Input paper: [[1]](#footnote-1) ARM8-10.9

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Workplan Task Number / Technical Domain 2 …………………………………

Working Group WG2 Information Services and Portrayal

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S-200 test bed project

# Summary

## Purpose of the document

The e-Navigation Strategic Implementation Plan reiterates the need for a Common Maritime Data Structure (CMDS) to support e-navigation and points out that it was agreed to use the IHO Geo-spatial Information Standard S-100 as the baseline for the CMDS. IALA S-200 Registry was established with the approval of IHO. IHO has approved IALA as a Submitting Organization and Domain Controller. IALA Product Specifications compliant with the IHO S-100 standard, use the numbering series S-201 to S-299.

IALA Domain covers Aids to Navigation (AtoN), Vessel Traffic Services (VTS), Positioning Systems, Communication Systems and AIS, ASM, VDES. Two Product Specifications are reaching maturity, S-201 – AtoN Information and S-240 – DGNSS Almanacs. Draft versions of these product specifications have been posted on IALA website for comment. More product specifications are under development or planned, including S-210, Inter VTS Exchange Format.

S-200 Product Specifications reaching maturity (S-201 and S-240) need to be finalised and their use needs to be promoted. This paper describes examples and major characteristics of an S-200 test bed and propose several recommendations in order to develop the S-200 test bed.

## Related documents

* IALA Guideline 1106 – Producing an IALA S-200 series product specification
* IALA Guideline 1087 - the Management of the IALA Domain
* IALA Guideline - Testbed reporting

# Discussion

## Overview of S-200 test bed

A testbed (also commonly written as ‘test bed’ in research publications) is a platform for trialling development projects. Testbeds generally involve rigorous, transparent and replicable testing of scientific theories, innovative solutions, computational tools and new technologies.

In the field of marine safety, e-Navigation testbed has been promoted. e‐Navigation testbeds allow for early identification and assessment of new system functionality, operational usability, areas of enhancements, identification of weaknesses and socio‐technical impact. Ideally, equipment developed as part of testbeds should be based on human‐centred design processes (e.g. MSC. 1/Circ. 1512), so that any operational usability issues are detected early. Testbeds should not be limited or restricted by current architecture, data structures or procedures.

Ideally, testbeds should be conducted in a controlled environment, so that they do not adversely affect real‐life situations, existing services and, more widely, maritime safety. Conclusions can be drawn for many aspects such as functionality, usability, feasibility and risk. As e‐navigation evolves from concept to operational reality, the importance of testbeds continues to grow.

Meanwhile, IALA is developing a number of S-200 product specifications;

* S-201 Aids to Navigation Information (Reviewing)
* S-210 Inter VTS Exchange Format (Planned)
* S-211 Port Call Messages (Ongoing)
* S-230 Application Specific Messages (Planned)
* S-240 DGNSS Station Almanac (Reviewing)
* S-245 eLoran ASF Data (Ongoing)
* S-246 eLoran Station Almanac (Ongoing)
* S-247 Differential eLoran Reference Station Almanac (Ongoing)

Since the S-201 AtoN PS is nearing maturity, test beds should be established to validate the usability of the specification.

## Example of web based Test bed project

A number of e‐navigation testbeds are already in place, trialling e‐navigation concepts. Additionally, there are a growing number of testbeds currently under development. A list can be found on the IALA e‐navigation web portal (http://www.iala-aism.org/technical/e-nav-testbeds/).

Among the e-Navigation testbed, Baltic web was developed to test the e-Navigation service. Stakeholders can access to the test bed freely (balticweb.e-navigation.net). BalticWeb uses the Maritime Connectivity Platform (MCP) in order to identify and retrieve relevant web services and identify users. BalticWeb was developed as part of the EU-funded EfficenSea2 Project.

BalticWeb is a maritime map-centric portal and a prototype. The site will aggregate relevant maritime data and information and allow access for users and services by utilizing the Maritime Connectivity Platform.

