was structured as follows<sup>25</sup>:

- Cover: including a short introduction to the KNOWME goals and to the objectives of the questionnaire survey. KNOWME Consortium members were also mentioned, while open space for further comments was provided.

- Part A: Personal Data. This set of questions focuses on data related to the professional profile of the respondent, i.e. affiliation, education and experience (at sea, ashore or both).

- Part B: Cross-cultural Education and Training. This set of questions focuses on the following topics:

- General management of cultural diversity in the European maritime industry;
- Management of cultural diversity on board and/or ashore;
- Knowledge and skills required prior to participation in maritime cross-cultural training;
- Cross-cultural competencies;
- Content of maritime cross-cultural education and training;
- Techniques of maritime cross-cultural education and training, i.e. experiential and knowledge exercises such as role plays, simulations, field trips, observation, lecture and discussion, guided self-study, and others (Connerley and Pedersen, 2005);
- Contribution of cross-cultural training in career mobility.

Part C: Required Knowledge and Skill. This set of questions addresses issues of task 2.2b assigned to another Consortium member (CHALMERS).

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<sup>25</sup> See Appendix A.

## 4. RESULTS OF THE SURVEY

For the need of the present Technical Paper 3.2.2, the analysis focuses on the results of questions nine to twelve (see Appendix A) of the responses received until April 9, 2012. The analysis of section B in full, including responses received during the whole data collection period (from mid- March till mid to end of April 2012) will be included in Deliverable D2.2.

Respondents until April 9, 2012 reached sixty, coming from Sweden, Greece and Germany as well as Denmark. Respondents represented mainly the seafaring profession and/or hold a shore-based position ashore. It is important to note that multiple responses were given by respondents who represented more than one maritime sub-sector. More specifically, respondents represented the following sectors (see table 1).

**Table 1: Sectors represented by respondents**

Sector	Number of responses	% (in total number of 60 respondents)	% (in total number of 72 responses)
Ship management company/ owner, manager or operator	15	25.00	20.83
Crew management company/ manning agency	4	6.67	5.56
Public/ private Maritime University/ Marine Academy	6	10.00	8.33
Seafarer	20	33.33	27.78
Employee in maritime sector	10	16.67	13.89
Representative of Administration	3	5.00	4.17
Representative of policy-making organisation (national or international, e.g. IMO, ILO)	2	3.33	2.78
Representative of national seafarers' union or ITF	1	1.67	1.39
Self-employed	3	5.00	4.17
Others*	8	13.33	11.11
<b>Total</b>	<b>72</b>	<b>120</b>	<b>100</b>

\*Others include: Ship broker/ Chartering broker (3), Swedish Custom (1), Maritime Consultancy Company (1), students (2), Dockers Union (1).

The following competencies were ranked<sup>26</sup> based on their perceived importance to cross-cultural education and training (question 9). It is important to note that the term "cross-cultural" here includes nationality and gender related issues. Results show that the 9 highest

<sup>26</sup> Ranking from 1: less important to 4: most important.

rated competencies perceived as most important (marked from 3 to 4) were fair attitudes towards people from different cultures, the ability to manage and cooperate with people from different cultures, awareness of cultural differences, understanding and ability to handle the dynamics among people from different cultures, ability to follow orders, self-cultural awareness in relation to other cultures, ability to recognise communication styles, ability to teach and learn from people from different cultures, and ability to utilise cultural diversity of a team in various conditions (see table 2). It is worth noting that respect for people of different cultures was ranked as the other most important competency by one respondent.

**Table 2: Sectors represented by respondents**

Rank	Competencies	No. of responses	mean value	standard deviation
1	Fair attitudes towards people from different cultures	57	3.47	0.76
2	Ability to lead, manage, receive orders from and cooperate with people of different nationalities	58	3.43	0.75
3	Awareness of cultural differences	57	3.30	0.84
4	Understanding and ability to handle the dynamics among people from different cultures	58	3.29	0.79
5	Ability to follow orders from people from different cultures	59	3.19	0.92
6	Awareness of one's own culture in relation to other cultures	57	3.09	0.83
7	Ability to recognize verbal & non-verbal communication styles	57	3.04	0.91
8	Ability to teach and learn from people from different cultures	59	3.02	0.88
9	Ability to utilize the cultural diversity of a team both in routine and dynamic conditions/situations	57	3.00	0.78
10	Ability to handle gender issues	56	2.91	0.86
11	Ability to relate to female leadership, management and as colleagues	58	2.88	0.96
12	Concern for the welfare of people from other cultures	56	2.79	0.97
13	Knowledge of how rights and responsibilities are defined in different cultures	58	2.78	0.84
14	Awareness of gender issues	58	2.76	0.88
15	Knowledge of the stress resulting from functioning in a multicultural situation	58	2.69	0.86
16	Awareness of linguistic differences	57	2.67	0.89
17	Other*	1	4	--

\*Other includes: "Respect [for people of different cultures]" marked with 4: most important



The following suggested content for cross-cultural education and training was ranked<sup>27</sup> based on its importance, as perceived by the respondents<sup>28</sup> (question 10). Results show that the 4 highest ranked areas of content of cross-cultural training (marked with 3 to 4) include conflict management, efficient communication, leadership and teambuilding, and patterns for living together with people from other cultures. Lower ranked were the cultural and self-cultural awareness, as well as comparisons between cultural characteristics (see table 3 below).

**Table 3: Content for cross-cultural education and training**

Rank	Content	No. of responses	mean value	standard deviation
1	How to manage conflict in culturally diverse teams	59	3.49	0.63
2	How to communicate efficiently in a culturally diverse working environment	59	3.44	0.65
3	How to lead and build culturally diverse teams	59	3.31	0.75
4	How to live together with other cultures on board	59	3.12	0.81
5	What is culture (cultural awareness)	59	2.92	0.90
6	What is one's own culture (cultural self-awareness)	59	2.85	0.96
7	Traditions, customs, vacations and other related culture characteristics different between cultures/ nationalities	59	2.80	0.78

The following training techniques for cross-cultural competency development were marked as considered to be most effective (question 11). The perceived as most effective training technique was the traditional method of lecture and discussion (in 16.33% of the responses). Effective were also considered the role playing and supervision by a person from another culture, followed by audiovisual presentations, critical incidents and simulations. Less effective were considered the writing skills practicing and guided self-study (see table 4).

**Table 4: Effectiveness of training techniques**

Rank	Training techniques	No. of responses	% of 60 respondents	% of 245 responses
1	Lecture and discussion	40	66.67	16.33%
2	Role playing	28	46.67	11.43%
3	Supervising and/or being supervised by a person from another culture	25	41.67	10.20%
4	Audiovisual presentations	23	38.33	9.39%

<sup>27</sup> Ranking from 1: less important to 4: most important.

<sup>28</sup> Respondents in this analysis include those that participated in the survey from mid-March till April 9, 2012.



5	Critical incidents encountered across cultures	22	36.67	8.98%
6	Simulations	20	33.33	8.16%
7	Interactive E-learning courses	17	28.33	6.94%
8	Observations	16	26.67	6.53%
9	Practicing a new behaviour pattern	16	26.67	6.53%
10	Field trips	15	25.00	6.12%
11	Guided self-study with given reading list	11	18.33	4.49%
12	Practicing writing skills to describe other cultures	8	13.33	3.27%
13	Others*	4	6.67	1.63%
	<b>Total</b>	<b>245</b>	<b>408.33</b>	<b>100.00%</b>

Note: Multiple responses.

\*Others include: practical training (1), a combination of all suggested techniques on board (1), sea experience (1) and another technique not clearly specified

Finally, analysis showed that 87.7% of the respondents (50 out of 60 respondents) believes that cross-cultural competency can facilitate career mobility and transfer from ship to shore positions and vice versa (question 12- see Appendix A).

## 5. CONCLUSIONS

The management of the cultural diversity is considered by academics and some practitioners to be one of the most crucial competencies that people employed in the globalised shipping industry should hold. Cross cultural communication skills is an essential part of this competency. This document analyses the training needs in management of cultural diversity of people employed in the shipping industry, onboard the ships and ashore. The review of the previous studies supported by the EU confirms that a restricted number of research has been conducted only in the general field of cross cultural communication in shipping and maritime education and training. At the same time, literature review proposes that the development of cross cultural competency has not been in the agenda of MET for many years. The last few years a number of publications has focused on the issue proposing frameworks and content for the development of training that will support cross cultural competency development.

The task environment analysis for seagoing and shore-based personnel proposes that a cross-cultural training program should include components such as culture in general, cultural self-awareness, culture specific information, acquisition of new attitudes and competencies associated with effectiveness in cross cultural business settings, and patterns of verbal and non verbal communication.

To gain a more thorough view of the training needs of seagoing and shore-based personnel on the management of cultural diversity a survey among maritime professionals in the European shipping industry was conducted. Primary data were collected with the use of a semi-structured questionnaire, which was also used for the scope of other tasks of the KNOWME project. The part of the questionnaire that examined the cross cultural education and training included questions that focused on topics such as the management of cultural diversity in the European maritime industry, the cross cultural competencies, the content of maritime cross-cultural education and training, the proper techniques and tools for maritime cross-cultural education and training and the contribution of cross-cultural training in career mobility. The analysis includes the results of 60 respondents mainly from Sweden, Germany and Greece.

**The competencies that respondents ranked as most important for the cross-cultural education and training are the fair attitudes towards people from different cultures, the ability to read, manage, receive orders from and cooperate with people of different nationalities, the awareness of cultural differences, the understanding and the ability to handle the dynamics among people from different cultures, the ability to follow orders from people from different cultures, the awareness one's own culture in relation to other cultures, the ability to recognize verbal and non-verbal communication styles, the ability to reach and learn from people from different cultures and the ability to utilize the cultural diversity of a team both in routine and dynamic conditions.**

With regard to the content for the cross cultural education and training the sections proposed by the respondents as the most important were how to manage conflict in culturally diverse team, how to communicate efficiently in a culturally diverse working environment, how to lead and build culturally diverse teams and how to live together with other cultures onboard. The techniques proposed as more effective for the cross-cultural training were the lectures and discussions, the role playing and the supervising or being supervised by a person from another culture. All these techniques which can be supported through the distance learning and e-learning approaches, at same time emphasize the contribution of the blended learning approach for the cross-cultural training.

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## APPENDIX TP 3.2.2

### APPENDIX A

#### Questionnaire on Maritime Education and Training



# KNOWME



## QUESTIONNAIRE ON

## MARITIME EDUCATION AND TRAINING

The **European Community** acknowledges that its **maritime sector** must sustain and improve its competitive advantage.

Employees in the maritime sector need innovative educational opportunities that focus on their special working conditions.

The EC supported project, the “**European Academic and Industry Network for Innovative Maritime Training, Education and R&D**”, (**KNOWME**) addresses this need by engendering a modern ‘image of shipping’.

The KNow-ME consortium argues that maritime training and education requires a life-cycle approach, where **education and training is developed in line with industry expectations and modern lifestyles**.

Enhanced education and training for the industry’s professions must accommodate for a multicultural working environment, gender neutrality and maximum accessibility independent from time and space.

To be able to support these tasks of the KNOWME project it is urgent to get information by different respondents and groups/stakeholders. This questionnaire will help the collection of information.

**Please give your response on the pages provided. It is also possible to add comments on the “blank page”. Please make a note about which question number it refers to.**

(You need about 15-20 minutes to answer the questionnaire)

**Thank you for helping us with this project!**

#### **KNOWME Consortium members:**

- EDINBURGH NAPIER UNIVERSITY (United Kingdom)
- HOCHSCHULE BREMEN(Germany)
- JACOBS UNIVERSITY BREMEN gGmbH (Germany)
- FACHHOCHSCHULE LÜBECK (Germany)

- HØGSKOLEN I MOLDE (Norway)
- IVL SVENSKA MILJÖINSTITUTET AB (Sweden)
- GÖTEBORGS UNIVERSITET (Sweden)
- CHALMERS TEKNISKA HÖGSKOLA AB(Sweden)
- UNIVERSITY OF THE AEGEAN- RESEARCH UNIT(Greece)
- UNIVERSITEIT ANTWERPEN (Belgium)
- RALF DUCKERT- DSN ANALYSEN & STRATEGIEN
- KOOPERATIONSMANAGEMENT (Germany)



The KNOWME project  
is co-financed by European Commission research funding

Please return this questionnaire to:

[knowme.smt@chalmers.se](mailto:knowme.smt@chalmers.se)



Response No:.....

