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Agenda item [[2]](#footnote-2) 12

Technical Domain / Task Number 2 Working Group 4 (Service)

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Progress and plan on the MSI service of SMART Navigation

## Purpose of the document

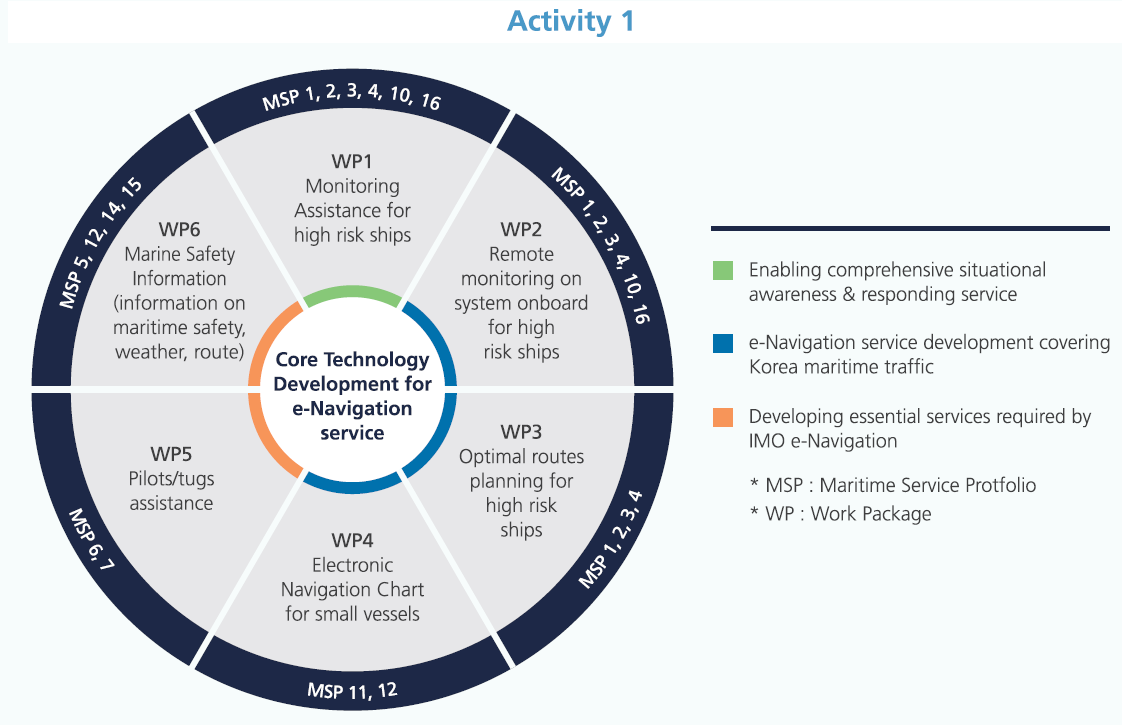
The SMART Navigation project has been promoted to prevent maritime accidents and improve the quality & efficiency of maritime transport while enhancing the quality of life for mariners at sea. The project tries to implement the concept of IMO’s e-Navigation, providing additional services for Non-SOLAS ships such as fishery boats, coastal vessels and ferries. The MSI service is one of important services in the SMART Navigation project. This document describes the progress and plan on the MSI service development of SMART Navigation project.

# Discussion

## Overview of SMART Navigation

The SMART Navigation was launched for safer navigation via wider connection. The project implements the concept of IMO e-Navigation as well as additional services for Non-SOLAS ships. The Project aims to improve the efficiency of maritime transport, contribute to IMO’s strategic implementation of e-Navigation and enhance mutual benefits of world maritime community via e-Navigation. The SMART Navigation project is divided into three activities, which consist of 13 work packages like the followings.

