Input paper: [[1]](#footnote-1) ENG8-10.15

Please note that this task is to be carried out in conjunction with ARM Task 1.2.4.

Input paper for the following Committee(s): check as appropriate Purpose of paper:

**□** ARM **X** ENG **□** PAP **X** Input

**□** ENAV **□** VTS **□** Information

Agenda item [[2]](#footnote-2) 10

Workplan Task Number / Technical Domain 2 1.2.1

Working Group WG2

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Proposal to develop operation manual for AtoN Simulation System

# Summary

## Purpose of the document

Operation manual of AtoN Simulation System is requested to develop operation and management for the system. Related Guidelines are 1058 and 1097. IALA Guideline 1058 on the use of simulation as a tool for waterway design and AtoN planning is intended to be a high level, strategic document to assist Competent Authorities in understanding how simulation tools can assist in planning and implementing AtoN. IALA Guideline 1097 provide better technical guidance, supplementing Guideline 1058 and a collection of features that are important to consider when specifying the objectives of a simulation study for planning, research and testing of AtoN. This operation manual contains the contents of the definition of the configuration and specifications of the AtoN Simulation System for the AtoN simulator operation and management, definitions of term used in operating the simulation, consideration on the simulation plan to review the range and preference before the simulation, simulator operating procedure defined by the step-by-step execution procedure, processing procedure in case of failure. Also, contain the procedure of backup and way for protection the simulator system and data retention, consideration for documentation to simulation analysis and results.

## Related documents

* IALA Guideline No. 1058 on The Use of Simulation as a Tool for Waterway Design and AtoN Planning(Ed. 2, '11.6)
* IALA Guideline No. 1097 on Technical Features and Technology Relevant for Simulation of AtoN (Ed. 1, '13.5)

# Discussion

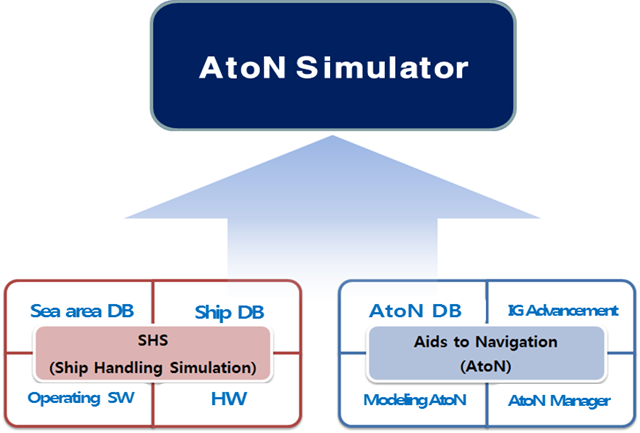
## Status of the AtoN Simulation System

Since the maritime safety accidents have increased due to the enlargement and high speed of the harbour and vessel traffic. In the world's major countries, it is strongly required to make sure to ensure the safety of maritime traffic in coastal waters ports. The technology of Aids to Navigation (AtoN) simulation system is an innovative technology that can completely change the paradigm of AtoN design and AtoN placement method. IALA also recommended the simulation system as a tool for the AtoN design and AtoN placement plan.

For this reason, AtoN Simulation System has developed based on ship handling simulator. An AtoN Simulation provides simulation environment, including the topographical and environmental characteristics of primary harbour, the characteristics of a navigating ship and the maritime traffic. AtoN are important in providing navigation information to ship. Previously, planning the distribution of AtoN was carried out using the experience of expert and marine chart. Recently the size of the ships, the vessel traffic and the complexity of the harbour area and the need for a scientific design technique for planning the distribution of AtoN are increasing.

The AtoN Simulation consists of ship handling simulator parts and AtoN operation parts. Ship handling simulation part consists of sea area DB, Ship DB, Operating SW, HW. Sea area DB and ship DB are simulation target area and target ship data. Operating SW and HW required for the ship handling and navigation.

AtoN part consists of AtoN DB, IG, modelling AtoN, AtoN Manager. The database stores the properties (type, specifications, colour, visibility of light, etc.) of the various AtoN the existing in Korea, AtoN Manager is database management software that allows users to easily modify and edit the database and intuitively checking in conjunction with simulators and systems. Advancement of the three-dimensional image can be identified intuitively a number of effects on the establishment and relocation of the AtoN, Modelling AtoN should look similar to the real in simulation.



1. Configuration Diagram of AtoN Simulation System
2. System configuration of AtoN Simulation System

|  |  |  |
| --- | --- | --- |
| **Division** | **Operation Room** | **Simulation Room** |
| Function | · Control and operation simulator | · Visualization verification and training space  · AtoN placing adequacy verification  · AtoN functions adequacy verification |
| S/W | · AtoN Manager  · 3D images software  · IOS and Motion Solver | · Radar and ECDIS linkage SW  · Fog signal audio linkage SW |
| H/W | · Operation console  · 5 channel visualization display(5 EA)  · AtoN Manager monitor(1 EA)  · Simulator operation PC(3 EA) | · Visibility reproduction system: screen,  beam projector(5 EA)  · Ship control room(bridge)  · Sailing equipment: steering wheel, engine controllers,  radar, ECDIS, etc. |

## Plan for the operation manual for AtoN Simulation System

This manual contains the contents of the definition of the configuration and specifications of the AtoN Simulation System for the AtoN simulator operation and management, definitions of term used in operating the simulation, consideration on the simulation plan to review the range and preference before the simulation, simulator operating procedure defined by the step-by-step execution procedure, processing procedure in case of failure. Also, contain the procedure of backup and way for protection the simulator system and data retention, consideration for documentation to simulation analysis and results. The draft of operation manual for AtoN Simulation System will be presented until the next meeting.

The AtoN Simulation System operation manual development is aimed to be done by 2020. The plan is the following

* ENG 8th : Develop manual outline and Confirm scope of manual
* ENG 9th : Develop manual content
* ENG 10th : Develop manual content
* ENG 11th : Finalise manual documentation
* ENG 12th : Finalise manual documentation

# Action requested of the Committee

The Committee is requested to:

1. Review on this paper.
2. Provide feedback and comments on developing an operation manual for AtoN Simulation System.
3. provide comments for the future plan.

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)