Terms of Reference (ToR) for the provision of a Vessel Monitoring System (VMS) for the Southern Indian Ocean Fisheries Agreement (SIOFA)

Project title: Establishment of a SIOFA Vessel Monitoring System

Project Code: SIOFA-VMS

1) Invitation to Bid

The Southern Indian Ocean Fisheries Agreement (SIOFA) is inviting qualified international companies to submit bids for the provision of a Software as a Service (SaaS) based Vessel Monitoring System (VMS) to the SIOFA Secretariat. The bids should include proposals for a SaaS-based VMS that complies with all the mandatory requirements of these terms of reference.

Bids are to be submitted to the SIOFA Executive Secretary, Mr Thierry Clot, at thierry.clot@siofa.org by 31 October 2025.

Key dates of the invitation to bid:

Activity	**Date**
Call for bids issued:	1 August 2025
Deadline for any request for clarifications from potential bidders:	15 October 2025
Deadline for submission of bids and proposals:	31 October 2025
Examination and evaluation of bids	1-30 November 2025
Notification to successful bidder:	1 December 2025
Contract signing:	December 2025
Start of Services:	1 January 2026

2) Background

The Southern Indian Ocean Fisheries Agreement (SIOFA) is a Regional Fisheries Management Organization (RFMO) established following the adoption of its Agreement in 2006 and its entry into force in 2012. Its mandate is to ensure the long-term conservation and sustainable use of the fishery resources in the Agreement Area through cooperation among the Contracting Parties, cooperating Non-Contracting Parties and Participating Fishing Entities (collectively CCPs) and to promote the sustainable development of fisheries in the Agreement Area, taking into account the needs of developing States bordering the Agreement Area that are Contracting Parties to the Agreement, and in particular the least-developed among them and small island developing States. To date, the SIOFA is composed of 13 CCPs.[1]

There are currently 103 vessels on the SIOFA Record of Authorized Vessels (RAV) flagged to the 13 SIOFA CCPs, of which approximately 74 vessels are actively fishing in the Agreement Area. These active vessels spend around 10,000 days (between 232,000-239,000 hours) per year in the Agreement Area. Article 6(1)(h) of the Agreement requires SIOFA to develop rules and procedures for the monitoring, control and surveillance of fishing activities in order to ensure compliance with SIOFA

[1] 10 Contracting Parties, 2 Cooperating non-Contracting Parties, and 1 Participating Fishing Entity.

conservation and management measures (CMM), including a system of verification incorporating vessel monitoring and observation of vessels operating in the SIOFA Agreement Area. While flag States are required to track and monitor their vessels' activities in the Agreement Area using a Vessel Monitoring System (VMS), SIOFA currently does not itself operate a VMS.

To address this, in 2023 SIOFA adopted Conservation and Management Measure (CMM) 16 (2023) for the establishment of a SIOFA Vessel Monitoring System (Vessel Monitoring System)[2] setting out the framework of the SIOFA VMS covering all key aspects, including the scope of application, definitions, nature and specifications of the VMS, prevention of tampering and actions in case of suspected breach, use and release of VMS data and VMS Position Reports, as applicable requiring / not requiring the consent of CCPs, closed and interim protected areas, as well as data security and confidentiality. This framework was further complemented in 2024 by the adoption of Standards, Specifications, and Procedures (SSPs) for the SIOFA VMS, which are available in Appendix 2.

In July 2025, the SIOFA Meeting of the Parties (MoP) agreed that the SIOFA Secretariat should subscribe to a SaaS VMS to provide SIOFA with an operational VMS.

3) Summary of Services

The SIOFA Secretariat is required to subscribe to an end-to-end SaaS VMS service to enable it and the CCPs to fulfil their obligations established under the Agreement, CMM 16 (2023) and other relevant conservation and management measures, also taking into consideration the requirements established by the SIOFA VMS SSPs. The service will include a test phase between the Secretariat and the CCPs before the entry into operation of the SIOFA VMS and the building of the Secretariat's capacity to operate and maintain the SIOFA VMS.

Procured services are expected to run for **36 months**, with the possibility of extension as determined by SIOFA. It will also include system maintenance and after-sales technical services required for the system's proper functioning, as determined by these terms of reference, including the technical specifications, and as agreed in a Service Contract.

4) General Description of Services

The desired system must provide a SaaS-deployed VMS to the SIOFA Secretariat on a subscription basis while respecting the technical specifications set out in these terms of reference, CMM 16 (2023), and the SIOFA VMS SSPs. The system must be capable of providing the following services, as laid down in more detail in the technical specifications in Appendix 1 and in accordance with SIOFA VMS SSPs in Appendix 2:

- Enable the SIOFA Secretariat to monitor in an automatic, continuous and cost-effective manner the movements and activity of fishing vessels operating in the Agreement Area to ensure compliance with SIOFA CMM The deployment shall include the installation of the VMS solution, training of Secretariat staff, and provision of documents and user manuals in the working language of SIOFA (English).

- Include a GIS (Geographic Information System) component to visually display VMS data and VMS Position Reports immediately after being received. The VMS must be able to determine a vessel's course (direction) and speed automatically and independently.

[2] The 12th Meeting of the Parties to SIOFA amended CMM 16 (2023) on Vessel Monitoring System to CMM 16 (2025) Vessel Monitoring System, which will enter into force on the 3rd of October, 2025.

- Storing and processing of VMS Data and dissemination of VMS Position Reports consistent with the provisions and data format of Conservation and Management Measure 02 (2023) for the Collection, Reporting, Verification and Exchange of Data relating to fishing activities in the Agreement Area (Data Standards)[3] and Conservation and Management Measure 03 (2016) for Data Confidentiality and Procedures for access and use of data (Data Confidentiality),[4] and the SIOFA Information System Security Policy (ISSP) once adopted by the Meeting of the Parties.

- Ability for the VMS solution to receive, store, process, and disseminate VMS Position Reports in North Atlantic Format (NAF) messages, described in Annex 1 of Appendix 2, using one of the following application layers (secured connection):

    - Hypertext Transfer Protocol Secure (HTTPS)

    - File Transfer Protocol (FTP) with Transport Layer Security (TLS) (FTPS)

    - Email.

- Availability, as part of the service, of a Fisheries Language for Universal Exchange (FLUX) node and ability to receive, store and process VMS Data, and disseminate VMS Position Reports over FLUX, described in Annex 2 of Appendix 2.

- Ability to receive, store, and process VMS Data, and disseminate VMS position reports received directly from fishing vessels' Automatic Locator Communicator (ALC)[5].

- A web interface for multiple users with customisable profiles and access privileges affecting both features and data made available, fully compliant with the Data Confidentiality and Security Provisions of the SIOFA VMS SSPs.

- A standard reporting system that allows user-defined queries of vessel movements and fishing activities, e.g. transhipments, entering a managed area. The queries should be possible for (but not limited to) a single vessel or groups of vessels (groups definable by users) and be definable by area, dates, trip length, flag state, fishing gear and alerts.

- Participation in and provision of necessary technical support during a testing phase with CCPs for a period of six (6) months.

- Ability to track user activities subject to security and confidentiality concerns, thus allowing the SIOFA Secretariat to run audit reports, as required by the SIOFA VMS SSPs.

- Features to import, manage and apply modifications to closed areas, fully compliant with the technical specifications provided in Appendix 1.

- Provision of necessary aftersales support services for the duration of the contract, including but not limited to system maintenance, fault finding and rectifications in Appendix 1.

[3] The 12th Meeting of the Parties to SIOFA amended CMM 02 (2023) on Data Standards to CMM 02 (2025) on Data Standards, which will enter into force on the 3rd of October, 2025.
[4] The 12th Meeting of the Parties to SIOFA amended CMM 03 (2016) on Data Confidentiality to CMM 03 (2025) on Data Confidentiality, which will enter into force on the 3rd of October, 2025.
[5] SIOFA may in the future adopt a list of approved ALCs to be used by vessels entered onto the SIOFA Record of Authorized Vessels (RAV), taking into account lists approved by existing regional and subregional VMS programs and by CCPs.

- The option to manually input reports and messages. Such data should be stored and displayed in a manner that distinguishes them from VMS data and VMS Position Reports received through automatic transmission, and it should be possible to add a reference to the archived source of the manually added information.

- Features to allow conditional alerts against incoming position reports.

- configuration option for display of GPS coordinates, bearing and bearing marks demarking vessel path and trails.

- option to generate reports, track maps summarising the status and activities of vessels with printing and screen capture options.