* Activity 1: Core technology development for e-Navigation service
* Activity 2: Developing e-Navigation operating system & digital maritime communication
* Activity 3: Harmonization with e-Navigation international standards



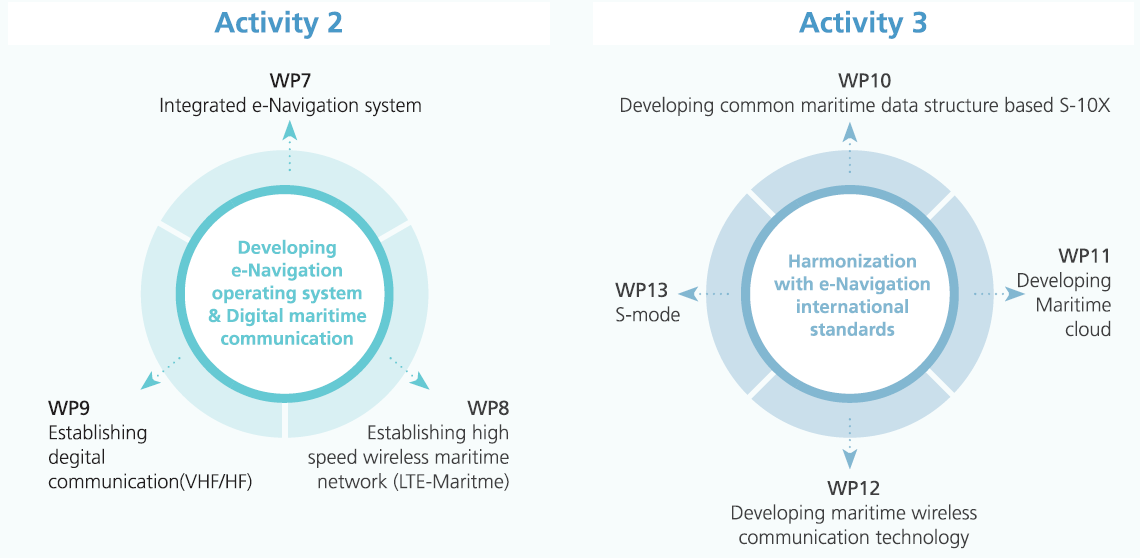


Fig. 1. Overview of SMART Navigation Project

## Major Characteristics of the MSI service in SMART Navigation

The MSI service is an internationally coordinated network of broadcasts of Maritime Safety Information from official information providers, such as:

* National Hydrographic Offices, for navigational warnings and chart correction data;
* National Meteorological Offices, for weather warnings and forecasts;
* Rescue Co-ordination Centres (RCCs), for shore-to-ship distress alerts; and
* International Ice Patrol, for Oceanic ice hazards.

The joint IHO/IMO/WMO Publication S-53 states that the Maritime Safety Information Service of the GMDSS is the internationally and nationally coordinated network of broadcasts containing information which is necessary for safe navigation, received on ships by equipment which automatically monitors the appropriate transmissions, displays information which is relevant to the ship and provides a print capability. The MSI service consists of Navigational warning, meteorological information and other urgent safety related information. The MSI service is a representative service of e-Navigation project and also belongs to the SMART Navigation project. The life cycle of MSI service can be summarised like Fig. 2.

