Australian Government
Australian Maritime Safety Authority

Trialling Real-Time S-124 Services in Australia

29 October 2026, Digital@Sea Asia-Pacific 2026

Australian Maritime Safety Authority – Dr Julius Moeller

The Australian Maritime Safety Authority acknowledges the Traditional Custodians of Country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present as well as the continuation of cultural, spiritual and educational practices of all Aboriginal and Torres Strait Islander peoples.

Australia's National S-100 Testbed



- Australia's National S-100 testbed was formally established in December 2025 to trial new S-100 navigational data products, provide feedback to international standardisation bodies and equipment manufacturers, and inform implementation in Australia.
- Several simulator-based trial sessions have been completed.
- Initial sea trials took place in Sydney in April 2026.
- Sea trials are planned in Melbourne and Torres Strait.
- Governed by Australia's national S-100 WG

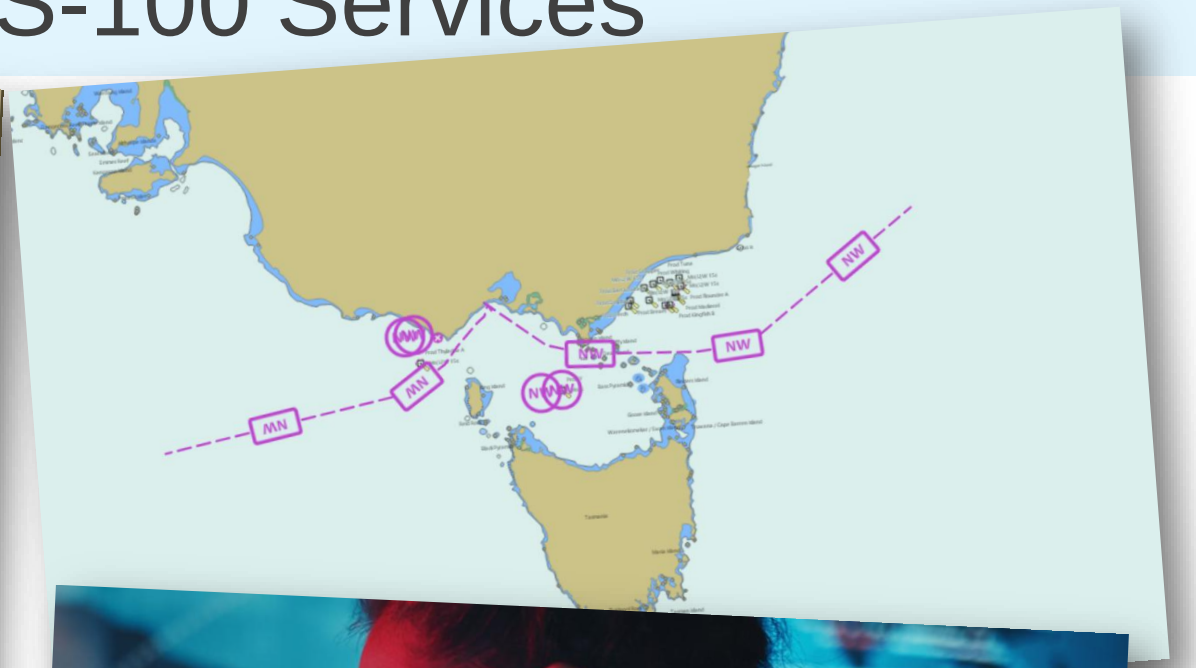
Testbed partners:

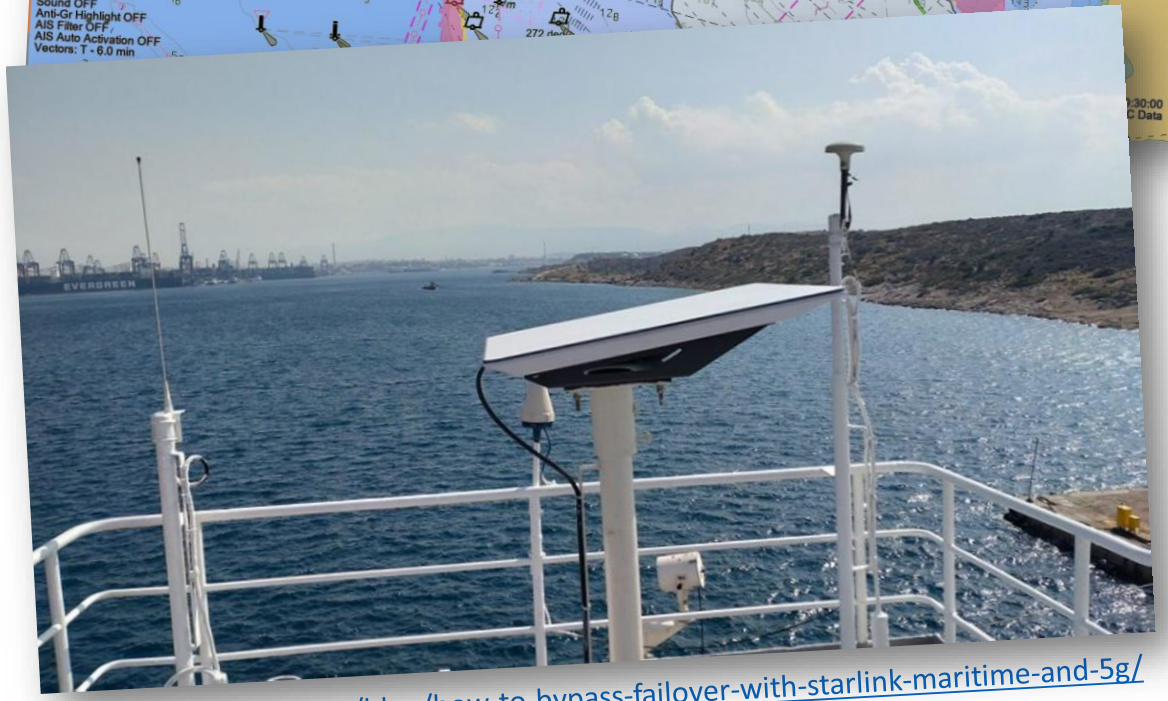
AHO Australian Hydrographic Office · AMSA · OMC International · Smartship Australia · Maritime Systems