## PART A- PERSONAL DATA

1. Please define the sector of your organisation:  
For multiple responses tick ALL applicable boxes:
- Ship management company/ owner, manager or operator
  - Crew management company/ manning agency
  - Public/ private Maritime University/ Marine Academy
  - Seafarer (please define rank): \_\_\_\_\_
  - Employee in maritime sector
  - Representative of Administration (please define \_\_\_\_\_)
  - Representative of policy-making organisation (national or international, e.g. IMO, ILO) (please define organisation and service): \_\_\_\_\_
  - Representative of national seafarers' union or ITF (please define organisation and service): \_\_\_\_\_
  - Self-employed (define field): \_\_\_\_\_
  - Other (please define): \_\_\_\_\_

2. What is your main affiliation?  
Name of main company/ organisation: \_\_\_\_\_  
Your position: \_\_\_\_\_

3. What is your educational background?
- PhD in: \_\_\_\_\_
  - MSc in: \_\_\_\_\_
  - BSc in: \_\_\_\_\_
  - Certificates of competency (Marine Academy/ University Graduates)
  - Endorsements (Masters/engineers, etc.)
  - Other (please define): \_\_\_\_\_

4. Years of \_\_\_\_\_ experience:

At sea:		Ashore:	
---------	--	---------	--

## PART B- CROSS-

## CULTURAL EDUCATION

### AND TRAINING

5. To what extent do you believe that the European maritime industry has dealt with cultural diversity so far? Pick ('X') the one that applies:

1: barely to to not at all	2: slightly	3: fairly to sufficiently	4: perfectly

6. Based on your experience onboard and/or ashore, is the need for management of cultural diversity acknowledged and properly handled?

Please mark an 'X':

Yes:		No:	
------	--	-----	--

How?.....

7. To what extent do you believe that seafarers and employees in the shipping industry are properly trained to work in a multicultural environment? Pick ('X') the one that applies!



1: barely to not at all	2: slightly	3: fairly to sufficiently	4: perfectly

8. **What kind of knowledge and skill sets do you believe are required for a maritime professional in order to participate in cross-cultural training?** *E.g. former experience in a multicultural environment, ability to communicate in English, etc.*

<b>(8) Seafarers: Officers</b>
<b>(8) Seafarers: Ratings</b>
<b>(8) Pilots</b>
<b>(8) Auditors/ surveyors</b>
<b>(8) Employees in port authorities</b>
<b>(8) Shore-based employees in shipping companies</b>
<b>(8) Other stakeholder (please define _____ )</b>

9. **Rank the following competencies based on their importance to cross-cultural (incl. nationality, gender etc.) education and training.**

Rank ***each*** from **1= less important** to **4 = most important.**

	<b>Awareness of cultural differences</b>
	Awareness of linguistic differences
	Ability to recognize verbal & non-verbal communication styles
	Concern for the welfare of people from other cultures
	Fair attitudes towards people from different cultures
	Awareness of one's own culture in relation to other cultures
	Understanding and ability to handle the dynamics among people from different cultures
	Ability to utilize the cultural diversity of a team both in routine and dynamic conditions/situations
	Awareness of gender issues
	Ability to teach and learn from people from different cultures
	Ability to follow orders from people from different cultures
	Ability to lead, manage, receive orders from and cooperate with people of different nationalities
	Knowledge of how rights and responsibilities are defined in different cultures



	Knowledge of the stress resulting from functioning in a multicultural situation
	Ability to relate to female leadership, management and as colleagues
	Ability to handle gender issues
	Other (please define.....)

10. Rank each row based on what you consider as the most important content for cross-cultural education and training.

Rank **each** from **1= less important** to **4 = most important**.

	<b>What is culture (cultural awareness)?</b>
	What is one's own culture (cultural self-awareness)?
	How to lead and build culturally diverse teams?
	How to manage conflict in culturally diverse teams?
	How to communicate efficiently in a culturally diverse working environment?
	How to live together with other cultures on board?
	Traditions, customs, vacations and other related culture characteristics different between cultures/ nationalities?
	Other (please define )

11. Which training techniques for cross-cultural competency development do you consider to be most effective?

Please mark an 'X' for all that apply.

- Role playing
- Simulations
- Field trips
- Critical incidents encountered across cultures
- Observations
- Lecture and discussion
- Guided self-study with given reading list
- Audiovisual presentations
- Practicing a new behaviour pattern
- Practicing writing skills to describe other cultures
- Supervising and/or being supervised by a person from another culture
- Interactive E-learning courses
- Other (please define \_\_\_\_\_)

12. Do you believe that cross-cultural competency can facilitate career mobility and transfer from ship to shore positions and vice versa?

Please mark an 'X':

Yes:		No:	
------	--	-----	--

## PART C- REQUIRED KNOWLEDGE AND SKILL

13. Which knowledge and skill sets will be needed in the future for people working in the maritime industry (sea-going and shore-based personnel)?

Please indicate for **every row!**

**obligatory (1); additional (2); not applicable (-)**

1	2	-	Knowledge/skill
			<i>Ability to work alone</i>
			<i>Administration/office work</i>
			<i>Bunkering</i>
			<i>Cargo handling and stowage</i>
			<i>Chartering</i>
			<i>Claims - general</i>
			<i>Claims - Management of Claims</i>
			<i>Classification -.general</i>
			<i>Classification -.Management</i>
			<i>Communication - general</i>
			<i>Communication - Radiocommunicatons</i>
			<i>Conflict Resolution</i>
			<i>Control systems</i>
			<i>Corporate Social Responsibility</i>
			<i>Cross-Culture - management</i>
			<i>Cross-culture understanding</i>
			<i>Decision Making and Problem solving</i>
			<i>Economics - Accounting</i>
			<i>Economics - Maritime Economics</i>
			<i>Electricity</i>
			<i>Electronics</i>
			<i>Engineering</i>
			<i>English - maritime</i>
			<i>English – oral/communication</i>
			<i>English - writing</i>
			<i>Firefighting</i>
			<i>Gender issues</i>
			<i>Health Care, Medical First Aid, Medical Care</i>
			<i>HF, Human factors</i>
<b>1</b>	<b>2</b>	<b>-</b>	<i>continue....</i>
			<i>Ice- &amp; Artic conditions</i>
			<i>Insurances - Management</i>
			<i>Insurances -general</i>
			<i>IT - general</i>
			<i>IT- Computer skills - general</i>
			<i>IT- Computer skills –shipping</i>
			<i>IT -security</i>
			<i>Law - general</i>
			<i>Law - National Maritime Legislation</i>
			<i>Law -International Maritime Law/regulation</i>
			<i>Leadership/Team Management</i>
			<i>Management of Crisis and emergency</i>
			<i>Maneuvering</i>



		<i>Meteorology</i>
		<i>Navigation</i>
		<i>RM, Resource management (MRM, CRM etc)</i>
		<i>Seamanship</i>
		<i>Search And Rescue</i>
		<i>Security - Awareness and related instructions skills</i>
		<i>Security - general</i>
		<i>Security - Ship Security -piracy, handling attacks</i>
		<i>Service/Maintenance Deck</i>
		<i>Service/Maintenance Engineering</i>
		<i>Service/Maintenance Kitchen</i>
		<i>Ship Stability</i>
		<i>Shipping's environmental impact, sustainability</i>
		<i>Teambuilding and team management</i>
		<i>VTS/pilot-service</i>
		<i>Work Environment - Mental</i>
		<i>Work Environment - Physical</i>
		<i>Work Environment - Social</i>
		<i>Other.....</i>

14. Define what you consider as the top characteristics (strengths or weaknesses) of employment in the maritime industry:

Please give two answers for each part:

<b>STRENGTHS (attractive)</b>	<b>WEAKNESSES (unattractive)</b>
<b>For seafarers:</b>	For seafarers:
1. _____	1. _____
2. _____	2. _____
<b>For shore-based personnel:</b>	For shore-based personnel:
1. _____	1. _____
2. _____	2. _____
<b>For port workers:</b>	For port workers:
1. _____	1. _____
2. _____	2. _____

15. From the point of view of people working and operating in the industries:  
Define what you consider as the top future conditions of the maritime market that can be considered as opportunities or threats

Please give two answers for each part:

<b>OPPORTUNITIES</b>	<b>THREATS</b>
<b>For seafarers:</b>	For seafarers:
1. _____	1. _____



2. _____ <b>For shore-based personnel:</b>	2. _____ For shore-based personnel:
1. _____	1. _____
2. _____ <b>For port workers:</b>	2. _____ For port workers:
1. _____	1. _____
2. _____	2. _____

16. From the point of view of those organizations operating in the industries: Define what you consider as the top future conditions of the maritime market that can be considered as opportunities or threats.

Please give two answers for each part.

OPPORTUNITIES	THREATS
<b>For the industry as a whole:</b>	For the industry as a whole:
1. _____	1. _____
2. _____	2. _____
<b>For shipping industry:</b>	For shipping industry:
1. _____	1. _____
2. _____	2. _____
<b>For shore-based industry:</b>	For shore-based industry:
1. _____	1. _____
2. _____	2. _____
<b>For port:</b>	For port:
1. _____	1. _____
2. _____	2. _____

17. What do you consider to be the most important strengths and weaknesses for European Officers and ratings on the international maritime labour market?

Please give two answers for each part.

STRENGTHS		WEAKNESSES	
Officers	Ratings	Officers	Ratings
1. _____	1. _____	1. _____	1. _____
2. _____	2. _____	2. _____	2. _____

Please return this questionnaire to: [knowme.smt@chalmers.se](mailto:knowme.smt@chalmers.se)

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Comments:

No:



**APPENDIX IV. TECHNICAL PAPER 3.2.3: TNA SOFT SKILLS  
IN SHIPPING – A MODERN APPROACH TO A TRADITIONAL  
INDUSTRY**

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**Due Date: 30 June 2012**

**Submitted: 19 November 2013**

**Main Author: Bremen University of Applied Sciences**

**Dissemination: Dissemination Level**



## DOCUMENT CONTROL SHEET

<b>Workpackage:</b>	3.2		
<b>Deliverable :</b>	3.2. Training Needs Assessment Report		
<b>Document short name:</b>	TP 3.2.3		
<b>Version:</b>	V3		
<b>Document History:</b>	Version	Issue Date	Distribution
	V1	17 April 2012	Task Leader
	V2	28 August 2012	Task Leader / WP Leader / Project coordinator.
	V3	19 October 2013	Task Leader / WP Leader / Project coordinator.



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## 1. INTRODUCTION

The main focus of maritime training and education has been for many years on improving the technical aspects of navigation and engineering systems in order to improve safety. Advanced man-machine interface competence was the core theme. However, these efforts have been successful in the reduction of accident rates but nowadays, it is realized that the human factor is not just an element like one piece of a puzzle: The whole shipping industry is run by people and for people, and while people vary in all sorts of ways, nevertheless, they are people with a set of capabilities as well as vulnerabilities. (Maritime Review Magazine 2011 and Lemper, Pawlik and Neumann 2012: 7). So, it is not only technical but also (inter-)personal – soft – skills that are needed in such a special working environment like a vessel. Exactly this is what Tor Svensen of Det Norske Veritas (DNV) confirmed: “Historically, the safety focus on shipping has been on technical improvements. Most employees dealing with the operation of the vessel in a shipping company have a technical background. Audits and inspections are strongly focused on technical compliance. This technical focus has brought major improvements to ship safety. Now is time to increase focus on the soft issues.” (Høifødt 2011). And Progoulaki assured: “Moreover, training should not focus only to hard skills, but also to the soft skills of the seafarers, since they are vital for the individuals’ and the team’s performance, safety and cohesion on board.” (Progoulaki 2011: 11). Hence, mariners need more skills than just the technical ones necessary to ensure a safe ship operation. So what are soft skills and why are these skills so important for people working in the maritime industry?

Moss and Tilly termed these subjective requisites as ‘soft skills’ which are defined as skills, abilities, and traits that pertain to personality, attitude, and behaviour rather than to formal or technical knowledge. “You could have great technical skills, but if you cannot communicate those skills, what good are they?” (Moss and Tilly 2003: 44).