Services available for all

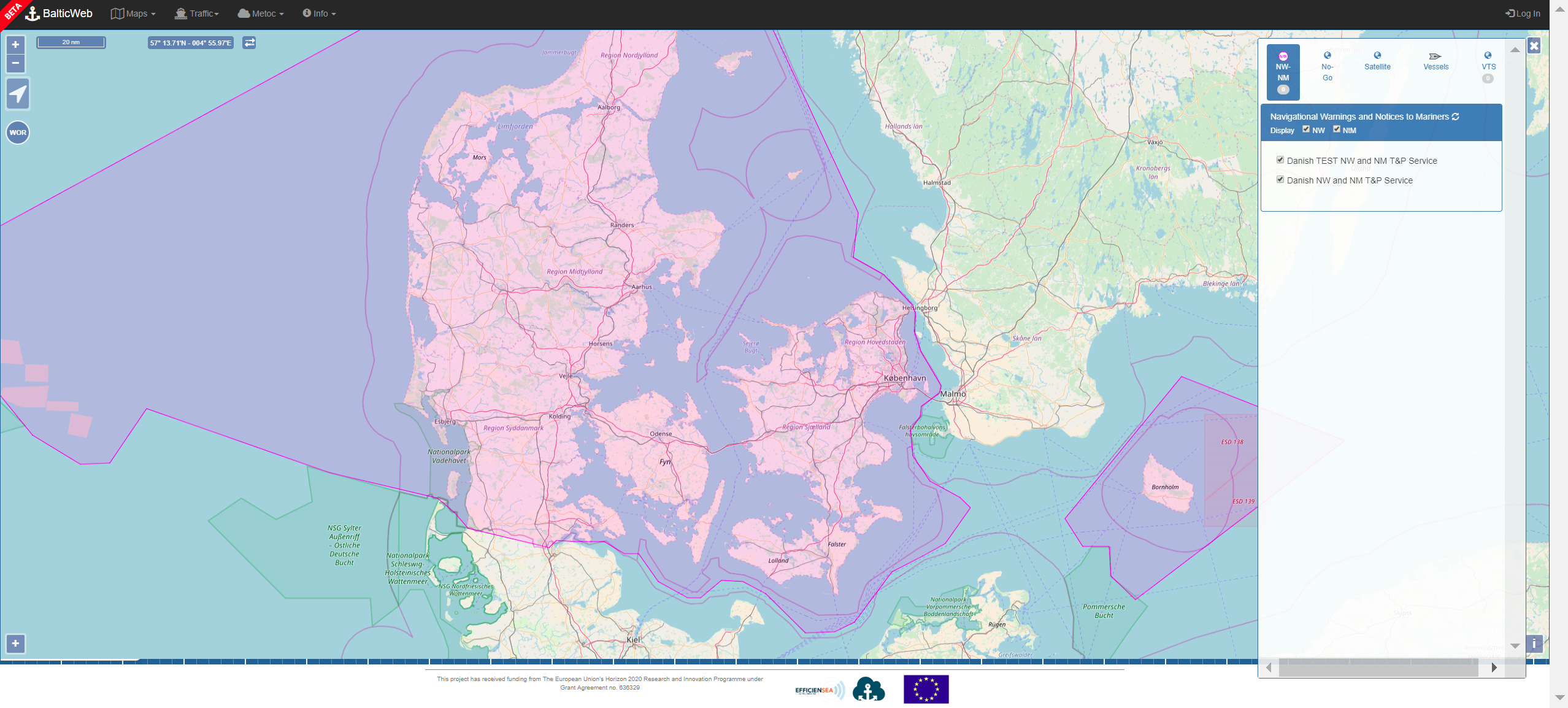
* Notices to Mariners and Navigational Warnings
* Simulated Route planning, optimization and exchange service
* OpenSeaMap.org overlay

Services requiring a MCP ID:

* Sea Traffic - Live Vessel position and information (AIS)
* No-Go area service
* Satellite imagery service from NASA
* Nautical Charts from the Swedish Maritime Administration and the Danish Geodata Agency
* METOC forecasts from DMI

BalticWeb is a prototype and it aims to serve the mariner in these ways:

* Assist in planning a sea voyage
* Navigational aid on a sea voyage
* Monitoring of maritime traffic



1. Baltic web (balticweb.e-navigation.net)

Similar with BalticWeb, the ArticWeb testbed has been set up in order to enhance safety of navigation in the Arctic. Danish Maritime Authority took the initiative to develop ArcticWeb. ArcticWeb is a web application that collects and presents relevant information to persons who are navigating the waters of Arctic regions. The information that is both static and dynamic is of relevance to both the authorities and shipowners who have ships navigating these areas. What is special about the web applications of ArcticWeb is that it collects relevant information into one package. ArcticWeb can be accessed at this web address; <https://arcticweb.e-navigation.net>. It is required to request access to fully utilize the services provided.

