Input paper: [[1]](#footnote-1) ENG6-10.33 v2

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 5.3.1/\_\_\_\_\_\_\_

Working Group WG2

Author(s) / Submitter(s) Mr. Jong-Uk Kim / Korea Association of Aids to Navigation

Mr. Ji-Min Yeo / Korea Association of Aids to Navigation

Proposal 2018-2022 Work Item - Update Guideline and Develop Manual related AtoN Simulator

* Work Item Name:

1. Update Guideline on AtoN Simulation System
2. Develop Manual on Operation and Management for AtoN Simulator

Related Guideline: IALA Guideline 1058('11.6) and 1097('13.5)

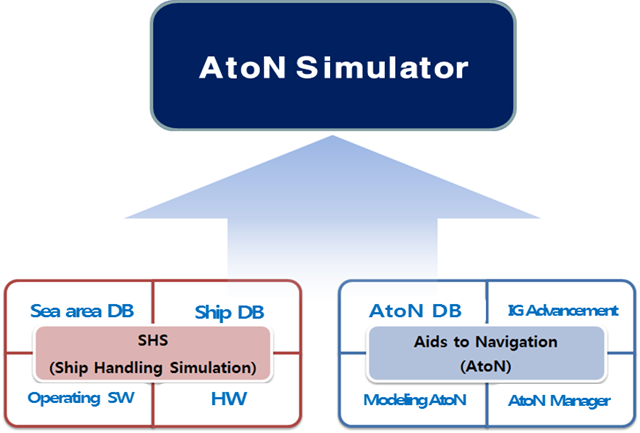
| **ENG Committee – 2018-22 Work Programme** | | | | |
| --- | --- | --- | --- | --- |
| **TASK** | X.X.X Development of Guideline and Manual on Operation and Management related AtoN Simulator | | | |
| Task leader |  | | | |
| Objectives of the task | To provide guidance and manual for AtoN Simulator administrator on Operation and Management for AtoN Simulator. | | | |
| Expected outcome | New guidance and Manual documentations. | | | |
| Strategic Alignment | **Goal** G1: Ensure that aids to navigation systems and related services, including e-Navigation, Vessel Traffic Services, and emerging technologies, through international cooperation and the provision of standards are harmonised  **Strategy** S3: Harmonise the information structure, Maritime Services Portfolios and communications for e-Navigation by creating standards and by cooperating with other IGOs to achieve worldwide interoperability of shore and ship systems including IMO sustainability goals for a maritime transport system.  **Priority** P1: Transform the IALA product line by redefining and restructuring existing documentation to meet the future needs of the organisation, including document content, the approval process, and accessibility. | | | |
| Scope *(Describe key items that are in scope/out of scope)* | **Working Group 2: Technical Knowledge & Sustainability**  Taking into consideration operation and management for AtoN Simulator | | | |
| Expected Sessions for Completion: | *Session number:*  *8 9 10 11 12 13 14*  X  X  X  X  X | | | |
| Brief and concise description of the work to be undertaken and programme milestones where appropriate. | Key milestones / Remaining key milestones for completing the task include:   * Review existing guidance documents(1058 On The Use of Simulation as a Tool for Waterway Design and AtoN Planning, O-138 On The Use of GIS and Simulation by Aids to Navigation Authorities, 1097 On Technical Features and Technology Relevant for Simulation of AtoN) * Develop guidance outline and Confirm scope of guidance at ENG8 * Develop guidance content at ENG9 and 10 * Finalise guidance documentation at ENG11 and 12. | | | |
| **Task Revision** | **Ver.** | **Date** | **Part / Section Revised** | **Requirement for Revision** |
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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) simulator system is an innovative technology that can completely change the paradigm of AtoN design and AtoN placement method. IALA also recommended the simulator system as a tool for the AtoN design and AtoN placement plan.

For this reason, AtoN simulator system has developed based on ship operation simulator. An AtoN Simulator 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 Simulator 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 Simulator
2. System configuration of AtoN Simulator

|  |  |  |  |
| --- | --- | --- | --- |
| **Division** | **Operation Room** | **Simulation Room** | **Note** |
| 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. |  |

We proposed work item on the selection of the next session for development AtoN simulator operation and management guidelines and manual. This guideline and manual contain the contents of the AtoN simulator system configurations definition necessary for the AtoN simulator operation and management, definitions of term used in operating the simulator, 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.

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)