In compliance with many experts, soft skills could be regarded as a decisive factor when it comes to dealing with other people: “From my own experience I can report that in the commercial business area as well as on board ships at least 50% of the business success can be credited to soft skills like negotiation techniques, appreciating other cultures, being interested in other cultures; - professional knowledge rather plays a minor part, it ensues automatically. But without the interpersonal skills, without understanding each other, a deal is rarely negotiated successfully.” (Irminger 2012). The good news is that soft skills like cross-cultural competence really are learnable, even though some might think differently and soft skills are regarded as difficult to teach. (van Hattum-Janssen and Vasconcelos 2007: 2). And they are being addressed in the curricula of nautical universities: “Every day conflicts on board have to be solved at once, or better: be avoided. Whether they are properly solved depends on the situation and especially on the individuals on board. Their behaviour has to be respectful and decisive at the same time. These things are part of human resource management taught at nautical schools.” (Göttsche 2012). But the question is: Are all necessary kinds of soft skills being addressed sufficiently? According to DNV’s observations during audits and projects for shipping companies, crews could be more effective with high-quality training and even though, shipping companies struggle to deliver training on soft skills. (Høifødt 2011).

And even in nautical schools – although there are soft skills such as leadership skills being taught – the difficulties of leading different nations for instance are not being addressed sufficiently. A captain has to acquire these skills him/herself. (Pörksen 2012).



Thus, there seem to be the need to evaluate, what kinds of soft skills are considered important from people working in the maritime domain and in what kinds of soft skills they do see a training need.

## 2. OBJECTIVES

As mentioned by Barsan, Surugiu and Dragomir: “A well-trained seafarer is the most valuable asset an owner has on board.” (Barsan, Surugiu and Dragomir 2012: 91). And derived from the introduction above seafarers should not only possess technical skills but also soft skills. Thus, good training should encompass the development of the right kind of soft skills which are really needed on board of vessels.

Therefore, this technical paper aims at:

- Finding out which kind of soft skills are being regarded by mariners as the vital ones for a safe and smooth ship operation
- Collecting information on the soft skills trained in MET (Maritime Education and Training) institutions
- Compare the necessary soft skills with the trained ones and identify gaps

This training needs assessment then reflects the shipping industry’s needs for training so that mariners are better equipped to face the present day challenges.

Even though this research mainly concentrates on German seafarers and their opinion about vital soft skills, it could be assumed that mariners in general – no matter what their cultural background is – might have similar experiences and needs since every crew member of whatever nationality has to face similar challenges in their daily working life aboard a vessel. And therefore for the findings nonetheless deliver some valuable hints about irremissible soft skills that need to be trained and developed properly for smoothly running processes aboard vessels.

### 3. METHODOLOGY

First of all, a definition of soft skills is being outlined. Therefore, existing literature has been looked through.

The information on the soft skills being vital for a safe and smoothly running ship operation have been gathered through literature research and interviews with mariners<sup>29</sup> who are in the position to tell what kinds of soft skills they regard as important and how they developed these skills. All interviewees received a confirmation that their names remain anonymous. These expert interviews on the necessary soft skills have been carried out in two groups. The first group consisting of ten experts have been interviewed in July and August 2012. This group of interviewees just were asked (besides their on board position and age), what they regard as the most important soft skills people in (lower and upper) managerial positions in maritime industry – especially aboard vessels – might need (see appendix 1). They were invited to name as many as they could think of. Besides common soft skills such as communication skills, intercultural competence, personal effectiveness and the ability to be a good team player, other skills which are not very obvious as being necessary were mentioned and partially explained by telling stories from the interviewees' own experiences. The valuable findings of this first research revealed a necessity to conduct some more in depth interviews since every interviewee emphasized the great meaning of several soft skills which are scarcely mentioned in maritime literature so far.

The second group of interviews – consisting of nine interviewees – have been carried out in August 2013. For interviewing this group, a more detailed questionnaire was used (see appendix 2).

In order to collect information on the soft skills which is presently provided in MET (Maritime Education and Training) institutions, three representatives of training institutes (two experts working at private MET institutions and one working at a university of applied sciences) were interviewed. Furthermore, the Standards of Training, Certification and Watchkeeping convention was reviewed with regard to soft skill training and development.

The comparison of the soft skills regarded essentially for the smooth ship operation and the trained soft skills in MET institutions then revealed the need for training.

For this survey, only German mariners and experts have been taken into account.

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<sup>29</sup> Some of the interviewees could be named "experienced mariners" since they worked many years on board of vessels. Also, a small number of students were being interviewed. Students who served their on board internship (12 months) gathered first experiences. Since they are not routine-blinded, their opinion was regarded worthy to be collected, too.

## 4. DEFINITION OF SOFT SKILLS

It seems to be quite a challenge to clearly define soft skills. On the surface, they could be described as the presence of social traits like friendliness, selflessness, being helpful and other such human traits. Generally, a differentiation between soft and hard skills could be done. “While hard work and vision are reasonably easy concepts to comprehend, the term ‘skills’ is more general and complex and needs to be understood more carefully. It is a term encompassing a whole range of abilities, right from technical skills to emotional intelligence to how to manage one’s time. But we can broadly divide them in two categories – the technical or ‘hard’ skills and a whole bag of non-technical skills classified as ‘soft’ skills...But, unlike hard skills on which one can put a finger, there is an air of mystery to soft skills and what it includes.” (Ramesh and Ramesh 2010: 2). So, hard skills refer to the technical ability and the factual knowledge needed to accomplish a work. And according to Klaus, soft skills allow a person to use the technical abilities and knowledge more effectively. (Klaus 2007 : 2). But what exactly are soft skills? They encompass behaviours such as personal, social, communication, and self-management behaviours. They are sometime described as a “cluster of personal qualities, habits, attitude and social graces”. (Brown (2009: xxiii). While covering a wide spectrum of abilities and traits like being self-aware, empathy, problem solving, leadership, adaptability, critical thinking, initiative, integrity, conscientiousness and so on, soft skills complement the hard ones and are regarded essential for success in the workplace. (Klaus (2007: 2). In contrast to hard skills, the outcome of using soft skills is often intangible: “For example, an employee’s job profile might indicate that the soft skill of effective communication is required for a job, but it might give no concrete metrics for assessing whether the employee is successful at engaging in this skill (the desired outcome).” (Sabbag (2009: 144). For a sales representative it is necessary to have good communication skills to explain and sell products to customers and someone who possesses good communication skills is likely to increase sales. But one cannot be completely sure that someone with higher sales figure has better communication skills than others since other factors might influence (such as a thriftier client base) the figures.

Another challenge is, that it is not easy to assess if the trained persons properly developed the appropriate soft skills during the training: “Related with the issue of developing soft skills is the assessment of soft skills. If we want students to develop certain skills, we would like to establish a way to assess them...The assessment of soft skills is complex for a number of reasons. Firstly, the sometimes poorly defined soft skills defined by teaching staff that is not familiar or not at ease with this kind of skills make the assessment process more complicated. When it is not completely clear what to develop and how, it is even more difficult to establish a way to assess the matter.” (van Hattum-Janssen and Vasconcelos (2007: 4). Summarizing one could say that soft skills are intangible, hardly assessable skills, abilities, and traits that pertain to personality, attitude, and behaviour. And these kinds of skills are vital for a good collaboration with others.

## 5. VITAL SOFT SKILLS FOR A SAFE AND SMOOTH SHIP OPERATION

Usually, mariners spend most of their time during a journey on board. (Grech, Horberry and Koester (2008: 15). In contrast to the working conditions thirty years ago, ships are nowadays - due to containerisation and other inventions - highly advanced: Short lay times in ports often far away from cities impede shore leaves. As thirty years ago crews used time ashore for recovering or even see something else than always the same ship, nowadays seafarers have to stay on board. Loading and unloading has to be monitored with ever smaller crews. In addition to technical development, ships and port rotations became faster as well. This affects the crew - the workload leads to fatigue and causes stress. Furthermore, strict legislative frameworks with regard on crew's shore leave in many ports affect the travelling ambitions of crewmembers. (Progoulaki 2012: 24). This implies a crew being on-board for months, spending time mostly for working. Even if there is an opportunity for shore leave - that means only a few hours between working shifts being left to visit foreign countries. As a result, isolation and boredom as well as monotony are marching in. Especially for seafarers who work on long-time contracts up to one year, an influence of job satisfaction is known. To improve the quality of life on board, internet access might be important. (Progoulaki 2012: 25). As technical development and costs made internet access possible, the opportunity to keep in touch with family and friends increased.<sup>30</sup> But not yet every ship has got internet access to improve seafarer's quality of life. However, it is needs to be considered who is going to pay cost for the communication. Furthermore, privacy of seafarers' communication needs to be guaranteed and leakage of security and commercial information needs to be prevented. (Intertanko 2011: 6-7). Being on-board a ship for months also means having no access to medical and psychological services and the consequences of this have not been properly assessed yet. (Österman 2012: 89-90). This creates a risk of diseases having time to flourish and makes a good hygiene, safe food and water essential to protect seafarers from those risks. Additionally to physical influences also psychological factors are an issue. As main factors stress and fatigue are characterised. The IMO defines fatigue as "a reduction in physical and/or mental capability as the result of physical, mental or emotional exertion which may impair nearly all physical abilities including: strength; speed; reaction time; coordination; decision making; or balance." (IMO 2001). Caused by various factors, including the lack of sleep, a poor quality of rest due to interruptions, stress and workload, fatigue is one cause for accidents and injuries. (Österman 2012: 90). As a clear separation between work and rest cannot be provided on-board a ship, in addition to the already mentioned fast port rotations, seafarers are at risk of having workplace accidents. Fatigue having effects on decision making, risk taking and self-reflection, increases risks of errors. Knowing about fatigue risks implies that a "human error is part of the daily working routine on board". (Ewert 2012: 114). Even if it is not always leading to accidents as a safety culture on-board has been implemented, still a permanent stress is left. As defined by Richter and Hacker stress is a reaction on unacceptable or threatening strain caused by excessive and insufficient

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<sup>30</sup> KNOWME TP 1.1.1 (Internet for Seafarers) deals with this specific topic.



requirements of performance which affect targets including social roles – and seafarers are exposed to this on a daily basis for months. (Richter and Hacker 2002: 125).

Furthermore, documented procedures have become more important in the maritime domain. Checklists and paperwork are main tasks of daily working procedures as well as physical aspects. Physical tasks are for example lifting, pushing, pulling and carrying tools, materials and other objects. Hence, a physical exhaustion appears. It is supported also by climate changes due to the route of a ship, motion and shocks caused by wind and sea. In combination all these aspects set the basis for psychological stress of seafarers. Taking a look at the social factors on-board, it is visible that ship crews are multinational. (Grech, Horberry and Koester 2008: 16). It is normal to have crewmembers from different countries with different languages and cultures. Although English has been established for communication, there are still problems in basic communication due to a lack of English language skills. These cultural aspects of the maritime profession have been also confirmed by Lobjiro who considers seafarers' needs to possess competences to work in a multicultural environment. (Lobjiro 2012: 71-83). Working in a team with a multinational background requires a set of skills for the intercultural context. Multinational crewing by shipping companies is a main strategy to reduce costs. Cross-cultural competence helps to maintain a harmonious working environment, improves work as well as it reduces risks. Besides this, crewmembers need to respond to alarms and make decision on data collected by technical equipment. Seafarers have to understand new technology, to monitor it and make decisions on the basis of limited and sometimes incomplete data.

All these stresses and strains mentioned above makes it necessary for mariners to have special skills to deal with all of this. These kinds of skills will be outlined in the following.

### **Vital soft skills according to literature research**

#### *Ability to work in a team*

Grech, Horberry & Koester declare that the maritime context requires people to work in a team. (Grech, Horberry and Koester 2008: 83-87). Although the hierarchy on-board is strict, it is important to know basic concepts of teamwork. Members of the bridge team have to work efficiently and effectively together in order to find the best and safest solutions for problems. Even though there is the authority gradient which describes the relationship between people on-board with the master being held responsible overall on top of the hierarchy, it is necessary to work together. While there are different leadership styles such as the authoritarian, the laissez-faire, the self-centred and the democratic style, the authoritarian style is the prevailing one on board of vessels. A master or chief mate making own decisions without listening to advise of other officers may have fatal consequences in case of a wrong decision. Which leadership style the best is depends on the situation. It is only important to change the style to avoid negative effects in the team. Bohinc characterises teamwork as the ability to work with instead of against other people. (Bohinc 2009: 67-68). To create a good teamwork a group needs to work together to achieve a goal without fighting against a team member. Teams are able to

use competences of their members to fulfil tasks which single employees could not have reached.