- Inbuilt fleet register data covering any vessel whose VMS data and VMS Position Reports is received by the system, with the possibility to integrate with existing and future SIOFA databases.

- Training of SIOFA Secretariat staff in the use of the VMS and relevant technical support to CCPs to enable the exchange of data with the SIOFA VMS (use and technical repairs).

Close cooperation with the SIOFA Secretariat during all phases of the VMS solution development, deployment and operations is expected.

5) Required service availability

The SIOFA VMS must be operational 24/7 with 99% uptime minus any planned downtime, e.g. scheduled maintenance or deployment of new features. SIOFA must be informed of any planned downtime no less than five (5) days prior.

Support services are expected to be available within the working hours of the SIOFA Secretariat[6], with the following contractual responses and resolution times:

- Critical severity issues (Total Service outage or with severe performance impact) <= 4 hours resolution;
- Medium severity issues (Degraded performance, incidents yet affecting pivotal activities for the work plan of the SIOFA Secretariat and the CCPs: <= 20 hours resolution;
- Low severity issues (Minor bug fix/patch to intermittent issues, Questions, Info, How-to): <= 3 business days.

These resolution times are subject to negotiation with the chosen service provider.

6) Duration

Procured services are expected to run for **36 months**, with the possibility of extension as determined by SIOFA.

[6] 04:00hrs GMT-13:00hrs GMT, Monday to Friday, excluding applicable statutory holidays.

7) Schedule of Contract performance and deliverables

The bidder shall propose, with its submission, a schedule of contract performance in accordance with the services determined in these terms of reference. The schedule shall include, at a minimum, the following deliverables/outputs;

- Signing of Contract
- Training of Secretariat Staff
- Completion of Fabric Acceptance Test (FAT)
- Deployment of VMS System at SIOFA Secretariat
- Client Acceptance Test (CAT)
- Test phase of SIOFA VMS (about 6 months)
- Entry into Operation of the SIOFA VMS (to be determined by SIOFA)

8) Submission of Bids

Bids submitted should demonstrate compliance of their proposed solution with these terms of reference, including the mandatory technical specifications in Appendix 1 and the SIOFA VMS SSPs. Bidders should also demonstrate experience deploying VMS solutions in other RFMOs or similar settings.

Bids are to be submitted to the Executive Secretary, Mr Thierry Clot (thierry.clot@siofa.org) containing the following items:

i. Description of the proposed system, with clear indications of its compliance with these terms of reference and all technical specifications appended thereto;

ii. Description of the development phase of the SIOFA VMS as applicable and its subsequent deployment at the SIOFA premises, with detailed timeframes for the completion of each phase;

iii. Provision for acceptance tests to be performed off-premises before deployment and on-premises after deployment at the SIOFA Secretariat;

iv. Provisions for user and maintenance manuals in the working language of the organization (English)

v. Detailed training proposal for SIOFA staff in the use and essential maintenance and technical support of the SIOFA VMS;

vi. **A financial offer for the services required, including itemised pricing for the services required, including all core and after-sales support specified in Appendix 1, in Euros and exclusive of taxes.** The itemised pricing should include third-party licenses (if any), e.g. database licenses, map layers, data extraction software etc. The financial offer should also include any other unforeseen expenses associated with the deployment and operation of the system, including maintenance and technical support of the system;

The deadline for submission of bids is 31 October 2025.

9) Evaluation Criteria for the Selection of Bidders

The bids received will be evaluated against these terms of reference. Failure to comply with any of the mandatory requirements may result in disqualification of the bid. The SIOFA Secretariat further reserves the right to consider and disqualify firms based on documented prior poor performance, including but not limited to poor quality of goods or services provided, late delivery and unsatisfactory performance.

The contract will be awarded to the most competitive bid that complies with the technical specifications laid out in these terms of reference. Bids will only be considered if they contain adequate documentation to allow the Secretariat to assess them against the mandatory requirements of these terms of reference.

10) Contacts

Bidders may direct any questions and clarifications to the SIOFA Compliance Officer (Mr Johnny Louys, johnny.louys@siofa.org).

The deadline for any request for clarifications is 15 October 2025

11) Additional information to bidders

1. All bids must be received in English and in a format compatible with Microsoft Office (e.g. Microsoft word, excel) and/or Adobe Reader (e.g. .pdf files).
2. All bids must identify a designated Contact Point (including a name, phone number and email address).
3. SIOFA is not obliged to accept any bids that do not meet these submission requirements.
4. Bidders should identify in their bid any information which should be protected as confidential information under any contract between the bidder and SIOFA, including the reason for its confidentiality. If the bidder fails to identify any information in the bid, SIOFA will consider that the respondent has no information which should be protected as confidential under the contract. SIOFA reserves the right, at its discretion, to refuse the request to treat information as confidential. In this case, SIOFA will notify the respondent in writing.
5. Bidders must disclose in their bid any potential or actual conflict of interest in the course of delivering this service and must specify how the bidder proposes to address this conflict of interest. This will not automatically exclude the bidder from consideration; however, SIOFA reserves the right to consider the potential or actual conflict in relation to the bid before the final decision is made.
6. Bids received by email after the deadline of 31 October 2025 will be neither considered nor acknowledged by SIOFA.
7. If a bidder wishes to revise or modify any aspect of its submitted bid, revisions must be in writing from the Contact Point, clearly identified and accompanied by a clear statement from the respondent about the action that the bidder wishes SIOFA to take with the original submission. All revisions must be submitted before the deadline for the submission of bids. If a revision is received after the deadline, the revision will be disregarded.
8. The successful bidder can expect to be notified by 1 December 2025.

12) Disclaimer

1. Bidders are responsible for ensuring that:
    a. They have examined these terms of reference, and the requirements specified within.
    b. They have examined any information made available to bidders for the purpose of their bid, including the relevant conservation and management measures referred to by these terms of reference.
    c. The bid submitted is complete, accurate and realistic in terms of its delivery and cost.
2. Bidders are responsible for all costs incurred in the preparation and lodgement of any bids; and in respect of any discussions, negotiations, enquiries or any work undertaken by them after the bid has been submitted. SIOFA is not liable for any costs or compensation in relation to these matters, regardless of whether SIOFA terminates, varies or suspends the invitation to bid process; or takes any other option under this invitation to bid.

3. SIOFA will not accept responsibility for any misunderstanding arising from the failure of a respondent to comply with the requirements set out in these terms of reference or arising from any ambiguity, discrepancy, inconsistency, error or omission contained in a bid.
4. Nothing in these terms of reference or any bid submitted by a bidder gives rise to contractual obligations between SIOFA and the bidder.
5. Any bid submitted becomes the property of SIOFA for the purpose of the bidding process and will be made available for use by SIOFA and its CCPs for any purpose connected with the bidding process.
6. SIOFA reserves the right to enter into negotiations or discussions with one or more bidders.

Appendix 1 - Detailed Technical Specifications

General Specifications		
1.	The system shall be web-based, hosted, configured and maintained by the service provider with remote secured access and consulted by multiple users through an Internet connection and various login (user/password) combinations. The system shall allow users to access VMS data and VMS Position Reports, including VMS position reports and vessel details. No on-site hardware, except computers connected to the Internet, or network configuration, shall be required to access it. Similarly, no specific software shall be required to access and consult the system except for modern web browsers.	Mandatory
2.	The system shall be deployed as a "software-as-a-service" (SaaS). The provider shall undertake the deployment, configuration, and maintenance of the system and all its components, including databases and data storage.	Mandatory
3.	The system must provide for procedures for services failure and technical issue resolution including timeframes and escalation processes.	Mandatory
4.	The system shall allow for scalability, thus enabling the allocation of additional resources as required by SIOFA, based on the potential future needs of the organisation. The bid shall include reasonably detailed specifications describing the kind of hosting setup supporting the software-as-a-service.	Mandatory
5.	The system in its entirety shall comply with all relevant CMMs governing the use and treatment of VMS Data and VMS Position Reports including CMM 02 (2023) on Data Standards, CMM 03 (2016) on Data Confidentiality, and CMM 16 (2023) on VMS.	Mandatory
6.	The system must be highly fault tolerant and be supported by back-up and redundancy systems and processes.	Mandatory
7.	The system must be supported by a comprehensive backup and disaster recovery plan that ensure no VMS data and VMS Position Reports is lost in the event of a system failure, or where services are no longer required.	Mandatory
8.	The system must receive and store VMS data and VMS Position Reports from at least 200 vessels: • in data formats specified in NAF and UN/Flux, as described in Annex 1 and Annex 2 of the SIOFA VMS SSPs, respectively. • Using the application layers specified in the SIOFA SSPs (i.e. HTTPS, FTPS, and Email). • Directly from ALCs transmitted in their respective proprietary formats. • From FMC of CCPs transmitted in their respective proprietary formats The service must be flexible to support modification to these standards on the potential future needs of SIOFA.	Mandatory
9.	The system must process and store for each VMS position report, at minimum, the following data i. the fishing vessel's unique vessel identifier (UVI); ii. the current geographical position (latitude and longitude) of the vessel; iii. the date and time (UTC) of the fixing of the position of the vessel; iv. the vessel's speed; and	Mandatory

