International Workshop on Global e-Navigation Test Bed

1. Introduction

For the promotion of global e-Navigation test bed research and development (R&D) activities, Korea Institute of Ocean Science and Technology (KIOST) has organized an international workshop on global e-Navigation test bed.

As it is well known, during some of e-Navigation projects, new concepts and technologies have been suggested as solutions for e-Navigation. Several test beds have been established to validate them. As far as now, those test beds remain just at domestic level or regional level. Navigation is, however, basically at global level.  This means that a global e-Navigation test bed is necessary for better validation of the new concepts and technologies.

The workshop aimed to give an opportunity to attendances for sharing and exchanging their ideas on how a global e-Navigation test bed can be established and what is required for that. The workshop was held at MOERI/KIOST in the city of Daejeon in Korea on 12th September 2013.

The workshop opened with an opening address by Dr. Sun Young KIM, the workshop chair, and a welcome by Dr. Sang-hyun SUH, the Director General of MOREI/KIOST, followed by a keynote speech by Mr. Sunbae HONG of Ministry of Oceans and Fisheries of Korea.

Following the keynote speech, seven distinguished presenter delivered valuable presentations on: (1) e-Navigation R&D activities, (2) e-Navigation test beds, and (3) usability and human centered design (HCD) for e-Navigation. Here is the list of presentations.

* “Maritime Safety Research toward e-Navigation” by Prof. Jung Sik JEONG
* “e-Navigation Test Bed in the North Sea Region: ACCSEAS” by Dr. Alwyn WILLIAMS
* “e-Navigation Test Bed in USA and CANADA” by Prof. Lee ALEXANDER
* “e-Navigation Test Bed for Korean Waters” by Dr. Hanjin LEE
* “Reporting of Results of e-Navigation Testbeds and a Focus on Usability” by Prof. Zhenjie LIU
* “Human Centered Design in e-Navigation” by Dr. Michelle GRECH
* “Maritime Cloud for e-Navigation: concept and test bed” by Mr. Thomas CHRISTENSEN

After presentations, there was a panel discussion on how we can start collaboration for global e-Navigation test bed. The workshop ended with the closing address by Dr. Sun Young KIM. Pre-workshop meeting on 11th September and post-workshop meeting on 13th September were organized as well for better results.

1. Discussions

There were three times of discussions: pre-workshop meeting, panel discussion, and post-workshop meeting. The discussants of each meeting or discussion are shown in the table below.

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| Name | Affiliation | Pre-workshop meeting | Panel discussion | Post-workshop meeting |
| Dr. Hanjin LEE | MOERI/KIOST, Korea | ✓ | ✓ |  |
| Dr. Michelle GRECH | AMSA, Australia | ✓ | ✓ | ✓ |
| Dr. Alwyn WILLIAMS | GLA R&RNAV, Trinity House, UK | ✓ | ✓ | ✓ |
| Mr. Thomas CHRISTENSEN | Danish Maritime Authority, Denmark | ✓ | ✓ | ✓ |
| Prof. Zhengjie LIU | Dalian Maritime University, China | ✓ | ✓ | ✓ |
| Prof. Lee ALEXANDER | Univ. of New Hampshire, USA |  | ✓ |  |
| Prof. Jung Sik JEONG | Mokpo Maritime University, Korea | ✓ | ✓ | ✓ |
| Mr. Kwang AN | Ministry of Oceans and Fisheries, Korea |  | ✓ |  |
| Dr. Jin Hyoung PARK | MOERI/KIOST, Korea | ✓ |  | ✓ |

The topic of discussion during the pre-workshop meeting was “Usability, Human-centered Design (HCD), and Software quality assurance (SQA).” Firstly, the decision of NAV59 on the topic was reviewed. Then the discussants agreed to the following:

* HCD and SQA fall into the category of a process while usability falls into that of an attribute.
* During the process of HCD and SQA, the usability attribute can be evaluated by a given methodology based on a guideline.
* HCD and SQA need to provide inputs for usability guideline.
* The guideline for usability evaluation needs to be linked to HCD and SQA.

The topic of panel discussion of the workshop was “How can we start collaboration for global e-Navigation test bed?” In addition to the panel discussion, the discussants extended their discussion on the same topic during the post-workshop meeting. By summing up the panel discussion and the extended discussion, the discussants drew conclusions as follows:

* Common platform would be a good facility.
* Facility for collaboration and global e-Navigation test bed is important.
  + Possibility of single global project with local funding should be investigated.
  + Bi-lateral funding possibilities need to be explored.
  + Combining test bed workshop with e-Navigation Underway conference
* Feasibility study on common platform should be conducted.
* Differences in R&D environment for e-Navigation such as national policy and funding capability are to be considered.
* Countries, which are unable to participate in the development process, should be involved in testing.
* Test bed guidelines should stretch from the planning through developing of test systems, to conducting actual sea-test up to the development of systematic reporting structures to increase comparability of test-bed results and allowing to detect the best candidates for implementation.
* Test bed guidelines should be linked to human centered design (HCD) process and software quality assurance (SQA) process.
* The test bed would give important inputs for the development of the Maritime Service Portfolio (MSP).

1. Action items

Based on the conclusions from the discussions, the discussant deduced the following five action items that were agreed as the first steps toward the global e-Navigation test bed.

* Conduct a feasibility study on the possibility of using a common platform for test bed
* Look into the possibility of conference of e-Navigation in Asia-pacific region, namely e-Navigation Underway Asia-Pacific
* Organize a test bed workshop before the next e-Navigation Underway conference, 27th Jan 2014.
* Establish an e-Navigation test bed network
* Submit the output of the workshop to CG of e-Navigation and IALA e-Navigation committee for information