### *Communication skills*

Communication is the ability to get and provide information. (Bohinc 2009: 19-20). But, human communication is not just the transmission of signals; it implies an interpretation of the said words. (Gregory and Shanahan 2010: 79). Team members do not only have to understand their own communication needs they need to understand other member's needs as well. Especially on-board ships where various aspects like noisy backgrounds threaten the communication, it is essential to communicate in a clear way. (Grech, Horberry and Koester 2008: 73-79). Orders have to be verified by receivers and misunderstandings which can cause serious accidents have to be avoided. A general definition of communication is as follows: "Human communication is the process of influencing a human receiver to create thought and action that is consistent with, and responsive to, the sender's purpose." (Gregory and Shanahan 2010: 79).

### *Intercultural competence<sup>31</sup>*

Intercultural competence is to understand the "specific concept of perception, thinking, feeling and acting" (Thommen 2002: 424). of people from foreign cultures, and to be able to deal with it. This is important for nautical officers for several reasons. Different cultural backgrounds in the maritime industry require this skill: „A ship might be financed by a Swiss and German bank, built in a Japanese shipyard for a company registered in Monrovia yet with the principal living in New York. The ship might be commercially traded from London, technically managed from Hong Kong, manned by a Filipino crew supplied through a crewing agent and fly the Liberian Flag." (Moreby 1990: 199). Seafaring has always been an international business, because it involves dealing with people from foreign countries, in which the ship is loaded and discharged. Nowadays, it is even more international, since the crew itself is, in most cases, made up of people from different nationalities. German shipping companies for example started to employ seafarers from Spain, Portugal, Turkey and Italy in the 1960's. (Gerstenberger and Welke 2004: 130). Because of the "growing trend to employ multicultural crews" (Horck 2006: 11)., it can be assumed that today at least two thirds of all seafarers are working on vessels with one or more other nationalities on board. This is the basic reason for the need to develop cross-cultural competences. Even experienced seafarers could still have huge communication problems due to misunderstandings of cultural signals. (Lobrigo 2012: 71). To prevent these problems, competence to work in cultural settings is essential for the interaction with people of diverse cultural backgrounds. This competence also affects the leadership. To work safe and efficient, other soft skills such as teamwork, communication and motivation have to be combined with knowledge about

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<sup>31</sup> Since "intercultural management" is regarded an important topic by the KNOWME consortium, a learning module "cross-cultural management" has been developed which is available as e-learning. Furthermore, KNOWME TP 3.2.2 (Training Needs Assessment in management of cultural diversity deals with this topic and is worthwhile being considered, too.

cultures of other crewmembers. (Lobrigo 2012: 76-82). Therefore theoretical knowledge supported by training on cross-cultural management is necessary.

#### *Ability to deal with stress and conflicts*

As outlined above, seafarers have to deal with many stressors related to work and being away from their home lives. (Gregory and Shanahan 2010: 55-56). This implies an essential need of stress resistance and the ability to deal with conflicts. When stress or conflicts arise, the solution should always be a dialogue. For this, a culture of listening and learning is essential. Moreover, a culture of empathy is necessary to find effective solutions to handle stress. A quote describes the basic requirements on seafarer's mental strength in recent times: "Some of the qualities most valued in mariners prior to mechanically propelled ships included physical strength, endurance, an ability to withstand a high level of discomfort, and to some extent an indifference to pain and even death." (Grech, Horberry and Koester 2008: 1). Thus, the ability to deal with stress and physiological aspects of a demanding job are traditional skills for each seafarer.

#### *Decision making skills*

The ability of rational decision making consists of gaining all relevant information and understanding them. (Gregory and Shanahan 2010: 23). Furthermore, a comparison with own experiences and the consequences of the decision need to be kept in focus. This whole process takes time. But on-board ships time is very limited. This requires a quick decision making with due regard especially on consequences of a decision. In addition, not all necessary information to make a rational decision is always available. Due to these aspects people on-board need to make compromises between efficiency and thoroughness. The efficiency increases, if people spend more time on acting than on thinking about a decision. When spending more time on thoroughness, the efficiency is less due to a higher time exposure. Gregory & Shanahan see the focus on thoroughness for seafarers as they have to maintain safety and quality standards which have been also confirmed by Grech, Horberry & Koester as "a wrong decision could result in accidents or catastrophes." (Grech, Horberry and Koester 2008: 51).

#### *Motivation*

Thinking about the fact that seafarers have to deal with many physical and psychological pressures it could be assumed that a high motivation is needed to work at sea. Kramer claims that a permanent motivation system is important for a good working performance. (Kramer 2001: 70-72). Own needs as well as working time and compensation are essential aspects to achieve a motivation. Furthermore a good working atmosphere is regarded as a useful tool to get best working performance.

#### *Self-reflection*

For an effective working performance it is necessary to know the own strengths and weaknesses. (Bohinc 2009: 195-196). A feedback by other people provides the chance to compare an internal picture with the picture other people have. This leads to a self-reflection supported by feedback of others which opens the opportunity to improve weaknesses. Feedback is described as the possibility to compare own perceptions and



those of others. (Bohinc 2009: 195-196). By giving this feedback, more knowledge about effect is provided and actions can be adjusted. As a consequence a good self-reflection supported by feedbacks of colleagues causes a better performance by a permanent improvement process.

**Table 1: Vital soft skills according to literature**

***Skills***

Teamwork
Communication skills
Intercultural competence
Ability to deal with stress and conflicts
Decision making skills
Motivation
Self-reflection

**Vital soft skills according to the first group of interviews**

In ten interviews, carried out in July and August 2012, the interviewees were asked, what they regard as the most important soft skills people in (lower and upper) managerial positions in maritime industry – especially aboard vessels – might need. They were invited to name as many as they could think of. Besides common soft skills such as communication skills, intercultural competence, personal effectiveness and the ability to be a good team player, other skills which are not very obvious as being necessary were mentioned and partially explained by telling stories from the interviewees’ own experiences. On the basis of the interviewees’ explanations it seems to be comprehensible why these soft skills are important. Therefore, the reader could find these explanations below.

**Table 2: Interviewees group 1**

<i>Occupation</i>	<i>Number of interviewees</i>	<i>Age</i>
Master	2	36, 54
Chief/first mate	3	30, 32, 60
Ex master, now working ashore	1	51
Student, last year of studies	4	24, 24, 25, 27

**Table 3: Skills mentioned by the interviewees**

<i>Skills</i>	<i>Number of mentions</i>
Teamwork/collaboration	10
Intercultural competence/understanding of global cultures and values	10
Ability to work (long hours) under pressure	7
Ability to resolve conflicts/problems	5
Flexibility/adaptability	4
Communication skills	3
Ability to create a pleasant atmosphere in the team (aboard the vessel)	3
Work ethic/self-motivation/dependability/honesty	3
To be at eye level with subordinates	1
Ability to take criticism/tolerance	1

## Analysis of the answers

### *Teamwork/collaboration*

All interviewees mentioned that being a good team player is one of the most important soft skills you need aboard a vessel, since no one can do the “job” – bringing ship and cargo in the most efficient and safest way from point A to point B – alone. According to Grech, Horberry and Koester, “maritime teams are often characterized by a formal construction based on the traditional roles of master, mate, officers, ratings, pilot and so forth. The hierarchy is strict and formal. It is important to know the essential concepts when...discussing maritime teamwork: these are authority gradient and leadership style.” (Grech, Horberry and Koester 2008: 83). Hence, team work very much depends on the captain and his leadership style. In an autocratic leadership style, the captain plays solo and does not pay attention to others and passes no information to the crew while in a democratic leadership style, the captain will consult the officers and asking them for their opinion prior to important decisions. Between these two extremes there are various mixed forms and one should prefer that style the crew can work together best in order to create synergy. “Synergy is obtained when the whole crew works together as a team, supporting each other through communication and the sharing of information. The democratic leadership style facilitates the creation of synergy and is therefore the preferred style under normal circumstances.” (Grech, Horberry and Koester 2008: 86).



## *Intercultural competence/understanding of global cultures and values*

Normally, no crew consists of just one nationality and as explained above, good team work is important for work and life aboard. Therefore, all interviewees emphasized the importance of getting along well with people from different nationalities. Respect, the willing to listen, understand and learn more about other cultures as well as empathy were the criteria for a pleasant social climate mentioned by the interviewees.

## *Ability to work (long hours) under pressure*

The interviewee reported various forms of pressure. These are for example fatigue (16 hours of work – port calls directly after the normal shift or journey through dangerous areas), the fear of dying in heavy weather, pressure from the responsibility, a bad feeling when a sick relative is left home and the mariner cannot be updated regularly aboard about the health situation or just time pressure or a bad working climate. "...being away from family, friends, and shore-based support and entertainment can be a significant challenge." (Grech, Horberry and Koester 2008: 71). Not mentioned were other burdening influences such as noise, vibration, heat or frostiness. (Richter and Hacker 1998: 17). Despite this, a mariner has to do his work reliably and accurately – the mariner has to "function" under all circumstances.

## *Ability to resolve conflicts/problems*

In the 'microcosm ship' without any normal possibility to communicate and discuss problems with neutral outsiders, conflicts are likely to escalate what some of the interviewees experienced. So, it is extremely important for managerial staff to perceive emerging conflicts early enough and to be able to counteract.

## *Flexibility/adaptability*

Changing crew members and routes, varying and sometimes non-specific instructions from the shipping company (fast transport, slow steaming, "wait for the cargo and we don't know how long"), modifying rules and regulations – a mariner has to be able to adapt quickly to new developments, otherwise he or she cannot cope with the maritime environment.

## *Communication skills*

One interviewee reported from various journeys with masters who did not communicate the next steps before it was absolutely necessary and did not even say much at all. This was a very demotivating and unsecure working environment for the crew and they did not feel appreciated. However, open communication, unambiguous announcements and the inclusion of all crew members' opinions from time to time is regarded as a facilitator of a good working environment and therefore, every mariner should possess good communication skills.

## *Ability to create a pleasant atmosphere in the team (aboard the vessel)*

The interviewees explained that they spend three, four or more months in the 'microcosm ship' and that they don't have the possibility to go home and spend the evenings in a friendly atmosphere with the family what might help bearing a tense atmosphere in a 'normal' workplace where you just spend eight hours. Both kinds of atmospheres seemed to be well-known by the interviewees and they described the on-board life and work in such a tense atmosphere as demotivating and aggression-facilitating. One person said that people just



went directly to their cabins after their watch and did not want to spend time with the other crew members outside their cabins. In this case, such a tense atmosphere fostered social isolation. Furthermore, the interviewees mentioned that they started worrying about returning after their holidays many weeks before the end of their holidays what resulted in a lower recovery effect.

On the other hand, in a pleasant atmosphere where the crew could feel comfortable and appreciated, the interviewees reported from higher motivation, open and relaxed communication during work and spare time and joint activities such as karaoke events or a Christmas party.

It is easy to understand that a skill like this is needed in upper managerial positions such as master or chief mate. In such a strictly hierarchical environment, a seafarer from the lower operational level is normally not in the position to change the atmosphere and facilitate open and friendly communication if the master does not support this or acts completely different.

### *Work ethic/self-motivation/dependability/honesty*

In a working environment where everybody relies on the other crew members, dependability is very important. One interviewee reported from officers who sometimes missed their watch. Then the others could not relax when they have to doubt about someone is being on watch. Furthermore, self-motivation is regarded useful due to the fact that no one has the time to motivate others during normal ship operation. Honesty, for example when problems occur and similar ethical issues are considered important. But one has to note that what is seen as ethical depends on the culture to some extent.

### *To be at eye level with subordinates*

One interviewee reported that he experienced a working environment where the master and chief mate treated seafarers from every hierarchical level just like they would have dealt with another master or a colleague on the same hierarchical level. The interviewee described the on board atmosphere as friendly, open and respectful. It was completely clear that the master did not ask seafarers from the lowest operational level what they think should be done – that might have caused problems due to the differences in the power distance level between different cultures. But the management staff openly communicated and explained every step and did not shout at anybody. This was described as a special way of showing respect to each other.

