MS 17 Aids to Navigation services (AtoN)

### Submitting organisation

IALA

### Coordination body

IMO and IALA

### Description of the Maritime Service

This Maritime Service describes the provision of Marine Aids to Navigation (AtoN) deployed to enhance the safety of navigation[[1]](#footnote-1). IALA defines an AtoN as a device, system or service, external to vessels, designed and operated to enhance safe and efficient navigation of individual vessels and/or vessel traffic. For the purposes of this service description, Positioning Navigation and Timing (PNT) services are included. However, the description of Vessel Traffic Services are contained in a separate Maritime Service.

**17.3.1 IALA Maritime Buoyage System (MBS)**

The MBS contains descriptions of AtoN systems used worldwide for all users. The MBS is comprised of fixed and floating visual marks and devices. This is primarily a physical system; however, all of the marks may be complemented by electronic means.

Within the MBS there are six types of marks, which may be used alone or in combination. Mariners can distinguish between these marks by identifiable characteristics. As described below, lateral marks differ between Buoyage Regions A and B, whereas the other five types of marks are common to both regions.

There are four AtoN applications:

• Fixed

• Floating

• Mobile (MAtoN)

• Electronic (AIS AtoN, radar beacon (Racon) and radar target enhancer)

Determining the proper application of a navigational mark or signal involves:

• balancing the benefits derived from new and advancing technologies against safety and security concerns;

• the impact on the environment and on international trade facilitation; and

• the potential costs to the industry, and finally their impact on personnel, both on board and ashore.

**17.3.2 Positioning, Navigation and Timing (PNT) services**

Positioning, Navigation and Timing services are considered to be the services provided to allow the mariner, or an aid-to-navigation to calculate their position, or to receive precise time. References to PNT data is considered to be the use of such derived position and time data within the AtoN or the vessel’s receiver.

It is useful to recognise that some AtoN use PNT data, while others can provide PNT Services for use by others. Examples of such can be the use of GNSS within AtoN AIS or the provision of positioning information via Racons, or augmentation data. Based on this, the maritime service only considers PNT aspects within the remit of AtoN service provider.

### Purpose

To promulgate the latest information on AtoN and augment charted AtoN information on an appropriate shipborne navigation display prior to updates to the nautical chart.

### Operational Approach

This document deals primarily with provision of AtoN services and related IALA S-200 series Product Specifications designed to convey updates and information to augment an ENC. A current listing and descriptions of existing (or under development) IALA S-200 series Product Specifications may be found [here](https://www.iala-aism.org/technical/data-modelling/iala-s-200-development-status/).

### User Needs

Users will include mariners and shore side authorities. User needs may include the most up to date presentation of information on:

* new hazards (fixed or dynamic),
* temporary channels or routes,
* temporary areas to be avoided (e.g., restricted areas (i.e., military exercises), survey, dredging, fishing, special marine events),
* changed hydrography, such as shifting banks,
* temporary replacement of gone from position physical AtoN,
* dynamic areas (e.g., reduced visibility, presence of protected species),
* polar navigation, provided there is sufficient means of radio communication broadcast and charting,
* ice conditions and navigation,
* incident response (e.g., environmental, search and rescue),
* port specific applications (e.g., passage planning, amended pilot boarding location, etc.),
* measures for the protection of the marine environment,
* security,
* PNT information on position in real time (Timing is a critical component in the provision of some AtoN services, and the need to synchronise and reference radio navigation signals to universal coordinated time (UTC) will increase as look to use more diverse systems and solutions.), and
* PNT Integrity (Recognizing the vulnerability of radionavigation systems to interference (e.g. GNSS jamming), the use of multiple dissimilar positioning and timing systems is required to achieve resilience in support of safe navigation and the optimal working of AtoN.).

### Information to be Provided

**17.7.1 General**

The Aids to Navigation (AtoN) Information Product Specifications (S-201, S-240, S-124 and S-125) provides a common structure for the exchange of information about AtoN. The product contains the positions, properties, operational status and general comments related to an AtoN.

The Product Specification can be used to exchange AtoN information in a consistent form between Aids to Navigation Authorities, Hydrographic Offices and other organizations, including commercial and professional agencies.

### Associated Technical Services

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| --- | --- | --- | --- | --- |
| Name | ID (MRN) | Description | Architect(s) | Standardisation Body |
| Provision of AtoN information service to end-users | urn:mrn:iala:ts:  spec:atoninfo\* | Using the datamodel from the S-125 product specification | IALA ARM | IALA(IHO) |
| Navigation warning service | urn:mrn:iho:ts:spec:navigationalwarnings\* | Using the datamodel from the S-124 product specification | WWNWS-SC | IHO |
| Enhanced AtoN information for AtoN authorities | urn:mrn:iala:ts:spec:enhancedaton\* | Using the datamodel from the S-201 product specification | IALA ARM | IALA |
| PNT information | t.b.d. | Using the datamodel from the S-240 product specification | IALA ENG | IALA |

Note: The technical service specifications listed are under development

\*not official designation, for example only

### Relation to other Maritime Services

MS 17 has a relationship with other Maritime Services where it affects the AtoN

Examples may be different depending on coastal states arrangement.

|  |  |
| --- | --- |
| **Description** | **Examples of information related to MS 17** |
| \*MS 1 VTS Information Service (INS) | Navigational hazard |
| \*MS 2 VTS Navigation Service (NAS) | Exchange of routes, navigational advices and assistance |
| \*MS 3 VTS Traffic Organisation Service (TOS) | Waterway management |
| MS 4 Port Support Service (PSS) | ETA/ATA, Access to the port, availability of port services |
| MS 5 Maritime Safety Information (MSI) Service | MSI information |
| MS 6 Pilotage Service | Pilot and boarding arrangements |
| MS 7 Tug Service | Update on information |
| MS 8 Vessel Shore Reporting | Position information |
| MS 9 Telemedical Assistance Service (TMAS) | Vessels position, delays, weather information |
| MS 10 Maritime Assistance Service (MAS) | Notifications, routing, places of refuge |
| MS 11 Nautical Chart Service | Local area updates, chart updates |
| MS 12 Nautical Publication Service | Updates to publications |
| MS 13 Ice Navigation Service | Ice routes, ice conditions, ice breaking assistance |
| MS 14 Meteorological Information Service | Weather information |
| MS 15 Real Time Hydro and Environmental Information Service | Horizontal and vertical tidal information in VTS area, available water column |
| MS 16 Search and Rescue (SAR) Service | Search pattern and vessels of opportunity |

\* Proposed to be amalgamated into one Maritime Service Description.

1. AIS-ASM is not included in the MS17 description [↑](#footnote-ref-1)