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| From: WG1, Sub Group on VTS Strategy | VTS37-8.12.3  Formerly VTS36/input/44 |
| To: VTS Committee  Agenda item 8.12 |  |

Information Paper

IALA Strategy Paper addressing the delivery of VTS in a rapidly changing world

# Introduction

The IALA Council at its 53rd session approved the proposal task (*VTS34/output/8*) to develop a strategy paper addressing the delivery of VTS in a rapidly changing world.

This Task includes the following actions:

1. Develop an IALA VTS Strategy with regards to the delivery of VTS in a rapidly changing world and the possible implications for IMO Resolution A.857(20) Guidelines for Vessel Traffic Services.
   1. Identify and document:
      1. the strengths and weaknesses of IMO Resolution A.857(20) in setting the framework for the delivery of VTS;
      2. developments in VTS since the existing Resolution was agreed and emerging trends that may be anticipated over the next 10-20 years;
      3. possible limitations to addressing the emerging needs and developments for VTS within the existing provisions of IMO Resolution A.857(20).
2. Provide a draft IALA VTS Strategy Paper outline and requisite Policy Objectives for the development of VTS to meet the emerging needs and developments over the next 10-20 years. Key milestones for completing the task include:

* VTS Committee prepare a draft outline of the ‘IALA Strategy on VTS’ paper’ (Sep 2012);
* IALA Council endorse the draft outline of the ‘IALA Strategy on VTS’ paper’ (Dec 2012);
* VTS Committee prepare a draft ‘IALA Strategy on VTS’ paper (Mar 2013);
* Council endorses current progress with the draft ‘IALA Strategy on VTS’ paper (Dec 2013);
* VTS Committee finalises the draft ‘IALA Strategy on VTS’ paper and submits to Council (Mar 2015);
* Endorsement by the Council of the draft ‘IALA Strategy on VTS’ paper’ (June 2015);
* Possible identification for a further review of A.857(20) (Sep 2015).

# Background

IALA, through the VTS Committee, deals with all aspects of VTS, including the expanding role of vessel monitoring for maritime safety, environmental protection and security. The Committee aims to develop and review VTS related IALA documentation on issues such as the training of VTS personnel, operational procedures, equipment requirements, the impact of new technologies and the role of VTS in security and global traffic monitoring systems.

The IALA VTS Manual 2012 (Section 0312) states:

*‘IALA recognises that the trends in maritime operations towards enhanced safety, security, efficiency, accountability and environmental responsibility, together with anticipated technical advances, will result in significant future change. As a consequence and where appropriate, IALA will initiate and lead developments, influence debate, and produce relevant recommendations and guidelines that may impact on the use or management of aids to navigation, including VTS.’*

In progressing Task 10 (Produce Guidelines on the provision of VTS Types of Service) and Task 3 (Review/update/provide input to IMO on Resolution A.857(20) - Guidelines for Vessel Traffic Services) during VTS34 possible shortcomings and differing interpretations in the delivery of VTS in a rapidly changing world were highlighted.

In considering these short comings and differing interpretations the Committee identified the need for a high-level policy document describing the objectives for VTS to meet the emerging needs and developments and the adequacy of the existing international framework for VTS.

# General Principles

To develop the vision for the future delivery of VTS in the next 10 – 20 years, a number of steps have been identified and could provide the outline for the VTS Strategy paper (Annex B).

It is proposed that in developing the IALA Strategy on VTS the following principles should be applied in drafting a VTS Strategy paper:

* establish a vision on the future delivery of VTS consistent with IALA’s overall mission statement;
* establish a mission statement for VTS based on IALA’s mission statement;
* the Strategy should follow the vision;
* after finalizing the vision a GAP analysis may follow, with the focus on “what does the maritime domain expects VTS to deliver and what does VTS deliver now”.

