Report of the Meeting of the Online Reporting Technology Working Group (WG-ORT)
(Online, 7-8 February 2024)

1.   Opening of the meeting

The ICCAT Executive Secretary, Mr Camille Jean Pierre Manel, and the acting Chair, Ms. Terra Lederhouse (replacing Dr Bryan Keller, the Chair of this Group, who was unable to participate due to urgent matters), welcomed the participants to the Meeting of the Online Reporting Technology Working Group (WG-ORT), noting that, in line with previous years, the WG-ORT has the honour of opening the 2024 intersessional meetings of ICCAT. The Executive Secretary specially thanked Ms. Terra Lederhouse (former Chair of the WG-ORT) for her availability to chair this meeting session, which would greatly benefit from her experience. Mr Camille Manel also informed the WG-ORT that Mr Carlos Palma (former Biostatistician and the Head of the Statistical Department of ICCAT, having recently retired from ICCAT after many years of service) will continue to work on the Integrated Online Management System (IOMS) project, but under a different contract arrangement. Mr Carlos Palma was one of the IOMS project precursors and therefore his dedication and knowledge of the IOMS will greatly benefit the work of this group and the IOMS development.

2.   Appointment of Rapporteur

The Secretariat was appointed as Rapporteur for the meeting.

3.   Adoption of Agenda and meeting arrangements

The meeting Agenda was adopted without modifications and is attached as **Appendix 1**. The List of Participants is attached as **Appendix 2**.

The ICCAT Secretariat briefly informed the participants about the meeting logistics. It also recalled that the meeting was recorded (internal use) and had interpretation in the three ICCAT official languages.

4.   Review of ICCAT regulations with implications on the Working Group's mandate

Firstly, the Chair reminded the Group that two important documents were presented by the WG-ORT Chair to the 28th Regular Meeting of the Commission, which was held in New Cairo, Egypt, from 13-20 November 2023:

-    "Online Reporting Technology Working Group - 2023 Status Report" (COC_316/2023). This executive summary report was presented to the Compliance Committee. It provides a summarized overview of the WG-ORT activities during 2023, recalling that all but three planned activities were fully completed. The three ongoing activities will be further debated in section 5.2, namely on plans to be successfully implemented.

-    "Proposed Commission budget for Integrated Online Management System (IOMS) 2024-2025" (STF_211/2023). It contains the WG-ORT proposal to increase the IOMS regular budget, considering the advanced workplan of the WG-ORT, the importance of the work as outlined by the Commission, and the need to establish long-term resilience and sustainability for further development of the IOMS.

In addition, the Chair reviewed the mandate of the WG-ORT and provided an update on the proceedings of the 28th Regular Meeting of the Commission held in New Cairo, Egypt, in 2023. The three management measures that are in place and remain in force related to the WG-ORT are:

- *Recommendation by ICCAT on the application of the Integrated Online Management System (Rec. 22-17).* This measure requires CPCs to register at least one user in the IOMS; requires that beginning in 2023, CPCs submit Part I/Annex 1 and Part II/Section 3 of the Annual Report directly into the IOMS; and requires that IOMS be used to submit additional reporting information in the future as new modules are released into production.

- *Recommendation by ICCAT to continue the development of an Integrated Online Reporting System (Rec. 21-20).* This measure reinforces the WG-ORT mandate by strengthening the intersessional work and allowing a more flexible and autonomous decision-making process on the release of new functionalities into production.

- *"Recommendation by ICCAT for the development of an Online Reporting System"* (Rec. 16-19). This measure establishes the creation and the terms of reference of the WG-ORT, on the development of the IOMS.

Details of the progress of the WG-ORT made during 2023, including some useful statistics on annual report completion, are detailed in section 5.1 of this report.

Finally, the Chair called attention to the "Revised Guidelines for the preparation of Annual Reports (Ref. 23-24). These guidelines were updated and circulated by the Secretariat, to reinforce the provision established in Rec. 22-17 (paragraph 2) where, starting in 2023, CPCs shall submit the relevant portions of their Annual Report (Part 1/Annex 1, Part 2/Section 3) directly through the IOMS. These guidelines also provide important details on how to complete each element of those sections, including on formats and mandatory explanations (explicit or standard) for cases of "not applicable." Further, paragraph 5 of Rec. 22-17 states that CPCs shall be required to submit the relevant compliance documents to the IOMS through new modules as they are developed.

The European Union (EU) acknowledged the work of the WG-ORT over the last year and thanked the Secretariat for its intensive work on the IOMS. The EU also thanked the availability of the Chair to replace Dr Bryan Keller, desiring him a successful return.

5. Status update of the Integrated Online Management System (IOMS)

5.1 Review of current status and progress made during 2023

After a brief outline of the purpose of the IOMS (an integrated online reporting system aimed to centralise and manage virtually all the data reporting requirements of ICCAT), the Secretariat provided a short historical synopsis of the IOMS work since the establishment of the WG-ORT in 2016 in accordance with Rec. 16-19, starting with a study period (2017), then a prototyping phase (2018), and finally, the effective start of the IOMS development from 2019 onwards. The development of the IOMS is currently reaching the end of the third phase. Additional information is provided in the WG-ORT workplan (section 9).

- *Status update and progress made*

A summary of Phases 1 and 2 can be found in the Report of the 2023 Meeting of the Online Reporting Technology Working Group (WG-ORT).

Phase 3 (2 years) started in June 2022 and will end in May 2024. It is ongoing and has two modules currently under development (Vessel Manager containing the UN/FLUX and Form Manager). The Vessel Manager module (with several components, functionalities, and working modes) was carried over from Phase 2 and continued under development throughout Phase 3. The great advances made to the development of two (out of three) Vessel Manager working modes (online and offline completion, to register and authorize vessels in the IOMS) allowed the Secretariat to do a "live" demonstration at this meeting (details in section 5.1.1) of the associated functionality. This demonstration complemented the IOMS training session held online on 16 October 2023, exclusively dedicated to the Vessel Manager module so that the CPCs could initiate testing (online completion only) with this module. Additional training sessions will be offered for the Vessel Manager module in 2024 due to its complexity. The Vessel Manager also includes the integration of the UN/FLUX (financed by the EU) that will allow an automatic exchange of vessel information

(3rd working mode) between the IOMS and interested CPCs, such as the EU Member States, (accounting for more than 60% of all the vessel information data flow). Due to the complexity of the UN/FLUX system, several technical exchanges were made, including more than a dozen EU-ICCAT technical meetings held online in 2022 and 2023 to develop two crucial implementation documents (details in section 5.1.1) to guide the development work of the UN/FLUX subsystem.

The development of the Form Manager started at the beginning of 2023, with great advancements over the last few months. The Secretariat was also able to do a "live" demonstration at this meeting. Finally, the enhancements to the Dynamic Help system (generalizing it to serve existing and future modules), also financed by EU, were completed at the start of 2023 with the most recent version already functioning in the IOMS since May 2023. From now on, only the help content (user manuals in the three official ICCAT languages) of each module will be updated as the IOMS development progresses. Overall, Phase 3 has progressed despite the difficulties and challenges encountered. Consequently, some of the objectives initially proposed, especially the ones linked to the Vessel Manager module, were extended to be attained in the first year of Phase 4. This delay (also required training of the IOMS users) necessitated changes in the WG-ORT workplan to develop the IOMS (see workplan discussion in section 9).

The Secretariat considers that both the Vessel Manager and the Form Manager modules are advanced enough in development status for the WG-ORT to agree on a clear "release into production" roadmap (training, testing, bug corrections and enhancements, release dates, etc.), requiring CPCs to effectively start using the IOMS to fulfil the reporting requirements. To accelerate the IOMS users training process using the new modules, the Secretariat has created a testing environment that can be used for practicing – the testing environment (IOMS sandbox) is identical to the IOMS in production, with all the new developed functionality. The Secretariat highly recommends that all IOMS users start using the new sandbox environment to train and additionally to collaborate on the development of the IOMS by identifying errors and recommending enhancements to the various modules.

- *Submission of Annual Reports (some indicators)*

The Secretariat provided some statistics related to the first three years in production (2021 to 2023) to allow the WG-ORT to better understand the improvements made and to identify potential weaknesses arising from completion of the Annual Reports. They can be summarised as follows:

- All ICCAT CPCs have IOMS registered users (paragraph 1 of Rec. 22-17): This was only possible thanks to the enormous effort made by the Chair. However, not all the CPCs have being actively using the IOMS.

- The full and complete submission of the two sections of the Annual Reports (P1A1: Part I/Annex 1; PS3: Part II/Section 3) using the IOMS has steadily increased between 2021 and 2023 for the 57 CPCs (52 Contracting Parties and 5 Cooperating Parties):

   • P1A1 (statistics): from 74% (42 CPCs) in 2021 to 81% (46 CPCs) in 2023
   • P2S3 (compliance): from 72% (41 CPCs) in 2021 to 81% (46 CPCs) in 2023

- Along with the steady increase shown above, the Secretariat support required to upload and correct both sections (P1A1, P2S3) has progressively decreased from 2021 (42% of CPCs) and 2023 (<10% of CPCs).

- A persistent group of 10 to 13 ICCAT CPCs have encountered difficulties in providing both Annual Report sections from 2021 to 2023.

The above statistical indicators (details in **Table 1**) signal good progress over the last three years. However, some difficulties still exist for some CPCs (pending submissions for both incomplete and complete sections). The Secretariat is committed to analysing each case and contacting the CPCs to solve the problems found.

- *Ongoing and long-term activities*

Across the three phases of IOMS development, the Secretariat has engaged in three simultaneous types of IOMS activities:

- User's support: Continuous work aimed at assisting all the IOMS users (CPCs and ICCAT Secretariat) to work within the IOMS (training courses or individual meeting sessions with CPCs, as requested (intersessionally, or at the Annual Meeting of the Commission – as done in 2023)), responses to questions or concerns by email (email: general@ioms.iccat.int), creation of the user manuals for each module, dynamic help system module, etc.).

- Maintenance: Work associated with maintaining the IOMS in production (bug corrections, code optimization, module enhancements, automation processes, update of cloud servers, security, backups, etc.).

- New development: Study, design, modelling, and new code development (new functionalities and modules only).

The Secretariat intends to maintain this path into the future, providing that sufficient human resources are available. The IOMS regular budget for 2024-2025 was increased to €412,180 by the Commission at its 2023 Annual Meeting. This increase will allow for hire of two additional experts working full time on the IOMS. The Executive Secretary informed the WG-ORT that he would contact the Chair of STACFAD and request confirmation that reopening the approval of the "2025 part" of the biannual budget (2024-2025) would not affect the IOMS.

The WG-ORT congratulated the Secretariat and all the CPCs that contributed to the progress made during 2023. It also considered that all the three types of IOMS related activities are complementary and important to develop the IOMS in an effective and sustainable manner. The Secretariat confirmed that these activities contribute to the main objectives of the IOMS: to simplify the data provision process and to use the information stored in the IOMS to produce high-quality reports and data summaries.

In addition, the WG-ORT suggested that STACFAD be informed about the 2024 IOMS progress report, through a section detailing the allocation of the three types of IOMS activities within the IOMS team, including the two additional senior software developers to be hired during 2024.

5.1.1 Vessel Manager module (including UN/FLUX system)

Two documents on UN/FLUX were presented by the European Union and two real-time demonstrations were performed by the Secretariat, which all related to the Vessel Manager module status update and progress made during 2023.

