**Draft Deliverable 1.15**

**VDES sample text for IALA Documents-Navguide**

# VDES sample text for IALA Documents - IALA NAVGUIDE

Chapter 4 – based on proposed revision (ENAV19-10-11)

|  |  |  |
| --- | --- | --- |
| Current title of sections | Current content of sections | Proposal for NAVGUIDE 2018 |
| 4.10 Communication | **Subchapter introduces MRCP** | **New title: Maritime Communication Systems**  Section should deal with communication plans, systems and platforms used for data exchange and information provision (therefore VDES should be also introduced). |
| 4.11 LRIT | **LRIT description** |
| 4.12 AIS | **AIS description with different depth of detail and ECDIS description** |

The current environment for maritime navigation is complicated, unsynchronised and un-ergonomic. Navigational and communications equipment are not designed to specifically integrate with each other, creating difficulties which lead to frustrations for the mariner and can result in creating dangerous situations. Maritime Communications Systems are evolving to embrace enhanced digital capabilities within the existing framework of maritime mobile spectrum allocations.

Almost every e-Navigation solution currently foreseen depends upon efficient and robust ship-ship, ship-shore or shore-ship electronic data transfer. Existing communications systems may, in many places, be adequate to serve these needs, but it may be necessary to develop new methods to realise the full potential of e-Navigation. The performance requirements, in particular data capacity, for communications systems to support e-Navigation are, in many cases, unknown and are likely to change over time.

There are a number of potential communication systems that could support e-Navigation. Each communication system has characteristics such as data capacity, data rates and channels, as well as benefits and drawbacks of using the system (pros and cons). These systems include:

**NAVDAT**

**VHF Data Exchange System (VDES)**

**Digital Selective Calling (DSC) (VHF and HF)**

**Digital VHF and HF**

**Wi-Fi**

**4G / 5G**

**Satellite communication systems and services including geostationary and low earth orbiting satellites**

Details on the existing and developing digital communications systems are contained in *[make reference to Digital Communications Strategy Document].*

## NAVDAT

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## VHF Data Exchange System (VDES)

At the World Radio Conference 2015 the International Telecommunications Union identified 6 frequencies in the VHF maritime mobile band for the use of digital data transfer. The frequencies form part of the developing VHF Data Exchange System (VDES). With the ability to group the new frequencies together to provide a larger band for data transfer, the VDES will enhance digital data functionality in the future.

VDES is seen as an effective and efficient use of radio spectrum, building on the capabilities of AIS and addressing the increasing requirements for data through the system. While VDES will include AIS as it currently exists, new techniques providing higher data rates than those used for AIS is a core element of the enhanced capabilities of VDES. Furthermore, VDES network protocol is optimized for data communication so that each VDES message is transmitted with a high confidence of reception.

Implementation of VDES has commenced, building on the allocation of spectrum at WRC-15 where the ITU approved a standard for VDES, Recommendation ITU-R M.2092-0. A remaining outstanding issue is the approval of the satellite component for the VDE channels which is targeted for approval at WRC-19.

The system concept, including VDES functions and frequency usage are illustrated pictorially in Figure YY (full system, including Satellite allocations)

