# Report from CApe town, south africa 2017 Intersessional

# IALA ENAV Working Group 3 – Telecommunication

The IALA eNAV working group 3 telecommunication met at an intersessional meeting in Cape Town, South Africa the week of February 13, 2017 hosted by Stone Three Venture Technologies, Senro Limited and IMIS Global. The group would like to thank our sponsors for the excellent facilities, including setting up and running our first remote access via GoToMeeting. The agenda called for progress on the following objectives:

Report of ITU meeting

Channel Plan Discussion

                Status of Channel Model

                Strategy at ITU

VDE-SAT Report

                Identify all open items and assign responsibility

Major milestones:

How VDE and ASM will integrate into the maritime cloud or other systems to transport S100;

                                Authentication and information security

                                Maritime numbering system mrn.xxx.yyy.zzz

                                VDES interoperability testing

Annex 1:

                                Bulletin Board details

                                Training Sequence finalized

                                Rate adaption requires update

                                Clarify Transmission masks

Mature Link Layer

Annex 2:

                                Using top-down approach identify all major milestones necessary for -1 release

Develop work plan that meets release goals

Discuss AIS/ASM slot usage rules

Unfortunately, these items were not addressed during the intersessional:

IALA VDES documentation

VDES Technical Guideline

IALA documentation strategy for VDES

The documents can be found at:

Workgroup credentials  [http://www.iala-aism.org/file-sharing/](https://protect-us.mimecast.com/s/NVq3Bec2n6oHn):

Username : WGWorkSpace

Password: WgWs2016?

Sub-directory:

WG3/201702\_intersessional

Summary of Discussion:

Report of ITU meeting

Stefan Bober provided a briefing on recent ITU meetings and expectations for the IALA work. We had some discussions around recent inputs from Russia and China regarding the VDE-SAT link and how these might be addressed for our planned submittal to ITU WP5B in May of the VDE-SAT Report.

Channel Plan Discussion

An input from Canada was brought forth expressing concern over the current channel plan and the cost to administrations to protect the reception of AIS. It has been well understood that the current channel plan will burden the shore, but this decision was taken and agreed to ensure that ship costs would be kept at a minimum. However, concerns have been raised that must be considered as it may not be technically feasible to protect the AIS channel reception on shore, and if a technical solution can be found it may, in fact, be prohibitively expensive to implement. The group recognizes that without a carriage requirement for shipborne VDES, it will be the shore authorities who drive the need for VDES through offered services that increase the efficiency of shipping. If our current channel plan is not practical and affordable for shore authorities then it is unlikely VDES will become a reality beyond the AIS channels and therefore the group must examine alternative channel plans.

In order to resolve this issue Ross Norsworthy has been tasked with writing a report that includes design and cost possibilities. The expectation is that this report will be available by the end of February so that it might be reviewed and vetted before submission to eNAV20.

Canada invites other administrations to cooperate in field and lab testing as these channel plans are examined.

VDE-SAT Report

Lars Loge reviewed the current status of the VDE-SAT report and established a break-out group. The group reviewed the entire document and have identified the work necessary for submittal to eNAV20 for council approval and submittal to ITU WP5B in May. Work to integrate VDE-SAT into 2092 will begin after approval of the channels at WRC19.

Major milestones

*VDES integration into the maritime cloud*

Ernie Batty presented a brief paper explaining the current philosophy of access through the maritime cloud via the concept of geo-messaging. The proposal is to establish a unique ‘namespace’ denoted ‘Maritime Resource Name’. Within this namespace IALA – and sister organisations like IHO – can define their own types of identifiers for objects within their respective domains. Issuing identifiers can be delegated by subdivision of the namespaces into national domains or any number of organizational layers.

Examples offered included:

W26 Lighthouse, Great Belt, Denmark: urn:mrn:iala:aton:dk:021345-w26

Great Belt VTS: urn:mrn:iala:vts:vtsstation:dk:vtsgreatbelt

Ship (the hull): urn:mrn:imo:imonumber: 9250969

Ship (the radiostation): urn:mrn:itu:mmsi:219543000

Ship (the radiostation): urn:mrn:itu:callsign:xp4358

For the VDES system this can be accomplished for both vessels and shore side base stations with the MMSI, and if available IMO number should be used.

*Authentication and information security*

It is well understood and accepted that VDES should have some method to ensure secure comms but within the capabilities of the system, i.e. we must be careful to not impose too much overhead to achieve this goal. Pieter Winter presented a paper on the concept of authentication versus encryption. The concept relies on a central authority that would manage the authentication certificates for terminal devices. Manufacturer’s would register with this central authority for the issuance of these certificates. When establishing trust, the terminal would be required to present its certification which would then be sent back to the central authority for verification. These concepts will be further matured in the Link Layer subgroup.

2092 Work

The goal is to provide ITU with a 2092-1 version for approval at the November ITU WP5B meeting. This version will address ASM (terr and sat) and VDE-TER. It was recognized during this meeting that the Link Layer definitions for ASM and VDE must be matured in order to further the development on 2092. To that end, two Link Layer groups have been established. The first will address the ASM, both terrestrial and satellite, this group is expected to complete their work and make all the relevant changes into 2092 by eNAV20. We believe this is achievable as the ASM will operate autonomously in the same manner as the AIS channels. The second group will take on the Link Layer definitions for the VDE-TER, where operation will be directed by the Bulletin Board (assigned). This work is much more complicated and so we have set a target for the next intersessional meeting.