- *Vessel Manager status update*

The Secretariat presented to the WG-ORT a real-time demonstration of the Vessel Manager module, with its current development status. This demonstration used the IOMS testing environment with outdated vessel information. The demonstration focused on the various capabilities this module has already implemented (those that are near completion and others still in heavy testing). Starting with the dashboard where important vessel's statistics are summarised, it then passed to the querying facilities (how to search for one or more vessels with simple or compound criteria), then on the editing facilities (how vessel characteristics can be changed, how authorization lists can be renewed/corrected, etc.), and then on the addition facilities (how to register a new vessel, and how to add a new type of authorization to a vessel already registered, etc.). Finally, the demonstration addressed the deletion facilities, which are designed so the vessel is retained in the IOMS for the vessel record. The specific types of deletions were addressed: either temporary or permanent, and in both cases all the associated authorizations are removed, and the operational status is explicitly indicated (examples: a permanent deactivation of a sunken vessel becomes "fully inoperative", a temporary deactivation of a vessel becomes "inactive"). The vessel administrative tools were also presented. These tools include facilities to export/import the form CP01-VessLst (make changes to it offline and upload it at a later stage), visual components that compare the actual information of a vessel stored in the IOMS against its preliminary information recently changed (online or uploaded using the CP01-VessLst form) for final validation and acceptance by the Secretariat (for now, it is possible for an IOMS CPC administrator to address these events at a later date). Special action buttons were developed to accept and store or to reject and cancel the changes made.

The WG-ORT raised various questions related to the Vessel Manager, which the Secretariat tried to clarify. As regards the availability of the recorded videos in the three official languages, only the ones related to the training courses will be publicly available and they will contain all the elements shown in the demonstration. As to the availability of the Vessel Manager module for testing purposes, only the sandbox environment has the modules under development. The Secretariat highly recommends using it for training and testing. In relation to the possibility of having IOMS users with specific rights per module, the Secretariat confirmed that the current IOMS roles and user's rights model do not contemplate this highly granular association, and that this approach would increase the complexity of IOMS development and delay progression through the WG-ORT workplan.

- *Vessel Manager functionalities (outline)*

The IOMS Vessel Manager module is a highly complex module, incorporating a multitude of functionalities aimed at handling all the vessel information submitted to ICCAT based on the various recommendations (details are contained in the "Guidelines for submitting data & information required by ICCAT"). The functionalities can be categorised in three groups in order of priority:

a) High priority: All the data provisions now provided using the ICCAT form CP01-VessLst (14 data requirements), namely the ICCAT Vessel registration (including carrier vessels), and the ICCAT Authorisation Lists (a total of 11 authorization lists).

b) Mid priority: Chartering arrangements provided using ICCAT form CP53-ChartrCP_FS (2 data requirements), and vessels authorised to tranship to carriers provided in ICCAT form CP46-VessTran (1 data requirement).

c) Low priority: Authorised active vessels fishing in the previous year by fishery, reported using ICCAT form ST01-T1FC (1 data requirement, resulting from the merging in 2015 of four former data requirements on this subject).

All the above functionalities will be progressively developed in the Vessel Manager prioritizing (a), which will have three different working modes:

1. Online completion: Direct change (add, edit, delete) of vessel registrations and authorizations.

2. Offline completion: Complete form CP01-VessLst outside the IOMS and then upload the information. Both import and export functionalities of this form are available.

3. UN/FLUX automatic data exchange: Both vessel registration and authorizations (using two FLUX domains) will be submitted automatically and in real time with minimal human intervention (machine to machine data exchange).

Any CPC user can always use working modes (1) and (2) complementarily and freely switch from one to the other. Working mode (3) should maintain its independence from (1) and (2).

Mid-priority functionalities (group (b)) will be progressively created without affecting the Vessel Manager plan of "release into production". The functionalities to handle the two forms of group (b) (1. online and 2. offline completion) will be progressively developed and at the same time there will be a smooth transition from the Form Manager module (see below) to the Vessel Manager module, with the Secretariat handling this information before the CPC IOMS users are fully trained in the new functionalities of group (b).

Low priority functionalities (group (c)) will be created together with another module that will manage the Task 1 Nominal Catches (data requirement S:GEN03) and the Compliance Tables (data requirement M:GEN03) in the future.

A question was raised in relation to the terminology (vessel registry, authorization lists, active, inactive, operative, inoperative, delisted, etc.) used by the Vessel Manager module which can be misinterpreted. The Secretariat informed that the majority of the IOMS terms are used by ICCAT in the current Vessel Record system and that they are fully consistent with the ICCAT existing regulation on vessels. On this subject, the WG-ORT agreed to create intersessionally the "IOMS glossary of terms and definitions" and that the IMM should contribute to this work in the future.

The WG-ORT also discussed the problem related to the level of accuracy of the information that the Vessel Manager will handle. Some CPCs may have difficulties in maintaining accurate vessel data over time (including the historical data traceability). The Secretariat agreed that having accurate and reliable vessel data is a difficult and time-consuming task, but also recalled that it is an intrinsic demand of the regulatory measures made by the ICCAT CPCs. It was acknowledged that the UN/FLUX is a powerful option to virtually eliminate errors on vessel data.

The WG-ORT proposed that both concerns stated above (terminology and data accuracy) together with a short presentation focused on the IOMS Vessel Manager be presented at the next IMM meeting.

- *UN/FLUX specifications for the IOMS*

The European Union presented two technical documents related to the UN/FLUX integration into the Vessel Manager module, which aim to automatically exchange vessel and authorisation data with ICCAT. The UN/FLUX language basically has three main elements a) FLUX standard domains (XML messages and XSD schemas); b) Code lists (here code mapping between CPC and ICCAT); c) Regional rules gathered in specific FLUX implementation documents and a set of software tools for data exchange (FLUX Transportation Layer or FLUX-TL) and for data visualization (developed within the IOMS). All the above components operate together, with the implementation documents governing the business logic that allows data exchange between any two authorities (i.e. a CPC and ICCAT), both being able to send and receive information (data or response messages).

Both documents were created by EU-MARE experts and the ICCAT IOMS teams during 2023. The term EU can be replaced by CPC, once these two documents can serve as the basis for any ICCAT CPC that wants to implement the UN/FLUX.

The first document (ICCAT-VESSEL-Implementation-Document-v0.4.docx) describes the business model behind the submission of vessel characteristics to ICCAT using the UN/FLUX Vessel domain only. This includes events such as registering new vessels, updating characteristics of existing vessels, delisting (temporary status) or deactivating (permanent) a vessel from the ICCAT Record of vessels. All the vessel messages follow XML standards validated by specific XSD schemas. Each XML message using the vessel domain contains only information of one vessel. The vessel message is sent by the CPC (FLUX-TL dispatcher node) directly to the ICCAT recipient (IOMS FLUX-TL end-node), which is subsequently validated by the IOMS, and the pertinent response prepared (accepted or not, together with potential errors identified) to be sent back to the CPC. This message exchange process continues until the respective vessel valid transaction is effectively stored in the IOMS, and therefore ready for dissemination. Virtually all the expected events will occur without human intervention.

The second document (ICCAT-FLAP-Implementation-Document-v0.5.docx) describes the business model (business rules, workflow, event types, etc.) behind the submission of Vessel Authorizations to ICCAT (what is requested in sub-form CP01B of form CP01-VessLst) using the UN/FLUX FLAP (Fishing Licenses, Authorizations and Permits) domain only. These includes all the events related to the currently 11 authorization lists that each vessel can have. This includes adding authorizations, changing authorizations, renewing expired authorizations, or removing existing authorizations. The prerequisite to issue a vessel authorization is that it must be already registered in the ICCAT Record of vessels managed by the IOMS. The FLAP message data exchange uses the same validation principles and workflow as the vessel messages. And similarly, each XML message using the FLAP domain contains only information of one authorisation. An important particularity of the UN/FLUX FLAP message is that it contains the gear and the vessel type (in conformity with EU regulation) which does not reflect the ICCAT regulatory measures on vessel authorization (both gear and vessel type is associated with the vessel characteristics). Both EU and the IOMS team experts are working to solve this discrepancy by adding specific business rules.

For both UN/FLUX domains, each business rule has a unique identifier and is characterised by four hierarchical levels (L0: Integrity control; L1: Data field validation (one attribute); L2: Row validation (one report); L3: Content validation (coherence between reports and systems)) that need to be sequentially checked during validation process. Whenever one fails the validation process stops and the response message is created with the corresponding error and a brief, objective, and simple explanation. The current list of business rules available in both documents (nearly 270 in total) are still preliminary and additional ones will be added or refined as required, in line with the progress made in the UN/FLUX development work of the Vessel Manager module.

Finally, the EU provided some practical considerations on the potential use by other ICCAT CPCs that intend to adopt the UN/FLUX in the future. A question was also raised on the need to review ICCAT Rec. 22-17 to include the Vessel Manager module as part of the mandatory reporting requirements to be satisfied through the IOMS. While paragraph 5 of Rec. 22-17 states that CPCs shall be required to submit the relevant compliance documents to the IOMS through new modules as they are developed, the WG-ORT Chair will confirm intersessionally if there is a need to change this recommendation.

The EU recalled its long experience (more than 10 years) with the use of UN/FLUX to automate fisheries data exchange among EU Member States, as well as with their international partners (countries and regional fisheries organizations). This practice confirmed that UN/FLUX can effectively improve the overall quality of the information exchanged and drastically reduce human resources and the delivery time. Therefore, even considering the time it takes to implement UN/FLUX in systems like the IOMS due to its complexity, it pays off in the long run with better data and resource savings. Finally, the EU also mentioned the expansion potential of UN/FLUX once implemented, allowing for exchange of data with other end users in all the available UN/FLUX domains (e.g. VMS, fishing activities, inspection reports etc.).

The Secretariat expressed its gratitude to the EU on the work done on the two UN/FLUX implementation documents, despite all the difficulties encountered during 2023.

- *UN/FLUX development status*

Before the presentation of the real-time demonstration of the UN/FLUX working within the IOMS, the Secretariat briefly described the UN/FLUX in terms of concepts, characteristics, and main goals. Subsequently, the Secretariat briefly described the work required to have the UN/FLUX integrated and running in the Vessel Manager module, and then gave a demonstration on how the IOMS handles vessel information using FLUX-TL.

The FLUX (**F**isheries **L**anguage for **U**niversal e**X**change) is an XML standard language to automatically exchange fisheries related information between two machines (Sender ⇔ Receiver) using SOAP (Simple Object Access Protocol). Its development was initiated by the EU, coordinated by the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) standard harmonisation group with many third-party contributions and adopted by the United Nations in 2016 as a standard (UN/CEFACT-P1000). Its primary goal is to ensure proper data interoperability with standardisation, simplification, efficiency, and security between parties. It uses the FLUX-TL software package to provide an implementation of the FLUX-TL protocol. The FLUX-TL software connects any business application that communicates using XML messages, including pre-existing XML based systems which have not been designed to use FLUX-TL.

The UN/FLUX automatic data exchange between two machines (Sender and Receiver nodes) always involves the concept of "envelope", a packed XML standard message containing well-formed and valid data (using XSD schemas of UN/FLUX). On data submission, the Sender node delivers the envelope to the Receiver end node using FLUX-TL, while usually the transportation layer consists of a chain of nodes, including the Sender and the Receiver nodes. As soon as the envelope with the message arrives at the Receiver node, it unpacks the message from the envelope, processes and validates the message against predefined business rules, prepares the XML response message based on the validation results, and subsequently packs it in the original envelope and sends it back to the Receiver node. All these sequential events occur in almost real time without human intervention.

The work required to have the UN/FLUX integrated into the Vessel Manager module is complex and still under development. After a long learning process of UN/FLUX and many technical online meetings with the EU FLUX expert team on how to prepare a FLUX-TL server node in the IOMS cloud infrastructure that seamlessly communicates with the EU FLUX-TL central node, the Secretariat was able to deploy a fully working FLUX-TL node in the IOMS cloud infrastructure. Deploying a FLUX-TL node is a highly complex and time-consuming task, involving the knowledge of a substantial set of software applications and tools (details in the UN/FLUX technical manuals) and many manual intermediate steps to configure and launch the FLUX-TL. The IOMS team has opted to use docker containers (small virtual servers working inside the cloud server host) and was able to virtually automate the deployment of a FLUX-TL node with specific scripts. This important achievement allows for the reduction in the deployment of a FLUX-TL node from weeks to only a couple of hours. Additionally, these scripts can also be used with very minor adjustments by any entity that adopts the UN/FLUX to deploy their FLUX-TL servers.