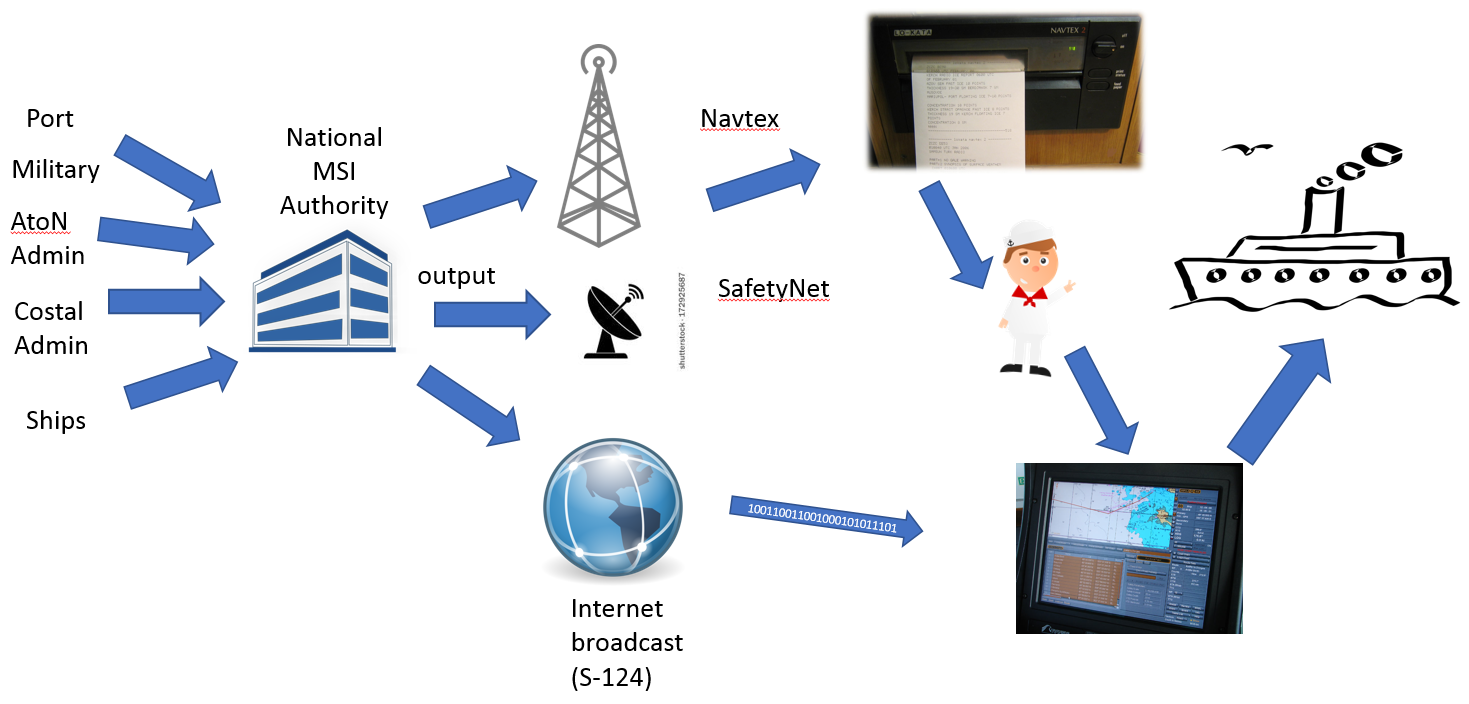


Fig. 2 The life cycle of MSI service

## Major progress

The research team investigated current status on the NATEX and SafetyNet service and surveyed the user requirement in 2016. According to the investigation results, the operation concept of MSI service was drafted like Fig. 3.