# Proposed Mission statement and policy objectives for VTS

IALA’s Constitution (Article 2) states:

*The aim of IALA is to foster the safe, economic and efficient movement of vessels, through improvement and harmonisation of aids to navigation worldwide and other appropriate means, for the benefit of the maritime community and the protection of the environment*.

Based on this statement the following VTS Mission Statement is proposed:

*“IALA’s mission for VTS is to foster the safe, economic and efficient navigation of vessels and the protection of the marine environment, through improvement and harmonization of the delivery of VTS worldwide in a rapidly changing maritime environment, for the benefit of the maritime community and in support of other services*.”

# Vision

A Vision statement is considered necessary for the development of an IALA Strategy on VTS (to be included in the overall IALA Strategy) and will be drafted at VTS36. All relevant issues for drafting the vision statement will have to be identified.

# Possible Implications for IMO Resolution A.857(20)

Examples of the strengths and weaknesses of the current IMO Resolution A.857 (20) have been identified and are at ANNEX A, which is under development.

# Developments and Emerging Trends

Developments in VTS since the existing IMO Resolution A.857(20) was agreed and emerging trends that may be anticipated over the next 10-20 years have been considered and examples are at ANNEX A.

# Possible limitations within the existing IMO Resolution A.857(20)

Examples of possible limitations to addressing the emerging needs and developments for VTS within the existing provisions of IMO Resolution A.857(20). These are shown at A.3.

# Conclusions from VTS Symposium relevant to VTS future.

## The full potential of VTS is still to be realised, particularly when compared to similar services in the aviation world, including maritime spatial planning

## There is a compelling need to establish stand-alone communication procedures for VTS to facilitate clear and unambiguous transfer of information.

## There are clear benefits in extending VTS beyond its current limits, noting increasing co-operation between competent authorities. The delivery of VTS beyond territorial seas requires clarification and certainty

## There is increasing awareness, public perception of, and expectation for, VTS. This places an enhanced degree of accountability on maritime administrations and their subsequent management of VTS.

## There is a compelling need for mandatory training for VTS operators in order to ensure a consistent and harmonised delivery of VTS worldwide.

1. **Goals for VTS**
   1. To consider and coordinate the factors with impact on the maritime traffic.
   2. To coordinate the stakeholders in the maritime domain(similar to air or road traffic).
   3. To do more and far reaching traffic organization. TOS should start long before the vessels enter the VTS area.
   4. To optimize the traffic flow from port to port.
   5. To do Traffic Organisation from berth to berth. Traffic organisation (management) covers VTS area and adjacent non VTS area ( inter VTS operations for TOS).
   6. to develop a inter- VTS network. Link VTS network with AS (Allied Services network and the other stakeholders (network).
   7. Harmonize the communication ship / shore (Forms, data set, format)
   8. Implement a structure /matrix for IALA guidelines and recommendations considering the future aims to reduce number, gaps, overlapping and ambiguity of the current documents
   9. Connection of VTS  to sensors and  communications outside VTS-systems, if relevant for VTS or interfere with VTS tasks or communications.The aims is to prevent ambiguity e.g. by mulitiple communication ways and partners  or to save costs by using  VTS- external sensor installations for VTS.
2. **Strategic Aims**
   1. Organizational / administrative:
      1. To encourage (public) awareness and acceptance of VTS-Stakeholder as the (most) important stakeholder in respect to maritime traffic (safety first)
      2. Early participation of VTS –Stakeholder in the development for measures to cope with the development described above
      3. include stakeholders and coordinate the stakeholder
   2. Operational:
      1. Extend the scope , area and responsibility of TOS
      2. foster unambiguous traffic organization (organisation out of one hand and not by many hands)
      3. coordination of multiple sources and stakeholders
      4. ergonomic and task oriented workstation, HMI and portrayal . Consider separation of sections for long term traffic prediction, tactical short term prediction and situational activity, reactive documentation, replay
      5. compliance of situation and planning presentation in the VTS-C and on the vessel´s bridge for the relevant area
   3. Personel/training:
      1. training of VTS personel  in respect to traffic organisation task  (Traffic management)
      2. organize the VTSO tasks and work station in way the VTSO can deal with extended TOS and coordination of multiple sources and stakeholders
      3. Implement mandatory training and certification for VTSO’s
   4. Technical
      1. give technical tools to the VTS O to deal with the long term prediction and planning task and the task to coordinate multiple stakeholders
      2. define standards especially for quality of data (reliability, integrity) because of the decreasing dependency on data from diverse sensors, (external) source und data processing.
      3. improve quality of voice communication

