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Agenda item [[2]](#footnote-3) 8.4

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Second Sea Trial Demonstration of AtoN Data Management and Services

# Summary

The second sea trial aims to demonstrate how Aids to Navigation (AtoN) data changes are provided to end users following IALA protocols. During the trial, changes in AtoN data will be generated using the Korean AtoN Information System, which has been developed to align with the IALA S-201 data model.

## Purpose of the document

The results of the sea trial on AtoN data management and service, conducted in conjunction with the S-100/S-200 training organized by IALA WWA, are reported.

## Related documents

S-100 IHO Universal Hydrographic Data Model (Edition 5.2.0, June 2024)

S-97 IHO Guidelines for Creating S-100 Product Specifications (Edition 1.1.0, June 2020)

S-201 Aton Information product specification

S-125 Marine Aids to Navigation product specification

# Background

Korea has newly developed an AtoN information management system based on the Maritime Resource Name (MRN) guideline developed by IALA and the S-201 product specification specification. To respond to IALA’s AtoN information service and SECOM requirements, Korea is currently carrying out a project to develop an AtoN information service. In conjunction with the S-100/S-200 training organized by IALA WWA, a sea demonstration of AtoN information management and service was conducted.

# Discussion

## Scope of sea trial and participants

This sea trial focuses on three key areas:

1. Data Management – Testing the generation of AtoN data using the S-201 standard and Maritime Resource Name (MRN).
2. Cybersecurity – Evaluating the security of data transmission using the SECOM protocol.
3. User Interface & Portrayal – Assessing how AtoN information is displayed and accessed by end users.

The first trial primarily validated the data model on Aton such as S-124, S-125 and S-201 . The second trial will expand including the service specifications and cybersecurity by testing real-world scenarios and system interactions. All attendees of the S-200 training course in March 2025, held in Busan, Korea, will take part in the trial.

## Scenario of sea trial

1. AtoN Data Management System Testing (S-201-based)

* TC01-01: Generation of S-201 AtoN data.
* TC01-02: Creation of S-124 (Navigational Warning) when AtoN changes are entered (Test Case: TC).
* TC01-03: Creation of S-124 when AtoN changes are entered (Data Case: DC).
* TC01-04: Creation of S-125 (AtoN Information) when AtoN changes are entered (Port Case: PC).
* TC01-05: Creation of S-125 when AtoN changes are entered (Area Case: AC).
* TC01-06: Generation of cancellation data for S-124 navigational warnings.
* TC01-07: Transition of navigational warnings into AtoN change information.

2. Service Function Testing (Based on IALA Service Specifications and SECOM)

* TC02-01: Testing the IEC SECOM Service Registry (SR) procedure.
* TC02-02: Verification of the "Get Summary" function in S-124 service specifications (including SECOM Information Registry (IR) procedure).
* TC02-03: Testing the "Get" interface for route-based requests and confirming S-124 data reception (including SECOM IR procedure).
* TC02-04: Confirming that it is not received when requesting the S-124 service regarding NWs issued outside the route (including SECOM IR functionality).
* TC02-05: Verification of the "Get Summary" function in S-125 service standards (including SECOM IR functionality).
* TC02-06: Testing the "Get" interface for route-based requests and confirming S-125 data reception (including SECOM IR functionality).
* TC02-07: Verifying whether S-125 data includes extended out-of-route visual range updates (including SECOM IR functionality).
* TC02-08: Confirming receipt of S-125 data when AtoN changes occur outside the primary navigation route (including SECOM IR functionality).
* TC02-09: Testing the reception of cancelled S-124 navigational warnings (including SECOM IR functionality).
* TC02-10: Validating the transition of a navigational warning (S-124) into an updated AtoN information entry (S-125) (including SECOM IR functionality).