For the demonstration, several examples of XML standard messages were prepared by the EU in line with the specifications of the two UN/FLUX implementation documents described above. These messages are being used to develop and test the IOMS FLUX subsystem (FLUX-TL node of the IOMS and the Vessel Manager FLUX component developed to read, transform, validate, store, and build proper XML responses in UN/FLUX format). The test consisted in demonstrating the sequence of main events occurring with one of the above vessel messages having a new valid vessel, being sent, received, and finally stored by the IOMS Vessel Manager module in the Vessels database. The envelope with the XML message is sent by the EU FLUX-TL node (Sender node emulated for the experiment) to the IOMS FLUX-TL node (Receiver). The IOMS FLUX-TL acknowledges receipt, immediately starts processing the message and then stores the new valid vessel data in the IOMS. Finally, the Sender node is informed that the transaction was complete. All these events are instantaneous and without human intervention. In the end, the new vessel sent by the EU FLUX-TL node was identified inside the IOMS Vessel Manager module, demonstrating the successful integration of the UN/FLUX into the Vessel module. The vessel authorizations using UN/FLUX is still under development and heavy testing.

The EU congratulated the Secretariat for the recent advancements on the integration of UN/FLUX into the Vessel Manager. A concern was also raised by the WG-ORT in relation to the expected time lapse between the submission of data and the availability of the vessel information. The Secretariat responded that the IOMS, and especially its UN/FLUX component, will significantly reduce the time this takes, as the information will be stored in the database and available for dissemination immediately after acceptance by the Secretariat.

5.1.2 Form Manager module (including list of standard forms)

The Secretariat presented to the WG-ORT a real-time demonstration of Form Manager module with its current development status. This demonstration used a local environment and soon will be deployed in the IOMS testing environment with several types of ICCAT forms registered. The main goal of the Form Manager module is to centralize and manage all the ICCAT standard electronic forms of various types (CP: compliance; ST: statistics; TG: tagging) sent by ICCAT CPCs to ICCAT. This way, a CPC can access online the inventory of all the forms submitted over time and verify the status of each form. Each form uploaded will have a unique thread identifier (dates, actions, remarks, etc.) to track intermediate events and resulting status (some examples under study: inventoried (waiting validation), rejected (revision requested), corrected (confirmation requested), replaced (replacement requested), processed (stored)) until the information is effectively stored in the ICCAT databases, and the thread is ultimately closed. The demonstration focused on three main functionalities (form uploads, querying facilities, and administrative and communication tools) and has only considered a subset of standard forms (this list will grow as the Secretariat continuously works to normalise all the ICCAT existing forms with trilingual capabilities). The three main functionalities can be summarised as follows:

-   Uploading: After uploading a registered form, the Form Manager checks if the form is valid by reading its header section. If valid, the Form Manager inventories the form in the database, complemented with upload date, IOMS user, IOMS reference, and additional metadata of the header section of the form, and assigns a unique thread to it. For now, invalid forms (not registered and with incomplete header sections) are not tracked by the Form Manager. After being inventoried, several intermediate events will occur until the form is considered fully verified by the IOMS and properly stored in the respective database. Each intermediate event (and the respective change in status) of the uploaded form will be recorded sequentially under the respective thread. All the recorded events can afterwards be queried.

- Querying: At any moment a CPC IOMS user can query (simple and combined filters) the status of all the forms uploaded and identify which ones require a specific action. Standard queries will also be developed in future iterations.

- Administrative and communication tools: These aim to manage the direct messaging between the CPC and the Secretariat in relation to a form previously uploaded to the IOMS. They can be simple notifications or messages requiring a specific action. The communication system is bi-directional and managed internally in the IOMS, with some specific cases where regular email can also be used.

The Secretariat reported that future iterations of the Form Manager will improve dramatically its functionality and automation processes in areas where the Form Manager needs to interact with existing IOMS modules, such as the Vessel Manager. The demonstration presented a simplified example, where a CP01-VessLst form was uploaded using the Form Manager. A validity check was completed. The form type was identified, and the form was inventoried and assigned to the Vessel Manager, where processing occurred, from full validation to final storage. If everything is correct the Vessel Manager informs the Form Manager that the form was processed and stored, closing the form thread. The same interaction will happen when the form is uploaded under the Vessel Manager. These principles also apply to the new modules being developed. This module is currently under development and several features may change. The roles and user rights for this module will be discussed in section 5.4.

The WG-ORT congratulated the IOMS team for the achievements as regards the Form Manager module, which reflected the expectations of the WG-ORT in 2023, noting that it would result in a great reduction in the exchange of emails between the CPCs and the Secretariat, and simultaneously contribute to a centralized, transparent and efficient data provision system.

The WG-ORT also recommended releasing this new module into the IOMS sandbox which will allow IOMS users to start testing its functionality.

The WG-ORT also asked if a CPC would need to upload vessel data using the CP01-VessLst to both the Form Manager and the Vessel Manager. The Secretariat responded that, because the two modules will communicate and interact with each other, only one should be used for the same data. The interaction among IOMS modules reflects one of the main operative characteristics of the IOMS which includes the exchange of information among module databases and the streamlining of reporting requirements.

5.2 Potential enhancements

By default, potential enhancements should only target existing IOMS functionality, already in production. The Secretariat presented a status update of the work done on the IOMS enhancements planned by the WG-ORT in 2023 (Table 3 of the Report of the Meeting of the Online Reporting Technology Working Group (WG-ORT)) and made some suggestions to the WG-ORT on how to address the incomplete work. From the list of 11 enhancements proposed by the WG-ORT to be made during 2023, six were fully completed (items 1, 2, 4, 8, 9, and 10); three are still in progress (items 3, 5, and 6) and their usefulness was debated. Two enhancements can be safely discarded (items 7 and 11) after confirming that both item 7 (Option to cancel an Annual Report) and item 11 (Secretariat corrections to CPC original requirements can be saved with the original CPC user) are already covered by the Annual Reports versioning system, with any CPC being able to review and edit Secretariat preliminary corrections made to some responses (always made in a new version) and then submit that revised version. This method allows the traceability of changes to be maintained.

The Secretariat proposed to the WG-ORT a list of 6 additional enhancements (some of them suggested intersessionally by CPCs and the Secretariat) which aim to improve further the functionality of the IOMS. As in 2023, each potential enhancement was assessed by the WG-ORT in terms of usefulness, development cost (time), and feasibility of implementation. Subsequently, the WG-ORT established its priorities, recalling that the enhancement work should not interfere with the normal execution of the IOMS workplan.

The full list of IOMS enhancements (2023 and 2024) is presented in **Table 2**, which also summarises additional information (module involved, development cost, priority, etc.), including the deliberations made by the WG-ORT. Of all the 9 pending enhancements (3 incomplete from 2023 and 6 new ones from 2024) requiring a decision, the WG-ORT chose to adopt all the 6 new enhancements (items 12, 13, 14, 15, 16, and 17) and 2 (items: 5 and 6) of the 3 pending ones from 2023.

In relation to the remaining item 3 from 2023, the WG-ORT considered that IOMS automatic email messages to inform of a successful Annual Report submission are irrelevant once the IOMS already stores internally this event, just after showing in real-time the success of the submission to the IOMS user. Nevertheless, the WG-ORT agreed that automatic email notifications should be used in the form of reminders for deadlines on data provisions (examples: 1 month ahead, 15 days ahead, etc.). In consequence, the enhancement number 3 from Table 3 in the Report of the Meeting of the Online Reporting Technology Working Group (WG-ORT) was replaced by a new one (item 18) only focusing on email reminders to CPCs on deadlines and similar events. The decisions, as shown in **Table 2** and described above, are adopted by the WG-ORT with adoption of this report.

The enhancements adopted by the WG-ORT will be made intersessionally during 2024, in parallel with and without affecting the normal IOMS development. There are, however, a few enhancements (items 12, 15, and 17) that will require a considerable amount of time for implementation (beyond 2024). Therefore, their progress should be evaluated at the 2025 Meeting of the Online Reporting Technology Working Group.

For the long run (2025 and beyond), an additional enhancement could be publication of the future "IOMS glossary of terms and definitions" (intersessional work adopted by the WG-ORT while debating the terminology used by the Vessel Manager module in section 5.1.1) in the Dynamic Help system of the IOMS.

The EU asked the WG-ORT Chair and the Secretariat if inclusion of the Port Inspection reports (potentially using UN/FLUX amongst other data exchange formats) can be considered an IOMS enhancement that would necessitate developing a new activity (module). The Chair and the Secretariat confirmed the work would represent a totally new module and it should be addressed under the revision of the workplan (section 9).

5.3   Review of the 2024 ICCAT data requirements for IOMS integration

The Chair of the WG-ORT reviewed the status of the data reporting requirements for 2024. With the new management measures adopted by the Commission in 2023, new Requirements will enter into force by the time of submission for the 2024 Annual Reports and some Requirements will no longer be needed. The 2024 list of Requirements includes a total of 175 (127 compliance related Requirements and 48 statistical related Requirements, with two redundant ones to be removed after confirmation), a net increase of 5 additional Requirements when compared with 2023. The updated list of Requirements for 2024, published on the ICCAT website (Compliance: List of 2024 Requirements for the Commission; Statistics: List of 2024 Requirements for the SCRS), are already stored in the IOMS.

The Secretariat reported that the 2024 Requirements have been published on the ICCAT website directly from the IOMS (using the first IOMS public Application Programming Interface (API)) since February 2024. From now on, all the changes made to the Requirements in the IOMS (three languages) will be automatically available on the ICCAT website. Additional IOMS facilities related to the stored Requirements (querying, exporting, etc.) can be found on the administrative menu of the IOMS.

5.4   Review of IOMS roles and user rights for the new modules

The ICCAT Secretariat presented a review of the current IOMS roles and user rights, focusing mostly on the permissions for the new modules in development (Vessel Manager and Form Manager). It started with a brief description of the IOMS security model based on roles (specific set of tasks or responsibilities assigned to users with similar profiles), where each IOMS user has been assigned a unique role. Each role is then mapped to each one of the IOMS functionalities with a set of permissions (read, read/write, none) always considering the data ownership (own CPC data, other CPC data). In consequence, a user of an ICCAT CPC inherits the permissions associated to the role assigned, constrained by the CPC data ownership. For flexibility, each user can have a role promotion/demotion made by its hierarchical superior (e.g. its CPC administrator role). A registered user may be active or inactive but can never be deleted from the IOMS to preserve its historical activity.

There are right now seven distinct IOMS roles (**Table 4**). All the functionalities of the new modules are covered by the existing roles and no changes are planned. A preliminary assignment of new permissions was proposed by the Secretariat (**Table 5**), following the same criteria used by the WG-ORT in 2022 and 2023 (starting with no restrictions in all cases, and, progressively adding restrictions as a function of three combined parameters: role/functionality/data ownership, as the hierarchic role decreases, the level of data detail handled by the functionality increases, a CPC loses rights of not owned data). The permissions for the Vessel Manager module were updated to accommodate the new functionalities for vessels. The permissions for the Form Manager module were assigned for the first time.

The current and updated tables of roles user rights (**Tables 4** and **5**, respectively) were assessed by the WG-ORT, with clarifications being requested and some suggestions made. Some CPCs asked for some additional time to review and propose changes to those tables. The EU recalled that some edits proposed last year were not yet reflected in **Table 5**, namely the ones related to the two roles used by EU Member States users (CPC_FLAG_ADMIN and CPC_FLAG_OFFICER). Thus, the EU committed to incorporate those edits in the new revised edits for **Tables 4** and **5** if sufficient time is available. The WG-ORT agreed to adopt the final roles and user rights with adoption of the meeting report.

The WG-ORT also discussed the possibility of increasing the resolution of IOMS roles and user rights in the in the future, by allowing IOMS users to have different roles in different modules (e.g. CPC_ADMIN in the Vessel Manager and CPC_OFFICER in the Form Manager), because this higher level of resolution may be necessary in the future. The Secretariat informed the WG-ORT that the current IOMS roles model does not contemplate multiple roles per user, recalling that increasing the level of resolution of the IOMS security model will increase the complexity of the IOMS development. Nevertheless, the Secretariat committed to study this subject intersessionally in terms of feasibility and impact on the development of the IOMS.