General Specifications		
	v. the vessel's course.	
10.	The system shall support the manual import of VMS Position Reports and record the manual import in the metadata. It shall identify data imported manually, distinguishing them from data received automatically.	Mandatory
11.	The system shall include the due features to import (either routinely or on-demand on a case-by-case-basis) additional datasets relevant to its role including but not limited to: i. Mandatory information of vessels entered onto the SIOFA Record of Authorised Vessels (RAV); ii. Shape Files relating to the Agreement Area, SIOFA sub-areas, Areas with specific management measures and Interim Protected Areas (IPAs). Data formats envisaged for this purpose may vary according to the type of dataset.	Mandatory
12.	In addition to the data formats enlisted so far, the system shall be ready to handle emerging needs through additional means for receiving and sending data, as may be determined by SIOFA.	Highly desirable
13.	The system shall grant eligible user profiles the ability to export all database information pertaining VMS data and VMS Position Reports, and relevant ancillary information in CSV, TXT, or Excel format. Such operation shall accept parameters to narrow-down the export for specific time frames, vessel groups, flag States or defined regions.	Mandatory
14.	The system must support the establishment of vessel groups or vessel lists by defining criteria relating to vessels.	Mandatory

Data Confidentiality and Security Provisions		
15.	The system shall have the following access control features: i. Stringent password and authentication system (three-factor authentication preferred), attributed to each designated user. The user shall only have access to functions and data that they are designated to have access to; ii. The system shall automatically record all events for analysis and detection of potential security breaches; iii. Time-based access control: Access to the system can be specified in terms of times-of-day and days of the week that each user is allowed to log into the system; iv. Terminal access control: the system shall specify for each workstation which user(s) are allowed to access it through selected IPs.	Mandatory
16.	The system shall have the following security measures: i. System Access Control: the system shall be able to withstand break-in attempts from unauthorised persons. ii. Authenticity and data access control: the system shall be able to limit access of users only to the data necessary for them to carry out their tasks via a flexible user identification and password authentication mechanism.	Mandatory

Data Confidentiality and Security Provisions		
	iii. Communication Security: VMS position reports shall be securely communicated. iv. Data Security: All VMS data and VMS Position Reports received by the Secretariat shall be securely stored for a predetermined time and shall not be tampered with. The system must prohibit the modification of VMS data and VMS Position Reports that are received automatically from FMCs or directly from vessels or received manually.	
17.	The data centre used to host the services must have effective controls for VMS data and VMS Position Report receipt, storage and dissemination including: • physical security; • personnel security; • communications security; • product security; • access control; and • network security.	Mandatory
18.	The service provider shall retain all VMS data and VMS Position Reports for the duration of the service contract period, including any extensions thereof.	Mandatory
19.	In case the service contract is terminated for any reason, the provider shall provide SIOFA with a copy of the full historical datasets and ancillary information collected through the system in accordance with the formats and standards specified by SIOFA at the time of the termination of the contract.	Mandatory
20.	The Service provider shall not retain any data collected through the system beyond three (3) months after the termination of the contract. The deletion of data shall be confirmed in writing by the service provider after the termination of the contract no later than 3 months after the termination of the contract, and the satisfactory hand over of data referred to in points 19 and 20.	Mandatory

Monitoring, control and surveillance specifications		
21.	Mapping tools and data display The system shall have a module intended to show the location of vessels on a geographical map while providing features commonly required by operators of Fishing Monitoring Centres. An indicative list is provided as follows: i. Map-specific features: • zoom and drag-to-scale; • pan map to a location; • pan map with cursor; • automatic zoom and pan to a specific vessel; • display or select all vessels within a specific area; • map layer selector; • visual elements, such as text and graphics, grids, boundaries etc. shall be organized in separate layers so to allow the end user to show or hide them as appropriate; • geographically display track lines of vessels and groups of vessels superimposed on the background features by accurately marking each position	Highly Desirable

Monitoring, control and surveillance specifications		
	report for a vessel and joining each subsequent position report for that vessel with a line; • upon click on a given vessel position, show a popup window including at least summary information such as: - vessel identification data (vessel name /UVI/[7] flag) - last location along with related timestamp; - speed and heading; - type of transmission device (VMS model), data source (NAF/FLUX) or manual input of position reports). ii. Controls such as menus, dialog windows, checklists and other relevant user controls in order to allow the end user to filter or query available information as necessary. This shall also apply to available details of position reports such as the source of VMS data and VMS Position Reports (FMC/ALC/Manual Input). iii. Load and display charts providing geographic coverage for the Agreement Area. iv. Display vector layers for themes and objects such as EEZ zone boundaries, closed areas, and IPAs.[8] v. Base maps relying on OpenStreetMap or equivalent while also supporting the use of third-party vector charts (preferably C-MAP) including information relevant to the work of SIOFA, such as bathymetries. vi. Allow the creation of user-defined zones by either using visual tools on the map or performing data entry for relevant dimensions. vii. Allow mobile units or vessels to be selected by name, ID, type, or user-defined group(s). viii. select and display a vessel group or vessel list both for graphical and tabular consultation. ix. Display vessel tracks differently (e.g. colour/line style) according to speed thresholds selected by the end-user. x. Display vessel tracks differently (e.g. colour/line style) according to the source of VMS Position Reports or other information, such as the transmission means. xi. Allow current and historical position reports to be available for graphical and tabular consultation to authorized users, along with the possibility to replay vessel tracks on the map in chronological sequence. xii. Ability to define a geographical area as a circle by providing center and radius. xiii. Possibility to measure the distance between two selected points. xiv. Printing/exporting a selected portion of the map to a graphic file should be supported.	
22.	A section of the user interface shall allow the user to consult fleet data covering any vessel whose position data is received by the system. For this purpose it is required that, for each vessel, overlapping register information originated from different sources are automatically merged into a single record, thus providing end users with complete and coherent information. To this end, the system shall consider any of the vessels' potential UVIs.	Highly Desirable
23.	The system should allow eligible users to set up and customize alerts against incoming position reports in accordance with a set of conditions. Resulting alert events: i. Should be shown as items of a dynamic list, along with detailed information on the vessels involved in each alert, the conditions met, and a comprehensive history of previous alerts generated for a given vessel.	Highly Desirable

[7] International Radio Call Sign (IRCS), the International Maritime Organization (IMO) Number or the ALC Unique Identifier.
[8] To be made available by the SIOFA Secretariat during the configuration phase of the SIOFA VMS.

Monitoring, control and surveillance specifications		
	ii. Shall be processed and shown in real-time. iii. Shall be graphically reflected on the VMS map interface by appropriately changing display attributes for the implied position report(s), such as using a different icon or colour to depict the concerned position report(s). iv. Shall include among available parameters: • Spatial and temporal conditions (e.g. crossing closed areas at specific fishing season end and within a speed range compatible with fishing activity); • Specific vessel identifiers (e.g. Authorized vessel or vessel with expired authorization); • Transmission anomalies such as unexpected delays in transmission reports; v. Shall allow the automated submission of notifications via email to relevant recipients.	
24.	The system shall automatically identify and transmit notifications when a vessel is entering/exiting the Agreement Area, a closed area, a managed area,[9] or Interim Protected Area designated under CMM 01(2024) on Interim Management of Bottom Fishing, including any such future areas designated by the Meeting of the Parties.	Mandatory
25.	The system shall provide a section including functions to generate thematic reports based on query parameters chosen by the end user (e.g. time frame, vessel or group of vessels, flag state). Factory settings applied to the reporting engine must include a set of predefined reports aimed at providing diagnostic, control and statistical reports for scientific purposes. Report outputs must be shown on the screen and made available for download as an Excel or CSV document.	Mandatory

Core and Aftersale Services		
26.	The system shall be deployed, configured, and customized according to the terms of reference, these technical specifications and the SIOFA SSPs, and available to the SIOFA for the entire duration of the service contract.	Mandatory
27.	The system must be subject to a Fabric Acceptance Test (FAT) undertaken by the service provider.	Mandatory
28.	The system must be subject to a Client Acceptance Test (CAT) undertaken by the service provider at the SIOFA Secretariat premises.	Mandatory
29.	The system setup shall entail that the provider undertakes the necessary tasks to import all relevant datasets required to deliver the features outlined by the terms of reference and these technical specifications.	Mandatory
30.	The provider shall establish technical contacts with the relevant VMS Points of Contact to establish UN/FLUX and NAF-based data exchange based on the specifications of the SIOFA SSPs. The work shall be undertaken to ensure the functioning of this feature for the whole duration of the contract.	Mandatory
31.	The service provider shall configure the system to receive direct transmissions from ALCs installed on fishing vessels on the SIOFA RAV.	Mandatory

[9] Subarea 2 (CMM 12 on Sharks), Del Cano Rise Area and Williams Ridge (CMM 15 on Management of Demersal Stocks), and any such future areas designated by the Meeting of the Parties.

