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Development of Guidelines on VDES resource sharing and coordination/cooperation

# Summary

At ENAV28 and ENAV29, the authors proposed and discussed, by document ENAV28.5.1.3.3 and ENAC29.5.1.3.1, a new work item of development of guidelines on VDES resource sharing and coordination/cooperation under IALA S1060. This proposal has been discussed in ENAV Committee and its WG3 and the IALA Council in late of 2021 approved this new work item.

This document has been submitted to facilitate the discussion for development of IALA Guidelines on VDES resource sharing and coordination/cooperation under IALS S1060.

## Purpose of the document

The document has been submitted for the purpose of starting up the development of guidelines on VDES resource sharing and coordination/cooperation.

## Related documents

IALA G1060.

# Background

WRC 2019 agreed to allocate VHF channels to VDES including for VDES satellite communications. In near future, there will be available several VDES satellites and VDES land stations world-wide.

Maritime Safety Committee (MSC) of International Maritime Organization (IMO), at its 103rd session (MSC103) held in May 2021 agreed a new work item for introduction of VDES into the International Convention of Safety of Life at Sea (SOLAS) and will start the actual consideration from 2023 at the Sub-Committee on Navigation, Communication, Search and Rescue of IMO for two years. This will allow VDES as an alternative of AIS and furthermore as a communication way for maritime safety and e-navigation.

Maritime development of digital transformation (Maritime DX) has been started in maritime sectors (maritime transport and logistics), and standardization activities for digital data exchanges between ships and land based station has started in the internationally, for example, at International Organization for Standardization (ISO).

In recent years, activities for establishment of VDES communications, that include both terrestrial and satellite communications, has started.

In these circumstances, IALA shall lead the collaboration on VDES communication services for establishment of international cooperation and resource sharing and management on VDES terrestrial and satellite communications.

# Discussion

## Objective of the project

The aim of the project of “Development of Guidelines on VDES resource sharing and coordination/cooperation” is to establish international cooperation for sharing of hardware and data resources and management on VDES terrestrial and satellite communication.

## Expected outcome

The expected outcome of the project is an IALA Guideline that provides framework of VDES resource sharing and coordination/cooperation for VDES satellites providers, VDES land-stations and VDES users to realize smooth and effective VDES communications on both official and private communications.

## Outline of the guidelines

It has been a long time since the announcement of the e-NAV concept to create a digital environment necessary for maintaining a sustainable marine environment. Since then, IALA-WWA (International Association of Marine Aids to Navigation and Lighthouse Authorities – World Wide Academy) has been involved in the development, management and maintenance of navigational aids and is proceeding with the examination of issues related to the development of advanced technology. Considering that IALA is strongly required to contribute to the development of the sustainable marine environment by transforming into an IGO (Intergovernmental Organization), IALA welcomes the decision to start the development of satellite VDES, which is the foundation of the marine digital society. Following this, we are pleased to propose measures for practical use of satellite VDES upon a coordination/cooperation of VDES communication providers and resources, since early and reliable commercialization of satellite VDES is essential for the sustainable use of the ocean.

IALA ENAV WG3 has started discussion to identify near future use cases of VDES in various maritime communications among merchant vessels and small crafts including pleasure crafts and fishing vessels, and has work on this issue as the revision of IALA G1117.

It is also recognized that some organs/groups have started establishment of VDES satellite communication systems, including space segments and land-based segments.

Under these circumstances, it would be better to establish cooperation and coordination of operation of VDES communications by sharing these resources.

Therefore, it is necessary to consider the establishment of an international collaboration on the following points for the establishment of international cooperation and resource management of VDES communications, in line with IRU-R M2092-1 Annex 6 Resource sharing method for VDES terrestrial and satellite services, as IALA Guidelines. The major contents of the Guidelines should be as follows:

1 Coverage of land-based stations (control station of communication);

2 Sharing resources among land-based stations (control station of communication);

3 co-operation between VDE-TER and VDE-SAT; and

4 cooperation and resource sharing among VDES satellites.

In order to implement the coordination and cooperation of VDES communications, It would be necessary to establish an international organization for international cooperation, resource sharing and management for VDES communications. Such an international organ may consider, establish and manage protocols for harmonization of scenarios of use and application for VDES terrestrial and satellite communications.

ENAV Committee and its WG3 is requested to consider the idea above, in particular, the major outlines as described above toward to the development of Guidelines on VDES resource sharing and coordination/cooperation.

Based on the discussion above, the principles of the Guidelines for VDES resource sharing and coordination/cooperation will as follows.

**3.3.1 Organizational framework**

The international cooperation on VDES resource sharing can be implemented by organs (governmental organizations, NGOs, private sectors) which operate VDES communications. Such organs that wish to join the coordination/cooperation should specify their systems (e.g., terrestrial stations, satellites) and contribute the communications that are conducted by the other organs, (by e.g., roaming or other methods). The guidelines should specify the method and procedures of joining the coordination/cooperation, as well as the obligations of the organs to the international cooperation of VDES communication. The Guidelines should also specify the code of operation of the international organization for international cooperation, resource sharing and management for VDES communications.

**3.3.2 Technical Methods and procedures of VDES communications for resource sharing among joining organs.**

The Guidelines should specify technical methods and procedures of VDES resource sharing that realize the VDES communication exchanges (various usage of VDES based on IALA G1117) among the member organs. This may incudes upper layers of protocols of VDES communications based on the ITU-R M2092-1 and ALA G1139. Such technical consideration and development may require participation of scientists/technologists and take a longer period. However, It also may require a development of onboard satellite system beforehand the implementation of the international cooperation on VDES resource sharing, therefore, the technological methods and procedures of VDES communication for resource sharing should be conducted as soon as possible.



**Figure-1 The image of VDES resource sharing and cooperation/coordination**

**3.3.3 Method of work within ENAV Committee**

In order to accelerate the work indicated in 3.3.1 and 3.3.2, it would be beneficial/necessary to establish a task group, for instance, within WG3 of ENAV Committee.

**3.3.4 Discussion at ENAV30 WG3**

The authors may provide a discussion paper to ENAV30 WG3 for its consideration on this subject.

# References

1. ENAV28.5.1.3.3
2. 20211015 WG3 New work items proposal 2021\_1015.
3. ENAV29.5.1.3.1

# Action requested of the Committee

The Committee is invited to consider the development of Guidelines on VDES resource sharing and coordination/cooperation outlined in paragraph 3.3, and if it feels necessary, the establishment of sub-group (e.g., task group) within its WG3 for the development of the Guidelines.

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