The change log was reviewed and those with action items came prepared with presentations on their work, and the results were incorporated into 2092 as appropriate. Presentations were given by Jan Safar, Ronald Raulfs, Hans Haugli, Derek Love, and Krzysztof Bronk. The group would like to thank those who contributed as we all recognize that most of this work must be done in addition to our “day jobs”.

Other Business

*IMO NCSR*

The group received an email from the ENAV Chairman, Hideki Noguchi, asking for a review of several input documents at the upcoming IMO NCSR meeting in March. Of particular note was a submittal by Brazil/Singapore/Norway where the VDES was mentioned. The group felt that there might be some basic misunderstandings around the capabilities of VDES and we have prepared intervention notes for the IALA representative. The participants agreed to brief their IMO representatives as appropriate.

*Interoperability Testing*

During the VDES seminar on Monday the Chief Executive Officer of Stone Three, Eugene Jansen, dealt with the need to achieve interoperability between the initial VDES manufacturers and included the offer to set up a ‘golden’ VDES unit (a version that has been tested and the test data declared to participants) against which other VDES units can be tested for interoperability. The group intends to take this forward into IALA, as interoperability testing will require an impartial arbiter to report results and work with manufacturers. The intention is to discuss this with the IALA secretariat at eNAV20.

*Changes to Work Structure*

During the closing plenary the group discussed a new way forward for our work given that Jillian Carson-Jackson will be available to help the group with management of the Change Log and the editing of 2092. The group agreed that regularly scheduled meetings for the work against the Change Log will be required rather than simply leaving it to the assigned engineer. To that end, Stefan P. has been asked to monitor and ensure that the inter-inter sessional meetings are happening and progress is being made toward closure on Change Log items. Jillian will work closely with Stefan P. to help with the management of documents.

The following actions were recorded in the Change Log:

|  |  |
| --- | --- |
| Description | Action |
| Transition from training sequence to actual data constallation | proposal for the mapping wich may clarify the issue -> see 115 |
| flow diagram for clarity including bit order, MSB first, | template included, needs more work |
| Clarification order: padding, FEC, schrambling CRC | In the event of no FEC, bit scrambling according to Annex 1 shall be implemented  -> Johan provide a diagram |
| Transceiver characteristics, Tx mask diagram needed |  |
| Sequence of data manipulations | Order in which padding, FEC, scrambling and CRC are performed must be very clear, -> Proposal from STT available |
| review definition of PI/4 QPSK (rotating vs switching) and its implication to training sequence |  |
| Definition of termination bits |  |
| define transmit ramp up and ramp down |  |
| Ship antenna gain vs. elevation angle | replace old figure with figure from A7-3 - done; , new task: include reference to ITU doc for antenna |
| change max no of slots: 4 slots to 3 slots |  |
| Training sequence; analyse Zadof-Chu sequence | what are the benefits and how to implement |
| Clarify training sequence and sync word for rotating PI/4QPSK |  |
| define and evaluate MITDMA | • New MITDMA channel access:  o allow burst transmission and burst reservation o reservation method (multi reservation MITDMA ComState) to allow multiple reservations with different increments (max increment [256], [3] reservations), use incremental increments (additive increment/relative increment)  o no keep flag used in MITDMA |
| analyse Rule 3: available on AIS channels and available on ASM channels if wanted and how |  |
| analyse independent operation of the AIS and ASM systems. |  |
| define available on ASM channels |  |
| delete polled mode for ASM operation |  |
| verify symbols instead time perione |  |
| review message structure, ComState and message ID (less bits), might be different from AIS (more efficient) |  |
| delete use character strings , e.g.use of @ |  |
|  |  |
| analyze channel plan A with CIMS versus channl plan C |  |
| set up a group for link layer VDE | definition of link layer |
| set up a group for link layer ASM | definition of link ASM |
| set up a group for transport layer ASM | definition of transport layer and network layer |

# eNAV committee requirements progress summary

\* On target, behind target but under control behind target needs action

| **Task** | **Start Session** | **Planned End Session** | **Revised End Session** | **Progress Indicator** | | | **Status Overview** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Green** | **Yellow** | **Red** |
| **WG3 Telecommunications** |  |  |  |  |  |  |  |
| 1.4.1 Develop VDES Message Structures | 18 | 21 |  |  |  |  | Commence ENAV18 |
| 1.4.2 Assist in the Development of Message Structures for e-Nav | 18 | 21 |  |  |  |  | Commence ENAV18 provided WG1 is ready |
| 2.1.1 Update the Marine Radio Communication Plan | 20 | 21 |  |  |  |  | Commence ENAV20 |
| 2.1.2 Develop Recommendation on VDES | 15 | 21 |  |  |  |  | On-going |
| 2.1.3 Organise a Workshop on VHF Data Exchange System | 17 | 17 |  |  |  |  | Complete |
| 2.2.1 Update IALA Recommendations and Guidelines for AIS and VDES | 15 | 21 |  |  |  |  | On-going |
| 2.3.1 Manage Application Specific Message (ASM) catalogue | 20 | 21 |  |  |  |  | Complete until ENAV20 |
| 3.2.1 Liaise with ARM regarding Virtual AtoN | 17 | 17 |  |  |  |  | Complete |

# Output Papers

The output papers will be referred to IALA council for approval, then submitted to ITU.

| Number | | Title | Status |
| --- | --- | --- | --- |
| Output 1 |  | Report on Comms Intersessional Cape Town South Africa | Final |
| Output 2 |  | 20170217\_WD\_WG3\_INTERSESSIONAL\_REC-M.2092-1 | Working Document |
| Output 3 |  | PDNR\_ITU-R\_M\_VDES-SAT\_IALA\_20170216 | Working Document |

# Attendees

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