32.	The service provider shall provide complete technical material, including manuals and guides, to SIOFA in English, including any updates as needed.	Mandatory
33.	The provider is expected to deliver technical support services during the SIOFA Secretariat's office hours for the entire duration of the contract, including via phone and email or a dedicated online helpdesk.	Mandatory

APPENDIX 2 – SIOFA VMS SSPs

Standards, Specifications and Procedures (SSPs) for the SIOFA VMS

SIOFA | APSOI

Southern Indian Ocean Fisheries Agreement

Accord relatif aux Pêches dans le Sud de l'Océan Indien

Southern Indian Ocean Fisheries Agreement (SIOFA)
13 Rue de Marseille
97420 Le Port
La Réunion
secretariat@siofa.org
http://www.siofa.org

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Background

Vessel Monitoring Systems (VMS) are satellite-based monitoring systems that enable flag States and regional fisheries management organisations (RFMOs) to track and monitor the activities of fishing vessels in a defined geographical area through the transmission of position data by fishing vessels at regular intervals. They are a cornerstone of monitoring control and surveillance (MCS) programmes at national and international levels and a key instrument in the fight against illegal, unreported and unregulated (IUU) fishing.

Article 6(1)(h) of the Southern Indian Ocean Fisheries Agreement (SIOFA) requires SIOFA to develop rules and procedures for the monitoring, control and surveillance of fishing activities to ensure compliance with SIOFA conservation and management measures (CMM), including a system of verification incorporating vessel monitoring and observation of vessels operating in the SIOFA Area. CMM 10 (2025) (Monitoring) also requires SIOFA to develop specifications and propose rules and procedures for establishing a SIOFA VMS. While flag Contracting Parties, Participating Fishing Entities and Cooperating non-Contracting Parties (collectively: CCPs) are required to track and monitor their vessels' activities using VMS, SIOFA does not currently operate a VMS system. In this respect, it is behind other RFMOs that have installed and operate a VMS.

To close this gap, the 10th Meeting of the Parties to the SIOFA (MoP10) adopted CMM 16 (2025) (Vessel Monitoring System) setting out the framework of the SIOFA VMS covering all critical aspects, including the scope of application, definitions, nature and specifications of the VMS, prevention of tampering and actions in case of suspected breach, use and release of VMS data requiring / not requiring the consent of CCPs, closed and interim protected areas, as well as data security and confidentiality. However, this framework needs to be further completed through the development of Standards, Specifications and Procedures (SSPs) as required by paragraph 9 of CMM 16 (2025) prior to the entry into operation of the SIOFA VMS.

Following intersessional work by the VMS-WG, the 11th Meeting of the Parties adopted these SSPs and the 12th Meeting of the Parties revised them.

The SSPs assume that Cooperating Non-Contracting Parties (CNCPs) will be treated similarly as CPs and PFEs, recalling that CNCPs do not currently contribute to the budget, which may be impacted by the implementation of the SIOFA VMS.

For the purpose of this document, all terms used shall have the same meaning as those in CMM 16 (2025) unless otherwise specified.

1. Purpose

1. The purpose of these Standards, Specifications and Procedures (SSPs) is to complement measures established under CMM 16 (2025) so as to achieve the objectives of the CMM, which are to monitor in an automatic, continuous and cost-effective manner the movements and activity of fishing vessels operating in the Agreement Area to ensure compliance with SIOFA Conservation and Management Measures (CMMs).

2. Application

2. These SSPs shall apply to all fishing vessels flying the flag of a Contracting Party, Participating Fishing Entity or Cooperating non-Contracting Party (collectively CCPs), that are entered onto the SIOFA Record of Authorised Vessels (RAV) and operating within the Agreement Area (Area), as defined in Article 3 of the Agreement.

3. These SSPs do not prejudice the right of CCPs to apply additional or more stringent measures to vessels flying their flag.

3. General Provisions

4. For the purposes of these SSPs, the term "VMS data" shall refer to all data associated with the SIOFA VMS, including VMS position reports and Automatic location communicator (ALC) details.

5. CCPs shall:

    a. For vessels entered onto the SIOFA Record of Authorized Vessels (RAV) prior to the entry into force of CMM 16 (2025), provide ALC details specified in paragraph 6 for each vessel registered on the SIOFA RAV by 31 December 2025 at the latest.

    b. For vessels to be entered onto the SIOFA RAV after the entry into operation of the SIOFA VMS, provide ALC details specified in paragraph 6 at the time of the submission of information required by CMM 07 (2025) (Vessel Authorization).[1]

6. CCPs shall provide the following ALC details:

    a. Model and Brand
    b. ALC Unique Identifier
    c. Service Provider (Inmarsat/Iridium/ARGOS etc.)

7. For the purposes of CMM 16 (2025), the term Unique Vessel Identifier (UVI) shall have the following meaning:

    a) For CCPs transmitting VMS position reports pursuant to paragraph 6 a), of CMM 16 (2025) the UVI shall be the International Radio Call Sign (IRCS), the International Maritime Organization (IMO) Number or the ALC Unique Identifier.

    b) For CCPs transmitting VMS position reports pursuant to paragraph 6 b) of CMM 16 (2025) the UVI shall be the ALC Unique Identifier.

[1] Conservation and Management Measure for Vessel Authorisation and Notification to Fish.

4. Methods to ensure ALCs comply with SIOFA Standards

Explanatory Notes

Paragraph 12 of CMM 16 (2025) sets out the general standards by which ALCs are expected to be installed and operated. Paragraphs 18 and 19 expand on the requirements to have tamper-proof ALCs while also prohibiting the tampering of ALCs. The minimum standards for ALCs are further described in Annex 1 of CMM 16 (2025).
This section of the SSPs provides for the possibility of the MoP adopting a list of approved ALCs and clarifies that it is the responsibility of flag CCPs to ensure that ALCs installed on their vessels comply with SIOFA specifications and standards.

8. The MoP may adopt a list of approved ALCs to be used by vessels entered onto the SIOFA Record of Authorized Vessels (RAV), taking into account lists approved by existing regional and subregional VMS programs and by CCPs.

9. CCPs shall be responsible for ensuring that the ALCs on board vessels flying their flag and entered onto the SIOFA RAV meet the specifications and standards set out in paragraph 12 and Annex 1 of CMM 16 (2025). To this end, CCPs are encouraged to conduct periodic audits of a representative sample of ALCs. Any findings shall be reported as part of CCPs' annual compliance assessment reporting under paragraph 12 of CMM 11 (2020) (Compliance Monitoring Scheme).

5. Rules for Polling and Programming for Vessels Reporting to the Secretariat in accordance with Paragraph 6 b)

Explanatory Notes

Paragraph 6 b) of CMM 16 (2025) allows for simultaneously reporting VMS position reports automatically to the Secretariat. In this regard, there may be a need to interact with the ALCs to program its automatic reporting and to change its reporting frequency based on location (programming) and also to "query" an unscheduled position report (polling). It should be noted that while CMM 16 (2025) does not provide for polling of ALCs, it may be required during diagnosis when the good reception of position reports cannot be achieved. Other cases may be to stop the reporting temporarily or indefinitely based on scenarios, such as the deletion of the vessels from the SIOFA RAV, repairs, flagging and decommissioning of fishing vessels.

As such, these SSPs suggest procedures for the same.

10. CCPs shall ensure that the ALCs on board of vessels flying their flag are configured to comply with paragraph 8 of CMM 16 (2025) and, where applicable, shall send programming commands.