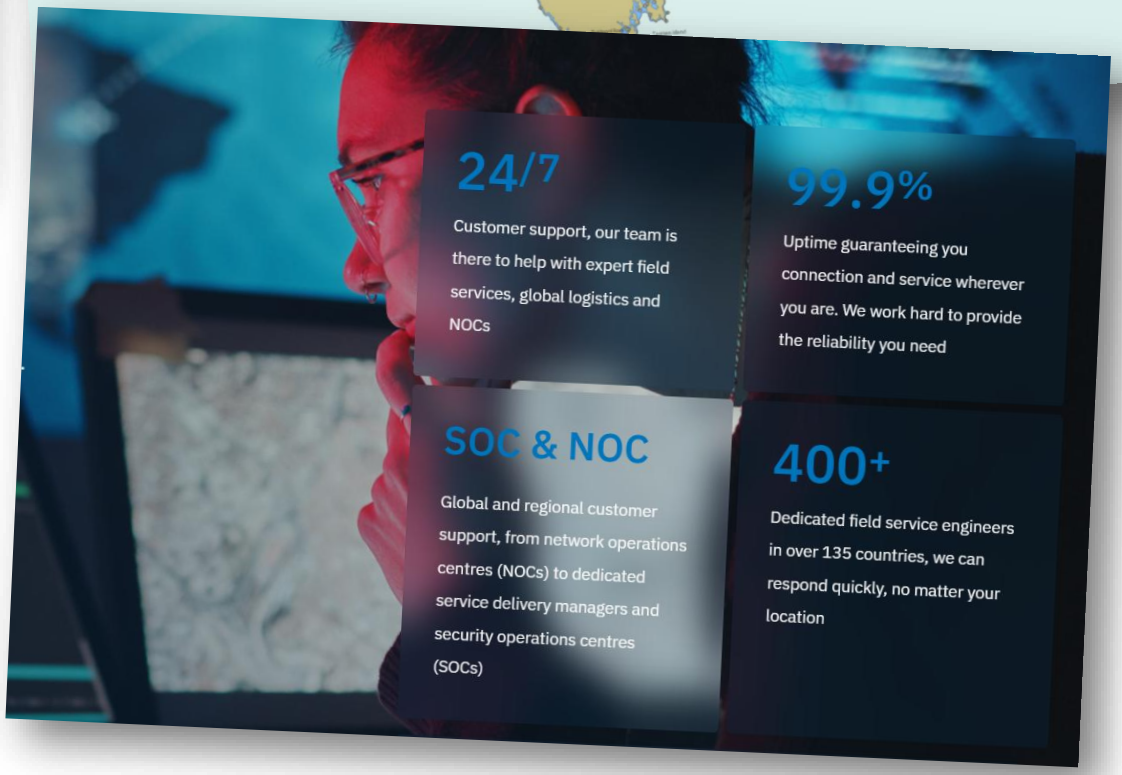
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Real-Time S-100 Services









Source: https://marpoint.gr/blog/how-to-bypass-failover-with-starlink-maritime-and-5g/

Still Doing This by Hand?

AUSCOAST WARNING 242/25
3 X 6M YELLOW SURFACE BUOYS, FL.W 3S, DEPLOYED WITHIN 1 NM OF 39-
2.5NM CLEARANCE REQUESTED
NNNN

SECURITE
FM JRCC AUSTRALIA 150900Z SEP 25
AUSCOAST WARNING 257/25
8 X 6M BUOYS WITH LIGHT CHARACTERISTICS FL 3 HAVE BEEN DEPLOYE
2.5NM CLEARANCE REQUESTED
NNNN

SECURITE
FM JRCC AUSTRALIA 252327Z SEP 25
AUSCOAST WARNING 268/25
8 X 6 METRE YELLOW LIGHT BUOYS, FL W 3 SEC, DEPLOYED WITHIN 1 N
2.5 NM CLEARANCE REQUESTED
NNNN

SECURITE
FM JRCC AUSTRALIA 072212Z OCT 25
AUSCOAST WARNING 277/25
DRILL RIG VALARIS 107 MMSI: 636012638 IN POSITION 38-23.90` S 148-
1 NM CLEARANCE REQUESTED.
NNNN

SECURITE
FM JRCC AUSTRALIA 252113Z OCT 25
AUSCOAST WARNING 294/25
8 X 6 METRE YELLOW SURFACE BUOYS WITH LIGHT CHARACTORIST
POSITION 39-00.85S 142-36.47E.
2.5NM CLEARANCE REQUESTED
NNNN

SECURITE
FM JRCC AUSTRALIA 291530Z OCT 25
AUSCOAST WARNING 296/25
DRILL RIG TRANSOCEAN EQUINOX / V7A7397 / MMSI 538010767 IN
2.5 NM CLEARANCE REQUESTED.
NNNN

Western Baltic

072229 UTC NOV
GERMAN NAV WARN 559/25
072155 UTC NOV
GERMAN NAVIGATIONAL WARNING 559/25
WESTERN BALTIC. BIGHT OF MECKLENBURG.
WEST OF DARSS.
JETTING OPERATIONS BY 'NORA B', CS 'PDKG'
IN VICINITY OF LINE JOINING
54-17,6N 012-18,9E,
54-30,5N 012-19,0E AND
54-35,8N 012-42,6E.
DISTANCE OF 500 M IS REQUIRED.

031752 UTC NOV
GERMAN NAV WARN 583/25
031730 UTC NOV
GERMAN NAV WARN 583/25
WESTERN BALTIC. NORTH OF FEHMARN ISLAND.
'W2' BUOY 54-33.7N 011-06.8E
IS PARTLY SUBMERGED
CANCEL NAVIGATIONAL WARNING 485/24.

090617 UTC OCT
GERMAN NAV WARN 520/25
090535 UTC OCT 25
GERMAN NAVIGATIONAL WARNING 520/25
WESTERN BALTIC. PROHIBITED AREA
SCHOENHAGEN.
LIGHTBUOY '5' 54-35,9N 010-04,5E TEMPORARILY
WITHDRAWN.