A CPC recalled that the WG must ensure that the ICCAT measures on confidentiality are fully respected by the IOMS security model when granting access rights to IOMS roles and users, as well as other technical security characteristics. The Secretariat confirmed that such measures were taken into account, while developing the IOMS. The WG Chair agreed and recalled the importance of balancing data restrictions and the need to improve transparency on data availability.

A question was raised by a CPC in relation to the differences between "Vessels registered" and "Vessel's authorizations" in **Table 5**. The Secretariat informed the WG-ORT that the functionalities (columns: Module, Section, Element) in **Table 5** reflect the structure of the IOMS functionalities, which simplifies the assignment of permissions to each IOMS element. The Secretariat acknowledged that some terminology used by the Vessel Manager may be misleading and considered that the development of the "IOMS glossary of terms and definitions" can play an important role in solving those ambiguities on the terminology used by the IOMS. The WG-ORT agreed with this observation. The Secretariat also informed about the different terms and concepts used by the tuna Regional Fisheries Management Organizations (t-RFMOs) in relation to vessels, which can lead to misinterpretation of vessel terminology. The Secretariat proposed to bring this subject to the attention of the Tuna Compliance Network (TCN) to reach an understanding on a more harmonized vessel terminology. The WG-ORT endorsed this proposal.

6. Discussion and adoption of the open-source license to publish IOMS source code

The Chair of the Subcommittee on Statistics (SC-STAT), Dr Pedro Lino, presented on the topic of IOMS licensing. From the outset, the Commission has planned the IOMS to be an open-source project, where everyone can use the IOMS source code (only some parts restricted for security) but with ICCAT retaining the ownership. The decision on the adoption of a Free Open-Source Software (FOSS) license type was now needed, as this had been agreed in 2023, due to various commitments with the IOMS complementary projects financed by the EU and the Global Environment Facility (GEF) (see section 8 for details). The release of the IOMS source code is expected to take place in early July 2024.

A study was conducted (Secretariat and the SC-STAT Convener) on several existing FOSS licenses with an emphasis on those used mostly by the FOSS International Community. A total of 8 FOSS licenses were chosen and studied in detail (**Table 3**). The most important features analysed were:

- Linking: Link the license of the new code with different licenses adopted by existing complementary code (e.g. code of a library)
- Distribution: Distribute the source code to third parties
- Modification: Change the code by a licensee
- Patent grant: Protect licensees from patent claims made by code contributors regarding their contribution and protect contributors from patent claims made by licensees
- Private use: Whether modification to the code must be shared with the community or may be used privately (e.g. internal use by a corporation)
- Sublicensing: Whether modified code may be licensed under a different license (e.g. a copyright) or the same license under which it was provided must be retained
- TM grant: Use of trademarks associated with the licensed code or its contributors by a licensee

The results of the comparison are presented in **Table 3**. Among the 8 licenses studied, several licenses were discarded because of their permissiveness (Affero GPLv2, Apache ASFv2, Eclipse EPLv2, FreeBSD, MIT, Mozilla MPLv2) in properly granting the ownership of the IOMS to ICCAT and allowing potential commercial use. In consequence, the only two remaining (European Union - EUPLv1.2, Free Software Foundation (FSF) - GPLv3) were discussed in detail. Both satisfy the two main criteria required by ICCAT to release the IOMS as an open-source project. As regards their main features, both licenses are *copylefted* (i.e. the source code is made publicly available and all provisions in the license are preserved in derivative works) and are compatible with each other. Additionally, the software and tools used to build the IOMS (MariaDB for databases, JAVA language and tools (OpenJDK, Spring Boot) on back-end, Angular framework on front-end, development IDE's (NetBeans, DBeaver, MS Visual Studio, others) rely on GPLv3 or less restrictive (ASFv2 and MIT) licenses. In terms of worldwide adoption, GPLv3 is by far the most widely used in FOSS software projects. This may be a reflection of the difference in release dates (GPLv3 was released 2007 while EUPLv1.2 was released in 2017). According to the SC-STAT Convener, the study indicates that both licenses chosen satisfy the IOMS criteria and recommended the WG-ORT to adopt one of those two chosen licenses for the IOMS together with a decision on a release date. The Secretariat added that the IOMS source code is practically ready to be released (pending the license decision, and minor security checks). The summary below shows the main characteristics (check also **Table 3**) of the two licenses:

Characteristic	GPLv3	EUPLv1.2
Ownership & copyright	Granted	Granted
Usage (major scenarios)	Copyleft (majority)	Copyleft (majority)
Trademark grant	Yes	No
Longevity (resilience)	> 16 years	> 6 years
Adoption level (projects)	Very large (all project types)	Unknown
Constrains found	Not identified	Consistency with copyright law in EU Member States

Finally, based on the broader adoption of GPLv3 worldwide, its longevity and resilience, both the SC-STAT Convener and the Secretariat considered the GPLv3 a good choice for the IOMS, also indicating a source code release date of 1 July 2024.

For informative purposes, in the case the FSF GPLv3 license is adopted, all the IOMS source code files must have at the beginning a header similar to the one shown below (otherwise similar header):

```
Project IOMS (Integrated Online Management System)
Copyright (C) 2020 ICCAT (https://www.iccat.int)

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General
Public License as published by the Free Software Foundation, either version 3 of the License, or (at your
option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License
for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see
<http://www.gnu.org/licenses/>.
```

The WG-ORT Chair asked the Secretariat to explain the GEF project requirements in terms of the IOMS source code delivery. The Secretariat explained that ICCAT will retain the ownership of the IOMS in its entirety. Shared ownership (ICCAT, Food and Agriculture Organization of the United Nations (FAO)) will apply to the outcomes (documents, standards, source code, etc.) related to the enhancements on data

dissemination of IOMS data (from public APIs only), the part financed by GEF. The GEF project requirements for the IOMS source code (similarly with EU projects) are direct deliverables for 2024. Both the ownership guarantees and continuous availability of the latest updates online can be better achieved with an IOMS release date and a FOSS license. Thus, a release date in early July 2024 satisfies those requirements.

Several options were debated by the WG-ORT on ways to move forward on the adoption of a license for the IOMS and its subsequent release date. Voting on a license during the meeting was discarded once several CPCs mentioned the need for additional time to evaluate the associated technical and legal aspects with their IT experts.

Another question raised by the WG-ORT related to the license behind UN/FLUX, which may impact on the WG-ORT's decision. The Secretariat was concerned that it was not able to find sufficient information to identify the license behind the UN/FLUX other than it is fully free to use. The EU committed to assist in identification of the UN/FLUX license and additionally to gather complementary characteristics related to the EUPLv1.2 license.

After a considerable debate on how to proceed with the IOMS license adoption and the source code release date, the WG-ORT Chair suggested that the WG-ORT tentatively decided on the license suggested by the SC-STAT Convener and the Secretariat (the FSF GPLv3 license), pending further confirmation to be given intersessionally. The WG Chair also suggested that the decision be made as soon as the report is adopted. Meanwhile, the WG Chair will request additional feedback from CPCs on the IOMS licensing subject on the basis of which the Chair will formally decide on the license adoption and release date.

7.   Status update of IOMS complementary projects

The Secretariat presented a status update of the two IOMS complementary projects, running in parallel with the IOMS main development project.

7.1   European Union IOMS related grants (two projects of 1 year each)

The European Union grant reference EMFAF-2022-VC-ICCAT3-IBA (ICCAT – Online Management System, from EMFAF Work Programme) is an IOMS complementary project with a total budget of €250,000 planned for a period of 12 months (June 2023 to May 2024), fully focused on the Vessel Manager. It has two topics (or sub-projects).

- *Topic 1 (EMFAF-2022-VC-ICCAT3-IBA-01) - Vessel Manager Module of the Integrated Online Management System (acronym: EU-ICCAT-IOMS2023-TV (Topic Vessel for short))*

Topic Vessel aims to support and strengthen the Vessel Manager module for online and offline completion (manual working modes), and dynamic interaction with the Form Manager module. The budget of €100,000 includes the hiring of a Senior Software Developer for a period of 12 months.

The Vessel Manager module incorporates a multitude of functionalities which aim to handle all the ICCAT reporting obligations on vessels. From the three groups of Vessel Manager functionalities (described in section 5.1.1) only the high and middle priority ones will be fully addressed by this project, with all the activities concentrated on their online/offline completion functionalities. However, the IOMS team will also prepare the conditions to start advancing on the low priority functionality group.

Status update: The Secretariat considers that the progress has been considerable and no delays in the development are expected. Development work is still in progress.

- *Topic 2 (EMFAF-2022-VC-ICCAT3-IBA-02 - Integration of the UN/FLUX standard into the Integrated Online Management System (acronym: EU-ICCAT-IOMS2023-TF (Topic FLUX for short))*

Topic FLUX aims to support the integration of the UN/FLUX which any CPC would be able to use to exchange vessel and authorizations information with ICCAT. For now, only two domains of UN/FLUX are covered: VESSEL and FLAP. The vessels domain will allow to exchange vessel characteristics. The FLAP domain exchanges information on vessel authorizations in all the ICCAT authorization lists. The budget of €150,000 includes the hiring of a Senior Software Developer for a period of 12 months, with about 30% used to cover the monthly costs of two FLUX cloud servers.

The main activities are focused on:

a) Set up a fully functioning FLUX-TL end node (ICCAT cloud infrastructure)
b) Set up fully working data flows for 2 UN/FLUX domains (vessels, authorisations)
c) Fully integrate (a) and (b) into the IOMS Vessel Manager module
d) Result in fully functioning data flows of vessel and authorizations (as detailed in Topic 1) and primarily the ones from form CP01-VessLst, via UN/FLUX

An important aspect of the UN/FLUX work is its potentially broader use i.e. to provide the ICCAT IOMS with the potential to exchange information with ICCAT CPCs, RFMOs and other external parties, in an automated way.

Status update: The Secretariat reported some delays in the progress of the work and that some important code related to the FLAP domain is still in development. This situation had been expected due to UN/FLUX complexity and the difficulties found to hire expertise for short term contracts, resulting in the work being carried out by the current IOMS team. Consequently, the Secretariat is studying the possibility of requesting from the EU a time extension of about 5 months to accomplish all the objectives, without affecting the budget.

One CPC inquired into the authorization process for vessels fishing for ICCAT species. The ICCAT Secretariat provided clarification as to the scope of the authorization and the role of the module in fulfilling reporting obligations for the Commission.

7.2 *GEF-ABNJ II project on the IOMS (4 years)*

One of the 5 capsules financed by Phase II of the Common Oceans Areas Beyond National Jurisdiction (ABNJ) Program and the Tuna Project (GEF-ABNJ Tuna II) is the "Enhancement of Online Reporting (OR) systems". This complementary project aims to enhance the IOMS through the development of extensions (standard RESTful public APIs – web services) for automatic data interoperability, with a focus on public data dissemination (one-way standard data structures to be consumed/published by any "end user"). The "end user" has a large spectrum of possibilities ranging from a single user who wants to download this information, including a web site that wants to publish it, to complex projects wanting to use more than one type of dataset (while always considering any restrictions on data availability and data privacy per "end user"). Two major end users of ICCAT information stored in the IOMS will be the ICCAT website and the TUNA-ORG website. Other potential end users considered are the 5 t-RFMOs and their CPCs, FAO (e.g. Global Tuna Atlas), and virtually any potential stakeholder that requests to analyse ICCAT information stored in the IOMS.

The GEF-ABNJ Tuna II total budget delivered to the IOMS development of extensions is about €490,000 and is planned for a total effective duration of four years. The project was signed by ICCAT and FAO in August 2023 and the work started in September 2023, and is expected to end in May 2027. ICCAT has already delivered to FAO the first interim report on 15 January 2024. It includes the progress made during the four months (e.g.: includes the first public restful API already working to publish the 2024 data requirements on the ICCAT website, as described in section 5.3 of this report), and the revised progress report indicators (quantitative measures scoring the project evolution over time) to reflect the IOMS development status and usage over time. The three indicators are now:

- Number of ICCAT CPCs effectively using the IOMS
- Global IOMS utilization combined score (scale: [0, 100])- accounts for all functionalities
- Number of IOMS public RESTful APIs for data dissemination

These three indicators aim to measure over time two major characteristics of the IOMS: the utilization by ICCAT CPCs (first two) and the public data dissemination facilities (third one). The three indicators were redrawn to be obtained automatically from the IOMS and thus facilitate the bi-annual project progress reports to FAO.