11. CCPs which opt for simultaneous reporting under paragraph 6. b) of CMM 16 (2025) shall ensure that their ALC service provider is capable of providing simultaneous reporting to multiple destinations (receivers) and shall bear the cost for reporting to their FMC and to the Secretariat as well as for programming command sending. The Secretariat (SIOFA VMS) shall receive the "simultaneously reporting" in accordance with the protocol provided by the CCP's service provider.

6. Responsibilities of the Secretariat

Explanatory Notes

These SSPs set out the responsibilities of the Secretariat in administering the SIOFA VMS.

12. The Secretariat shall:

    a. ensure that data, once received by the SIOFA VMS, are not altered, manipulated, copied or interfered with in any way, and that the data is only used in accordance with CMM 03 (2025), and with any such additional data security and confidentiality rules adopted by the Meeting of Parties for the purposes of the SIOFA VMS.

    b. provide a stable, reliable, fully maintained and supported SIOFA VMS that is in compliance with CMM 03 (2025), and any additional data security and confidentiality rules adopted by the Meeting of Parties.

    c. utilise the SIOFA VMS in a manner consistent with the Agreement, CMMs and these SSPs.

    d. compile and report annually to the MoP, through the Compliance Committee, an overview of potential issues identified by vessel and flag with regard to their compliance with CMM 2016 (2025) and these SSPs.

    e. monitor and report annually to the Compliance Committee on the implementation and performance of the SIOFA VMS and its application and, as necessary, make recommendations for improvements or modifications to the system and these SSPs established to support it.

7. Data format for data transmission

Explanatory Notes

Paragraph 6 a) of CMM 16 (2025) allows CCPs to choose to report VMS positions automatically to the Secretariat via their FMC. However, these provisions do not provide for the data format and standards that will allow these transfers to take place.

There are at least two globally accepted data formats for data exchange of fisheries information. These are the North Atlantic Format (NAF) and the Fisheries Language for Universal Exchange (UN/FLUX). NAF is recognised as an older format with some limitations, therefore there are ongoing efforts to improve NAF or develop new standards for the exchange of fisheries information altogether.

UN/FLUX is one such proposed standard that has already gained recognition by the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), with more states and regional organisations adopting its use for VMS data exchange, among others. The most significant advantage of UN/FLUX over NAF is its ability to cater to other data types, such as inspection reports, catch and effort reporting, etc. However, the uptake of UN/FLUX is still relatively low, and implementation may present challenges to the Secretariat and CCPs.

Noting the above, the SSPs recognise the two data formats and provide standards to enable CCPs to exchange data using those formats.

13. VMS position reports sent to the SIOFA VMS in accordance with paragraph 6 a) of CMM 16 (2025) shall be transferred using the following data formats;

    a. The North Atlantic Format (NAF) (Annex 1)

    or

    b. Fisheries Language for Universal Exchange (UN/FLUX) (Annex 2)

14. VMS position reports sent using NAF shall follow the structure of NAF messages provided in Annex 1, and shall be transferred using one of the following application layers (secured connection):
    a. Hypertext Transfer Protocol Secure (HTTPS)
    b. File Transfer Protocol (FTP) with Transport Layer Security (TLS) (FTPS)
    c. Email

15. VMS position reports sent using FLUX shall adhere to the specifications of the Flux P1000-1 (General Principles) and Flux P1000-7 (Vessel Position Domain), as described in Annex 2.[2]

[2] https://unece.org/trade/uncefact/unflux

8. Data Confidentiality and Security Provisions

Explanatory Notes

These SSPs covers the Confidentiality and Security procedures required to ensure the secure and confidential treatment of VMS data being exchanged between CCPs and the Secretariat.

16. CCPs and the Secretariat shall only use VMS data for the purposes specified in CMM 16 (2025).

17. The Secretariat shall maintain a database of the ALC details attributed to all vessels entered onto the SIOFA RAV. ALC details shall be confidential data (i.e. non public domain data) but shall be provided to CCPs' VMS points of contact upon request pursuant to paragraphs 23 to 28 of CMM 16 (2025).

18. The Secretariat shall only provide VMS position reports to the contact point designated pursuant to Paragraph 11 of CMM 16 (2025).

19. CCPs shall immediately delete VMS position reports received for the purposes set out in paragraph 28 of CMM 16 (2025) once the VMS position reports have served their intended purpose, and confirm their deletion to the Secretariat in writing without delay.

20. CCPs, the Secretariat, the SIOFA Scientific Committee and its Working Groups, and any SIOFA VMS service provider shall take all necessary measures to protect VMS data against accidental or unlawful destruction, loss, alteration, unauthorised disclosure or access, and against all unauthorised forms of processing.

21. The following security measures shall be mandatory for the SIOFA VMS:

    a. System Access Control: The Secretariat shall ensure that the system can withstand break-in attempts from unauthorised persons.

    b. Authenticity and data access control: The Secretariat shall ensure that the system is able to limit access of Secretariat staff only to the data necessary for them to carry out their tasks via a flexible user identification and password mechanism.

    c. Communication Security: VMS position reports shall be securely communicated.

    d. Data Security: All VMS data received by the Secretariat shall be securely stored for a predetermined time and shall not be tampered with.

    e. Security Procedures: The Secretariat shall implement an Information System Security Policy adopted by the Meeting of the Parties to ensure proper access to the system (hardware and software), system administration and maintenance, backup and general usage of the system.

22. The system shall have the following mandatory access control features:

        a. Stringent password and authentication system, attributed to each designated user. The user shall only have access to functions and data that they are designated to have access to;

        b. All access to physical computer systems shall be controlled by the Secretariat;

c. The system shall automatically record all events for analysis and detection of potential security breaches;

d. Time-based access control: Access to the system can be specified in terms of times-of-day and days of the week that each user is allowed to log into the system;

e. Terminal access control: the system shall specify for each workstation which user(s) are allowed to access it.

23. Communication between CCPs, the SIOFA VMS Service Provider, and the Secretariat shall use secure internet protocols. The exchange of VMS position reports may also require the use of digital certificates that correctly identify and validate the party submitting the VMS position reports.

24. The Secretariat shall periodically review access to and the logs of the VMS software and ensure the proper maintenance of system security.

Annex 1: Description of the North Atlantic Format (NAF)[3]

Data Elements of NAF Messages

All NAF Messages sent to the SIOFA VMS shall contain, at minimum, the information required in paragraph 1. f) of CMM 16 (2025). The general structure and data elements are as below

Data Element	Field Code	Definition	Contents
Start Record	SR	Defines the start of the message structure.	No Data
Address	AD	Indicates the destination. Provider and Secretariat to define code for SIOFA VMS	3-Alpha code
From	FR	3-alpha code describing the country which FMC is submitting the report.	3-Alpha code
Sequence Number	SQ	Message Sequence Number	0-999999
Internal Reference Number*	IR	Unique Number attributed by the flag state	3-Alpha code. 0-999999999
Type of Message	TM	Letter code of the type of message	POS = position report, MAN = manual report, ENT = entry report, EXI = exit report
Radio Call Sign (IRCS)	RC	Vessel detail: international radio call sign of the vessel	IRCS
Latitude (decimal)	LT	Latitude expressed in degrees and decimals (WGS-84)	+(-)DD.ddd
Longitude (decimal)	LG	Longitude expressed in degrees and decimals (WGS-84)	+(-)DD.ddd
Vessel Speed	SP	Speed of the vessel	Knots * 10
Vessel Course	CO	Heading of the vessel in degrees	1-360
Flag State	FS	State of registration of the vessel.	3-Alpha code
Date	DA	Date of reported event	YYYYMMDD
Time	TI	Time of reported event	HHMM
End of Record	ER	Indicates the end of the message/report	No Data

Structure of the position report

Each data transmission shall be structured as follows:

- double slash (//) and the characters 'SR' indicate the start of a message,
- a double slash (//) and field code indicate the start of a data element,
- a single slash (/) separates the field code and the data,

[3] https://www.naf-format.org/index.htm

* Submission of IR is optional

- pairs of data are separated by space,
- the characters ‘ER’ and a double slash (//) indicate the end of a record.

