Input paper: [[1]](#footnote-1) VTS53-9.3.2

Input paper for the following Committee(s): Purpose of paper:

**□**ARM **□**ENG **□**PAP **X** Input

**□**ENAV **X** VTS **□** Information

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Technical Domain / Task Number2 2.3.1

Author(s) / Submitter(s) China Maritime Safety Administration

Proposal on Draft of VTS Digital Information Service Product Specification V 0.6.5

# Summary

The VTS Task Plan 2018-2023 raises the task of Developing VTS Product Specifications Based on the S-100 Framework (item 2.3.1). Since the 45th VTS meeting, the task group has sorted out the scene of the interaction between VTS and ship information, built the data model of VTS digital information service, and formed the draft of”VTS Digital Information Service Product Specification”, which has been revised and perfected many times. According to the procedure of formulating the release specification, the current task group should consider whether the draft meets the conditions of version 1.0.0. Based on the requirements of IHO and IALA, this proposal checks the current draft and forms a verification opinion that“the current draft is basically meeting the conditions of version 1.0.0 for publication ”.

On this basis, in accordance with IMO Resolution MSC.467(101)”Guidance on the definition and harmonization of the format and structure of maritime services in the context of e-navigation”, the requirement for the establishment of VTS technical services for the implementation of maritime SERVICE set 1(MS 1-VESSEL Traffic Service) to enable the digital interaction of information between VTS and ships, the data information of ”VTS digital information service product specification” is further combed(reviewed), and the unique data information of VTS is formed by screening, which lays a good foundation for establishing VTS technical service.

**1.1 Purpose of the document**

The purpose of this proposal is to check whether the current draft of ”VTS Digital Information Service Product Specification” meets the conditions of V1.0.0 for publication in the relevant documents of IHO and IALA, and to provide a reference. At the same time, compared and combed the data needed to realize MS-1 that were arranged by task group 2.3.1 and task group 1.2.4, sifted and formed the unique data information of VTS, paved the way for the establishment of VTS technical service, and formed a good connection.

## Related documents

The relevant documents of this proposal are as follows：

VTS Digital Information Service Product Specification*V0.6.5(WP);*

**VTS52-13.1.1.4** *Draft description of Maritime Service 1- VTS；*

**VTS52-7.1.2** *Task Plan 2018-2023 (2022-03-14) revised by CMT；*

**VTS49-9.3.3.2** *From VTS48 - Annex 2 - detail description\_VTS product specification v0.6.1；*

*VTS Digital Information Service product specification Annex D2 Feature Catalogue V0.6.3；*

**VTS51-13.3.1.3** *WP Appendix 1 MS1-3 (VTS51-9.1.6.1 )*

# background

The backgrounds of this proposal are as follows:

**2.1** The VTS Task Plan 2018-2023 raises the task “Develop a Product Specification under the S-100 framework for VTS”, and states that the expected outcome of this task is a VTS Product Specification, which will assist authorities to better implement VTS. On VTS49, the name of the expected outcome was adjusted to “VTS Digital Information Service Product Specification”. The working group formed drafts and has been revised many times. Now, has formed version 0.6.5.

**2.2** The task 2.3.1 aimed to finalize “VTS Digital Information Service Product Specification” draft Edition 1.0.0 at VTS53.It is needed to check the latest draft whether meets the conditions of version 1.0.0 according the related document in IHO and IALA or not. China MSA was entrusted to propose how to finalize “VTS Digital Information Service Product Specification” draft Edition 1.0.0 and review the feature catalog by the task group.

**2.3** IMO MSC.467(101) illustrated the interactions between different service levels (Maritime Services, Technical services and Data Models ). Technical services are needed to coordinate a seamless combination between different product specifications. Information provided using s-100 based product specifications is brought together by technical services to deliver a maritime service. IMO Assembly 32 approved the new IMO Resolution - Guidelines for Vessel Traffic Services, IMO Resolution A.1158(32) had been released in February 2022. The update to Guideline 1089 was completed at VTS49 and Guideline G1089 - Provision of a VTS was approved at Council meeting C72 for issue on adoption of the new resolution by the IMO Assembly. VTS51 had merged MS1-3 into new MS1: VTS as PAP recommended.