The WG-ORT Chair thanked the Secretariat for the update on the ongoing complementary IOMS projects. The EU, as one of the main supporters of the IOMS project, congratulated the advancements made by the IOMS team on the two ongoing complementary projects, and on the recent progress made in the UN/FLUX sub-project.

In relation to GEF project and the goal of improving automatic data interoperability among stakeholders, the EU highlighted the relation with the port inspection reports under the Port State Measures Agreement (PSMA). The EU asked how feasible it would be to have ICCAT working together with FAO and other t-RFMOs on this subject, foreseeing future integration in the IOMS. The Secretariat confirmed that it would involve the development of a new module (to be discussed within the IOMS workplan review), but due to the current ongoing IOMS overloaded activities, this new PSMA module should not be considered a high priority module, at least until the ongoing planned modules have been completed and are in production. The Secretariat also agreed on collaborative work with FAO and other t-RFMOs, starting with an initial study on the potential use of the Indian Ocean Tuna Commission (IOTC) system (which offered to share the code with all t-RFMOs) to manage port inspection reports, but also considering the ICCAT limited resources and overbooked 2024 calendar.

The WG-ORT raised another question related to the GEF project as to whether CPCs could benefit from the GEF budget in improving the data interoperability between CPCs and ICCAT. The Secretariat explained that the GEF budget only covers the data dissemination process linked to information management (current and new modules) by the IOMS, and not the data provision for now. Nevertheless, all CPCs will benefit indirectly from all the functionalities related to both data interoperability features and better data quality.

Overall, the WG-ORT acknowledged the importance of these two complementary projects in strengthening the IOMS capabilities with benefits for all the ICCAT Community and many potential "end users".

8. Feasibility of adapting existing IOMS source code for sharks/billfish check sheets data

In 2023, the WG-ORT requested the Secretariat to carry out a preliminary study on the likelihood of re-using part of the source code made for the IOMS Annual Report module, to shorten the development of the check sheets for sharks and for billfishes. These reporting requirements apply to all the ICCAT CPCs.

The Secretariat presented the results of the brief study which compared the two types of templates (Annual Reports versus Check Sheet). Overall, both have similar structures and some similar characteristics (large, complex templates with long, heterogeneous responses). However, the Annual Report templates suffered a normalization process over the past two years that simplified both the structures and the complexity of the responses. The check sheets may also require normalization of both templates during the development of the Check Sheets Manager module.

The working logic is similar but with some important nuances. Only the logic behind the source code can be replicated, with virtually no code reuse. The new components that need be built for the check sheets:

- New database (to store the information)
- Back-end source code (database services and others)
- Front-end source code (visual part)
- Help content for the Dynamic Help System (both sharks and billfishes)

The work to improve and harmonize the structure of both sharks and billfish check sheet templates needs to start from the beginning of the development of the module. One of the main goals of the harmonization process should consider the improvement of the check sheet data usability, which will allow the delivery of better outputs to the Commission and the Compliance Committee. In summary, the work behind the Check Sheets Manager module is complex and time-consuming work that will require a minimum of 8 months to be implemented. The Secretariat suggested to start this module only after having completed the two ongoing modules.

The WG-ORT thanked the Secretariat for the preliminary work on the sharks/billfish check sheets, and acknowledged that, apart from developing the Check Sheet Manager module, it is also time-consuming work to review and analyse all the responses from CPCs. Additionally, some CPCs may misunderstand the ICCAT recommendations on this subject, which could lead to incoherent responses. Thus, a possible solution to harmonize both check sheets and simplify the responses may include a full review of ICCAT recommendations including guidance on how to answer the check sheets. The Secretariat confirmed that every year the responses are verified using the guidance from the two recommendations, and that CPCs are contacted to correct cases where the responses are not in line with what is expected but agreed that this verification process is difficult and inefficient, with many delays resulting from lack of CPC feedback. In addition, the check sheets are continuously increased in size due to the frequent updates following Commission action.

The WG-ORT agreed to prioritize the Check Sheets Manager module after completing the two ongoing modules and continue, based on the outcome of the feasibility study, with the harmonization and simplification work of the two check sheet templates and with the standardization of the potential responses. The WG-ORT noted that all the work leading to a simplification of the data provision process is an ICCAT common goal, even in cases where a recommendation needs to be revisited.

Notwithstanding, the WG-ORT Chair recalled that the sharks and billfish check sheets were measures that came out of the Commission's Panel 4 and the WG-ORT has no mandate to change these measures. This simplification and standardisation process must move forward by having the WG-ORT Chair contact the Chair of Panel 4 to determine the best approach to handle this revision at the next Commission meeting. The Secretariat noted that, in accordance with the *Recommendation by ICCAT on improvement of compliance review of conservation and management measures regarding billfish caught in the ICCAT Convention area (Rec. 18-05),* modifications to check sheets should involve the Compliance Committee (COC) and suggested that both the Panel 4 and the COC Chairs be involved in the simplification and standardisation process of the sharks/billfish check sheets.

9. Update and approval of the IOMS workplan

The ICCAT Secretariat presented the current IOMS workplan (adopted in 2023) with some updates to Phases 3 and 4 to include the latest achievements in the IOMS, and the proposed adjustments needed to complete ongoing activities. The preliminary proposal for Phase 5 planning has also been added to the workplan.

9.1 Proposed revisions for Phase 3

The ICCAT Secretariat described the progress made during 2023 and provided a status update of the ongoing activities of the second year of Phase 3 (two years: June 2022 to May 2024). Phase 3 is reaching its end. During the last year the IOMS team has concentrated its development work on two major modules, the Vessel Manager module (including the UN/FLUX integration) and the Form Manager module.

The Vessel Manager module (including the UN/FLUX integration) has seen great progress across all the three working modes (online completion, offline completion, UN/FLUX automation) and for all the information submitted under form CP01-VessLst. Both online and offline completion modes are now fully working and under heavy testing. There is a minor exception related to the upload of more complex CP01-VessLst forms linked to the vessel authorization sub-form CP01B. This portion of the code is still under development and fine tuning, and it is expected that it will be ready in the coming months, before the first 2024 training course of the Vessel Manager. During the following months, the IOMS team will concentrate all its efforts on bug corrections and optimizations to the Vessel Manager source code, validation work on UN/FLUX business rules, and developing the mid-priority functionalities, namely the management of chartering arrangements (form CP53-ChartrCP_FS) and the management of vessels authorised to tranship to carriers (form CP46-VessTran). More details can be found in section 5.1.1 of this report. The content of user's manual for the Vessel Manager module in the three official languages is also being drafted for the IOMS Dynamic Help System. This work will progress until the Vessel Manager module is released into production.

Due to its complexity and based on various concerns raised during the meeting, the Secretariat proposed two additional workshop sessions dedicated to vessels. Consequently, the expected finalization date to complete the activities on the Vessel Manager was postponed to 31 October 2024, which already contemplates additional time for improvements resulting from the two training sessions.

The Form Manager module adopted in 2023 has also seen great advancements particularly in the last few months. It is now capable of managing a subset of ICCAT standard forms with a basic verification of the forms uploaded. The Form Manager can also interact with other modules of the IOMS, as is the case of the interaction with the Vessel Manager (details in section 5.1.2).

During the following months, the IOMS team will continue to further develop the Form Manager. Future iterations will perform a deeper validation, will no longer require a pre-selection of the form type to be uploaded (pre-emptive capacity), and will allow multiple forms to be uploaded at once using batch processing (multiple forms contained in a compressed file will be processed, checked, and inventoried in sequence, in a sealed group of events). The user's manual of the Form Manager module in the three official languages is also being drafted for the IOMS Dynamic Help System. This work will progress until the Form Manager module is released into production.

The Secretariat proposed one additional workshop session dedicated exclusively to the Form Manager. The expected finalization date to complete the activities on the Form Manager was adjusted to 30 September 2024, which already contemplates additional time for improvements resulting from the training session.

9.2 Proposed revisions for Phase 4

Several adjustments were made to Phase 4 to accommodate the three training sessions proposed and the rescheduling of the Vessel Manager and the Form Manager activities (all occurring at the beginning of Phase 4). The Secretariat considers that, by ending the development of both the Vessel Manager and the Form Manager in the third quarter of 2024, sufficient time will be available (3 months) to do some potential bug correction and optimization work on both modules before they are released into production in January 2025.

The Port Manager module was postponed and will now start in November 2024, maintaining the highest priority (1). The Check Sheet Manager module for both sharks and billfishes was postponed to December 2024 and maintains the highest priority (1).

In addition, within Phase 4, two modules (T1NC (Task 1 nominal catches) Manager, Compliance tables (COCT) Manager) planned for the first year (June 2023 – May 2024) were postponed to the second year of Phase 4 (June 2024 – May 2025) with the dates open and dependent on the progress achieved (to be agreed at the next intersessional meeting of the WG-ORT).

9.3 Rescheduling the IOMS roadmap

The WG-ORT used the latest adopted workplan (2023 Report of the Meeting of the Online Reporting Technology Working Group (WG-ORT), Table 6) and the proposed changes made by the Secretariat (sections 9.1 and 9.2), as the basis for the rescheduled workplan, which includes updates to Phases 3 and 4 and the addition of Phase 5 (to start in June 2026 for 24 months).

For planning posterior phases, the WG-ORT requested that all meeting participants suggest future priority modules for the IOMS. The compiled combined list of priority modules is:

- Validation seals and signatures for Statistical Document Programs (SDPs) (incorporated into SDPs (SWO, BET, etc.))
- Inspection reports
- Task 2 Catch and effort
- Task 2 Size samples
- Task 1 Fleet characteristics (active vessels in previous year)
- Transhipment declarations/ Supply declarations / Transhipment reports
- Port inspection / Joint Inspection Scheme reports

- Fishing plans
- Access agreements
- Seabird mitigation
- Lost/found gears and others

This list should be interpreted as a prospective list of modules and not a definitive one. Further studies are required to identify operational similarities and potential merges/splits of functionalities in order to create definitive IOMS modules.

The WG-ORT Chair thanked the Secretariat for putting together the rescheduled workplan and the pathway to move forward the IOMS project. The Chair also asked about the approach proposed to release into production both the Vessel Manager and the Form Manager modules. The Secretariat replied that the IOMS sandbox environment was created to start testing IOMS modules well ahead of their release dates. When a module is released into production the information must be official, but it was estimated that a period of 3 months may be required to support CPC users using former email data provisions (e.g. if a CP01-VessLst form arrives by email, the Secretariat will help uploading the information to the IOMS). This three-period approach (testing in sandbox, work in production with Secretariat support, work in production autonomously) is an improvement compared to the one used in the Annual Reports module. Official data start with the second period but a transition period of 3 months secures a safeguard for potential unexpected issues. The end of last period is indicative and may be extended as required.

With reference to the compulsory use of the new modules in the IOMS system once they have entered into production, the Chair of the WG-ORT clarified that paragraph 5 of the *Recommendation by ICCAT on the application of the Integrated Online Management System* (Rec. 22-17) had been adopted with the view to cover all future modules of the IOMS, and hence a new measure was not required, as the use of the module would be compulsory once it entered into production under this provision. The WG-ORT agreed with the Chair's interpretation and understanding and suggested that the WG-ORT Chair raise this matter at the Commission Annual Meeting for further discussion and deliberations.

Overall, the WG-ORT agreed with the proposed changes made by the Secretariat to reschedule Phases 3 and 4, which were considered appropriate and in line with the activities planned for those two phases. Postponing the shark and billfish Check Sheets Manager module to Phase 4 provides sufficient flexibility and time for the Commission to consider the possibility of trying to streamline the check sheets templates and fit in a more realistic timeframe that will facilitate the overall CPCs and Secretariat work.