Southern Baltic

061342 UTC NOV
POLISH NAV WARN 295/25
SOUTHERN BALTIC. POLISH COAST
DUE TO MILITARY EXERCISES AREA BOUNDED BY
POSITIONS:
1. 54-40.75N 016-16.95E
2. 54-45.70N 016-13.00E
3. 54-52.19N 016-43.28E
4. 54-47.04N 016-46.38E
IS TEMPORARILY DANGEROUS FOR SHIPPING

NAVAREA IV 1217/2025 (11, 26)

080029Z NOV 25
NAVAREA IV 1217/25(11,26).
NORTH ATLANTIC.
FLORIDA.
1. HAZARDOUS OPERATIONS, ROCKET LAUNCHING
102212Z TO 110255Z NOV, ALTERNATE
110300Z TO 110743Z, 112146Z TO 120229Z,
120300Z TO 120743Z, 122120Z TO 130203Z,
130300Z TO 130743Z, 132054Z TO 140137Z,
140300Z TO 140743Z, 142028Z TO 150111Z,
150300Z TO 150743Z, 152002Z TO 160045Z,
160300Z TO 160743Z, 161936Z TO 170019Z,
170300Z TO 170743Z NOV IN AREAS BOUND BY:
A. 26-12.00N 075-07.00W, 26-29.00N 075-54.00W,
26-32.00N 076-26.00W, 26-26.00N 076-31.00W,
26-01.00N 076-09.00W, 25-43.00N 075-40.00W,
25-17.00N 074-58.00W, 25-10.00N 074-29.00W,
25-24.00N 074-09.00W, 25-44.00N 074-19.00W.
B. 28-30.00N 080-10.00W, 28-39.00N 080-28.00W,
28-39.00N 080-37.00W, 28-29.00N 080-32.00W,
28-23.00N 080-19.00W, 28-21.00N 080-11.00W,
28-24.00N 080-09.00W.
2. CANCEL NAVAREA IV 1215/25.
3. CANCEL THIS MSG 170843Z NOV 25.
/

NAVAREA IV 1214/2025 (11, 24, 25, 26)

072121Z NOV 25
NAVAREA IV 1214/25(GEN).
NORTH ATLANTIC.
FLORIDA.
1. HAZARDOUS OPERATIONS, ROCKET LAUNCHING
091945Z TO 092211Z NOV, ALTERNATE
101940Z TO 102206Z, 111938Z TO 112204Z
AND 121950Z TO 122215Z NOV
IN AREAS BOUND BY:
A. 28-38.13N 080-34.53W, 28-38.00N 080-00.00W,
28-13.00N 077-19.00W, 28-00.00N 076-03.00W,
27-10.00N 076-03.00W, 28-03.00N 079-31.00W,
28-20.00N 080-03.00W, 28-25.43N 080-34.61W.
B. 27-27.00N 073-45.00W, 26-49.00N 070-28.00W,
25-14.00N 063-43.00W, 22-41.00N 055-29.00W,
19-50.00N 048-11.00W, 19-40.00N 048-20.00W,
22-29.00N 055-44.00W, 24-53.00N 063-17.00W,
26-37.00N 070-29.00W, 27-14.00N 073-45.00W.
C. 27-10.00N 076-03.00W, 28-04.00N 076-03.00W,
28-09.00N 074-58.00W, 27-41.00N 073-45.00W,
27-03.00N 073-45.00W, 26-54.00N 074-53.00W.
2. CANCEL NAVAREA IV 1210/25.
3. CANCEL THIS MSG 122315Z NOV 25.