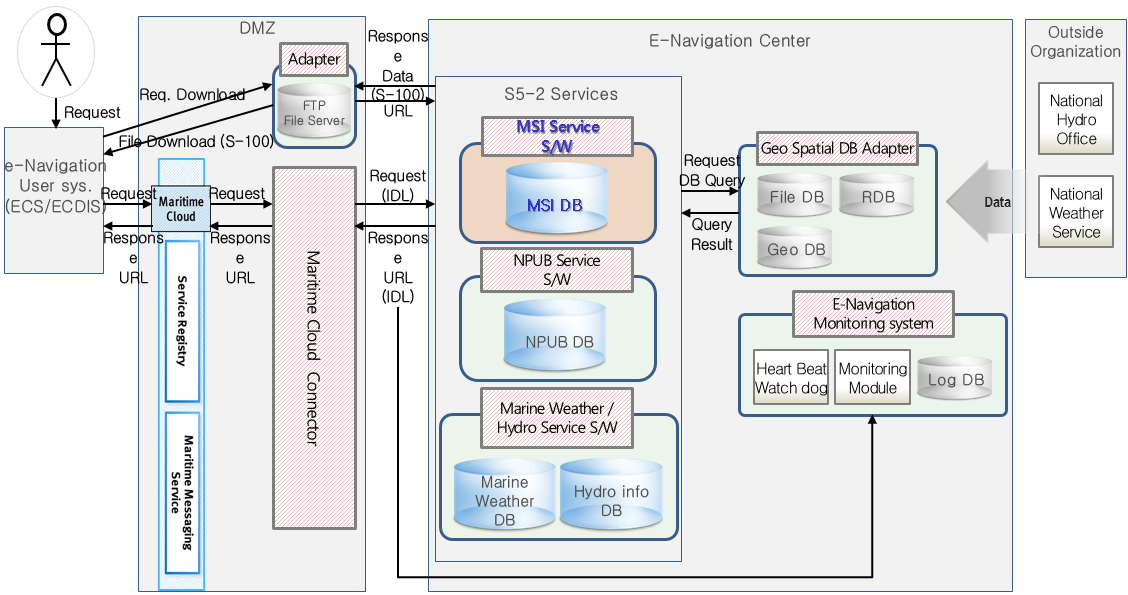


Fig. 3. The operation concept of MSI service in SMART Navigation project

With regard to the MSI data model, it’s decided to adopt the S-124 Navigational Warning data model, which was developed by the S-124 Correspondence group under the WWNWS-SC (World Wide Navigational Warning Service Sub Committee) of International Hydrographic Organization. The S-124 CG has been focusing in the modelling of the navigational warnings (NWs). Following the encoding exercise last year and the comments received, the model (dated 3 Dec 2015) has been explained in a better manner and the chair of CG worked out proposals to amend the draft S-124 model. These proposals were submitted to S-124 CG members. The replies provided various inputs, including backgrounds from the authors (Eivind Mong) and DMA’s contribution based on the NIORD implementation and tests.

The research team aims to develop a prototype of MSI service in 2017 and is developing core technology on querying the MSI messages from geo-spatial database and transfer S-124 NW GML datasets via the common infra-structure of SMART Navigation project. The common infra structure consists of LTE-M, Maritime Cloud, Information linkage S/W and Geo spatial database like Fig. 4.