A missing aspect of the IOMS workplan for which the WG-ORT should be encouraged to address in the future, is improvement in clarity and transparency of the IOMS data dissemination policy (e.g. what information can and cannot be publicly available). The Secretariat took note of this missing component and offered to prepare a preliminary document that describes the IOMS data dissemination policy for the next intersessional meeting of the WG-ORT, using as a guideline the criteria used in the publication of vessel information in the ICCAT website. This document will also serve as a reference to determine which IOMS data dissemination Application Programming Interfaces (APIs) can be classified as public APIs and therefore contribute to improve IOMS transparency on data dissemination.

The WG-ORT also discussed another important aspect indirectly related to the IOMS transparency, which is the availability of some pieces of the information managed by the IOMS in the three official languages of ICCAT, such as the Annual Reports. The Secretariat confirmed that the current IOMS budget does not account for the externalization of these translation tasks and that it does not have resources to carry out this task internally. The Executive Secretary noted that additional costs not already foreseen in the IOMS budget such as this one must pass through STACFAD. The Secretariat recalled that this issue was raised by the COC Chair at the last Annual Meeting, but there had not been sufficient time to address it. The Secretariat recommended that this proposal be presented to the COC by way of a document, and if accepted by COC it can be sent to STACFAD and then for approval by the Commission. The WG-ORT Chair agreed with the proposal but had some concerns about its priority since the IOMS team is already overcharged with many priority tasks, and this new task cannot affect the current work, and committed to work intersessionally with the COC Chair and the Secretariat on the proposal to translate sections of the Annual Reports in the three official languages of ICCAT, detailing priorities and costs. This proposal will be presented as a COC document to the next Commission Annual Meeting. The WG-ORT acknowledged its importance and agreed with this approach.

After evaluating all the changes proposed to the IOMS workplan (**Table 6**), the WG-ORT adopted the following roadmap for releasing into production the Vessel Manager and Form Managers modules:

Date	Event	Environment
2024-04-01	Vessel Manager available in Sandbox (https://sandbox-ioms.iccat.int)	Testing
2024-04-30	Vessel Manager training/workshop session (1st session)	Testing
2024-06-01	Form Manager available in Sandbox (https://sandbox-ioms.iccat.int)	Testing
2024-06-24	Form Manager workshop sessions	Testing
2024-08-31	Have ready one-way migration of the Vessels DB from SQL Server (intranet) to MariaDB (IOMS)	Production
2024-10-09	Vessel Manager training/workshop session (2nd session)	Testing
2025-01-01	Form Manager into production (https://ioms.iccat.int)	Production
2025-01-01	Vessel Manager into production (https://ioms.iccat.int) including FLUX	Production
2025-04-01	Form Manager only way to submit the CP01 form	Production
2025-04-01	Vessel Manager only way to edit vessel characteristics and authorizations online	Production

On the discussion related to the two new modules planned for Phase 4 (Port Manager and sharks/billfish Check Sheets Manager), a question was raised in terms of which one to prioritize. After some discussion, the WG-ORT agreed to start with the Port Manager due its development simplicity and only start the Check Sheet Manager after releasing into production both the Vessel Manager and Form Manager. This approach will give additional time to allow the Commission to address the simplification and standardization of the sharks/billfish templates.

While discussing the planning of future modules, the EU proposed for the WG-ORT to consider the "Port inspection/Joint Inspection Scheme reports" work as the Port State Measures Agreement (PSMA) is becoming an important subject among fisheries partners. The EU recalled that ICCAT also regulates this provision under the *Recommendation by ICCAT amending Recommendation 18-09 on port State measures to prevent, deter and eliminate illegal, unreported and unregulated fishing* (Rec. 23-17) on the implementation of Port State measures to fight illegal, unreported and unregulated (IUU) fishing, and that ICCAT currently collects summaries of port inspection report information using EXCEL. Given that FAO has already implemented the Global Information Exchange System (GIES) which includes PSMA data related capabilities, ICCAT would benefit from the synergies and interoperability on data exchange among partners, thus avoiding double reporting. The GIES system relies on the traditional data upload methods but is planned to be adapted to use automated data exchange methods with UN/FLUX. The EU does not consider this a high priority task but recommends that the first technical studies be carried out by ICCAT in collaboration with FAO and other t-RFMOs, such as IOTC which is already exchanging port inspection reports with FAO. The Secretariat asked whether the EU plans to send port inspection reports to FAO to determine how ICCAT can benefit from the UN/FLUX data interoperability in this process. The EU confirmed this provision to FAO, at first using the traditional method but aiming to move to the UN/FLUX automated method. The Secretariat indicated that it would appreciate being involved in the technical aspects of this work between the EU and FAO, including the technical documentation when it is available. The EU will keep the Secretariat informed as developments evolve and called the attention for several ongoing initiatives on data interoperability involving t-RFMOs and their CPCs and FAO (including ABNJ projects in which ICCAT is involved, see section 7.2), suggesting that the WG-ORT and the ICCAT Secretariat should follow their developments. The Secretariat confirmed it is aware of those initiatives with some partial participation (e.g. using the vessel related APIs from the IOMS to exchange data with FAO, upon consent from the Commission), and expects to improve its future participation on those initiatives including the port inspection reports exchange between IOTC and FAO, which can guide the WG-ORT on how to plan the new module on Port Inspections/Joint Inspection Scheme reports.

The updated workplan is presented in **Table 6** and will be adopted by the WG-ORT with the meeting report adoption.

10. Planning the IOMS users training sessions (Vessel and Form Manager modules)

Envisioning the needs of IOMS users from CPCs to improve their skills on the use of the new modules, the Secretariat proposed three training sessions (Vessel Manager: two sessions; Form Manager: one session) with the following tentative dates:

-	Vessel Manager training session #1	2024-04-30
-	Form Manager training session #1	2024-06-24
-	Vessel Manager training session #2	2024-10-09

All the training sessions will use the IOMS sandbox. The main goal will be learning in detail how to work with the modules. The Secretariat recalled that the recorded videos from the previous IOMS training sessions (available in the NEXTCLOUD shared folder reserved for the WG-ORT) could be always revisited and invited all the participants to review those videos.

The WG-ORT agreed by consensus with the three training sessions on the proposed dates.

11. Redundancy in data requirements

The elimination of redundant requirements is one of the main long-term tasks stated in the Terms of Reference (ToRs) of the WG-ORT (*Recommendation by ICCAT to continue the development of an Integrated Online Reporting System* (Rec. 21-20), paragraph 2b).

11.1 Review of strategic plan to eliminate redundancy

The ICCAT Secretariat, after recalling the complexity behind the elimination of redundancy on ICCAT data requirements and its long-term goal recognized by the WG-ORT in 2022, presented a status update on the topic. First, the guidelines for a "strategic plan to eliminate redundancy" discussed in 2023 were revisited:

1. Define redundancy: "similar information required by different data requirements with slightly different structures"

2. For all requirements (2021 to 2023), study all the data structures and identify similarities between them (structural level)

3. For similar groups, check if, with minor adjustments on data structures, the data requirements can be merged

4. Analyse the implications on the existing "ICCAT regulations" (Recommendations, Resolutions, etc.)

5. Prepare a "consolidated response" to the Commission

From the five tasks defined, the Secretariat suggested extending point 2 with the requirements of 2022 to 2024 to have a broader perspective of the changes in the data requirements over time.

The Secretariat informed the WG-ORT that little progress has been made since the last meeting of the WG-ORT (Report of the 2023 Meeting of the Online Reporting Technology Working Group (WG-ORT)), mostly due to lack of sufficient time and resources to properly study the characterisation/classification of the data structures of each data requirement (similarities, differences, complementarity, overlap, etc.) of Tasks 2 and 3.

Some potential redundancy cases were further explored. For example, two annual catch provisions of previous years (S:GEN03 - Task 1 nominal catches; M:GEN03 - Compliance reporting tables) aim to provide similar data but have incompatible structures (number of fields/characteristics, level of detail), metrics (product types not always in "live weight"), and no clear definition/differentiation of the catch components covered (only landings, landings + dead discards, etc.). A potential merge of these two provisions would imply a complex exercise of harmonization of structures, metrics, and definitions, while maintaining the same utility to Commission purposes. However, it would noticeably reduce the CPC burden of these two complex data provisions. The compliance tables allocation/distribution rules can complicate further this potential merge.

Finally, the ICCAT Secretariat reiterated the commitment to continue working on the elimination of redundant requirements but requested the WG-ORT Chair to consider additional involvement from CPCs and other ICCAT subsidiary bodies. ICCAT has by far the largest amount of reporting requirements among all t-RFMOs and it is expected that the number of reporting requirements will increase in the future and consequently the number of data formats and structures.

The WG-ORT fully agreed that the elimination of redundancy in ICCAT reporting requirements is a fundamental priority of the WG-ORT, considering the indicators just discussed. Despite the WG-ORT consensus on the importance of this work, no effective solutions have yet been found. Canada suggested the possibility of bringing back to ICCAT Panels their related requirements to participate in a coordinated and deeper revision of the existing requirements in the search for outdated requirements. The EU recalled that redundancy in reporting requirements also has large and costly IT implications and therefore suggested a radical change in the way of thinking to address the requirement redundancy: move from thinking on "templates" to thinking on "data structures". The IOMS in general and particularly the Form Manager could play an important role in this work as it evolves to manage and interact with various modules and their databases that contain the data structures, by analysing how changes in those data structures would affect the goals behind a given requirement. The EU also noted that the UN/FLUX was designed with that principle in mind and may also play a role in the elimination of redundancy in the reporting requirements. The Secretariat and the SC-STAT Convener concurred with the EU view and suggested that this potential intersessional work should involve the active participation of WG-ORT members and the Chairs of COC, the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures (PWG), the SCRS, the four Panels and the Convener of SC-STAT.

11.2 Next steps

To move forwards, Brazil suggested the creation of a specialized ad hoc WG-ORT working group to deal specifically with this elimination of redundant requirements. The WG-ORT Chair agreed with the suggestion. Brazil, the EU, Canada, and the SC-STAT committed to participate in the ad hoc Working Group. It was agreed that the WG-ORT Chair will contact all CPCs intersessionally to inquire about interest in participating in the ad hoc Working Group, which will be carried out by correspondence and the results will be presented at the next WG-ORT meeting.

12. Intersessional work required in 2024 (Working Group and Secretariat)

In addition to the various IOMS enhancements discussed/adopted (summarized in **Table 2**) the WG-ORT together with the ICCAT Secretariat has planned the following list of intersessional work:

Follow up actions and intersessional WG-ORT tasks:

1. To review and adopt February 2024 meeting report, including modifications to the workplan.
2. As part of the 2024 WG-ORT status report to be submitted to the Compliance Committee at the Annual Meeting, the Chair is to include details that describe Secretariat technical staff activities to develop and maintain the IOMS and to facilitate CPC reporting and is to identify future needs for addressing redundancy in reporting requirements. Relevant portions of this report will also be presented to STACFAD.
3. Chair is to create the "IOMS glossary of terms and definitions" for review [and endorsement] by the Working Group on Integrated Monitoring Measures (IMM).
4. The Compliance Department will raise the question of consistency of terminology among the tuna RFMOs at the next meeting of the Tuna Compliance Network.
5. To consider adding Vessel Manager presentation to IMM (Secretariat to discuss with IMM Chair).
6. Secretariat will provide further description of differences between the two main license options (EUPL v 1.2 and GPL v3) in meeting report. Chair will seek any strong concerns or preferences from WG-ORT members intersessionally by a determined date well in advance of FAO's 1 July 2024 deadline. In the absence of a strong preference for one option from the majority of the group, the WG-ORT will defer to the expertise of the Secretariat.
7. The Chair will communicate with the Chairs of Panel 4 and COC on WG-ORT request for Panel 4 to modify and simplify the billfish and shark check sheets.

8. The Chair will coordinate with the Secretariat to confirm that Rec. 22-17 does not need to be updated to require CPCs to use new modules in the IOMS, including the Vessel Manager and Forms Manager, to fulfil reporting requirements.