0668/25
SOUTH OF RIO DE JANEIRO
CHART 21070 (INT 2008)
SEISMIC SURVEY
03 NOV 25 TO 17 NOV 25
BY SEA 1 DORADO

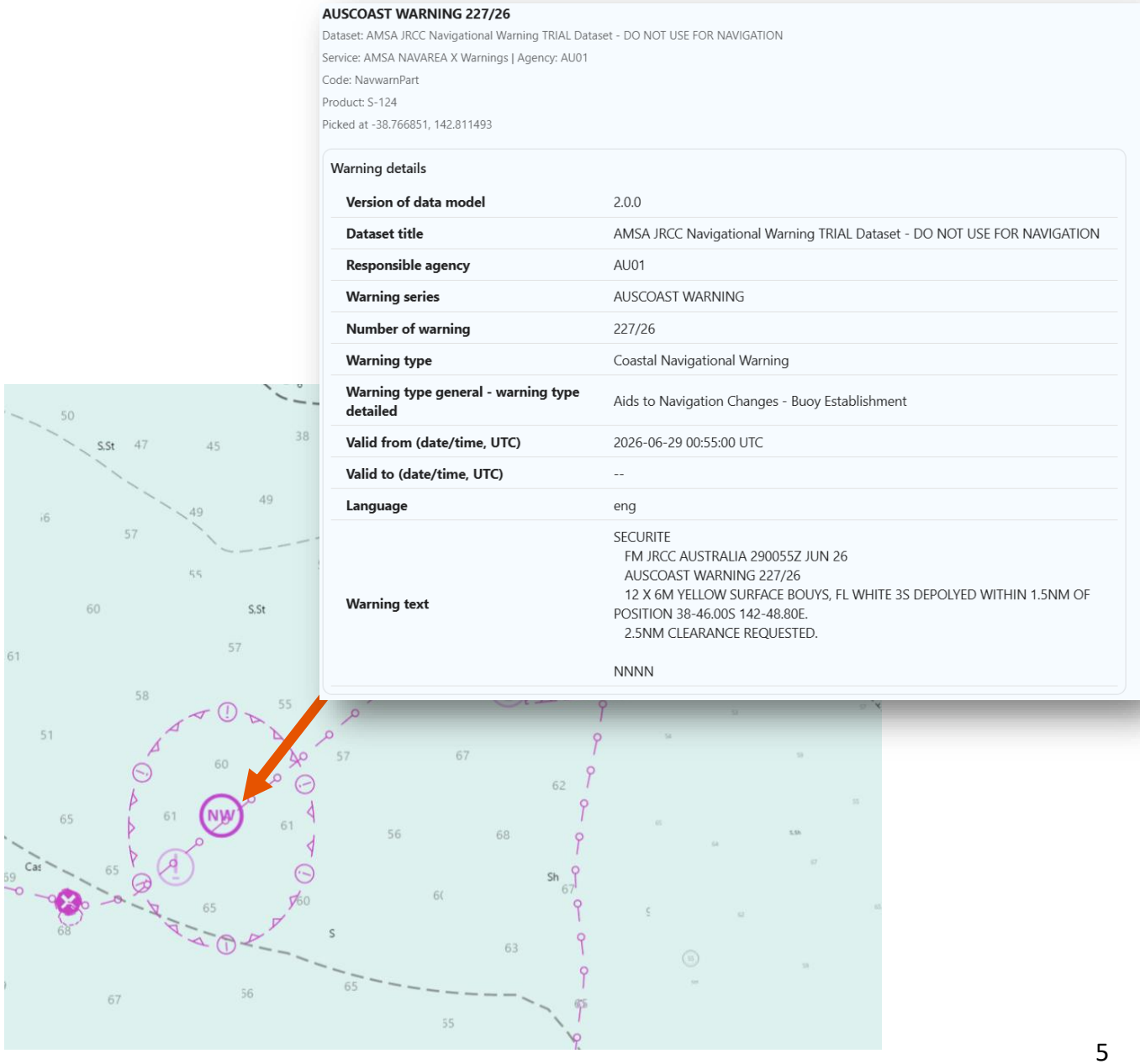
IN THE AREA LIMITED BY
25-46.08S 042-50.25W 25-43.68S 042-55.00W
25-39.95S 042-56.13W 25-38.80S 042-56.48W
25-36.33S 042-55.00W 25-33.62S 042-53.37W
25-31.72S 042-52.20W 25-27.05S 042-51.38W
25-16.58S 042-44.98W 25-15.68S 042-40.37W
25-18.48S 042-34.80W 25-21.37S 042-33.70W
25-25.03S 042-35.95W 25-27.73S 042-38.87W
25-36.77S 042-43.53W 25-40.68S 042-44.12W
25-43.20S 042-45.65W CANCEL THIS WARNING 170400 UTC NOV 25.

0667/25
TOW
TUG SS NASSOR TOWING REALIZAR
BETWEEN 22-49.58S 043-05.73W 20-19.65S 040-18.43W LENGTH OF
TOW 299 METERS
SPEED 5 KNOTS
CANCEL THIS WARNING 070200 UTC NOV 25.

0666/25
SOUTH OF SANTOS
CHART 21070 (INT 2008)
SHIP TO SHIP OPERATION

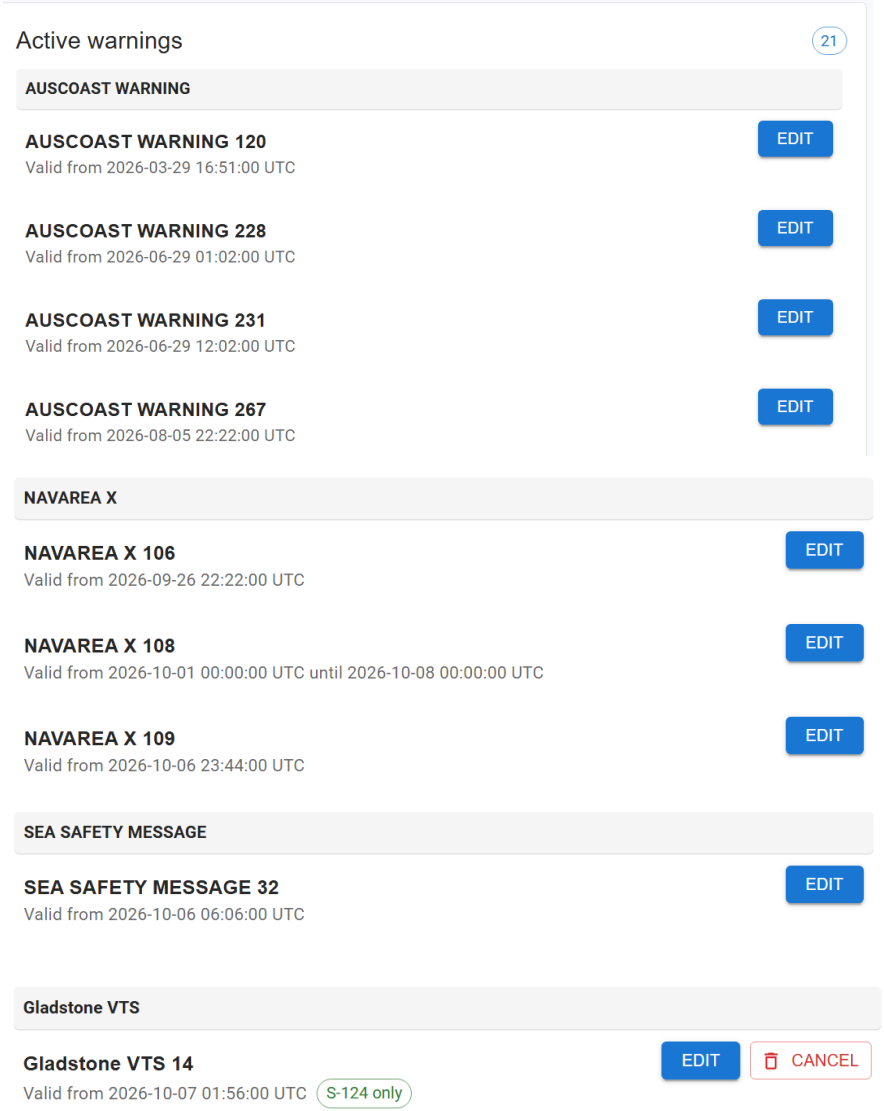
S-124 Navigational Warnings

- S-124 is the S-100 product used to display Navigational Warnings on ECDIS
- Cancellations, Updates, In-Force Bulletins all handled automatically
- Will be delivered in real-time / aligned with GMDSS delivery of text-based warnings
- Supports multiple languages, additional text placement and references
- **CAUTION: S-124 is not yet considered MSI and cannot be used to comply with carriage requirements for GMDSS equipment**



