

The MarTEL Plus ICT System

Tomaz Gregorič¹, Reza Ziarati², Martin Ziarati³

¹Spinaker d.o.o. (Slovenia), ²TUDEV (Turkey), ³Centre for Factories of the Future (United Kingdom)
tomaz.gregoric@spinaker.si, martin.ziarati@c4ff.co.uk

Abstract

MarTEL and MarTEL Plus are transnational projects in the field of English language testing for the maritime industry, funded by the EU Leonardo Lifelong Learning Programme. The MarTEL tests (Maritime Tests of English Language) are designed to assess the English language proficiency of cadet officers, officers and senior officers. The tests are available in four stages: Phase 1 for cadets, Phase 2 for junior officers, Phase 3 for senior officers, and Phase R for ratings. MarTEL tests are computer based, online tests, implemented using Moodle and Flash. The MarTEL Plus is a continuation of the earlier MarTEL project and will bring new features to it, including a mobile phone application to provide practice tests, and an enhanced oral evaluation with an accompanying ICT application for storing interviews and facilitating the grading of candidates. This paper provides an overview of the MarTEL and MarTEL Plus products, and describes how the project consortium has developed an efficient system for transferring technical specifications between the test designers and software developers.

1. Introduction

The existing MarTEL project contains three different phases: Phase 1- Cadet level, Phase 2- Officer level, Phase 3- Senior Officer Level.

Encouraged by the generous feedback and huge interest generated by the MarTEL project, the project partners were eager to extend and improve the e-learning tool by adding new functionalities in the MarTEL Plus project. MarTEL Plus project complements standards implemented in previous project by implementing Phase R, for Ratings. As a result the MarTEL Plus project contributes in eliminating the gap in Maritime English Education.

The new approaches through the MarTEL Plus project, such as: mobile phone application to provide practice tests, enhanced oral evaluation with an accompanying ICT application for storing interviews and facilitating the grading of candidates and set of teachers guidelines for all MarTEL standards, will make Maritime English tests platforms much more constructive.

The MarTEL and MarTEL Plus respond the International Maritime Organisation's (IMO) regulations.

More about the MarTEL and MarTEL Plus projects can be found at their official web site <http://www.martel.pro/>.

2. Pilot tests and teaching materials

Teaching materials and tests for all three levels for MarTEL project have been completed. The work on the final list of MarTEL Plus tests and learning materials are at a very advanced stage. A summary of each phase of the MarTEL projects is as follows.

2.1 MarTEL project

Phase 1: This phase is designed for entry on to merchant navy cadet officer programmes for both deck and engineering cadet officers.

Phase 2: The second phase is split into two parts. One test is for Deck Officers and the other is for Marine Engineers. This phase is designed for candidates at Officer Level.

Phase 3: The third phase is also divided into two parts. One test is for Senior Deck Officers and the other for Chief Engineers. This phase is designed for candidates at the Senior Officer Level.

All these phases have study guidelines to prepare the test takers for the test.

2.2 MarTEL Plus project

Phase R: This foundation phase is designed to assess Ratings Maritime English level. It will provide them the opportunity to improve their qualifications and become officers in the future. A study guidelines will also be produced for this phase test.

Enhanced Oral Test: All phases are enhanced by two-tier system for the assessment of the speaking skill. This system will consist of the current MarTEL test and a separate enhanced oral exam which will be assessed through a one-to-one session with a qualified examiner.

Teachers Guidelines: Each Phase of the Project will have a comprehensive package to help teachers prepare their students and for students to prepare themselves for the Phase test. This comprehensive package will include teacher's guidelines, study guidelines, mobile application and number of other resources to support the test taker.

Mobile Application: The mobile phone application is an innovative solution which would allow hosting the mobile phone practice test. These practice tests will be accessible through most internet enabled mobile phones. It will be possible to use this application offline, so that it will provide the opportunity to use the content while away at sea.

Quality Management: The quality management involves evaluation of all MarTEL Plus products by partners, the steering committee and the external evaluators. The products will be evaluated internally as well as by at least one external evaluator. A report on the evaluations will be disseminated to relevant industry and academic bodies for accreditation of the MarTEL Plus products.

2.3 Other facts

All the MarTEL and MarTEL Plus materials are in English and are based on the language used in actual situations on board ships and in ports. The materials will be extensively evaluated and tested by the advisory project partners and external evaluators.