# PROPOSAL

**3.1 The latest draft of “VTS Digital Information Service Product Specification” is basically meeting the conditions of v1.0.0**

**3.1.1 IHO Resolution 2/2007**

According to IHO Resolution 2/2007 “Principles and Procedures for Developing IHO Standards and Specifications and to Conduct Changes” revised in 2020:

1. First Edition (WG/PT Development Phase)
2. A Working Group must make a submission to the Committee if the standard was developed by a subordinate Project Team – if the Project Team (Task Group in IALA) was established directly under the Committee, then the Project Team (Task Group in IALA) would submit directly to the Committee for approval of Edition 1.0.0 to be released and published for initial implementation, testing and evaluation and further stakeholder review. Such Edition 1.0.0 is not designed for regular use in approved arrangements or for regular provision of services by purpose.
3. The first Edition aiming to be released and published for regular use in approved arrangements or for provision of operational services is Edition 2.0.0. For the maturation process from Edition 1.0.0 to Edition 2.0.0 the Working Group (WG) has the authority to issue iterative Edition(s) 1.n.n– for clarifications and revisions that may have arisen during the implementation phase. The changes should be traceable either via a formal comment procedure or through an official proposal mechanism.
4. When the WG/PT has completed an impact assessment and obtained stakeholder feedback and considers that the standard is mature to become an Edition 2.0.0, it must submit the standard to the Committee for endorsement. The Committee may submit the standard to the Council for endorsement, if applicable, before the New Edition is submitted to Member States by the IHO Secretariat for approval of the content, and confirmation of the “effective date” of implementation. (see the diagram in annex 1)

**3.1.2 IHO S-97**

According to “S-100 Readiness Levels” of IHO S-97 Guidelines for Creating S-100 Product Specifications Ed1.1 in June 2020:

1. The readiness levels concept shows a progression from an idea to regular use, and allows the IHO community to gain a clear understanding of whether the Specification is ready for endorsement and approval. This will also allow other non-IHO stakeholder organizations who are leveraging the S-100 IHO Guidelines for Creating S-100 Product Specifications framework to gauge when their Product Specifications meet an appropriate readiness level for transition to live operation. (see the diagram in annex 1)
2. Level 1: Contains the minimum amount of components needed to commence the development of test datasets and system prototypes. This should be considered the final stage of development before demonstration begins, and would typically be Edition 1.0.0 of a Product Specification.

**3.1.3 IALA G1106**

According to IALA G1106 Producing an IALA S-200 Series Product Specification Ed2 in June-2017:

"determine geometry requirement, determine classes and attributes and relationships, create application schema, coordinate reference system, units of measure, data quality, maintenance, portrayal, data format (encoding)"are nine key steps when developing S-100 based product specifications. Based on all previous steps the product specification is complete.

When the template in annex A is complete, the product specification is finished and can be  submitted (see the diagram in annex 1).

**3.1.4 IALA G1087**

According to IALA G1087 Procedures for the management of the IALA Domain under the IHO GI

registry Ed3 in June-2017:

Product specifications with a 'draft status', which are reviewed and in a 'final state', are to be submitted to the IALA Domain Administrator. The IALA Domain Administrator will receive product specifications from product specification developers and review product specifications  for completeness.

At HSSC14 in May 2022, IHO invited IALA to submit their Ed1.0.0 of their product specification in the IHO Geospatial Registry.

## 3.1.5 Proposal for developing “VTS Digital Information Service Product Specification” Edition 1.0.0

According to the analysis of the “VTS Digital Information Service Product Specification” from the above four aspects, we believe that:

1. According to IHO Resolution 2/2007 revised in 2020, Edition 1.0.0 of VTS Digital Information Service Product Specification is not designed for regular use in approved arrangements or for regular provision of services by purpose, but aim to be released and published for initial implementation, testing and evaluation and further stakeholder review.
2. VTS digital information service product specification v0.6.5 contains essential components such as main document, default coding, S-100 compliant feature catalogue, data classification and encoding guide, and conforms to S-100 readiness level 1 proposed by IHO S-97, as Edition 1.0.0 for initial implementation, testing and evaluation.
3. VTS digital information service product specification v0.6.5 has completed all 9 key steps proposed by IALA G1106, and can be submitted as Edition 1.0.0.
4. It is recommended that VTS Digital Information Service Product Specification be submitted to the IALA Domain Administrator for review after being adopted by the VTS Committee.
5. According to the product specification template in annex A of IALA G1106 and the format of version 1.0.0 of other draft product specifications in IALA domain, such as S-201 and S-211, it is suggested that the product specification format of S-212 should be improved. If necessary, China MSA will be glad to undertake this work.

**3.2 Specific data information of VTS linking to VTS technical services**

When sorting out and digitizing VTS specific data, we should pay attention to the particularity of VTS role and VTS Information:

* different VTS centers may assume different roles and have different data requirements: the VTS center may be a monitoring center that organizes monitoring of traffic information, identifies possible risks and informs participants to take actions. The VTS center may be a data center, gathering maritime information and government security information and implementing management. VTS center may be a coordination center, playing the role of traffic coordination, actively formulating traffic management plans, specifying mandatory routes for ships (sea and inland rivers), and playing the basic function of information management. The VTS center may be a command center to monitor ship traffic, provide reliable information for ships, provide mandatory routes and instructions for ships entering / crossing the VTS area, and command and coordinate the handling of water emergencies.
* the information interaction between VTS and ships requires high timeliness, and some information needs immediate feedback: Currently, the information interaction between VTS and ships is mainly completed through VHF. In order to reduce misunderstanding and save time, IALA has developed a detailed guide (g1132) to regulate the communication terms of VTS personnel. Automatic information exchange (such as AIS) will reduce verbal VHF messages and misunderstandings between ships and their interaction with shore support services, thereby improving security in the port area. However, it should be noted that not all information is suitable for automatic exchange, for example, some safety reminders involving navigation safety must be responded to immediately.
* VTS maritime service (MS1) contains a large amount of unstructured information, and the data requirements also overlap with other maritime services: most of the information that VTS interacts with the ship is the information that has been involved in other product specifications (it is possible to integrate single product specification information or multiple product specification information), or safety suggestions or instructions based on other product specification information (such information is usually not structured and difficult to be digitized), Therefore, it is very difficult to thoroughly sort out VTS specific information, and some unstructured VTS Information is also difficult to be digitized.