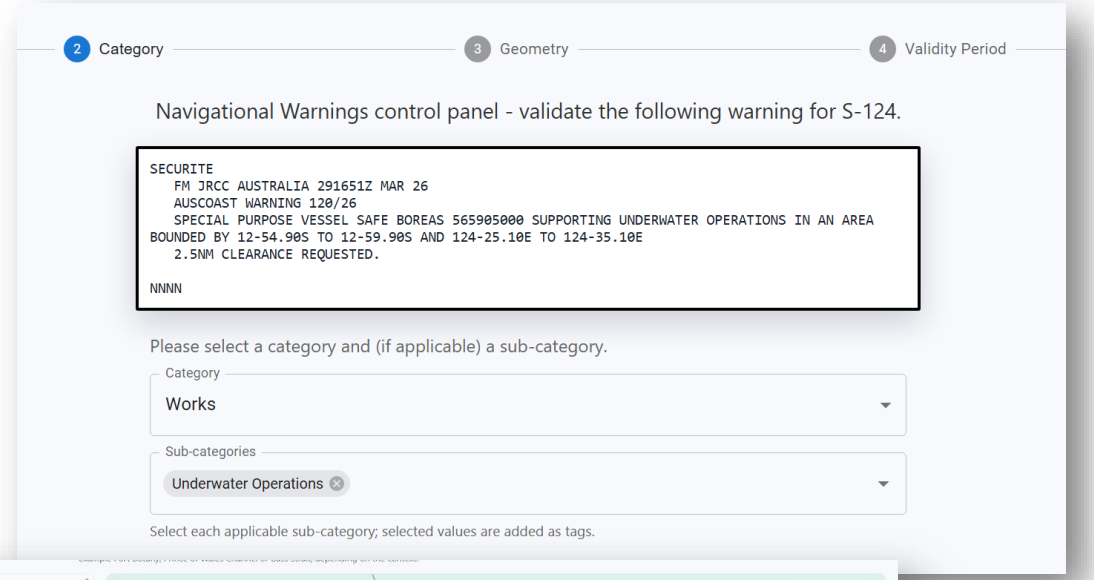
S-124 Prototype Production System

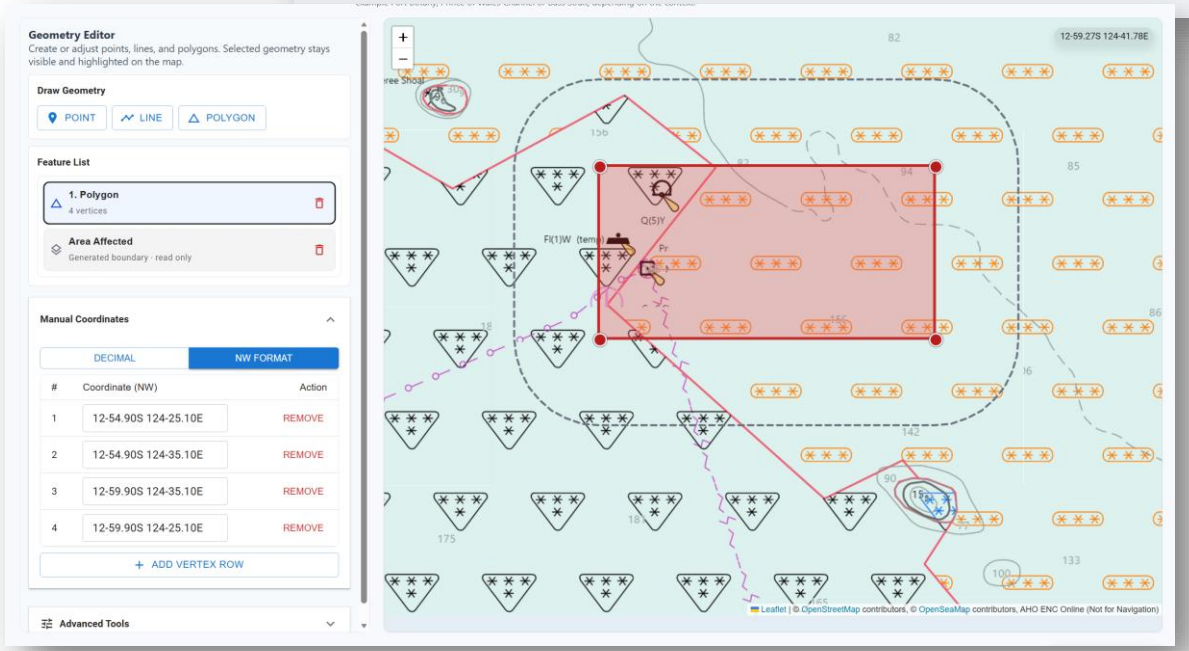
- A prototype S-124 production system supports S-124 Ed 2.0.0 and SECOMv2
- Two production pathways:
  - Coastal and NAVAREA warnings: AI-assisted conversion of S-53 text warnings to S-124, with validation by an operator in AMSA's Rescue Coordination Centre (available 24/7)
  - Local warnings: S-124 warnings can be created from scratch for approved areas and may require approval by AMSA's RCC



S-124 Prototype Production System

- The system guides operators through creating or validating S-124 data in an intuitive way
- A five-step process covering:
  - Warning series and number
  - Warning category
  - Spatial geometry
  - Validity period
  - Included text





Navigational Warnings Control Panel

Review warnings, manage active datasets, or create a new S-124 dataset.

