

## Bridge Control Competence-Verification and Training Tool (SafeBridge)

2008-1-LV1- LEO05-00028

<http://www.adam-europe.eu/adam/project/view.htm?prj=5732>

## Project Information

Title: Bridge Control Competence-Verification and Training Tool (SafeBridge)  
Project Number: 2008-1-LV1- LEO05-00028  
Year: 2008  
Project Type: Transfer of Innovation  
Status: completed  
Country: LV-Latvia  
Marketing Text: Safebridge – a new aid to safe navigation

Ships' navigating officers are facing more challenging software in the workplace than ever before. To ensure safety of navigation it is paramount each equipment unit is properly operated. A tough challenge considering AIS, ARPA, ECDIS and GMDSS may come from many different makers. For example, more than 20 manufacturers offer 30 different types of radars alone all with different interface layouts.

Only if correct and efficient handling of the bridge equipment is assured, can the safety of the ship also be assured. Safe carriage of the cargo, the safety of life and prevention of pollution are critical and dependent upon safe bridge operations. Officers' competence plays a crucial part – estimated to be worth up to €500 million per unit. Any approach to enhance faultless usage of watch-keeping equipment is of the utmost importance. We face a potential major disaster if officers do not fully understand the operational capabilities and limitations.

Generally officers receive type-specific training only during vocational education on just one or two systems. Once on board the hand-over time is limited to at best a day, or often much less before the relief will be at sea and in full charge of the vessel. Confronted with new equipment he is probably not familiarised with the radars, communication, navigation, safety or any other bridge equipment.

The objective of SAFEBRIDGE is to advance classical CBT tools and knowledge management systems to a competence verification and training interface exactly replicating and integrating the desktop structure of the navigation consoles in question. To achieve this, a tool will be developed which is not a modified copy of the original application software but an autonomous applet mirroring certain screenshots of the application with a selected pre-defined operability. The competence verification and training tool will be completed by tutorial explanations / animations to illustrate the operation of the relevant control elements. Because trainees can learn directly on the console's graphical interface the required knowledge is transferred immediately one-to-one to the real equipment and the real situation.

The key problem shipping faces today is how to accelerate the transition of cognitive knowledge to inherent experience. In other words, how to make the untrained and inexperienced perform better in a shorter period of time. When looking at the training module of the competence tool to be developed, ship owners, recruiting agencies and others for selecting ship's officers could provide the seafarer in question with a computer assisted tailor-made instruction tool developed to meet specific training needs.

The training tool to be formulated under SAFEBRIDGE is not only aimed at fostering the acquisition and use of the necessary skills to facilitate the officer's professional development, but also to make such training more time and cost efficient and through this approach also more attractive and beneficial for employers and trainers alike.

For more information see [www.safebridge.eu](http://www.safebridge.eu)  
478 words

Summary: Aims

## Project Information

The Project Objective is to develop a new training and competence verification tool that can be used for marine navigators to fast track learning and improve safety in marine operations.

For

All persons in the maritime sector involved in the ship operations and training whether: Crew Managers, Ship Managers, Ship Owners, Agents and staff of Government Administrations, as well as training providers, and Vetting Inspectors and Auditors.

Partnership

The expertise underpinning this Leonardo da Vinci transfer of innovation project is drawn from a trans-national partnership of seven European organisations that are all experts in their own fields.

**Description:** Today on board latest art design tonnage ship's officers are facing more challenging software integrated in workplaces then ever before. To assure safe navigation of a ship it is of paramount importance that each equipment unit is operated properly to utilize the full scope of complex computerised systems for various applications and activities. Only if the correct and efficient handling of said bridge equipment by the officer on watch is assured, the the safety of the ship can also be assured. Although the task sounds simple safe carriage of the cargo, the safety of life of passengers and crew on board, but also the prevention of any pollution of the environment depends on this task and therefore plays an important part – in all worth up to 500 million Euros per unit. Therefore any substantial approach to enhance reliable usage of watch-keeping devices is of utmost importance. This goal is paramount to minimise the risk of human failure and this project would provide a valuable contribution for more safety at sea and improved navigation in ships.

Unfortunately it is a fact that navigational watch officers too often are not fully familiarised with the computer based applications they will be faced with on board . Certainly e.g. ECDIS and AIS and various radars are areas of potential major disaster in case officers not understanding fully the operational abilities, limitations and pitfalls of subject integrated electronic systems.

This unfamiliarity is caused on one hand by the widespread number of different computer systems available on the market for the same appliance. For example at present more than 20 well known manufacturers offer about 30 radar equipments with different interface layouts. But maybe the officer concerned has received type specific training during his vocational education on only one or two systems. Once send on board the hand over time with his predecessor is limited in most cases at best a day or even less before the reliever will be in full charge for the vessel when on watch and at sea.. In case he is confronted with new equipment means that he is probably and most likely not fully familiarised with the radar, communication, navigation, safety or any other bridge equipment - to carry on this example.