9. The Secretariat will prepare a proposal for next WG-ORT meeting on making appropriate IOMS data publicly available.

10. The Chair and the Secretariat will work intersessionally to develop a proposal for COC in 2024 on translating IOMS data into three languages and determine appropriate timing for requesting resources from STACFAD to develop this capability.

11. The WG-ORT will form an ad hoc working group to address redundancy. The Chair will solicit interested members from the WG-ORT. The ad hoc group will work intersessionally through correspondence and present an interim report to the Commission in 2024 and provide a formal presentation at the next WG-ORT meeting in 2025. The ad hoc group will identify additional funding and resource needs for this effort and present them to STACFAD (see item 2).

12. The Secretariat will make initial contacts with FAO and IOTC regarding future implementation of the data exchanges required by the ICCAT Recommendation 23-17, with a view to developing efficient data sharing mechanisms for CPCs through a dedicated IOMS module in a future phase. The possibility of using UN/FLUX will be considered for such exchanges.

13. Other matters

No other matters were discussed.

14. Adoption of report and adjournment

It was agreed that the report would be adopted by correspondence.

Table 1. Number of 2021, 2022, and 2023 Annual Reports stored in the IOMS by category (Compliance, Statistics), completion rate (0% to 100%), and completion source (CPC, Secretariat, pending). The total number of expected Annual Reports is "57" (52 Contracting Parties + 5 non-Contracting cooperating), in each category (P1A1: Part 1/Annex 1, P2S3: Part 2/Section 3). Shaded light-blue cells, indicate the ratio of Annual Report sections fully completed (100%) by CPC only.

| | | | | Year of annual report / Secretariat support [Yes/No]) | | | | | | | | | | | |
| | | | | 2021 | | | | 2022 | | | | 2023 | | | |
Indicator	Section	Completion status	Party type	No	Yes	pending	Total	No	Yes	pending	Total	No	Yes	pending	Total
number of annual reports	Compliance (P2S3: Part 2/Section 3)	complete	CP	18	19		37	32	10		42	40	1		41
			NCC	1	3		4	5			5	5			5
		incomplete	CP	3	2	10	15	1	3	6	10			11	11
			NCC			1	1								
		Total		22	24	11	57	38	13	6	57	45	1	11	57
	Statistical (P1A1: Part 1/annex 1)	complete	CP	17	21		38	32	10		42	39	2		41
			NCC	2	2		4	5			5	5			5
		incomplete	CP	4	1	9	14	1	6	3	10			11	11
			NCC			1	1								
		Total		23	24	10	57	38	16	3	57	44	2	11	57
Ratio (%)	Compliance (P2S3: Part 2/Section 3)	complete	CP	32%	33%		65%	56%	18%		74%	70%	2%		72%
			NCC	2%	5%		7%	9%			9%	9%			9%
		incomplete	CP	5%	4%	18%	26%	2%	5%	11%	18%			19%	19%
			NCC			2%	2%								
		Total		39%	42%	19%	100%	67%	23%	11%	100%	79%	2%	19%	100%
	Statistical (P1A1: Part 1/annex 1)	complete	CP	30%	37%		67%	56%	18%		74%	68%	4%		72%
			NCC	4%	4%		7%	9%			9%	9%			9%
		incomplete	CP	7%	2%	16%	25%	2%	11%	5%	18%			19%	19%
			NCC			2%	2%								
		Total		40%	42%	18%	100%	67%	28%	5%	100%	77%	4%	19%	100%

Table 2. List of IOMS enhancements proposed, discussed, and adopted to be developed intersessionally. The development time is a preliminary qualitative indicator (Legend: completed - shaded "green"; discarded - shaded "red"; ongoing/studying – no shade).

Year	Number	Enhancement (short description)	Module	Cost (dev. time)	Adopted	Intersessional work	Status (current)	Notes
2023	1	Allow formatting (rich text) of non-protected cells of the exported Annual Report in EXCEL	Annual Report	low	Yes	No	done	
2023	2	Make the cells bigger, font smaller or wrap text to be able to see what is required	Annual Report	low	Yes	No	done	
2023	3	An automated message will be sent to the sender confirming the successful submission (CC to: info@iccat.int ?)	Annual Report	medium	No	No	discarded	Replaced by 18 (WG decision to focus on deadline reminders)
2023	4	Change "organization" to CPC	Annual Report	low	Yes	Yes	done	
2023	5	Show percentage of CPCs which have completed the Annual Report (e.g. 19 CPCs out of 57 = 33.3%, particularly on the deadline + 1)	Annual Report	medium	No	No	studying	No decision made (maybe added to dashboard)
2023	6	Order alphabetically those with 100% complete, not in order of completion, and add "date submitted" column to graph	Annual Report	medium	Yes	Yes	ongoing	
2023	7	Option to cancel an "importing" file	Annual Report	high	No	No	discarded	Versioning already contemplates it
2023	8	In the management files, the redundant requirements do not appear, but they do appear in the scientific extract	Annual Report	low	Yes	Yes	done	
2023	9	Cap-Vert should be Cabo Verde (same for Côte d'Ivoire and Türkiye)	Annual Report	low	Yes	Yes	done	
2023	10	Invert the "not-applicable" (negative) response to "applicable" (positive) response (choices: Yes/true & No/False)	Annual Report	high	Yes	Yes	done	
2023	11	If requirements are edited manually by the Secretariat Staff at the request of the CPC/original submitter, is it necessary save it as a new version and thar our name appears?	Annual Report	medium	No	No	discarded	Traceability needed in any cases
2024	12	Discriminatory questions to automatically fulfil Annual Report requirements (includes developing CPC profiles)	Annual Report	high	Yes	Yes	studying	Study/create how CPC profiles can help in autocompletion of AR's
2024	13	Review Standard responses	Annual Report	high	Yes	Yes	ongoing	
2024	14	Enhance the visualization of vessels charts for better understanding	Vessel Module	medium	Yes	Yes	studying	
2024	15	Edit/Add the complete Annual Report (not only Part I Annex 1/Part II Section 3)	Annual Report	medium	Yes	Yes	studying	
2024	16	Enable batch file upload (.zip) without the need to specify their type	Form Manager	high	Yes	Yes	studying	
2024	17	Automatic completion of the Annual Report based on the submission of forms (only specific requirements)	Form Manager	high	Yes	Yes	studying	
2024	18	Automated ahead reminders to CPCs informing on deadlines proximities (replaces 3)	Annual Report	medium	Yes	Yes	studying	

Table 3. The eight chosen FOSS licenses studied with their main features (see available links for details). The ones that better reflect the IOMS criteria are shaded "light-orange".

#	License	Author	Latest version	Publication date	Linking	Distribution	Modification	Patent grant	Private use	Sublicensing	TM grant
1	Affero General Public License	Affero Inc	AGPL/GPLv2	2007	Copylefted	Copylefted	Copylefted	?	Yes	?	?
2	Apache License	Apache Software Foundation	ASFv2	2004	Permissive	Permissive	Permissive	Yes	Yes	Permissive	No
3	Eclipse Public License	Eclipse Foundation	EPLv2	2017-08-24	Permissive	Copylefted	Copylefted	Yes	Yes	Copylefted	No
4	European Union Public License	European Commission	EUPLv1.2	2017-05-01	Permissive	Copylefted	Copylefted	Yes	Yes	Copylefted	No
5	FreeBSD	The FreeBSD project	—	1999-04-01	Permissive	Permissive	Permissive	Manually	Permissive	Permissive	Manually
6	GNU General Public License	Free Software Foundation	GPLv3	2007-06-01	GPLv3	Copylefted	Copylefted	Yes	Yes	Copylefted	Yes
7	MIT license / X11 license	MIT	—	1988	Permissive	Permissive	Permissive	Manually	Yes	Permissive	Manually
8	Mozilla Public License	Mozilla Foundation	MPLv2	2021-01-03	Permissive	Copylefted	Copylefted	Yes	Yes	Copylefted	No

Legend:
Permissive: The software has minimal restrictions on how it can be used, modified, and redistributed, usually including a warranty disclaimer.
Copylefted: The software requires that its source code be made publicly available and that all provisions in the license be preserved in derivative works.
Manually: Requires an explicit request.
Yes: Directly granted by the license.

Table 4. Current IOMS user roles adopted (added the last three additional roles).

CURRENT model (roles/users)			
UserCode	**Description English**	**Description Spanish**	**Description French**
ICCATSEC_ADMIN	**Admin user in the ICCAT Secretariat**. You will be able to register users of all roles and CPCs, add new roles, organizations, data requests, requirements, regulations, consult the audit table that collects the information of the webservices consumed by the user, edit the main menu, and consult the API used for the IOMS web services.	**Usuario administrador de la Secretaría de ICCAT**: Podrá registrar usuarios para todos los roles y las CPC, añadir nuevos roles, organizaciones, peticiones de datos, requisitos, regulaciones, consultar la tabla de auditoría que recoge la información de los servicios web utilizados por el usuario, editar el menú principal y consultar la API utilizada para los servicios web del IOMS.	**Utilisateur administrateur du Secrétariat de l'ICCAT**. Celui-ci pourra enregistrer les utilisateurs pour tous les rôles et CPC, ajouter de nouveaux rôles, organisations, demandes de données, exigences, réglementations, consulter le tableau d'audit qui recueille les informations des services Web utilisés par l'utilisateur, modifier le menu principal et consulter l'API utilisée pour les services Web de l'IOMS.
ICCATSEC_OFFICER	**Regular officer in the ICCAT Secretariat**. You will have permissions to use all IOMS functionalities, except for administration tasks.	**Usuario regular de la Secretaría de ICCAT**: contará con permisos para utilizar todas las funcionalidades del IOMS, exceptuando las tareas de administración.	**Utilisateur régulier du Secrétariat de l'ICCAT**. Celui-ci aura l'autorisation d'utiliser toutes les fonctionnalités de l'IOMS, à l'exception des tâches d'administration.
CPC_ADMIN	**Admin user in a CPC**. You can register CPC Officer users that are within your own CPC.	**Usuario administrador de una CPC**. Podrá registrar usuarios que sean funcionarios de su propia CPC.	**Utilisateur administrateur d'une CPC**. Celui-ci pourra enregistrer les utilisateurs qui sont fonctionnaires de sa propre CPC.
CPC_OFFICER	**Regular officer in a CPC**. You will have permissions to use all the IOMS functionalities of your own CPC, except for administration tasks.	**Usuario regular de una CPC**. Contará con permisos para utilizar todas las funcionalidades del IOMS de su propia CPC, exceptuando las tareas de administración.	**Utilisateur régulier d'une CPC**. Celui-ci aura l'autorisation d'utiliser toutes les fonctionnalités de l'IOMS de sa propre CPC, à l'exception des tâches d'administration.
CPC_FLAG_ADMIN	**Admin user of a Flag CPC**. You can register CPC Officer users that are within your own Flag.	**Usuario administrador en una CPC de pabellón**. Podrá registrar a los usuarios de la CPC de pabellón de su propia CPC de pabellón.	**Utilisateur administrateur d'une CPC de pavillon**. Celui-ci pourra enregistrer les utilisateurs de la CPC de pavillon de sa propre CPC de pavillon.
CPC_FLAG_OFFICER	**Regular officer of a Flag CPC**. You will have permissions to use all the IOMS functionalities of your own Flag, except for administration tasks.	**Usuario regular de una CPC de pabellón**. Contará con permisos para utilizar todas las funcionalidades de IOMS de su propia CPC de pabellón, exceptuando las tareas de administración.	**Utilisateur régulier d'une CPC de pavillon**. Celui-ci aura l'autorisation d'utiliser toutes les fonctionnalités de l'IOMS de sa propre CPC de pavillon, à l'exception des tâches d'administration.
ICCAT_CHAIR	**ICCAT Chairs of a subsidiary body**. You will be able to access with read permissions all the IOMS information.	**Presidente de un organismo auxiliar de ICCAT**. Tendrán acceso de lectura de toda la información de IOMS.	**Président d'un organe subsidiaire de l'ICCAT**. Celui-ci pourra accéder avec des autorisations de lecture à toutes les informations de l'IOMS.