Annex 2: Description of the Fisheries Language for Universal Exchange (UN/FLUX)

2 I: UN/FLUX format : mandatory data to be transmitted in position reports

Data	Mandatory/optional	Comments
Addressee	M	Message detail — Addressee Alpha-3 country code Note: Part of the FLUX TL envelope
From	M	Message detail — Sender Alpha-3 country code
Unique message identifier	M	UUID according to RFC 4122 defined by IETF
Date and time of transmission	M	Date and time when the message was created in UTC, using the format YYYY-MM-DDThh:mm:ss[.000000]Z[4]
Flag State	M	Message detail – Flag of flag State, Alpha-3 country code
Type of message	M	Message detail – Type of message The following codes are to be used: ENTRY: first position recorded after entering the fishing zone) EXIT: first message recorded after leaving the fishing zone POS: posistions transmitted while being in the fishing zone) MANUAL: position transmitted manually
Radio call sign	M	Vessel detail – Vessel international radio call sign (IRCS)
CCP internal reference number	O	Vessel detail – Unique CCP vessel identifier
Unique Vessel Identifier (UVI)	O	Vessel detail – IMO number

4 YYYY= year; MM= month, including leading 0 where month number is less then 10; DD= day of the month including leading 0 where day number is less then 10; T= the letter T to indicate the part of the time section; H24= hours of the day expressed with 2 digits using the 24-hour notation; MI=minutes expressed as 2 digits; SS=seconds expressed as 2 digits; [.000000]= optionally fractions of seconds may be included, not including the brackets; Z= time zone, which must be Z (i.e. UTC)

External registration number	O	Vessel detail – Number on side of vessel
Latitude	M	Vessel position detail – Position in degrees and decimal degrees DD.ddd (WGS-84) Positive coordinates for positions north of the Equator; Negative coordinates for positions south of the Equator.
Longitude	M	Vessel position detail – Position in degrees and decimals DD.ddd (WGS-84) Positive coordinates east of the Greenwich meridian; Negative coordinates west of the Greenwich meridian.
Course	M	Vessel course 360° scale
Speed	M	Vessel speed in knots
Date and time	M	Vessel position detail – date and time of recording of the position in UTC, using the format YYYY-MM-DDThh:mm:ss[.000000]Z[5]

5 YYYY= year; MM= month, including leading 0 where month number is less then 10; DD= day of the month including leading 0 where day number is less then 10; T= the letter T to indicate the part of the time section; H24= hours of the day expressed with 2 digits using the 24-hour notation; MI=minutes expressed as 2 digits; SS=seconds expressed as 2 digits; [.000000]= optionally fractions of seconds may be included, not including the brackets; Z= time zone, which must be Z (ie. UTC)

2.II FLUX Vessel Position Implementation Document

1. INTRODUCTION

This document aims to describe the implementation of Vessel Position in the context of the SIOFA VMS. Submissions of reports will be done through the FLUX Transportation Layer.

2. REFERENCES

UN/CEFACT P1000 FLUX Standard v1.0 [2]:

- FLUX BRS: P1000 – 1; General principles (version 2.1).
- FLUX BRS: P1000 – 7; Vessel Position domain (version 2.0).

UN/CEFACT FLUXVesselPositionMessage_4p0.xsd

3. SCOPE

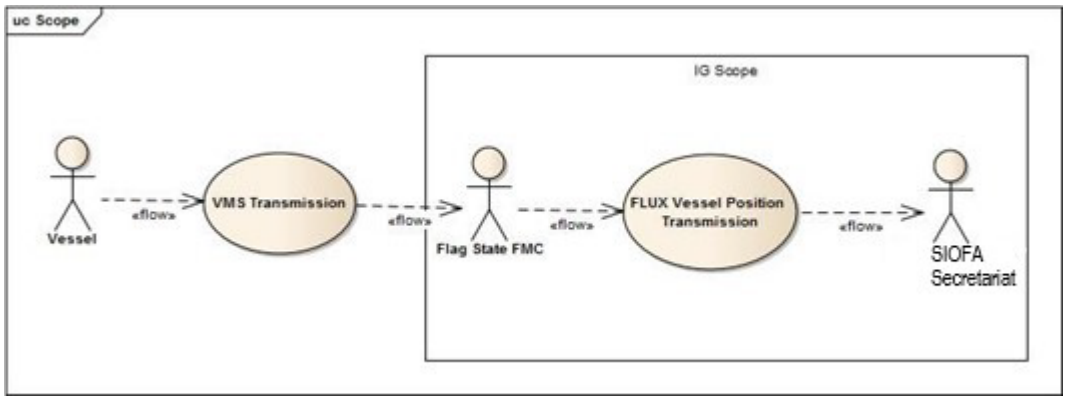

Figure 1: Implementing Guide Scope diagram

As shown on Figure 1, even if the message is provided by a Vessel, the scope of this document is limited to the transmission from a Flag CCP FMC, which has received the Vessel Position message, coming in most cases from aa ALC to the SIOFA Secretariat.

4. PROCEDURES

4.1. General principles

The following activity diagram describes the normal procedure defined for the submission of every Vessel Position Messages sent between the FMC of a Flag CCP to the SIOFA Secretariat:

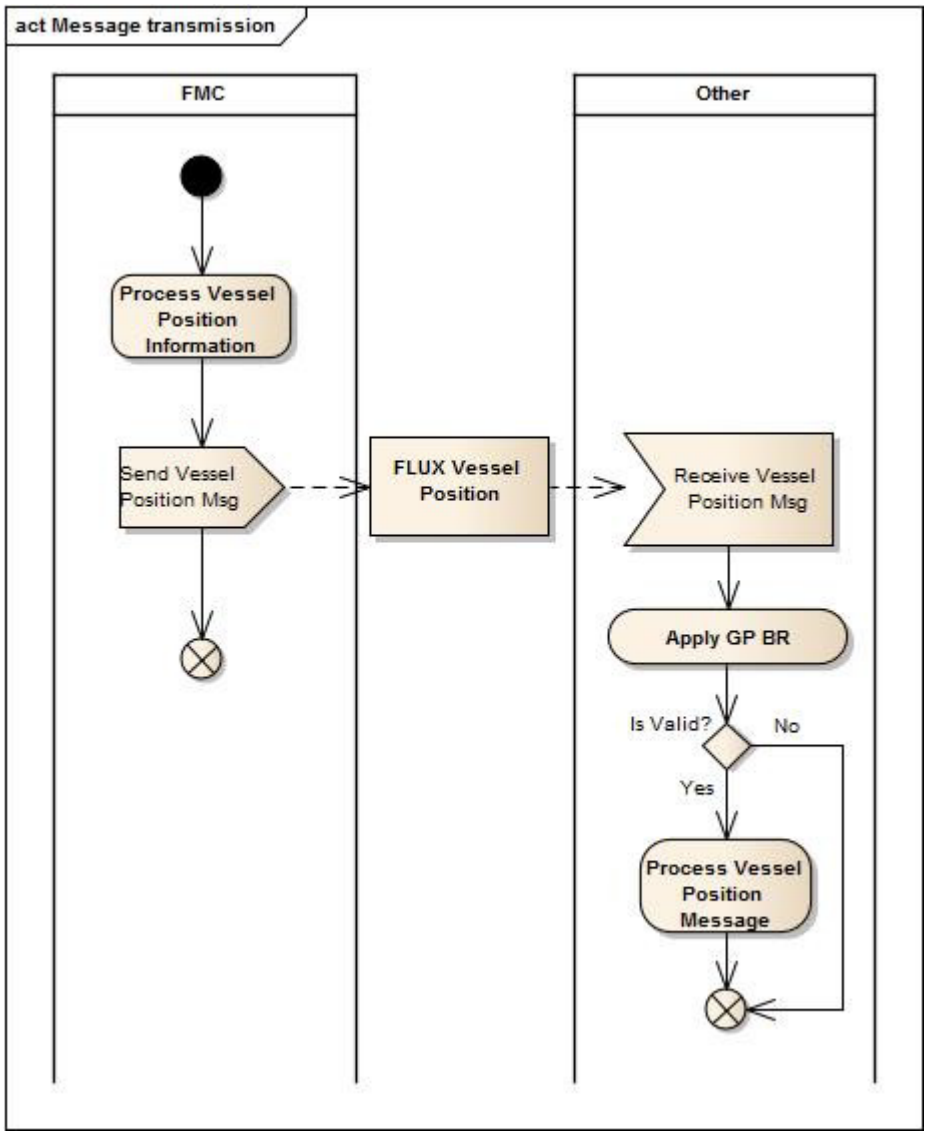

Figure 2: Message Transmission activity diagram

As shown in the diagram, Apply General Principles (GP) Business Rules (BR) is a validation process which does:

1. XML Validation level: Based on the definition in the XSD, the parser validates the structure and cardinality as well as compliance for mandatory elements of the XML provided.[6]

[6] In general, only XSD element are defined as mandatory. Element attributes and facets remain optional.

Note: Comparing XML vs. XSD defined by the namespace can make the parser generating error having technical information when the basic information requested by General Principles is not correct.