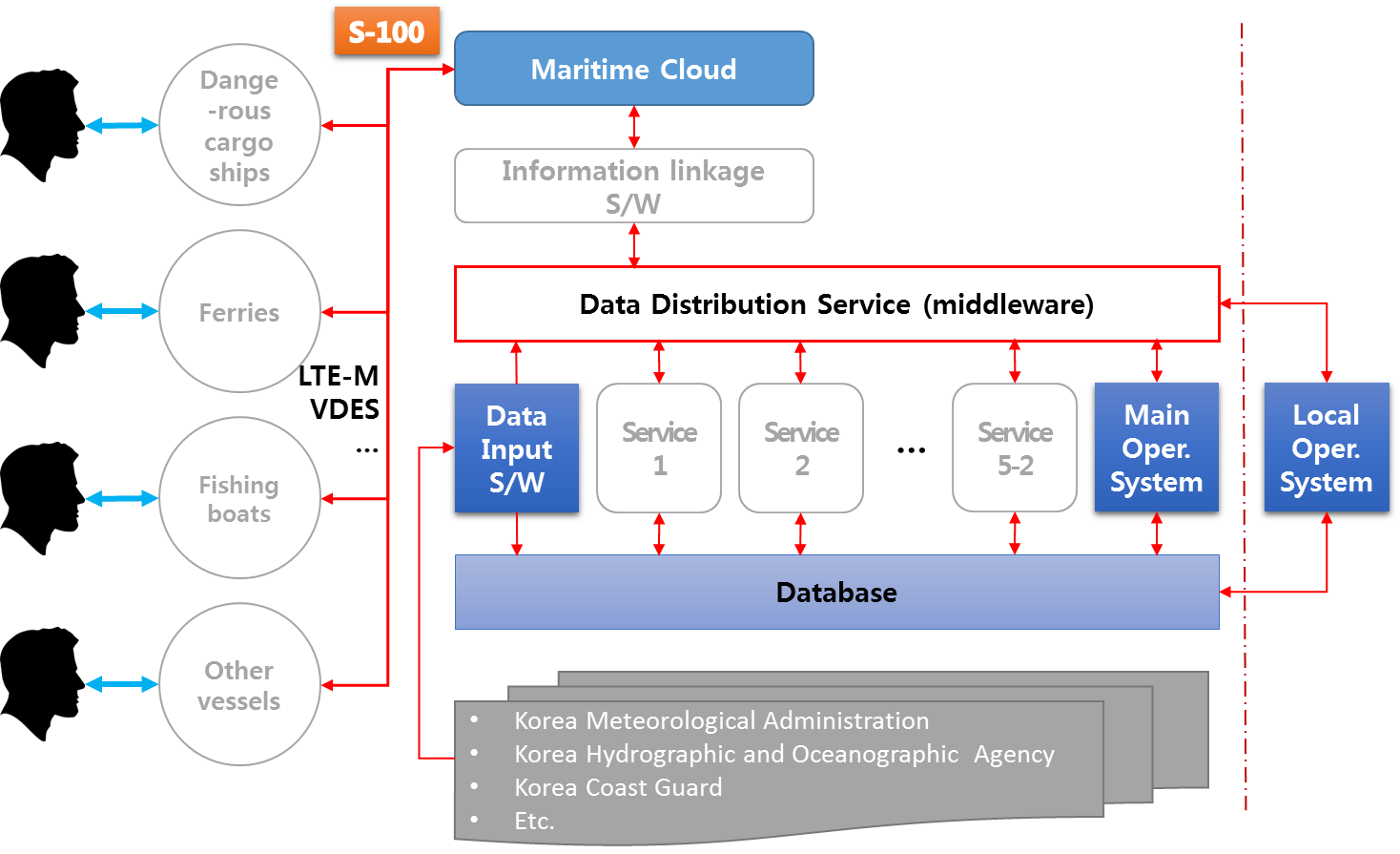
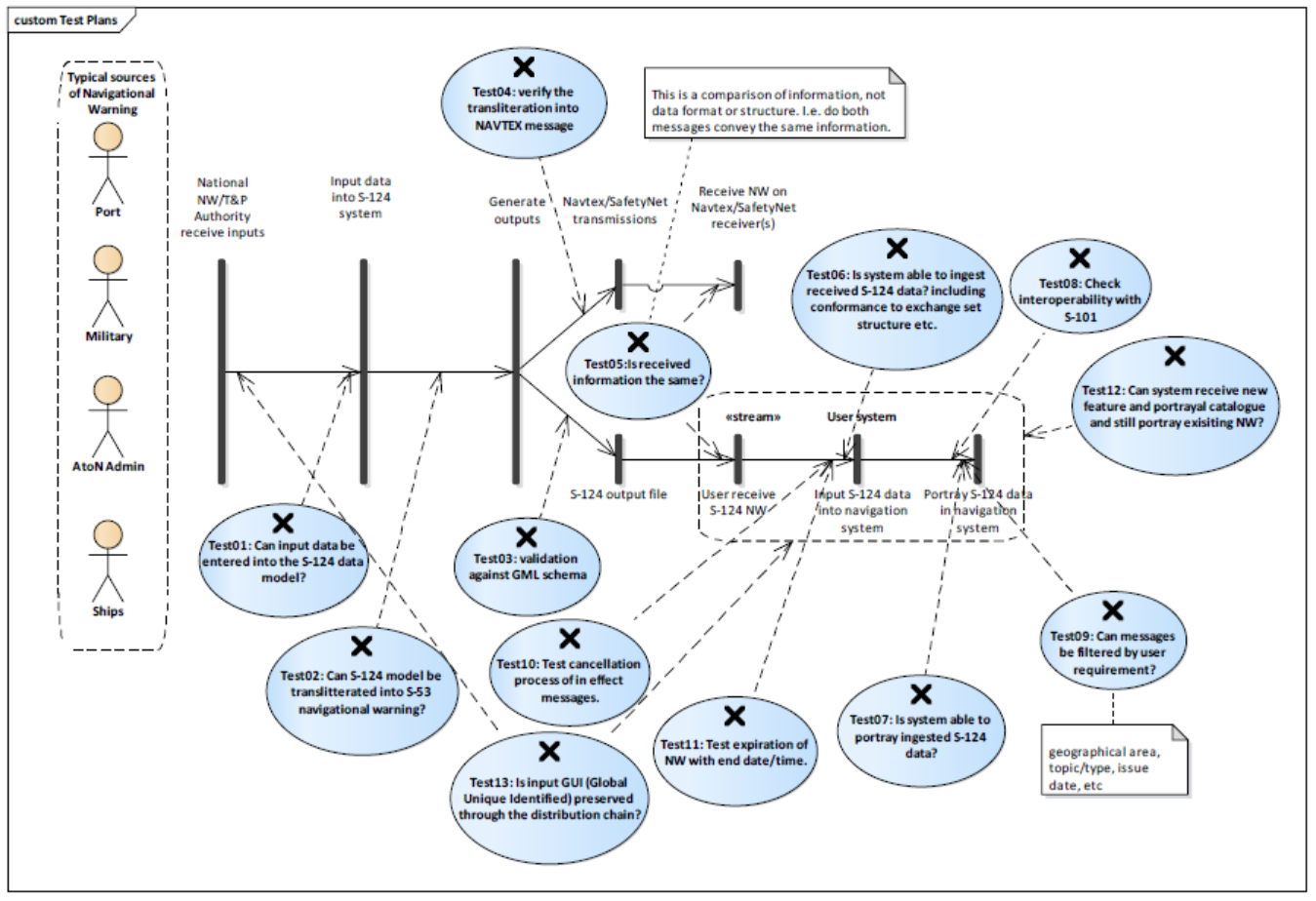