ANNEX A

1. Examples of the strengths and weaknesses of the current IMO Resolution A.857(20)

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| **Strengths** | **Weaknesses** |
| Vessel Traffic Services (VTS) are recognised under SOLAS, (Chapter V Regulation 12) as contributing to safety of life at sea, safety and efficiency of navigation and protection of the marine environment. | The Resolutionis over 16 years old and was adopted:   * prior to the last SOLAS amendment relating to VTS (Regulation 12 -textual change in 1997 and adopted in 1999) * prior to modern technologies * at a time when VTS was in its infancy. VTS is now a mature and established partner in the maritime domain with respect to its role, function and interaction with other services * at a time when the globalisation of maritime shipping had just commenced and the impact on VTS (boundaries, responsibilities, etc.) was unclear |
| Provides Internationally recognised guidelines for Contracting Governments / Competent authorities to authorise VTS Authorities to deliver VTS services worldwide | Although there is a mechanism to amend the Resolution it is recognized that the process often requires considerable inter-government coordination which may prevent changes in a timely manner to meet recent developments and maintain transparency and currency. |
| Provides guidance as to the responsibilities and liabilities of VTS authorities | The definitions in the Resolution  are in need of review and amendment as identified by IALA recent guidance In addition new definitions are also required. It has been recognized that commonly accepted and unambiguous definitions are in line with the IMO harmonization policy. |
| Provides Internationally recognised guidelines for planning and implementing a VTS | The scale of the types of services needs to be defined as they currently are a source for continuous debate.  [Not sure what you mean by scale of the types of services. Categories - Levels?] |
| Provides Internationally agreed guidelines on recruitment, qualification and training of VTS operators | The Resolution needs to provide guidance on the requirements for validity, renewal or compulsory expiry of certification.  [Not sure what you mean by compulsory expiry. What about mandatory training?] |
| The delivery of VTS services is transparent to mariners | Guidance is also needed for:   * the management of maritime data and information, * ensuring a legal basis for information sharing and re-use of data in accordance with national and international law * VTS - Pilotage interoperability |
| There are VTS like services provided by non-VTS authorities (e.g. commercial operators wind-and fishfarms and other offshore installations), which are not bound to the present Resolution.  [INS is a VTS Information Service. The service provided by 'those above' is a Local Service consisting of information and no interaction - or should be!] |
|  | According to A.857(20) , by establishing a VTS, the guidelines for Criteria for Ship Reporting Systems should be used in conjunction with A.857. See A.857.(20) Annex 1, point 3.  This guideline for Ship Reporting System is also very old (1994) and today, a VTS is a totally different instrument of a Ship Reporting System with a different purpose. |