2. Business Rules Validation level: a Business Rules Engine validates the content of XML according to the General Principles Business Rules definition.[7]

[7] Some specific business rules of this domain can withdraw or overwrite the definition of FLUX General Principles

5. DATA MODEL (XSD) IMPLEMENTATION

The implementation of the Vessel Position Data Model applies the following general constraints at the level of XSD Element attributes:

(1) For Code & Identifier DataType: *listID* or *schemeID* attribute must be provided if it is not specifically defined in the definition of the element;

(2) For DateTime DataType: only udt:DateTime (of type xsd:dateTime) choice is used. The date and time must be expressed in UTC, unless explicitly mentioned otherwise. The format shall be YYYY-MM- DDThh:mm:ss[.000000]Z;[8]

The following diagram describes the Vessel Position Data Model used for the implementation of transmission of VesselPositionMessage:

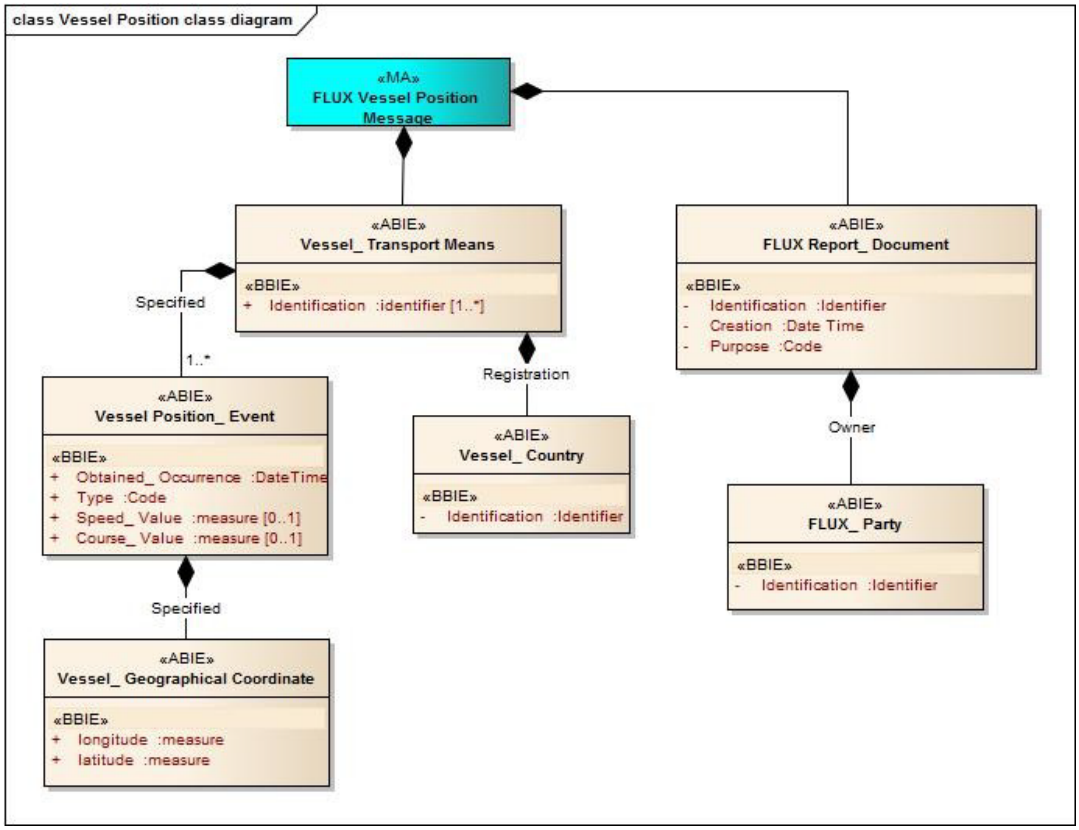

Figure 3: Vessel Position Message Data Model

[8] YYYY= year; MM= month, including leading 0 where month number is less than 10; DD= day of the month including leading 0 where day number is less than 10; T= the letter T to indicate the part of the time section; H24= hours of the day expressed with 2 digits using the 24-hour notation; MI=minutes expressed as 2 digits; SS=seconds expressed as 2 digits; [.000000]= optionally fractions of seconds may be included up to 6 digits, not including the brackets; Z= time zone, which must be Z (ie. UTC)

The table below describes for each fields defined in the Data Model (XSD) the values that can be used:

Entity/Field Name	DataType	Cardinality		Description	Remarks
		Min	Max		
FLUX Report_ Document		1	1	The document details for this FLUX vessel position message.	FLUX General Principles Entity
Identification	Identifier	1	1	The unique identification of the FLUX vessel position message	A UUID as defined in the RFC 4122
Creation	DateTime	1	1	The date, time, date time of the creation of the FLUX vessel position message.	A UTC date time. Must be according to the definition provided in 6(2)
Purpose	Code	1	1	The code specifying the purpose of this FLUX report document, such as original, cancellation or replace.	Attribute *listID*= FLUX_GP_PURPOSE Reference: EDIFACT Code List 1225 (qDT UN02000125 - Message Function_ Code). Restriction: only value 9 is used in this context.
Owner. FLUX_ Party	Assoc.	1	1	Entity used to provide information on an individual, a group, or a body having a role in a Fisheries Language for Universal eXchange (FLUX) business function. Party has a legal connotation in a business transaction.	FLUX General Principles Entity
Identification	Identifier	1	1	An identifier of this FLUX party.	Attribute *listID*= TERITTORY alpha-3 code of the country owning this report. e.g.: SWE

Entity/Field Name	DataType	Cardinality		Description	Remarks
		Min	Max		
Vessel_ Transport Means		1	1	Entity used to provide the identification and characteristic information of a ship or boat.	
Identification	Identifier	1	*	An identifier for this transport means vessel UVI, as defined by the SIOFA VMS SSPs,	Attribute *schemeID must be provided with a value from list* = **FLUX_VESSEL_ID_TY PE**
Registration. Vessel_ Country	Assoc.	1	1	The country of registration of this transport means vessel.	
Identification	Identifier	1	1	The identifier for this vessel country.	*Use Code Countries code list in MDR.* *listID* = TERRITORY alpha-3 code of the country where the vessel is registered (flag state).
Specified. Vessel	Assoc.	1	*	The general information of the VMS message.	More than one position can be provided.

Entity/Field Name	DataType	Cardinality		Description	Remarks
		Min	Max		
Position_ Event					
Obtained_ Occurrence	DateTime	1	1	The date and time when the position of the vessel was taken by the vessel's navigation equipment.	The UTC date time when the position was obtained by the vessel navigation equipment, transmitted by the VMS system on-board of the vessel. Must be according to the definition provided in 6(2)
Type	Code	1	1	The code specifying the type of vessel position event.	Attribute *listID must be provided with a value from list* = FLUX_VESSEL_POSITION_T Y PE Example of values are: "ENTRY,"EXIT","POS"," MANUAL".
Speed_ Value	Measure	0	1	The measure of speed of the vessel for this vessel position event.	Mandatory. In knots. Maximum 2 significant decimals. Optional in case the following conditions are all met: - TypeCode= EXIT - Message addressed to Third party or RFMO - The element is defined as optional in the agreement with the Third Party or RFMO
Course_ Value	Measure	0	1	The measure of course of the vessel for this vessel position event.	Mandatory. In degrees and decimal degrees. Maximum 2 significant decimals.

					Optional in case the following conditions are all met: - TypeCode= EXIT - Message addressed to

Entity/Field Name	DataType	Cardinality		Description	Remarks
		Min	Max		
					Third party or RFMO - The element is defined as optional in the agreement with the Third Party or RFMO
Specified. Vessel_ Geographical Coordinate	Assoc.	1	1	The latitude and longitude of a specified place, by which a vessel's relative situation on the globe is known. The height above the sea level constitutes a third coordinate.	Geographical Coordinates Position of the vessel transmitted by the VMS system at Obtained DateTime. Altitude and System information are not used in context of this implementation.
Latitude	Measure	1	1	The measure of the latitude as an angular distance north or south from the Equator meridian to the meridian of a specific place for this vessel geographical coordinate.	Coordinate expressed in WGS84, decimal degree notation, using a precision of at least 3 and maximum 6 decimal positions. Positive coordinate refers to North of equator. Negative coordinate refers to South.
Longitude	Measure	1	1	The measure of the longitude as an angular distance east or west from the Greenwich meridian to the meridian of a specific place for this vessel geographical coordinate.	Coordinate expressed in WGS84, decimal degree notation, using a precision of at least 3 and maximum 6 decimal positions. Positive coordinate refers to East of Greenwich meridian. Negative coordinate refers to West.