Review mode: ON

Switch to publishing without Manual validation

S-124 service: connected

Last update: 10:59:48 am

Search warnings

Active warnings 20

AUSCOAST WARNING

AUSCOAST WARNING 120
Valid from 2026-03-29 16:51:00 UTC
EDIT

AUSCOAST WARNING 228
Valid from 2026-06-29 01:02:00 UTC
EDIT

AUSCOAST WARNING 231
Valid from 2026-06-29 12:02:00 UTC
EDIT

AUSCOAST WARNING 267
Valid from 2026-08-05 22:22:00 UTC
EDIT

AUSCOAST WARNING 270
Valid from 2026-08-10 06:38:00 UTC
EDIT

AUSCOAST WARNING 273
Valid from 2026-08-14 00:43:00 UTC
EDIT

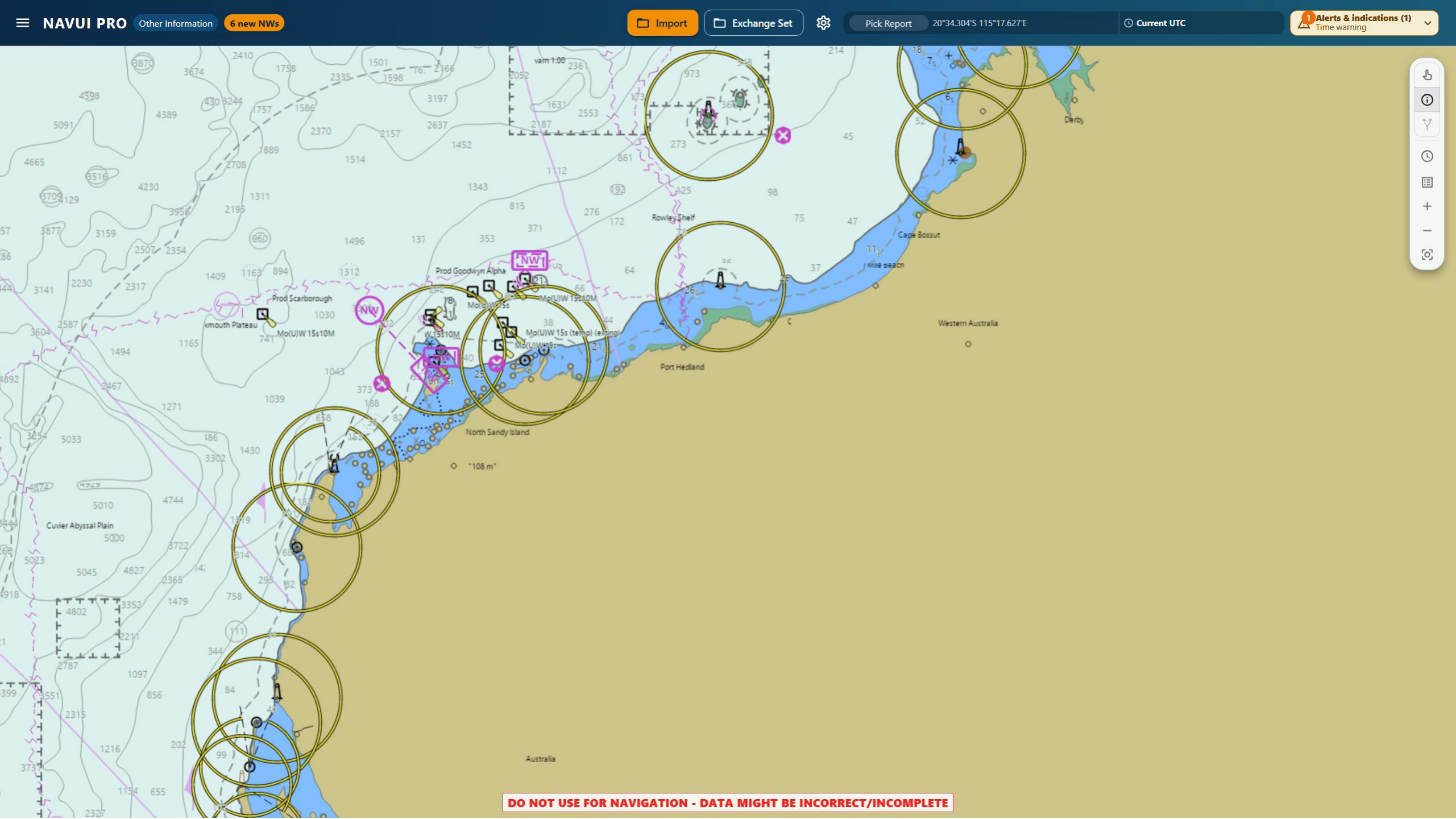
Coastal / NAVAREA warnings awaiting review 2