### *Ability to take criticism/tolerance*

One interviewee experienced a situation in which he constantly was criticized by the shipping company and simultaneously by the crew. It is important not to break under this pressure, but to take this criticism and to reflect to what extent the criticism is justified and to what extent it is just general dissatisfaction with something which lies beyond the own possibilities to change. And then think about what could be improved in an objective way.

After identifying the soft skills which are regarded most important to the interviewees, the next step was to ask them, what kind of soft skills many mariners in managerial positions lack – due to their personal experiences. These could be regarded as the soft skills which should be trained (more) – where the training need was revealed by the interviews.

**Table 4: Important skills with a lack of proper training (according to the interviewees' experiences)**

<i>Skills</i>	<i>Number of mentions</i>
Intercultural competence/understanding of global cultures and values	2
Ability to resolve conflicts/problems	2
Communication skills	1
Ability to create a pleasant atmosphere in the team (aboard the vessel)	3
Work ethic/self-motivation/dependability/honesty	3
To be at eye level with subordinates	1

### **Vital soft skills according to the second group of interviews**

Nine mariners - navigational officers and masters – were interviewed in August 2013. All of them still work on board of vessels and their working experience time ranges from several months up to more than fifty years. Three masters from two big shipping companies in Hamburg, two chief officers from smaller companies located in Northern Germany, two 2nd Officers from a shipping company based in Hamburg and Rostock and two junior officers were interviewed. A detailed questionnaire was used to find out for example, if any problems they experienced arose from a lack of soft skills or if companies have ever asked them about soft skills in a job interview (see appendix 2). In the following, the interviewed persons and an analysis of their answers are being presented.

**Table 5: Interviewees group 2**

<i>Occupation</i>	<i>Number of interviewees</i>	<i>Age</i>
Master	3	72, 56, 46
Chief/first mate	2	46, 31
2nd Officer	2	32, 28
Junior Officer	2	27, 25

**Table 6: Skills mentioned by the interviewees<sup>32</sup>**

<i>Skills</i>	<i>Number of mentions</i>
Intercultural management skills	9
Sense of responsibility	9
Ability to work in a team/to cooperate with others	9
Communication skills	9
Flexibility	9
Tolerance	7
Motivation	7
Self-reflection	7
Transparency/share ideas and knowledge	7
Leadership skills	7
Conflict management/ability to deal with problems	7
Respect	5
Ability to delegate work	5
Empathy	5
Ability to gain new knowledge/learning ability	4
Strictness	3
Ability to enforce something	3
Fairness/ objectivity	3
Decision making skills	3
Endurance	2
Negotiation skills	2
Ability to work under pressure	2
Ability to offer and take criticism	2
Efficiency	2
Diligence	2
Knowledge of human nature	2
Reliability	2
Authority	2
Honesty	2
To be a good example	2
Ability to create a good atmosphere	2

## **Analysis of the answers**

The 72 years old master started 1958 as ordinary seaman. His education was mainly based on on-board experience. After he studied nautical sciences in Bremen, he became officer and later on master. Since 1972 he works as master on-board ships until today, where contracts are limited to four months a year. In between he is working as navigational inspector ashore for another company. His total experience reaches about 55 years on-board.

The 56 years old master worked as navigational officer for eight years in the German navy before he studied in Hamburg to get the civilian officer's certificate. He became Master at an age of 37. He will continue his seagoing job until retirement.

The third master, aged 46, started in 1983 as ordinary seaman. After first experience he joined from 1986 until 1989 the German army. Between 1989 and 1995 he completed

<sup>32</sup> Every expert describes the same skill with different words. Therefore, some mentioned skills were renamed.



maritime studies in Warnemünde. After his studies he became a nautical officer and since 2001 he is working as master until today.

The two chief mates studied nautical sciences in Bremen. Their tasks on-board are staff planning, cargo handling and ballast water management as well as garbage management etc. Additionally, sea watch is a part of daily work. Furthermore, the direct representation of the master is a function of a chief officer. The 46 year old first mate completed a first career as TV and radio technician before he started an apprenticeship as ships mechanic. Having completed his first maritime education, he continued with nautical sciences in Bremen. Since 2009 he is working on board and does not want to change that.

The other officer aged 31, finished an education as Nautical Officers Assistant (NOA) before studies nautical sciences in Bremen to become an officer. Since roughly two years now he is working in the position of a nautical officer and is planning to start an onshore career within the next few years.

The two 2<sup>nd</sup> officers from a shipping company based in Hamburg/Rostock described their main tasks as responsibility for the complete navigational and radio equipment on the bridge, voyage planning including chart corrections and the health care for all crewmembers on-board. Further duties involve the responsibility for the inventories of hospital and bridge equipment as well as regular checks of it. Additionally, port and sea watch belongs to the daily duties of their position. Both officers plan to quit their jobs soon to become pilot or continue the career in the shipping business ashore. One 2<sup>nd</sup> officer started an apprenticeship as ships mechanic in the same company. Afterwards the company offered a scholarship for the duration of his studies due to a shortage of officers and engineers at that time. He studied in Warnemünde. After he finished his studies he worked in the same company he served his apprenticeship. He now works in the position of a 2<sup>nd</sup> officer on containerships. Regarding his future plans he said, he will only finish the required time at sea to get the master's certificate to become pilot later on. The other interviewed 2<sup>nd</sup> officer served one year in the United States for his community service before he started to work as industrial manager back in Germany. After four years as an industrial manager, he started to study nautical sciences in Bremen. After his graduation he started in the same shipping company where he completed his internship as 3<sup>rd</sup> officer. After nine months working as 3<sup>rd</sup> officer he was promoted to his current rank. According to his future plans he stated that he wants to quit soon and his experience on-board was from the beginning only to gain more knowledge and start a shore career as nautical inspector or superintendent.

Two junior officers in the rank of a 3<sup>rd</sup> officer and a 2<sup>nd</sup> officer (who started his career without being 3<sup>rd</sup> Officer) have been interviewed. The first interviewee was a 25 year old female 2<sup>nd</sup> officer from a big shipping company in Hamburg. She worked for one and a half year as NOA in the same company before she studied nautical sciences in Bremen. As future plans she stated a career ashore most likely in education and training fields due to family planning. The second interviewee is 27 years old and just finished his second journey as 3<sup>rd</sup> officer. He is working for a company from Northern Germany. At the start of his maritime career he completed an apprenticeship as ships mechanic with main focus on navigation. Later on he went for two years to a seaman's school in Cuxhaven and got a watchkeeping certificate but without an academic degree. Afterwards, he studied nautical sciences in Bremen to get his academic degree but when he got a job offer, he quit studies. Unlike the female junior officer, he plans to work on-board until his retirement. The duties of 3<sup>rd</sup> officers are daily watchkeeping, safety drills such as fire drills and maintenance of safety equipment, preparation of pre-arrival papers for port calls etc.

Most of the interviewees reported that companies did not try to assess the possession of soft skills or even bring up a question on soft skills during a job interview or before being promoted. The two chief mates explained that they received an employment contract after a short personal interview which dealt only with technical and nautical know-how. One interviewee reported that he had to pass a test consisting of four personal interviews before being promoted to become master. After every interview people were sorted out if their behaviour and/or answers were not matching with company's requirements for the rank. The last interview was with the managing director who finally confirmed the promotion afterwards.

According to all interviewees, soft skills are an important part of the daily work. But for the 72 year old interviewee the main aspect of soft skills is connected to leisure activities. According to his description, people working on-board need to talk about private issues to relax and deal with stress caused by workload. As measures to achieve a better atmosphere he gave examples of sports, barbecue or celebrations on Christmas and birthdays. These activities get the people on-board together and support a better living environment which affects the working environment in a positive way. Without planning some recreation activities nobody would leave the cabin during free time, but people need social contacts instead of watching movies alone. Being on-board without the opportunity to escape makes it necessary to support the interpersonal relationship between the seafarers.

Concerning the situation on-board all interviewees emphasized that various nationalities such as Germans, Polish, Romanian, Russian and Ukrainians, Filipinos and Kiribati seafarers work and live together and that intercultural competences are essential to 'survive'. In one company, also Ethiopian seafarers started to work. When dealing with nationalities from foreign countries, it seems to be important to the respondents to respect other religions and habits for maintaining a good working and living atmosphere. On the other hand, the oldest master being interviewed mentioned that working without social competence is also possible and he experienced it already: In this atmosphere everybody was doing his duties with a minimum of communication in a tensed atmosphere. The two younger masters explained that communication between European and Asian seafarers is difficult. While Europeans communicate in a direct way, Asians feel offended when being confronted with this direct way. They said that especially with regard to the intercultural aspects, they are trying to give clear orders. It is regarded by one chief mate that companies seem to think seafarers know how to deal with colleagues from other countries and how to lead other crewmembers. But abilities like 'how to deal with conflicts and problems' or 'how to motivate people with different cultural backgrounds' are not being trained.

In all companies the interviewees work for, English is the mandatory working language on board but for free time no further regulations by the company are being provided. In order to communicate in their mother tongue people form groups of their fellow countrymen which hinders leisure activities that includes all crewmembers, one master said.

Especially for the two chief mates, the following seemed to be important to mention: Tasks and manpower have to be arranged in an effective way and due to limited resources and time pressure a good motivation of the crew is necessary. And once again – but this time not in an intercultural context – the ability to give clear orders and a clear feedback was mentioned. This helps the other crewmembers to understand what should be done in which



way. Making expectations transparent is always important. If one does not fulfil a task in the required way, a feedback was considered as the best way to improve the quality of work. Clear orders, transparent expectations and a good communication with other crewmembers were regarded as essential tools by both chief mates. Additionally when talking about communication one of the chief mates said that sometimes even the basic communication is not possible sufficiently due to a lack of English language skills. As English being the working language on-board everybody on a ship has to be able to speak understandable; otherwise even the easiest communication is not possible. One chief mate said also that for officers rhetorical skills are necessary. Speaking in front of a group on board is not different from the same activity ashore but some seafarers never learned how to do it. This makes it very difficult to communicate, which implies a lack of information for the affected crewmembers. In his opinion this opens a door for errors and accidents.

As very important skills officers need to possess, the interviewees named the ability to make decisions. The ability to get important information and select the right ones and base the decisions on sometimes incomplete information is important. To solve problems with the limited resources on-board – far away from any external helping hand – a high flexibility is vital to deal with the situation.

The clear hierarchy requires an authority and strict orders by the responsible person. On the other hand a good communication flow provides information to everybody on-board which enables an exchange of ideas. Also crewmembers feel integrated which improves the atmosphere on-board. But the hierarchy being essential for emergency cases, creates some challenges, too: Lower ranks often have great respect for officers. Then, the hierarchy makes it difficult to work as a team during the daily routine. And all interviewees emphasized several times that the ability to collaborate and to work in a team is a decisive prerequisite for a smooth ship operation. One 2<sup>nd</sup> officer explained a situation as an example for problems derived from the hierarchical structure on board of vessels: During one journey the radar equipment was not properly working and he asked the master for a service during the next lay time in port. The master refused to call a shore service to check the radar equipment since in his opinion the equipment was still in a good working condition and problems were only caused by a wrong setup by the user. The master advised the 2<sup>nd</sup> officer to fix problems by himself instead of calling a professional service team. The interviewee said that he did not agree with this decision. The master did not use the radar frequently and kept only the commercial aspect of a service in mind. But due to the higher rank, he had to accept the master's decision. The master gave a wrong decision, nobody tried to fix the problems or to find a satisfying solution. Consequently, the ship was sailing with radar equipment which was not in a proper working condition and this could have caused serious accidents with other ships or fishing boats during night times or in conditions with a limited visibility. That risk could have been avoided, if the master would have taken advice from his 2<sup>nd</sup> officer who is responsible for the navigational equipment. Caused by the hierarchy on-board, lower ranks have to accept decisions from superiors but these decisions might not always be correct.

The two junior officers said that good superiors should have the following skills: good self-reflection, authenticity, authority, empathy and a general knowledge of the human nature. These two young mariners also explained that for superiors also the ability to delegate working tasks is important. One person cannot solve all problems alone. Therefore, tasks



have to be delegated to other crew members which provides them with the possibility to learn.

One master mentioned that it seems important to him to tell the crew what he expects and how work should be done and which targets should be achieved at the beginning of a journey. After a while, if necessary earlier, he makes a briefing where he gives positive and negative feedback to his crew with hints how to improve.