Through the comparison and analysis of the VTS data sorted out by the 2.3.1 task group and the 1.2.4 task group, the VTS specific data information is formed through screening (see Annex 2). Considering the particularity of VTS Information, the VTS data information service information, ship information, ship dynamic information, navigation equipment status information, accident report information, accident handling information, contact information and other contents in the current VTS digital information service product specification v0.6.5 have basically covered the VTS maritime service (MS1) requirements.

# References

1. **IMO MSC.1/Circ.1610***Initial Descriptions of Maritime Services in the Context of E-navigation(14 June 2019);*
2. IMO MSC.467(101) *guidance on the definition and harmonization of the format and structure of maritime services in the context of e-navigation*;
3. IMO A.1158(32) *Guidelines for vessel traffic services;*
4. *Future VTS scenarios - Port of Rotterdam;*
5. *SILENT VTS - Digitalizing VHF communications for the VTSO;*
6. IIHO Resolution 2/2007 Revised “Principles and Procedures for Developing IHO Standards and Specifications and to Conduct Changes” (November 2020);
7. IHO S-97 Guidelines for Creating S-100 Product Specifications Ed1.1(June 2020);
8. IALA G1106 Producing an IALA S-200 Series Product Specification Ed2.0 (June 2017).

# Action requested of the Committee

The Committee is invited to take note of the above information and to consider appropriate action.

**Enclosures:**

1.Requirements for documentation relating to the formation of product specifications v1.0.0

2. The specific data information of VTS

Annex 1：

Requirements for documentation relating to the formation of product specifications version 1.0.0

(1)Development, change and approval process of IHO standard：



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(2)List of essential components for S-100 technical readiness:

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(3) Process for submitting proposals for the registration of production specification:



Annex 2：

VTS data from Task Group 2.3.1 and Task Group 1.2.4

Comparing the VTS data of task group 2.3.1 and Task Group 1.2.4(see Annex 2) , the specific data information of VTS were screened including:

* VTS Digital Information Service Message: Source MRN of Vessel, MMSI Code, Message Identifier, Message Markers, VTS Operator Assignment, Acknowledgement Code, Reported At, Reported By, Request Information, Location State.
* Ship Information: Vessel Name, IMO Code, MMSI Code, Call Sign, Vessel's Measurements, Category of Vessel, Flag State, Ship Crew, Cargo Information, ISPS level, Number of passenger.
* Ship Dynamic: Ship Speed, Heading, Route Name, Route Version, Message identifier for Route, Bunker information, Vessel Statement, Movement Purpose, Ship's position.
* Navigational Equipment Condition: Whistles, Radar Equipment, Speed log, Electronic position-fixing, Compass system, Number of power units in use, Engine Telegraph, Steering Gear, Rudder Indicator, RPM Pitch Indicator, Rate of Turn Indicator, VHF Equipment, Mooring winches and lines.
* Sending Accident Information in VTS Area: Accident Alarm Type, Location, Accident Ship Information, Accident Details, Administration State.
* Accident: SAR Detail, Medical Assistance Detail, Not Under Command (NUC) Detail, Geometry, Assistance Detail.
* Contact Details: Communication Channel, Telecommunications.
* Security: ISPS, Piracy.
* Traffic and route information: Traffic Image to Vessels, Voyage Plan, Anchorage assignment, Berthing assignment, Route advisories, Navarea messages, Navtex messages, Notice to shipping, Suspension or change of routes, Reporting.
* Cargo information: hazardous cargo, medical information, type of cargo.
* Navigational information: Position from / to, Provide information related to navigating.
* Navigational advice: Provide advice or instruction related to navigation.
* Navigational warning: Dangerous wreck, Obstacles not otherwise promulgated, Diving operations, Vessel not under command (name, position, range and bearing, vessel identity).
* Request: Identification, Dynamic vessel information, Voyage Plan/ Route.
* Waterway management: Provide advice or instruction related to navigation, Diverging from the recommended route towards, Traffic clearance, Anchorage.
* Enforcement: Identification, Dynamic vessel information, Traffic image information (provide instruction related to speed limit; adherence to rules regarding traffic routing measures; pilotage requirements; other traffic regulations and local by-laws).

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