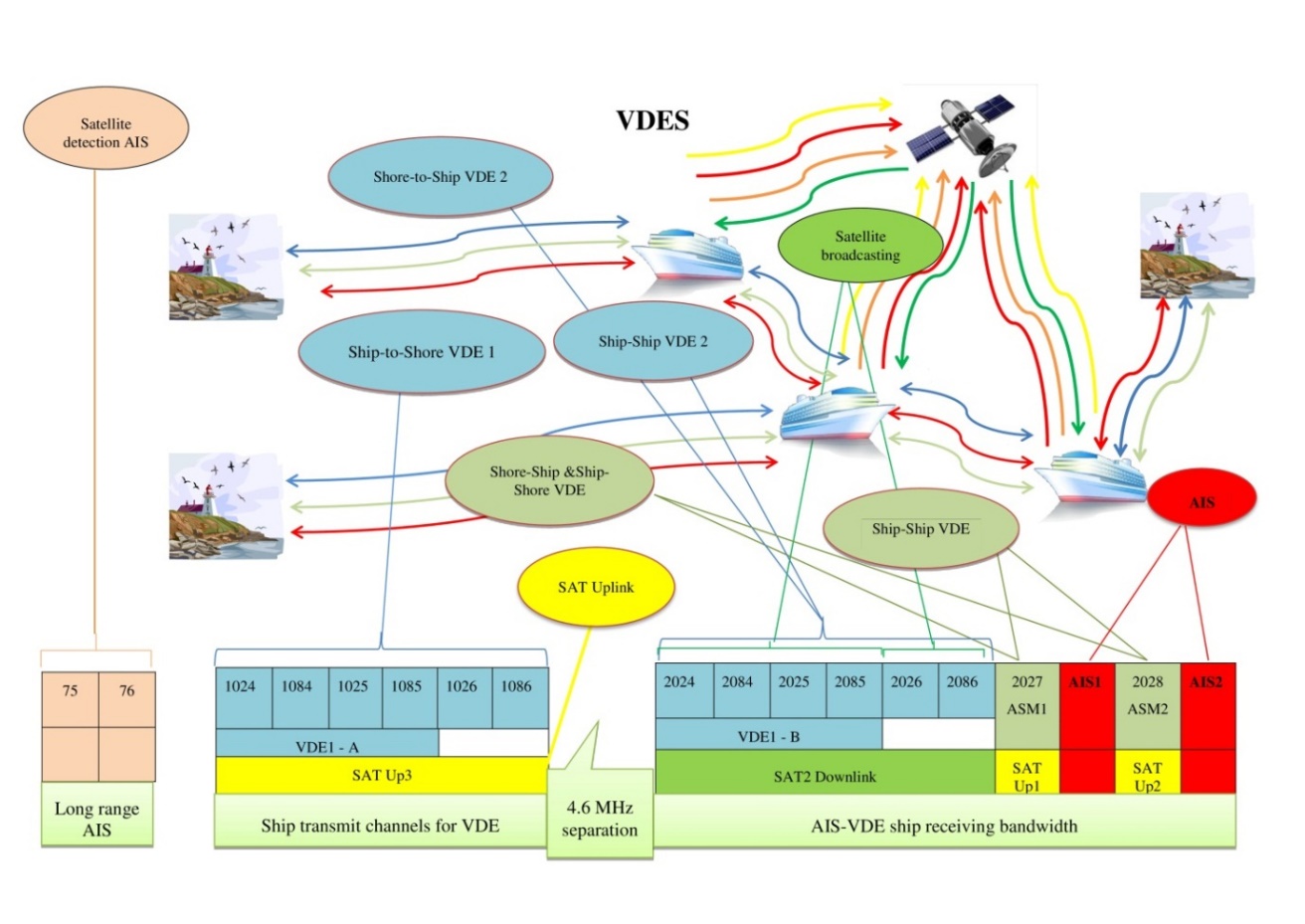


Figure YY - VDES functions and frequency use – full system

Table XX presents the channel allocation of VDES.

| Channel number in RR Appendix 18 | Transmitting frequencies (MHz) for ship and coast stations | |
| --- | --- | --- |
| Ship stations (ship-to-shore)  (long range AIS)  Ship stations (ship-to-satellite) | Coast stations  Ship stations (ship-to-ship)  Satellite-to-ship |
| AIS 1 (87B) | 161.975 | 161.975 |
| AIS 2 (88B) | 162.025 | 162.025 |
| 75 (long range AIS) | 156.775 (ships are Tx only) | N/A |
| 76 (long range AIS) | 156.825 (ships are Tx only) | N/A |
| 2027 (ASM 1) | 161.950 (2027) (SAT Up1) | 161.950 (2027) (SAT Up1) |
| 2028 (ASM 2) | 162.000 (2028) (SAT Up2) | 162.000 (2028) (SAT Up2) |
| 24/84/25/85 (VDE 1)  24  84  25  85 | 100 kHz channel  (24/84/25/85, lower legs, merged)  Ship-to-shore  Ship-to-satellite (SAT Up 3) | 100 kHz channel  (24/84/25/85, upper legs, merged)  Ship-to-ship, Shore-to-ship  Satellite-to-ship under certain conditions (SAT2 possible extension) |
| 157.200 (1024) | 161.800 (2024) |
| 157.225 (1084) | 161.825 (2084) |
| 157.250 (1025) | 161.850 (2025) |
| 157.275 (1085) | 161.875 (2085) |
| 26/86  26  86 | 50 kHz channel  (26/86, lower legs, merged) VDE 2  Ship-to-satellite (SAT Up3) | 50 kHz channel  (26/86, upper legs, merged)  Satellite-to-ship (SAT 1) |
| 157.300 (1026) VDE 2, SAT Up3 | 161.900 (2026) (SAT 1) |
| 157.325 (1086) VDE 2, SAT Up3 | 161.925 (2086) (SAT 1) |

Table XX Channel allocation for VDES

IALA has published a Guideline that provides an overview of VDES, including the road map to develop and implement this system. [*make link to IALA Guideline #### VDES Overview*]

## Digital Selective Calling (DSC) (VHF and HF)

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## Digital VHF and HF

[text]

## Wi-Fi

[text]

## 4G / 5G

[text]

## Satellite communication systems and services

[text]

### Geostationary (GEO)

[text]

### low earth orbiting satellites (LEO)

[text]