AUSCOAST WARNING

AUSCOAST WARNING 319
Valid from 2026-10-07 22:03:00 UTC
VALIDATE

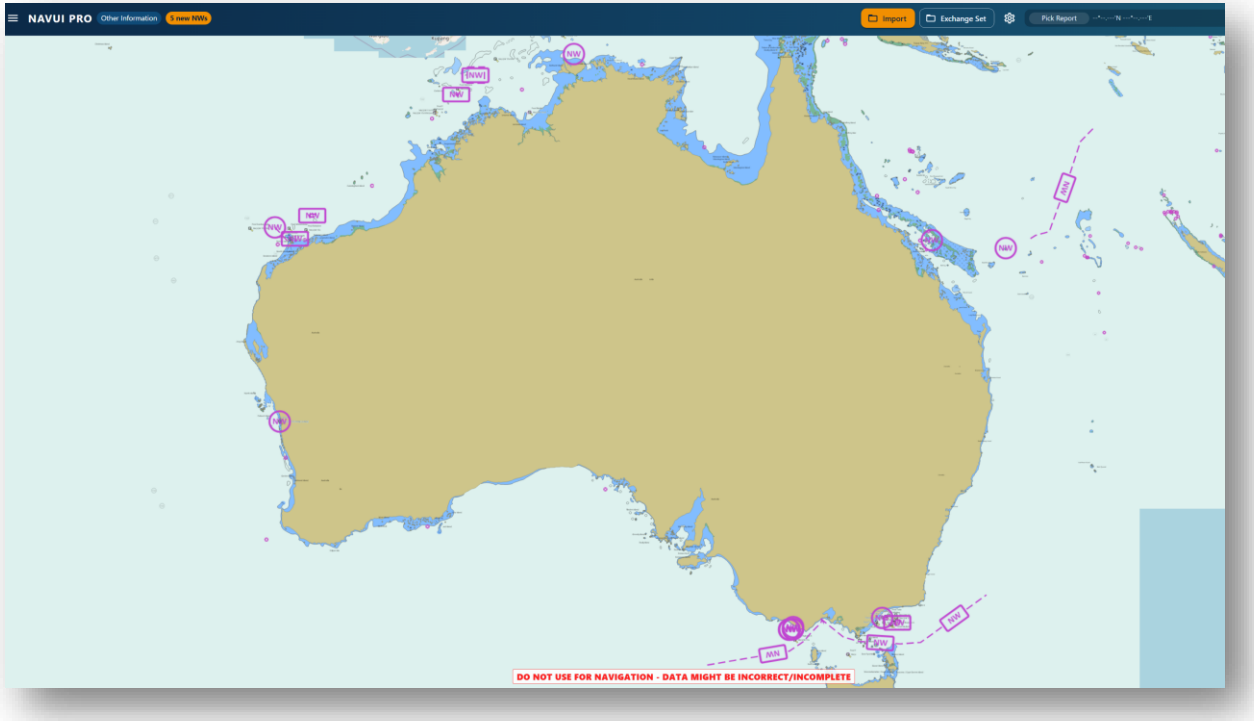
AUSCOAST WARNING 320
Valid from 2026-10-07 22:19:00 UTC
VALIDATE

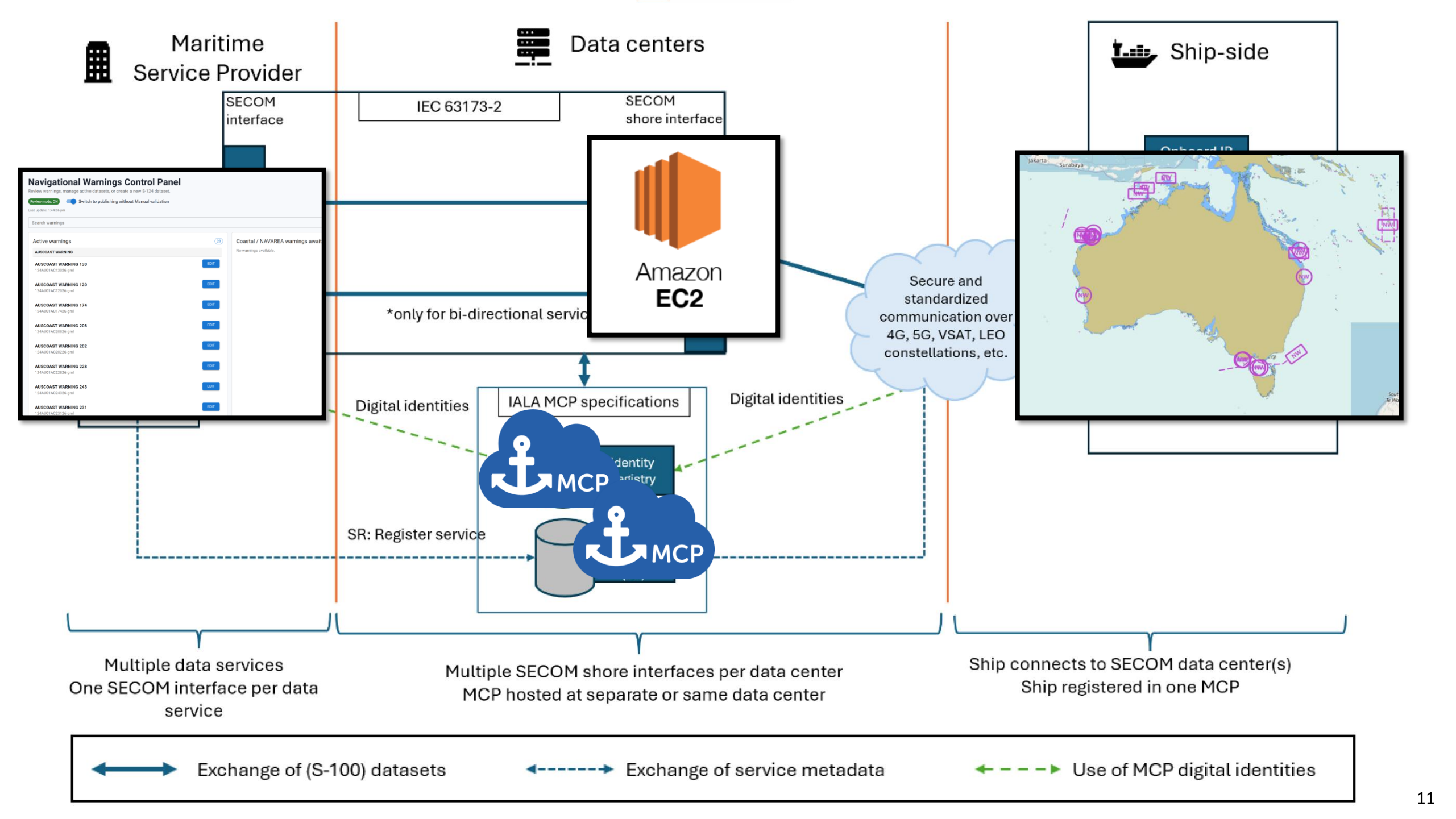
+


NAVUI PRO
Other Information
6 new NWs
Import
Exchange Set
Pick Report
20°34.304'S 115°17.627'E
Current UTC
Alerts & indications (1)
Time warning
Prod Goodwyn Alpha
Mo(U)W 15s10M
Prod Scarborough
Mo(U)W 15s10M
Rowley Shelf
Cape Bossut
Western Australia
Port Hedland
North Sandy Island
"108 m"
Cuvier Abyssal Plain
Australia
Derby
DO NOT USE FOR NAVIGATION - DATA MIGHT BE INCORRECT/INCOMPLETE

Distribution

- S-124 service accessible through NavUI (a web-based S-100 viewer)
- Service provided through SECOMv2 and registered in the IHO and IALA MCP testbeds
- The ECDIS used for the trials did not support SECOM. A custom script downloaded the data for manual updates to the system database.