6. XML EXAMPLES

```
<rsm:FLUXVesselPositionMessage
xsi:schemaLocation="urn:un:unece:uncefact:data:standard:FLUXVesselPositionMessage:4
FLUXVesselPositionMessage_4p0.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:rsm="urn:un:unece:uncefact:data:standard:FLUXVesselPositionMessage:4"
xmlns:ram="urn:un:unece:uncefact:data:standard:ReusableAggregateBusinessInformationEntity:18"
xmlns:udt="urn:un:unece:uncefact:data:standard:UnqualifiedDataType:18">
<rsm:FLUXReportDocument>
<ram:ID> c133b211-0b0e-4358-893c-7afb5437bd61</ram:ID>
<ram:CreationDateTime>
<udt:DateTime>2001-12-17T09:30:47.0Z</udt:DateTime>
</ram:CreationDateTime >
<ram:PurposeCode >9</ram:PurposeCode>
<ram:OwnerFLUXParty>
<ram:ID >SWE</ram:ID>
</ram:OwnerFLUXParty>
</rsm:FLUXReportDocument>

<rsm:VesselTransportMeans>
<ram:ID schemeID=" CFR ">SWE000007880</ram:ID>
<ram:ID schemeID=" EXT_MARKING">S-381</ram:ID>
<ram:ID schemeID=" IRCS ">EI6207</ram:ID>
<ram:RegistrationVesselCountry>
<ram:ID>SWE</ram:ID>
</ram:RegistrationVesselCountry>

<ram:SpecifiedVesselPositionEvent>
<ram:ObtainedOccurrenceDateTime>
<udt:DateTime>2001-12-17T09:30:47.0Z </udt:DateTime>
</ram:ObtainedOccurrenceDateTime>
<ram:TypeCode >POS</ram:TypeCode>
<ram:SpeedValueMeasure>8.3</ram:SpeedValueMeasure>
<ram:CourseValueMeasure>50</ram:CourseValueMeasure>
<ram:SpecifiedVesselGeographicalCoordinate>
<ram:LatitudeMeasure >50.563</ram:LatitudeMeasure>
<ram:LongitudeMeasure>009.252</ram:LongitudeMeasure>
</ram:SpecifiedVesselGeographicalCoordinate>
</ram:SpecifiedVesselPositionEvent>
        </rsm:VesselTransportMeans>
      </rsm:FLUXVesselPositionMessage>
```

```
<rsm:FLUXVesselPositionMessage
xsi:schemaLocation="urn:un:unece:uncefact:data:standard:FLUXVesselPositionMessage:4
FLUXVesselPositionMessage_4p0.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:rsm="urn:un:unece:uncefact:data:standard:FLUXVesselPositionMessage:4"
xmlns:ram="urn:un:unece:uncefact:data:standard:ReusableAggregateBusinessInformationEntity:18"
xmlns:udt="urn:un:unece:uncefact:data:standard:UnqualifiedDataType:18">
<rsm:FLUXReportDocument>
<ram:ID> c133b211-0b0e-4358-893c-7afb5437bd61</ram:ID>
<ram:CreationDateTime>
<udt:DateTime>2018-12-17T11:31:47.0Z</udt:DateTime>
</ram:CreationDateTime >
<ram:PurposeCode >9</ram:PurposeCode>
<ram:OwnerFLUXParty>
<ram:ID >SWE</ram:ID>
</ram:OwnerFLUXParty>
</rsm:FLUXReportDocument>

<rsm:VesselTransportMeans>
<ram:ID schemeID=" CFR "> SWE000007880</ram:ID>
<ram:ID schemeID=" EXT_MARKING">S-381</ram:ID>
<ram:ID schemeID=" IRCS ">EI6207</ram:ID>
<ram:RegistrationVesselCountry>
<ram:ID>SWE</ram:ID>
</ram:RegistrationVesselCountry>

<ram:SpecifiedVesselPositionEvent>
<ram:ObtainedOccurrenceDateTime>
<udt:DateTime>2018-12-17T09:30:47.0Z </udt:DateTime>
</ram:ObtainedOccurrenceDateTime>
<ram:TypeCode >POS</ram:TypeCode>
<ram:SpeedValueMeasure>8.3</ram:SpeedValueMeasure>
<ram:CourseValueMeasure>50</ram:CourseValueMeasure>
<ram:SpecifiedVesselGeographicalCoordinate>
<ram:LatitudeMeasure >50.563</ram:LatitudeMeasure>
<ram:LongitudeMeasure>009.252</ram:LongitudeMeasure>
</ram:SpecifiedVesselGeographicalCoordinate>
</ram:SpecifiedVesselPositionEvent>

<ram:SpecifiedVesselPositionEvent>
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<udt:DateTime>2018-12-17T11:30:47.0Z </udt:DateTime>
</ram:ObtainedOccurrenceDateTime>
<ram:TypeCode >POS</ram:TypeCode>
<ram:SpeedValueMeasure>8.3</ram:SpeedValueMeasure>
<ram:CourseValueMeasure>50</ram:CourseValueMeasure>
<ram:SpecifiedVesselGeographicalCoordinate>
<ram:LatitudeMeasure >50.123456</ram:LatitudeMeasure>
<ram:LongitudeMeasure>009.132</ram:LongitudeMeasure>
</ram:SpecifiedVesselGeographicalCoordinate>
</ram:SpecifiedVesselPositionEvent>
```

```
        </rsm:VesselTransportMeans>
</rsm:FLUXVesselPositionMessage>
```

7. CODE LISTS

Vessel Transport Means[2]

Description: the entity containing the details of the identification and characteristic information of a ship or boat.

Mult.	Business term	Rel.	Type	Description
0..n	Identification	Att	Identifier	An identifier for this transport means vessel, such as an identifier defined by the Food and Agriculture Organisation (FAO), the radio call sign, or an external marking.
0..1	Registration	Ass	Vessel_ Country Entity	The country of registration of this transport means vessel.
0..n	Specified	Ass	Vessel Position_ Event Entity	A position event specified for this vessel transport means.

Vessel Country[9]

Description: the entity containing the details of a country associated to a vessel.

Mult.	Business term	Rel.	Type	Description
1	Identification	Att	Identifier	The identifier for this vessel country.

Vessel Position_ Event

Description: The entity containing information obtained related to the position of a vessel.

Mult.	Business term	Rel.	Type	Description
1	Obtained_ Occurrence	Att	DateTime	The date and time when the position of the vessel was taken by the vessel's navigation equipment.
1	Type	Att	Code	The code specifying the type of vessel position event.

[9] For sake of clarity, the description of Vessel_ Transport Means; Vessel Country entities contains only the part that is necessary for this domain. The complete definition of such entities can be found in the Vessel domain document of the UN/FLUX standard.

0..1	Speed	Att	Measure	The measure of speed of the vessel for this vessel position event.

0..1	Activity_ Type	Att	Code	The code specifying the type of activity, such as of the vessel or the crew, at this vessel position event.
1	Specified	Ass	Vessel_ Geographical Coordinates Entity	The set of geographical coordinates specified for this vessel position event.

Vessel_ Geographical Coordinates

Description: The latitude and longitude of a specified place, by which its relative situation on the globe is known. The height above the sea level constitutes a third coordinate.

Mult.	Business term	Rel.	Type	Description
1	Latitude	Att	Measure	The measure of the latitude as an angular distance north or south from the Equator meridian to the meridian of a specific place for this vessel geographical coordinate.
1	Longitude	Att	Measure	The measure of the longitude as an angular distance east or west from the Greenwich meridian to the meridian of a specific place for this vessel geographical coordinate.
0..1	Altitude	Att	Measure	The measure of the altitude that reflects the vertical elevation of an object above a surface for this vessel geographical coordinate.
0..1	System	Att	Identifier	The identifier of the system used for measuring this specified geographical coordinate.

8. FLUX TL ENVELOPE PARAMETERS

The following FLUX TL parameters must be used for transmission of Vessel Position Messages.

Common name	FLUX TL Envelope Tag name	Value	Remark
Dataflow name	DF	urn:un:unece:uncefact:data:standard:FLUXVesselPositionMessage:4	

Timeout DateTime	TODT	DateTime (in UTC) of creation of the envelope + 60 minutes.	Value expressed as XSD DateTime in UTC. Must be according to the definition provided in 6(2).
Acknowledge Receipt	AR	False	Note: a non-delivery message is always sent when the recipient cannot be reached and timeout (TODT) time has expired.