On the other hand it is not only difficult but also fairly cost intensive and time consuming for the navigational officer to pass such essential training needed somewhere ashore, although numerous training centres offer console training . To find exactly that one matching the installed onboard units - when existing at all – will be very difficult. Employers judge such attendance training unattractive when considering time, efforts and expenses necessary to sent designated officers from various parts of the world to the training venue during shore leave.

The problem of deficient detail knowledge in complex computerised bridge navigation systems and the interaction of such devices when combined to complex information system has also been addressed by the International Maritime Organisation (IMO) in its MSC circular 1061. A similar result has been reported by the Finnish Maritime Administration in its study "improving co-operation on the bridge".

The objective of the project presented herewith is to advance classical CBT tools and

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knowledge management systems to a competence verification and training interface exactly copying and integrating the desktop structure of the navigation console in question. A PC tool was developed which is not a modified copy of the original application software but an autonomous applet mirroring certain screenshots of the application with a selected pre-defined operability. The competence verification and training tool is completed by tutorial explanations / animations to illustrate the operation of the relevant control elements. Because trainees can learn directly on the console's graphical interface the impart knowledge can be transferred immediately one-to-one to the real equipment and the real situation which can be seen as an innovative learning method.

The problem owners and the industry face today is an accelerating transition of cognitive knowledge to inherent experience. In other words how to make the untrained and inexperienced perform better in a shorter period of time. When looking at the training module of the competence tool to be developed, ship owners, recruiting agencies and other employment outlets for selecting ship's officers could provide the seamen in question with a computer assisted tailor made instruction tool developed to meet the specific training needs. The training tool is not only aimed to foster the acquisition and use of necessary skills to facilitate the officer's professional development but also to make such training more cost and time efficient and through this approach also more attractive and beneficiary for the target group of employers / training establishments.

For those who are already familiar with the handling of the navigation console installed, the proposed training system offers a competence verification feature. Here officers can perform an assessment session generated by the training software and provide recorded evidence that the examined officer showed sufficient qualification for subjected bridge duties. This additional proof is an essential requirement within the international certification requirements as laid down by the IMO.. by means of the competence verification feature of this proposed tool also skills in console operations acquired by non-formal learning (learning by doing) can be authenticated.

From the above explanation at least three fields of usage can be deduced:

For employers it is a request to ensure that the crew is properly qualified for its duties. Thus for bridge officers the verification feature of the competence tool can be used in this respect to provide the necessary evidence.

Again employers are legally responsible (STCW '95 Reg. 1/ 14) for permanent advanced training of the crew. Through the proposed system they can assist the nautical officers to familiarise with the console handling before commencing the voyage as it is stipulated in STCW '95 reg. 1/6 independent from time and place.

When installed on a computer on the bridge (or even running parallel on the same computer as the application software) the officer on watch has an immediate HELP system on hand.

In order to best configure and implement the competence tool first of all a general marked analysis was undertaken to highlight pro and cons of existing CBTs (WP 1). In a next step requirements of the target groups were identified, regulatory frameworks analysed and conclusion on the product specification drawn (WP 2). Before realising a theoretical model and description of the tool structure was set up (WP 3) followed by an international workshop to learn also from other experts (WP 4). Once the competence tool has been prototyped (WP 5) a test run was commenced to evaluate the results with set objectives (WP 6). Finally the outcome was disseminated at a project conference in London (WP 7).

The project is supported by a competent partnership which has demonstrated its ability to manage especially marine related projects already a few times in the past and one of the projects has won the Latvian national LdV awards and was presented as a "success story" at the Maastricht EU Exhibition in 2004. Bound by the project are

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partners from maritime vocational institutes, the Seafarers' Union as the social partner, well established SMEs and reputable research facilities as well as one of the world's leading shipmanagement companies providing sustainable impact to the project.

When it comes to the impact of the project the overall effect should be mentioned first: Without doubt it makes a contribution towards safer shipping and it reduces the risk of accident and collisions often resulting in serious environmental damages. On the personnel aspect the proposed learning methodology assists ship officers to enhance their professional knowledge and keep pace with today's market demands regarding sustainable employment.

- Themes: \*\*\* Lifelong learning  
 \*\*\* Recognition, transparency, certification  
 \*\*\* Vocational guidance  
 \*\* Labor market  
 \*\* ICT  
 \*\* Open and distance learning  
 \* Access for disadvantaged
- Sectors: \*\*\* Transportation and Storage  
 \*\* Education  
 \* Professional, Scientific and Technical Activities

Product Types: CD-ROM  
 evaluation methods  
 open and distance learning  
 transparency and certification  
 website  
 modules

Product information: Ultimately the completed project delivers exhausting reports on the present maritime CBT aids, the special user needs and a deduction from the innovative theoretical structure of the competence tool which all leads to the production of a PC based competence verification and training software.

We are certain that the final product of the project produces a competence tool enabling ship's officers to readily upgrade and/or document their bridge control competences prior to joining the vessel which in turn will lead to less human errors on board and thus enhance professional development of beneficiaries.