The MarTEL projects teaching materials can be used in a classroom, in distance learning and for self-study purposes. The MarTEL Plus system will be fully functional and available to use in the autumn of 2012, whereas MarTEL tests are already available.

3. E-learning and e-assessment

The experience of our partners in maritime education and training has provided a supplementary value to the projects. The partnership intends to support the development of e-learning and e-assessment very, which have been assigned to two leading partners involved in such developments. As a result, increase of the existing interest in the project and its dissemination is expected to develop further. The

partnership is convinced that plans to link the e-platforms to the website and Internet portals holding the test materials and providing the connection to other database would significantly enhance the opportunity of wider audience within the stated target groups. The role of Leonardo's programme support is essential to this project. This programme has encouraged the partners to come together in a precious cause and innovatively transfer the existing knowledge and experience from previous projects to current MarTEL and MarTEL Plus projects.

4. Marking

A computer system for marking the tests is being used. This system is accessible to all graders and markers. A number of multiple choice questions are given to test takers in a phase test. This enables the test to be marked quickly and effectively. However, some subjective gradings are inevitable for the writing and speaking tests.

It is important for the markers and the graders to have a common marking framework to ensure assessment is reliable and valid. Appropriate language test construction and evaluation procedures are in place.

5. ICT used in MarTEL

Once technical specification including all recommendations and requirements were delivered by MarTEL test designers, project partners responsible for software development had to make a decision which information and communication technologies to be used. During their decision making process they have been considering also the following: current available technologies, available open source applications and finally also limited resources.

In the Fig. 1 are shown information and communication technologies used in MarTEL. They can be easily separated on the server side and two different client sides, e-assessment and e-learning/m-learning.