Maritime Service Provider
Data centers
Ship-side
SECOM interface
IEC 63173-2
SECOM shore interface
Navigational Warnings Control Panel
Amazon EC2
*only for bi-directional servic
Secure and standardized communication over 4G, 5G, VSAT, LEO constellations, etc.
Digital identities
IALA MCP specifications
Digital identities
MCP
MCP
SR: Register service
Multiple data services
One SECOM interface per data service
Multiple SECOM shore interfaces per data center
MCP hosted at separate or same data center
Ship connects to SECOM data center(s)
Ship registered in one MCP
Exchange of (S-100) datasets
Exchange of service metadata
Use of MCP digital identities

Trials - Methodology

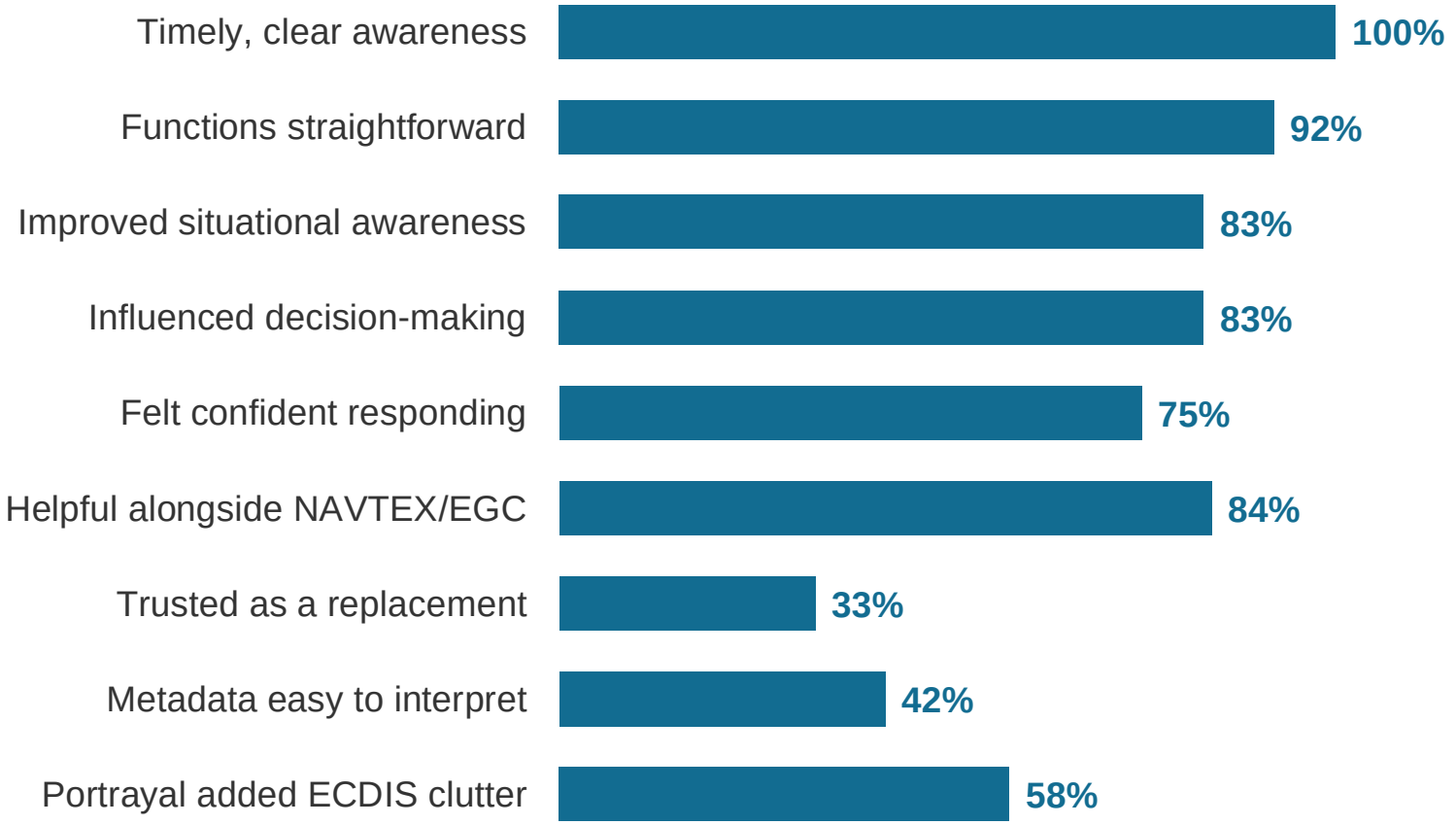
- **Purpose**: Evaluate interoperability, portrayal, alerting, usability and impacts on mariner decision-making.
- Conducted as part of the Torres Strait S-100 Test Bed, using workshops, controlled simulations and high-fidelity full-bridge simulation ahead of live sea trials.
- 11 experienced participants took part in the simulator trials: 9 Marine Pilots, 1 Master >24 m and 1 Marine Operations participant.
- S-124 scenario (example): a new navigational warning for a dangerous wreck was introduced on the vessel's route. Mariners had to detect, interpret and respond to the warning within a multi-layer S-100 display.
- The S-124 warning was compared with the corresponding NAVTEX/EGC text warning received simultaneously, examining consistency, portrayal, metadata accessibility, clutter and impact on route-adjustment decisions.
- Assessment combined scenario questionnaires, direct observation of mariner behaviour and post-scenario debriefs.





Findings of the Trials (preliminary)

Participant responses



Priorities before wider use

S-98 capabilities

OEMS: Implement notifications, filtering and an overview of active warnings.

Reliable delivery

End-to-end transmission and multiple providers were not fully tested. Communications reliability remains a concern → **IMO Framework**

Route integration

Future work: Improve route alerts and scanning. Regulatory status and training also need to mature.

S-124 shows strong potential as a complement to existing warning services.

Thank you!

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Contact

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