Proposal for the Work Programme 2023-2027 for IALA ENAV WG3 - Digital Communication Systems

# Overview

The following major topics are part of the responsibility WG3 takes in the future work program:

1. Develop necessary changes to ITU-R M.1371 AIS through liaisons with ITU and cooperation on preparing ITU inputs; Example Topics:
   1. Improve AIS operability, security, integrity and reliability for all actors
2. Develop necessary changes to ITU-R M.2092 VDES through liaisons with ITU and cooperation on preparing ITU inputs; Example Topics:
   1. Identify issues and potential improvements for VDES from the workgroup’s experience
   2. Revise VDES for issues identified during development and test of equipment and infrastructure
3. Create/maintain guidelines on the implementation of e-Navigation services through VDES; Example Topics:
   1. Creation of guidelines on shore, satellite and ship infrastructure
4. Discuss status updates from AIS and VDES experiences in test beds, development and infrastructure deployment and develop solutions to problems seen
5. Liaise with other committees and organisations supporting the development and the implementation of VDES R-mode into ITU and IMO

# Existing Tasks

This section discusses the tasks from previous sessions, that will be continued in 2022-2026.

The following existing Tasks will be continued (source: the e-Nav task sheet as of 2021-03-17):

Table

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# New Tasks / Tasks that have not been Started

Work on the following new tasks is proposed to be established:

| **ENAV Committee Work Programme 2023-2027** | | | |
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| **Standard** | **S1060** | | |
| **Topic Area** | Digital Communication System | | |
| **Task** | Develop a Guideline for AIS/VDES VDL integrity monitoring | | |
| **Objectives of the task** | Provide references and advice for authorities to monitor the integrity of VDL.   * Internally, make AIS/VDES VDL operating normally. * Externally, specify the common services and functions of the AIS/VDES VDL monitoring system or platform.   WG 3.  *(Describe the objective/s of the task)* | | |
| **Expected outcome** | An IALA Guideline.  In case of the vulnerability of AIS/VDES VDL, relative authorities can respond quickly according to the guidelines, in order to enhance the capability to protect the integrity of AIS channels and ensure the safety of navigation.  *(Describe the expected outcome: e.g. Recommendation, Guideline or Other)* | | |
| **Compelling need** | * The AIS/VDES VDL is vulnerable, as it is easy to be spoofed, jammed and there might be unauthorized base stations transmitting management messages as well. * Currently, IALA does not have a guideline for relative authorities to specify the functions and services to monitor the AIS/VDES VDL integrity.   *(Describe briefly why this task should be included in the Work Programme)* | | |
| **Strategic Alignment**  *(See IALA Strategic Vision)* | **Goal**  G1 – All coastal states have contributed to a sustainable and efficient global network of Marine Aids to Navigation through capacity building and the sharing of expertise.  **Strategy**  S1 - Develop standards suitable for direct citation by States, in areas deemed important by the General Assembly, and the related Recommendations and Guidelines.  S2 - Position IALA as the source of standards, knowledge, and expertise that will enable States to provide Marine Aids to Navigation, in accordance with relevant international obligations and recommendations.  S3 - Coordinate the further development of Marine Aids to Navigation, taking into account evolving operational and functional requirements, new techniques, new technologies and sustainability.  S4 - Continue to develop capacity building activities to improve the global provision of Marine Aids to Navigation. | | |
| **Scope** | **In Scope:**   * Establish of structure and content of the Guideline * To draft and align the guideline with the new IALA document structure * Associated with the implementation and operation of AIS and VDES systems   **Out of scope:**  *(Describe key items that are in scope/out of scope)* | | |
| **Brief and concise description of the work to be undertaken and programme mile­stones** (where appropriate). | Provide guideline of services and functions for relative authorities to monitor the integrity of AIS/VDES VDL;  Key milestones include:   * March 2022(ENAV29) – Scope Task and research * October 2022(ENAV30) – Prepare skeleton. * March 2023(ENAV31) – Draft document prepared * October 2024(ENAV32) – Draft guideline reviewed by ENAV Committee and forwarded to Council for approval. | | |
| **Expected numbers of sessions for completion** | Session number:  29 30 31 32 33 34 35  X  X  X  X | | |
| **Committee notes** | **Origins** | Requested by ENAV Committee at ENAV27 | |
|  | **Agreed by session** | **TD#** | **Comments** |
|  |  |  |
|  | **Approved by Council** | *(Council Session)* | *(Date)* |
|  | **Revision Notes:** |  | |