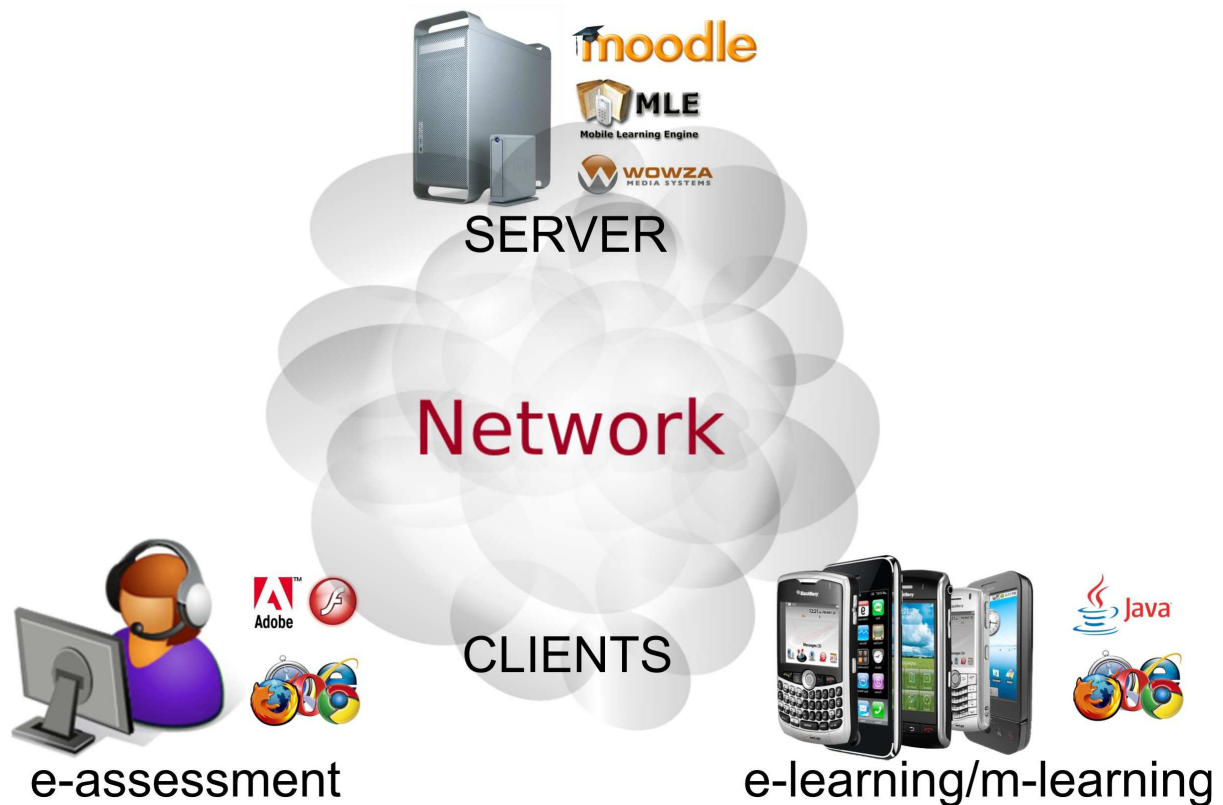


Fig. 1: ICT used in MarTEL

5.1 Server

Currently just one server is used which handles all MarTEL needs. The enhancement is not envisaged. On the server side, widely used applications/technologies are mostly used.

Moodle [1] is an Open Source Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It has become very popular among educators around the world as a tool for creating online dynamic web sites for their students. Moodle currently runs on more than 55.000 registered sites and it is used by almost 45.000.000 users. In MarTEL, Moodle is used as a learning management system. It enables to store all tests, study guidelines, practice tests, other learning material etc. for users of different levels/roles for several test attempts. So, Moodle is used as the only source where any information used for MarTEL is stored. It is directly used by test designers, graders and secretaries. Just few Moodle modules/activities were altered on the level of the source code in php to fit the MarTEL requirements.

MLE [2] is a plugin for Moodle, which adds mLearning functionality to it. The mobile learning area can be accessed with the mobile phone browser or with a special mobile phone application, which is designed for mLearning. In MarTEL, MLE is used to enable mobile access to practice tests and study guidelines. It is directly used by test designers only. Just few Moodle modules/activities were altered on the level of the source code in php to fit the MarTEL requirements.

WOWZA Media Server [3] is proven, industrial strength media server for streaming video/audio content, video/audio/text chat, recording, and RIA. It takes your H.264 video to any screen - the desktop, mobile and the living room - for unified streaming on all popular media platforms including Adobe Flash. In MarTEL, Wowza is used to record spoken answers within the speaking skill testing. It

is not directly used by any user but just as a link between client MarTEL e-assessment application through which spoken answers are recorded and Moodle where recordings are stored as test attempts.

5.2 E-assessment client

All MarTEL Tests including Enhanced Oral Tests, can run on any client computer on any web browser with Flash Player plugin and headset (headphones combined with a microphone) connected. So, the client computers are used for the e-assessment. Client computers are connected with the server side applications/technologies during the e-assessment. Almost unlimited number of client computers can run simultaneously. On each e-assessment client runs only one e-assessment application which has been fully developed within the MarTEL projects. It runs in a web browser.

The e-assessment application has been developed with **Adobe Flash Professional** [4].

When a test-taker enters the e-assessment application a connection with Wowza media server is established, test-taker is asked to allow the access to the microphone and finally he has to adjust microphone and speakers volume. Then the application acquires the whole randomly generated test from the pool of questions available in the Moodle database (questions are separated to language skills). At the end of each part, the test answers are sent to the Moodle database and stored there as test attempts. Within the speaking skill section spoken answers are recorded using Wowza media server.

In Fig. 2 is shown a part of the reading skill section of MarTEL Phase 1 test.

