# MS 1 - Vessel Traffic Service (VTS)

* + 1. Submitting organization

IALA

* + 1. Coordinating bodies

IMO and IALA

* + 1. Description of the Maritime Service

This Maritime Service in the context of e-Navigation is a digital information service for the exchange of VTS information by electronic means between a VTS and ships in the VTS area and shore based users. With the Maritime Service in the context of e-navigation is meant the exchange of VTS information by electronic means, not to be confused with operational services for a VTS independent of way of service provision.

* + - 1. Operational Description

Vessel Traffic Service (VTS) means a service implemented by a Government with the capability to interact with vessel traffic and respond to developing situations within a vessel traffic service area to improve the safety and efficiency of navigation, contribute to safety of life at sea and support the protection of the environment.

IMO Resolution A.1158(32) states that:

*“The purpose of VTS is to contribute to the safety of life at sea, improve the safety and efficiency of navigation and support the protection of the environment within a VTS area by mitigating the development of unsafe situations through:*

1. *providing timely and relevant information on factors that may influence ship movements and assist onboard decision-making.*
2. *monitoring and managing ship traffic to ensure the safety and efficiency of ship movements.*
3. *responding to developing unsafe situations.*

The IALA Guideline G1089 “*Provision of a VTS”* provides guidance for the provision of VTS to participating ships in a harmonized manner in accordance with internationally approved guidelines and IALA Standards.

* + 1. Purpose

The purpose of this digital Maritime Service is to support the provision of VTS to participating ships by providing information in a digital format.

Information can be presented in appropriate systems on board and ashore in order to create the means to reduce administrative burden and information overload, reduce miscommunication due to external interference, simplify work procedures, promote sustainable shipping and increase navigational safety.

This Maritime Service can be used for digital information exchange between a VTS and other stakeholders, such as conventional ships, maritime autonomous surface ships (MASS) and allied services.

* + 1. Operational approach

The digital information provided in this digital Maritime Service can be delivered by several different means, such as Automatic Identification System (AIS) or VHF data exchange system (VDES) messages, by IP-based communication and using S-100 based Product Specifications and other international standards.

Information provided digitally could partly replace voice communications in non-time critical situations and in addition complement voice communications in time critical situations.

The steps to achieve this transition to digital information exchange may vary in different areas and for different types of vessels. Details about digital information exchange should be published by the VTS provider.

IALA publishes standards and associated recommendations and guidelines specifically related technical services and specifications used for the implementation of this Maritime Service.

* + 1. User needs

The use cases are generic and intended for description purposes only.

* + - 1. Use Case - Providing timely and relevant information

The provision of timely and relevant information on factors that may influence the ship’s movements and assist on-board decision making should be provided where:

* Deemed necessary by the VTS; or
* Requested by the participating ship.

Vessels can receive timely and relevant information in a digital format that can be displayed in the navigational equipment on board. This may include but is not limited to:

* Navigational situations (including traffic and route information)
* Navigational warnings
* Meteorology
* Meteorological warnings
* Hydrography
* Electronic navigational aids
* Other information
  + - 1. Use Case - Managing ship traffic

Vessels can receive information related to the management of ship traffic in a digital format that can be displayed in the navigational equipment on board. Digital information exchange may apply to elements of the management of ship traffic that is not time critical.

This information may include but is not limited to the following examples:

* Slot management: provides vessels digitally with priority of arrival and distance between two vessels.
* Traffic clearance: provides vessels digitally with permission to proceed, impose conditions or deny entry.
* Anchorage: assigning anchorage positions in digital format.
* Route information: VTS and vessels digitally exchange planned and recommended routes.
* Waterway management: VTS and vessels digitally exchange intentions and recommendations related to traffic situations, such as overtaking of another vessel.
* Information regarding restricted or no go areas: the content (draft, closed fairway/port/quay etc.) can be provided digitally to vessels without using voice communication.
  + - 1. Use Case – Responding to unsafe situations

VTS responding to developing unsafe situations can be supported by the provision of navigational information in digital format. Information provided digitally could complement voice communications in time critical situations and in addition partly replace voice communications in non-time critical situations.