An ability to maintain a life-long learning attitude leads to a higher on job experience as one master mentioned. When using a cooperative leadership style, one master observed a higher motivation, because people feel integrated in the team. And while making decisions and suggestions, lower ranks have the chance to gain more knowledge. The “ability to be a good example” was mentioned by the two younger masters as being important. Furthermore, the ability to lead people is regarded essential in a higher position on-board as seafarers expect leadership from their superiors. Sometimes a softer style is the better choice as one chief mate reported.

One master said that soft skills are not soft by the meaning of the weakness. These are skills, which lead people on-board and become more and more important nowadays. This opinion was confirmed by the other 46 year old master who said that soft skills cannot be measured due to the fact that they are not clearly defined. As a consequence it is not easy to provide a proper training on soft skills but a sensitization needs to be done to prepare people for the job and the related responsibility. Especially junior officers need the ability of self-reflection to be aware of the responsibility of their rank on-board.

The 72 years old interviewee did not get any training on soft skills during his education. All social competences and skills he gained by own experiences. His education focused only on navigational and technical know-how but later in his career took part in seminars about Bridge Team Management and Bridge Resource Management. Both other masters identified their first training on soft skills during their time in the German navy. They were trained in different leadership styles with role-plays and the exchange of experiences with other seafarers and psychologists. One master stated that colleagues of the same rank sometimes would not accept seminars about leadership focused on the human aspect due to their position. Some masters consider themselves as being “next to God”. Having good and bad examples of superiors on-board, provided one master with the impression of effective leadership as well as a reflection of own behaviour. Another aspect all masters talked about was that soft skills could not be easily learned. According to the masters how well developed soft skills are depends to a certain degree on how people grew up. Both chief mates developed their personal soft skills mainly by collecting own experiences on-board. As they explained, they learned something about soft skills during their studies but both said it was not sustainable. One chief mate said that it was very difficult for him to start his career as junior officer because he was not prepared for the intercultural aspects, but then he learned soft skills through general experiences in life and went to seminars offered by his company. These seminars dealt with teamwork, management skills and intercultural topics. These seminars, combined with the on-board experience and the feedback of his colleagues gave him the possibility to improve his soft skills. The female young officer stated that she learned something about soft skills in seminars during her studies for instance: By the use of role-plays and example situations, she gained first knowledge about soft skills. As



already mentioned, all interviewees said that the training during maritime education was not enough for their on board profession. Nearly all interviewees agreed upon the following: Young seafarers have to be sensitized on soft skills.

## 6. INFORMATION ON THE SOFT SKILLS TRAINED IN MET INSTITUTIONS

### **Soft skills being trained according to STCW**

In this chapter, the STCW will be reviewed with regard on soft skill training and development. Therefore the latest Manila amendments will be taken into account. The 1978 STCW Convention was the first establishment of international basic requirements training, certification and watchkeeping for seafarers. It is a minimum requirement which is compulsory for involved countries. Over the years two major amendments have been adopted in 1995 and 2010 due to latest developments in the maritime industry. Since the Manila amendments entered into force on 1 January 2012, a focus is especially set on “new requirements for marine environment awareness training and training in leadership and teamwork”. (IMO). Masters and navigational officers on-board ships of 500 gross tonnage or above need to have a minimum standard of competence. In parts A-II/1 and A-II/2 the following tables show the requirements concerning the application of soft skills (The Swedish Club Academy 2011: 16-18):

**Table 7: Table A-II/1-Specification of minimum standard of competence for officers**

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
<b>Application of leadership and team working skills</b>	Working knowledge of shipboard personnel management and training	Assessment of evidence obtained from one or more of the following:	The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned
	A knowledge of related international maritime conventions and recommendations, and national legislation		
	Ability to apply task and workload management, including:		Training objectives and activities are based on assessment of current competence and capabilities and operational requirements.
	.1 planning and co-ordination	.1 approved training	Operations are demonstrated to be in accordance with applicable rules
	.2 personnel assignment	.2 approved in-service Experience	Operations are planned and resources are allocated as needed in correct priority to perform necessary tasks
	.3 time and resource constraints	.3 practical demonstration	Communication is clearly and unambiguously given and received
	.4 prioritization Knowledge and ability to apply effective resource management:		Effective leadership behaviours are Demonstrated
	.1 allocation, assignment, and prioritization of resources		Necessary team member(s) share accurate understanding of current and predicted vessel and operational status and external environment
	.2 effective communication on-board and ashore		Decisions are most effective for the Situation
	.3 decisions reflect consideration of team experiences		
	.4 assertiveness and leadership, including motivation		
	.5 obtaining and maintaining situational awareness		
	Knowledge and ability to apply decision-making techniques:		
	.1 Situation and risk assessment		
	.2 Identify and consider generated options		
	.3 Selecting course of action		
	.4 Evaluation of outcome effectiveness		

The focus is clearly set on leadership and team working skills with due regard on management skills linked to available resources. Other soft skills included are the ability to apply an effective communication and demonstrate leadership including motivation as well as decision making. As main tools to assess, the competence approved training combined with in-service experience and practical demonstration are pointed out. Furthermore, the point of decision-making techniques deals with a substantiated decision making. Therefore, situation and risk assessment has to be carried out to find effective decisions which lead to actions. Especially for masters and chief mates a use of the named skills is required as per attached table:



**Table 8: Table A-II/2-Specification of minimum standard of competence for masters and chief mates**

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Use of leadership and managerial skill	<p>Knowledge of shipboard personnel management and training</p> <p>A <i>knowledge</i> of related international maritime conventions and recommendations, and national legislation</p> <p>Ability to apply task and workload management, including:</p> <p>.1 planning and co-ordination</p> <p>.2 personnel assignment</p> <p>.3 time and resource constraints</p> <p>.4 prioritization knowledge and ability to apply effective resource management:</p> <p>.1 allocation, assignment, and prioritization of resources</p> <p>.2 effective communication on board and ashore</p> <p>3 decisions reflect consideration of team experiences</p> <p>.4 assertiveness and leadership, including motivation</p> <p>.5 obtaining and maintaining situation awareness</p> <p>Knowledge and ability to apply decision-making techniques:</p> <p>.1 situation and risk assessment</p> <p>.2 identify and generate options</p> <p>3 selecting course of action</p> <p>.4 evaluation of outcome effectiveness</p> <p>Development, implementation, and oversight of standard operating procedures</p>	<p>Assessment of evidence obtained from one or more of the following:</p> <p>.1 approved training</p> <p>.2 approved in - service Experience</p> <p>.3 approved simulator training</p>	<p>The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned</p> <p>Training objectives and activities are based on assessment of current competence and capabilities and operational requirements</p> <p>Operations are demonstrated to be in accordance with applicable rules</p> <p>Operations are planned and resources are allocated as needed in correct priority to perform necessary tasks</p> <p>Communication is clearly and unambiguously given and received</p> <p>Effective leadership behaviours are demonstrated</p> <p>Necessary team member(s) have accurate understanding of current and predicted vessel and operational status and external environment</p> <p>Decisions are most effective for the situation</p> <p>Operations are demonstrated to be effective and in accordance with applicable rules</p>

Due to these requirements as per Manila Amendments Maritime Crew Resource Management (MCRM) became mandatory for seafarers training. (Jörgens 2012: 68). Institutes and training centres offer courses on different topics like Bridge Team Management (BTM), Bridge Resource Management (BRM) and Engine Resource Management (ERM). (Jörgens 2012: 65-66). Main aspects of training are intercultural communication and behaviour, conflict management as well as exhaustion, relaxation and sleep management. Additionally stress management, threat and error management and also decision making are provided by these various trainings.

All the stated skills could be characterised as soft skills and are directly linked to the maritime industry dealing with the major challenges of seafarer's daily work. Especially BTM and BRM link the basic navigations skills with soft skills such as communication and teamwork to improve the safety of shipping by studying the human behaviour when operating ships. (Adams 2006: 3). To support the matters Adams' BRM analyses various incidents with focus on the situations and errors. The BTM on the other hand gives direct



advice dealing with navigational aspects as well as with teamwork and tasks of a bridge team including communication with a pilot. (Swift and Bailey 2004). In contrast, the Swedish Club developed a Maritime Resource Management (MRM) which is covering the STCW requirements and provides even more training on soft skills. (The Swedish Club Academy 2011: 5-6). As intention the difference between engine and deck departments of ships were named. Seafarers feel split into two camps by BRM and ERM courses. The same training on human factors has to be applied to all seafarers. It includes various methods from e-learning up to workshops and refreshing courses where a number of relevant soft skills are trained. (The Swedish Club Academy 2011: 5-15). These skills are covering awareness of situations and cultures, management skills and communication, the human error and decision making in emergencies as well as automation awareness and further skills.

Concluding, there are various trainings and literature dealing with soft skills and their use on-board ships. As requirements became mandatory with the Manila amendments of 2010, there are training and coaching offers providing especially soft skills training. Nevertheless, the human factor in maritime training and education did not arise for the first time within the latest STCW amendments. (Adams 2006: 2). Only the focus increased and the complying regulations became mandatory. But, "the resulting challenges for shipping companies have not yet to be determined." (Jørgens 2012: 68).

## **Soft skills being trained according to MET experts**

All three interviewed MET experts are currently working in the maritime training domain. One of them is working with a private owned company, the other two experts are teaching at a university of applied sciences. One of the lecturers is also managing director of two companies providing training for seafarers as well. The main focus on the evaluation is on soft skills trained in MET centres by the interviewed experts. The MET experts, who were all working on-board at the beginning of their career, confirmed the general conditions of seafarers outlined above and the essential need of well-developed soft skills. Knowledge of MET experts is based on their onboard experience and for two of them by the German navy/army. The third MET expert gained knowledge as lecturer. Additionally, his master studies in Great Britain which focused especially on the human resources in the maritime industry provided further training on personal skills. All in all the interviewed MET experts improved themselves by target-oriented coaching and experience and mainly by a lifelong learning process.

Regarding the participants of training seminars, NOAs, junior officers but also more experienced officers, up to masters were named. All seafaring nationalities, mainly from Germany, Eastern Europe and Asia are being trained. For communication the English language is used, whereby levels range from very poor up to good English skills. In seminars of the two MET centres, intercultural aspects are only shortly covered. However, a special leadership seminar, dealing with self-reflection trains how to identify own skills and potentials. Furthermore, communication and providing feedback in the right manner are essential elements of training. By showing participants how to communicate on the bridge it is tried to make seafarers aware of their position and make them support the bridge team. But talking to each other to share information, giving advice and being team leader can only be shown during training. Everyone has to find and attempt an own leadership style, as



seminars and training only provide the basic tools on leadership skills. As method to sensitize people, one facility is using for example role-plays, which are caught on tape and analysed afterwards.

As the basic aspect of education, interviewees considered the navigational and technical know-how. On the other hand – they admitted – the professional knowledge is useless, if soft skills are not available at all because on-board people are working together. Later on when working on higher rank soft skills become even more important as working tasks and responsibility of each rank vary. This implies the need of sharing professional knowledge with other people. Furthermore, the ability to share own knowledge and experience with others and to work in a team with a proper communication was stated as important. To achieve a goal, people must find the best way to deal with the given resources. If someone does not know how to do something, maybe someone else does. But due to the hierarchical structure on-board a ship, the ability to be open-minded is not always available. It depends on cultural background, age and the rank if seafarers accept and use the knowledge of colleagues. The ability of being open-minded can also be applied to technical aspects. Older seafarers need good teamwork skills because the younger ones are more up to date with new technical systems on-board. Another aspect of the technical progress is a reduced crew. As research projects are working on tools to navigate ships from shore, there might be even less people on-board in the future. Only an officer acknowledging changes in passage planning. As consequence, crewmembers on-board ships get all information and tasks from shore offices. These shore offices, where also people who might have never worked on-board a vessel, make decisions and need training on soft skills, too. Therefore, a better communication between ship and office has to be established, according to one MET expert. Accordingly by teamwork and the sharing of knowledge a problem can be solved and in best case, the own competence can be improved by the experience of others. Therefore, life-long learning was named with the focus on all kind of competences. Always being aware of the situation and dealing with conflict and errors can be trained. But although this training is provided, a responsibility needs to be developed by each seafarer on its own. The awareness of the ship's size and reaction is trained in simulators, where it is possible to make mistake without consequences, to improve the own skills. But a training of soft skills itself is not a questions of a three days seminar. Leadership and management seminars which are offered by companies in cooperation with psychologists need more attention. People can only be sensitized, the internalization needs more than a few days. The interviewees described it as a culture of awareness where participants are provided with knowledge on own social competences. But in the end the exchange of the theoretical skills and the daily work is the most important part. The culture of awareness is also necessary for all seafarers on-board; not only for higher ranks, to develop itself in a top-up as well in a top-down process. Especially seafarers need these soft skills because they are working together in a system without the opportunity to escape.