Fig. 4 Infra structure for operating SMART Navigation service

The research team is cooperating on the verification of MSI service based on S-124 NW data model. The S-124 test cases was identified and the cooperation group agreed to test below twelve process with NIORD of DMA and STM project team.



|  |  |
| --- | --- |
| Test # | Test description |
| 01 | Test input examples from various sources and ensure these can be entered into the S- 124 data model. |
| Test objective: This shall test the data model versatility |
| 02 | Test that S-124 data can be transliterated into S-53 navigational warnings to ensure backward compatibility and that system can support legacy outputs. |
| Test objective: This shall test that significant S-53 (legacy) items are supported in the data model so that S-124 data can be converted and broadcast in legacy issues. |
| 03 | Validate test data against the GML schema to ensure data corresponds to the GML structure and load data in COTS GML viewer. |
| Test objective: This shall test how well the data matches the GML standard. |
| 04 | Test that S-124 data can be transliterated into NAVTEX to ensure backward compatibility and that system can support legacy outputs. |
| Test objective: This shall test that NAVTEX output is supported by the data model so that S-124 data can be converted and broadcast in legacy issues. |
| 05 | Check that the information that follow the new S-124 path is the same as the information that goes the established S-53 (SafetyNet and NAVTEX) path. |
| Test objective: This is to validate the conversion to see that no significant information is lost between the various paths. This ensures that formatting of the NW/TP does not impact the information contained in the message. |
| 06 | Test that systems can ingest received S-124 data (including exchange set structure). |
| Test objective: This shall verify that the data is formatted as system expect |
| 07 | Test that S-124 data can be portrayed. |
| Test objective: This is to verify that the data can be viewed and portrays as expected in a system, including pick report. |
| 08 | Test that S-124 data is interoperable with S-101 data |
| Test objective: This is to verify that the data can compliment S-101 ENC and cause no conflict |
| 09 | Test that data can be filtered by use criteria like geographical area, topic/type, issue, date, etc. |
| Test objective: This is to verify that the data can be filtered to allow users to reduce information clutter. |
| 10 | Test cancellation process for in effect messages |
| Test objective: This is to verify that the cancellation process in S-124 works and that only the data that is to be cancelled is affected, leaving all other information un-affected. |
| 11 | Test expiration of NW/T/P with end date/time. |
| Test objective: This is to verify that S-124 data, that has an expiration date/time, will be terminated at the specified date |
| 12 | Test that system can receive new feature and/or portrayal catalogue and still portray existing NW/T/P. |
| Test objective: This is to verify that the S-124 product specification can evolve and not negatively impact existing data. |
| 13 | Test that input GUI (Global Unique Identified) is preserved through the distribution chain. |
| Test objective: This is to verify that the GUI can be preserved throughout the distribution chain for traceability |

## Future plan

The SMART Navigation project has a project management method named as Sprint, which has a period of time during which specific work has to be completed and made ready for review. The research team planned to be ready for testing the MSI service in terms of service operation in 2017 and the prototype will be improved continuously. The brief plan of MSI service development is like the followings;

* Phase 1: development of MSI service based on S-124 NW data model considering the common platform of SMART Navigation like maritime cloud, Information linkage S/W and Geo spatial database
* Phase 2: Test of MSI service based on S-100 ECS/ECDIS via LTE-M
* Phase 3: Expansion of service contents like marine weather warnings and forecasts and other urgent information above navigational warnings.
* Phase 4: Full scale demonstration of MSI service on the Platform of SMART Navigation

The SMART navigation project team will continue to report the progress of service development and hope to receive helpful recommendations from member states and stakeholders.

# Action requested of the Committee

The Committee is requested to:

1. Note the progress and plan on the MSI service of SMART Navigation project

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Leave open if uncertain [↑](#footnote-ref-2)