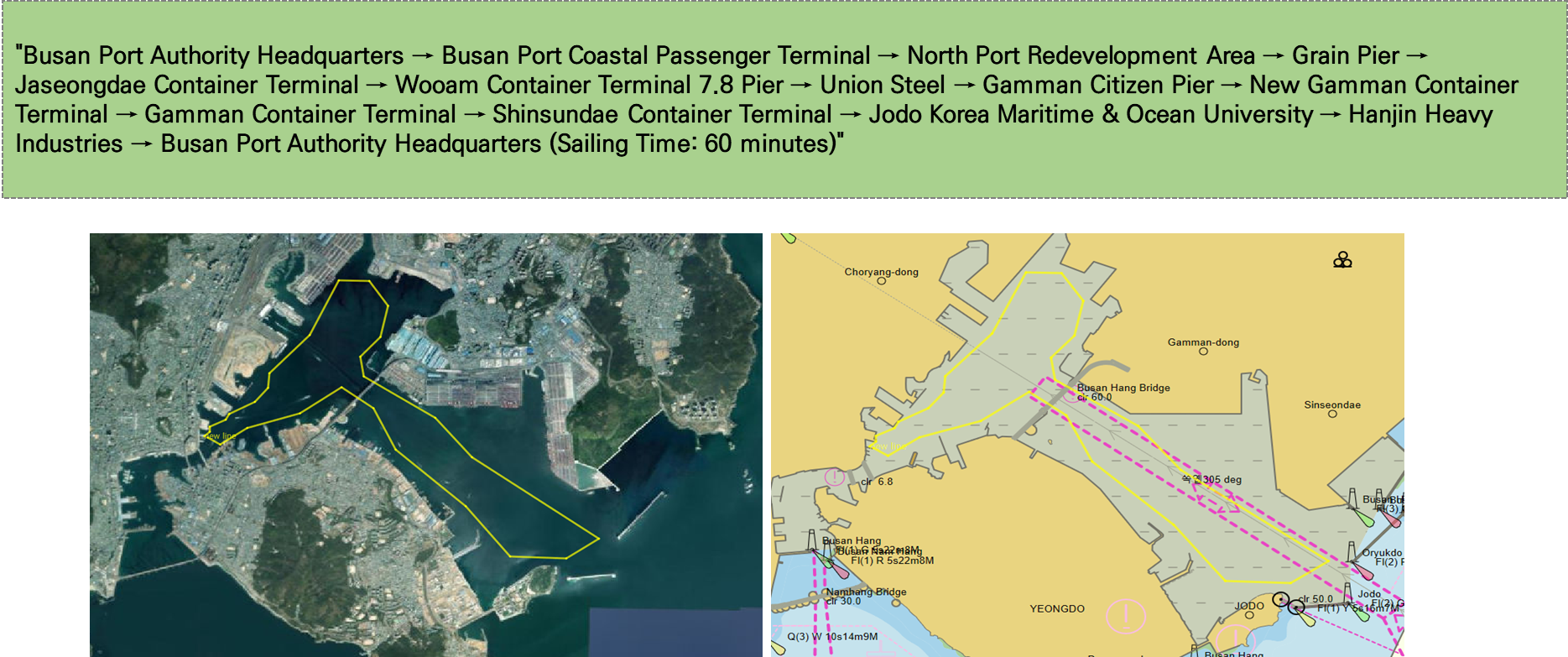
3. User Feedback & Visualization Assessment

* TC03-01: Collecting user feedback on the S-124 service interface.
* TC03-02: Collecting user feedback on the S-125 service interface.
* TC03-03: Reviewing the symbolic portrayal of S-124 data.
* TC03-04: Reviewing the symbolic portrayal of S-125 data.
* TC03-05: Evaluating and improving the "Pick Report" function for S-100/S-200 data attribute queries.

## Sea Trial Testing Environment

* Communication: 4G/5G network (MARCOM).
* Test Vessel: Harbour guide vessel of Busan Port Authority
* Shore Systems: AtoN Information Management System, SMART AtoN Service Platform.
* Ship Systems: S-100 Viewer including S-101 ENC .







## Testing Documentation & Reporting

A video report of the sea trial will be produced, including screen recordings of the testing systems and drone footage of the demonstration at sea.

The trial results will be documented following IALA G1107: Planning and Reporting of Testbeds in the Maritime Domain and submitted to the relevant IALA technical committee.

# Action requested of the Committee

The Committee is requested to consider this input paper, and take actions as appropriate.

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-2)
2. Leave open if uncertain [↑](#footnote-ref-3)