1. Developments and emerging trends WHICH IMPACT ON IMO RESOLUTION A.857(20)

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| Developments in VTS since the existing IMO Resolution A.857(20) was agreed | **Technology** –  AIS, CCTV, LRIT, Satellite based AIS, Computer Technology, New Radar Technology, new symbology, Electronic Nautical Charts |
| **Communications** –  AIS, Network technologies, VOIP, implementation of GMDSS,  VHF Channelling, introduction of electronic notifications,  implementation of high speed digital communications |
| **Guidance –**  Primary tasks of VTS evolved since the first development of the Resolution. New and reviewed IALA Recommendations and Guidelines have not been incorporated since 1997. |
| **VTS in maritime domain -**  Increasing interaction outside traditional VTS - due to globalization of shipping and the increasing information position of VTS and its increasing communications capabilities |
| **Legislation/regulations -** Implementation of  • ISPS Code (Security)  • International Aeronautical and Maritime Manual on Search and Rescue (IAMSAR)  • Monitoring Guidelines on Dangerous Goods   * MARPOL ? |
| Emerging trends that may be anticipated over the next 10-20 years | * General: * Increasing public expectation for safety, security and environmental protection in the marine environment. * Adoption of e-Navigation * Need for operational delivery of primary tasks of VTS will due to increasing intensity and diversity of shipping * scale enlargement of ships * economies of scale in shipping * claims for alternative use of maritime manoeuvrable space (e.g. OREI (Offshore Renewable Energy Infrastructures) fishfarms) * growing perception that the organization of maritime traffic (including most if not all types of shipping) should be further developed |
| **Operational:**  **•** a shift of focus towards Traffic Organisation Service  • An increase of route and traffic planning  • Increase of Routing advises (berth-to-berth) from shore  • Worldwide increase of the number of Traffic Separation Systems (TSSs)  • Implementation of VTS beyond territorial waters  • An increasing need for collaboration between neighbouring VTSs  • A rapid automation of VTS related port processes   * Increasing * need for linking to the logistic chain * use of VTS for navigational efficiency and planning in collaboration with other nautical services; * need from other parties for access to information available from VTS (due to its increasing information position) |
| **Communications -**   * Digitalisation of maritime VHF frequencies is foreseen and most probably autonomous and irreversible. * New technologies (under e-navigation) * Modernization GMDSS |
| **Organization and responsibilities:**  The introduction of new services (development Maritime Service Portfolio under e-navigation) may lead to  • new responsibilities and liabilities of the VTS, VTSOs and the VTS Authority  • changes in the traditional operational structure of the organizations  • new or extra competences for VTSO on various levels  • the need to respond to (evolving) Quality Management Systems |
| **Legislation -**  • Due to the increasing complexity of international maritime shipping an increase of legislation , regulations and Guidelines for operating VTS are to be expected.  • Certification of the performance of VTS is expected, the need for certification of the VTS organization may be studied  • The imbedding of changes in SOLAS V, Resolution 12 |
| **Training and Simulation**   * Due to all foreseen developments training Guidelines and Model Courses may have to be reviewed and adjusted to new operational needs; * The requirements for simulation training will have to be further developed and increased; * Need for an internationally recognized mandatory VTSO certification (in a system similar to STCW) |
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1. Possible limitations within the existing IMO Resolution A.857(20)

The present IMO Resolution A.857(20), adopted in 1997 with its original structure unchanged, is not flexible enough for and may obstruct the introduction of new items, such as the operation of Navigational Assistance Service (NAS), VTS supporting other services such asSecurity, VTS beyond Territorial Waters, berth-to-berth advices from shore etc.

The relationship with other (also evolving) services and its consequential responsibilities and liabilities may also be constrained by the existing Resolution.

Most textual changes to IMO Resolution A.857(20) will not promote the transparency and its unambiguity.

Consequential aspects in respect to SOLAS V (Regulations 10, 11, 12) for a future delivery of VTS in a rapidly changing maritime domain need further study as a consequence of the vision to be developed.

ANNEX b

PROPOSED VTS STRATEGY PAPER Outline

# Introduction

# Background

## History of VTS

## Changes and new opportunities in the maritime domain

## Compelling need (for VTS to respond to these needs and changes)

## The mission

## Future task for the VTS Committee

# Revisiting VTS functionality

# Other identified issues to be analysed

# Scope of future VTS

# Potential consequences

## Legislation and regulations

## Organization

## Future role and position of VTS

## Future role, position and responsibilities of the VTS Authority

## Human resources and Training

## Services

## Primary services

## Supporting services (e.g. to allied and other services)

## Infrastructure

# Identified Actions

# Actions requested