This information may include but is not limited to the following examples:

* A vessel deviating from the route: updated route can be sent digitally to a vessel.
* The content of the voice communication can be provided digitally and be displayed as text in parallel / in addition to voice communication.
* Risk of grounding/striking/collision. In addition to voice communications, the vessel can be provided with an electronic route recommendation or waypoint.
  + 1. Information to be provided

Technical services and data models used for the implementation of this Maritime Service are under development.

S-212 on VTS *Digital Information* [under development] is a product specification for encoding VTS Information. It is based on the IHO S-100 framework specification and the ISO 19100 series of standards.

Information elements provided in the Maritime Service may include but is not limited to:

* Meteorological and Hydrographic data, using AIS/VDES Application-Specific Messages defined in IMO SN.circ.289 or S-100 based product specifications developed by the Joint Technical Commission for Oceanography and Marine Meteorology (WMO/IOC JCOMM) (S-411 to S4-14).
* Navigational warning information, using S-124 Product Specification for Navigational Warnings.
* Information related to Aids to Navigation (AtoN), using virtual AtoN following the guidance from IALA G1081 Provision of Virtual Aids to Navigation or S-125 Product Specification for Marine Navigational Services.
* Route Information, using AIS/VDES Application-Specific Messages defined in IMO SN.circ.289, S-421 Product Specification on Route Plan or IEC specification 61174-1:2021 Route plan exchange format.
* Restricted Area Information, using AIS/VDES Application-Specific Messages defined in IMO SN.circ.289.
* VTS and SRS Area and Reporting information, using S-127 Product Specification on Marine Traffic Management.
  + 1. Associated technical services

The table below lists potential technical services associated with this Maritime Service. The list may be updated.

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| --- | --- | --- | --- |
| Name | ID (MRN) | Description | Standardisation Body |
| Voyage Information Service |  | The service supports exchange of voyage plans, text messages and area messages. | [IALA] |
| Meteorology Service |  | The service supports the provision of information which could include the speed and direction of the prevailing wind, direction and height of the waves, visibility, atmospheric pressure, the formation of ice, etc. | [WMO] |
| Meteorological Warnings Service |  | The service supports the provision of warnings concerning gale, storm, tsunami, restricted visibility, etc. | [WMO] |
| Hydrographic Service |  | The service supports the provision of information which could include factors such as the stability of the seabed, sea depth, the accuracy of surveys, tidal ranges, tidal streams, prevailing currents and swell, etc. | [IHO] |
| AtoN Information Service to End-users |  | The service supports the provision of Aids to Navigation information for end-users (primarily navigators). | [IALA] |
| Service for Provision of Navigational Warnings to End-users |  | The service supports the provision of safety related messages such as dangerous wrecks, obstacles not otherwise promulgated, diving operations, vessels not under command, etc. | [IHO] |
| Route Information Service |  | The service provides route recommendations and/or route validation for ships. | [IALA] |
| Slot management Service |  | The service allocates ships in a time window to ensure safe voyage in the VTS area. | [IALA] |
| Traffic Clearance Service |  | The service provides vessels with permission to proceed, impose conditions or deny clearance. | [IALA] |
| Anchorage Assignment Service |  | The service assists ships into anchorage position by assigning anchorage areas/positions. | [IALA] |

* + 1. Relation to other Maritime Services

This Maritime Service has close relationship with nearly all of the other Maritime Services as several information elements delivered in the service can also be provided as part of other Maritime Services. Areas of overlap, such as vessel shore reporting (MS 8), meteorological information service (MS 14) or Maritime Safety Information (MSI) service (MS 5), should be taken into consideration during the implementation of this service.