Liaison Note to IMO e-Navigation Correspondence Group

**Preliminary Guidance on Harmonisation of testbeds**

# INTRODUCTION

The IALA e-NAV Committee has established a working group to deal with testbeds. One of the tasks of the working group is to develop guidelines for the harmonisation of testbeds. In keeping with the decision of NAV 58 (NAV 58/WP 6 Rev 1 para. 3.22), IALA has developed the following preliminary guidance on the harmonisation of testbeds.

# Action requested

The IMO CG on e-Navigation is invited to consider the preliminary guidance at Annex A and decide as appropriate.

* + 1. Preliminary guidance on e-navigation testbeds

# Background

The 58th session of the IMO Sub-Committee on Safety of Navigation (NAV 58, WP 6 Rev. 1 refers) agreed to the further development of guidelines for the harmonization of testbeds. Additionally, the e-Navigation Underway 2013 Conference (January 2013) identified a need for a body to coordinate the harmonisation of testbed results. The conference concluded that IALA could consider taking on this role and submit its results to IMO.

Testbeds for e-navigation applications have previously been set up (e.g. EfficienSea, BLAST etc.). Also, there are currently other testbeds established such as:

* ACCSEAS in the North Sea Region;
* ARIADNA;
* MONALISA; and
* Marine Electronic Highway in the Straits of Malacca and Singapore.

# e-navigation testbeds

The term testbed is used across many disciplines to describe a platform that is used for research, development or testing. Such a platform can be protected from a live (or production) environment. However, in the maritime domain, it is often necessary to conduct live tests with appropriate safety precautions in place.

In the context of e-navigation, a testbed is used to demonstrate / evaluate a proof of concept of one or more of the e-navigation solutions, systems and services. These testbeds may be established in a live or simulated test environment.

# Need for harmonisation of testbeds

It is important that the implementation and reporting of these testbeds are harmonised[[1]](#footnote-2) and their outcomes captured so that the e-navigation solutions that emerge can have global use. These preliminary guidelines have been prepared for discussion and will be subject to further development at IALA.

Testbeds will provide early implementation and user experience while the e-navigation concept continues to evolve. They will also allow early detection of areas of improvements or defects in intended system functionality.

It is evident that significant information on testbeds exists outside IALA; furthermore a number of testbeds are currently established. Noting this and the IMO requirement above, it is necessary to harmonise the testing of e-navigation solutions, systems and services.

At present, guidelines for the establishment of testbeds in the maritime domain are lacking. The e-Navigation Committee considers it important that guidelines be developed on testbeds.

# Scope and benefits of guidelines

Harmonisation of testbeds will increase the value of the e-navigation solutions being tested. IALA will develop guidance on the harmonisation of requirements and results of testbeds. This will include (but not be limited to) the following:

* identification of the need for a testbed;
* identification of similar testbeds;
* planning of a testbed;
* establishment of a testbed;
* developing of test methodology;
* conduct of trials and tests;
* analysis and validation of test results;
* reporting in a harmonised manner.

## Detailed Considerations

In addition to the above, IALA will take the following into account when developing its guidance.

### Planning of test-beds

When planning testbeds, e-navigation applications selected should be linked to the established user requirements and be aimed at the agreed objectives of e-navigation. Where possible, the applications should address identified gaps in the gap analysis.

### Services and architecture

Testbeds should align with the technical and operational services in the Maritime Service Portfolio and with the IMO e-navigation architecture.

### User involvement

Testbeds should involve users at every stage and focus on user needs - from planning, through implementation to assessment of results.

### Usability

IMO guidance on usability and human centred design should be taken into account, together with system quality assurance.

### Data Structures

Applications should (potentially) fit into the data model agreed for the development of e-navigation – the IHO S-100 framework.

### Information

Information on testbed progress should be provided on a website that can be accessed by all interested parties. In particular, information should be provided to IALA to be posted on its e-navigation web portal (<http://www.e-navigation.net>).

### Results

It is essential that tests meet an agreed standard which takes into account a structured, transparent, objective and repeatable methodology. Where the output is in the form of software tools, these may be open-source, with arrangements in place for collaboration, user feedback and improvement.

All results should pass quality assurance checks and should be made widely available.

### Reference to the IMO Strategy Implementation Plan

The details of the testbed, including the outcome and the lessons learnt (in the context of user needs, gap analysis and practical solutions of the IMO Strategy Implementation Plan) should be recorded.

1. The IMO Sub-Committee on Safety of Navigation (NAV) has emphasised that relevant or potential solutions from regional or national projects, e.g. MarNIS could be taken into account during the e-navigation development process. [↑](#footnote-ref-2)