Table 5. Adopted mapping of IOMS user's rights and access levels in each IOMS functionality (module/section/element). Grant descriptors in the legend below. The new category "Edit (v)" was initially added in the 2023 Report of the WG-ORT Meeting.

Module	Section	Element	ICCATSEC_ADMIN Own data	Others	ICCATSEC_OFFICER Own data	Others	CPC_ADMIN Own data	Others	CPC_OFFICER Own data	Others	CPC_FLAG_ADMIN Own data	Others	CPC_FLAG_OFFICER Own data	Others	ICCAT_CHAIR Own data	Others
IOMS core	Main dashboard	Main dashboard	-	Read	-	Read	Read	Read	Read	Read	Read	Read	Read	Read	-	Read
IOMS core	Data request	Data requests	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read
IOMS core	Data request	Data Request by organization	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read
IOMS core	Data request	Requirements	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read
IOMS core	Messaging	Inbox/Outbox	Edit	Read	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-
IOMS core	Messaging	New thread	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-
IOMS core	Administration	Users	Edit	Edit	Edit	-	Edit	-	-	-	Edit	-	-	-	-	-
IOMS core	Administration	Roles	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	Administration	Organizations	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	Administration	Data Requests	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	Administration	Flags	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	Administration	Requirements	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	Administration	Standard responses	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	Administration	Regulations	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	Administration	Audit	-	Read	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	Administration	Manage menu	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	Administration	Feedback	Edit	Read	Edit	Read	Edit	Read	Edit	Read	Edit	Read	Edit	Read	Edit	Read
IOMS core	Administration	API Documentation	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read
IOMS core	Administration	API Documentation Vessels	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read
IOMS core	Administration	Change log	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	Administration	Help Manager	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-
IOMS core	User menu	Profile	Edit	Edit	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-
IOMS core	User menu	Send feedback	Edit	Read	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-
IOMS core	User menu	Help	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read
IOMS core	User menu	Theme	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-
IOMS core	User menu	Notifications	Edit	-	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read
IOMS core	User menu	Alerts	Edit	-	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read
IOMS core	User menu	Language	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-	Edit	-
Annual report	Annual report	Annual Reports Dashboard	-	Read	-	Read	Read	Read	Read	Read	Read	Read	Read	Read	-	Read
Annual report	Annual report	Edit/add report	-	Edit	-	Edit	Edit	-	Edit	-	Edit (v)	-	Edit (v)	-	-	Read
Annual report	Annual report	Summary reports	-	Read	-	Read	Read	Read	Read	Read	Read	Read	Read	Read	-	Read
Annual report	Annual report	Status by requirement	-	Read	-	Read	Read	Read	Read	Read	Read	Read	Read	Read	-	Read
Annual report	Annual report	Guidelines	Read	-	Read	-	Read	-	Read	-	Read	-	Read	-	Read	-
Annual report	Annual report	Export Annual Report (*testing)	-	Read	-	Read	-	-	-	-	-	-	-	-	-	Read

			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14
Annual report	Annual report	Export All Annual Reports	-	Read	-	Read	-	-	-	-	-	-	-	-	-	Read
Vessel Manager	Vessel Manager	Vessels registered	-	Read	-	Read	Read	Read	Read	Read	Read	Read	Read	Read	-	Read
Vessel Manager	Vessel Manager	Vessels authorizations	-	Read	-	Read	Read	Read	Read	Read	Read	Read	Read	Read	-	Read
Vessel Manager	Vessel Manager	Vessels dashboard	-	Read	-	Read	Read	Read	Read	Read	Read	Read	Read	Read	-	Read
Vessel Manager	Vessel Manager	Full list of vessels	-	Read	-	Read	Read	Read	Read	Read	Read	Read	Read	Read	-	Read
Vessel Manager	Vessel Manager	ICCAT Record of Vessels Admin	-	Edit	-	Edit	Edit	-	Edit	-	Edit (v)	-	(Edit) (v)	-	-	Read
Vessel Manager	Vessel Manager	Vessel record acceptance	-	Edit	-	Edit	Edit	-	Edit	-	Edit (v)	-	(Edit) (v)	-	-	Read
Vessel Manager	Vessel Manager	Owners/operators	-	Edit	-	Edit	Edit	-	Edit	-	Edit (v)	-	(Edit) (v)	-	-	Read
Vessel Manager	Vessel Manager	Chartering arrangements	-	Edit	-	Edit	Edit	-	Edit	-	Edit (v)	-	(Edit) (v)	-	-	Read
Vessel Manager	Vessel Manager	Transhipment authorizations	-	Edit	-	Edit	Edit	-	Edit	-	Edit (v)	-	(Edit) (v)	-	-	Read
Form Manager	Form Manager	Form Summary	-	Edit	-	Edit	Read	-	Read	-	Read	-	Read	-	-	Read
Form Manager	Form Manager	Upload file	-	Edit	-	Edit	Edit	-	Edit	-	Edit (v)	-	(Edit) (v)	-	-	Read
Form Manager	Form Manager	Form Administration	-	Edit	-	Edit	-	-	-	-	-	-	-	-	-	-
Form Manager	Form Manager	Form Configuration	-	Edit	-	-	-	-	-	-	-	-	-	-	-	-

Legend (rights):

Grant	Meaning
Read	Reading rights
Edit	Editing rights
Edit (v)	Editing rights, subject to validation by CPC Officer or CPC Admin
-	No rights / Not applicable
?	Doubts / to decide

Table 6. Revised IOMS workplan adopted by the WG-ORT, covering ongoing and future development phases. Details of each phase are shown at the bottom. Phases 4 and 5 are preliminary module references.

Phase	Priority	Module / Task	Description	Data requirements	Dev. Status	Date Start	Date End	Phase end	Budget	Remarks
1	1	Module	IOMS core/database	n/a	COMPLETE	2019-06-01	2021-08-01	2	COM-18	
1	2	Module	IOMS Annual Report (Part II/Section 3, Part I/Annex 1)	S:GEN01, M:GEN01	COMPLETE	2019-06-01	2021-08-01	2	COM-18	
1	3	Task	IOMS in production		COMPLETE	2019-06-01	2021-08-01	2	COM-18	
1	1	Task	Training/workshop sessions (Phase 1)		COMPLETE	2022-04-28	2022-09-01	2	COM-18	Two sessions (4 hours each)
1	1	Task	Maintenance (including improvements & error fixing)		Ongoing	2019-06-01	n/a	n/a	COM-18	Continuous task (maintenance)
2	1	Module	Dynamic Help system (module)	n/a	COMPLETE	2021-03-31	2022-03-31	2	CPC (EU)	
2	1	Task	Adjustments to the new roles definition	n/a	COMPLETE	2022-02-15	2022-03-15	2	COM-19	Adopted by WG-ORT 2022
2	1	Module	ICCAT Vessel Manager	Up to 21 data requirements (Vessel registration, 11 authorisation lists, carriers, chartering arrangements, transhipment authorizations, previous year activity)	Ongoing	2021-03-01	2024-10-31	4	COM-19 & CPC(EU)	Development extended to Phase 3 (10 additional months) jointly with UN/FLUX integration. Partially covered by EU voluntary contributions (2021, 2022, 2023, 2024)
2	1	Task	UN/FLUX integration into Vessel Manager	All requirements of Vessel registration and authorizations (11 lists)	Ongoing	2022-04-01	2024-10-31	4	CPC (EU)	EU contribution (2021, 2022, 2023, 2024)
2	2	Module	Enhancements to Dynamic Help system (generalization)	n/a	COMPLETE	2022-04-01	2023-03-31	3	CPC (EU)	
2	1	Task	Vessels training/workshop session (1st session)	n/a	Planned	2024-04-29		4	COM-19	IOMS users preliminary tests on Vessel module
2	1	Task	Vessels training/workshop session (2nd session)	n/a	Planned	2024-10-09		4	COM-19	IOMS users preliminary tests on Vessel module (optional)
2	1	Task	Maintenance (including improvements & error fixing)	n/a	Planned	2020-06-01	n/a	n/a	COM-19	Continuous task (maintenance)
3	1	Module	Form Manager	Module to upload and manage all ICCAT forms (ST, CP, TG)	Ongoing	2023-07-01	2024-09-30	4	COM-21	Includes improvements from workshops
3	1	Task	Form Manager workshop sessions	n/a	Planned	2024-07-04	TBD	4	COM-21	
3	1	Task	Maintenance (including improvements & error fixing)		Ongoing	2022-06-01	n/a	n/a	COM-21	Continuous task (maintenance)
4	1	Module	Port Manager	M:GEN11, M:GEN12, M:BFT20, M:BFT21, M:SWO10	Planned	2024-11-01	TBD	4	COM-21	
4	1	Module	Sharks/billfishes check-sheets Manager	M:SHK05, M:BIL01	Planning	2024-12-01	TBD	4	COM-21	Not possible to reuse AR code. Requires big structural changes.

4	1 Task	Sharks/billfish check-sheets training/workshop sessions	n/a		Planned	TBD	TBD	4	COM-21	
4	3 Module	T1NC (Task 1 nominal catches) Manager	S:GEN03		Planned	TBD	TBD		COM-23	Start may change (pending study on time required)
4	4 Module	Compliance tables (COCT) Manager	M:GEN03		Planned	TBD	TBD		COM-23	Start may change (pending study on time required)
4	1 Task	T1NC/COCT training/workshop sessions	n/a		Planned	TBD	TBD		COM-23	
4	1 Task	Maintenance (including improvements & error fixing)	n/a		Planned	TBD	TBD		COM-23	
5	1 Module	SDP programs (SWO, BET)	M:TRO06, M:SWO01		Planning	TBD			COM-25	
5	2 Module	Bluefin tuna (BFT) weekly and monthly reports Manager	M:BFT22, M:BFT23, M:TRO14 weekly BET		Planning	TBD			COM-25	
5	3 Module	Task 2 - Catch and effort	S:GEN04		Planning	TBD			COM-25	
5	1 Task	Maintenance (including improvements & error fixing)			Planning	TBD			COM-25	

Complementary information on IOMS Phases:

Phase	Start	End	Budget (months)	COM meeting	Budget Year	Budget Type
Phase 1	2019-06-01	2020-05-31	12	annual	2018	Extraordinary
Phase 2	2020-06-01	2022-05-31	24	biennial	2019	Regular
Phase 3	2022-06-01	2024-05-31	24	biennial	2021	Regular
Phase 4	2024-06-01	2026-05-31	25	biennial	2023	Regular

Appendix 1

Agenda

1. Opening of the Meeting
2. Appointment of Rapporteur
3. Adoption of the Agenda and meeting arrangements
4. Review of ICCAT Regulations with implications on the Working Group's mandate
5. Status update of the Integrated Online Management System (IOMS)
    5.1 Review of current status and progress made during 2023
        5.1.1 Vessel manager module (including UN/FLUX system)
        5.1.2 Form manager module (including list of standard forms)
    5.2 Potential enhancements
    5.3 Review of the 2024 ICCAT data requirements for IOMS integration
    5.4 Review of IOMS roles and user rights for the new modules
6. Discussion and adoption of the open-source license to publish IOMS source code
7. Status update of IOMS complementary projects
    7.1 European Union IOMS related grants (two projects of one year each)
    7.2 GEF-ABNJ II Project on the IOMS (four years)
8. Feasibility of adapting existing IOMS source code for Sharks/Billfish Check Sheets data provision
9. Update and approval of the IOMS workplan
    9.1 Proposed revisions for Phase 3 (modules, priorities, timetable, etc.)
    9.2 Proposed revisions for Phase 4
    9.3 Rescheduling the IOMS roadmap
10. Planning the IOMS users training sessions (vessel and form manager modules)
11. Redundancy on data requirements
    11.1 Review of Strategic Plan to eliminate redundancy
    11.2 Next steps
12. Intersessional work required in 2024 (Working Group and Secretariat)
13. Other matters
14. Adoption of Report and adjournment

<div align="right">**Appendix 2**</div>

<div align="center">**List of participants**[*1]</div>

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