| **ENAV Committee Work Programme 2023-2027** | | | |
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| **Standard** | **S1060** | | |
| **Topic Area** | Digital Communication System | | |
| **Task** | Develop Guidelines on VDES Authentication Techniques | | |
| **Objectives of the task** | Describe potential methods for authenticating VDES transmissions, including VDES R-Mode signals.  Provide basis for the development of an international standard for VDES authentication, so that all mariners can have trust in e-navigation communications and future resilient positioning, navigation and timing solutions based on VDES.  *(Describe the objective/s of the task)* | | |
| **Expected outcome** | New IALA Guideline  *(Describe the expected outcome: e.g. Recommendation, Guideline or Other)* | | |
| **Compelling need** | The AIS and most aspects of VDES are vulnerable to spoofing. With the advent of software defined radio, spoofing unprotected radio transmissions has become much easier than in the past and can be accomplished using relatively low cost equipment.  With the exception of AIS vessel position reports, most e-navigation data cannot easily be corroborated with other sources of information available on-board maritime vessels (consider, for example, virtual aids-to-navigation).  Mariners should be able to authenticate all e-navigation data that they receive (no matter how trivial) as we do not know how the data may be used in the future.  *(Describe briefly why this task should be included in the Work Programme)* | | |
| **Strategic Alignment**  *(See IALA Strategic Vision)* | **Goal**  <Goal number>  **Strategy**  Harmonization of e-Navigation, cybersecurity | | |
| **Scope** | **In Scope:**  AIS, ASM, VDE-TER, VDE-SAT transmission  **Out of scope:**  Encryption, Public Key Infrastructure  *(Describe key items that are in scope/out of scope)* | | |
| **Brief and concise description of the work to be undertaken and programme mile­stones** (where appropriate). | Build up the structure of the Guideline by intersessional work   * Description of the threat and vulnerabilities * Potential solutions * Discussion of solutions * Conclusion | | |
| **Expected numbers of sessions for completion** | Session number:  29 30 31 32 33 34 35    X  X  X  X | | |
| **Committee notes** | **Origins** | Requested by ENAV Committee at ENAV27 | |
|  | **Agreed by session** | **TD#** | **Comments** |
|  |  |  |
|  | **Approved by Council** | *(Council Session)* | *(Date)* |
|  | **Revision Notes:** |  | |

| **ENAV Committee Work Programme 2023-2027** | | | |
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| **Standard** | **S1060** | | |
| **Topic Area** | VDE-SAT and VDE-TER | | |
| **Task** | Develop Guidelines on VDES resource sharing and coordination/cooperation | | |
| **Objectives of the task** | Establishment of international cooperation and resource sharing and management on VDES terrestrial and satellite communication  *(Describe the objective/s of the task)* | | |
| **Expected outcome** | 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. | | |
| **Compelling need** | WRC 2019 agreed to allocate VHF channels to VDES including for VDES satellite communications. IMO agreed a new work item for introduction of VDES into SOLAS and will start the consideration from 2022 for two years. In near future, there will be available several VDES satellites and VDES land stations world-wide.  In the 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. | | |
| **Strategic Alignment**  *(See IALA Strategic Vision)* | **Goal**  G1 – All coastal states have contributed to a sustainable and efficient global network of Marine Aids to Navigation through capacity building and the sharing of expertise.  **Strategy**  S1 - Develop standards suitable for direct citation by States, in areas deemed important by the General Assembly, and the related Recommendations and Guidelines.  S2 - Position IALA as the source of standards, knowledge, and expertise that will enable States to provide Marine Aids to Navigation, in accordance with relevant international obligations and recommendations.  S3 - Coordinate the further development of Marine Aids to Navigation, taking into account evolving operational and functional requirements, new techniques, new technologies and sustainability.  S4 - Continue to develop capacity building activities to improve the global provision of Marine Aids to Navigation. | | |
| **Scope** | **In Scope:**   * Establish of structure and content of the Guideline * To draft and align the guideline with the new IALA document structure * Associated with the implementation and operation of AIS and VDES systems   **Out of scope:** | | |
| **Brief and concise description of the work to be undertaken and programme mile­stones** (where appropriate). | Provide guidelines on VDES resource sharing and coordination/cooperation for use by VDES satellites providers, VDES land-stations and VDES users.  Key milestones include:   * March 2022(ENAV29) – Scope the task and establish framework * October 2022(ENAV30) – Prepare skeleton and first draft * October 2023(ENAV31) – Draft document prepared * March 2024(ENAV32) – Draft guideline reviewed by ENAV Committee and forwarded to Council for approval. | | |
| **Expected numbers of sessions for completion** | Session number:  29 30 31 32 33 34 35  X  X  X  X | | |
| **Committee notes** | **Origins** | Requested by ENAV Committee at ENAV28 | |
|  | **Agreed by session** | **TD#** | **Comments** |
|  |  |  |
|  | **Approved by Council** | *(Council Session)* | *(Date)* |
|  | **Revision Notes:** |  | |