Therefore, the basic training during maritime education is relevant as seminars tie up to these basics. The whole process needs time but teamwork, situation awareness and error management have to be provided already during the first maritime education. Example cases were named as possible tool trying to sensitize students amongst other things with regard on the hierarchy on-board. This method was confirmed by one MET expert teaching at a university of applied sciences. Furthermore, in seminars like a leadership course, normally companies participate with a group of their employees. In these cases the companies make guidelines about the training aspects and where the focus should be at.



According to one interviewee this is the beginning of a corporate social responsibility of companies. Supporting their employees and give them the opportunity to extend their knowledge on various sectors. As second step an appreciation of employees is necessary that people start to identify themselves with the company. Thereby, a motivation is achieved which could have a positive effect on the work. As tools to create this motivation, awarding systems and better appraisals of employees were stated. The appraisal systems on-board imply mostly the question who is appraising the master.

Regarding the provision of training the interviewees considered that shipping companies have to deliver training for their employees. With STCW, Maritime Crew Resource Management, MET centres adopted already to soft skill training. It is important for seafarers as well as for employees ashore. Nevertheless, also lecturers need to be social competent and make their expectations for students transparent.

Analysing which soft skills of the named ones are trained during the education of future officers, an interviewee stated that there is no training of these skills. Only the basic social competence every student is bringing along a course is more sensitized. But each student has to decide on his own, which soft skills or which behaviour is the most effective. Hence, only a basic tool kit on soft skills is provided which needs to be improved by experience or further training later on. For further training the interviewee confirmed, shipping companies have to provide more coaching to their seafarers. The aviation industry was named as a good example for further training and tests on psychological aspects and social competences. Moreover, it depends on the leadership style on-board. If the hierarchy is strict, it is harder to establish the use of soft skills due to the orders of a higher rank. A possibility to improve the training on soft skills during the maritime studies is an exchange semester. Thereby, students can get familiar with other cultures, especially when studying in a country known for its seafaring employees. Another way could be an education system where during a first bachelor degree only navigational and technical know-how is taught. After the first experience as officer on-board, master studies or a course before becoming captain, need to be completed. This master studies only deal with leadership skills to prepare seafarers for managing tasks on-board in higher positions. Furthermore, the improvement by good and bad experience on-board is essential together with a self-reflection to extend social competence.

**Table 9: Soft skills being trained in MET institutions**

Soft skills being trained in MET institutions	
Ability to deal with stress	Leadership styles
Ability to exchange knowledge	Respect
Communication	Responsibility & delegate responsibility
Conflict management	Self-reflection
Decision making	Situation awareness
Error management	Teamwork
Give/take constrictive feedback	Tolerance/acceptance
Intercultural awareness/management	Transparency
Language skills	

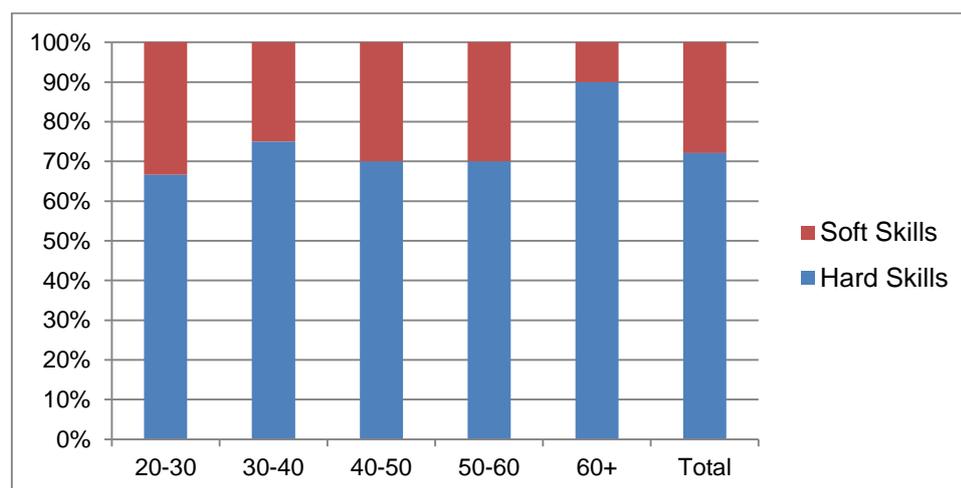
## 7. GAP ANALYSIS, DISCUSSION OF RESEARCH FINDINGS AND CONCLUSION

In the following the interviews of on-board and MET experts are summarized and compared. The needed soft skills on-board are connected to the training by MET centres. For on-board experts further training wishes are outlined. First gaps become visible and after both evaluations have been compared, future training suggestions are given.

### Evaluation of mariners' answers

The interviewed mariners' set a clear focus on the technical and navigational know-how. All of them considered basic knowledge on the ship's navigation as essential. Without these basics, soft skills could not be applied because they are an additional factor. The respondents were asked to make a grading between hard and soft skills, the results can be seen in the following table:

**Figure 1: Second group – interviewees' grading between hard and soft skills**



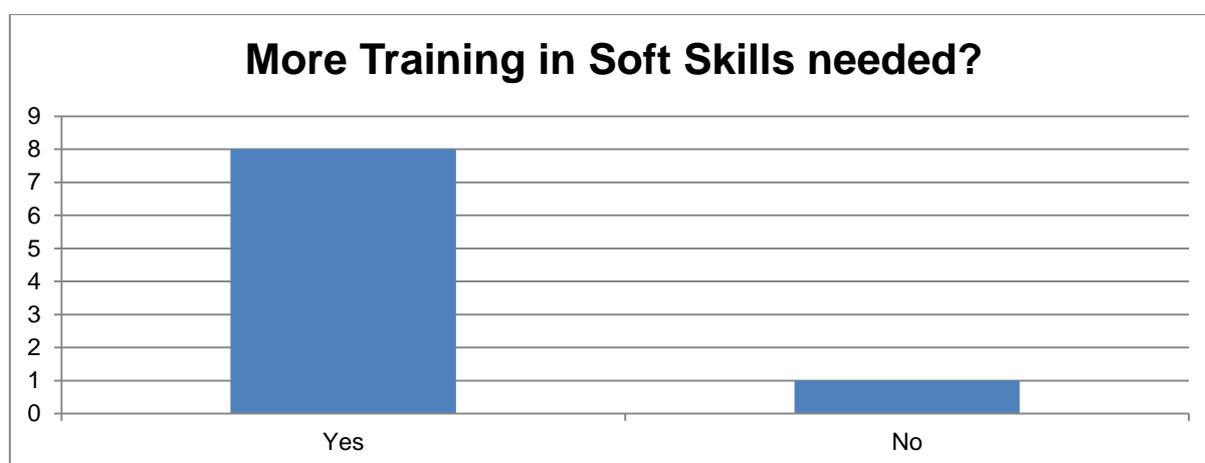
Soft and hard skills reach a maximum level of 100%. The red coloured part stands for soft skills while the blue one displays the grading for the hard skills. The statistic refers to the age of the interviewees divided by ten years. It is visible that most interviewees graded the importance of soft skills with about one third in comparison to two thirds on hard skills. Significant is that especially the younger officers between 20 and 30 years as well as the older ones in positions as chief officer or master named higher percentages of soft skills than officers between 30 and 40 years. This seems to be a result from a sensitization due to education as one junior officer wrote a thesis about intercultural aspects and stated the fact that due to latest developments, the focus is set on this topic. The rankings are affected by the position of the interviewees. Being a master or chief officer, it is crucial to have personal planning and leadership skills as well as to be able to maintain a good motivation on-board. Thus they have to apply soft skills in correspondence with their responsibilities daily. Furthermore, more gained on-board experience in various positions is caused by their age and current rank. A single exception was the 72 aged Master, who described the education as very practical without having heard anything about soft skills. But through on-board



experience, he also gained soft skills such as communication and empathy, supported by trainings on BTM. Concluding, a correlation can be seen where the grading of soft skills depend on age and experience of the seafarers.

Regarding the question if more training on soft skills is necessary eight interviewees said yes, only one said no. He explained his decision that European seafarers are more social competent than others so due to that, no further training is necessary. Instead he named psychological tests to assess the motivation and behaviour of potential seafarers. By this people would be tested with focus on their interpersonal skills. Motivation and behaviour would give an impression if someone is qualified to work on-board under social aspects.

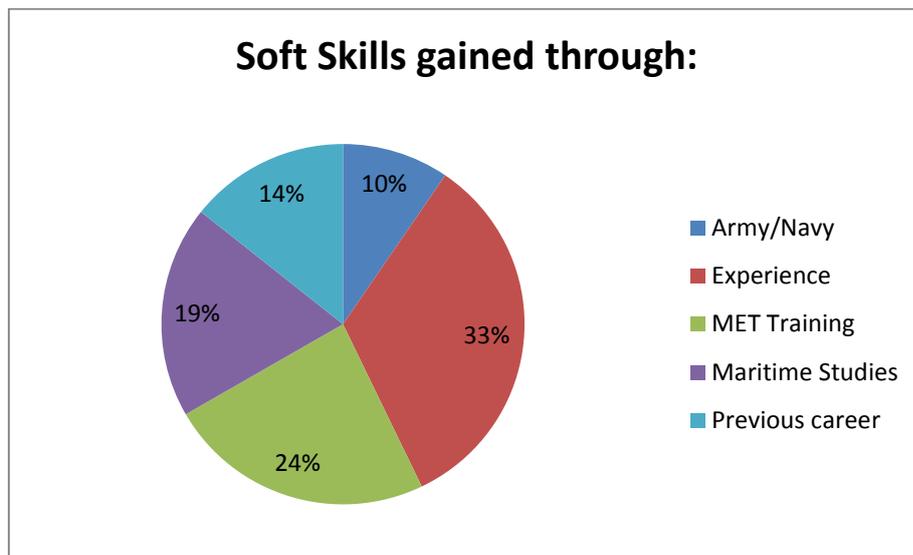
**Figure 2: Second group – interviewees’ meaning about soft skills training needs**



The other interviewees agreed that further training on soft skills is necessary. A method to supply and implement this training is the participation in seminars. Regularly training and courses should be supplied by the shipping companies. Especially before getting promoted to a higher rank training should be completed. Also an exchange between theoretical training and practical application should be provided. For this purpose the provision of role-plays with example situations and simulations of conflicts would be a very effective way of training and applying certain skills. Moreover, two officers also considered a better preparation on human resource management during maritime studies as important. In contrast, e-learning was not considered being an option to gain more knowledge on soft skills.

Concerning the question, where the personal skills were learned, more than one answer was possible. Two interviewed mariners stated that the time spend with the navy/army was where they were trained in different leadership styles. Most interviewees stated the experience on-board as reasons for an improvement of soft skills. Only four mariners gained knowledge during maritime studies independently from the institute where they graduated. Five mariners considered seminars provided by the shipping companies as source of further skills while only four interviewees named the maritime studies. Previous jobs and educations were named three times.

**Figure 3: Development of soft skills**



Additionally it has to be said that three out of five mariners who took part in seminars dealing with human resources, bridge team and soft skills work for the same company. This implies differences in the provided training between different shipping companies.

Concluding, all interviewees agree that soft skills are of great importance. Nevertheless, a ship could be managed also without applying soft skills and without seafarers being socially competent, these skills make working and living easier, safer and more efficient. Seafarers improve their teamwork and maintain a lifelong-learning culture where everyone on-board benefits from interpersonal skills. This causes the seafarers to desire getting further training and to be better prepared for the challenges of their job. Moreover, it seems that training has improved over the last years as some shipping companies already provide training additionally to the job. For the most part maritime studies were assumed presenting only a small factor of soft skill based training. Most interviewees, who mentioned their studies, considered the training being not sustainable enough to be prepared for the career on-board. The main aspect of soft skill gaining was the experience thus the essential basic requirements are still the hard skills. Furthermore, a better appraisal system for seafarers and a bigger focus on assessments procedure during application processes were highlighted by seafarers to provide more social competence on-board ships.