Projecthomepage: [www.marine-knowledge.net/safebridge/](http://www.marine-knowledge.net/safebridge/)

## Project Contractor

Name: Liepaja Marine College  
City: Liepaja  
Country/Region: Latvija  
Country: LV-Latvia  
Organization Type: university/Fachhochschule/academy  
Homepage: <http://www.ljk.lv/page.php>

## Contact Person

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Homepage: <http://www.ljk.lv/page.php>

## Coordinator

Name: MSG MarineServe GmbH  
City: Hamburg  
Country/Region: Hamburg  
Country: DE-Germany  
Organization Type: SME - small and medium-sized enterprise (up to 250 employees)  
Homepage: <http://www.marineserve.de>

## Contact Person

Name: Prof. R. Becker-Heins  
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Homepage: <http://www.marineserve.de>

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## Partner

### Partner 1

Name: Hochschule Bremen  
City: Hanseastadt Bremen  
Country/Region: Bremen  
Country: DE-Germany  
Organization Type: university/Fachhochschule/academy  
Homepage: <http://www.hs-bremen.de>

### Partner 2

Name: Nautical-e Consultancy (NAUTEC)  
City: Riga Latvia  
Country/Region: Latvija  
Country: LV-Latvia  
Organization Type: research institution  
Homepage: <http://www.nautec-consult.lv>

### Partner 3

Name: Entra Agentura  
City: Riga Latvia  
Country/Region: Latvija  
Country: LV-Latvia  
Organization Type: SME - small and medium-sized enterprise (up to 250 employees)  
Homepage: <http://www.entra.lv>

### Partner 4

Name: Marine Information Ltd  
City: Horsham-Wesat Sussex  
Country/Region: London  
Country: UK-United Kingdom  
Organization Type: SME - small and medium-sized enterprise (up to 250 employees)  
Homepage: <http://marine-info.co.uk>

## Partner

### Partner 5

Name: Bernhard Schulte Marine Training Centre  
City: Limassol  
Country/Region: Kypros / Kibris  
Country: CY-Cyprus  
Organization Type: continuing training institution  
Homepage: <http://www.bsm@traing.cy>

## Events

### PROJECT VALORISATION at Intern. Digital Conference Ship&Machinery&Environmrnt Hamburg

Date 10.09.2010

Description "It is a matter of prime importance that the products of the Leonardo da Vinci programme are not confined to the archives, that project outcomes find their way into mainstream practice and that the lessons of the programme are transferred into policy development. For more details pls refer to  
 ? www.safebridge.eu  
 ? Presence on EU site  
 ? Project Reports available from the web site  
 ? Email news shot to Workshop Attendees  
 ? International Conferences  
 ? E-press release  
 ? Press conference and exhibition stand at SMM in Hamburg, Germany

Target audience International shipping community, maritime hardware and soft-ware developers. maritime industry, Shipowners, shipmanagers, maritime academies and colleges as well as marine training centres

Public Event is open to the public

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Time and place Hamburg , Digital Conference for Ship/Engine and the Maritime environment. September 8-10

### SCM and Public Releases

Date 08.09.2010

Description detailed progress reports and information on pilot project Limassol 11 Nov.2009 Synopsis on status, Vienna 19/March 2010 schedule of present work progress also first >demo. safebridge.net< regarding use of ECDIS and reference to <www.pcmaritime.co.uk> and Hamburg 10 Sept 2010

Target audience european maritime employment and training establishments, shipping industry and related working environment

Public Closed event

Contact Information webpage < safebridge.net>, www.safebridge.eu> and for correspdce/inf< admin@getquality.net

Time and place at 2-3 mothly intervals between 2009 Nov and Sept 2010 at various location-Limassol, Vienna, Hamburg

## Events

### International Work Group Assambly

Date 18.06.2010

Description SAFEBRIDGE-LIEPAJA MARITIME COLLEGE 18th June 2009  
Introduction Captain U.E. Zellmer,  
Chairman Steering Committee  
L a d i e s and G e n t l e m e n ,  
A warm welcome to the Maritime College and thank you accepting our invitation  
Zirznigie Svezinatie –Dobro Pojaalovat  
A special thank you goes to our promoter the JLK under their director Ivars Virga and his staff  
for having arranged this meeting. A similar and deep felt appreciation goes to the National  
Agency of the European Union and here not only to their director Ms. Dita Traides but  
similarly to Ms. Dagnia Dilane as head of the Life Long Learning projects under the Leonardo  
da Vinci heading and our project supervisor Ms. Ilze.

Target audience The recruiting and employment market of sea-going personnel of Latvia, the maritime  
administration, respective social partners and least but not least the sea-faring community.

Public Event is open to the public

Contact Information WP4, SCM4, LMC-director I.Virgas/Slava Jurins

Time and place Lirepja Maritime College, Liepaja Latvia, 18th June 2009.