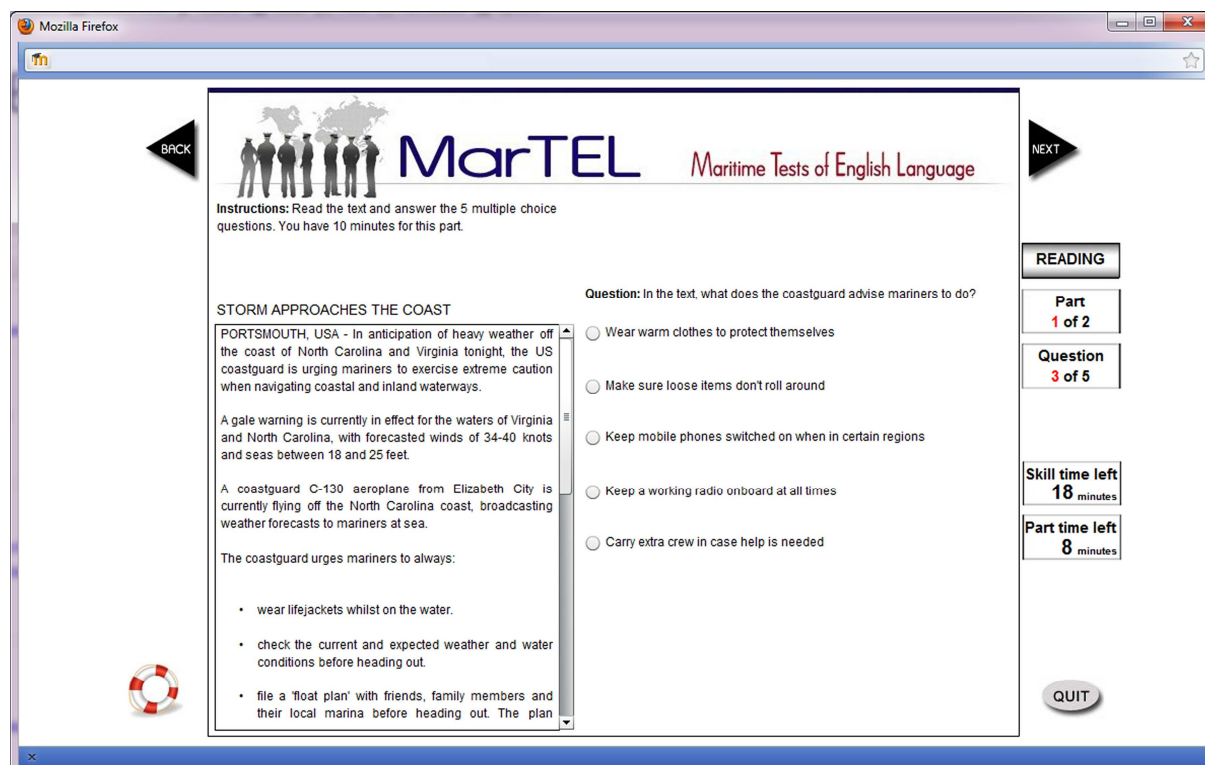


Fig. 2: MarTEL test screenshot

5.3 E-learning/m-learning client

All MarTEL resources that are available at Moodle except MarTEL tests, can be accessible using mobile devices of almost any kind.

Study guidelines and practice tests for all MarTEL tests and possibly some other additional resources will be available in such way. Currently study guidelines and a practice test for MarTEL Phase 1 are available.

Mobile access to the resources in Moodle is available in two different ways. Both of them are using MLE plugin for Moodle.

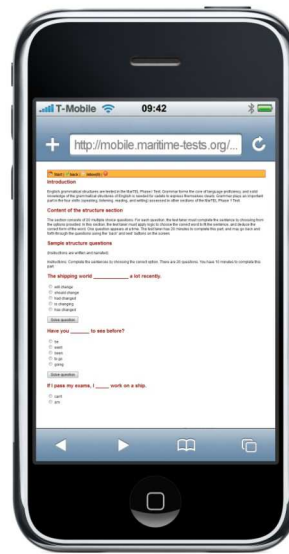
Application access: On any mobile device having J2ME [5] Java support it is possible to install special Java Application. The main advantage of using access through special application is the possibility to store content on a device while being connected to the network and to use it also while being disconnected. This is very suitable for seaman when they are at the sea as there is no internet connection available or it is just too expensive to use satellite services. Special application can be installed on any mobile device that runs on Symbian or Blackberry operating system.

Browser access: It is available on any mobile device with enabled web browser access. Resources are automatically converted to fit the size of the device screen before they are delivered to the device through the network. Devices that runs on Andorid, iOS, Windows mobile and other operating systems are supporting only browser access.

In Fig. 3 is shown a practice test for MarTEL Phase 1 which is a part of study guidelines for MarTEL phase 1.



Application access
 on Nokia 2700



Browser access
 on iPhone

Fig. 3: MarTEL mobile resources screenshot

6. Conclusion

MarTEL and MarTEL Plus projects are based on dedicated multi platform ICT which enables them to efficiently contribute to eliminating the gap in Maritime English Education. Currently most advanced and most used information and communication technologies are used to enable test-takers smooth e-assessment/e-learning/m-learning and to enable all other users quick familiarization with the system. Most of the MarTEL Plus system features has been piloted already and no major deficiencies were discovered. The MarTEL Plus system will be fully functional and available to use in the autumn of 2012.



The technical solutions used in MarTEL Plus system can be transferred also in other industry sectors or in foreign language learning in general, in particular where Moodle is already used as a pool of questions.

7. Acknowledgments

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