### **Evaluation of MET experts' answers**

All three MET experts regarded soft skills as important for seafarers. All interviewed MET experts agreed that the higher the rank on-board is the more social competence is needed. Therefore, seafarers have to be trained and sensitized on soft skills, especially junior officers. As junior officers are mostly part of the lowest rank of the managerial ranks on-board, they need to be trained from the beginning to create a culture of awareness up to the higher ranks. This approach is based on the hierarchical structures on-board where sometimes the social competence can be applied only in limited ways due to orders of superiors. Another point named by all interviewees was the life-long learning process. Soft skills cannot be provided and implemented in a three days seminar. It is a process of coaching and sensitizing people about their social competences where theoretical knowledge and training have to be combined with on-board experiences. In the end soft

skills have to be used by the seafarer on-board which implies that social competences cannot be learned as a subject like other knowledge.

Nevertheless, all MET experts see the delivery of soft skill based training in the responsibility of shipping companies. As commercial facilities offer specialised training according to wishes of companies, the maritime education is very limited on this topic. According to the director of maritime studies it is not possible to provide training to students because every student needs to develop on his own. He can only be supported by a tool kit how to apply social competence to solve conflicts on-board. The only chance to provide more training is an exchange semester to improve on intercultural aspects and a requirement to participate in further training delivered by MET centres before being promoted to the senior management ranks such as chief officer or master.

### **Comparison of expert interview's evaluation**

Both, mariners and MET experts, suppose soft skills being important. Agreeing that technical and navigational knowledge (hard skills) are essential for seafarers, the social competence becomes the more important the higher the rank on-board a ship. Especially mariners wish to get more training on their social competences. Due to explanations these skills make working and living more comfortable. Furthermore, it has been stated that safety and efficiency at work improve with social competence. This was confirmed by all MET experts with regard on the provided training and the human error.

The provided training includes BTM, BRM, ERM and special leadership courses which deal with skills considered as important by mariners. Especially skills on communication, intercultural management, leadership, teamwork and self-reflection have been identified by mariners for further training needs. All these skills are provided by MET centres. Regarding leadership skills, training facilities offer courses dealing with different leadership styles. Also the training of the ability to deal with problems and conflict management is covered by the MET centres. In addition error management and awareness of situations and responsibilities are provided to improve certain skills. The only skills which are not directly trained by MET experts are motivation and authenticity. Concerning the motivation, one MET expert stated that a motivation system for seafarers needs to be established by shipping companies such as monetary benefits or meetings for senior officers. In contrast of authenticity, skills on decision making are provided during seminars in MET centres. Another skill regarded as important was experience. Experience was considered as most important skill by all interviewees. It is only achieved by training, on-board as well as in MET centres. Accordingly, experience is not only provided on the job, it is also provided by participating in MET trainings. This was confirmed by MET experts with focus on the BTM and BRM courses which deal with awareness and handling of situations and conflicts in focus of teamwork and communication. Moreover, the ability of sharing knowledge and ideas is provided and interviewees from both sides name this ability as essential for a permanent successful improvement during the career.

Concluding, wide training offers are provided by MET experts focussing nearly on all skills referred to being important by interviewed seafarers. Especially soft skills which experts request for further training are provided by MET centres. Seven out of the ten most important skills are trained. In addition skills such as error management and situation awareness are provided due to a focus on the human error. A question which has to be asked in view of this comparison is 'why do still eight of nine mariners wish to get further



training on soft skills?' MET experts deliver appropriate opportunities but only 24% of mariners participated yet in such a training. During maritime studies only 19% named a sustainable training on soft skills.

In the following table main soft skills which are trained by the MET centres are listed in comparison to the skills the mariners mentioned as vital. By comparing the trained and the needed soft skills, one can clearly see in which soft skills training institutes have to be more engaged.



**Table 10: Gap analysis**

<i>Vital soft skills mentioned by mariners</i>	<i>Soft skills being trained in MET institutions</i>
Intercultural management skills	Intercultural awareness training
Sense of responsibility	Sense of responsibility
Ability to work in a team/to cooperate with others	Ability to work in a team/to cooperate with others
Communication skills	← <b>Training Need</b>
Flexibility	← <b>Training Need</b>
Tolerance	← <b>Training Need</b>
Motivation	Leadership training
Self-reflection	Self-reflection
Transparency/share ideas and knowledge	Transparency/ Ability to exchange knowledge
Leadership skills	Leadership training
Conflict management/ability to deal with problems	Error/conflict management
Respect	Respect
Ability to delegate work	Delegate responsibility
Empathy	← <b>Training Need</b>
Ability to gain new knowledge/learning ability	← <b>Training Need</b>
Strictness	Leadership training
Ability to enforce something	Leadership training
Fairness/ objectivity	← <b>Training Need</b>
Decision making skills	Decision making skills
Endurance	← <b>Training Need</b>
Negotiation skills	← <b>Training Need</b>
Ability to work under pressure	Situation awareness
Ability to offer and take criticism	Give/take constrictive feedback
Efficiency	← <b>Training Need</b>
Diligence	<b>Training Need</b>
Knowledge of human nature	← <b>Training Need</b>
Reliability	Leadership training
Authority	Leadership training
Honesty	← <b>Training Need</b>
To be a good example	Leadership training
Ability to create a good atmosphere	← <b>Training Need</b>
-	Language skills

## Discussion of Research Findings

Due to the working and living conditions on-board ships, communication, intercultural management, teamwork, decision making, motivation, self-reflection and the ability to deal with stress and conflicts were deducted as soft skills which support a smooth running process on-board. The comparison between deducted soft skills and most important skills shows, main skills such as communication, intercultural management and teamwork are necessary in the maritime industry. Furthermore, leadership skills such as various leadership styles were regarded as important by mariners. Motivation and self-reflection were also considered being helpful to work efficiently on-board. In addition, the deducted ability to deal

with stress and conflicts is proved as important skill. Interviewees described various conflict situations regarding intercultural communication with colleagues as well as the teamwork as important and sometimes problematic. Besides, mariners named a high degree of experience on hard skills and various ships as good tool to improve on soft skills. Trying various behaviours and learning from the exchange of knowledge, seafarers try to improve on their own.

The soft skills which were regarded as important by mariners almost match exactly with the trained skills. This implies that MET centres deliver training on soft skills. In compliance with the latest amendments to STCW, the required leadership, management and teamwork skills seem to be already implemented in provided training. Decision making with regard on risk and situation awareness seems to be trained as well. In contrast, nearly all interviewed mariners described experienced problems concerning misunderstandings or interpersonal communication. Supported by only 43% of interviewed seafarers who gained soft skills by maritime education or MET trainings, a gap seems to exist concerning provided training to seafarers. All interviewees confirmed the exchange of practical experience and theoretical knowledge but only less than 50% had the chance to participate in further training. All seafarers who participated in leadership and intercultural seminars work for the same company. Other seafarers took only part in BTM and BRM trainings, with due regard on the position. Only one Chief Officer and one master were sent to seminars by the shipping companies. Junior Officers did not get any further training than maritime studies provided, except one of them who works in the already mentioned company. This seems to show another gap in the training on soft skills. According to latest STCW requirements every officer needs to be social competent. This were also the answers of all MET experts, who named training for all officers as important to sensitize the whole management level of a ship and provide soft skills in top-down and top-up processes. In contrast, some younger interviewees were not sure if training on soft skills would change attitudes of more experienced seafarers. This could be confirmed by the oldest interviewed mariners who graded soft skills only with 10%. However, it was significant that masters including the most experienced interviewee described the importance and the daily use of soft skills. A difference was that the 72-years-aged master did not know the synonym of “soft skills”. This implies that soft skills seem to exist already for a longer period of time, even if training and legal framework only adapted in the recent years.

Nevertheless, it is a question of responsibility, who is in charge of soft skills based training. As shown in previous chapters commercial MET centres provide such training but on the other hand interviewees wish to get training especially on intercultural aspects already during maritime education. This was confirmed by one MET expert who considered a higher focus on social competence during first maritime educations due to a better sensitization. The argument is supported by the statement that social competence needs permanent training which was confirmed by all interviewees and also visible as the greatest part of 33% named experience as source of skills.

A critical point is the assessment of soft skills and social competence because both are not clearly defined and thereby not easy to identify (**Error! Reference source not found.**). This might be the reason why only one company tests future employees with an assessment procedure and interviews concerning social behaviour. Other companies only dealt with navigational and technical skills during job interviews.

Concerning research findings, it has to be kept in mind that only German experts and mariners were interviewed. Accordingly, results represent only the situation and skills of German experts and training facilities.

### **Training Needs and Recommendations**

All interviewed persons assumed training on soft skills as important. With regard on the working and living conditions on-board ships compared to the interviewees descriptions, there seems to be a need of further training. Signification is that eight out of nine mariners wish to be better trained regarding social competence during maritime studies and later on. As STCW adapted with the Manila amendments to soft skill based training and MET facilities provide certain trainings, it is recommended to use existing training facilities and provide knowledge on soft skills to seafarers regularly. In addition, a higher focus on soft skills could be set during maritime studies because most interviewees considered the training as not sustainable for future challenges in the maritime industry. Furthermore, this research recommends a higher sensitization on the topic to improve the awareness of the responsibility of current and future navigational officers.

As tool for a better assessment on available soft skills an assessment and appraisal system for seafarers needs to be established due to the findings that only interviewees of one company were tested for social competences before getting employed or promoted. This implies also an appraisal system for seafarers with due regard on their behaviour on board is essential. This transparent appraisal system could be useful to create a better assessment of seafarer's skills and show gaps for specialised further trainings.

The list of soft skills regarded as being important in this paper could not be considered as complete. There might of course be more important ones. But due to the experiences of the interviewed experts from different stages of a maritime career, it just seems to be a useful collection of information helpful for further actions.

One interviewee in the position of a master explained that he can do whatever he wants to do and can treat the crew in what way he wants to and that no one ashore is really interested in anything – just as long as the cargo is being transported from its starting point to its destination without major occurrences. Of course, the crew members have the change to say that they don't want another journey with that master and the human resources department ashore might pay attention to this request if it is possible, but in the past nothing more happened. But this interviewee said that a good working and living environment matters to him and for him, this means to pay attention to the people for who he is responsible and make them feel as comfortable as possible aboard a ship. This interviewee mentioned that he would get the same salary if he would just do the absolute minimum what is not what he wants, and he regards this practice as being unfair. He did not gain his soft skills during studies but he learned from bad examples on journeys he made in the position of a third or second mate. There might be room for improvement concerning the salary structure (e.g. assessing the soft skills the managerial staff possess and show when dealing with the rest of the crew) and the education.

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## APPENDIX 1

### Interview guide soft skills – first group

1. What is your age?
2. Tell me something about your educational background and your on-board experiences.
3. What is your current on-board position?
4. According to your opinion: What are the most important soft skills people in managerial positions in maritime industry – especially aboard vessels – might need? Can you explain, why you think so and tell maybe something about your experiences that led to your opinion. Please name as many skills you could think of and please take your time!



## APPENDIX 2

### Questionnaire soft skills, second group

#### **Personal details:**

5. What is your age?
6. Tell me something about your educational background and your on-board experiences.
7. What is your current on-board position?
8. What are your future plans?

#### **On-board/working experiences:**

9. When you applied for a job, have you been asked what kind of soft skills you possess?
10. As a mariner, you might have been working with people from other cultural backgrounds. With people from what kind of nationalities have you been working together so far?
11. Does the shipping company require the crew to peak a special language during work or spare time so that everybody could be included to group activities?
12. Have you ever experienced any problems on-board? Can you explain these problems and how you handled them? Just give an example.
13. Are these problems perhaps connected to misunderstandings or interpersonal communication?
14. What characterises in your opinion a good Master/Officer/Superior?

#### **Soft Skills:**

15. What is your understanding of soft skills?
16. Which soft skills/capabilities do support a smoothly running process on board?
17. How do they support the running process?
18. Did you receive any kind of training regarding soft skills? Which kind of soft skills and how have they been trained?
19. Are there any other soft skills you possess besides the ones you developed through the above mentioned training? How did you learn these skills?
20. Do seafarers need more training regarding soft skills? If yes, how should they be trained?
21. Which skills are more important – hard or soft skills?