ArcticWeb can give you information about:

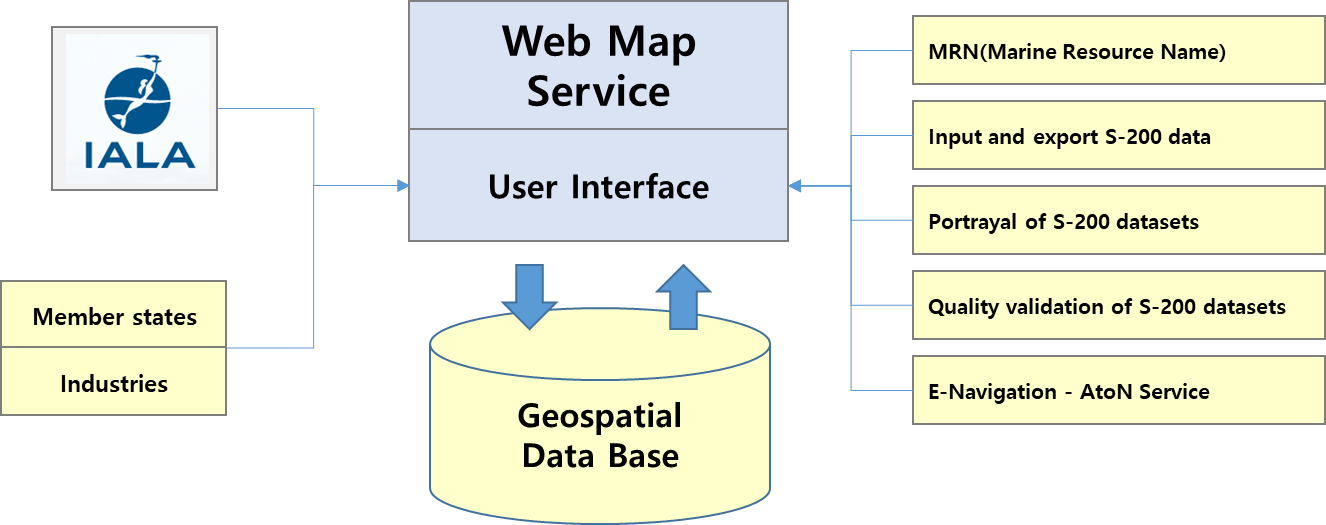
* Complete overview of other ships in the area (via AIS)
* Ice charts, satellite charts and prognoses
* Weather data, including weather forecast for planned routes
* Navigation warnings
* GREENPOS reporting and coast control
* Coordinated voyages through the exchange of routes and voyage plans
* Assistance tools
* Front page with general information

## Characteristics of S-200 test bed

S-200 test bed should be a platform to test the S-200 product specification and identify benefits and intended usages by member states and stakeholders. The major purpose can be summarized as follows;

* To test S-200 product specification and find hidden problems before releasing operational versions
* To find a benefit and intended usage
* To make a process of making operational
* To apply the MRN(Marine Resource Name) to AtoN domain
* To get AtoN information consumer involved

Like current web based e-Navigation testbed project, S-200 test bed can be developed based on web based system. Figure 2 shows an overview of an envisioned S-200 test bed system. The S-200 test bed should have a web map based user interface and be connected with a Geo spatial data base.



1. Concept of S-200 test bed

The test bed system can be used to verify the major topics of S-200 product specifications

* MRN (Marine Resource Names)
* Input and export S-200 data model
* Portrayal of S-200 datasets
* Quality validation of S-200 datasets
* AtoN information Service in terms of e-Navigation

## Proposed way forward of S-200 test bed project

In order to support IALA's development of the S-200 product specification and test the concept and contents, the S-200 test bed should be established and the following recommendations should be considered.

* Discuss a need of S-200 test bed
* Make a plan of S-200 test bed
* Consider the IHO S-100 test bed and e-Navigation test bed project
* Organize a Task group of developing the S-200 test bed
* Invite other IALA committees to consider this proposal

# Action requested of the Committee

The Committee is requested to:

1. Note this document

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Input papers should be assigned to a work task as listed in the Committee work plan which is available in input papers. Leave open if uncertain but consider how the paper is to be processed if not relevant to a work task [↑](#footnote-ref-2)